

PROCEEDINGS BOOK

6th ASIA PACIFIC

International Modern Sciences Congress



December 15-16, 2021

Delhi, India

Mata Sundri College for Women, University Of Delhi



Editors

Prof. Dr. Harpreet KAUR
Dr. Uzma NADEEM
Samira KHADHRAOUI ONTUNC

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TURKEY

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TOTAL NUMBER OF PAPERS FROM TURKEY

61

TOTAL NUMBER OF INTERNATIONAL PARTICIPANTS

78

PARTICIPANTS COUNTRIES

India, Turkey, Bulgaria, Vietnam, Nigeria, Malaysia, Italy, Romania, Egypt, Iraq, Algeria, Pakistan, Portugal, Mexico, Morocco, Iran, Azerbaijan, Kazakhstan, Kyrgyzstan, Benin, Republic of Moldova, Ukraine, Saudi Arabia, Georgia, Hongkong

TOTAL ACCEPTED PAPERS

139

TOTAL REJECTED PAPERS

36

EVALUATION PROCESS

All applications have undergone a double-blind peer review process

PRESENTATION

Oral Presentation

CONFERENCE ID



TITLE

6th ASIA PACIFIC International Modern Sciences Congress

DATE - PLACE

December 15-16, 2021

Delhi, India

GENERAL COORDINATOR

SAMIRA KHADHRAOUI ONTUNC

LANGUAGES

English, Turkish, Russian

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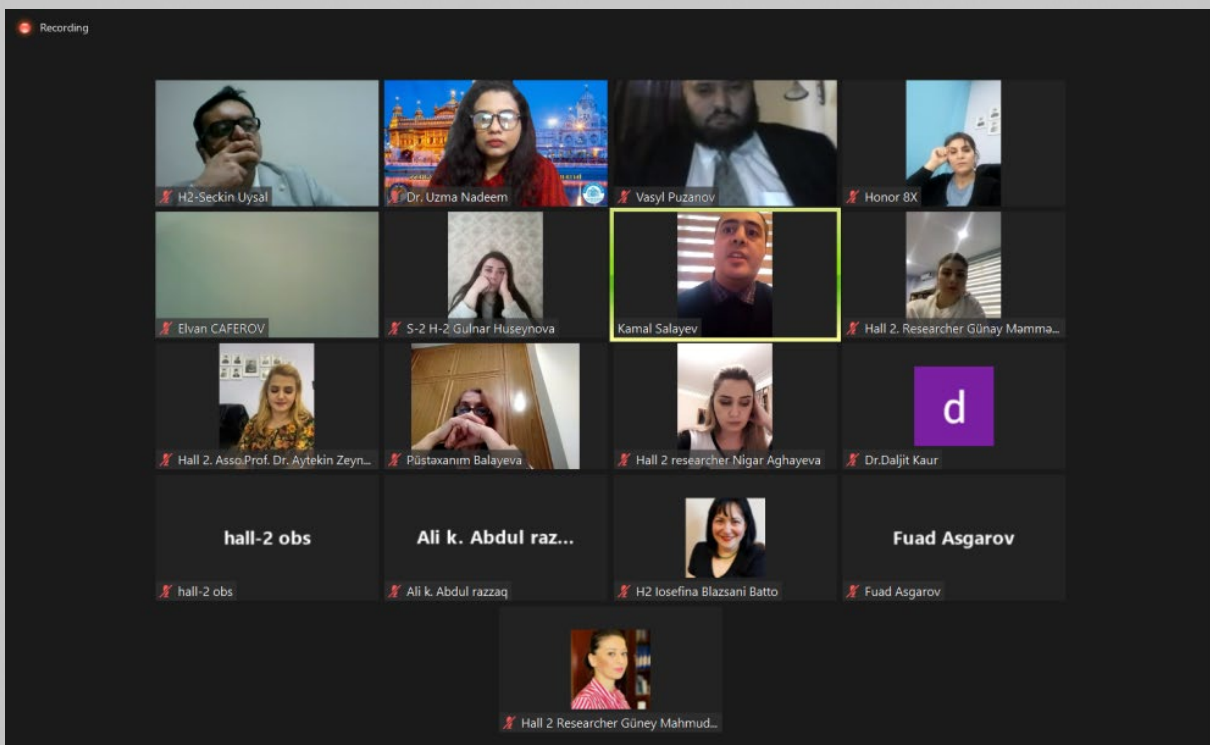
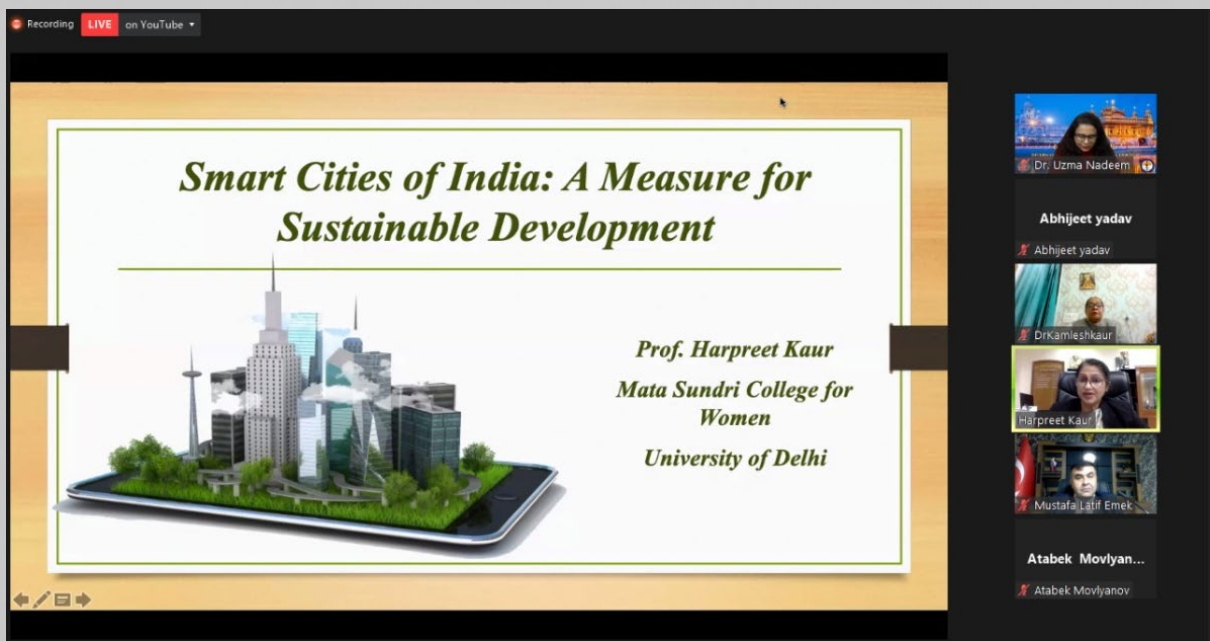
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DR. SHADI DAVARI, PAYAM NOOR UNIVERSITY, IRAN

CONFERENCE GALLERY



CONFERENCE GALLERY

Zoom Meeting interface showing a presentation slide and a grid of participants.

Table 1. The experimental density of pure epoxy and Tungsten Heavy Reinforced Polymer composites is given as g/cm³.

SAMPLES	DENSITY
PURE EPOXY	1.146
ALTERNATIVE METHOD 8 H	1.189
ALTERNATIVE METHOD 16 H	1.157
ALTERNATIVE METHOD 24 H	1.159
CLASSICAL METHOD 24 H	1.168

Participants visible in the grid include: H4 melek İora SAKARLI, Hall_4_Observer, H4 AYŞE DOLAR, H4-SİBEL TAŞ, H4-Yusuf KARNO, H-4 Hasan YILDIZHAN, Ali Rıza Dincer, Session-2 Hall-4 DEMET ÇAKIR, H-4, SELİM TAŞ..., and H-4, SELİM TAŞKAYA.

Zoom Meeting interface showing a presentation slide titled "The clinical characteristic of primary myelofibrosis in patients under 40 years."

The clinical characteristic of primary myelofibrosis in patients under 40 years.

Sghibneva-Bobeico Nina
Institute of Oncology, Department of Hematology, Chisinau, Republic of Moldova, State University of Medicine and Pharmacy "N. Testemitanu", Discipline of Hematology

Yasile Musteata
Institute of Oncology, Department of Hematology, Chisinau, Republic of Moldova, State University of Medicine and Pharmacy "N. Testemitanu", Discipline of Hematology

Maria Robu
State University of Medicine and Pharmacy "N. Testemitanu", Discipline of Hematology

Participants visible in the grid include: H6-Zekeriya ÖZCAN, H6-Nina Sghibneva-Bobeico, H6-Latif Üstünel, Hamza Sigirci, Şerife GÜZEL, and H6-Mumin Alper Erd...

Zoom Meeting interface showing a grid of participants.

Participants visible in the grid include: H4 AYŞE DOLAR, Hall_4_Observer, H4-SİBEL TAŞ, Ali Rıza Dincer, Session-2 Hall-4 DEMET ÇAKIR, H4 melek İora SAKARLI, H4- Gülseren Dağlar, İ. Feda ARAL, Hemlata Krishnani, H-4, SELİM TAŞ..., H4-Yusuf KARNO, H-4 Hasan YILDIZHAN, Hemlata Krishnani, H-4, SELİM TAŞKAYA, and H4-Yusuf KARNO.

CONFERENCE GALLERY

Recording... You are viewing H5: Aysegül Özbacı's screen View Options

Hall-5, Observer

H5 - Muhammed Emir AKYOL

H5 - Veli BATDI

H5 - Yüksel MAVİ

H5 - Seda SABAH

H5 - Burcu GÜRGEN AKICI

Şenyurt yenişinar

H5 - SEDA AY

H5 - Ly Dai Hang

Activate Windows
Go to Settings to activate Windows.

Unmute Start Video Participants Chat Share Screen Pause/Stop Recording Breakout Rooms Reactions Leave Room

Zoom Meeting

Recording...

H6-Zekeriya ÖZCAN H6-Nina Sghibneva-Bobel... H6-Latif Östünel Harnza Sığircı Şerife GÜZEL H6-Mumin Alpe...

The clinical characteristic of primary myelofibrosis in patients under 40 years.

Sghibneva-Bobeico Nina
Institute of Oncology, Department of Hematology, Chisinau, Republic of Moldova, State University of Medicine and Pharmacy "N. Testemitanu", Discipline of Hematology

Vasile Musteata
Institute of Oncology, Department of Hematology, Chisinau, Republic of Moldova, State University of Medicine and Pharmacy "N. Testemitanu", Discipline of Hematology

Maria Robu
State University of Medicine and Pharmacy "N. Testemitanu", Discipline of Hematology

7°C Bulutlu 13:21 15.12.2021

Recording... View

Hall-5, Observer

H5 - Muhammed Emir AKYOL

H5 - Veli BATDI

H5 - Burcu GÜRGEN AKICI

H5 - SEDA AY

Şenyurt yenişinar

H5 - Seda SABAH

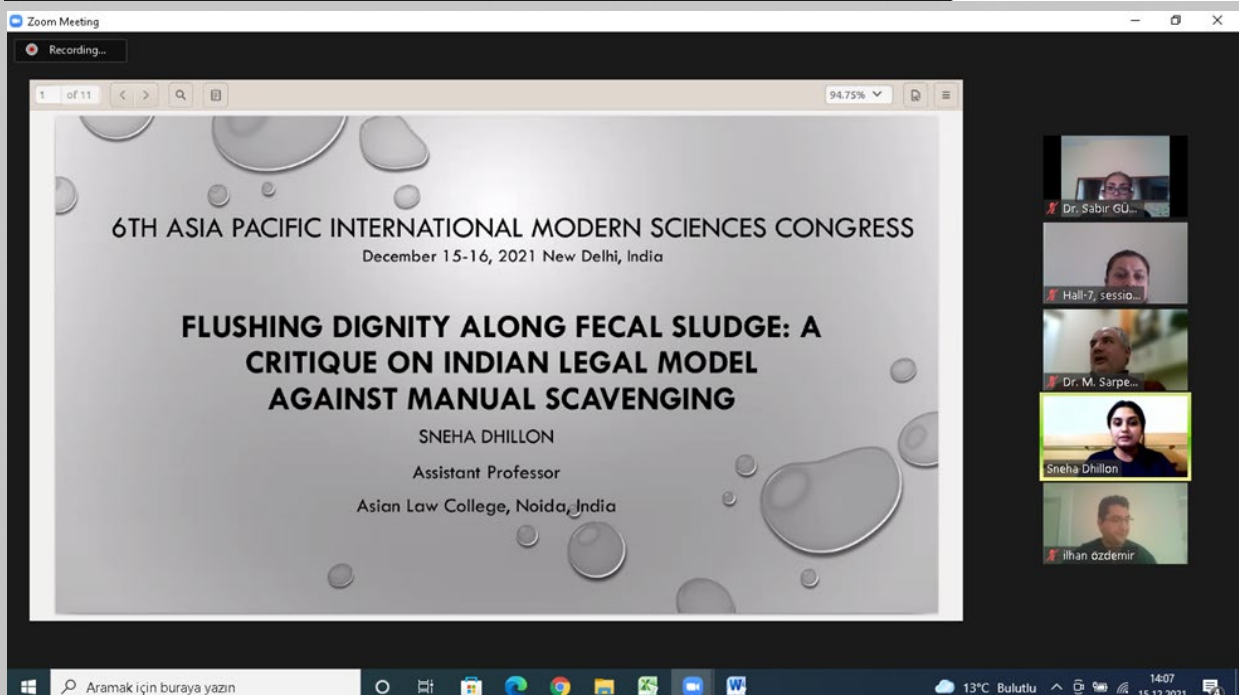
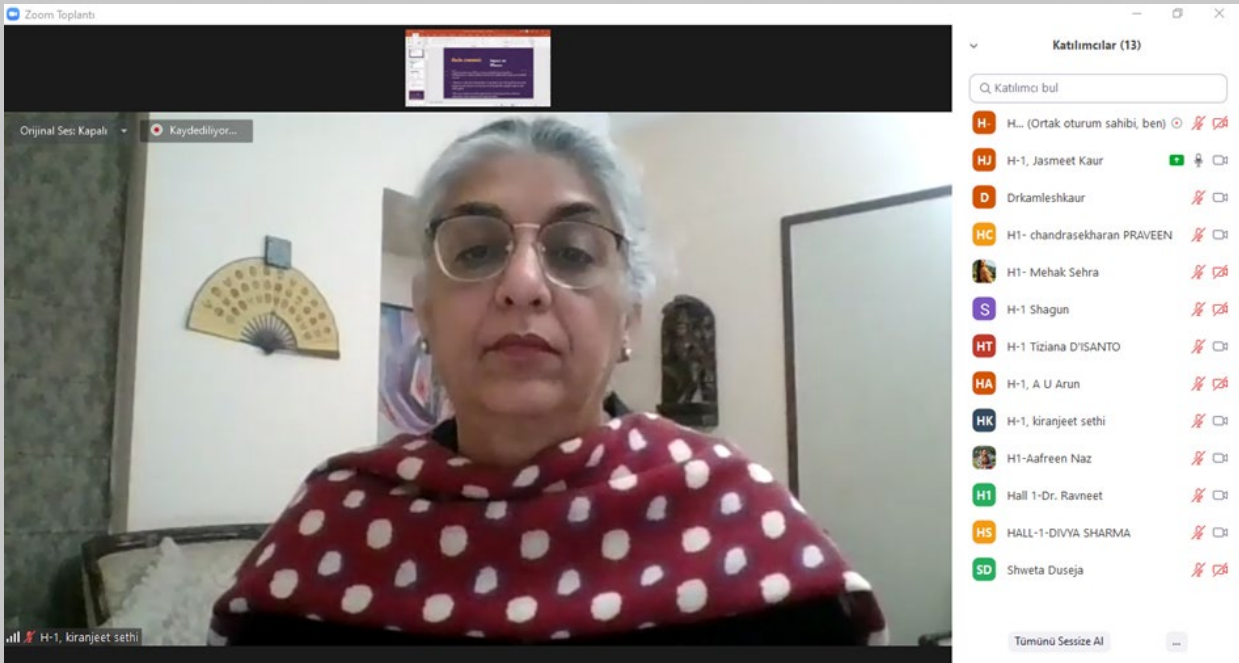
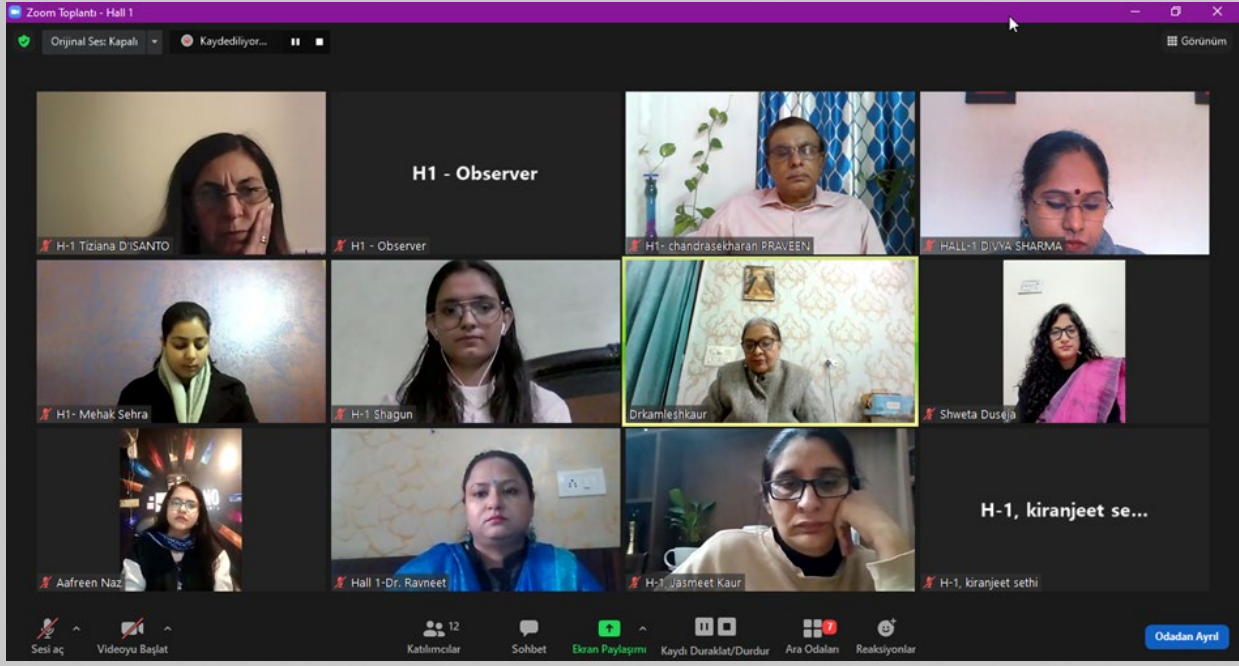
H5 - Yüksel MAVİ

1 unassigned participant

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CONFERENCE GALLERY



CONFERENCE GALLERY

Zoom Toplantı - Hall 1

Orjinal Ses: Kapalı Kaydediliyor...

H1 - Observer

H-1 Tiziana D'ISANTO H1 - Observer H-1, kiranjeet sethi Hall 1-Dr. Ravmeet

HALL-1 DIVYA SHARMA H1- chandrasekharan PRAVEEN Drkamleshkaur H1-Aafreen Naz

H-1 Shagun H1- Mehak Sehra Shweta Duseja H-1, Jasmeet Kaur

Sesi aç Videoyu Başlat Katılımcılar Sohbet Ekran Paylaşımı Kaydı Duraklat/Durdur Ara Odaları Reaksiyonlar Odadan Ayrıl

H-3 Observer H-3, Liliana NO... H-3, MONIKA M...

H-3 Observer H-3, Dr. Uzma Nadeem H-3 Felicia Andei H-3, Dr. Kapil Kumar Soni H-3, Liliana NOROCEL H-3, MONIKA MOOND

THE HITS CAN BE EXPORTED AS A CSV FILE FOR HIT PICKING OR OTHER DOWNSTREAM ANALYSIS.

All Events All Cells

Beads 15.13% All Cells 71.54%

SSC-H FSC-H

SSC-H Viability Dye (FL1-H)

Live Cells 70.51%

Katılımcılar (15)

H-3, (Ortak oturum sahibi, ben) H-3 51 Felicia Andei H-3, Dr. Kapil Kumar Soni H-3 Rajita Beniwal H-3, Dr. S. Mohana Roopan H-3, Dr. Uzma Nadeem H-3, Liliana NOROCEL H-3, MONIKA MOOND H-3-Maria Proença H-3-Rajita Beniwal Monika Moond Olesca Musteata pranita gaur vanshika yadav Zoya Arshad

Zoom Meeting - Hall 7

You are viewing İlhan Özdemir's screen View Options

Recording...

Diabetes Mellitus on Male Infertility - PowerPoint (Dün Etkinleştirildi)

6. ASYA PASİFİK ULUSLARARASI MODERN BİLİMLER KONGRESİ

15-16 Aralık 2021 / Delhi, Hindistan

MATA SUNDRI KADIN KOLEJİ, DELHI UNİVERSİTESİ

Evaluation of Possible Complications of Diabetes Mellitus on Male Infertility

Zeynep KÄMALAKI*, Şamil ÖZTÜRK2**, Serap Mutlu OTÇU3****, İlhan ÖZDEMİR4*****

Atatürk University, Faculty of Medicine, Department of Gynecology and Obstetrics, Erzurum, TURKEY

Öğretim Görevlisi İlhan ÖZDEMİR

Dr. Sabir Gü... Hall-7, sessio... Sneha Dhillon Dr. M. Sarpe... İlhan özdemir

1 unassigned participant

Aramak için buraya yazın

13°C Bulutlu 14:21 15.12.2021

CONFERENCE GALLERY

Zoom Meeting - You are viewing H-4 Adil Geybull's screen

Diagnosis principles of diabetic foot

To clarify the state of blood supply and the degree of ischemic tissue lesions, the level and extent of occlusive processes and alterations, as well as to assess the state of the round about (collateral) blood supply, microcirculation, we used ultrasound duplex scanning, Doppler sonography, Doppler manometry, load test tread-mill, transcutaneous oximetry (Tc pO₂), thermography and radiopaque angiography.

Participants: H-4 Adil Geybull, Hall_4_Observer, H4-Hatice Sengel, H4-Pinar Çelik, Doç. Dr. Ersin GÜNGÖR, H4-Erdoğan Karip, fehime-cakicioglu, YAKUP ASLAN, S1-H4-CEMAL GÜNER, fehime-cakicioglu, YAKUP ASLAN

Recording... You are viewing Ly Huynh's screen

The cause of multi-vulnerabilities

- Acceptance and silence due to the power of gender
 - A man holds the highest position in a family- makes the final decision

Mrs G: I must receive the permission of my husband, if he does not allow me to go, I can not go.

Mrs F: My life is not blessed, let it be, I try to accept my fate

- Female migrants' behaviours are shaped by local culture- Fate

Kaydediliyor...

FİZİKSEL VE PSİKOLOJİK MESLEK HASTALIKLARI BAĞLAMINDA ÇALIŞANLARIN ÇEŞİTLİ İŞ YERİ UYGULAMALARINA İLİŞKİN DÜŞÜNCELERİ

OPINIONS OF EMPLOYEES REGARDING VARIOUS WORKPLACE APPLICATIONS WITHIN THE CONTEXT OF PHYSICAL AND PSYCHOLOGICAL OCCUPATIONAL DISEASES

Prof. Dr. İsmail BAKAN
Prof. Dr. Burcu ERŞAHAN
Hamran AMIRLI

Participants: H7-Dr. Pelin DEMİR, Abdurrahman Akdağ, S1. H7- Hamran Amirli

6TH ASIA PACIFIC INTERNATIONAL MODERN SCIENCES CONGRESS

PROGRAM



December 15-16, 2021
New Delhi, India

Opening Ceremony
Meeting ID: 914 4322 8423
Passcode: 008780

Main Sessions
Meeting ID: 839 7164 8548
Passcode: 060606

-Opening Ceremony-

Zoom Meeting ID: **914 4322 8423**

Zoom Passcode: **008780**

15.12.2021

New Delhi Local Time: 11:30-12:00

Ankara Local Time: 09:00-09:30

Dr. Mustafa Latif EMEK

President of the Institute of Economic Development and Social Research

Prof. Dr. Harpreet Kaur

*Principal, Mata Sundri College for Women, University of Delhi
Congress Head*

"Smart Cities of India: A Measure for Sustainable Development"

Dr. Kamlesh Kaur

Associate Professor, Mata Sundri College for Women, University of Delhi

Dr. Uzma Nadeem

*Assistant Professor, Mata Sundri College for Women, University of Delhi
Welcoming Speech*

TOTAL NUMBER OF PAPERS: 139

THE NUMBER OF PAPERS FROM TURKEY: 61

OTHER COUNTRIES: 78

Participant Countries (25)

India, Turkey, Bulgaria, Vietnam, Nigeria, Malaysia, Italy, Romania, Egypt, Iraq, Algeria, Pakistan, Portugal, Mexico, Morocco, Iran, Azerbaijan, Kazakhstan, Kyrgyzstan, Benin, Republic of Moldova, Ukraine, Saudi Arabia, Georgia, Hongkong

15.12.2021 | SESSION-1 | HALL-1



New Delhi Local Time: 12³⁰-16⁰⁰



Ankara Local Time: 10⁰⁰-12³⁰



ID: 839 7164 8548 | Passcode: 060606

HEAD OF SESSION: Assoc. Prof. Dr. Kamlesh Kaur & Assoc. Prof. Dr. Kiranjeet Sethi

Tiziana D'Isanto	<i>University of Salerno, Italy</i>	<i>THE TEACHING OF PHYSICAL EDUCATION IN ITALIAN PRIMARY SCHOOLS: NEW SCENARIOS IN EVOLUTION</i>
Dr. Ravneet Kaur	<i>Mata Sundri College for Women, India</i>	<i>CHILDREN'S CHANGING LEARNING ECOLOGY DURING COVID-19 PANDEMIC</i>
Asst. Prof. Jasmeet Kaur Divtej Singh Bhatia	<i>Mata Sundri College for Women, India University of Hongkong</i>	<i>ECONOMIC EMPOWERMENT AND JOB REINSERTION FOR WOMEN IN THE POST-PANDEMIC PERIOD</i>
Asst. Prof. Jasmeet Kaur	<i>Mata Sundri College for Women, India</i>	<i>EFFECTIVENESS OF THE INCORPORATION OF ONLINE TEACHING TOOLS DURING COVID 19</i>
Dr. Chandrasekharan Praveen	<i>Institute of Advanced Study in Education, India</i>	<i>FEASIBILITY AND CONSTRAINTS OF INTEGRATING AI FOR TEACHER EDUCATION- A STUDY</i>
Divya Sharma	<i>Mata Sundri College for Women, India</i>	<i>CULTURAL DIVERSITY AND TEACHERS: REFLECTING ON ENVIRONMENTAL STUDIES CLASSROOMS</i>
Dr. Kiranjeet Sethi	<i>Mata Sundri College for Women University of Delhi</i>	<i>COMPARATIVE LITERATURE</i>
A. U. Arun Prof. Dr. Usha K. Aravind Asst. Prof. Aneesh V. Pillai	<i>Cochin University of Science and Technology, INDIA</i>	<i>CLIMATE CHANGE AND INDIAN LEGAL FRAMEWORK: AN ANALYTICAL VIEW</i>
Shweta Duseja	<i>Mata Sundri College for Women, India</i>	<i>INTERROGATING THE POLAR NATURE OF BOONS AND CURSES IN THE MAHABHARATA</i>
Asst. Prof. Aafreen Naz Mehak Sehra Shagun	<i>Mata Sundri College for Women, India</i>	<i>STATUS OF ELEMENTARY EDUCATION IN UTTAR PRADESH: AN OVERVIEW</i>

15.12.2021 | SESSION-1 | HALL-2



New Delhi Local Time: 12³⁰-16⁰⁰



Ankara Local Time: 10⁰⁰-12³⁰



ID: 839 7164 8548 | Passcode: 060606

HEAD OF SESSION: Erdoğan Karip & Assoc. Prof. Dr. Sharda Garg

Asst. Prof. G. Madhumitha	<i>Vellore Institute of Technology, India</i>	<i>MICROWAVE APPROACH IN CLAY NANOCOMPOSITE PREPARATION: PHOTOCATALYTIC AND SONOPHOTOCATALYTIC METHYLENE BLUE DYE DEGRADATION</i>
Arooj Saeed Faisal Bukhari Waheed Iqbal	<i>University of the Punjab, Lahore, Pakistan</i>	<i>A PREDICTIVE ANALYSIS OF IMPACT OF LAPTOP SCHEME ON IT UNDERGRADUATE STUDENTS</i>
Tebbal Nadia Rahmouni Zine El Abidine Maza Mekki Belouadah Messaouda	<i>M'sila University, Algeria</i>	<i>A REVIEW: THE COMPARISON BETWEEN ALKALI ACTIVATED SLAG AND METAKAOLIN AND THE EFFECTS OF HIGH TEMPERATURE ON GEOPOLYMER MORTARS</i>
Riya Dr. Megha Gupta	<i>MSCW, University of Delhi, India</i>	<i>DEFENCE AGAINST PHISHING ATTACKS</i>
Khudheyer S. Mushatet Ali k. Abdul Razzaq	<i>University of Thi-Qar, Iraq</i>	<i>NUMERICAL PREDICTION FOR TURBULENT FLOW AND HEAT TRANSFER IN ELLIPTICAL TWISTED TUBE</i>
Ayoub CHEDDOUR Abdelhai ELAZZOZI Mohamed OUZAHRA	<i>university of Sidi Mohamed Ben Abdellah-USMBA, Morocco</i>	<i>FEEDBACK STABILIZATION AND NUMERICAL SIMULATION</i>
Prabhat Kashyap Krishan Kumar	<i>Mata Sundri College for Women, India</i>	<i>BTEX EMISSIONS FROM THE EXHAUST OF DIFFERENT TYPES OF VEHICLES IN DELHI</i>
Subhashish Dey	<i>Andhra Pradesh, India</i>	<i>REMOVAL OF CHLORIDES FROM SYNTHETIC WATER BY USING VARIOUS BIOSORBENTS</i>
Santosh Kumar Assoc. Prof. Dr. Ravi Chaurey	<i>MGCGV Chitrakoot, India</i>	<i>GEO-INFORMATICS BASED LAND USE LAND COVER CHANGE ANALYSIS FOR SUSTAINABLE AGRICULTURAL DEVELOPMENT IN PART OF BIRSINGHPUR TEHSIL M. P. INDIA</i>

15.12.2021 | SESSION-1 | HALL-3



New Delhi Local Time: 12³⁰-16⁰⁰



Ankara Local Time: 10⁰⁰-12³⁰



ID: 839 7164 8548 | Passcode: 060606

HEAD OF SESSION: Asst. Prof. Dr. Uzma Nadeem		
M. C. PROENÇA M. T. REBELO M. J. ALVES REVIVE Team	<i>University of Lisbon, Portugal</i> <i>Centre for Environmental and</i> <i>Marine Studies (CESAM)</i> <i>National Health Institute Doutor</i> <i>Ricardo Jorge (INSA)</i>	LOCALIZING THE AREAS OF VECTOR-BORNE DISEASE RISK FROM THE ABUNDANCE OF CULEX PIPIENS SL.
Liliana ANCHIDIN-NOROCEL Sonia AMARIEI	<i>Stefan cel Mare University of</i> <i>Suceava, Romania</i>	THE ANALYTICAL PERFORMANCE CHARACTERISTICS FOR Ni(II) VOLTAMMETRIC SENSORS DEPENDING ON IMMOBILIZATION ELEMENTS AND TYPES OF SCREEN-PRINTED ELECTRODES
Felicia Andrei Diana Antal	<i>University of Medicine and</i> <i>Pharmacy, Romania</i>	CELL VITALITY AND NUMBERING ASSAY FOR NON-ADHESIVE MIXED CELL LINES
Asst. Prof. Dr. Kapil Kumar Soni Deepak Meshram	<i>Barkatullah University Bhopal,</i> <i>India</i>	LEUKOTRIENE INHIBITORY ACTIVITIES OF SEMI-PURIFIED FRACTION (OB-2) OF OCIMUM BASILICUM (L) PLANT EXTRACT
Asst. Prof. Selvaraj Mohana Roopan	<i>Vellore Institute of Technology,</i> <i>India</i>	STATISTICAL OPTIMIZATION OF GREEN SYNTHESISED METAL OXIDE NANOPARTICLES AS A CATALYST FOR PHOTOCATALYTIC DEGRADATION OF ORGANIC POLLUTANTS
Rajita Beniwal Sushila Singh Ritu devi Monika Moond	<i>CCSHAU, India</i>	GREEN MEDIATED SYNTHESIS OF GOLD NANOPARTICLES (AUNPS) USING AQUEOUS NEEM EXTRACT
Monika Moond Sushila Singh	<i>Chaudhary Charan Singh Haryana</i> <i>Agricultural University Hisar</i> <i>Haryana, India</i>	GREEN SYNTHESIS OF SILVER NANOPARTICLES (AgNPs) USING AQUEOUS EXTRACT OF FENUGREEK (TRIGONELLA FOENUM- GRAECUM)
Dr. Uzma Nadeem Dr. Harpreet Kaur	<i>Mata Sundri College for Women,</i> <i>India</i>	ENVIRONMENTAL EDUCATION IN SOLVING ENVIRONMENTAL PROBLEMS FOR THE SUSTAINABLE DEVELOPMENT
Dr. Uzma Nadeem Dr. Kamlesh Kaur	<i>Mata Sundri College for Women,</i> <i>India</i>	GREEN-BUSINESS: A WAY TOWARDS SUSTAINABLE DEVELOPMENT
Asst. Prof. Olesea Musteata	<i>State University of Medicine and</i> <i>Pharmacy "N. Testemitanu",</i> <i>Republic of Moldova</i>	DIAGNOSIS AND TREATMENT OF HYPERPLASTIC GINGIVITIS IN ACUTE LEUKEMIAS

15.12.2021 | SESSION-1 | HALL-4



New Delhi Local Time: 12³⁰-16⁰⁰



Ankara Local Time: 10⁰⁰-12³⁰



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HEAD OF SESSION: Prof. Adil Geybulla & Assoc. Prof. Dr. Ersin GÜNGÖR

Assoc. Prof. Dr. Ersin GÜNGÖR Ali Berkay YILMAZ	<i>Bartın University, Turkey</i>	<i>ECONOMIC ANALYSIS OF MEDITERRANEAN BASIN FOREST FIRES: A CASE STUDY IN TURKEY-ANTALYA</i>
Assoc. Prof. Dr. Ersin GÜNGÖR Ali Berkay YILMAZ	<i>Bartın University, Turkey</i>	<i>RAISING VOLUNTEER AWARENESS IN FIGHTING FOREST FIRES</i>
Prof. Dr. Fehime ÇAKICIOĞLU-ÖZKAN Cemal GÜNER	<i>Izmir Institute of Technology, Turkey</i>	<i>APPLICATION OF Cu BASED METAL ORGANIC FRAMEWORK on COTTON FIBER FOR HUMIDITY AND NH 3 SENSOR</i>
Hatice ŞENGEL Prof. Dr. Cüneyt KURTAY	<i>Institute of Science, Ankara, Turkey</i>	<i>EXAMINING THE ADEQUACY OF NATURAL LIGHTING IN PATIENT ROOMS IN HEALTHCARE FACILITIES: THE CASE OF GAZİ UNIVERSITY HOSPITAL</i>
Assoc. Prof. Pınar Çelik İhsan Çelik Şükran Cirik	<i>Çanakkale Onsekiz Mart University, Turkey</i>	<i>MORPHOLOGICAL CHANGES AND GROWTH OF BLACK NEON TETRA (HYPHESSOBRYCON HERBERTAXELRODI) IN EARLY LIFE STAGE</i>
Mehtap MURATOĞLU Erdoğan KARİP Akın ODABAŞI Hülya KAFTELEN ODABAŞI	<i>Firat University, Turkey</i>	<i>INVESTIGATION OF HYBRID SHEEP HYDROXYAPATITE COMPOSITES PREPARED BY COLD ISOSTATIC PRESSING METHOD</i>
Akın ODABAŞI Hülya KAFTELEN ODABAŞI Erdoğan KARİP Mehtap MURATOĞLU	<i>Firat University, Turkey</i>	<i>PRODUCTION OF APATITE-WOLLASTONITE GLASS-CERAMIC FOAM USING WASTE MATERIALS</i>
Yakup ASLAN	<i>Mus Alparslan University, Turkey</i>	<i>ACCOUNTING SCANDALS AND TRANSITION TO INTERNATIONAL ACCOUNTING STANDARDS</i>
Yakup ASLAN	<i>Mus Alparslan University, Turkey</i>	<i>COMPANY MERGENS IN THE FRAMEWORK OF INTERNATIONAL ACCOUNTING STANDARDS: A SAMPLE PRACTICE</i>
Prof. Adil Geybulla	<i>Azerbaijan Medical University</i>	<i>DIAGNOSTIC PRINCIPLES OF DIABETIC FOOT</i>

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HEAD OF SESSION: Prof. Dr. Ahmet Niyazi ÖZKER

Ly Dai Hung	<i>Vietnam Institute of Economics, Hanoi, Vietnam</i>	STEADY STATE GROWTH OF VIETNAM ECONOMY
DR. ANA-CRISTINA BĂLGĂR	<i>Institute for World Economy, Romanian Academy, ROMANIA</i>	RECENT CHALLENGES OF CHINA'S SUPREMACY ON THE GLOBAL RARE EARTHS MARKET
Manpreet Kaur Kamna Virmani	<i>Mata Sundri College for Women, India</i>	THE IMPACT OF THE COVID-19 PANDEMIC ON THE ADOPTION OF E-COMMERCE IN INDIA: A CASE STUDY OF AMAZON
Assoc. Prof. Dr. Garima Kumar	<i>Mata Sundri College for Women, India</i>	EXPERIENCES OF EMOTIONAL LABOUR IN THE SERVICE INDUSTRY: SOME REFLECTIONS
İsmail BAKAN Halil İbrahim OLUCAK	<i>Kahramanmaraş Sütçü İmam University, Turkey</i>	PERSPECTIVE ON HUMAN RESOURCES PRACTICES WITHIN THE SCOPE OF PERSONALITY TRAITS
Elif Bali Kurtarır	<i>Marmara University, Turkey</i>	DECISION MAKING MECHANISM AND CRISIS SOLVING CAPACITY
Dr. Öğr. Üyesi Mehmet KUZU Dr. Fatih KOCAOĞLU	<i>Bayburt University, Turkey Ankara Hacı Bayram Veli University, Turkey</i>	COMPARATIVE ANALYSIS OF THE EFFECT OF POLITICAL DOCTRINES ON THE DEVELOPMENT OF FINANCIAL MARKETS AND THE GLOBAL FINANCIAL SYSTEM WITHIN THE FRAMEWORK OF TRUMP AND REAGAN DOCTRINES
Prof. Dr. Ahmet Niyazi ÖZKER	<i>Bandırma Onyedli Eylül University, Turkey</i>	EFFECT LEVEL OF DYNAMICS IN THE PROCESS OF CONSUMPTION GOODS VARIABILITY: THE CASE OF TURKEY

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HEAD OF SESSION: Assoc. Prof. Dr. Neetu Sharma

Theevine Dhatu Darussalam	<i>Keningau Vocational College, Malaysia</i>	<i>SAVOURY FERN CHIPS AS AN AFFORDABLE AND NUTRITIOUS SNACK FOR LOW INCOME COMMUNITIES</i>
Dr. Ly Huynh	<i>Can Tho University, Vietnam</i>	<i>EXPLORING GENDERED VULNERABILITY OF MIGRANT WOMEN - A CASE OF HO CHI MINH CITY</i>
Le Thi Hong Nhung Dang Hoang Xuan Huy	<i>Nha Trang University, Vietnam</i>	<i>RESEARCH FOR THE TRANSFORMATION OF LIVELIHOODS FOR WOMEN THROUGH TOURISM DEVELOPMENT IN MARINE PROTECTED AREAS IN CENTRAL VIETNAM</i>
Radhika Menon	<i>Mata Sundri College for Women, India</i>	<i>MCQS IN SOCIAL SCIENCES: CHALLENGES AND NEGOTIATIONS</i>
Sakshi Jindal	<i>Mata Sundri College for Women, India</i>	<i>WOMEN WELL-BEING IN INDIA: AN APPLICATION OF SEN'S CAPABILITY APPROACH</i>
Dr. Murat KARTAL	<i>İstanbul University, Turkey</i>	<i>A COMPARATIVE LOOK AT GAZIANTEP GASTRONOMY</i>
Dr. Murat KARTAL	<i>İstanbul University, Turkey</i>	<i>THE EFFECT OF THE MODERN SILK ROAD PROJECT ON TURKEY AND CENTRAL ASIAN COUNTRIES WITHIN THE SCOPE OF REGIONAL INTEGRATION</i>
Evrin TARTAN SELÇUK Öğr. Gör. Şeref MADEN Assoc. Prof. Dr. Gökhan KERSE	<i>Karamanoğlu Mehmetbey University, Turkey Kafkas University, Turkey</i>	<i>ORGANIZATIONAL CITIZENSHIP BEHAVIOR FROM AN ENVIRONMENTAL (GREEN) PERSPECTIVE</i>
Assoc. Prof. Aslıhan Aykara Assoc. Prof. Fulya Akgül Gök	<i>Hacettepe University, Turkey</i>	<i>USING MOTIVATIONAL INTERVIEWING IN WORKING WITH RESISTANT CLIENTS IN SOCIAL WORK PRACTICES</i>
Şermin AÇIK Bülent ÇAVAŞ	<i>Dokuz Eylül University, Turkey</i>	<i>AN INVESTIGATION ON OCEAN LITERACY OF PRESERVICE SOCIAL SCIENCES TEACHERS</i>

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HEAD OF SESSION: Dr. Pelin DEMİR & Dr. Uzma Nadeem

Assoc. Prof. Dr. Ferda ÜSTÜN Burcu TOKER TUNA	<i>Nevsehir Hacı Bektas Veli University, Turkey</i>	COMPARISON OF GLOBAL BORN AND GRADUAL INTERNATIONALIZED COMPANIES: A STUDY OF MANUFACTURING INDUSTRY
Roxana Gheorghita Puscaselu Liliana Anchidin-Norocel	<i>Stefan cel Mare University of Suceava, Romania</i>	New Strategies of the Green Economy Concept: Edible Materials Based on Biopolymers and Essential Oils, Used for Packaging Meat Products
Roxana Gheorghita Puscaselu Gheorghe Gutt	<i>Stefan cel Mare University of Suceava, Romania</i>	Use of Biopolymers and Natural Essential Oils for the Development of Edible Packaging for Food Supplements
Mohammed Kriche Abdelhai ELAZZOZI Khalil ezzinbi	<i>University of Sidi Mohamed Ben Abdellah, Morocco</i>	Periodic Solution for a class of evolution equation in nondensly case
Abdurrahman Akdağ	<i>Harran University, Turkey</i>	Poly(aniline-co-o-anisidine-co-pyrrole) Terpolymer Coating on Carbon Steel
Abdurrahman Akdağ	<i>Harran University, Turkey</i>	Poly(pyrrole-co-o-phenilenediamine) Coating on ZnNi Plated Carbon Steel
Dr. Pelin DEMİR Dr. Fadime TONBAK	<i>Firat University, Turkey</i>	Determination of Physical and Chemical Parameters of Fruit and Foam Leathers (Pestil) Offered for Sale in Elazig
İsmail Bakan Burcu Erşahan Hamran Amırlı	<i>Kahramanmaraş Sütçü İmam University, Turkey</i>	OPINIONS OF EMPLOYEES REGARDING VARIOUS WORKPLACE APPLICATIONS WITHIN THE CONTEXT OF PHYSICAL AND PSYCHOLOGICAL OCCUPATIONAL DISEASES
Işıl Sezen Ermiş İlhan Özdemir Engin DEVECİ	<i>Harran University, Turkey</i> <i>Atatürk University Faculty of Medicine, Turkey</i> <i>Dicle University, Turkey</i>	Effect of Bone Marrow Mesenchymal Stem Cell Therapy on Intrauterine Adhesion Model
Işıl Sezen Ermiş İlhan Özdemir Engin DEVECİ	<i>Harran University, Turkey</i> <i>Atatürk University Faculty of Medicine, Turkey</i> <i>Dicle University, Turkey</i>	Effect of Nebivolol on changes in cerebellum tissue after traumatic brain injury
Işıl Sezen Ermiş İlhan Özdemir Engin DEVECİ	<i>Harran University, Turkey</i> <i>Atatürk University Faculty of Medicine, Turkey</i> <i>Dicle University, Turkey</i>	Evaluation of Microenvironment (Niche) and Its Role in Differentiation of Stem Cells

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HEAD OF SESSION: Assoc. Prof. Dr. Pranita Gaur

Jashanpreet Kaur Assoc. Prof. Dr. Arvinder Singh	Akal University, India	PHYTOCHEMICAL SCREENING, TLC PROFILING AND ANTIBACTERIAL POTENTIAL OF METHANOL, ETHANOL AND AQUEOUS EXTRACTS FROM SEED, BARK AND LEAF OF BAUHINIA TOMENTOSA L.
Kavita Singh	Mata Sundri College for Women, India	INDIA'S THRIVING ORGANIC FOOD MARKET
Kavita Singh Harpreet Kaur	Mata Sundri College for Women, India	A FRAMEWORK FOR GREEN GOVERNANCE AS FOUNDATION FOR SUSTAINABLE DEVELOPMENT
Assoc. Prof. Hilal BULUT	Firat University, Turkey	ZOOPLANKTON OF SOME PONDS IN FIRAT UNIVERSITY (CAMPUS TURKEY-ELAZIG)
Assoc. Prof. Hilal BULUT Prof. Dr. Serap Saler	Firat University, Turkey	ZOOPLANKTON OF ZIKKIM STREAM (ELAZIĞ)
Prof. Sanjeev Kumar Gupta Dr. R.K. Manhas	Head, Department of Botany, Govt. Degree College Basohli, India Govt. Degree College Basohli, India	INVASIVE ALIEN SPECIES IN THE SIWALIK HILLS OF SUKRALA DEVI DISTRICT KATHUA, JAMMU AND KASHMIR, INDIA
Florin Constantin Popa Codrin Gavra Radu-Petru Brejea	University of Oradea, Romania	PEDOCLIMATIC INFLUENCES ON ANIMAL BREEDING IN THE PLAIN OF NORTH-WEST OF ROMANIA
Ufuk Eren Vapur Tulay Ozcan	Nisantasi University, Turkey Bursa Uludag University, Turkey	DETERMINATION OF OPTIMUM PARAMETERS IN STARTER CULTURE SELECTION IN KASHAR CHEESE PRODUCTION
Medea Burjanadze Natalia Kharabadze Mariam Arjevanidze	Agricultural University of Georgia	BOVER-GE – MYCOPESTICIDES FOR THE CONTROL BROWN MARMORATED STINK BUG - HALYOMORPHA HALYS (STÁL) (HEMIPTERA: PENTATOMIDAE)

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HEAD OF SESSION: Sadigova Afag & Assoc. Prof. Dr. Daljit Kaur

Kamal Salayev Eyvaz	<i>Institute of Caucasus Studies of ANAS</i>	<i>CULTURAL RELATIONS BETWEEN GEORGIA AND ARMENIA</i>
Dr. Seçkin UYSAL	<i>Kyrgyz-Turkish Manas University, KYRGYZSTAN</i>	<i>SOME REMARKS ON POSSIBLE NEW CLASSIFICATION OF CHAGATAY TURKIC (IN THE LIGHT OF 17TH AND POST-17TH CENTURY MANUSCRIPTS)</i>
Pustakhanim Balayeva	<i>Azerbaijan State Pedagogical University</i>	<i>INTRODUCTION OF THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE SCIENTIFIC AND PEDAGOGICAL LITERATURE</i>
Dr. Iosefina BLAZSANI-BATTO	<i>Romanian Language Institute, Bucharest</i>	<i>DECISIONS IN REVIVING INTERNATIONAL CULTURAL HERITAGE</i>
Agaveva Nigar Ikram gizi	<i>Baku State University, Azerbaijan</i>	<i>PRINTED ORGANS OF THE "NEW OTTOMANS" IN THE STRUGGLE FOR NATIONAL FREEDOM AND INDEPENDENCE</i>
Asst. Prof. Aytekin Zeynalova	<i>Baku State University, Azerbaijan</i>	<i>AZERBAIJAN'S GREATEST WEALTH IS INDEPENDENCE</i>
Huseynova Gulnar	<i>Ganja State University</i>	<i>GANJA LITERARY ENVIRONMENT: FROM THE PAST TO THE PRESENT</i>
Dr. Vasyl Puzanov	<i>Zaporizhzhia National University, Ukraine</i>	<i>THE PERSONALITY-ORIENTED TEACHING DURING PANDEMIC</i>
Prof. Dr. Salkynbay Anarkul Bekmyrzakyzy Anarbekova Ulzhan Usenkyzy	<i>Al-Farabi Kazakh National University, Kazakhstan</i>	<i>KAZAKH GRAMMATOLOGY: ORTHOGRAPHY IN THE XXth CENTURY</i>
Fuad Esgerov	<i>The Academy of Public Administration Under the President of the Republic of Azerbaijan</i>	<i>BRITAIN'S BREXIT PROCESS IN THE EUROPEAN UNION</i>
Sadigova Afag	<i>Baku State University, Azerbaijan</i>	<i>International Strategic Partnership and Information Exchange</i>
Mahmudova Guney Salam gizi	<i>Baku State University, Azerbaijan</i>	<i>LITERARY LANGUAGE NORMS ON RADIO</i>
Mammadova Gunay Samad gizi	<i>Baku State University, Azerbaijan</i>	<i>Women journalists and publicists in Azerbaijan</i>

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HEAD OF SESSION: ASSOC. PROF. DR. JASLEEN KAUR & ASSOC. PROF. DR. S. KALPANA DEVI		
Dalal Adnan Amer Maturi	King Abdulaziz University, Saudi Arabia	THE VARIATIONAL ITERATION METHOD FOR SOLVING NONLINEAR ORDINARY DIFFERENTIAL EQUATION USING MAPLE
Driss AOURAGH Mohamed NAHLI	Moulay Ismail University of Meknes, Morocco	STABILIZATION FOR A HYBRID SYSTEM OF ELASTICITY WITH UNKNOWN BOUNDARY EXTERNAL DISTURBANCE
Rashmi Verma	Mata Sundri College for Women, India	AN ALGORITHM TO CONSTRUCT REPEATED BURST ERROR CORRECTING LINEAR CODE
Gurpreet Kaur	Mata Sundri College for Women, India	CERTAIN SUBCLASSES OF STARLIKE FUNCTIONS
Korada Vaishali Muskan Lakra Ramita Sahni Rashmi Verma	Mata Sundri College for Women, India	SHORTEST PATH ALGORITHMS: COMPARISON AND APPLICATIONS
Uzm. Ceylan AKCAN	Akdeniz University, Turkey	THE PLACE AND IMPORTANCE OF THE CONCEPT OF "ADDICTION" IN PHILOSOPHY
Vanshita Arora Dr. Megha Gupta	MSCW, University of Delhi, India	HUMAN OR TECHNOLOGY: WHICH IS A TOOL FOR OTHER?

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HEAD OF SESSION: Prof. Dr. Sibel Taş & Assoc. Prof. Dr. Hemlata Krishnani		
Yusuf Karno Dr. Mikail Aslan	Gaziantep University, Turkey	HEAVY TUGNSTEN ALLOY REINFORCED EPOXY MATRIX COMPOSITE
Melek Lora SAKARLI Murat DAL Şana SUNGUR Ayşe DOLAR	Hatay Mustafa Kemal University, Turkey Munzur University, Turkey	THE EFFECTS OF ACID RAIN ON HISTORICAL BUILDINGS IN THE WORLD AND IN TURKEY
Ayşe DOLAR Murat DAL Erol ATAY Melek Lora SAKARLI	Hatay Mustafa Kemal University, Turkey Munzur University, Turkey	STONE ALTERATIONS IN SOME HISTORICAL BUILDINGS IN HATAY PROVINCE
Assoc. Prof. Dr. Ali Rıza DİNÇER Dr. İbrahim Feda ARAL	Tekirdağ Namık Kemal University, Turkey	CHANGE OF PHOSPHORUS CONTENT AND PHOSPHORUS CONCENTRATION IN A TEXTILE FACTORY WASTEWATER
Asst. Prof. Dr. M. Timur CİHAN Asst. Prof. Dr. İ. Feda ARAL	Tekirdağ Namık Kemal University, Turkey	LENGTH AND WEIGHT CHANGES OF WASTE STONE POWDER ADDED MORTARS UNDER THE INFLUENCE OF MAGNESIUM SULFATE
Assoc. Prof. Dr. İbrahim Halil Yılmaz Assoc. Prof. Dr. Hasan Yıldızhan	Adana Alparslan Türkeş Science and Technology University, Turkey	PROPOSING OPTIMAL ORIENTATION AND TILT ANGLE FOR A PHOTOVOLTAIC-THERMAL PANEL IN ADANA, TURKEY
Assoc. Prof. Gulseren DAGLAR Lect. Demet ÇAKIR	Sivas Cumhuriyet University, Turkey Amasya University, Turkey	INNOVATION IN INTRAPARTUM FETAL MONITORING; FREEDOM OF MOVEMENT: CASE REPORT
Prof. Dr. Sibel Taş	Bursa Uludağ University, Turkey	Brassica nigra Pollen Supplementation Increases Serum Paraoxonase and Arylesterase Activities in Streptozotocin-Induced Diabetic Rats
Assoc. Prof. Dr. Ebru ATAŞLAR	Eskişehir Osmangazi University, Turkey	ANALYSIS OF THE FLORA OF TURKEY IN TERMS OF PLANT SECONDARY METABOLITES
Selim Taşkaya	Artvin Çoruh University, Turkey	DISPLAY OF ZONING DIAMETER ACCORDING TO THE PLANNED TYPE DISTANCE APPROACH ON OFFICIAL AGENCY ZONING ISLANDS, EXAMPLE OF TURKEY
Cansu YILMAZ Assoc. Prof. Gulseren DAGLAR Assoc. Prof. Dilek BİLGİC	Sivas Cumhuriyet University, Turkey Dokuz Eylul University, Turkey	The Effect of Breast Cancer Fear on Healthy Life Behaviors in Midwife and Nurses

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HEAD OF SESSION: Assoc. Prof. Dr. Veli BATDI

Prof. Dr. Salih YEŞİL Ayşegül ÖZBAĞIŞ	<i>Kahramanmaraş Sütçü İmam University, Turkey</i>	<i>THE EFFECT OF PSYCHOLOGICAL RESILIENCE ON ALIENATION TO SCHOOL AND STUDENT HAPPINESS: A FIELD RESEARCH</i>
Prof. Dr. Salih YEŞİL Yüksel MAVİ Ayşegül ÖZBAĞIŞ Nazlı Ceren KAZANCI	<i>Kahramanmaraş Sütçü İmam University, Turkey</i>	<i>EFFECT OF ENTREPRENEURSHIP EDUCATION ON ENTREPRENEURSHIP TENDENCIES AND ACADEMIC PERFORMANCE: A FIELD RESEARCH</i>
Assoc. Prof. Dr. Veli BATDI Gülfem ÖCAL COŞKUN Burcu GÜRGEN AKICI	<i>Gaziantep University, Turkey</i>	<i>THE EFFECTIVENESS OF EDUCATIONAL GAME APPLICATIONS</i>
Assoc. Prof. Dr. Zekavet KABASAKAL Muhammed Emir AKYOL	<i>Dokuz Eylül University, Turkey</i>	<i>EXAMINATION OF THE RESEARCHES ON GAME ADDICTION</i>
Assoc. Prof. Dr. Zekavet KABASAKAL Muhammed Emir AKYOL	<i>Dokuz Eylül University, Turkey</i>	<i>EXAMINATION OF SELF – EFFICACIENCY IN THE COVID – 19 PROCESS</i>
Seda AY Zarife PANCAR	<i>Gaziantep University, Turkey</i>	<i>EFFECT OF PLYOMETRIC EXERCISES ON SOME MOTOR SKILLS IN SMOKING ADDICTIVES</i>
Zarife PANCAR Seda AY	<i>Gaziantep University, Turkey</i>	<i>THE EFFECT OF THE AEROBIC TRAINING PROGRAM APPLIED TO SEDENTARY MEN ON SPO 2 LEVELS</i>
Assist. Prof. Dr. Seda SABAHA Dr. Aydan ERMIŞ Prof. Dr. Soner ÇANKAYA	<i>Amasya University, Turkey</i> <i>Ondokuz Mayıs University, Turkey</i>	<i>ANALYSIS OF PHYSICAL EDUCATION AND SPORTS COURSE HAPPINESS LEVELS IN TURKISH AND IMMIGRANT SECONDARY SCHOOL STUDENTS</i>
Assoc. Prof. Dr. Şenyurt YENİPİNAR Assoc. Prof. Dr. Kamil YILDIRIM	<i>Aksaray University, Turkey</i>	<i>CORRELATIONAL ANALYSIS FOCUSED ON SCHOOL ADMINISTRATORS' INTRA AUTHORITATIVE HIERARCHIC MANAGERIAL APPROACH</i>
Prof. Dr. Durmuş Çağrı Yıldırım Assoc. Prof. Korhan Arun Assoc. Prof. Seda Yıldırım	<i>Tekirdağ Namık Kemal University, Turkey</i>	<i>Nexus between rule of law, FDI, high-tech exports, education & innovation</i>

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HEAD OF SESSION: Asst. Prof. D. Gayathri

Dr. Öğr. Üyesi İbrahim BOZKURT Arş. Gör. Erhan ELMAOĞLU	<i>Kilis 7 Aralık University, Turkey</i>	INVESTIGATION OF THE EFFECT OF COVID-19 FEAR ON MENTAL WELLNESS
Öğr. Gör. Zekeriya ÖZCAN Fikri ERDEMCİ Prof. Dr. Volkan ÖNGEL	<i>Siirt University, Turkey Dicle University, Turkey Beykent University, Turkey</i>	PERFORMANCE MANAGEMENT IN THE HEALTH SECTOR AND EVALUATION OF THE PERFORMANCE OF FAMILY PHYSICIANS
Lect. Dr. Melike Taşdelen Baş Asst. Prof. Funda Özpulat	<i>Selcuk University, Turkey</i>	CHILDREN AND ADOLESCENTS IN LOCKDOWN: COVID- 19 PANDEMIC
Asst. Prof. Funda Özpulat Lect. Dr. Melike Taşdelen Baş	<i>Selcuk University, Turkey</i>	THE CHARACTERISTICS OF ADOLESCENTS REGARDING MENSTRUATION STATUS AND MENSTRUATION KNOWLEDGE LEVELS
Asst. Prof. D. Gayathri	<i>National College, Trichy, India</i>	A COGNIZANCE INTO ETIOLOGY OF ATTENTION DEFICIT HYPERACTIVE DISORDER (ADHD) IN THE POPULATION OF CURRENT TRENDS
Sghibneva-Bobeico Nina Assoc. Prof. Dr. Musteata Vasile Robu Maria	<i>State University of Medicine and Pharmacy "N. Testemitanu", Republic of Moldova</i>	THE CHARACTERISTIC OF PRIMARY MYELOFIBROSIS IN PATIENTS UNDER 40 YEARS
Assoc. Prof. Dr. Vasile Musteata Nina Sghibneva-Bobeico Aliona Monul Dumitrita Urescu	<i>State University of Medicine and Pharmacy "N. Testemitanu", Republic of Moldova</i>	MANAGEMENT OF PATIENTS WITH CHRONIC MYELOID LEUKEMIA – AN ACTUAL ISSUE OF ONCOLOGY AND PUBLIC HEALTH
Assist. Prof. Dr. Şerife GÜZEL Res. Asst. Hamza SİĞİRCİ Büşra KÖŞGER	<i>Selcuk University, Turkey Karamanoğlu Mehmetbey University, Turkey</i>	INVESTIGATION OF QUALITY OF LIFE AND WORK MOTIVATIONS OF HEALTHCARE PROFESSIONALS IN THE PERIOD OF COVID-19
Latif Ustunel Ibrahim Murat Ozguler	<i>Firat University Hospital, Turkey</i>	TREATMENT OF DEEP VEIN THROMBOSIS IN CANCER PATIENTS
Assoc. Prof. Dr. Mumin Alper Erdoğan Assoc. Prof. Dr. Oytun Erbas	<i>Izmir Katip Celebi University, Turkey Istanbul Bilim University, Turkey</i>	DEMONSTRATION OF THE ANTI-SEIZURE EFFECT OF LIRAGLUTIDE ON PTZ-INDUCED CONVULSIONS THROUGH ITS ANTI-OXIDANT AND ANTI-INFLAMMATORY PROPERTIES

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HEAD OF SESSION: Dr. Sümeyye BARUT & Assoc. Professor Dr. Pooja Jaggi

Lect. Dr. Emine BAŞ	<i>Selçuk University, Turkey</i>	DATA MINING MODELS AND APPLICATIONS
Dr. Sümeyye BARUT	<i>Firat University, Turkey</i>	SEX DURING PREGNANCY
Dr. Sümeyye BARUT Asst. Prof. Esra GÜNEY Assoc. Prof. Tuba UÇAR	<i>Firat University, Turkey</i> <i>İnönü University, Turkey</i>	THE RELATIONSHIP OF WOMEN'S BIRTH BELIEF WITH DEPRESSION, ANXIETY, STRESS AND AVOIDING PREGNANCY
Dr. Mustafa Sarper ALAP	<i>Kırkkale University, Turkey</i>	THE TRADITION OF MUSHAIRA IN CLASSICAL TURKISH LITERATURE AND URDU LITERATURE
Dr. Sabır GÜLER SEVLİ	<i>Mersin University, Turkey</i>	DISCUSSIONS ON POLITICAL PHILOSOPHY: THE FUTURE OF POLITICAL PHILOSOPHY AS AN OPPONENT LANGUAGE
Asst. Prof. SNEHA DHILLON	<i>Asian Law College, Noida, India</i>	FLUSHING DIGNITY ALONG FECAL SLUDGE: A CRITIQUE ON INDIAN LEGAL MODEL AGAINST MANUAL SCAVENGING
Ercan TİZAR Assoc. Prof. Dr. Ali Serdar YÜCEL	<i>Dicle University, Turkey</i> <i>Firat University, Turkey</i>	THE EFFECT OF EIGHT WEEKS INTERVAL TRAINING ON SOME PHYSIOLOGICAL PARAMETERS OF WOMEN FOOTBALL PLAYERS
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THE TEACHING OF PHYSICAL EDUCATION IN ITALIAN PRIMARY SCHOOLS: NEW SCENARIOS IN EVOLUTION

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Abstract

In Italy the teaching of physical education in primary school is provided but is not mandatory. In fact, each individual school can decide whether to teach physical education and for how many hours to teach it within the time flexibility of 24, 27, 40 hours a week offered to families. Generically, in the model up to 27 hours per week, it is carried out 1 hour per week by the generalist teacher who can teach all subjects and does not have specific skills in physical education. For this reason, it is not taught adequately. There are many projects of the Ministry of Education to increase, with teachers specialized in physical education, the hours of physical education. But the projects have failed because not all schools join the initiative. Since 2018, a bill (n.992) is currently being considered in the Senate that brings the teaching of compulsory physical education for 2 hours a week in all primary school classes taught by the specialized teacher, that is, with a master's degree. With the new State Budget Law (Article 109) it is provided for the mandatory nature of 2 hours of physical education given by specialist teachers in addition to the ordinary timetable starting from the a.s.2022/23 for the fifth classes only and then expand also to the fourth classes in the a.s.2023/24.

The aim of the study is to verify the actual applicability of Article 109 of the new budget law to highlight its applicability and limits. The method is archival research through the analysis and evaluation of documents from various sources.

The budget law establishes the master's degrees that can compete specifying that they also require additional training credits university or academic in anthropological, psychological and pedagogical disciplines and in teaching methodologies and technologies. The start of the introduction of teaching is subject to the issuance of an interministerial decree. The budget law allows a progressive introduction of the teacher specialized in physical education for the fifth and fourth classes: it will thus be possible to verify the problems that have arisen in order to solve them by definitively approving the bill n.992. This law would definitively establish, by varying the legal framework, the introduction of the specialist teacher and the two mandatory hours of physical education for all classes of primary school including the first three classes that currently remain with an inadequate teaching entrusted to the generalist teacher.

Key words: physical education, teaching, primary school



INTRODUCTION

In Italy the teaching of physical education in primary school is provided by ministerial documents but is not mandatory (MIUR, 2012). In fact, the team of teachers of every class for each school can decide whether to teach physical education and for how many hours to teach it within the time flexibility of 24, 27, 40 hours a week offered to families (DPR n.275/99). The law gives at school the discretion for teaching it. Generically, in the model up to 27 hours per week, it is carried out 1 hour per week by the generalist teacher who can teach all subjects and does not have specific skills in physical education (D'Elia, 2019). For this reason, it is not taught adequately. Therefore, the generalist teacher does not feel prepared in this operational discipline, especially as regards the safety of physical and sporting activity, because he was not trained in Physical Education as a specialized teacher and is also afraid of student injuries (D'Isanto T, D'Elia F, 2021). Furthermore, the WHO recommends practicing at least 60 minutes a day for the health and well-being of the individual and the tendency to overweight of children (WHO, 2010). Italian children, between 5 and 10 years old, are obese for 9.4% and overweight (overweight) for 20.4% and the school, in this way, is unable to make any systematic contribution to improve the situation (Epicentro.iss, 2019). There are many projects of the Ministry of Education to increase, with teachers specialized, the hours of physical education. For years, to make up for the lack of physical education lessons, the Ministry of Education with the help and collaboration of the Italian National Olympic Committee (CONI), and also with the governmental agency "Sport and health", realizes the project, entitled *Sport di Classe*, to broaden the audience of students who receive physical education teaching (Progettospordiclasse, 2014). But the projects have failed because not all schools join the initiative. (D'Isanto, 2019).

For the current school year 2021/22 the project has started "Scuola attiva kids" as an evolution of the project "Sport di classe". The project is for all primary school classes. It is organized by the Ministry of Education, the governmental agency "Sport and health", and the sports federations. The project provides for the training of the teacher with webinar for the first, second and third classes to allow the teaching of two hours per week of PE. For the fourth and fifth classes there is a sports tutor with master degree who supports the generalist teacher for the teaching one hour a week of the two scheduled. The sports tutor has the task of providing the primary school with organizational and methodological support. All classes will receive materials for physical activity to be carried out at school even during breaks, at home or outdoors with the family over time and in extra-curricular spaces; and they will receive material for the realization of a promotional campaign on well-being linked to movement. "End of school year games" are planned to be held at the end of the lessons starting in June. A small step has been taken to improve the situation but it is the schools that decide to participate.

A legislative measure would be necessary in order not to create inequality between schools by guaranteeing the same number of hours dedicated to physical education and adequate professionalism to teach them.

Since 2018, a bill n.992 (DdL 992/2018) is currently being considered in the Senate that brings the teaching of compulsory physical education for 2 hours a week in all primary school classes taught by the specialized teacher, that is, with a master's degree. Furthermore, the law project, that is being examined and approved by the Senate of the Republic for 2 years ago, now it must be approved by the Chamber of Deputies in the same contents already approved. If there are any modification of it to resolve some critical issues, the law project must examine and approve again by the Senate of the Republic and it must approve by Chamber of Deputies for final approval. But the bill is blocked due to the economic and organizational problems that would arise in the implementation phase. With the new State Budget Law (Article 109), thanks to the resources of the National Recovery and Resilience Plan (PNRR), it is provided for the mandatory nature of 2 hours of physical education given by specialist teachers in addition to the ordinary timetable starting from the school year.2022/23 for the fifth classes only (terminal classes) and then expand also to the fourth classes



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in the school year 2023/24. A competition will be announced for the coverage of these teaching posts of this new competition class called "Sport and sports sciences in primary school".

OBJECTIVE AND METHOD

The aim of the study is to verify, regardless of the state of the art of the bill regarding timing and criticality, the actual applicability of Article 109 of the new budget law to highlight its applicability and limits.

The method is archival research through the analysis and evaluation of ministerial and parliamentary documents as well as documents of scientific societies of motor and sports sciences and university research.

RESULTS AND DISCUSSION

The budget law establishes precisely the classes of competition of master's degrees that can compete. Therefore, subjects in possession of the master's degree obtained in the LM-67 class "Sciences and techniques of preventive and adaptive motor activities" or in the LM-68 class "Sports sciences and techniques" or in the LM-68 class "Sports sciences and techniques" can teach motor education in primary school, following passing specific qualifying procedures, who also require additional university or academic credits (24) in anthro-psycho-pedagogical disciplines and teaching methodologies and technologies or with a single-cycle master's degree in class LM-85-bis "Primary Education Sciences" together with a three-year degree in "Sciences of motor and sports activities". The start of the introduction of teaching is subject to the issuance of an interministerial decree that establishes the number of places to be allocated to the teaching of physical education in primary school, guaranteeing the invariance of the overall organic endowment.

CONCLUSION

The budget law allows a progressive introduction of the teacher specialized in physical education for the fifth and fourth classes: it will thus be possible to verify, in the two years of progressive introduction, the problems that have arisen in order to solve them by definitively approving the bill n.992. This bill would introduce 2 hours of physical education for all primary school classes per week given by the expert teacher of the subject with a master's degree. The budget law provides for an implementation of two hours in extracurricular time which in the curricular model of 27 hours per week would lead to 29 hours per week with the reorganization of school time and the need for canteen time not yet balanced which could subtract useful time for other disciplines or to the same discipline of physical education, while in the model with 40 hours per week the two hours of physical education would be included in the curricular timetable with the simultaneous presence of the specialist teacher and the generalist teacher. The experimentation phase is therefore useful for solving the practical problems highlighted. With the approval of the bill it would be definitively established, by varying the legal framework, the introduction of the specialist teacher and the two mandatory hours of physical education for all primary school classes including the first three classes that currently remain with an inadequate teaching entrusted to the generalist teacher.



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CHILDREN'S CHANGING LEARNING ECOLOGY DURING COVID-19 PANDEMIC

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Abstract

When NCF (2005) and NEP (2020) stressed the significance of school-home collaboration, by no means one would ever imagine that the Covid-19 pandemic will literally bring the school to the home. The pandemic has practically left no life untouched. Children's lives are no exception to this. From family routines to education, all have undergone changes. This paper aims to present the nature of changing learning ecology of children during the Covid-19 pandemic times. Routines and engagements of children within families provide them with opportunities to learn. Impact of the pandemic on children's learning ecology cannot be fully captured without understanding how this situation unfolded and affected the minutiae of the lives of family members. Thus, the paper investigates the daily lives vis-à-vis daily routines and engagement of children as well as parents within family lives. Furthermore, it unpacks the changes children's education has undergone, as a result of the pandemic. The data for the present paper was gathered from Delhi, India. Semi-structured interviews were conducted with parents and children. The data was subjected to descriptive content analysis. The findings of the study indicate that both for parents and children, family routines and roles one undertakes in families changed drastically owing to the pandemic. Family routines and rhythms changed as children were taking classes online and their parents were also working largely from home. As a result, the nature of resources required by the children, forms of engagements, and role of parents in children's education changed. Based on the findings, the paper makes suggestions for teachers and schools wherein the need to take into account the changing nature of children's learning ecology, one may need to adapt one's pedagogy and teaching strategies.

Keywords: Children, Education, Learning ecology, Pedagogy, Teaching strategies

Note: The paper is based on a research funded by Indian Council of Social Science Research-Ministry of Human Resource Development under the IMPRESS Scheme



**EFFECTIVENESS OF THE INCORPORATION OF ONLINE TEACHING TOOLS
DURING COVID 19**

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Abstract

In year 2020, the spread of coronavirus has led to the educational learning institutions in India rapidly transition from the face-to-face classroom to online learning systems. The crisis called for countries worldwide to move towards digital learning, which brought about new challenges such as availability of devices, proper internet accessibility, teaching experiences for remote learning, proper resources etc. Digital tools are not the only factor for an effective online learning rather there are various other factors that makes the classroom engaging and a healthy learning environment such as instructional strategies used by the teacher, perception of a teacher, learner's reactions towards resources, teachers' knowledge, the provision and the training given to the teachers from the institution and teacher's preferences for the usage of digital tools.

This study was conducted to understand the effectiveness of the incorporation of online teaching tools during Covid 19 by the preservice teachers during the internship.

Key Words: Pre-service teachers, Online tools



ECONOMIC EMPOWERMENT AND JOB REINSERTION FOR WOMEN IN THE POST-PANDEMIC PERIOD

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Abstract

The women working as daily wagers faced some of the most severe and unforeseen impacts of the pandemic. The pandemic has posed a threat not only to livelihoods from inadequate social protection systems, but also to women's independence and security as violence against women has increased in the country.

Formally, the Indian governments played a key role in spreading public health information, providing dry ration, medicines etc. However, accessibility barriers and providing livelihood in many marginalized communities specially the women was a challenge. This communication gap is one factor that amplified health inequities and other requirements during the COVID-19 pandemic.

This is where nongovernmental organizations (NGOs) play a key role. NGOs are powerful facilitators for providing, reaching out and resonating in the communities they serve.

A case study was conducted to understand how the NGO is working towards the empowerment of women in the Post Pandemic Period.

Key Words-Pandemic, Women empowerment, NGO



FEASIBILITY AND CONSTRAINTS OF INTEGRATING AI FOR TEACHER EDUCATION- A STUDY

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Abstract

Motivation for Research: When the Covid-19 compelled Online pedagogy was implemented across India, one of the most affected was Teacher Education programmes. The obvious reason being that more than transmission and transaction of knowledge, teacher educators give prime importance to the transformation of the teacher trainee which was difficult to be realized in the virtual classroom. When Online pedagogy became the norm, teacher educators explored the use of technological tools. But of late, many across the globe are exploring possibilities of Virtual Teacher Education. So the investigator, a teacher educator by profession, drawing on own experience of transacting the Bachelor of Education (BEd) curriculum in the face to face and online mode, attempted a study of the feasibility and constraints of integrating AI for Teacher Education.

Statement of the Problem: For almost a decade, many have been exploring the possibilities of using AI-based tools for education. But most such tools are invariably used for content transaction, learner interaction and assessment. But in teacher training programmes, teacher educators and supervisors check the trainee's ability to transact procedural knowledge both during training sessions and Teaching Practice. Further, after observing classes engaged by the teacher trainee, they provide individual feedback based on performance, and attempts to refine and prune trainee performance with demonstration if necessary. This process being complex, adoption of AI-based tools in teacher education, is particularly difficult.

Objectives: The main objective is to find out ways of employing AI-based tools for Teacher Education programmes. The specific objectives include: (1) Preparation of a check list for the transmission, transaction and assessment phases of the teacher education curriculum for integrating AI-based tools. (2) Identification of strategies for assessment of the Practice Teaching phase using AI-based tools.

Methodology: This empirical, analytical and descriptive study commences with an identification of the content which falls under factual, conceptual and procedural knowledge of the teacher education curriculum. Then, drawing on experience gained from transacting content of teacher education programmes, in the online mode, a four-phase plan of action with appropriate check list for incorporating AI-based tools for each phase are suggested with specific mention of likely constraints.

Author's contribution towards creation of new knowledge: It is hoped that the plan of action for integrating AI-based tools suggested in this paper will provide guidelines for curriculum developers for redesigning existing curriculum for virtual teacher education. It can also help sensitize technocrats of the complexity of developing algorithms and the likely pitfalls in developing effective AI-based tools for teacher education.

Key words: Artificial Intelligence, BEd, Online teaching, Teacher Educator, Teacher Trainee



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“What education in 2030 will look like...the next generation education will look like starts first with the concept of Educator 5.0, second discovering new learning networks, third the meta verse, fourth the idea of the ‘superhuman’, finally the educational revolution where all these come together...”

-Ruth Shearman (Aug. 20,2021)

Introduction

Of late, many countries have been assiduously developing user-friendly general system, designed particularly for solving problems. They are based on experience-based intelligent tutoring systems, and have been produced primarily for transacting lessons more effectively and aid students' self learning. (Flogie & Abersek,2021) The computers of today have advanced capabilities characteristic of human problem solving, but the challenge of integrating several types of intelligences into a sensible whole is still being resolved.(1)

Motivation for research

When the Covid-19 pandemic disrupted education, to cope with the compelled shift to online pedagogy, teacher educators had to identify appropriate learning environments to match the learning outcomes of their respective teacher education programmes. It essentially meant adapting technological tools for pruning the teaching skills of teacher trainees. But having thither to engaged classes only in the face-to-face mode and not having received any training in transacting curriculum online, teacher educators found teaching in the online mode a challenge. Though the investigator, a teacher educator by profession had been using technology for transaction of the BEd curriculum for almost a decade, teaching online was a challenge. This prompted the investigator to explore the feasibility and likely constraints of integrating AI for teacher education.

Statement of the problem

Studies have already been undertaken to find out how different institutions and stakeholders tried to adapt to the new scenario created by Covid-19 (Bao 2020;Zhang et al.2020). While finding solutions to emergency situations is essential, providing quality online instruction using appropriate learning materials is equally important. Informal interviews with teacher educators revealed that many had simply presented the material used in the traditional class in the online mode without matching it with the digital tool employed for online transaction. This naturally resulted in poor quality learning and teacher trainees losing interest in learning online. What type of content should be adapted in which possible way for transacting factual knowledge, conceptual knowledge and procedural knowledge is not fully known and has to be identified.

Objectives

Teacher training programmes have marked phases which include 1.Orientation to teacher education 2. Transmission of factual and conceptual knowledge 3. Modelling cum interactive phase in which teacher trainees grasp aspects of procedural knowledge 4. The teaching practice phase when the trainees under supervision of the teacher educator attempts to teach in the real classroom where their own factual and conceptual knowledge becomes operational in the procedural knowledge while engaging classes. Matching these four phases, the main objective of the study is to find out the feasibility and constraints of employing AI-based tools for virtual teacher education. The specific objectives include preparation of a check list for transmission, transaction and assessment phases of the teacher education syllabus and identification of strategies for assessment of Practice Teaching employing AI-based tools.



Method

In order to identify AI based tools for teaching and assessment of the teacher education curriculum, the study commences by identifying a four phase plan of action essential for transacting factual, conceptual and procedural knowledge of teacher education. A check list for each of the four phases –Transmission, Transaction, Assessment and Teaching Practice is also prepared for integrating appropriate AI-related tools focusing on the feasibility and likely constraints.

Brief review of studies on the use of AI for instructional purposes

eSchool News published a study indicating that by 2021, the application of AI in learning and education will increase by 47.5%.(Johnson,2019)

An instance of the successful use of Artificial Intelligence in science education comes from the Georgia Institute of Technology where many students never knew that their teaching assistant (Jill Watson) was a machine.

Recently, Genius 3D Learning, made use of stereoscopy- a technology that combines special eyeglasses with a booster box to create a three-dimensional, interactive experience. The makers claim that this AI powered tool can help students learn twice as fast by interacting with realistic, scaled models that depict the topic the way it exists in real life.(Digital Learning Network) To Bernard Marr, a thought leader in the use of AI in education, students of today will need to work in a future where AI is the reality. So it is important that our educational institutions expose students to and use the technology.

It has also been found that one of the greatest advantages of the use of AI is that it will help breach geographical barriers making available specialized skills from the best teachers, no matter where they are located. More importantly Artificial intelligence makes possible kids with special needs to study most comfortably using SpeakIt!, Widex's Evoke, and Empower Me (Analytics Insight)

Dukadinovska (2020) a technical writer at Digital.Silk, suggested seven ways in which AI is changing the education industry. These include, 1.Task automation 2.Smart content 3.Personalized learning 4.Virtual learning environment 5.24/7 assistance 6. Face recognition 7. Secure online exams. She also identified disadvantages such as the likelihood of too much use of technology resulting in production of stress in kid's brains, higher electricity bills and affordability issues.

Suggested Phases for a Plan of Action for use of AI for Teacher Education

For Virtual Teacher Education, select representative content falling under the different types of knowledge have been listed in sequence and appropriate AI tools and strategies have been identified. The content chosen is from the first unit of the paper prescribed for study in the third semester syllabus of the Bachelor of Education (BED) English Optional course of the University of Kerala and is included in the Appendix and is not exhaustive.

Checklist : Phase I: Transmission Phase

To effectively address transmission of factual and conceptual knowledge, the following questions can serve as a kind of check list:

- *What is the knowledge that is to be transmitted?
- *What is the tool and medium for transmitting ?
- *What is the role of the teacher?
- *What is the role of the learner?
- *What previous knowledge do the learners have?
- *What type of advanced organizer is to be introduced for transmitting the topic?
- *What activities should be included while transmitting content in the virtual mode?



*Which of the following strategies is the most appropriate?:

- Lecture Oral
- Lecture with teacher demonstration
- Lecture with visual aids
- Lecture with student activity

Check list: Phase II : Transaction Phase

For effective transaction during the transaction phase, the following questions can serve as check list:

- *What different kinds of questions related to the content can be posed to initiate discussion/ collaborative learning?
- *What special role should be assigned to student leaders to sum up each discussion thread in the Discussion Forum during Online learning?
- *What special strategy should the teacher employ to ensure that all students participate in the learning process?

Check list: PHASE III Assessment Phase

For effective assessment, it would be a good idea to explore different products that can be submitted to check understanding of the learners. The following questions can serve as a check list:

- *How to assess?
- Pen and Paper test
- Assignment/Practicum
- Performance/Practical exam

Check list: Part IV : Tool/ Strategy identification Phase for Teaching Practice

1. What are the expected trainee roles in the class?
2. What are the indicators for assessment of different teaching skills?
3. What are the indicators of good classroom management?

Here it may be noted that for effective assessment of Practice Teaching, a surgical analysis of the phase is essential to identify the feasibility and constraints of integrating AI. Only then can the modus operandi for integrating AI for monitoring Virtual Teaching Practice can be undertaken. For this, the use of computer screens with camera that scans face, emotions every five seconds of both the teacher trainee and the pupils become necessary.

Feasibility and constraints

The scope for integrating AI have been identified for select topics (Please see Appendix)

*Introduction and integration of AI into the traditional syllabus of the teacher education programme should commence with digitizing of learning materials used in colleges of Teacher Education. Following this, textual materials regularly used for teaching pupils in schools during Teaching Practice would have to be digitized and new learning interfaces to help the teacher trainee would have to be developed.

*Smart data gathered by intelligent computer systems should be used to provide recommendations to enhance both students' lives and learning experience. This can commence at the very time of joining the BEd programme and use of enrolment analytics to determine which teacher trainee should teacher educators reach out to in what possible way.

*It is generally acknowledged that unlike in Arts and Science colleges with many students, in colleges of Teacher Education, bonding between the teacher educator and the teacher trainee is possible with the existing teacher-student ratio (1: 5 or 1:7). But now, it is possible for teacher



educators to identify social and emotional needs of teacher trainees right from the first week of the training programme using AI. It is possible for AI software systems to garner accurate patterns of information and help identify students who may be at risk academically, socially or financially. However there can be pitfalls as teacher educators and institutions may inadvertently choose a criteria which is not ideal.

*Following an initial introduction of AI-based tools, the efficacy of the tools have to be checked. This should be followed by plugging of loopholes. The next phase should be creation of more immersive and diverse learning experiences. Here it is worth recalling Ling (2017,562) who described fairly well the real nature of teacher education programmes as an iterative and complex process that needs to look ‘backwards, forwards, inside-out and outside-in’ to respond to the evolving needs of a world that is ‘moving, blurring and shifting’.

Limitations

The study has the obvious limitation of identifying the possibilities of using Artificial Intelligence for transacting only a few topics of the syllabus of teacher education. The strategies and AI based tools for assessment of trainee performance during Practice Teaching in the real classroom have not been dealt with in detail. More significantly, what has been suggested are based on the investigator’s own experience of using technology for transacting the content of teacher education.

Implications

*Given the likelihood of integrating AI-based tools, teacher educators need to familiarize themselves with the emerging area of AI and explore the possibility of incorporating them in own teaching and assessment.

*The quest for finding the right AI-based tool should be a continuous process involving research teams comprising educators, programmers and visualizers.

Summing up

There is no doubt that AI is poised to make great changes in education. Programmes like the ones employed by Khan Academy has sensitized us to the possibilities of adapting learning which is creating a huge impact on education all over the globe. This paper has only attempted to identify feasibilities and constraints of integrating Artificial Intelligence in teacher education programmes.

One of the greatest challenges of integrating AI in teacher education is the difficulty of ensuring that cognitive, social and emotional competencies of teacher trainees are translated and incorporated into algorithms. And these should be ones that aim at transmission, transaction and transformation of the teacher trainee, which is the expected learning outcome of teacher education programmes. That is to say, the area is quite complex and further research needs to be conducted on learning design (Best & MacGregor,2017), reflection and knowledge development (Mumford & Dikilitaş,2020) and the real impact of integrated pedagogy of online teaching learning.

Notes and References

1.Researchers are keenly trying to integrate game element into the teaching learning process and design tools that facilitate application of a variety of abilities : numerical, textual, semantical, pictorial, spatial, motor, memorial, perceptive, inductive, deductive, etc. and emotional intelligence is also being undertaken. (Flogie & Abersek,2021)

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Appendix

Identification of different types of Knowledge in sequence in select content of the BEd syllabus

The table shows an identification of different types of Knowledge in sequence (Factual, Conceptual and Procedural) in select content of the syllabus of the Bachelor of Education. (Semester III BEd English 2019-20 University of Kerala- EDU 0.13 : Emerging Trends and Practices in English Language Education- Unit 1 : Modern Instructional strategies in English education). For each type, the possibility of integrating Artificial Intelligence is suggested.

Factual knowledge	Feasibility of using AI	Conceptual Knowledge	Feasibility of using AI	Procedural Knowledge	Feasibility of using AI
*Learner types *Group	*Identification of AI-based tools to respond to a range of learning styles of teacher trainees.	*Collaboration	*Use of learner monitoring tools	* Providing tasks depending on learner ability, content suitability and learner interest	*Providing customizable tutoring applications *Creating new learning interfaces
*Learner *Group	*Identification of AI-based tools to respond to a range of learning styles of teacher trainees.	*Cooperation	*Use of learner monitoring tools	* Providing tasks depending on learner ability, content suitability and learner interest	*Creating new learning interfaces
*Interaction *Question types	*Automating basic repetitive activities *Creation of learning platforms that enable learners to learn at their own pace *Creation of virtual AI-powered tutoring systems helping learners grasp the basics of the content *Use of touch screen based tools for Interactive training	*Constructivism *Connectivism	*Making available digitized reading material *Use of AI-powered chatbots to help trainees who are embarrassed by asking for additional help in front of peers.	*Providing support applications matching learner interest and ability * Providing tasks depending on learner ability, content suitability and learner interest	*Creating new learning interfaces *Creation of learning platforms that quickly identifies gaps and failings in the curriculum after each teaching encounter. *For teaching in the virtual environment the free plugin for PowerPoint, (PowerPoint Translator) may be used *Use of PrepAI, the smart question to set question papers for the tests and save time.
*Instruction	*Use of adaptive learning programmes, repeating things that students haven’t mastered	*Types of learning materials *e-learning *Blended learning	*Making available digitized reading material *Use of Learning Management Systems	*Preparing materials based on learning outcome *Procedure for assessment	*Creating new learning interfaces
*Material prescribed for study in	*Creation of customized digitized textbooks	*Vocabulary, Grammar *Prose, and	*Making available digitized reading material	*Providing support applications matching learner	*Making available learning materials any time



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English Course book		Poetry *Types of Lesson Plans	*Use of voice assistants to converse with the learning material *Use of visualization, simulation and web based study environments powered by AI to enable trainees to perceive information in new ways.	interest and ability *Identification of teacher role, pupil role, classroom activity assessment of content taught *Choosing appropriate instructional strategy for Prose and Poetry	anywhere on demand. *Creation of Intelligent Tutoring Systems (ITS) for extensive diagnostics on student performance
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CULTURAL DIVERSITY AND TEACHERS: REFLECTING ON ENVIRONMENTAL STUDIES CLASSROOMS

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Abstract

Indian classrooms display cultural diversity among learners in terms of caste, class, religion, gender, region and language. Related researches have shown that the cultural affiliation of students from marginalised or disadvantaged social groups would lead to their marginalisation in classrooms as well. Many teachers perceive students' diversity as a problem rather than utilizing as a resource. Adverse experiences at schools may also lead to 'push out' of the students from the formal education system. Hence, there is a need for transforming school curriculum and pedagogy to make it more accommodating for such diversity of learners received at schools. Teachers must strive to create a classroom culture where all students are welcomed and supported for learning regardless of their backgrounds. Culturally responsive teaching is based on the underlying assumption that academic knowledge and skills become more meaningful, interesting and easier for students to learn if situated within their lived experiences and frames of references. EVS (Environmental Studies) being an integrated subject offered by NCERT for class III to V requires moving beyond traditional disciplinary boundaries with a focus on connecting with children's understanding and lived experiences rooted in their diverse natural and socio-cultural environments. This paper is based on a small study done in an MCD school of central Delhi where the researcher carried out detailed classroom observations to understand teaching learning processes of EVS. The researcher has analyzed and reflected on the observed classroom interactions and processes to understand the way teachers were addressing the students' diversity. A comparative profiling of the teachers have been done to place them along a continuum as per their cultural responsiveness. Findings of the study would help in carving out implications for the pedagogy of EVS for diversity.

Key words: Environmental Studies, Pedagogy, Teachers, Cultural Diversity, Culturally responsive teaching



COMPARATIVE LITERATURE

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Abstract

Comparative Literature in the broadest sense of term is the mental process which enables a person to perceive similarities and dissimilarities of other pieces of literature. Whether it is done implicitly or explicitly, Comparative Literature becomes a significant part of the process of criticism and evaluation. Observed keenly, it is found that comparison is an essential component of human nature. The recognition of this specialty in any field of search and research comes to the fore through the comparative perspective present in human nature. Therefore, its reach in literature becomes quite natural. Although comparison of different genres of literature has been part of literary studies for a long time now, still the exact period of debate and controversy is difficult to ascertain. It would not be an exaggeration to say that a person, who is fond of reading literature, implicitly moves towards Comparative Literature. While reading about any subject, its source, writer, theme etc. one naturally tends to find other similar works. The genesis of Comparative studies of literature takes place from here. It is said that no event and no literature can be adequately understood except when they are juxtaposed with other events or other pieces of literature. Hence making it an important branch of critical appreciation of literature. However, this branch of literary history, which critically analyses other pieces of literature, is quite complex, with its own set of problematics and perspectives. Various aspects like geographical, linguistic, chronological, narrative etc. have to be taken into consideration as all the areas are challenging, sensitive and systematic. Thus, it becomes a tool to gain insights into new techniques of different genres, new criteria of evaluation, thereby making it very relevant in modern literary field.

Key Words: Mental process, Criticism, Evaluation, Debate, Genres, Genesis, Problematic



CLIMATE CHANGE AND INDIAN LEGAL FRAMEWORK: AN ANALYTICAL VIEW

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Abstract

Anthropogenic activities lead to an increase in the green house gas emission in to the environment, which in effect causes global warming, consequently resulting in complete change in climate pattern. India stands fifth in the emission of green house gases in the world. After a prolonged discussion for a century, majority of scientific organizations, International bodies such as IPCC agreed the fact that, global warming is a serious issue and anthropogenic emissions of greenhouse gases is the one of the major source behind this. IPCC has concluded that there is a likelihood that failure to achieve the proposed two degree Celsius limit will result in a climate “tipping point”, unleashing irreversible non-linear, exponential, long-term impacts and adverse effects. The international community has created several international instruments including the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 for dealing with the issue of global warming and climate change. Though India is a part of two most important instruments such as the Kyoto protocol and UNFCCC, India does not owe any legal obligation to reduce Green House Gas emission. However, the Government of India has adopted several voluntary measures to minimize the emission of Green house gases. India has planned to depend on renewable energy sources, adopted new green technologies and established new ministries and administrative agencies. India adopted a “National Action Plan on Climate Change” (NAPCC) in 2008 outlining existing and future policies and programmes directed at climate change mitigation, adaptation and knowledge management. From pre-independent period onwards India started fight against global warming, to cope up with the move India has started legislation in issues related with global warming. To further strengthen the commitment towards protection of environment, immediately after the participation of Stockholm Conference in 1962, India has amended its Constitution, through 42nd Amendment Act and thereby introduced two specific provisions such as Article 48 A and 51 A (g). Thus the protection of environment and natural resources becomes one of the constitutional obligation of the Country and duty of every citizens in the country. Subsequently in order to fulfill this Constitutional obligation the Indian Government has enacted several legislations like Water Act, Air Act, Environment Protection Act and Biodiversity Act, etc. So also the Indian judiciary through its activist role have given several landmark decisions for the purpose of controlling the environmental pollution and for the protection and conservation of environment. All these legislations and judicial pronouncements are one way or other dealing with the issue of climate change by protecting and conserving the environment as well as by preventing the pollution. This paper seeks to examine the scope of these legislations and judicial decisions in the protection and preservation of natural environment thereby preventing climate change and reducing its adverse effects.

Key words: Indian Constitution, Articles, Amendment, Climate Change, global warming, emission



INTERROGATING THE POLAR NATURE OF BOONS AND CURSES IN THE MAHABHARATA

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Abstract

The Mahabharata is filled with intricate stories revolving around boons and curses. Boons and curses have largely been read as occurrences with polar outcomes in most of the studies. My analysis of the phenomena, however, does not support the dominant discourse about the nature of boons and curses. My objective during the presentation would be to examine the nature of the two narrative devices in the epic and establish a thinning line between the two phenomena. However, in no way, do I claim that the reversal happens at all times. This paper intends to explore the parameters and pre-requisites for such a reversal.

Some of the scholarly works have cursorily suggested the blurring lines between the two occurrences. Several questions still remain unaddressed and thus, unanswered. Curses and boons are crucial narrative devices in understanding the workings of fate and karma in the world of the epic. Hence, it becomes essential to take the studies on boons and curses a step further by reinterpreting the inherent nature of the phenomena.

In most of the cases, curses lead to the downfall of the character and boons help him/her in winning over the enemies. However, there are several instances in the epic when a boon becomes a curse and a curse becomes a boon. The birth of Karna is an example of a boon turned wrong. Sage Durvasa blesses Kunti with a boon for her devotion. To test the efficacy of the boon, she invokes Surya with the mantra she was given. She has to accept the embraces of the God because of the fear of being cursed. The boon turns into a curse not just for Kunti but for the unborn child, Karna, who would be humiliated all his life because of his identity. Similarly, there are times when a curse turns into a boon in the Mahabharata. Arjuna is cursed to be a eunuch for a year by Urvashi for rejecting her advances. But, the curse works in Arjuna's favour because he could choose the year of his physical transformation. When the Pandavas disguise themselves during the thirteenth year of their exile, he uses the curse as a boon and plays the role of Brihannala, the dance teacher for Virata's daughter, Uttara. This paper would also shed light on the metamorphosis of boons into curses and vice versa.

Keywords: Challenging, Interrogating, Reinterpreting, Intrinsic (polar) nature of Boons and Curses



STATUS OF ELEMENTARY EDUCATION IN UTTAR PRADESH: AN OVERVIEW

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Abstract

This paper highlights the current status of elementary education in the state of Uttar Pradesh while evaluating the determinants of primary education in UP. Despite making tremendous investments in Elementary Education, the state has lacked behind to provide quality education to its students which in turn have a lot of negative implications on the future of the children. The paper analysis factors that certainly reveal the deteriorating quality of education level in Uttar Pradesh. The suggestions are given to curtail the obstacles in way of the quality education to the students.

Keywords: Elementary, Education and Evaluation



Microwave approach in clay nanocomposite preparation: Photocatalytic and Sonophotocatalytic methylene blue dye degradation

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Abstract

In this study, we used *Carrisa edulis* fruit extract as the capping agent and developed a microwave-assisted procedure for processing ZnO nanoparticles modified by montmorillonite K10 nanosheets in a one-pot strategy. The photocatalytic ability of the ZnO/MK10 nanocomposite to degrade methylene dye (MB) was superior. The sonophotocatalytic effect of ZnO/MK10 nanocomposite is three times greater than that of MB. This nanocomposite has also been active in trapping species, developing a potential mechanism for sonophotocatalytic degradation, and demonstrating excellent recyclability and stability.

Keywords: *Carrisa edulis*, Methylene dye, Montmorillonite K10, Sonophotocatalytic degradation



A PREDICTIVE ANALYSIS OF IMPACT OF LAPTOP SCHEME ON IT UNDERGRADUATE STUDENTS

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Abstract

The Prime Minister Laptop scheme was launched in 2013 by the Ex-Prime Minister of Pakistan as a part of the Prime Minister's Youth Program. The laptop scheme was based on similar models implemented in various developing countries, like Peru, Uruguay, India, Mongolia, Brazil, and Nigeria. Such initiatives aim to provide free laptops to deserving students and move towards a paperless classroom. However, these projects have always been the target of both praise and criticism. So, this study's goal is to analyze the effectiveness of incorporating laptops in education and predict the impact of laptop usage on students' learning abilities and employment prospects. A relationship between student's use of government-provided laptops and its impact on their learning would determine whether to incorporate this initiative in our education system in the future. A total of 206 responses of I.T. undergraduate students were taken from all over Punjab, Pakistan. The collected data was analyzed using various machine learning algorithms. The results showed that laptop schemes create jobs for those who receive them, especially females, and increase students' digital learning.

Keywords: Technology, Education, Traditional Teaching, Laptop Scheme, Online Learning, Machine Learning

INTRODUCTION

Education plays a very critical role in human capital development. It raises efficiency and productivity and thus produces skilled individuals who are empowered enough to lead a country's economy towards a path of sustainable socio-economic development (Memon et al., 2007). Many see computer-aided learning (CAL) as an enhancement to traditional teaching methods and a possible way to improve the quality of learning in developing countries (Linden et al., 2003). Owing to the I.T. industry's exponential growth, this idea of incorporating technology to develop children's interest in the education field has been slowly gaining momentum and exciting the education experts. However, recently due to the impact of Covid-19, over 1.2 billion students globally are out of school. The school closures worldwide have forced educational institutes to utilize digital platforms and shift towards online learning, which means these changes might be here to stay, even post-pandemic (Onyema et al., 2020). In the past few decades, Pakistan has been, as one of the developing countries, trying to make its place in the I.T. boom, worldwide. However, according to a report by the World Economic Forum, in the last decade, Pakistan has dropped from its rank of 84 out of 144 countries (The Global Information Technology Report, 2006) to being ranked at 110 out of 139 countries (The Global Information Technology Report, 2016). To counteract this problem, the Prime Minister Laptop scheme was launched in 2013 by Ex-Prime



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Minister of Pakistan Mian Muhammad Nawaz Sharif as a part of the Prime Minister's Youth Program. This initiative aimed to provide free Haier laptops to deserving students studying in public and semi-public universities throughout Pakistan. It was modeled on a similar scheme, launched in other developing countries, like Peru, Uruguay, India, Mongolia, Brazil, and Nigeria, who provided computers and related technologies to public schools under "One Laptop per Child (OLPC)" from 2005 onwards. However, such projects have always been the target of both praise and criticism. According to (Linden et al., 2003), adopting active learning (use of technology) in classrooms can improve academic courses' knowledge and increase attendance by making schools more attractive. Educationists have recently started promoting enquire learning, which encourages students and teachers to develop inquisitive and creative thoughts (Pundak et al., 2009).

Various studies conducted over the past years show mixed results that incorporating online teaching elements in education has improved students' learning and cognitive skills in some instances but made no difference in others. A series of experiments conducted by Scheines, Richard, et al. at the University of Pittsburgh in 2000 and 2001 observed that students who sporadically attended online lessons performed better on the final exam than those who regularly attended the physical lessons (Scheines et al., 2005). Similarly, Linden, with the help of Pratham (an NGO in India), implemented a computer-assisted learning program (CAL) in 55 schools in the urban slums of India to enhance mathematical and language skills through games (Linden et al., 2003). A survey conducted at the end showed that the program had a large and significant effect on the mathematical abilities of students. Another study carried out by Paris also indicated that 65 percent of the students, especially females, felt that Online Web-Assisted Learning (OWAL) activities are better than Paper Assisted Learning (PAL) activities, primarily due to the animations and graphics (Paris et al., 2004). Zhang, in 2004, also developed a multimedia based interactive computerized system named Learning by Asking (LBA) (Zhang et al., 2004). He inferred that those who took lectures via E-learning got a significantly higher average score than those who did not. In 2007, another benefit of introducing students to online education was found to be a decrease in dropout rate because students did not have to commute or decide between work and education anymore (Gortan et al., 2007). Oweis, in 2018, also found using ANCOVA (a statistical analysis technique) that students who were taught English using a computer program outperformed those who were trained using the traditional method, i.e., textbook (Oweis et al., 2018). Other benefits were found to be ease in organization and structuring of lectures using animation designing tools like presentations (Ling et al., 2013), improvement in short term memory because it perceives visually presented information quickly (Nouri et al., 2005) and building of practical concepts via the use of simulations (Qazi et al., 2012). On the contrary, studies like (El Khoury et al., 2012), and (Priya et al., 2017) found that PowerPoint presentations could be a potent tool in a teacher's arsenal if appropriately used to engage the students. However, the findings indicated that 70.7 percent of the students surveyed prefer traditional lectures, as they find them more interactive than the dull and monotonic PowerPoint presentations. Similarly, a study conducted by Abdellatif in 2015 found that 100% of the students included in the survey stated that PowerPoint presentation drew their attention and hence 0% of the watch was directed at the teacher, dividing student attention between lecture and teacher (Abdellatif et al., 2015). Another research result provided by Nouri and Shahid in 2008 stated that students taking lecture notes (active learners) along with PowerPoint presentations performed better than students who received lecture notes (passive learners) and just sat listening to the presentation (Nouri et al., 2008).

Sporadic but concerted efforts have been made to reform teaching methods and education by introducing students and teachers alike to computers and digital technology. Programs like "one laptop per child (OLPC)" were implemented in various countries to bring schools to homes. Uruguay was the first such country to put this initiative into action with a deployment of 1 million laptops. A study conducted in Uruguay showed that students could not obtain optimal benefits from



OLPC due to internet connectivity issues, due to which there was a slight improvement in their math and reading skills (De Melo et al., 2014). The OLPC scheme was also implemented in Brazil in late 2006, and two surveys were conducted six months apart. The surveys were able to shed light on the fact that although the OLPC scheme benefited many, but had limited success due to unavailability of the internet at the homes of students and lack of technical training (Lavinias et al., 2013). Similarly, in countries like Peru and Birmingham, where the OLPC scheme was implemented in 2007 and 2008, respectively, students indicated that their laptops often broke down and were not repaired due to lack of money and technical support (Warschauer et al., 2011). However, the study conducted in Ghana concluded that the majority of the students agreed that OLPC increased their exposure to technology and improved their computer skills (Owusu-Ansah et al. 2015). Influenced by the United Nations efforts to make the OLPC scheme a success, Pakistan also initiated a laptop distribution scheme which the former Chief Minister of Punjab launched in 2012. A few I.T. labs and training centers like TEVTA were also built (Abbas et al., 2014). Later, another similar laptop scheme was launched by the former Prime Minister of Pakistan in 2014. Aimed to move towards paperless classrooms and bring about a technological revolution, such schemes have always been a target of praise and criticism alike in developing countries. A primary reason being that hunger takes priority over education, and the large amounts of money spent on these schemes could be utilized to solve more pressing issues (Shah et al., 2010). However, the deciding factor in the success of any such scheme is essentially dependent on the students who are the recipients of those laptop distributions and the technical support provided to them, e.g., internet, hardware parts, digital skills, or teacher assistance, as found in an analysis conducted by Onah (Onah et al., 2014). A hypothesis was investigated and found to be true by Cheon in 2011 that students who have confidence that they would attain a skill have a higher chance of learning that skill (Cheon et al., 2012). Similarly, Yilmaz found in a study in 2017 that student's e-learning readiness impacts their motivation towards e-learning, which in turn increases their satisfaction with the online classes (Yilmaz et al., 2017). There is no associated work on analyzing the effectiveness and impact, positive or negative, of the laptop schemes implemented in Pakistan, on the recipient students. A relationship between student's use of the Prime Minister Laptop and its impact on their learning would determine whether to implement this initiative in our education system in the future or say adieus to it for good. This study aims to help educational institutes realize if introducing a fusion of technology and education would help students learn better.

MATERIALS AND METHODS

A. Data Set Collection

Data was collected via questionnaire administered to 206 respondents that consisted of I.T. undergraduate students from all over Punjab. Two groups were established; one was the experimental group, students who had received laptops from the PM laptop scheme. It comprised of 95 students. The other group was the control group, which had not received the laptops from the PM laptop scheme. It consisted of 111 students. The questionnaire consisted of various questions about undergraduate students of I.T. such as age, gender, semester, laptop availability, course type studied, laptop usage frequency, online jobs, online courses, learning, and household expenses. To maximize the response rate, the questions flew from least sensitive (called the 'screens') to most sensitive ('classification'). The Lickert scale was also employed in the questionnaire to gauge students' response, with the anchors being 'strongly disagree,' 'disagree,' 'neutral,' 'agree,' and 'strongly agree.' The responses from participants of both groups were gathered, analyzed, and tabulated.

B. Input Features

The following graphs show a better understanding of the input parameters used in our research study. To predict the impact of laptop schemes on undergraduate students, we used 25 input features. Figure 1 shows the statistics that most students who received laptops were males based on specific educational criteria. Around 71 male and 24 female students stated that they had been recipients of the laptop scheme, while 90 male and 21 female students claimed they had not been part of it.

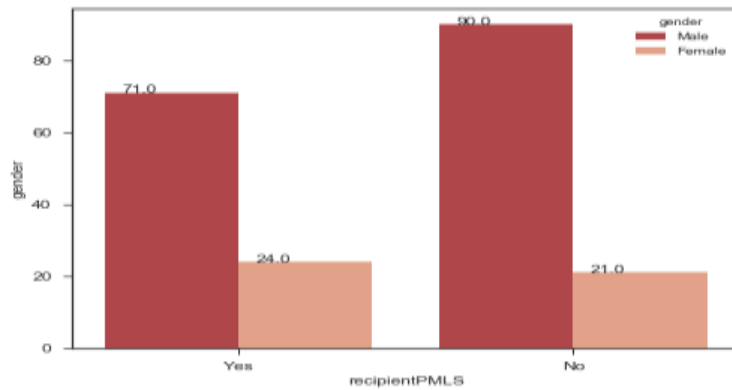


Figure 1. No. of recipients of the Prime Minister Laptop Scheme

Figure 2 explains that most of the 1st and 3rd semester’s students stated that they used their laptops several times a week. This proves that many instructors use a blended teaching method consisting of both traditional and online notes.

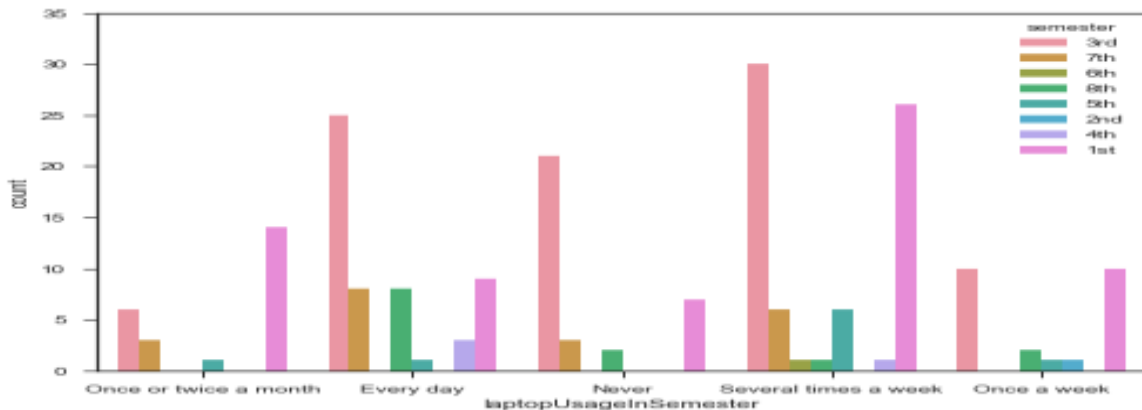


Figure 2. Frequency of laptops usage in classrooms during semester

Figure 3 shows that around 68 male and 15 female students agreed that initiating such laptop schemes positively impacted students’ learning. In contrast, about 11 male and 2 female students disagreed with the positive nature of distributing laptops among students.

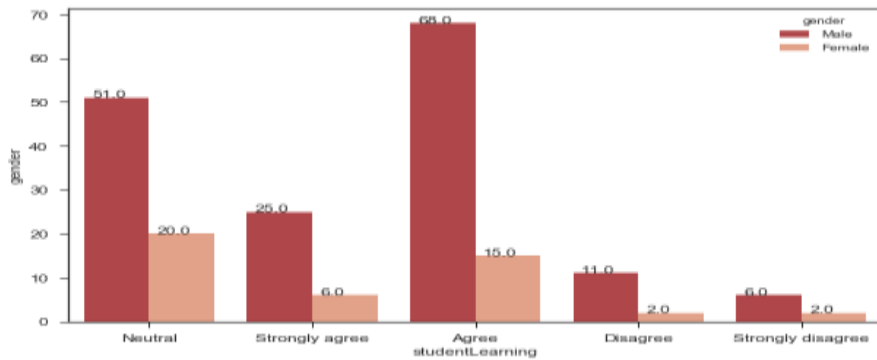


Figure 3. Influence of laptop scheme on student cgpas

Figure 4 also displays that 90 students out of 95, who received laptops, used them for learning via digital materials, while 5 of them stated that they did not use those laptops for education purpose. On the other hand, 49 out of 111 students who did not receive laptops said that they did not use laptops for learning.

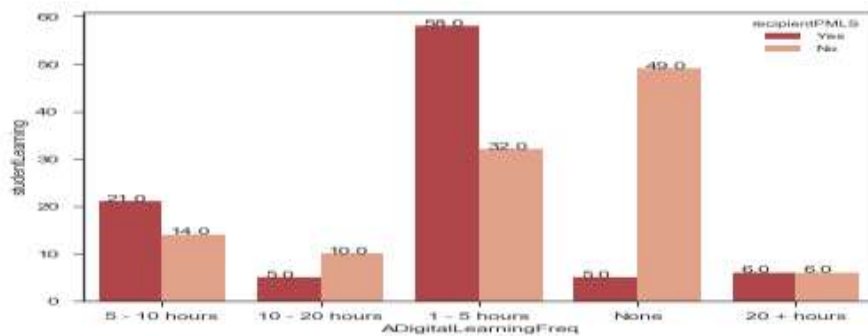


Figure 4. Influence of laptop scheme on student cgpas

C. Data Formatting

The data gathered was raw and converted from categorical to numerical form for easier machine learning model comprehension and efficiency. For this purpose, two encoding types were implemented: ‘Label/Integer Encoding’ and ‘One Hot Encoding.’ ‘Label Encoding’ consisted of manually mapping the categorical variables; for example, ‘male’ and ‘female’ options of gender were mapped to ‘1’ and ‘2’. Contrarily, in ‘One Hot Encoding’ is automatic mapping, where each option of the categorical feature is created into a new variable called ‘Dummy Variable.’ A binary value was assigned to them. For example, the ‘gender’ feature was used to form two new variables, namely ‘genderfemale,’ and ‘gendermale.’ Various machine learning Algorithms were applied, and the results were later tabulated.

D. Feature Selection

The best features were selected using three methods: K Best, Variance Threshold, and Select From Model. In the ‘Select K Best’ model, 50 out of 105 features were selected by combining a univariate statistical test (i.e. f classif) with K-number of features. This gave an accuracy of 86% on unseen data when coupled with the Decision Tree Classifier. In ‘Variance Threshold,’ 46 out of 105 features were selected by eliminating the features with low variance(less than 0.8), which gave an accuracy of 83%. Similarly, in ‘Select from Model,’ 38 out of 105 features were selected by removing the lower-ranking features based on a calculated threshold, which also gave the accuracy of 83%.

RESULTS OF MACHINE LEARNING



Figure 5 and Table 1 presents a visual and tabular form of the results acquired by selecting optimal input features using Kbest, variance threshold, and choose from the model. Multiple machine learning algorithms were applied to these selected features. The results show that the optimal machine learning algorithm is Gradient Boost Classifier since it gave the best results with all three feature selection methods used.

CONCLUSION

In this paper, we collected the data of 206 students and trained the Machine Learning model on it. After studying the data, applying various machine learning techniques, and analyzing the results, we concluded that Gradient Boost Classifier is the optimal model to clean, classify, and analyze data. Our research reported that improved quality of hardware should be installed in laptops and steps should be taken by the relative authorities to ensure that more women are recipients of the student laptop distribution schemes. Initiatives should be taken so that more students from rural backgrounds benefit from such systems, as they are the most in need of mobile classrooms. We also concluded that laptop schemes create jobs for those who receive them, especially females, and increase students' digital learning. However, better results of students were seen where the blended mode of teaching was used. In the future, we intend to gather data from a larger student sample population and add more features to evaluate the success and benefits of Computer Aided Learning in Pakistan.

Table 1. Comparison of Accuracy of Various ML Algorithms with Various Feature Selection Methods

Comparison of accuracy of various ML Algorithms			
Algorithms	K-Best	Variance Threshold	Select From Model
Gaussian Naive Bayes	55	48	48
K Neighbours Classifier	90	90	90
Logistic Regression	90	93	93
Decision Tree Classifier	86	83	83
Random Forest Classifier	90	93	93
Support Vector Classifier	90	90	90
Ada Boost Classifier	86	83	83
Gradient Boosting Classifier	93	93	93

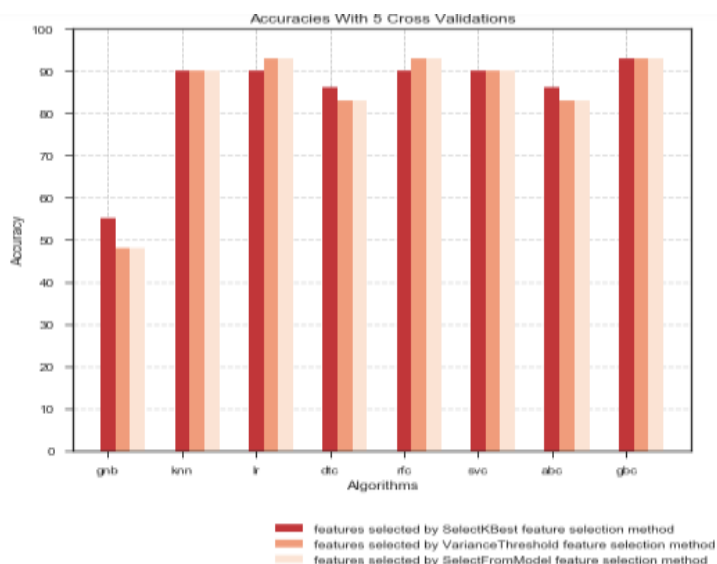


Figure 5. An illustration of accuracy of various ML Algorithms

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AREVIEW : THE COMPARISON BETWEEN ALKALI ACTIVATED SLAG AND METAKAOLIN AND THE EFFECTS OF HIGH TEMPERATURE ON GEOPOLYMER MORTARS

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Abstract

A very long time ago, alkaline metal compounds were excluded from the mineral components in ordinary Portland cement essentially because of their high solubility: a perfectly reasonable conclusion, in scientific-technical terms. Alkali-activated materials are recognized as potential alternatives to [ordinary Portland cement](#) (OPC) in order to limit CO₂ emissions as well as beneficiate several wastes into useful products. Geopolymer mortars produced by activation of alkalis have high flexural and compressive strength. Activator ratio, aggregate properties, water/binder ratio, curing time and curing temperature, binding properties are the factors affecting the mechanical strengths of geopolymers. High temperature is required for rapid reaction in geopolymer concretes produced with binders such as blast furnace slag and metakaolin. Due to its high mechanical properties, corrosion resistance, durability, especially desirable performance under high temperature, wide source of raw materials, and low energy consumption, geopolymers has become an increasingly popular research area in recent years and many researchers have conducted studies on the thermal properties of geopolymers and the mechanical properties at high temperatures. Ground granulated blast furnace slag, commonly known as "slag" is another widely available industrial by-product and a good candidate for use in metakaolin geopolymers to achieve ambient temperature curing. In most of the studies very high amounts of slag are used in metakaolin -slag geopolymers and significant loss in strength of the above geopolymers is observed after exposure to elevated temperatures. Therefore, based on previous research, this paper reviews current knowledge about the comparison between alkali activated slag and metakaolin and the effects of high temperature on geopolymer mortars, including the general proprieties of slag and metakaolin , resistance mechanics, losses mass and micro structures of mortars subjected to high temperatures.

Keys words: alkali activated cements, granulated slag, metakaolin, high temperature, mechanical behavior



DEFENCE AGAINST PHISHING ATTACKS

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Abstract

Phishing is a cybercrime in which criminals pose as a real entity through e-mails or other communication medium. The attacker captures sensitive information of user by sending fraud links. This harms victim due to identity theft and money loss. The aim of Phishing attack is to steal user data, including login credentials and credit card numbers. It occurs when an attacker, posing as a trusted entity, dupes a victim into opening an email, instant message, or text message. The user is then tricked into clicking a fraud (malicious) link, which can lead to the installation of malware or the revealing of personal information. Phishing messages are difficult to distinguish from real messages. But there are several clues like subdomains, misspelled URLs, message invokes fear, sense of urgency, message includes request to verify personal information. There are various phishing techniques to target various users e.g., Spear Phishing, Whaling, Smishing and Vishing, Angler phishing. Their aim is same but the way to steal information is different. This paper explains phishing mechanism, its techniques, and also discusses about various anti phishing activities such as AIWL, SURF, Filtering and Classification, APEE. These anti phishing techniques helps in classifying between fraud and real mails.

Keywords: Phishing, Cybercrime, Anti-phishing

INTRODUCTION

Cybercrime is a crime includes host and a network. The host may be the target or have been used in the commission of crime. Phishing is attack used to steal user data. Data is vulnerable to various attacks while in transit and while stored. Industries rely on computer for functionalities; hence data needs to be protected. For example: a mocking email (Phishing Attacks, imperva) sent from myuniversity.edu claims that the user's password is about to expire. Instructions are given to go to myuniversity.edu to renew their password within 24 hours. Then, a malicious script activates in the background to hijack the user's session cookie and the user was asked to enter both new and existing passwords. The attacker, hijacks the original password to access the secured areas on the university network. Cyber security are the processes/technologies used to protect system, networks and technologies. This security is very important since it protects data (personal data, sensitive data, medical data etc.) from damage.

Anti-Phishing techniques traces the sensitive information filled by the user and alerts the user whenever they share information to an untrusted web site (Patil and Devale 2016). It means cultivating the users to approach only for trusted websites. This approach is unrealistic. Anyhow, the user may get tricked.



Kiren et al. (Tandale et al., 2020) presented a review on different types of phishing attacks and detection techniques and some mitigation techniques. 100% accuracy to detect phishing can be made possible by using machine learning. Alabdan 2020, presented a review of the phishing attack techniques to spread awareness of phishing techniques among the reader and to educate them about different types of attacks. Author encourage the use of anti-phishing methods as well.

Rastenis et al. 2020, proposed a phishing attack taxonomy based on e-mail which is covering all the drawbacks of already existing phishing taxonomies. It is concluded that the proposed taxonomy has broader classification and depending on classes which are two times greater in numbers as compared to the classes of the existing taxonomies.

PHISHING TECHNIQUES

There are various phishing techniques (Irwin L. 2020) to target various users. Their aim is same but the way to steal information is different.

- **Email phishing scam-** An attacker sends thousands of fraudulent messages which can gain huge information and money, even if only a small percentage of recipients fall for the scam. Attackers design phishing messages to make them pose as actual emails from a spoofed organization. They use same phrasing, typefaces, logos, and signatures which makes the message appear legitimate. In addition, users are forced to dive into action by creating a sense of urgency. Attacker's design misspelled domain name or extra sub-domains, but this becomes difficult for a user to find actual mail and malicious link.
- **Spear Phishing-** This type of phishing uses 'spray and pray' approach and is more targeted. Mass emails are sent to as many as people. Hacker knows the particular organization they are after and do research on the target.
- **Whaling-** Whaling attacks are more targeted. Senior Executives are victims in this case. Scams involving bogus tax returns are common variety of whaling as they contain information like addresses, Social Security numbers and bank account information.
- **Smishing and Vishing-** Smishing involves text messages and Vishing involves telephonic conversation. In vishing, Criminals acts as a fraud investigator (from bank /card) and they tell the user that their account has been breached and are asked to provide payment card details or to transfer their money into secure account (i.e., hacker's account).
- **Angler phishing-** Criminals use the data posted on social media platform. Attackers know Organizations are using social media platform to interact with customers. But cyber-criminals exploited this by spoofing corporate accounts. They use accounts like @dominoscustomercare. Attackers steal personal information by asking customers to message them for account details in legitimate site.

PHISHING MECHANISM

Fig 1 shows the phishing mechanism (Shankar et al. 2019):

- 1) Attacker composes an e-mail using phishing website.
- 2) Attacker sends fraud mail to user (victim).
- 3) User is directed to malicious site after opening email and enters sensitive/personal information in malicious site.
- 4) Phishing websites provides information to hacker.
- 5) Now, Hacker will be able to access information of victim in target website using data gathered from phishing website.



Figure 1. Phishing Mechanism (Ali, Waleed. (2017))

Phishing kit (Huerta A. 2021) is a collection of software utilities such as html, images and code as shown in Fig 2. Hackers use phishing kits to build websites that trick people into thinking they are on a legitimate site. When people visit a phishing website, the homepage, login field, or form on the site looks authentic. Phishing kits usually only last about 36 hours before they are found and removed by security systems.

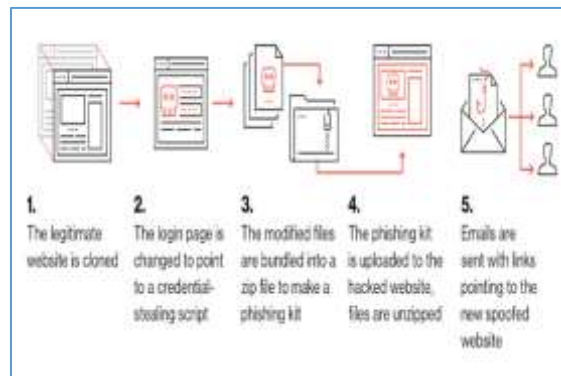


Figure 2. Phishing Kit (Wright J. 2017)

Damage Caused by Phishing Attack

- User’s machine can be controlled by hackers
- Leaked User’s credentials
- Access to technical security controls
- Website defacing

CASE STUDIES

1. *Twitter Phishing Case* (Brad 2021)



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In July 2020, Twitter employees became victim of spear phishing attack enabling the malicious actors to access the administrator's tools. Malicious actors posed as Twitter IT administrators and emailed employees to share their credentials. Hackers reset the twitter accounts of celebrities like Barack Obama, Uber, Elon Musk etc. Many users transferred more than \$180,000 in Bitcoins to scam accounts. Twitter took immediate action.

2. Target: Indian Officials (India News Feb 2021)

Attackers targeted Senior officials from external affairs and ministry of defense by using compromised govt. domain email accounts. The officials received mail from @gov.in, @nic.in and documents, if clicked, would install malware on the system which will give back-door access to the hackers. National Informatics Centre (NIC) is not clear whether any of system were compromised.

3. UC San Diego Health (Bowcut 2021)

In July 2021, UC San Diego Health disclosed data breach since, attackers hijacked employee email accounts in a spear phishing attack. Unauthorized access occurred between December 2020 and April 2021. Hackers accessed date of birth, govt. ID's, usernames, password, email address, physical address and Full names.

A number of organizations has been hit by phishing attacks time to time, as per a report banking sector and Internet portals suffered a lot as shown in Fig 3.

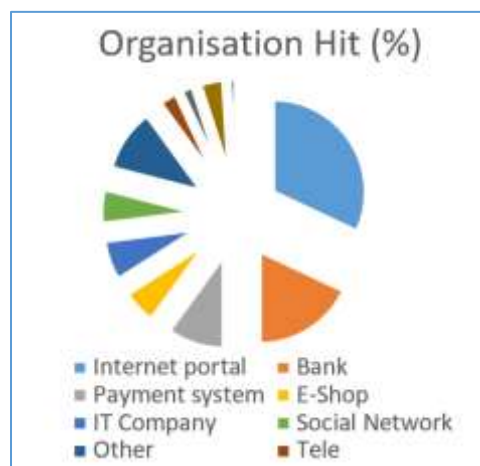


Figure 3: Organizations Hit by Phishing In 2018

ANTI PHISHING TECHNIQUES

To counter the Phishing attacks, following measures has been proposed.

- **AIWL** (Cao et al. 2008): Automated Individual White-List (AIWL), maintain a white list consists Login User Interfaces (LUI) of the users. When a user submits his/her login credentials to a LUI that is missing from the white-list, AIWL will warn the user of the possible trap.
- **SURF** (Rao and Ali 2015): Speed up Robust Features (SURF) detector is used for extracting discriminative key point features from suspicious and genuine websites. The features are then compared for calculating a similarity degree. If the similarity degree was high, it was considered malicious.



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- **Filtering and Classification** (Chen et al. 2017): In the pre-filtering, URL was compared against a black list using the domain part of the URL. If the URL was present in black list, then it was classified as malicious. In classification, consistency- Randomness and the Position of the domain token of the URL are checked. URL was classified as malicious based on the outcome of classification.

- **Spam Filter** (Xavier et al. 2018): Spam filter performs its filtering function at mail-box and verifies if the mail is spam or not. If the URL looks like suspicious, the filter marks the mail as 'junk'. The URL in the mail is deactivated and the mail is then moved to junk. If the mail is genuine, the mail is moved to inbox for the user to open it safely.

A general user must follow following rules to be saved from phishing attacks.

- Secured Login: use of an HTTPS site rather than HTTP.
- Implementing organization policies and procedures: Firm should update their policies.
- Reporting: Users must stay alert to maintain security.
- Install firewall

CONCLUSION

Phishing is the dangerous attack (cyberattack) occurs in organization or in personal lives. 'INFORMATION IS WEALTH' and hackers gather personal information to conduct scams. It is a kind of trick played by attackers against users to steal information. This type of attack harms people mainly in emotional manner. Each individual must be careful from these tricks. Now, there are various antivirus software and techniques available to avoid phishing, but one should read/identify mail before opening it and trusting it.

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Numerical prediction for turbulent flow and heat transfer in elliptical twisted tube

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Abstract

Heat transfer and Turbulent flow characteristics of fluid flow inside in the double elliptical twisted tube heat exchanger with different volume concentrations of nano fluid were investigated numerically. The investigation has been conducted for Reynolds number range from 5000 to 30000 while the twist ratio ($Tr=5$). Four values of nano fluid volume concentration is examined as ($\phi=0.05, 1, 2.5, 4$) %. The research is aim to promote the heat transfer enhancement by means of the combined mechanism of the double elliptical twisted tube heat exchanger and nano fluid. The obtained results show that the the twisted elliptical tube improvement the heat transfer performance compared with plain tube. This increase is improved as the volume concentration of nano fluid increases. The twisted elliptical tube can reduce the dissipation based thermal resistance that provides the great benefit in heat transfer. In addition, the numerical consequence revealed that, the effectiveness of the heat exchanger and the overall performance factor increase as twist ratio decreases. The twist pitch has an influence on the overall thermal hydraulic performances. The twisted elliptical tube with $\phi=4\%$ and $Tr=5$ has the best overall thermal-hydraulic performance. The twist elliptical tube bring on the pressure drop because of the twisted wall the pressure drop both increase with increasing Reynolds number.

Keywords: Twisted elliptical tube, Nano fluid, Turbulent flow, Double tube heat exchanger

Nomenclature

LMTD	Logarithmic mean temperature difference
ϵ	Effectiveness
C_p	Specific heat (J/kg.K)
m	mass (kg)
ΔP	Pressure drop (pa)
Re	Reynolds number
Tr	Twisted ratio
P	Twisted pitch (mm)
K	thermal conductivity, w/m.k
Greek symbols	
μ	Dynamic viscosity, kg. m ⁻¹ .s ⁻¹
ρ	Density (kg/m ³)
η	Overall Performance
ϕ	concentration of nanofluid, %



Introduction

Heat exchangers are widely used in various commercial and engineering industries. Therefore, the design of heat exchangers is a complex matter. It needs careful analysis of the hydraulic, thermal performance regardless of the equipment's long-term performance problems and financial costs. It is necessary to use optimization methods that increase thermal performance and efficiency, offset by a rise in pressure drop, resulting in an increase in pumping power and, consequently, an increase in losses. Therefore, it is preferable to use double-tube heat exchangers because they are used in high-pressure applications and are essential when a wide range of temperatures is required. Tan et al. [1] experimentally studied the overall performance of heat transfer and pressure drop on both sides of a twisted oval tube heat exchanger. In addition, a rod baffle heat exchanger is designed and compared with the twisted oval tube heat exchanger by analyzing the overall performance. The study showed that the heat transfer in a twisted oval tube heat exchanger is higher than that of a rod baffle heat exchanger, in contrast to the pressure drop is higher in a rod baffle heat exchanger. Also, the overall performance of the twisted oval tube is higher and more effective in the annular and lateral flow. Li et al. [2] Heat transfer properties and flow rate were experimentally in a twisted oval tube bundle in tangential flow. As the general performance of the twisted oval tube is higher than that of the straight round tube. Show that there is a good correlation between the Nusselt number and the Euler number. Vaezi et al. [3] numerically studied the effect of aspect ratio on heat transfer rate as well as laminar flow and compressive flow of double oval tubes under different conditions. The heat transfer in double oval tubes is significantly improved if compared to the circular tubes, but this does not prevent the use of circular tubes because the effect of pressure drop may overwhelm the improvement of heat transfer. Considering that the geometry of the tube affects the thermal optimization ratio and the flow characteristics, a well-designed optimization technique ensures that the heat transfer overcomes the pressure loss. Whereas the improvement ratio increases as the aspect ratio increases. Kim et al. [4] numerically investigated heat transfer and flow, the aerothermal performance, and the twisted ratio in the twisted elliptic tube. Simulations were performed for Reynolds numbers (100-10000). Feng et al. [5] a numerical simulation of flowing air was carried out during nested tubes consisting of a twisted elliptical tube with a firm temperature at the wall. Also studied the thermal-hydraulic characteristics for Airways within twisted elliptical tube using Physical Parameters and Reynolds Number. Where they found that the flow of bawburs towards the tube wall due to deformation spiral deformation at Twisted Elliptical Tube. In addition to this Nusselt Number and Eller Number Increase in The Aspect Ratio. The Nusselt Number Continues to Increase in Reynolds Number, while the two Decrease with the Increase in the Twist Pitch. In Addition, Heat Transfer Increases Due To Changing of Air Flow Near The Wall of Tube, Which Leads To The Formation of Annular and Spiral Flow. After years of a challenge to promote heat transfer by Fluid Mechanics. At present, one of the ways to overcome fluids with low thermal conductivity, such as water, oil, and others, are replaced by advanced liquids with high thermal conductivity, nanotechnology [6-8]. Sasmal et al. [9] discussed numerically the effect of the axis ratio of the elliptical tube and the nanofluid on the flow field, drag coefficient, and Nusselt number. In addition, analysis of the crowding and heat transfer phenomenon in elliptical tubes and exceptional cases of oval tubes and flat plates. It was found that the drag coefficient in the oval tube is higher in nanofluids than in water. Dawood et al. [10] investigated numerically the thermal properties of mixed convection heat transfer when a nanofluid flowed in the annular stream of an elliptical tube in a laminar manner. Various types of nanofluids of different diameters were used. The results showed that the Nusselt number increased as the volume percentage of nano-particles and the number of Reynolds rose. Alempour et al. [11] showed numerically the effect of the twist pitch, cross-section, aspect ratio, and flow rate on the heat transfer properties of elliptical tubes.

In addition, the effect of the liquid type (nanofluids) flowing on the heat transfer process was studied. The heat transfer of the twisted tube compared to that of the smooth tube was observed to be 20% higher at twist pitches of 0.2. The effect of nanofluid in increasing heat transfer. Shahsavari



et al. [12] Numerical verification of the effects of the Reynolds number and the volume concentration of nano-particles and twist pitch in increasing the performance of a double-tube heat exchanger using nano-particles and twisted tubes. Laminar flow of the CuO nanofluid with the base fluid carboxymethyl cellulose with different mixing ratios. At the same time, the outcomes found that the efficiency of the heat exchanger and heat transfer increases when the Reynolds number increases. Also, the nanofluid works better than the base fluid at a Reynolds number of 500 and a concentration of nano-particles $\leq 1.5\%$. In addition, the overall performance of the double twisted tube heat exchanger is higher than that of the twin-tube heat exchanger, while the highest overall performance value is 2.671 at Reynolds number 2000, the concentration of nano-particles 3% and twist pitch = 4 mm. Eltaweel et al. [13] Experimentally examined thermal performance improvement by utilizing two types of tubes in the warmth exchanger: a standard circular tube and a twisted tube for flat plate collector; The twisted tube exchanger aims to improve heat transfer performance and lower the shell pressure drop. The results revealed that the efficiency of twisted tubes increased by 12.8 percent and 12.5 percent in comparison with the circular tubes in fluid flow (water and MWCNT/water nanofluid). In comparison with conventional circulated tubes with distilled water, also an improvement of 34 percent in MWCNT twisted tubes.

In this study, the main purpose is to enhance the convective heat transfer efficiency of the double elliptical twisted tube heat exchanger. Twisted elliptical tube are investigated numerically with twisted ratio and deferent volume concentration of nano fluid and compared with plain tube. The cold outlet temperature, the effectiveness of the heat exchanger, pressure drop and the overall thermal performance are also used to describe the performance of the heat exchanger. Also, addition of nanoparticles to the fluid is studied in order to investigate the effect of nanoparticles on the performance of the heat exchanger.

Model description

The physical model of the test section mainly consists of two tubes used to form an annular space ranging from an twisted elliptical tube placed at the center of a circular tube are shown in Fig. 1. The outer tube was 50 mm outer diameter, 4mm thickness, and 1000 mm length. The inner twisted elliptic tube with a major (a) and minor (b) radii of 35.4 mm and 17.6mm respectively, 4mm thickness, and a length of 1000mm. Pure water, Al₂O₃ nanoparticles are selected as the working fluid and the thermos physical properties assumed to be temperature independent.

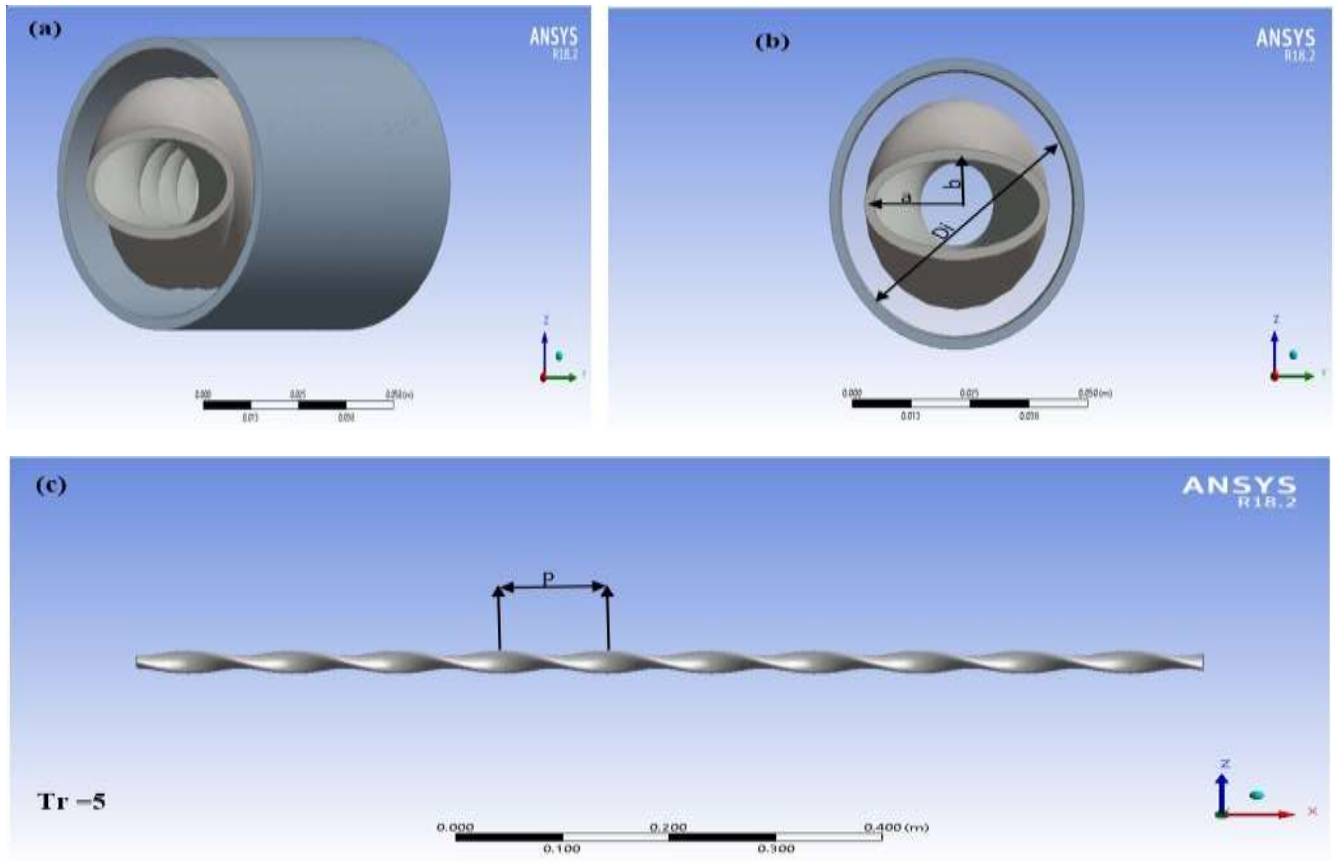


Fig. 1. (a) Double twisted tube, (b) major and minor axis of elliptical twisted tube and diameter of circular tube,

(c) The physical model of the elliptical twisted tube.

Governing equations and numerical scheme

The 3-D governing equations for solving the turbulent fluid and heat transfer is the continuity, momentum, and energy equations. Whose are realized in Cartesian coordinate's technique. To modeled the turbulent flow is used $k - \omega$ turbulent model. The flow for the mixture model are presented with the following basic assumptions:

- 1- Steady-state flow.
- 2- Turbulent flow.
- 3- Three-dimensional flow.
- 4- Incompressible flow.
- 5- Body force is ignored.

$$\frac{\partial u_i}{\partial x_i} = 0 \quad (1)$$

Momentum equations:

$$\frac{\partial u_i u_j}{\partial x_i} = -\frac{\partial P}{\rho \partial x_i} + \frac{\partial}{\partial x_j} \left((\mu + \mu_t) \left(\frac{\partial u_i}{\partial x_j} + \frac{\partial u_j}{\partial x_i} \right) \right) \quad (2)$$



Energy equations:

$$\frac{\partial u_i T}{\partial x_i} = \rho \frac{\partial}{\partial x_i} \left(\left(\frac{\mu}{\rho r} + \frac{\mu_t}{\rho r_t} \right) \frac{\partial T}{\partial x_i} \right) \quad (3)$$

Nano fluid properties relations

The nanoparticle is (Al₂O₃) particles, which is added at four different volume fractions of 0.005, 0.01, 0.025, and 0.04 to the base fluid (water). In order that estimate the properties of the nanofluid in every volume fraction, the subsequent relations are used and the consequential thermophysical properties are provided in Tables 1. The relation for calculating the dynamic viscosity is [12]:

$$\frac{k_{nf}}{k_f} = \frac{k_s + 2k_f + 2\phi(k_f - k_s)}{k_s + 2k_f - \phi(k_f - k_s)} \quad (7)$$

$$\rho_{nf} = (1 - \phi)\rho_{nf} + \phi\rho_s \quad (8)$$

$$cp_{nf} = \frac{(1 - \phi)\rho_f cp_f + \phi\rho_s cp_s}{\rho_{nf}} \quad (9)$$

$$\mu_{nf} = \frac{\mu_f}{(1 - \phi)^{2.5}} \quad (10)$$

Table 1. Water-Al₂O₃ nano-fluid thermo-physical properties.

	ρ (kg/m ³)	cp (J/kgK)	k (W/mK)	μ (kg/ms)
	3970	765	40	————
Nanoparticle Characteristics				
φ = 0%	998.2	4182	0.613	0.001003
φ = 0.05%	1013.059	4115.046891	0.621	0.001016
φ = 0.1%	1027.918	4050.029454	0.631	0.001029
φ = 0.25%	1072.495	3865.786638	0.657	0.001069
φ = 0.4%	1117.072	3696.248321	0.686	0.001111

Constant temperature (T_{ci}=298, T_{hi}=343) and Reynolds number (5000 -30000) are used at the two tube inlet, whereas the two-fluid outlets are both set to zero relative gauge pressure. The twisted tube was twisting at Tr=5, with an adiabatic surrounded wall of the outer tube.

The hydrothermal parameters investigated together with the logarithmic mean temperature difference, the heat exchanger effectiveness, and the overall performance which are calculated, respectively, as follows:

$$LMTD = \frac{\Delta T_1 - \Delta T_2}{\ln\left(\frac{\Delta T_1}{\Delta T_2}\right)} \quad (11)$$

$$\epsilon = \frac{q_{act}}{q_{max}} \quad (12)$$

$$\eta = \frac{\epsilon}{\Delta PT} \quad (13)$$

The system of governing equations of the fluid flow solved iteratively using Ansys Fluent 18.2, 3D double precision solver. The convergence criterion for continuity, momentum and energy are 10⁻⁴. The thermal performance of a double pipe twisted tube heat exchanger was examined to predict and explain the influence of twisted elliptical configuration on flow stability during steady-state turbulent flow.

Result and Discussion

The imitations are performed of turbulent convection heat transfer and fluid flow of nanofluids in a three-dimensional through a twisted elliptic annulus. The type of nanoparticles is studied which is,

Al₂O₃ with pure water as a base fluid. Different values of Reynolds number were used in the range of $5000 \leq Re \leq 30000$ with volume fraction of four nanoparticles in the range of $0.5\% \leq \phi \leq 4\%$. Nanofluids are proven to enhance the heat transfer characteristics. The effect of changing the twist pitch along the flow path on the heat transfer and flow field is studied.

Figure 2 shows the cold outlet temperature of nanofluid with Re for double twisted tube heat exchanger. This figure indicates that the T_{co} is decreased as the Re increases for all volume fraction. This is due to the increasing in the mass flow of cold nano fluid which reduces the time of nano fluid to exchange heat. Also, this figure shows that pure water has the lower T_{co} and volume fraction =0.04 has the higher T_{co}. Due to increasing the secondary flow leads to an increase in the contact area, which increases heat transfer.

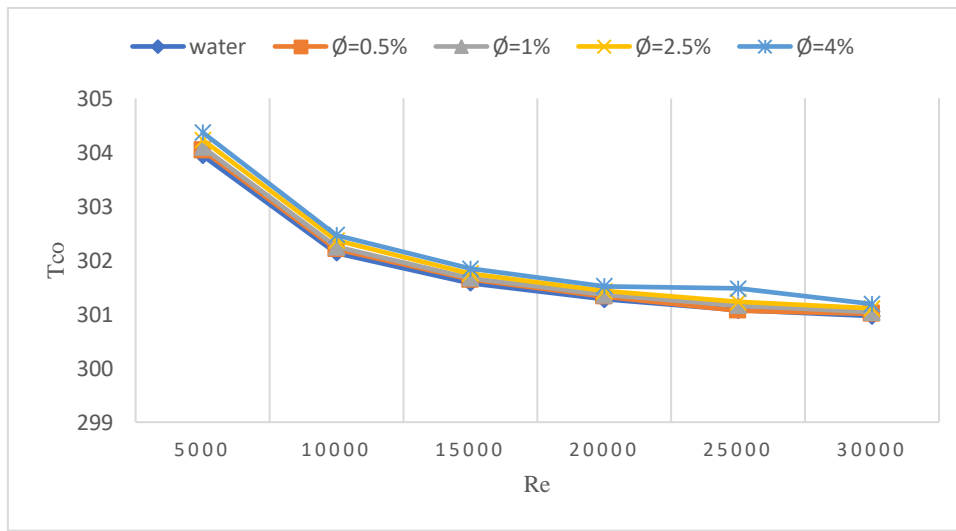


Fig.2. Variation of cold outlet temperature with Re.

Figure (3) shows the variation of heat exchanger effectiveness versus Re for two types of nanofluid and pure water. This figure shows that the effectiveness is increasing when the Re increased this is fundamentally due to the combined effect of common swirling flow by the twisted elliptical tube and turbulence generated by the alternative cuts along the edge of the twisted tube. Subsequently this leads to the destruction of the thermal boundary layer and creating better flow mixing between the fluids at the core and heating wall surface. It also increases at volume concentration =0.04 increased is because of increasing the heat dissipated in case of nanofluid due to the increasing in the thermal conductivity of nano fluid with the rising of the volume concentration value as a results of dispersing more amount of nanoparticles and the increase in fluid viscosity, which cause to be lost the fluid movement, which promotes better heat transfer. The effectiveness is higher for the double twisted elliptical tube than for the plain tube because of strong swirl flow in the presence of the twist elliptical tube. It is found that the heat transfer rate with the twist ratio (Tr=5) is higher than those with other ratios this means that the turbulent intensity obtained from the lower twist ratio is higher than those from higher ratios. Moreover, the use of minimal twist ratio lead to higher tangential contact between the swirling flow and the tube surface

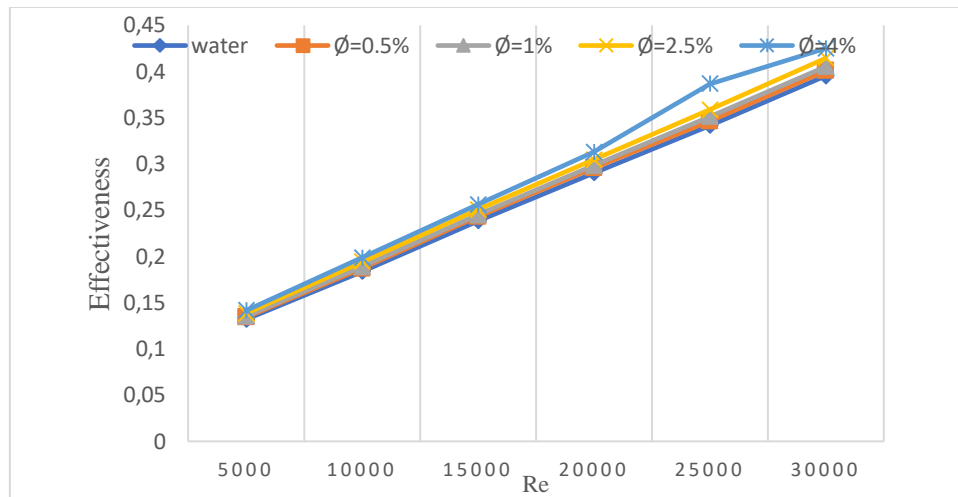


Fig.3. The variation of Effectiveness against Re.

The dramatic variation in velocity in the cross sections causes the enhancement of the pressure drop. The pressure drop in twisted tubes with twist pitch and Reynolds number is depicted in Fig. 4. The pressure drop increases with increase in Reynolds number and decrease in the twist pitch. That leads to strong resistance in fluid flow. Investigating the effect of changing the number of the turns in the flow path showed that, by a sudden reduction of the twist pitch, the pressure drop increased significantly. Because by a sudden reduction of the twist pitch length, the flow experienced higher distortions along the path and the intensities of the recirculation and secondary flows are augmented, leading to more the pressure drop enhancement. According to the obtained results, by changing the cross section shape from circular to elliptical and twisting the tube wall, the heat transfer coefficient and pressure drop increased. Whereas, the presence of nanoparticles increases the pressure drop due to the increase in the viscosity of the liquid, and thus the intensity of the turbulence increases, reaching the highest possible at volume fraction =0.04. That boosting the pressure drop entails the increase in pumping power and, therefore, increases the cost required to circulate the fluid through the heat transfer system, which is undesirable.

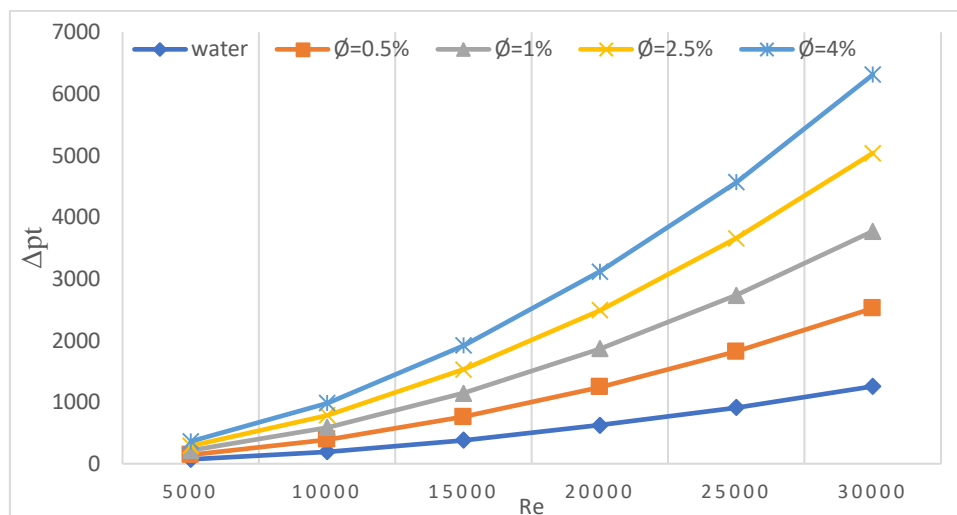


Fig.4. Variation of total pressure drop across with Re.

Due to the flow distortion in passing through a twisted path, the fluid flow experiences a considerable velocity gradient, and the secondary flow generated along the path, and the recirculation in the flow cross sections causes the fluid mixing to improve and the turbulence intensity to increase. The enhancement in mixing and turbulence intensity causes the heat transfer to improve a fact that could also be observed in Fig. 4. Illustrates the overall thermal performance of twisted elliptical tube with Re for $Tr=5$ and different volume fraction. The increase in pressure drop results in the decrease in the overall thermal performance. The results show that when the pressure drop is considered, the twisted elliptical tube with volume fraction =0.04 has the best overall thermal-hydraulic performance for Reynolds numbers ranging from 5000 to 30000. As shown, the overall thermal performance first enhances and then decrease with Re. The value of the overall thermal performance is higher for Al_2O_3 nanofluid, which implies that using hybrid nanofluid and twisted tube are considered a better choice in practical application. This is due to the enhanced effective thermal conductivity of the nanofluid which is accompanied by an increase in the thermal diffusivity. Heat transfer enhancement is increased when volume fraction is increased; it can be observed that 4% volume fraction has the highest heat transfer enhancement, while 0.5% concentration has the lowest enhancement. This is because the physical properties of nanofluid vary with the volume fraction. Thus, transfers more energy in the fluid, because of the momentum energy is much higher than the thermal energy in higher volume fraction. In general, the increase of nanoparticles volume fraction results in an increase of fluid viscosity which diminishes the fluid movement. The overall thermal performance increases significantly, and by suddenly decreasing the pitch along the flow and raising the number of the turns.

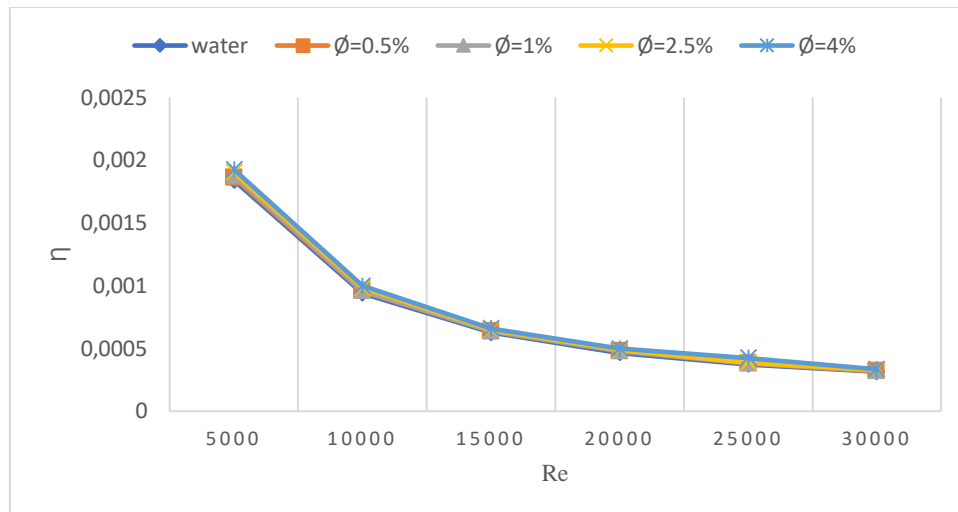


Fig.5. Variation of the overall thermal performance versus Re.

Conclusion

- 1- Comparing the performance of the nano fluid and the base fluid the nano fluid has a better hydrothermal performance than the base fluid. The highest overall thermal performance was 5.88%, when volume fraction = 4%.
- 2- The double elliptical twisted tube heat exchanger always performs better than the plain tube, and increasing both the Reynolds number and volume fraction leads to a greater difference between the overall hydrothermal performance.
- 3- Investigating the effect of twisting the wall showed that, at the flow Reynolds number of 30000, in conditions that the tube wall is $Tr=5$ and nanofluid volume concentration =4%, the effectiveness of heat exchanger is equal to 0.42, which showed that twisting of tube wall with elliptical cross section and nano fluid has caused the effectiveness of heat exchanger to increase by 80.2%.
- 4- The up growth of twist in the twisted oval tube reason secondary flow. This secondary flow change the velocity and temperature distributions in the twisted elliptic tube. Causes pressure drop higher than the plain tube.

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FEEDBACK STABILIZATION AND NUMERICAL SIMULATION

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Abstract

Bilinear systems represent a subclass of nonlinear systems that are jointly linear in both state and input variables. This class of equations are initiated in control theory due to their simple forms and also to their applicability in many and different real-life problems such as biology, economics, engineering, chemistry.

Among the themes of control theory, there are several problems such as controllability, observability, state estimation, and stabilization. The issue of stabilization of bilinear systems has been studied by many researchers in the world, among these researchers we refer to (Ammari & Ouzahra (2020); Ayadi & Ouzahra (2019); Ball & Slemrod (1979); Benzaza & Ouzahra (2019); El Houch, Tsouli, Benslimane & Attioui (2019); Hadd & Zhong).

First, in this paper, we prove the existence and uniqueness of the global mild solution of the system bilinear with discrete delay. After that, we investigate the stabilization problem and we show that the system is stabilizable for any $\mathbf{r} > \mathbf{0}$ and for any arbitrary dimension of $\mathbf{X}^{\{\mathbf{u}\}}$ and $\mathbf{X}^{\{\mathbf{s}\}}$. In fact, we prove that the feedback control $\mathbf{v}(\mathbf{t})$ stabilizes weakly and strongly the systems. Furthermore, in the strong stabilization case, we establish an explicit polynomial decay estimate of the stabilized state. We should mention here that the obtained stabilization results are given in terms of the observability conditions. To illustrate our theoretical results, we give at the end some applications and numerical simulation.

Key word: Bilinear systems, delay, feedback control, decomposition of the phase space



BTEX EMISSIONS FROM THE EXHAUST OF DIFFERENT TYPES OF VEHICLES IN DELHI

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Abstract

Volatile organic compounds (VOCs) play a crucial role in metropolitan areas and influencing local atmospheric chemistry. BTEX (Benzene, Toluene, Ethylbenzene, Xylene) in particular, are the most abundant VOCs released globally. They are considered as highly reactive species and having a high ozone formation potential (OFP) that have a substantial impact on the tropospheric ozone chemistry. The major sources of these BTEX compounds are vehicular exhaust in cities. To investigate the quantitative analysis of various BTEX compounds present in the exhaust released from the tailpipe emission of the different types of vehicles. 2-wheelers (mainly bikes, scooters), 3-wheelers (autos and lower transport vehicles), cars, Delhi Transport Corporation (DTC) buses, and tempos were selected for the study. In each vehicle category, a minimum of 30 automobiles were chosen. These vehicles were further classified based on their fuel type, which included petrol, diesel, and compressed natural gas (CNG). The vehicular exhaust was directly collected from the tailpipe of the vehicle in idling mode after 5 to 10 minutes of engine start in 1-liter Tedlar bags using squeezer pump. Gas Chromatograph-Flame Ionization Detector (GC-FID) system was used for the analysis. It was observed that the concentration of m/p-Xylene is higher in all types of vehicles followed by Toluene, o-Xylene, Ethylbenzene and Benzene. The result of the study suggested that the petrol-driven vehicles emit higher amount of BTEX compounds followed by diesel & CNG vehicles.

Keywords: Volatile Organic Compounds (VOCs), BTEX, Vehicular Exhaust, Delhi



REMOVAL OF CHLORIDES FROM SYNTHETIC WATER BY USING VARIOUS BIOSORBENTS

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Abstract

The chlorides are regulated in drinking water quality primarily because excess amounts can cause disease. Chlorides present in water can be irritating to the eyes, respiratory tract and skin due to its alkaline nature. The biological effects of hardness and chlorides in humans after acute exposures are dose-related depend on their concentration; the amount is taken by the body and duration of exposure.

1. Objectives

Chlorides present in water/wastewater are a serious concern in the era of water conservation and reuse. There is a need for different methods which are low cost and efficient. It is also to be considered in order to maintain the permissible limits. Chloride contaminated water is prepared by using chloride and the tap water is taken for the hardness. Volumetric titration method is used to know the concentration levels of the chlorides.

2. Methods

Biosorption process is a simple, economical and eco-friendly in order to remove the chlorides and hardness from the contaminated water. Rice husk, rape straw, parthenium, sawdust and egg shell are the five biosorbent materials taken for the process of removal of chlorides from synthetic water. In order to select the most efficient bio-adsorbent from rice husk, rape straw, parthenium, sawdust and egg shell they are tested for the removal of chlorides from the water and selected the parthenium biosorbent material which shows the best results in both removal of chloride from water.

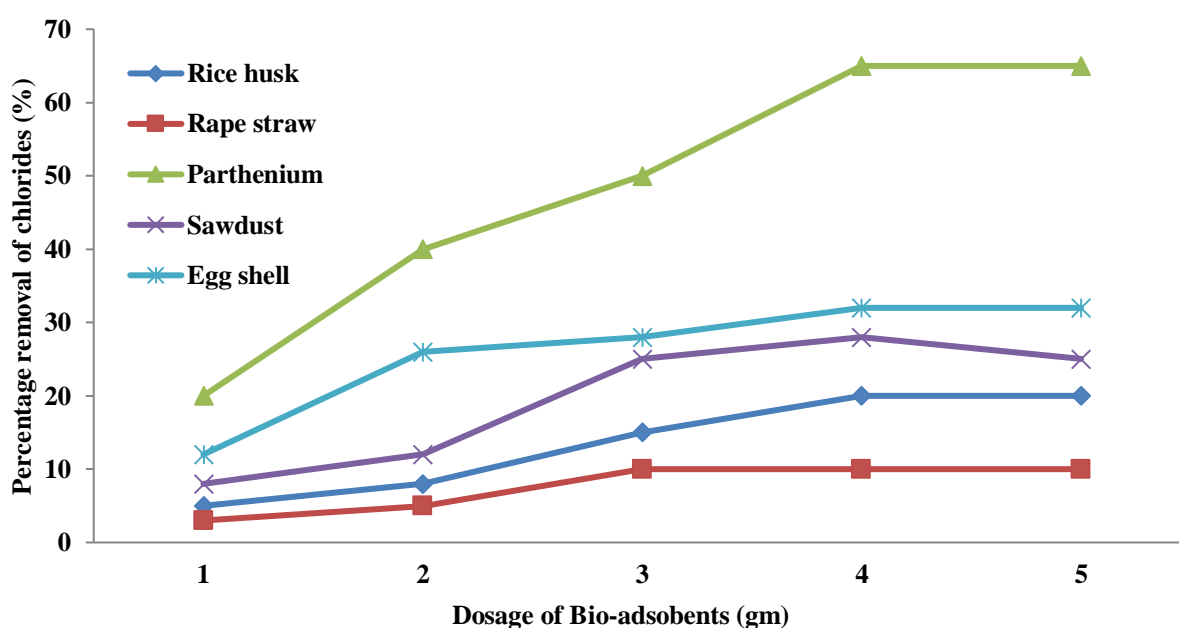


Fig. 1: Comparison of different bio-adsorbents in removal of chlorides



The percentage removal of chloride varies from one biosorbent to another. Parthenium has high removal percentage and rape straw has low removal percentage when compared to other bio-adsorbent materials. The graph shows the various percentage removal of each biosorbent at different dosages. From the Table 1, it is observed that parthenium and egg shell has shown maximum effect on removal of chlorides in contaminated water. The order of percentage removal of chlorides is found as rape straw < rice husk < sawdust < egg shell < parthenium.

Table 1: Comparison of different bio-adsorbent for chloride removal

Dosage of bio adsorbent (gm)	Rice husk (%)	Rape straw (%)	Parthenium (%)	Sawdust (%)	Egg shell (%)
1	5	3	20	8	12
2	8	5	40	12	26
3	15	10	50	25	28
4	20	10	65	28	32
5	20	10	65	25	32

3. Result

Further the parthenium biosorbent material is tested for combined removal of chlorides from contaminated water and then the parthenium biosorbent material is tested for various optimum conditions like temperature, pH, contact time and agitation speed for the removal of chlorides from the contaminated water. By using plant biomass of Parthenium, chloride removal of 65% can be achieved. The required temperature for this process is 25-30°C, pH is 7-7.5, contact time is 60min and agitation speed is 80rpm.

4. Conclusions

The presence of pollutants in aqueous solution particularly from hazardous heavy metals and metalloids is an important environmental and social problem. The chlorides are regulated in drinking water quality primarily because excess amounts can cause disease. Every biosorbent had different physical, chemical and biological properties for heavy metals removal by biosorption from the water. The biosorption process can be made economical by regenerating and reusing of biosorbent after removing the heavy metals. Various bioreactors can be used in biosorption for the removal of metal ions from large volume of water.

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**GEO-INFORMATICS BASED LAND USE LAND COVER CHANGE ANALYSIS FOR
SUSTAINABLE AGRICULTURAL DEVELOPMENT IN PART OF BIRSINGHPUR
TEHSIL M. P. INDIA**

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Abstract

Land use and Land cover changes have a strong effect on the environment and its surroundings. Land Use Land Cover (LULC) change analysis assists decision makers to ensure sustainable development and to understand the dynamics of our changing environment. This research study provides a comparative analysis of land use and land cover (LULC) changes and to investigate the major factors that have caused these changes. Steep topography, shallow soils and monsoonal climatic conditions. A classification system composed of five classes – habitation, water body, Agriculture, waste land and forest. Digital change detection techniques by using multi-temporal satellite imagery helps in understanding landscape dynamics. In the resent study we have to use IRS P6 LISS IV satellite imageries have been downloaded from USGS website (://glovis.usgs.gov) and WV02 (MAP_IT) Satellite imageries over the 5 years of two different time periods (2011-2017). The present study illustrates the spatiotemporal dynamics of land use/cover of part of Birsinghpur tehsil, district Satna, MP India. Normalized Difference Vegetation Index (NDVI) was used as an important indicator to assess the change scenario.

Present study of part of Birsinghpur tehsil land use land cover from 2011-12 to 2016-17 shows rapid change in the LULC as there is high growth in the Waste land and minor growth in the built up area only within five years. Waste land have occupied the Agriculture lands and forest are while forest has reduced marginally and water body is showing almost stagnant condition over time.

If this trend of growth continues then most of the Agriculture areas will be occupied by Waste land and in near future which may create a threat to environment. Our results suggest a better and safe planning approach in the study area, which will also be useful to urban planners for urban development and it's also helpful to formers for a safe and sustainable manner.

Keywords: Remote Sensing, GIS, Land Use and Land Cover Change, Spatiotemporal Pattern, Thematic Maps, Birsinghpur tehsil boundary



LOCALIZING THE AREAS OF VECTOR-BORNE DISEASE RISK FROM THE ABUNDANCE OF CULEX PIPIENS SL.

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Abstract

This work characterizes the environment of *Culex pipiens* sl. in Portugal, using a 7-year data set collected all over the territory from May to October each year. *Culex pipiens* sl. are the most abundant mosquito complex in Portugal mainland and of medical importance, as they act as vectors for more than 20 species of virus.

The abundance data of mosquitoes' females is used with environmental factors in a geographic information system (GIS) to characterize its habitat, using land use/land cover data, distance to cartographed water bodies, altitude, and latitude. The distribution of mosquitoes by each factor shows mosquito preferences and identifies thresholds between areas of higher/lower abundance for i) altitude in intervals of 100 m, ii) degree of latitude and iii) distance to water in intervals of 1000 m; in the case of land use/land cover, the subset of the most populated classes is identified and aggregated. These thresholds allow the segmentation of the corresponding maps, and the area in common for all the environmental factors considered identifies the area where the risk of disease transmission is significant.

To categorize the risk in this broad area and focus mitigation countermeasures, we use the quantity of captures above average from all the data set to identify three categories of increased risk, which allow for a more targeted use of countermeasures and a detailed mitigation planning. This methodology can be used for any other vectors of medical importance, whenever abundance data is available, contributing to reduce costs and human labor and saving the environment from extensive application of toxic products.

Keywords: *Culex pipiens* sl., transmission risk, GIS, vector-borne diseases

INTRODUCTION

This case study characterizes the environment of *Culex pipiens* sl. in Portugal mainland based in its abundance, using a data set collected during seven years (2006-2012) from May to October all over the territory. The data set consists of 2,181 bulletins, containing records of 37,094 female mosquitoes and it's linked to environmental factors in a geographic information system (GIS). Several works in this line can be found (Kalluri, 2007), (Beck, 2000) and the basics of the methodologies, although rather diverse, were also inventoried (Dale, 1998).

The environmental factors used here to characterize the vector habitat are land use/land cover,

distance to cartographed water bodies, altitude, and latitude. Focus is on mosquito females, which gonotrophic cycle mate-bloodmeal-oviposition is responsible for the virus transmission; its abundance is the key for the planning of prophylactic countermeasures in delimited areas of disease transmission risk and to focus mitigation measures to avoid outbreaks of vector-borne diseases. Both total and females' mosquito figures were detailed in the data set. The same methodology can be applied to other vectors, whenever national surveillance abundance data is available; the cartography is worldwide available (Hay, 2006) and the computational requirements are the usual find in a current laptop.

MATERIAL

The data set is issued from a long-term vector surveillance program – REVIVE – a net of vector surveillance implemented by the Health Ministry, with the local labor of each of the five regional administrations of health (ARS). No sampling plan has been previously elaborated, so time and location of the captures was scheduled by the local agents doing the field work; trapping was carried out from May through October, with traps staying on site for one night.

The data base includes many other vectors, but the focus of interest in the *Culex pipiens* complex is justified by its medical importance: the females bite all warm-blooded vertebrates and are involved in the circulation of several arbovirus of concern to human health, like West Nile virus (Hamer, 2008) iridoviruses, rheoviruses and parvoviruses (Vinogradova, 2000).

The average capture is defined as the number of females caught divided by the number of traps used in one night, at each place. The average capture for each ARS, from North to South, is shown in Figure 1. Only at Alentejo and Algarve the figures are larger than the overall average value of the data set, 17.0.

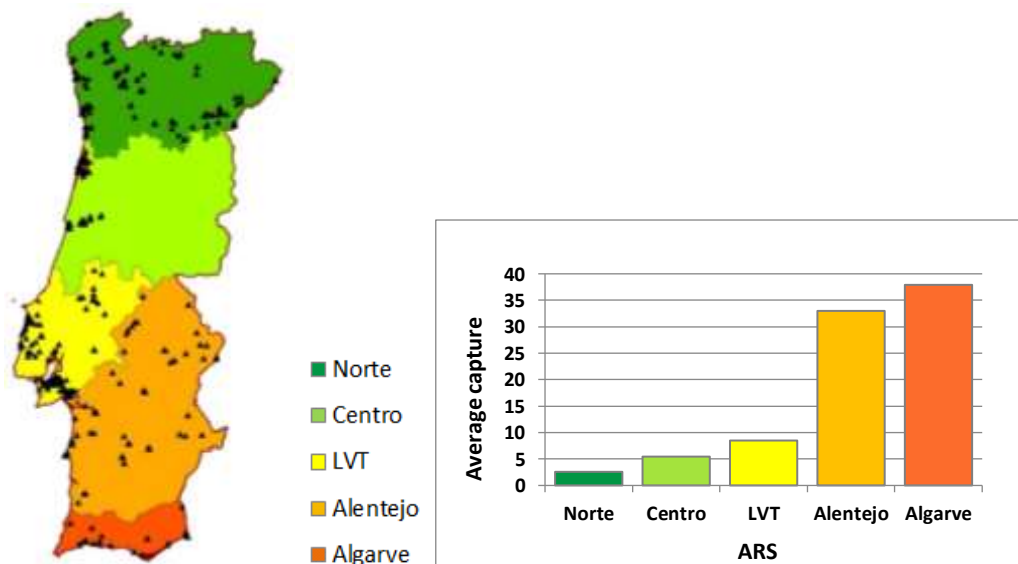


Figure 5. Portugal mainland, with capture areas in the five ARSs and their average in each region.

The land use/land cover information used is part of the data base issued from the CORINE Programme (Co-ordination of Information on the Environment). Basically, it's an inventory of land cover with a hierarchical nomenclature of 44 classes: a program of the European Union aiming to build a uniform data base at a scale 1:100 000, with a minimum unity cartographed of 25 ha.

From 1985 to 1990, the European Commission implemented the CORINE Programme, and now it's a responsibility of the European Environment Agency (EEA).



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We use the data base from 2006. Two kinds of satellites provided imagery for CLC2006 project (Butner, 2012),

- French SPOT-4/5 (60 km swath width, 20 m pixels; VIS, NIR and SWIR bands)
- Indian IRS P6 LISS III (141 km swath width, 23 m pixels; VIS, NIR and SWIR bands).

The altimetry came from the digital elevation data (DEM) obtained by the Shuttle Radar Topography Mission (SRTM), an international project spearheaded by the U.S. National Geospatial-Intelligence Agency (NGA) and the U.S. National Aeronautics and Space Administration (NASA) that has covered more than 80% of the Earth's solid surface during a 11-day mission of the Space Shuttle Endeavour in February 2000. The SRTM data is available as 3 arc second (approx. 90m ground resolution) and has a vertical error reported to be less than 16 m (<https://www.usgs.gov>).

We had access to a version made available by University of Porto, which has been projected to ETRS89 PT-TM06 and resampled to a ground resolution of 80 m (<https://www.fc.up.pt>).

The information concerning cartographed water was available online from Serviço Nacional de Informação de Recursos Hídricos (<https://snirh.apambiente.pt>). Different layers contain rivers, reservoirs, lagoons, etc. The focus on stagnant water led to the selection of the layers containing lagoons, marshes, and reservoirs; after some discussion, the rivers were included, for favoring the creation of large pools of stagnant water along the banks and in the estuary. These digital layers have elements of three different types: polygonal (reservoirs of dams, lagoons, and estuaries), linear (rivers) and punctual (marshes).

METHODOLOGY

Two criteria were used to compare the environmental parameters associated with the captures (altitude, land use/land cover, distance to water, latitude), to establish a suitability discrimination: the distribution of the average captures for the interval considered, and the percentage of above average captures in each class/interval to be compared. The average of the overall data set is 17.0 *Culex pipiens* females per trap and night.

To be sure that our choice of a threshold or the selection of a group of classes was the best, we compare the two large groups resulting from the splitting using statistical Levene's test for variances and the appropriate test for means at a 95% confidence level.

The original 44 classes of land use/land cover data were aggregate to the appropriate classes to establish the report with mosquito activity and habitat preferences. This aggregation was achieved merging several of the Corine Land Cover (CLC) classes in 11 classes that synthetize the common interest of each subset, and they are Forest, Heterogeneous cultures, Permanent cultures, Small vegetation, Human presence, Human uninhabited, Temporary, Coastal and Natural wetlands, Bare soil and Water bodies.

This spatial aggregation was achieved in a Geographic Information System (GIS) (ArcMap from ESRI). The resulting layer is a simplified thematic map, especially in detailed areas, as it can be seen in Figure 2.

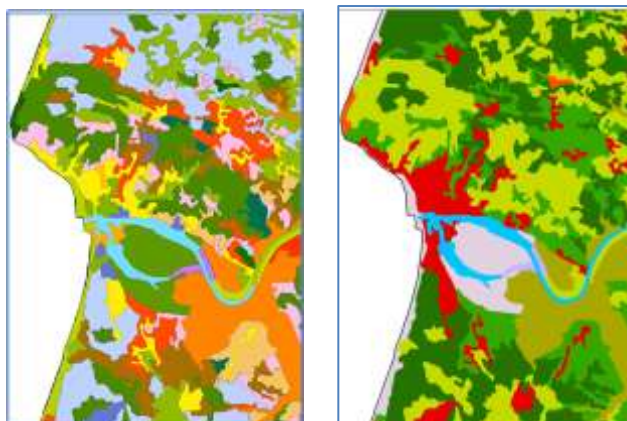


Figure 6. Illustration of the difference corresponding to the original CLC with 44 possible classes (left) versus the same area with the aggregation to 11 classes (right).

One of the classes (Bare soil) has no records associate with it, so only 10 aggregate classes were used. The score of these 10 classes shows (Figure 3) an average capture higher than the overall average in Heterogeneous cultures, Forest and Small vegetation, although three more classes have meaningful scores compared to the four less representative ones, which are Permanent cultures, Coastal and Natural wetlands and Urban uninhabited, all with an average capture below 2.5 individuals.

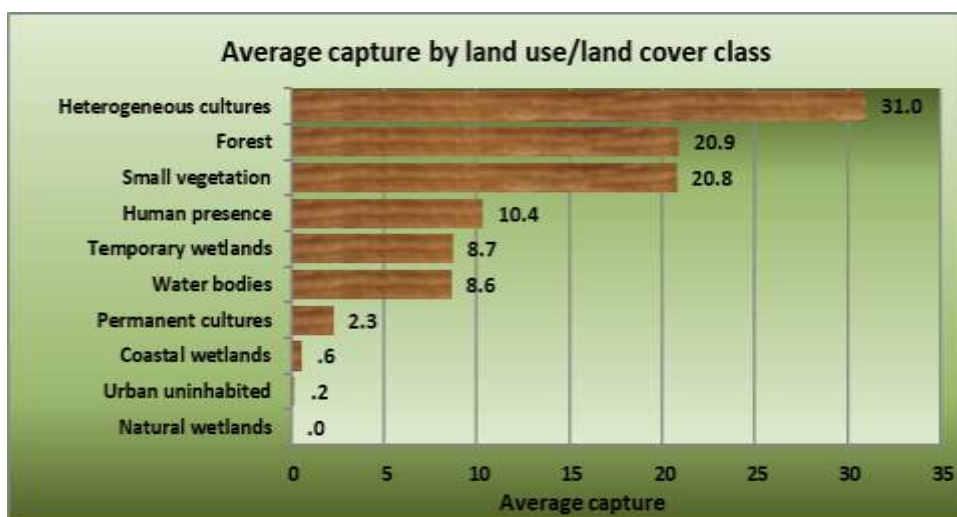


Figure 7. Average capture in each class.

For the altitude data, the orthometric altitude for each record was extracted and interpolated at each capture point. In the range found in the data [-15 m, 941 m] we consider intervals of 100 m between 100 and 900 m and averaged the captures for each interval (Figure 4).

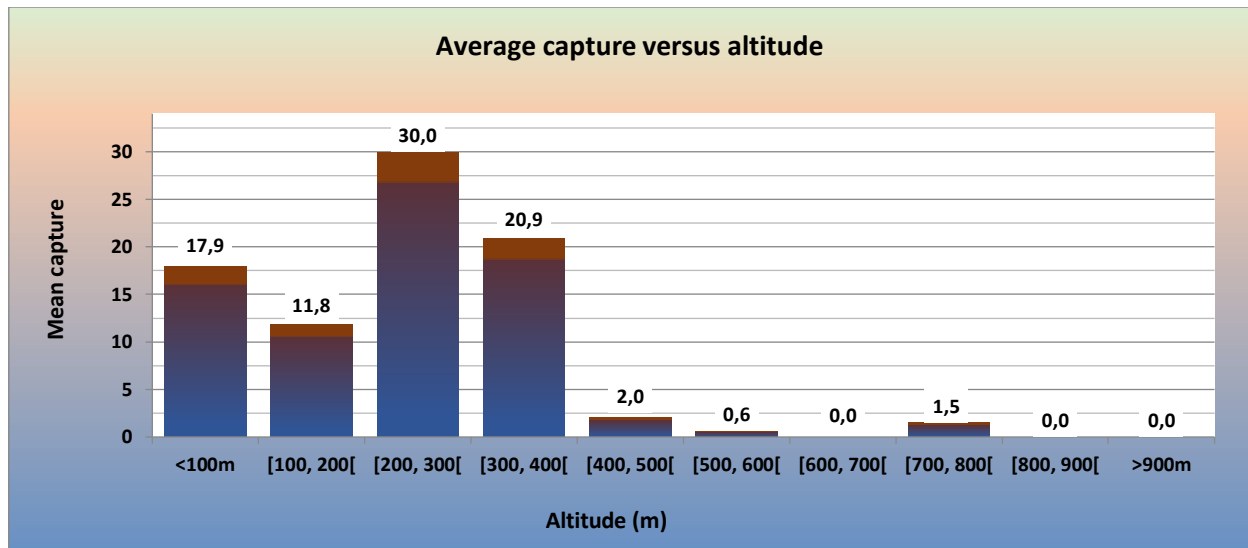


Figure 8. Average capture size by interval of altitude.

The *Culex pipiens* depend on the presence of water to complete their life cycle, and disease transmission requires the completion of at least one gonotrophic cycle before pathogen transfer occurs (Bentley, 1989) as the transmission is a collateral effect of the blood meal needed for the oviposition. Their preference seems to go for standing water with large amounts of organic content, which turns out to be the case for most spots of standing water.

The water bodies' cartographed are indicative of the presence of the standing water needed, but there are many small water containers, natural and man-made, that it's not possible to referencing. So, we worked with the set of layers previously mentioned (reservoirs, lagoons, estuaries, marshes, and rivers) establishing the minimum Euclidean distance to the nearest water body, and its type.

The global trends with intervals of 1000 m (Figure 5) shows the average capture have a clear decrease at distances greater than 3 km.

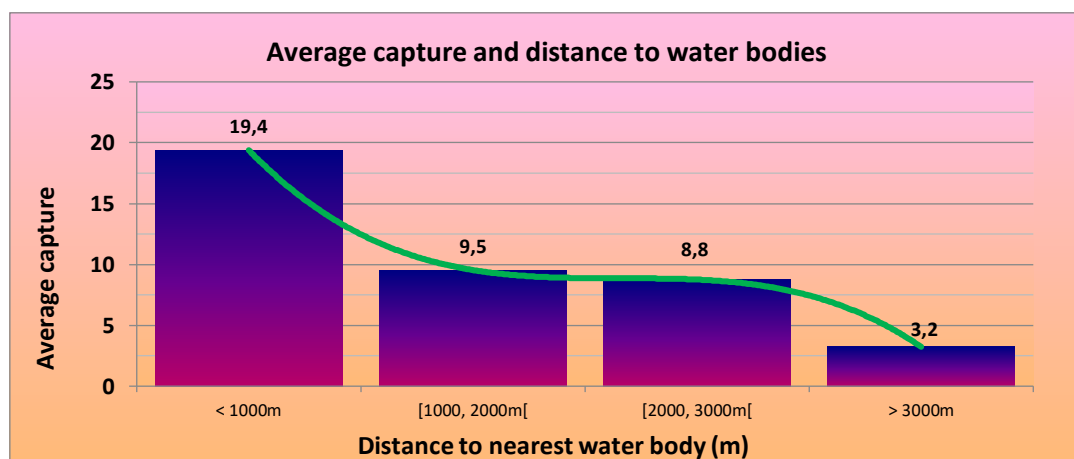


Figure 9. Average capture and distance to a cartographed water body.

The set of observations allowed also to analyze the latitudes where the *Culex pipiens* spp. abundance is more significant. The places of capture range from 37.021600 to 42.044911 decimal degrees latitude; although the Est-West coverage is not perfect along this range, with a large area (8.5W to 6.8W degrees) lacking information between 40 and 41 degrees, the North-South sampling is more regular.



Figure 10. Places of capture – the sampling ensures a reasonable North-South coverage.

The percentages of all captures that took place below 39 degrees of latitude is 86.7% (Table 1), even if the number of traps placed above 41° is the largest (686), which drive us to evaluate the average capture by degree of latitude.

Table 1. Distribution of the captures by interval of latitude

Latitude interval	Number of traps	Sum of captures	Percentage
Lat <38.0	511	17.988	48.5%
38.0 ≤ Lat <39.0	472	14.157	38.2%
39.0 ≤ Lat <40.0	120	1.103	3.0%
40.0 ≤ Lat <41.0	392	2.065	5.6%
Lat ≥ 41.0	686	1.781	4.8%

The average catch below 39° of latitude is higher than 30 individuals (**Error! Reference source not found.**), which overcomes largely the overall average of 17.0. Southern latitudes has the largest figures.

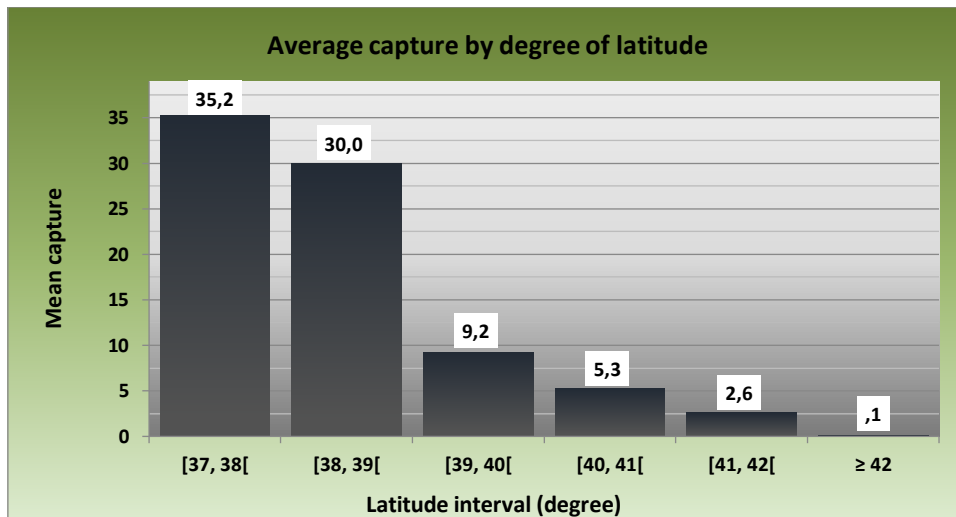


Figure 11. Average catch of *Culex pipiens* females by interval of latitude.

The supremacy of the southern latitudes is enhanced when the average captures are detailed by month (Figure 8), which shows that only in July the size of the catches in latitudes above 39° attains the global average size; latitude 39° is a clear threshold in *Culex pipiens* abundance.

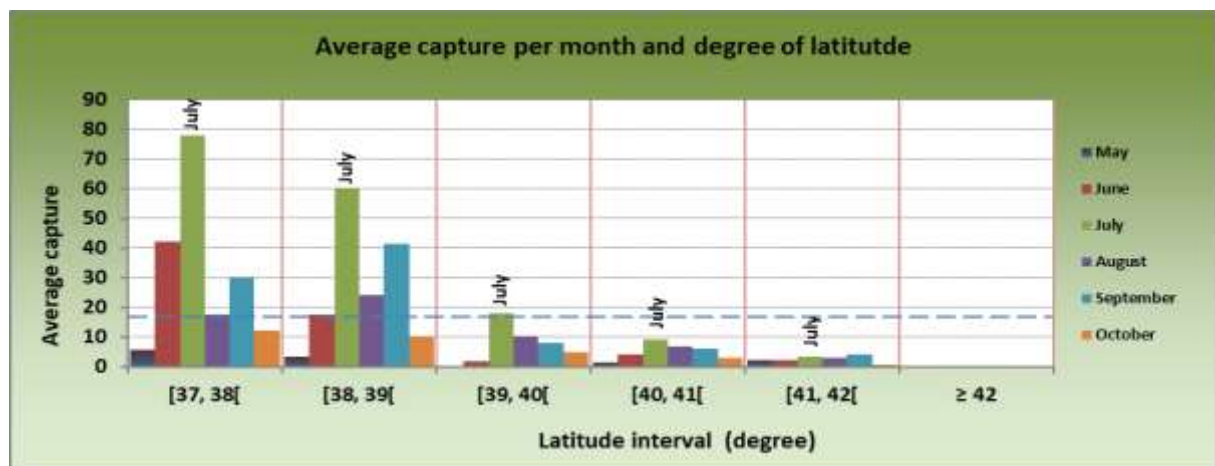


Figure 12. Average capture of *Culex pipiens* females per month at each interval of latitude

GIS IMPLEMENTATION

The environmental conditioning founded through the analysis of mosquito’s abundance previously described was applied to delimitation of areas with those characteristics in a geographic information system (ArcMap from ESRI), creating tree masks:

- the distance of 3000 m from the water is represented by a buffer contouring all the cartographed water bodies. The water distance was processed separately for rivers and the set of lagoons, reservoir dams, marshes, and estuaries because of its nature in a GIS: rivers are the only linear feature among the water layers.
- for the altitude, the 400 m threshold was applied to the raster DEM, cutting off the higher altitudes, that in the case of Portugal are mainly at north.
- the 6 land use/land cover classes with major abundance were separated.

The crossing of these 3 spatial conditions gives the area where the abundance of the vector is most

noticeable (Figure 9).



Figure 13. Area of higher probability of *Culex pipiens* sl. presence.

CATEGORIZATION OF RISK

Among the area identified by the abundance of *Culex pipiens* (Figure 9) as having high probability of presence and therefore, an increase transmission risk for humans, it was possible to discriminate 3 sets of conditions expressing categories of risk, using the same methodology previously described and the distribution of the 342 captures above average, that shows features that can be used to target only those areas where the mosquito population becomes critical. We present as example the distance of the captures above average to a water body.

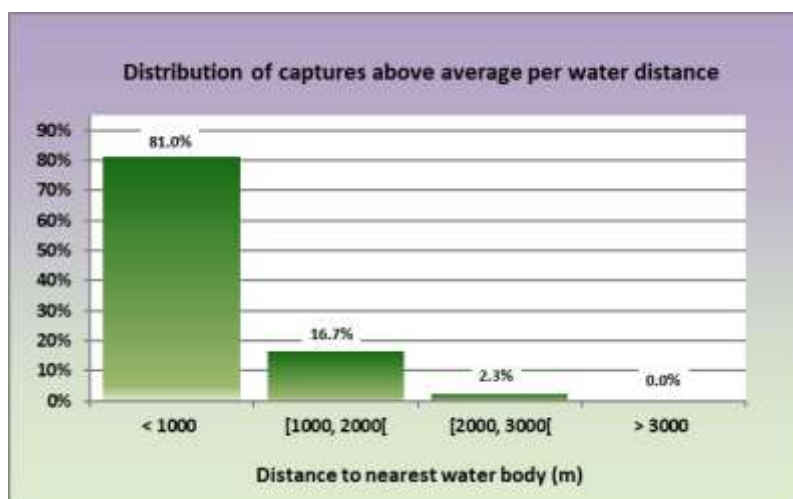


Figure 14. Distribution of above average captures to water body distance.

Figure 10 shows that 81% of all the captures above average were made in a distance of less than 1 km from a water body, and 16.7 % in the next interval, but still at less than 2 km from the water. A minority of these captures (2.3%) took place far than 2 km and none was registered after the 3 km mark.

The same reasoning is made for the other two factors, Altitude and Land use/Land cover. Assuming

that the abundance of *Culex pipiens* females represents a health risk, the criteria issued from this analysis can define three areas of increasing risk:

1 – Minimum risk

Distance to water bodies < 3000 m

Altitude < 300 m

LU/LC classes included: Heterogeneous cultures, Small vegetation, Forest, Temporary wetlands, Human presence and Water bodies.

2 – Medium risk

Distance to water bodies < 2000 m

Altitude < 200 m

LU/LC classes included: Heterogeneous cultures, Small vegetation, Forest and Temporary wetlands

3 – High risk

Distance to water bodies < 1000 m

Altitude < 100 m

LU/LC classes included: Heterogeneous cultures, Small vegetation

The advantage of a GIS is that these results can be translated to maps and released to the stakeholders to target the counter measure level needed at each location. The three areas are superposed in Figure 11.



Figure 15. The three area of increased risk using female abundance as a proxy.

The highest risk area is small and can be perfectly localized, as well as the other two areas, superposing the areas of interest defined in the GIS as masks in the conventional cartography (Figure 12).

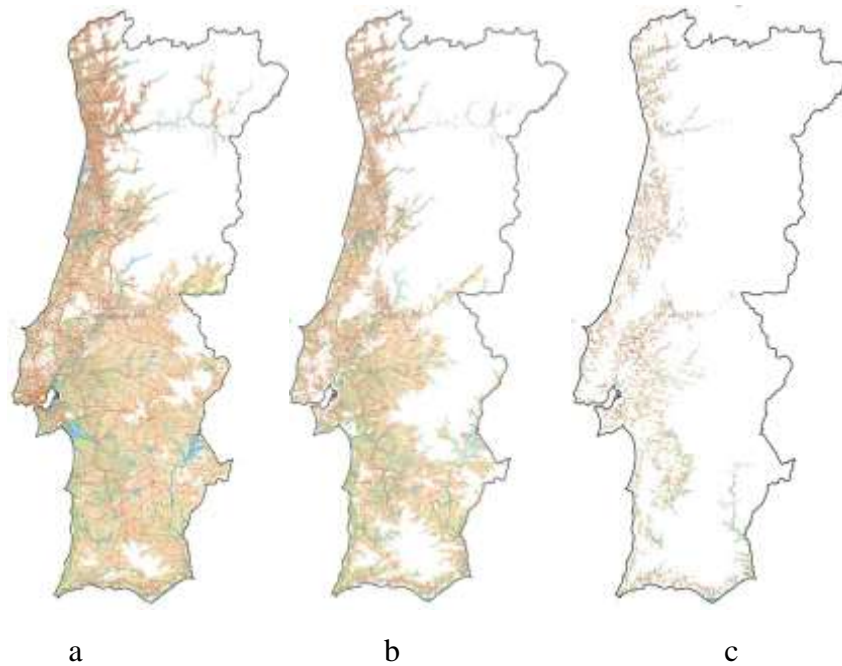


Figure 16. Separation of the areas of increased risk: a) minimum risk, b) medium risk and c) maximum risk.

This categorization of the risk can help stakeholders to target the harsher countermeasures, including products that are toxic to other animal species, and to save human labor and costs, because the high-risk areas are reduced and well localized, and more efficient use of mitigation measures can be targeted.

CONCLUSIONS

The case study presented shows the methodology to apply at an abundance data set of any vector in order to evaluate its ecological niche and establish the limits for areas of increased risk of transmission for vector-borne diseases. In this implementation we use environmental factors, but many others can also be used, according to our knowledge of the habits and characteristics of vector species, or the conditions for survival and replication of pathogens whenever they are known. The application of this methodology for a large area allows to plan and detail different countermeasures levels according to the local scale of the problem. The resources used in this implementation (all the exogenous data) were available online.



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**THE ANALYTICAL PERFORMANCE CHARACTERISTICS FOR Ni(II)
VOLTAMMETRIC SENSORS DEPENDING ON IMMOBILIZATION ELEMENTS AND
TYPES OF SCREEN-PRINTED ELECTRODES**

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Abstract

According to the European Food Safety Authority, food is the main source of nickel intake by the general population. Based on the risk assessment, EFSA determined the tolerable daily intake of this element from all sources at the level of 2.8 $\mu\text{g}/\text{kg}$ body weight, which is for an adult 196 μg , while for a child 56 μg . Nickel is a common sensitizing agent responsible for the high prevalence of allergic contact dermatitis. Human exposure to highly nickel content in food or polluted air causes a variety of pathologic effects, in addition to allergies. So, it is very important to determine the levels of nickel from food products and for this there are several techniques such as: atomic absorption spectrometry (AAS), inductively coupled plasma- mass spectrometry (ICP-MS), and voltammetry. The classical methods mentioned are usually expensive, requires specialized personnel and are laborious methods. Thus, two disposable screen-printed electrode (carbon and bismuth) have been proposed for a simple, fast and low-cost determination of Ni(II) by cyclic and linear sweep voltammetry in the presence of dimethylglyoxime (DMG) as complexing agent and alginate or benzophenone as immobilization elements. A bipotentiostat was used to study the electrochemical behavior of Ni(DMG)₂ complex formed from nickel standard solution, with different concentration and the ligand (DMG) and then from calibration curve, the performance parameters (sensitivity and limit of detection) were extracted and calculated. Also, Atomic Absorption Spectrometer (AAS) was used as reference method for comparing the results of nickel concentration obtained for the four food products (chocolate, dill, sea buckthorn and onion). The results showed a similarity of data obtained from AAS with voltametric methods that use dimethylglyoxime and alginate with both bismuth and carbon screen printed electrodes by cyclic voltammetry and with bismuth by linear sweep voltammetry. In addition, these types of sensors resulted to have also the better characteristics of performance.

Keywords: nickel detection, screen printed electrode, sensor, voltammetry.

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CELL VITALITY AND NUMBERING ASSAY FOR NON-ADHESIVE MIXED CELL LINES

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Abstract

One of the standard laboratory procedures used within a series of experimental workflows, with practical appliance in medical sciences is the cell numbering. The assessment of the vitality in combination with cell numbering is an important phase in the cell's health characterization. This precious information can be used for analysing the rates of proliferation, optimizing the growing conditions and synthetizing cell data.

Objectives: Our assay tries to obtain optimum, accurate and reproducible results for the operations of cell counting and for the viability tests. There are some classical methods for measuring the number and the vitality of the cells but they are not consistent in the protocols, they lack of dimensional impression and very long-term procedures. The new computing served methods are much easier to perform and provide accuracy across a large range of cell lines.

Methods: In 96 well plates with small sample sizes we analysed the cell count and viability for a mixture of floating cell lines (Raji, Jurkat and Ramos) within a streamlined workflow. No cell dilutions were required for the analysis. Quantitative cell count and viability efficient tests were accurately performed with an advanced system of Flow Cytometry. The assay steps: 1. Undiluted cells were mixed 1:1:1 with a vital serum and then incubated for 10-30 minutes 2. The counting beads were added to the wells. 3. The plates were analysed on the IQUE platform.

Results: We realized 2 maps: one of the cell densities and one of the viabilities and after combining the we obtained a profile map of the cells showing the top spots that match the highest density and vitality.

Conclusions: Some key advantages of this assay that can be translated in the work of every laboratory are the correctness and exactness of this precise method. The analysis saves precious time and unique samples and can maximize the productivity

Keywords: cell numbering, cell vitality, laboratory analisys



Leukotriene inhibitory activities of semi-purified fraction (OB-2) of *Ocimum basilicum* (L) plant extract

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Abstract

Ayurveda, a Traditional System of Medicine has described several drugs from indigenous plant sources for the treatment of various ailments based on the folklore information and traditional use by the peoples. In the present study, semi-purified fraction (OB-2) isolated from the plant extract of *Ocimum basilicum* (L.) was applied to evaluate IL-6 inhibition in *BAL* fluids of *OVA* sensitized Wistar albino rats *Rattus norvegicus* and LTC-4 inhibitory activities in blood serum of albino rats.

To explore leukotriene inhibitory activities of semi-purified fraction (OB-2) of *Ocimum basilicum* hydro-alcoholic extracts in Wistar albino rats.

Ocimum basilicum (Popularly known as Shyama Tulsi) whole plants were collected from BHEL area of Bhopal after identification and authentication from BSI, Allahabad. Shade dried, pulverized powdered plant materials was extracted in methanol and water using Soxhletion and fractionated by Thin layer and Column Chromatography to get semi purified fraction. The hydro-alcoholic fraction (OB-2) was tested for their effects on leukotriene C₄-synthase inhibitory activities in blood serum of Wistar albino rats and IL-6 inhibition using ELISA kit in isolated *BAL* fluids of *OVA* sensitized albino rats and lung histopathology was performed.

Semi-purified fraction (OB-2) of ethnomedicinal plant *Ocimum basilicum* hydro-alcoholic extract showed leukotriene-C₄-synthase inhibition significantly (496.22 ± 11.75 and 374.00 ± 05.09), when given treatment of OB-2 fraction at the rate of 50 and 100mg/kg body weight in Wistar albino rats *Rattus norvegicus*, respectively and showed significant IL-6 inhibition (3.714 ± 0.19 and 2.229 ± 0.09) in *BAL* fluids of albino rats after the treatment at 50 and 100mg/kg body weight doses of OB-2 fraction, respectively and finally lung histopathology of excised lung tissues was performed for histopathological comments and photographs were captured for interpreting results. The results showed significant inhibition of leukotriene-C₄-synthase in Wistar albino rats *Rattus norvegicus* after the treatment at 50mg and 100mg/kg body weight of semi-purified fraction (OB-2) of hydro-alcoholic extract of *Ocimum basilicum* (L.) after intra-gastric administration of the *Ocimum basilicum* OB-2 fraction with HPMC led to a reduction of *OVA*-induced lung inflammation as determined by histopathological comments.

Fraction (OB-2) of *Ocimum basilicum* showed significant leukotriene inhibitory activities in albino rats and the present study supports for the Ayurvedic application of the treatment of lung inflammation.

Key words: Leukotriene, Inflammation, Ethnomedicine



STATISTICAL OPTIMIZATION OF GREEN SYNTHESISED METAL OXIDE NANOPARTICLES AS A CATALYST FOR PHOTOCATALYTIC DEGRADATION OF ORGANIC POLLUTANTS

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Abstract

In this study, we used *Calotropis gigantea* latex (CGL) to make nickel oxide nanoparticles (NiO NPs) using a green synthesis method in which the latex acts as a capping agent. Response surface methodology-BBD methodology was used to optimise the synthesis part. The NiO NPs were then subjected to various analytical techniques such as UV–Visible spectroscopy, Transmission Electron Microscopy, X-ray diffractometer, Energy Dispersive Analysis, Particle Size Histogram, and Zeta potential. The cuboidal shape of NiO NPs with an average particle size of 28 ± 2 nm was observed. Furthermore, in the presence of sunlight, the synthesised NiO NPs were subjected to degrade toxic diazo dye Congo red (CR) and organic compound 4-Nitro phenol. According to the findings, NiO NPs degrades 95% of CR and 94% of nitro phenol.

Keywords Azo dye, *C. gigantean Latex*, Kinetics, NiO NPs, Nitrophenol



GREEN MEDIATED SYNTHESIS OF GOLD NANOPARTICLES (AUNPS) USING AQUEOUS NEEM EXTRACT

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Abstract

Nanotechnology is an emerging interdisciplinary field which mainly concerns with the fabrication of nanoparticles (NPs) with specific requirements in terms of size, shape and controlled dispersity. Materials in the nano dimensions (1-100 nm) have very high surface to volume ratio that gives them certain unique properties that are different from the same material in bulk and behaves as a whole unit in terms of their transport and properties which are useful in different fields such as electronics, photonics, biomedical, catalysis etc. For synthesis of nanoparticles two approaches are generally involved either a “top down” approach or a “bottom up” approach. *Azadirachtha indica* L. also known as Neem belongs to the family *Meliaceae* is the most important medicinal plant that has been declared worldwide as the “Tree of the 21st century” by the United Nations. In India, Neem is known as “The Village Pharmacy” because of its healing versatility. Neem is also called ‘Aristha’ which means “Srva Roga Nivarini”, meaning “the curer of all ailments”, “divine tree” and “nature’s drugstore”. Neem elaborates a vast variety of biologically active compounds that are chemically diverse and structurally variable with more than 140 compounds isolated from different parts of the tree. Quercetin and β -sitosterol, were the first polyphenolic flavonoids purified from fresh neem leaves and were known to have antibacterial and antifungal properties. Biosynthesis of AuNPs was carried out by dissolving aqueous $\text{HAuCl}_4 \cdot 3\text{H}_2\text{O}$ solution and neem leaf aqueous extract under optimised conditions. The noticeable color change as a result of surface Plasmon resonance was monitored visually, so confirming the formation of AuNPs. The reaction mixture thus obtained was centrifuged at 7500 rpm for 10 minutes to remove any large entity. The supernatant was discarded with the help of pipette and the sediment was washed with deionized water several times and finally with absolute ethanol. Sediment thus obtained was lyophilized to get the powered AuNPs. Biosynthesized AuNPs thus obtained were stored in freeze drying conditions till their characterization (PSA, FT-IR, XRD, FE-SEM and HR-TEM). Work is under progress.

Keywords: Neem, gold nanoparticles, optimisation and characterization



GREEN SYNTHESIS OF SILVER NANOPARTICLES (AgNPs) USING AQUEOUS EXTRACT OF FENUGREEK (*TRIGONELLA FOENUM- GRAECUM*)

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Abstract

Nanotechnology has become the most promising and emerging field of research because of its applications in various fields. Development of reliable and eco-friendly methods for the synthesis of nanoparticles is a vital step in the field of nanotechnology. In recent years, innumerable efforts were made to develop green methods of synthesis to avoid hazardous byproducts. “Green” synthesis is a reliable, sustainable, and eco-friendly method for synthesizing a wide variety of nanoparticles. Green synthesis is regarded as an important tool to reduce the destructive effects associated with the traditional methods of synthesis for nanoparticles commonly employed in laboratories and industries. Silver nanoparticles (AgNPs) have become the focus of greater research interest due to their exceptional chemical, physical, and biological properties. The key mechanism behind the plant-mediated synthesis of nanoparticles is a plant-assisted reduction due to phytochemicals such as ketones, terpenoids, amides, flavones, carboxylic acids, aldehydes, organic acids, and quinones. Synthesis of silver nanoparticles (AgNPs) from the aqueous extracts of Fenugreek (*Trigonella foenum-graecum*) was carried out by using bottom-up approach. The rate of production of the AgNPs was affected by the concentration of the plant extract, concentration of the metal salt, pH, temperature, and contact time. The procedure for the synthesis of stable AgNPs was rapid, simple and viable. Characterization of synthesized AgNPs were carried out by using various techniques, such as FESEM, XRD, PSA, UV–Visible Spectrophotometer and FTIR. Among various metal nanoparticles, AgNPs had several effective applications besides their biomedical applications.

Keywords: Plant extract, Green synthesis, AgNPs, and Characterization



ENVIRONMENTAL EDUCATION IN SOLVING ENVIRONMENTAL PROBLEMS FOR THE SUSTAINABLE DEVELOPMENT

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Abstract

Environment Education plays a vital role in raising consciousness of environmental challenges and shaping the behaviour/attitude of the community to make a difference. Environmental education is an ideal way to incorporate academic disciplines and also for the societal development of young people. The main components of environmental education are (1) Awareness and sensitivity, (2) Knowledge and understanding, (3) Attitudes of concern, (4) Skills and (5) Community participation. It was repeatedly acclaimed by educationalists that environmental education is a key part of spreading knowledge about the environment and its importance by adopting various techniques like awareness workshops, campaigns, field visits etc. Environmental education proposes an elevating system for both students and teachers to connect with nature. For the greater academic achievement there is a need for the engagement of more students and for this research studies are required to know the learning impacts by collecting data of regular classroom and outdoor activities for the students. There is a need to emphasize on critical thinking skills of students adopting a survey-based analysis to know the psychological state of mind of the students for the evaluation of the impact of environmental education also by asking them for the solutions of the environment related issues. There is a need to enhance the positive impact of environmental education on the students to develop a deeper understanding of environmental problems like recycling or sustainable consumption. Environment education helps students to build knowledge and to develop skills among them which are extremely important to address the multifaceted environmental problems and to keep our environment healthy for a sustainable future. The Supreme Court of India made environmental education mandatory as a compulsory subject in all schools across the country in 1991, which is supervised by the National Council of Education Research and Training (NCERT). The main component of the National Curriculum Framework of NCERT includes "Protection of the Environment".

Keywords: Environment Education, Awareness, Environment, Sustainable Development



GREEN-BUSINESS: A WAY TOWARDS SUSTAINABLE DEVELOPMENT

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Abstract

The Global Goals, also known as sustainable development goals (SDGs), were adopted by the United Nations in 2015, which is a universal call of action to achieve SDGs by 2030. Eco-friendly practices and profits are increasingly going hand in hand which leads to increasing importance of sustainability in the business world. There is a strong link between climate change and sustainable development and climate change continues to affect our lives as well as other flora and fauna around the globe due to development activities. Human caused extinction of species of both flora and fauna is higher than the natural rate of extinction and the majority of species will not survive past the 21st century if we don't act responsibly in the business sector. Due to business environment and demand of high production and turnover of products for maximum profits developing nations produce tons of solid waste and emitting more CO² by production industries which are contributes to global temperature increase, which may be of two degrees Celsius by 2050, which will cause sea levels to escalate and an upsurge of disastrous weather events. Developing countries are most adversely affected by climate change and are not able to cope with the impact caused to their community, economy and natural systems. Business owners are also affected as climate change increases the costs of development in poor countries. There is a new term introduced known as "Business sustainability", which is the practice of operating a business without creating a negative impact on the environment. As a result, today's customers are willing to pay more for sustainability and demand green initiatives due to increased environmental consciousness. Eco-conscious customers will help in deriving greater competitive advantage as they seek out for the business that values the environment. To mitigate climate change, there is a need to intensify dependency on low-carbon energy supply and adopt the principle of green economy by reducing the depletion of natural resources, expanding green production and market, and reducing the degradation of ecosystems caused by economic developmental activities.

Keywords: Environment, Climate Change, Extinction, Sustainable Development, Green-Business



DIAGNOSIS AND TREATMENT OF HYPERPLASTIC GINGIVITIS IN ACUTE LEUKEMIAS

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Abstract

The purposes of the study were to evaluate the diagnostic features and management of hyperplastic gingivitis (HG) in the acute leukemias (AL).

The study may be considered as analytical and descriptive. The following research modalities were used: epidemiological, analytical, data transfer, descriptive statistics. The AL patients have been followed up and treated at the Institute of Oncology between 2012-2020. The diagnosis was proved by the bone marrow aspiration (BMA) with cytochemical reactions, tissue biopsy or fine needle aspiration cytology. The immunotyping was performed in the selected cases. The type of myeloproliferative disorder was identified according to the Revised WHO classification of the myeloid neoplasms, approved in 2018. The review of the literature is based on a study of 17 references.

Gingival tissues are considered more susceptible to leukemic cell infiltration because of their microanatomy and expression of endothelial adhesion molecules which boost infiltration by leukocytes. The HG may be observed in the non-lymphoblastic AL with a frequency of 3% to 5% of patients receiving anti-leukemia chemotherapy at the referral centers [Fatahzadeh M., Krakow A. M., *Spec. Care Dentist*, 2008]. We report a study of 5 cases with HG due to the myelo-monoblastic (M4) and monoblastic (M5) AL. The leukemia patients were admitted to the Institute of Oncology with a history of fatigue, anorexia, headache, gingival bleeding and enlargement initially identified by a family doctor from the consulting centers of the municipal hospitals. Clinical examination showed marked anemic syndrome, mild to moderate splenomegaly and slight hepatomegaly. ECOG-WHO performance status score was 2-3. The intra-oral examination revealed the generalized gingival hyperplasia. There was a fair amount of plaque and calculus, but did not justify the degree of enlargement. On palpation, the gingiva was spongy and painless, with solitary sectors of necrosis. Blood count: Hb 66-101 g/l, er. $2.3-3.7 \times 10^{12}/l$, leuk. $12.1-35.2 \times 10^9/l$, plt. $54.0-115.0 \times 10^9/l$, ESR 23-50 mm/h, blast cells 17-42%. The BMA detected hypercellularity, red cell line hypoplasia, the elevated rates of myeloid blast cells (31.0-48.0%) and monocytes (9.0-12.0%). HG regressed only in 3 of 5 patients after obtaining the complete hematologic response under the combined chemotherapy.

In AL the gingival hyperplasia is secondary to infiltration of the gingival tissue with blast cells, but may be mixed up with the benign conditions during the intra-oral examination. The HG may regress completely or at least partially under an efficient chemotherapy.

Keywords: hyperplastic gingivitis, acute leukemias, diagnosis, combined chemotherapy.

CONFLICT OF INTERESTS:

The author has no conflict of interests to declare.

ETHICAL APPROVAL:

The research was approved the Research Ethic Board of State University of Medicine and Pharmacy “Nicolae Testemitanu”.



ECONOMIC ANALYSIS OF MEDITERRANEAN BASIN FOREST FIRES: A CASE STUDY IN TURKEY-ANTALYA

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Abstract

Today, the world's forest wealth is approximately around 3.5 billion hectares. In recent years, global warming and climate change have begun to be felt more effectively in this world, and forest loss has reached an average of 13 million hectares per year. In the Mediterranean Basin, which is located in the fire-sensitive zone, known as forest fires are increasing with the impact of global warming. Due to the characteristic feature of the Mediterranean climate, summers are dry and hot. Especially in the summer months, large forest areas are lost in fires. In this study, Antalya is the province with the highest forest fire risk by over 1 million hectares of forest area in Turkey, located in the Mediterranean Basin, was determined as the study area. In the study, forest fires that broke out in 14 Forest Management Directorates of Antalya Regional Directorate of Forestry in 15 years (between 2005-2019) were examined and their economic losses were analyzed. In the evaluations, the costs related to criteria such as the number of fires, the burned area, the people working in the fire, the vehicles used, extinguishing, cooling, afforestation of the burned areas were taken into account. According to the results, the highest number of forest fires occurred in 2013 with 323 in 15 years, whereas the most burned area was in 2008 with 6.128 hectares. Especially in the last five years when the records were examined, an increase was observed in afforestation and extinguishing-cooling costs. This increase peaked in the forest fire, which started in Antalya in 2017 and grew in a short time, as well the damage of extinguishing reached 40 million dollars and the afforestation costs 5 million dollars. Again, with the effect of global warming, forest fires, which caused massive economic losses, broke out in many countries such as Spain, Italy, Greece, and Turkey in the Mediterranean Basin in 2021. For example, Antalya had the largest forest fire in the history of Turkey as well which has cost over 100 million dollars. For this reason, effective strategies should be developed to prevent potential forest fires, taking into account the effect level of global warming in the countries located in the Mediterranean basin, thus the economic losses that may occur must be prevented.

Keywords: Mediterranean Basin, Turkey, Antalya, Forest Fires, Economic Loss.

Özet

Günümüzde dünya orman varlığı alanı yaklaşık olarak 3,5 milyar hektardır. Son yıllarda dünyada küresel ısınma ve iklim değişikliğinin olumsuz etkileri daha da hissedilmeye başlamış olup orman kaybı yılda ortalama 13 milyon hektarı bulmuştur. Yangına duyarlı kuşakta yer alan Akdeniz Havzasında, küresel ısınmanın etkisiyle orman yangınlarında artış olduğu bilinmektedir. Akdeniz ikliminin karakteristik özelliği gereği yazlar kurak ve sıcak geçmektedir. Özellikle yaz aylarında meydana gelen yangınlarda geniş orman alanları kaybedilmektedir. Bu çalışmada, Akdeniz Havzasında yer alan ülkelerden biri olan Türkiye’de, 1 milyon ha üzerinde ormanlık alanı ile en fazla orman yangını riskine sahip il olan Antalya, çalışma alanı olarak belirlenmiştir. Çalışmada,



Antalya Orman Bölge Müdürlüğüne bağlı 14 Orman İşletme Müdürlüğünde; 15 yıllık periyotta (2005-2019) çıkan orman yangınları incelenmiş ve ekonomik kayıpları analiz edilmiştir. Değerlendirmelerde; yangın adedi, yanan alan, yangında çalışan kişiler, kullanılan araçlar, söndürme-soğutma çalışmaları ve yanan sahaların ağaçlandırılması gibi kriterlere ilişkin maliyetler dikkate alınmıştır. 15 yıllık dönem dikkate alınarak yapılan incelemelerde; 2013 yılında 323 adet olmak üzere en fazla orman yangınının çıktığı ancak yanan alanın 2008 yılında 6.128 ha. olarak en üst seviyeye ulaştığı görülmüştür. Özellikle son beş yılda, ağaçlandırma giderleri ile söndürme-soğutma harcamalarında bir artış gözlenmiştir. Bu artış 2017 yılında Antalya merkezli çıkan ve kısa sürede büyüyen orman yangınında pik yapmış, söndürme maliyeti 40 milyon doları, ağaçlandırma gideri 5 milyon doları bulmuştur. Yine küresel ısınmanın etkisiyle 2021 yılında Akdeniz havzasında yer alan İspanya, İtalya, Yunanistan ve Türkiye gibi birçok ülkede de büyük ekonomik kayıplara yol açan orman yangınları çıkmıştır. Örneğin Antalya, Türkiye tarihinin en büyük orman yangınlarına sahiplik etmiştir. Bu orman yangınlarının ekonomiye verdiği zarar 100 milyon doların üzerindedir. Bu nedenle; Akdeniz havzasında yer alan ülkelerde küresel ısınmanın etki düzeyi dikkate alınarak potansiyel orman yangınlarını önlemeye yönelik etkili stratejiler geliştirilmeli bu sayede oluşabilecek ekonomik kayıplar önlenmelidir.

Anahtar Kelimeler: Akdeniz havzası, Türkiye, Antalya, Orman yangınları, Ekonomik kayıp.

1. INTRODUCTION

Today, the world forest asset area is approximately 3.5 billion hectares. Forests are under intense pressure due to increasing population, ever-expanding agricultural lands, urbanization, and industrialization. The reduction or economic inefficiency of forests is a current problem in our world. One of the factors that cause deforestation is forest fires. In recent years, the negative effects of global warming and climate change have started to be felt more and the loss of forest areas in the world has reached an average rate of 13 million hectares per year (OGM, 2006).

Like global warming, climate change, ozone depletion, acid rain, etc. are many problems that we call environmental problems, and they threaten humanity with each passing day. Deforestation lies at the root of most such environmental problems (Kırış and Toprak, 2015).

As with every activity, fire-fighting operations are also needed for planning and evaluation in order to fulfill the most effective and efficient way. In addition to plans and projects are carried out on many variables such as fire behavior, effects and the activity of fire prevention teams. However, economic pillar of the prepared the plans and projects are being ignored because of fire is a sensitive issue (Şen and Erkan Buğday, 2016).

Forests are ecosystems with a very dynamic structure, together with all the organisms they host. However, from time to time, they are exposed to human-made hazards and their continuity is endangered. Among these classified factors such as biotic and abiotic, human-induced fires are one of the most important factors that endanger the continuity of forests. The forest fires in our country this year in the summer also threatened the future of forests in other Mediterranean countries like Australia and some parts of the USA. In terms of the geography that our country locates; Meteorological conditions, especially in the summer months, also cause fires. Besides, many forest fires occur every year because it is covered with vegetation that is more easily combustible and because of the extreme population mobility in the coastal areas during the fire season (Avcı and Korkmaz, 2021).

Forest fires are significant causes of the degradation of forests, especially in the Mediterranean region. Migration movements and population growth that have been going on for more than a

thousand years have changed the natural forest fire dynamics in the Mediterranean basin. Also, the openings caused by the pressure in the forest areas have made the vegetation sensitive to fire. Along with global warming, there have been significant changes in the prevailing climatic conditions in the region. The moisture content of the forest has deteriorated, the average temperatures have increased, temperatures that do not fall below 30 °C in summer (from June to the end of October) and the decrease in the amount of rain, combined with the high speed and strong drying power of the wind, large-scale forest fires have become inevitable. In addition, the threat of unusual weather conditions due to climate change exacerbates fires (FAO, 2007).

The world is on average 1.2 degrees warmer than during the industrial revolutions due to human-induced climate change (WMO, 2020). Because the carbon content in the atmosphere is about 420 ppm (NOAA, 2021). Sea level rise over the past 20 years has averaged 3.2 millimeters per year (BOUN, 2021). These data raise the issue of taking more effective and rational measures against global warming.

The IPCC 6th Assessment Report (IPCC, 2021) contains current findings on climate change and the effectiveness of the measures taken by countries to combat it. According to the report;

- To limit the temperature, rise to 1.5 degrees; countries need to halve their emissions by 2030,
- A large part of the planet is under the influence of heat waves,
- Recently; the share of extreme heat and human influence is quite high,
- The best that current climate policies and national contribution statements will bring us in 2100; Global warming of 2.7 degrees.

Climate change and global warming make the borders of the country unimportant not only because of the global temperature increase and the greenhouse effect but also because of the disasters that have been or will be experienced. Every step is taken to prevent the climate crisis is taken not only for ourselves and our relatives but also for people, animals, and nature itself, tens of thousands of kilometers away, which we will never see in our lifetime. The forest fires that increase with the effect of climate change in the world are shown in Figure 1 and the forest fires in the Mediterranean Basin countries are shown in Figure 2.

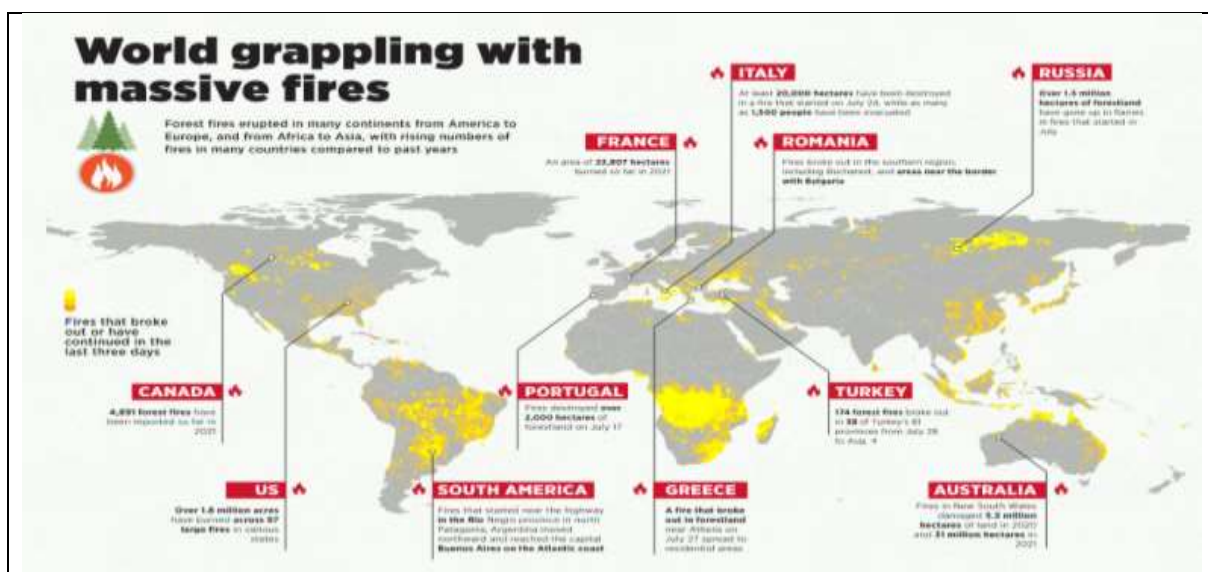


Figure 1. From North America to Indonesia, world is grappling with massive forest fires (HAS, 2021).



Figure 2: Forest fires in Mediterranean Basin countries (FIRMS, 2021).

In addition to Turkey, there is an intense struggle against forest fires in countries with Mediterranean coasts such as Italy, Albania, Greece, Tunisia, and Algeria. According to the satellite map of the “Fire Information and Resource Management System” named “FIRMS” by the US Aerospace Agency (NASA), the fires shown with red dots have spread to many parts of the world (Figure 2). The map shows that the Mediterranean coast and Northern and Eastern Europe are affected by the fires in Europe (FIRMS, 2021).

Many countries, including Turkey, have shown their seriousness in the fight against global warming by signing the Paris Agreement, and in this way, the whole world has had the chance to act together for climate mobilization. With this agreement, Turkey will reduce the use of fossil fuels, which is over 60 percent in electricity generation, coal-fired power plants will be closed and take steps to accelerate renewable energy investments. In this way, we will have the opportunity to protect the forests, agricultural areas and water resources that we are responsible for protecting. Cities and other settlements will be redesigned based on cohesion and mitigation policies.

The study aims to examine forest fires in the Mediterranean basin and to carry out an economic analysis of forest fires in Antalya.

2. RESEARCH AND FINDINGS

This study was carried out in Turkey, one of the countries in the Mediterranean Basin. Antalya, which is the province with the highest forest fire risk with over one million hectares of forest area, was determined as the study area (Figure 3). Fact because the forests of the Mediterranean region are in the fire zone, a significant part of the total forest area is sensitive to fire, the maquis and red pine youths cover large areas in the forests, the region is located at an altitude of 0-400 m, the region is affected by the drying terrestrial winds, and it is in terms of tourism as well as for settlement and agricultural purposes. Antalya has been chosen as the study area because it has features such as intense human use.

In choosing this area, since it is a fire-sensitive area, the frequency of fires and the diversity of species played an important role. In the study area, the altitude starts from sea level and reaches up to 2.700 m. The bedrock of the study area generally has a calcareous structure. The average temperature in the region is 18.6 °C and the average precipitation is 1.089 mm. Red pine (*Pinus*

brutia), black pine (*Pinus nigra*), stone pine (*Pinus pinea*), cypress (*Cupressus sempervirens*), cedar (*Cedrus libani*), Taurus fir (*Abies cilicica*) are the leading plant species found in the study area.



Figure 3. Working area.

Due to the characteristic feature of the Mediterranean climate, summers are dry and hot. Especially in the summer months, large forest areas are lost in fires. For example, with the effect of global warming, forest fires that caused great economic losses broke out in many countries such as Spain, Italy, Greece, and Turkey in the Mediterranean basin in 2021.

In Antalya, the increase in average temperatures with global warming, the decrease in the humidity in the air, the winds that increase in frequency and intensity create optimum conditions for forest fires.

It is known that in forest fires in recent years, the slightest trigger, the slightest spark, leads to an unstoppable disaster. The damage done by the Antalya Forest fire to the environment, nature and people is shown in Figure 4.





Figure 4. Antalya Forest Fires and Demolition (NG , 2021; OGM, 2021).

In the study, in 14 Forest Management Directorates affiliated to Antalya Regional Directorate of Forestry; Forest fires in the 15 years (2005-2019) were examined and their economic losses were analyzed.

In the evaluations, the costs related to the criteria listed below were taken into account.

- Number of fires,
- burning area,
- Persons working in the fire,
- the tools used,
- Quenching-cooling costs,
- Afforestation expenses of burned areas.

Local people living in forest villages within the study area generally do dry farming on limited and unsuitable lands. On the other hand, livestock is an important source of livelihood in the region. According to the State Institute of Statistics (DIE) 2007 data, it has been determined that there are approximately 200 thousand hair goats, 90 thousand sheep, 40 thousand cattle and 5 thousand riding animals in Antalya. Forests are used as an illegal grazing area for small cattle breeding in the field. Since this situation poses a risk in terms of forest fires, it should be taken into account.

In the region, while irrigated farming is carried out on large agricultural lands at low altitudes, greenhouse cultivation has become increasingly important in recent years. Greenhousing is shifting to inland areas due to the presence of tourism, natural and archaeological areas concentrated in the coastal part of the study area. This mobility constitutes an important risk factor for forest fires.

3. CONCLUSION

Fires affect many forested areas of the earth. In addition to Turkey, it is struggling with intense forest fires in Mediterranean Basin countries such as Italy, Albania, Greece, Spain, Tunisia, and Algeria. According to the European Forest Fires Information System “EFFIS” map, which includes data obtained from the Copernicus satellites of the European Union (EU), large and small fires throughout the continent reach as far as the north of Russia. According to data obtained from satellite maps, fires of different sizes in EU countries have lasted longer than 1 week in recent years (FIRMS, 2021).

EFFIS data show that forest fires cause above-average losses in Europe. According to 2021 data, the amount of burned area in Italy, France and Romania has exceeded the 2008-2020 average. While 53,797 hectares of area burned in Italy this year, the average of 12 years was recorded as 40,781. While 22,807 hectares burned in France, the average of previous years was 9,283. In the same way, 18,620 hectares of land burned in Romania this year, while the average of 12 years is 16,082 hectares. Among the non-EU countries, it can be stated that Bosnia and Herzegovina lost 25,583 hectares of land in the fire, which is close to the 2008-2020 average of 30,199 hectares. While 17,599 hectares of land burned in Tunisia this year, it is recorded that this has already surpassed the 12-year average of 6,257 hectares (FIRMS, 2021).



In Turkey, approximately 1.5 million hectares of forest area were damaged in approximately 72 thousand fires that broke out between 1937-2002, when regular statistics on fires began to be kept. Forest fires, which are a major disaster due to their consequences, are mostly seen in the Aegean, Mediterranean and Marmara regions of our country (Doğanay and Doğanay, 2004).

In recent years, Turkey has been going through a hotter and drier period as a result of climate change. The year 2016 was recorded as the warmest year in the world, and 2020 was the second warmest year measured. This was followed by 2019, 2017, 2018, 2015, 2010, 2014, 2005 and 2013, respectively (Avcı and Korkmaz, 2021). According to the data of the General Directorate of Meteorology (MGM), the average temperature of the autumn (September, October, November) season for many years in Turkey was measured as 14.8 °C, while the average temperature in the autumn of 2020 increased by 2.5 °C to 17.3 °C. (MGM, 2021).

The findings obtained within the scope of the study support the data of EFFIS and MGM. In the study, the following findings were obtained.

- 2013 is the year with the highest number of forest fires with 323.
- 2008 was the year with the most burnt area (6,128 ha).
- Especially in the last five years, an increase has been observed in afforestation expenses and extinguishing-cooling expenses.
- This increase peaked in the forest fire that started in Antalya in 2017 and grew in a short time, and the cost of extinguishing reached \$ 40 million and the cost of afforestation reached \$ 5 million.

Forest fires, desertification, drought, and land degradation, which are gradually increasing in the world due to climate change and increases in global temperature, cause 15 trillion dollars of damage to the global economy every year (World, 2021). On the other hand, Antalya had the biggest forest fires in Turkey in 2021. The damage caused by the fires to the economy is over 100 million dollars.

Although forest fires cannot be completely prevented in Turkey's location, it will be possible to minimize forest fires and their negative consequences with the awareness of the population of the country and the measures to be taken. This is extremely important for the future of our country and sustainable forestry activities (Doğanay and Doğanay, 2009).

It is estimated that the temperature in the Mediterranean basin will increase by 5 °C on average in the next 50 years due to "global warming" in the world. The only method of curbing this negative development, which may cause the isotherm curves to shift further to the north and lead to desertification; expanding and developing the forest cover (Dağdaş, 2003).

Countries in the Mediterranean basin are the countries most affected by climate change. Therefore, these countries should develop comprehensive strategies that take into account the impact of global warming. In line with these strategies, forest fire prevention and extinguishment plans should be prepared in which climate, geographical conditions and demographic conditions are taken into account. Thanks to the developed strategies and plans, forest fires will be intervened promptly, and thus, economic losses will be prevented.

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RAISING VOLUNTEER AWARENESS IN FIGHTING FOREST FIRES

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Abstract

Extreme meteorological events caused by climate change that affected the world, have increased the numbers and degree of effectiveness of forest fires. To prevent fires, it can be a benefit from use in the fight, to develop and improve fire prevention strategies. At the same time, it is substantial to create a consciousness and raise awareness about fires in society. Turkey, the season of forest fires, is located in the Mediterranean climate zone. Especially the coastal band of the Mediterranean, Aegean and Marmara Geographical Regions up to 400 meters high are very sensitive to forest fires. Among all the other Mediterranean countries, Turkey has made significant progress in terms of early intervention over the years in the fight against forest fires and has achieved successful results. Forestry Department; has approached ideal standards in terms of equipment, and infrastructure capacity. However, society does not have enough information about fire awareness. This situation raises forest fire risks and dangers. People that live in forest settlement areas, local administrations, and forest administration employees; are the most effective in the fight against forest fires. It is very costly to have enough fire workers in public institutions in the fight against forest fires, the number and effects of these are increasing due to climate change. For this reason, for a sustainable fight against fires, a system based on volunteering should be established in addition to technical information in fire extinguishing works. The most important building block of the system is to raise awareness in volunteering. For this purpose, a regulation was published by the General Directorate of Forestry in Turkey in 2019. Since the relevant regulation has just been published, the number of volunteer fire workers is not sufficient. For example, in Antalya, where the largest forest fire in the history of Turkey broke out in the summer of 2021, volunteered fire workers played a significant role in the fight against fire. However, they were insufficient in number. This research aimed to raise awareness of volunteering in the fight against forest fires and to contribute to the increase of the number of volunteer fire workers to the desired level. For this purpose, the research was carried out in Antalya, which has the highest forest fire risk with its forested area. An awareness survey was conducted with 80 people who voluntarily participated in the forest fire extinguishing efforts in the summer of 2021. 92% of the participants live in and around the fire area, 96% are between the ages of 50-65, 90% are male, 86% are primary school graduates. It is desired to work with young individuals on volunteering and to have a high level of education. Almost all of the respondents are not aware of the "Volunteering Regulation" published by the General Directorate of Forestry in 2019. As a result of the survey, 85% of the participants participated in the "*Volunteer Fire Worker Training Program*" organized by the Antalya Regional Directorate of Forestry and they were entitled to receive a certificate. By development of awareness in volunteering, it will contribute to a more effective fight against forest fires. Thus, a volunteer structure that learns to live with fires prevents fires and contributes to reaching large groups who are sensitive to fires will always be supported.

Keywords: Forest Fire, Turkey, Antalya, Volunteer Wildland Firefighters, Awareness.



Özet

Dünyayı etkileyen iklim değişimi kaynaklı ekstrem meteorolojik olaylar, orman yangınlarının sayısını ve etki derecesini arttırmıştır. Yangınların önlenmesi için mücadelede etkin tekniklerin kullanılması, yangın önleme çalışmalarının çeşitlendirilmesi ve bölgesel tedbirlerin alınması gerekmektedir. Aynı zamanda toplumda yangına yönelik bir bilincin ve farkındalığın da oluşturulması önemlidir. Türkiye, orman yangınlarının sıkça görüldüğü Akdeniz iklim kuşağında yer almaktadır. Özellikle Akdeniz, Ege ve Marmara Coğrafi Bölgelerinin 400 metre yüksekliğe kadar olan kıyı bandı orman yangınları için oldukça hassastır. Akdeniz ülkeleri içerisinde Türkiye, orman yangınları ile mücadelede erken müdahale açısından yıllar içerisinde önemli yol kat etmiş ve başarılı sonuçlar almıştır. Ormanlık teşkilatı; araç, gereç ve donanım altyapı kapasitesi bakımından ideal standartlara yaklaşmıştır. Ancak toplum, yangın bilincine yeteri kadar sahip değildir. Bu durum, orman yangını riskini ve tehlikesini arttırmaktadır. Orman içi yerleşim alanlarında yaşayanlar, yerel yönetimler ve orman idaresi çalışanları; orman yangınları ile mücadelede en etkili kişilerdir. İklim değişikliği nedeniyle sayısı ve etkisi artan orman yangınları ile mücadelede kamu kurumlarında yeterli yangın işçisi bulundurmamak oldukça maliyetli bir durumdur. Bu nedenle, yangınlara karşı sürdürülebilir bir mücadele için yangın söndürme çalışmalarında teknik bilgiler yanında gönüllülük esasına dayalı bir sistem oluşturulmalıdır. Sistemin en önemli yapı taşı da gönüllülükte farkındalığın sağlanmasıdır. Bu amaçla Türkiye’de, Orman Genel Müdürlüğü tarafından 2019 yılında bir yönetmelik yayınlanmıştır. İlgili yönetmeliğin, yeni yayınlanmış olması nedeniyle gönüllü yangın işçileri yeterli sayıda değildir. Örneğin, 2021 yazında, Türkiye tarihinin en büyük orman yangını çıkan Antalya’da, yangınla mücadelede gönüllü yangın işçileri önemli rol üstlenmiştir. Ancak sayıca yetersiz kalmıştır. Araştırmada, orman yangınları ile mücadelede gönüllülük farkındalığının geliştirilmesi ve gönüllü yangın işçisi sayısının istenilen düzeye ulaştırılmasına katkı sağlanması amaçlanmıştır. Bu amaçla araştırma, ormanlık alanı ile en fazla orman yangını riskine sahip olan Antalya ilinde gerçekleştirilmiştir. 2021 yılı yazında çıkan orman yangını söndürme çalışmalarına gönüllü olarak katılan 80 kişiye farkındalık amaçlı bir anket yapılmıştır. Katılımcıların %92’si yangın bölgesi ve çevresinde yaşayan, %96’sı 50-65 yaş arası, %90’ı erkek, %86’sı ilköğretim mezunu kişilerdir. Aslında gönüllülükte genç bireylerle çalışılması, eğitim seviyesinin daha yüksek olması arzulanmaktadır. Ankete katılanların neredeyse tamamı 2019 yılında Orman Genel Müdürlüğüne yayınlanan “Gönüllülük Yönetmeliğinden” haberdar değildir. Anket sonucunda katılımcıların %85’i daha sonra Antalya Orman Bölge Müdürlüğüne gerçekleştirilen “Gönüllü Yangın İşçisi Eğitim Programına” katılmış ve belge almaya hak kazanmıştır. Gönüllülükte farkındalığın geliştirilmesi ile orman yangınlarına karşı daha etkin mücadeleye katkı sağlanmış olacaktır. Böylece yangınlara yaşamayı öğrenen, yangınların çıkmasına engel olan ve yangınlara karşı duyarlı geniş kitlelere ulaşılmasına katkı sağlayan bir gönüllülük yapısına destek olunacaktır.

Anahtar Kelimeler: Orman yangını, Türkiye, Antalya, Gönüllü Orman Yangını İşçisi, Farkındalık.

1. INTRODUCTION

The total area of world terrestrial education is just over 4 billion hectares with a total forest area of 14.9 billion years. It is calculated that forests cover 26.6% of the total snowfall, excluding Greenland and Antarctica (figure 1). 66% of these forests have been in place for 10 years. These are Russia, Brazil, Canada, the USA, China, Australia, Congo, Indonesia, Peru and India. Turkey has 2% of productive forest areas (FAO, 2005).

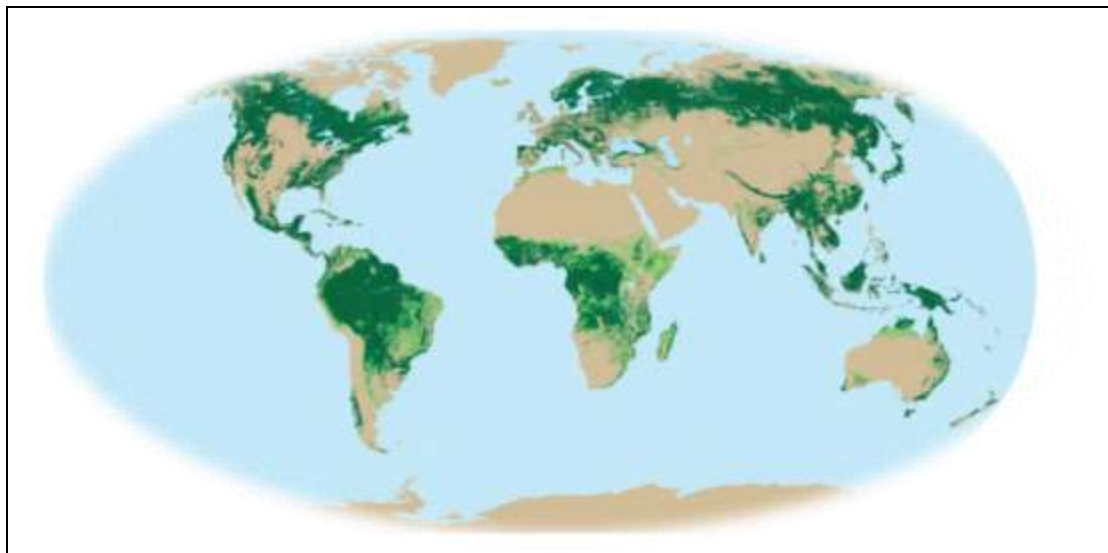


Figure 1. World Forest Areas (FAO, 2016).

3.1% of the world's forest areas (129 million hectares) disappeared between 1990 and 2016 for various reasons. While global forest loss was 7.6 million hectares annually in the 1990s, this figure decreased to 3.3 million hectares between 2010 and 2016. Our country is among the countries that were able to increase its forest assets between 1990 and 2015 (FAO, 2016).

It is important to create a consciousness and awareness about fire in society. However, society does not have enough fire awareness. This situation increases the risk and danger of forest fire. People living in forest settlement areas, local administrations and forest administration employees; are the most effective people in the fight against forest fires.

Due to climate change; In the fight against forest fires, the number and effect of which are increasing, it is very costly for all states of the world to have sufficient fire workers in public institutions. Many countries, especially the USA, Australia, Brazil, Spain, Italy and France, are working voluntarily in forest fires, issuing regulations, preventing fires and wanting to reduce costs. The increase in the number of forest fires, especially with the effect of global warming, increases the need for volunteers even more. For example, many volunteers participated in firefighting in the big forest fires in Australia in 2019, in which at least 9 people died and approximately 5 million hectares of land were ash. 90% of the fire extinguishing activities carried out with nearly 3,000 people consisted of volunteers. Despite this, the workers, who were insufficient in number, had difficulty in extinguishing the fire. For this reason, additional studies have been carried out voluntarily in Austria and additional measures have been implemented for subsequent fires. In this context, voluntary public employees who will participate in firefighting activities are given 20 days of unpaid leave per year in addition to their paid leave (AA, 2019).



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In the summer of 2021, in Antalya, where the biggest forest fire in the history of Turkey broke out, fire workers played a significant role in the fight against fire. However, they were insufficient in number. For this reason, studies on volunteerism in forest fires have accelerated in Turkey since 2018. The “Regulation on Volunteers Working in Combating Forest Fires” was prepared and put into practice in 2019 by the General Directorate of Forestry (OGM) to provide an effective response to fires (OGM, 2019). Within the scope of the relevant regulation, Volunteer Fire Worker Trainings are given in many cities of Turkey, especially in Antalya.

Within the scope of the Forest Fire Volunteer Regulation issued by the General Directorate of Forestry (OGM) in 2019. Volunteer Fire Worker trainings have been exerted in Turkey since the beginning of 2020. The main purpose of this is to raise awareness of the society against forest fires. The second purpose is to enable fire volunteers to consciously assist the forest organization during forest fire extinguishing efforts.

To become a Volunteer Fire Worker in Turkey, people with a lower age of 18 apply by filling out the relevant forms. Volunteers whose conditions are suitable by the commission are accepted to the training. In the trainings given by expert teams, theoretical and practical information is given about fire response, first aid, use of personal protective equipment, occupational safety, tools used in forest fires. How to extinguish forest fires and extinguishing stages are issues to be considered in education. Candidates who score 70 and above in the post-training exam are entitled to receive the Volunteer Fire Worker certificate. Successful participants are given the “Volunteer Fire Worker Hardware Bag” consisting of clothes, helmets, masks and boots with the identity of fire volunteer. In the event of a possible fire, volunteers take the fire equipment bag and go to the scene. Volunteers assist the teams in line with the instructions of the authorized teams or work in the background for logistic support (OGM, 2019).

In the volunteering system, it is determined as a principle that the trainings should be carried out in groups of at least five and at most ten people. There is also a team responsible for the extinguishing team, which consists of an average of five people. Officers communicate with volunteers with contact information when there is a fire. Volunteer fire workers, who receive the Volunteer Fire Worker Hardware Bag and ID, go to the fire site to assist the teams.

The research aims to raise awareness of how volunteering in the fight against forest fires and can contribute to the increase of the number of volunteer fire workers to the desired level.

2. RESEARCH AND FINDINGS

The research has been performed in Antalya, which has the highest forest fire risk with its forest area (Figure 2). Turkey locates in the Mediterranean climate zone, where forest fires are common. Especially the coastal band of the Mediterranean, Aegean and Marmara Geographical Regions up to 400 meters high is oversensitive to forest fires (TOD, 2020).

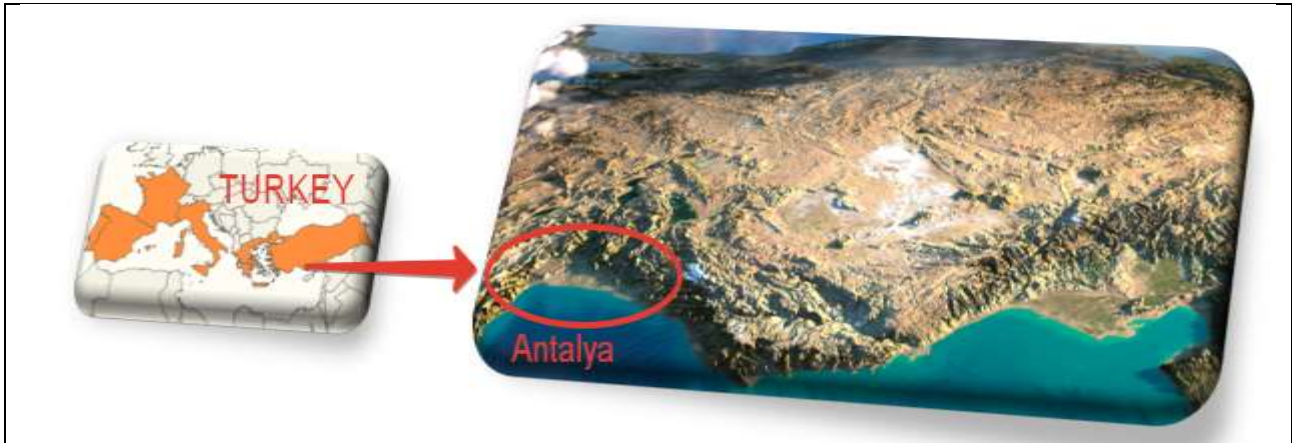


Figure 2. Working Area.

In the study, an awareness survey was conducted with 80 people who voluntarily participated in the forest fire extinguishing efforts in the summer of 2021.

92% of the participants live in and around the fire area, 96% are between the ages of 50-65, 90% are male, 86% are primary school graduates. It is desired to work with young individuals in volunteering and to have a higher education level.

Almost all of the respondents are not aware of the “Volunteering Regulation” published by the General Directorate of Forestry in 2019.

As a result of the survey, 85% of the participants participated in the “Volunteer Fire Worker Training Program” organized by the Antalya Regional Directorate of Forestry and were entitled to receive a certificate. For example, volunteer fire workers trained in Antalya can support not only the fires in Antalya but also forest fires in the whole of Turkey. 80 volunteers participated in the Volunteer Fire Worker Training held in Antalya (Figure 3).



Figure 3. General Directorate of Forestry Volunteer Fire Worker Training (İHA, 2021).

3. CONCLUSION



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Turkey has been experiencing disruptions in Volunteer Fire Worker training due to the pandemic that it has been under the influence of in recent years. However, it can be stated that after the great Antalya fire of 2021, there was an increase in fire volunteer applications and the pieces of training were completed quickly. By the end of 2021, it is planned that the number of fire volunteers will approach 2 thousand people. However, it is known that this number is insufficient compared to the need expressed in 10 thousand.

The subsistence expenses of the volunteers participating in the extinguishing of the fire in the state forests are covered by the relevant forest management directorate during the fire extinguishing activities (OGM, 2019).

Among the Mediterranean countries, Turkey has made significant progress over the years in terms of early intervention in the fight against forest fires and has achieved successful results. Forestry organization; has approached ideal standards in terms of equipment, equipment and infrastructure capacity. However, the infrastructure of the understanding of volunteering has just been established in Turkey, and effective strategies, plans and time are needed to move forward.

For a sustainable fight against fires, the system created voluntarily as well as technical information in fire extinguishing studies should be made more in a participatory way and the number of individuals participating in the training should be increased.

One of the most significant building blocks of the volunteering system is to raise awareness in volunteering. For this purpose, it is necessary to act together with non-governmental organizations.

Volunteer Fire Workers should have some legal rights, especially daily wages, in works voluntarily. As in the case of Australia, voluntary public employees who will participate in firefighting activities in Turkey may be given 20 days of unpaid leave per year in addition to their paid leave.

The development of awareness in volunteering will contribute to a more effective fight against forest fires. Thus, the volunteer structure will be supported by reaching large masses who learn to live with fires, prevent fires and are sensitive to fires.

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APPLICATION OF Cu BASED METAL ORGANIC FRAMEWORK on COTTON FIBER FOR HUMIDITY AND NH₃ SENSOR

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Abstract

Metal-organic frameworks (MOFs) which are prepared in the form of one, two or three-dimensional networks using inorganic salts and organic linkers have recently gained considerable attention due to their large surface areas and ability to bear various functionalities. Due to these reasons, MOFs have a wide range of application areas such as gas storage, adsorption/separation, and catalysis. In this study copper-based metal organic framework (Cu-BTC) is deposited on cotton fabrics by the layer by layer method (LBL). The effects of carboxymethylation and deposition methods over the Cu-BTC deposition on the cotton were investigated. Two different carboxymethylation methods were used and there was not a major difference between the carboxymethylated cotton by these methods so that the carboxymethylation methods did not have importance. Three different Cu-BTC deposition methods were tested for cotton and among them, layer by layer method show higher efficiency. A characterization study was performed to comprehend whether the deposition of Cu-BTC was achieved successfully or not. In this context, the surface morphology, framework vibration, and crystalline structures of Cu-BTC and all Cu-BTC deposited substrates were analyzed via SEM, FT-IR, ATR-IR, and XRD analyses, respectively. Additionally, the effect of cycle number over the deposition of Cu-BTC by second and third method on the surface of cotton fabric. The optimum cycle numbers were found as 10 and 12 for the second and third method, respectively. Besides, their sensing properties against the NH₃ gas was investigated. The Cu-BTC deposited substrates showed sensing activity against NH₃ gas. The sensing activity to humidity and NH₃ gas was tested. In order to increase the carboxylic groups of cotton fabric carboxymethylation process is carried out. The deposition of Cu-BTC on cotton fabric was successfully achieved by using the 12-cycle deposition method.

Keyword: sensor, Cu-BTC, metal organic framework, cotton.



EXAMINING THE ADEQUACY OF NATURAL LIGHTING IN PATIENT ROOMS IN HEALTHCARE FACILITIES: THE CASE OF GAZI UNIVERSITY HOSPITAL

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Abstract

Today, energy consumption is increasing day by day due to technological developments and changes in life style. This situation brings the concept of energy efficient design to the agenda in the building sector, which has a large share in energy consumption worldwide. With the technological developments, the use of computational design tools is increasing and energy efficient design solutions are obtained by making performance analyzes of the structures. In line with the energy efficient design approach, the idea of using daylight as an effective element of design is becoming more common day by day. It is aimed to both increase the indoor light quality and reduce the electricity-based lighting energy consumption by making maximum use of daylight in a way to ensure the interior visual comfort conditions in the buildings. The increase in the number and capacity of health buildings, which have intense energy consumption, necessitates applications to reduce lighting energy consumption, which has a significant share in energy consumption in these buildings. In this study, it is aimed to find ways to increase the daylight performance in providing indoor visual comfort conditions in patient rooms, which determine the capacities of hospitals and have spaces used throughout the day, and to provide a method and framework that will help designers make decisions at the early design stage in the light of the obtained data. For this purpose, a patient room belonging to Gazi University Hospital was taken as an example, 29 scenarios were produced based on the existing window size and location of the patient room, and natural lighting adequacy was examined by simulation method. For each scenario produced, assuming that it is in all four main directions, the illuminance levels were calculated by simulation at the times determined for 21 June and 21 December. The results obtained were analyzed both in terms of meeting the standards and comparatively between the current situation and each other. According to the results obtained from the study, the daylight illumination performance of a building can be increased by 9-56% with the change of window sizes and position. In the light of the results obtained, it has been revealed that the energy efficiency of the buildings can be increased significantly with simple modifications and decisions at the design stage in the newly designed buildings.

Keywords: Health buildings, patient rooms, daylight, natural lighting performance, window size, window position.



SAĞLIK YAPILARINDAKİ HASTA ODALARINDA DOĞAL AYDINLATMANIN YETERLİLİĞİNİN İRDELENMESİ: GAZİ ÜNİVERSİTESİ HASTANESİ ÖRNEĞİ

Özet

Teknolojik gelişmelere ve yaşam biçiminin değişmesine bağlı olarak günümüzde enerji tüketimi gün geçtikçe artmaktadır. Bu durum dünya genelinde enerji tüketiminde büyük bir paya sahip olan yapı sektöründe enerji etkin tasarım anlayışını gündeme getirmektedir. Teknolojik gelişmelerle birlikte hesaplamaya dayalı tasarım araçlarının kullanımı artmakta ve yapıların performans analizleri yapılarak enerji etkin tasarım çözümleri elde edilmektedir. Enerji etkin tasarım anlayışı doğrultusunda gün ışığının tasarımın etkin bir ögesi olarak kullanılması fikri gün geçtikçe yaygınlaşmaktadır. Yapılarda iç mekân görsel konfor koşullarını sağlayacak şekilde gün ışığından maksimum düzeyde yararlanılarak hem iç mekân ışık kalitesinin artırılması hem de elektrik kaynaklı aydınlatma enerji tüketiminin azaltılması hedeflenmektedir. Yoğun enerji tüketimine sahip olan sağlık yapılarının sayılarının ve kapasitelerinin her geçen gün artış göstermesi bu yapılarda enerji tüketiminde önemli bir paya sahip olan aydınlatma enerji tüketimini azaltmaya yönelik uygulamaları gerekli kılmaktadır. Bu çalışmada, hastanelerin kapasitelerini belirleyen ve gün boyu kullanılan mekânları olan hasta odalarında iç mekân görsel konfor koşullarının sağlanmasında gün ışığı performansını arttırmanın yollarını bulmak ve elde edilen veriler ışığında tasarımcıların erken tasarım aşamasında karar vermelerine yardımcı olacak bir yöntem ve çerçeve sunmak amaçlanmaktadır. Bu amaçla, Gazi Üniversitesi Hastanesi'ne ait bir hasta odası örnek olarak ele alınmış, hasta odasının mevcut pencere boyutu ve konumu üzerinden 29 adet senaryo üretilmiş ve simülasyon yöntemi ile doğal aydınlatma yeterlilikleri incelenmiştir. Üretilen her bir senaryo için dört ana yönde de olduğu kabul edilerek 21 Haziran ve 21 Aralık tarihleri için belirlenen saatlerde simülasyon yoluyla aydınlık düzeyleri hesaplanmıştır. Elde edilen sonuçlar hem standartları sağlayıp sağlamadığı yönünde hem de mevcut durum ve birbirleri arasında karşılaştırmalı olarak analiz edilmiştir. Çalışmadan elde edilen sonuçlara göre pencere boyutlarının ve konumunun değişimi ile bir yapının gün ışığı aydınlatma performansı %9-56 aralığında değişen oranlarda artırılabilir. Elde edilen sonuçlar ışığında, basit tadilatlarla ve yeni tasarlanacak yapılarda tasarım aşamasındaki kararlar ile yapıların enerji verimliliğinin önemli oranda artırılabilceği ortaya konulmuştur.

Anahtar Kelimeler: Sağlık yapıları, hasta odaları, gün ışığı, doğal aydınlatma performansı, pencere boyutu, pencere konumu.

1. INTRODUCTION

After the industrial revolution that took place in the 19th century, energy consumption is increasing day by day due to technological developments and changes in life style. The limited existing energy resources and their negative effects on the environment have brought up the understanding of building design that will make maximum use of sustainable energy resources in the building sector, which has a large share in energy consumption.

It is seen that energy consumption for air conditioning and lighting purposes has an important share in general energy consumption in order to provide user comfort in buildings. In the building design, it is aimed to both increase the indoor light quality and reduce the electricity-based lighting energy consumption by making maximum use of daylight in a way that provides interior visual comfort conditions.

With the fact that health buildings have much more intense energy consumption than traditional commercial buildings and the capacities of hospitals are increasing day by day, the issue of energy efficiency in these areas emerges as a current issue. In the United States of America, where the



number of healthcare facilities, which make up approximately 4.8% of the total area of commercial buildings, has increased by 22% since 2003, the energy consumption of healthcare facilities constitutes approximately 10.3% of the total energy consumption in this area (Bawaneh, Ghazi Nezami, Rasheduzzaman, & Deken, 2019).

The energy consumption shares of patient rooms, which are used throughout the day in hospitals, are quite high due to lighting. In these areas, it is aimed to reduce the energy consumption of lighting by using daylight more effectively in natural lighting, which has proven positive physiological and psychological effects on patients. In this context, it is necessary to determine the natural lighting performance and to deal with the studies to increase the natural lighting performance in detail and comprehensively.

Natural lighting performance of buildings; building area and orientation, building and interior geometry, the reflectance of the interior finishing materials, window area, glass type, shading devices and external obstruction are determined. The energy loss from the windows constitutes more than 10% of the building energy load and therefore it can be easily stated that it has a significant effect on the total energy consumption (Roadmap For Emerging Window And Building Envelope Technologies, 2014). The daylight entering directly from the window depends on the size and location of the windows. When the design is made by considering these parameters during the design phase of the buildings, it is possible to reduce the energy consumption of artificial lighting in the areas used throughout the day and to provide the psychological needs of the users by providing their relationship with the external environment.

In the study, a research was conducted on the size and location of the windows in order to reduce the electrical lighting load by making maximum use of daylight in health buildings. For this purpose, a patient room from Gazi University Faculty of Medicine Research and Application Hospital was taken as an example, and the daylight illuminance level provided by the current window size and position in the volume was calculated with the DIALux Evo simulation tool. 29 scenarios were created based on window sizes and locations, and daylight illuminance level calculations were made by creating separate models for four main directions in the DIALux Evo program. The results obtained were evaluated both according to the current situation and within the scenarios, and the effect of the window size and location on the daylight illuminance level was analyzed.

2. NATURAL LIGHTING DESIGN IN PATIENT ROOMS IN HEALTHCARE BUILDINGS

Health structures are generally defined as the place where the doctor controls the patient, brings experts together, enables joint work, and has auxiliary personnel and necessary equipment and materials (Kepez, 2001; quoted by Özil, 2008). Patient rooms are the most important spaces in hospitals, as they are used as multi-purpose areas and reveal the most effective environmental factors in patient treatment.

In studies conducted to date, the effects of patient room environmental conditions on stress, personnel injuries, patient safety, operational efficiency, patient satisfaction, patient care speed and medical errors have been discussed. In today's world where patient potential is increasing day by day, providing visual comfort conditions in patient rooms becomes important in terms of the healing processes of patients and the working performance of staff.

Providing visual comfort conditions in patient rooms where care and treatment is performed is a very complex and important issue. Because there are different users and different visual comfort requirements. The lighting provided in the room, with all its features, should provide comfort conditions that are not tiring for the patients, and that positively affect the psychological structure of the patient, while it should be satisfactory for the employees.



The purpose of natural lighting design in patient rooms is to provide the necessary visual comfort conditions for users and to minimize energy consumption while providing these conditions.

2.1. Required Visual Comfort Conditions in Patient Rooms

The factors that are effective in creating a visually comfortable environment and that affect the quality and quantity of visual comfort differ from country to country. Various standards and regulations are published based on research in this field.

In this context, design limits are defined in TS EN 12464-1 prepared by CEN (European Committee for Standardization) and standards prepared by CIBSE. The illuminance levels determined for the patient rooms according to EN 12464-1 and CIBSE standards are the same and the values are given in the table below.

Table 2.1. Recommended illuminance levels for patient rooms according to CIBSE standard (CIBSE, 2002, s.53)

Healthcare – wards

	Maintained illuminance (lux)	Limiting glare rating	Minimum colour rendering (Ra)	Note
General lighting	100	19	80	1, 2
Reading lighting	300	19	80	2, 3
Simple examinations	300	19	80	2
Examination and treatment	1000	19	80	
Night lighting, observation lighting	5	–	80	2
Bathrooms and toilets for patients	200	22	80	

Notes:

1. Illuminance at floor level.
2. Prevent high luminances in the patient's field of view.
3. Local lighting required.

Illuminance values may be varied to suit circumstances; see section 2.3.2, Illuminance.

According to the TS EN 17037 Standard published by the CEN European Daylight Standard, the daylight benefit of a volume is rated as "minimum, medium and high". According to the daylight standard, a daylight illuminance level of at least 300 lx in at least 50% of the reference plane of the volume and at least 100 lx in at least 95% of the reference plane should be provided in the volumes with vertical windows (TS EN 17037, 2019).

Table 2.2. Recommendations for providing daylight with daylight openings on vertical and inclined surfaces (TS EN 17037, 2019)

Level of recommendation for vertical and inclined daylight opening	Target illuminance E_T lx	Fraction of space for target level $F_{plane, \%}$	Minimum target illuminance E_{TM} lx	Fraction of space for minimum target level $F_{plane, \%}$	Fraction of daylight hours $F_{time, \%}$
Minimum	300	50 %	100	95 %	50 %
Medium	500	50 %	300	95 %	50 %
High	750	50 %	500	95 %	50 %

NOTE Table A.3 gives target daylight factor (D_T) and minimum target daylight factor (D_{TM}) corresponding to target illuminance level and minimum target illuminance, respectively, for the CEN capital cities.

2.2. Natural Lighting Systems in Patient Rooms

Natural lighting system has a very important place in illuminating patient rooms due to its psychological effect on patients, germicidal properties, perfect vision and low cost. In patient



rooms, the healing rate is higher in patients who are close to the window compared to those who are far away (Garris, 2004; quoted by Arpacıoğlu, 2010).

The use of daylight provides energy efficiency by reducing the loads of artificial lighting and heating-cooling. In addition, it provides a comfortable field of view and allows users to perform their vital activities in a better environment and in a healthier way.

The factors that determine the level of illumination created by daylight in the room while creating the natural lighting scheme in the patient rooms can be listed as follows:

- Room dimensions
- Reflectance of the interior finishing materials
- Window size and position
- Glass type
- Shading devices
- External obstructio

In this study, it is aimed to find ways to increase daylight performance in providing interior visual comfort conditions in patient rooms and to present a method and framework that will help designers make decisions at the early design stage in the light of the data obtained. For this purpose, window size and position were chosen as variable input parameters in the creation of the scenarios and their effect on daylight lighting performance was investigated.

There are also standards based on window size. According to the UK BRE Report, the window area should be 20% of the outer wall area where the window is located for rooms less than 8 meters deep, and 35% for rooms with a depth of more than 14 meters (BRE-Designing buildings for Daylight-1996).

3. CASE STUDY

The building considered within the scope of the research is Gazi University Faculty of Medicine Research and Application Hospital located in Ankara, located between 39°55' north latitude and 32°51' east longitude (Figure 3.1). There are single, double, triple and quadruple patient rooms located in the east-west direction in the block where the inpatient floors are located in the hospital. When the patient rooms were examined, it was observed that approximately 65% of the rooms consisted of single-person, 19% double-person, and the remaining 16% three- and four-person patient rooms, and it was decided to carry out the study over a single patient room.

The study was carried out on the floor where the patient room is located and the architectural project drawings of the patient room. The block where the patient rooms are located has almost identical floor plans. The block with approximately 26 patient rooms on the floor has a floor height of 3.30 m and the interior height of the patient rooms is 3.07 m. In Figure 3.2, the floor layout and the layout of the patient rooms are shown on the plan plane.



Figure 3.1. Gazi University Faculty of Medicine Research and Application Hospital (URL-1,2)



Figure 3.2. The floor plan of Gazi University Faculty of Medicine Research and Application Hospital and the patient room where the study was carried out

3.1. Input Parameters Used in Daylight Illuminance Simulations

Daylight illuminance value can be stated that it depends on the type of sky, room dimensions, reflectance of the interior finishing material, window size and position, glass type and shading devices.

Patient Room Dimensions: The dimensions of the room, which can be listed as width, depth and height, and the ratio of these sizes to each other are effective on the level of illumination achieved by daylight. The patient room used in this study is 2.86 m wide and 5.80 m deep, and the interior height of the room is 3.07 m (Figure 3.3). Since the scenarios produced to be analyzed in the study are based on window sizes and their positions on the outer wall, the room dimensions have been kept constant by being the same as the current situation in all scenarios.

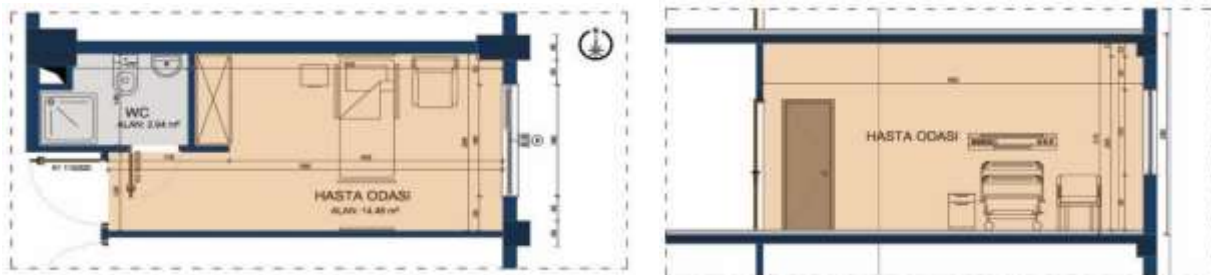


Figure 3.3. Plan and section drawing of the sample patient room

Reflectance of The Interior Finishing Material: Adequate light distribution in the room depends on the reflectance factors of the interior surfaces. In this study, while the model was created for the sample patient room based on on-site observations, the reflection coefficients of the materials used



in the interior were 0.7 for the ceiling; 0.5 for interior walls; 0.2 for outer walls; 0.3 for flooring and 0.7 for window.

Window Size and Position: The window size and the way it is positioned on the outer wall are one of the important elements of architectural design in terms of effective use of daylight. For a particular type of glass, the critical factor that determines the daylight entering a building is the window area. Window area is usually defined by the window-wall ratio (WWR), which is defined as the ratio of the total area of the windows to the total gross exterior wall area, including windows (Danny H. W. Li. & Tsang, 2008).

In this study, window sizes and its position on the outer wall were taken as input variables, since it is thought that it is one of the most important architectural design elements in the effective use of daylight and can be easily changed within the scope of renovation even in existing buildings. 11 different window sizes were created and a total of 29 scenarios were produced by making displacements in the X and Y axes of the wall. In the scenarios created, it is assumed that the material and thickness of the existing window joinery, the permeability and color of the glass are constant (same as the current situation) and unchanged.

Glass Type: The glass type is one of the important parameters that control the amount of daylight entering the interior in terms of light transmittance. The glass type used in the examined patient room is double glass, and this glass type was taken as the same for the window alternatives created and the light transmittance was accepted as 81% in the simulations.

Shading Devices: Shading devices, which are used to control the daylight entering the room and to ensure the comfort of the users, are important building components in terms of energy efficiency in buildings.

In this study, there are currently no shading devices on the windows in the patient room. However, since the column protrusions on the facade of the building will also function as shading devices in natural lighting, they are included in the calculations of daylight illuminance level by being processed into the model for simulations.

3.2. Creating Simulation Models

Within the scope of the study, the DIALux Evo program was used as a simulation program and the studies were progressed on the models prepared here. While creating the models, the data on the area calculations related to the current situation of the patient room were obtained directly from the measurements made on the projects taken from the archive of the relevant institution of the patient room examined in the study, and were based on some assumptions.

The simulations of the generated scenarios were made in both the CIE Overcast Sky and the CIE Average Sky. Calculations were made on the solstice dates of June 21 and December 21, which are the days when the sun's rays come with the greatest and smallest angles, considering that they also represent the summer and winter seasons, and for the hours of 09.00, 12.00 and 16.00 in order to reflect the morning, noon and evening times of the day.

Calculations of the scenarios created with the current situation were made for four main directions, east, west, north and south, at the solstice and at the specified times. In research findings, the data obtained from the simulations were evaluated.

4. RESEARCH FINDINGS

In this section, the results obtained from the study carried out by simulation on the window sizes and the positions of the windows on the outer wall in the sample patient room with the aim of increasing the daylight performance and reducing the electrically sourced artificial lighting load in providing indoor visual comfort conditions are discussed and analyzed. The evaluation criteria of the obtained illuminance levels are given below.

Evaluation Criteria:

Considering the standards related to the illumination level required to be provided in patient rooms, TS EN 12464-1 requires at least 100 lx for general lighting and at least 300 lx for simple examination and reading lighting in patient rooms (TS EN 12464-1, 2013). TS EN 17037, on the other hand, gives the standards for daylight to be provided in any volume and states that 300 lx illumination level should be provided at least 50% of the reference plane for the targeted illuminance level (TS EN 17037, 2019).

In the comparison of the scenarios produced, the calculated illuminance levels were based on the E_{ort} values and the improvement rates were given according to the current situation. Current state; it refers to the situation with a width of 180 cm and a height of 140 cm, a window-to-wall ratio of 22%, a parapet height of 90 cm, located in the center of the X and Y axes of the wall.

The simulations were made on the working plane, which is 85 cm above the ground and taken one meter from the walls seen in Figure 4.1, and the E_{ort} value obtained on the plane was used when evaluating the results. Calculated illuminance levels-room depth variation are expressed with graphs. The E_{max} value shows the illuminance level at a room depth of 1 meter, the E_{ort} value indicates the illuminance level at a room depth of 2 meters, and the E_{min} value indicates the illuminance level at a room depth of 3 meters.

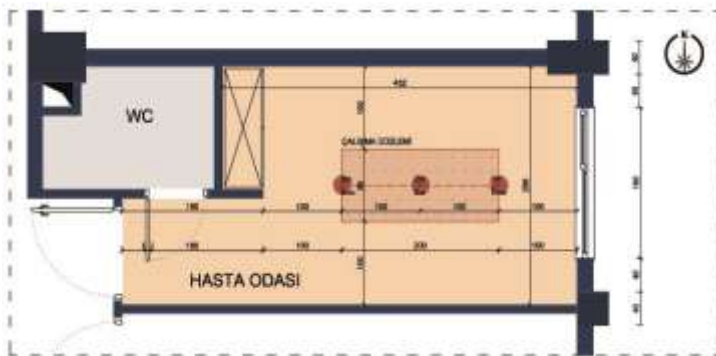


Figure 4.1. Representation of the working plane on the plane plane where the illuminance level calculations are made in the patient room simulations

4.1. Evaluation of The Obtained Data in the CIE Overcast Sky

Evaluation of windows in the center of the wall's X and Y axes and whose sizes change

When the results obtained are evaluated; it has been determined that the illuminance levels increase when the window sizes are enlarged, and similarly, it decreases when the dimensions are reduced.

If the window is in the center of the axes, it has been determined that the window with a width of 180 cm and a height of 220 cm with a 35% window-to-wall ratio provides the best performance. Considering the E_{ort} values obtained at the end of the simulations, the lowest is 104 lx; the highest illuminance level of 675 lx was achieved and it is seen that the desired standards were reached and there was an increase of 43% in the illuminance levels compared to the current situation (Figure 4.2-4.3).

It was determined that the window with 180 cm width and 50 cm height and 8% window-to-wall ratio showed the worst performance. Considering the E_{ort} values obtained at the end of the simulations, the lowest is 20.4 lx; the highest illuminance level of 133 lx was achieved and the desired standards could not be achieved at many points (Figure 4.2-4.3). It was determined that there was a 71% decrease in illuminance levels compared to the current situation.

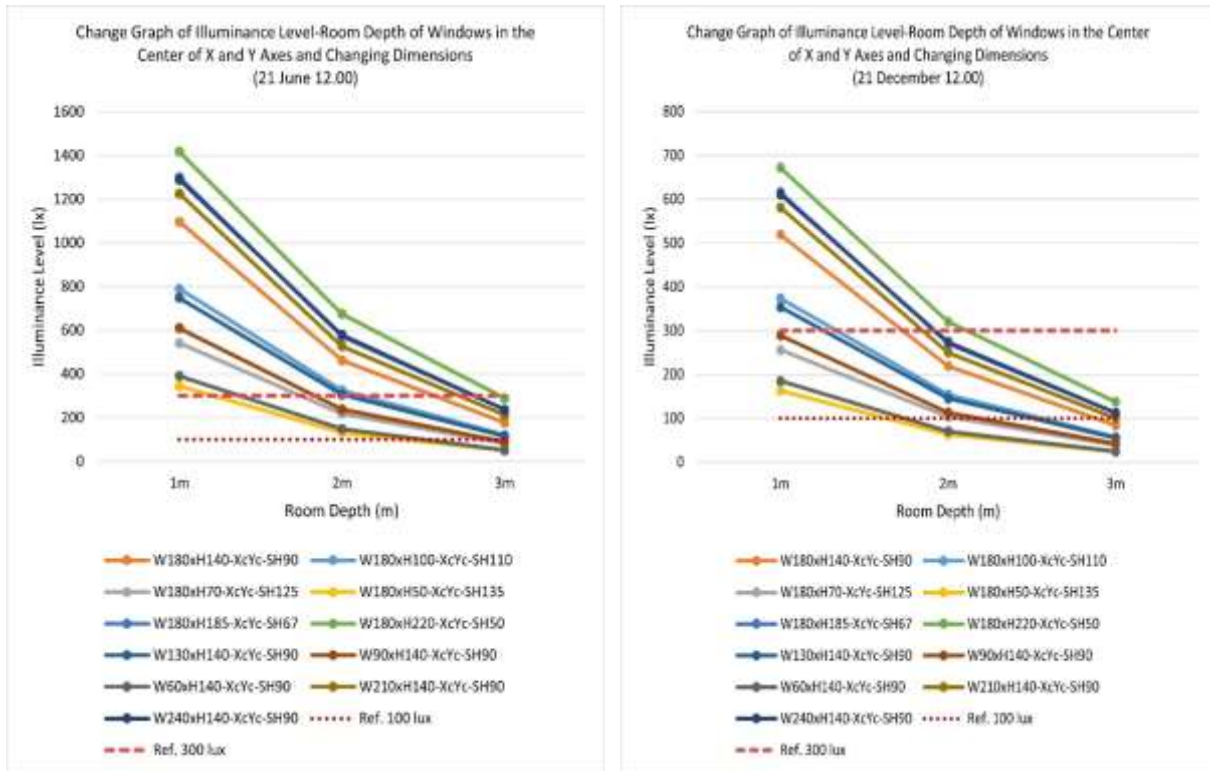


Figure 4.2-4.3. Changing illuminance levels depending on the windows size in the center of the X and Y axes in the CIE overcast sky

Evaluation of windows that are above the X-axis of the wall and whose sizes change

It has been determined that when the windows are placed above the X axis, the illuminance levels increase compared to the situation where they are in the center of the axes. It has been determined that if they are placed above the X axis, there is an increase of 13-28% in the illuminance levels and daylight factor when they are in the center of the axes. In this case, it can be stated that as the parapet height of the window increases, the level of illumination entering the room increases.

If the windows are placed above the X-axis, it has been determined that the window with a width of 180 cm and a height of 220 cm, which has a window-to-wall ratio of 35%, provides the best performance. Considering the E_{ort} values obtained at the end of the simulations, the lowest is 114 lx; it is seen that the highest illuminance level of 741 lx is achieved and the desired standards are achieved and there is an improvement of 56% compared to the current situation (Figure 4.4-4.5).

It was determined that the window with 180 cm width and 50 cm height and 8% window-to-wall ratio showed the worst performance. Considering the E_{ort} values obtained at the end of the simulations, the lowest is 23.2 lx; the highest illuminance level of 151 lx was achieved and the desired standards could not be achieved at many points (Figure 4.4-4.5). Compared to the current situation, there has been a 68% decrease in illuminance levels.

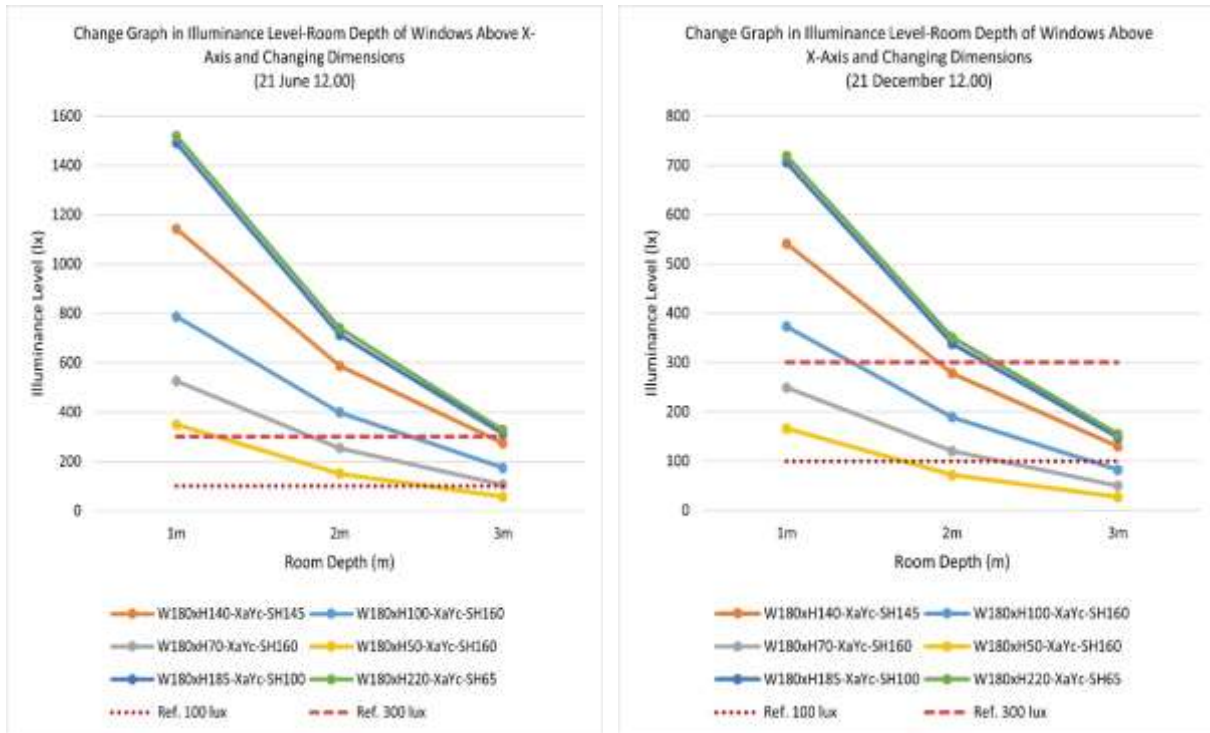


Figure 4.4-4.5. Changing illuminance levels depending on the windows size above the X-axis

Evaluation of windows that are under the X-axis of the wall and whose sizes change

In all scenarios, it was determined that the illuminance levels decreased when placed under the X axis compared to the cases where they were in the center of the axes. It has been determined that if they are placed under the X axis, there is a decrease of 6-68% in the illuminance levels and daylight factors depending on their changing sizes.

It has been determined that the best performance is provided by the window with a width of 180 cm and a height of 220 cm and a window-to-wall ratio of 35%, if the windows are placed under the X-axis. Considering the E_{ort} values obtained at the end of the simulations, the lowest is 67.8 lx; it has been determined that the highest illuminance level of 442 lx is provided and the desired standards have been reached, except for one of the calculated hours. It is seen that there is a 5% decrease in illuminance levels compared to the current situation.

It was determined that the window with 180 cm width and 50 cm height and 8% window-to-wall ratio showed the worst performance. Considering the E_{ort} values obtained at the end of the simulations, the lowest is 15.8 lx; it was determined that the highest illuminance level of 103 lx was achieved and the desired standards could not be reached, except for one of the calculation hours (Figure 4.6-4.7). It is seen that there is a 77% decrease in illuminance levels compared to the current situation.

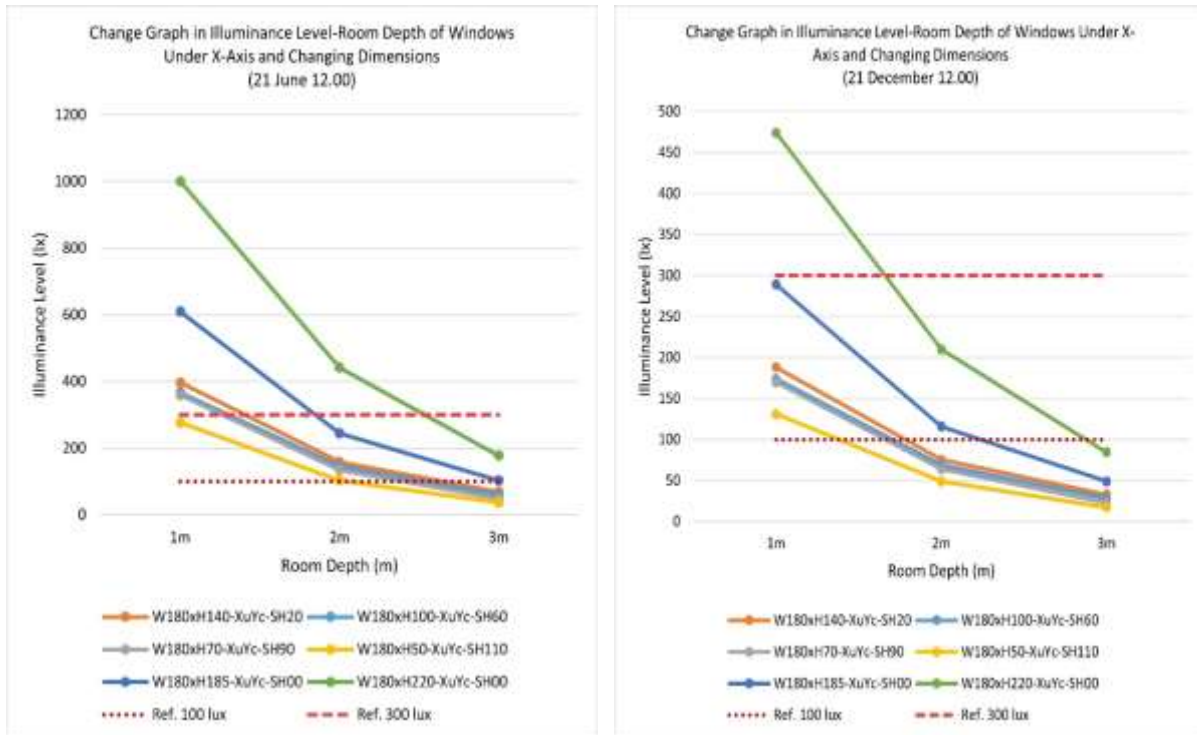


Figure 4.6-4.7. Changing illuminance levels depending on the window size under the X axis

Evaluation of windows that are shifted to the side in the Y-axis of the wall and their sizes change

In the scenarios, it has been determined that the illuminance levels and daylight factors decrease in the case of shifting in the Y axis compared to the cases where they are in the center of the axes, and it has been determined that the reduction rate remains in the range of 1-10%.

It has been determined that the window with a window-to-wall ratio of 30% with a width of 240 cm and a height of 140 cm provides the best performance when the windows are shifted sideways in the Y axis. Considering the E_{ort} values obtained at the end of the simulations, the lowest is 87.9 lx; it was determined that the highest illuminance level of 574 lx was provided and the desired standards were reached, except for one of the hours for which the calculation was made. It has been determined that there is a 23% increase in the illuminance levels compared to the current situation, but this increase is not caused by the window being moved sideways, but by enlarging the size of the window. It has been determined that there is a 1% decrease in the daylight factor compared to the situation where the window is in the center of the axes.

It was determined that the window with 60 cm width and 140 cm height and 8% window-to-wall ratio showed the worst performance. Considering the E_{ort} values obtained at the end of the simulations, the lowest is 21.5 lx; the highest illuminance level of 141 lx was achieved and the desired standards could not be achieved at many points (Figure 4.8-4.9). It was determined that there was a 70% decrease in illuminance levels compared to the current situation. However, this decrease is due to the reduction in the window sizes, and it has been determined that there is a 1% increase in the reduction rate when the window is in the center of the axes.

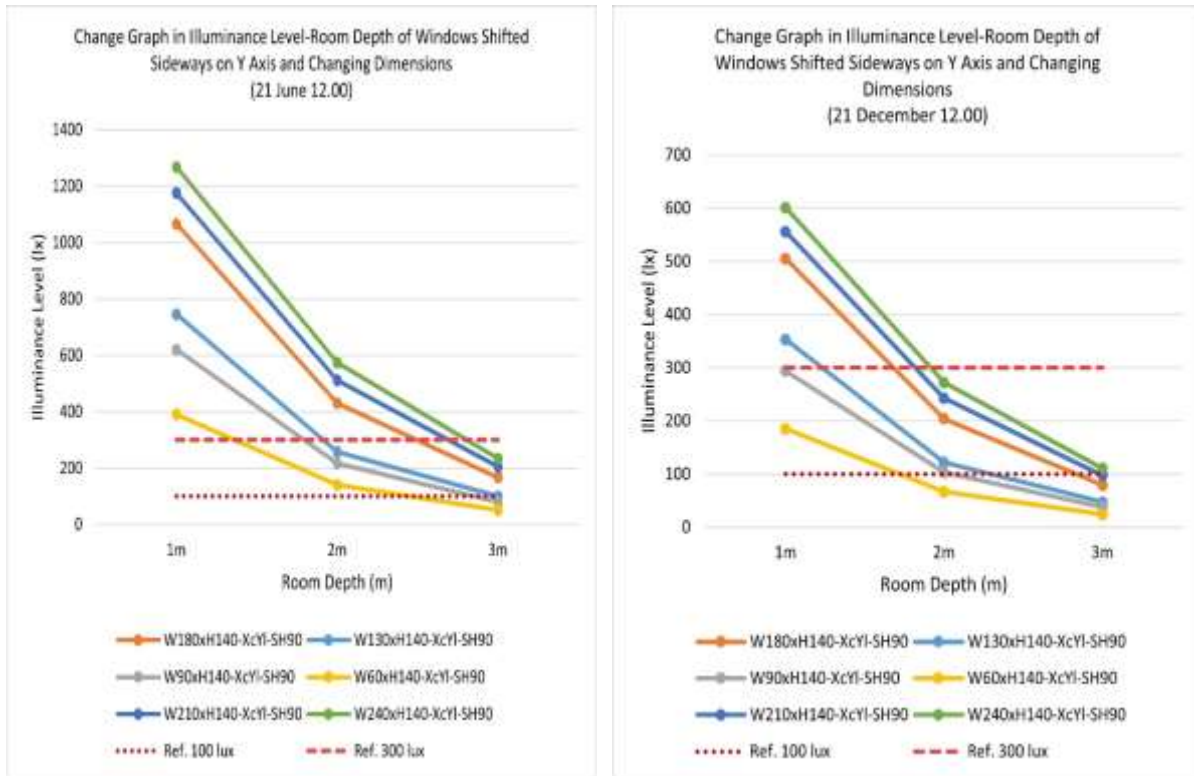


Figure 4.8-4.9. Changing illuminance levels depending on the window size shifted sideways in the Y-axis in the CIE overcast sky

4.2. Evaluation of the Obtained Data in the CIE Average Sky

In order to benefit from the findings obtained in the study in a wider area, the model was not limited to the direction of the patient room, the scenarios were modeled and simulated for four main directions, and the data obtained in the CIE average sky model were evaluated.

Evaluation of windows that are considered to be in the east direction

It has been determined that the alternative with a 35% window-to-wall ratio, 180 cm wide and 220 cm high, when the window is placed above the X axis, shows the best performance. When the E_{ort} values obtained from the simulations are examined; on 21 June, it is seen that it is 6286 lx at 9.00 in the morning, 936 lx at 12.00 at noon and 533 lx at 16.00 in the evening, and it has been determined that the desired illuminance levels are provided in all of the calculated hours (Figure 4.10).

When the E_{ort} values obtained from the simulations made on 21 December are examined; it is observed that it is 202 lx at 9.00 in the morning, 724 lx at 12.00 at noon and 146 lx at 16.00 in the evening, and it is seen that the illuminance level of 100 lx for general lighting is provided in all of the simulated hours. It is seen that the desired 300 lx illuminance level for daylight illumination is only achieved at 12.00 noon (Figure 4.11).

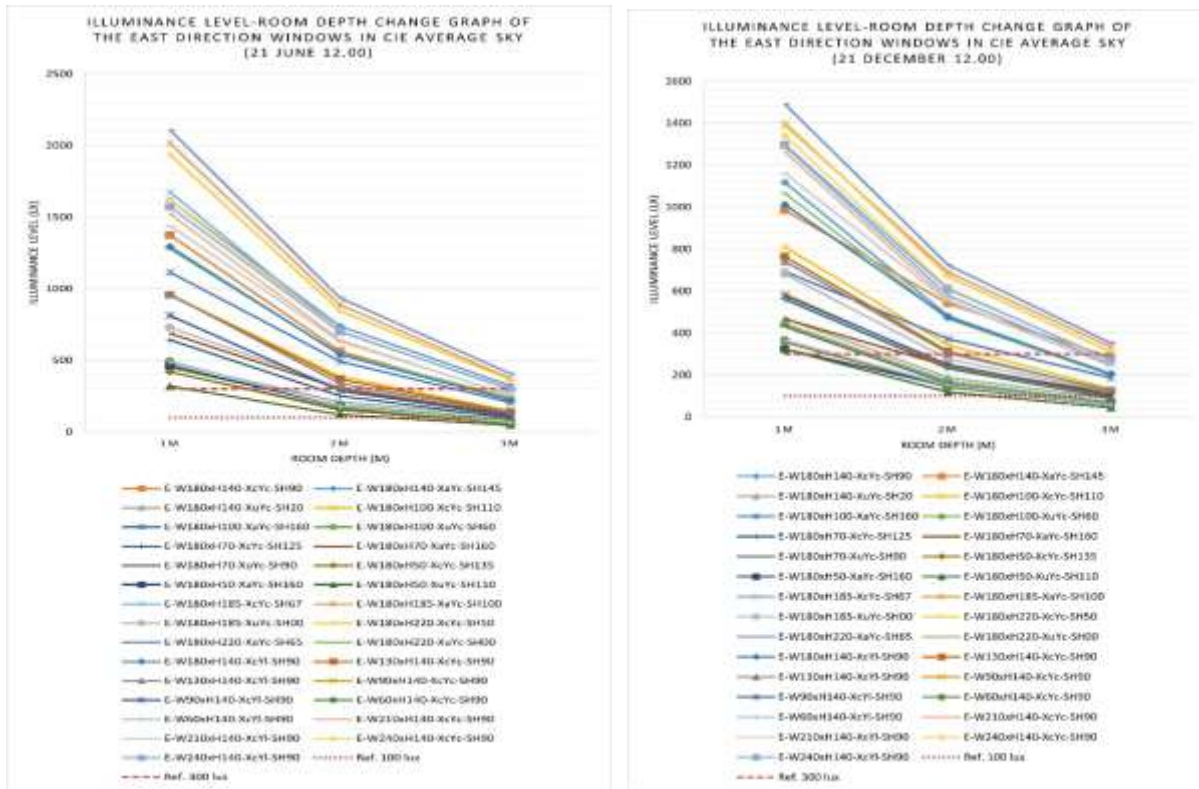


Figure 4.10-4.11. The illuminance levels of the windows assumed to east direction vary according to the room depth in the CIE average sky model

It has been determined that the alternative of the window with a window-to-wall ratio of 8%, 180 cm wide and 50 cm high, has the worst performance, when the window is placed under the X axis. When the E_{ort} values obtained from the simulations are examined; on 21 June, it is seen that it is 375 lx at 9.00 in the morning, 120 lx at 12.00 in the afternoon and 81.7 lx at 16.00 in the evening. It was determined that the desired 100 lx illuminance value could not be achieved only at 16.00 in the evening, and the desired 300 lx illuminance value for daylight illumination could not be achieved in any of the calculated hours (Figure 4.10).

When the E_{ort} values obtained from the simulations made on 21 December are examined; it is seen that it is 32.5 lx at 9.00 in the morning, 119 lx at 12.00 noon and 23.5 lx at 16.00 in the evening. It has been determined that the 100 lx illuminance level foreseen for general lighting is provided only at noon, while the 300 lx illuminance level cannot be achieved in any of them (Figure 4.11).

Evaluation of windows that are considered to be in the west direction

It has been determined that the alternative with a 35% window-to-wall ratio, 180 cm wide and 220 cm high, when the window is placed above the X axis, provides the best performance. When the E_{ort} values obtained from the simulations are examined; on 21 June, it is seen that it is 482 lx at 9.00 in the morning, 506 lx at 12.00 in the afternoon and 5040 lx at 16.00 in the evening, and it has been determined that the desired illuminance levels are provided in all of the calculated hours (Figure 4.12).

When the E_{ort} values obtained from the simulations made on 21 December are examined; it is seen that it is 70.8 lx at 9.00 in the morning, 547 lx at 12.00 at noon and 432 lx at 16.00 in the evening, and it is seen that the desired illuminance levels are provided except for the morning time (Figure 4.13).

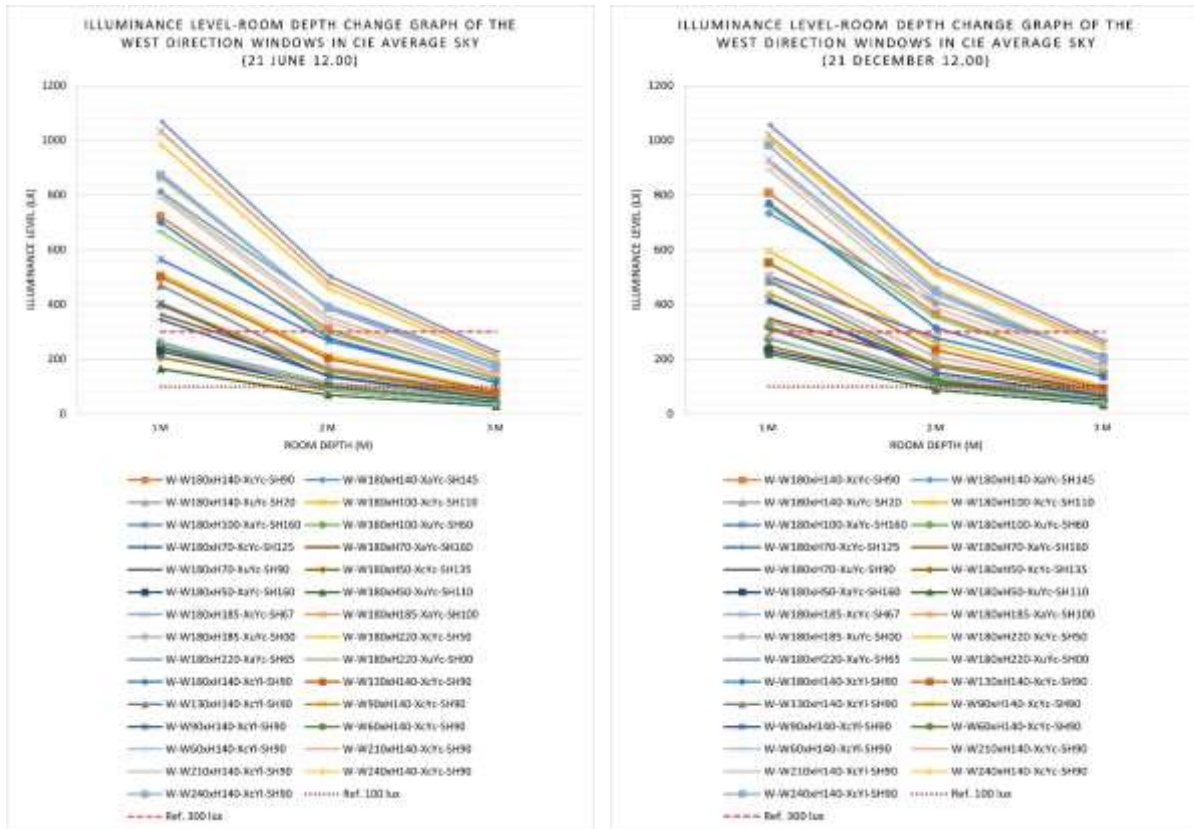


Figure 4.12-4.13. The illuminance levels of the windows assumed to be in the west direction vary according to the room depth in the CIE average sky model

It has been determined that the alternative of the window with a window-to-wall ratio of 8%, 180 cm wide and 50 cm high, has the worst performance, when the window is placed under the X axis. When the E_{ort} values obtained from the simulations are examined; on 21 June, it is seen that it is 74.8 lx at 9.00 in the morning, 69.5 lx at 12.00 at noon and 377 lx at 16.00 in the evening, and it has been determined that the desired standards cannot be achieved in general (Figure 4.12).

When the E_{ort} values obtained from the simulations made on 21 December are examined; it was observed that it was 11.1 lx at 9.00 in the morning, 89.1 lx at 12.00 in the afternoon and 69 lx at 16.00 in the evening. It was determined that the 100 lx illuminance level predicted for general lighting could not be achieved in any of the calculated hours (Figure 4.13). It has been observed that the necessary illuminance values in terms of visual comfort can be achieved only with the activation of artificial lighting during the calculation hours.

Evaluation of windows that are considered to be in the north direction

It has been determined that the alternative with a 35% window-to-wall ratio, 180 cm wide and 220 cm high, when the window is placed above the X axis, provides the best performance. When the E_{ort} values obtained from the simulations are examined; on 21 June, it is observed that it is 971 lx at 9.00 in the morning, 464 lx at 12.00 at noon and 963 lx at 16.00 in the evening, and it has been determined that the desired illuminance level values are achieved (Figure 4.14).

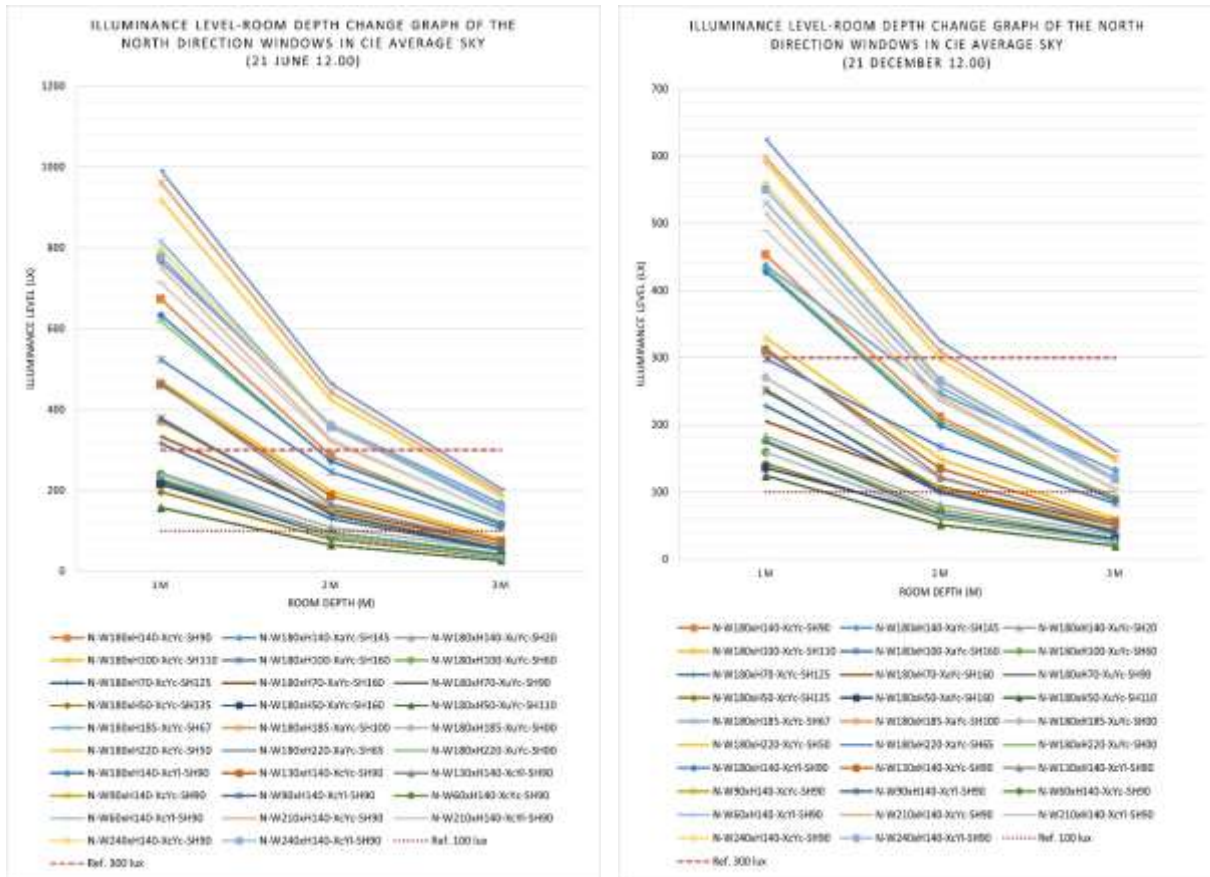


Figure 4.14-4.15. The illuminance levels of the windows assumed to be in the north direction vary according to the room depth in the CIE average sky model

When the E_{ort} values obtained from the simulations made on 21 December are examined; it is seen that it is 76 lx at 9.00 in the morning, 324 lx at 12.00 in the afternoon and 145 lx at 16.00 in the evening. It is seen that the illuminance level of 100 lx for general illumination is generally provided, but the illumination level of 300 lx for daylight illumination cannot be achieved (Figure 4.15).

It has been determined that the alternative of the window with a window-to-wall ratio of 8%, 180 cm wide and 50 cm high, has the worst performance, when the window is placed under the X axis. When the E_{ort} values obtained from the simulations are examined; on June 21, it is seen that it is 155 lx at 9.00 in the morning, 64.6 lx at 12.00 at noon and 149 lx at 16.00 in the evening, while an illuminance value of 100 lx is provided in general, it has been determined that 300 lx cannot be achieved (Figure 4.14).

When the E_{ort} values obtained from the simulations made on 21 December are examined; it is seen that it is 12 lx at 9.00 in the morning, 51.1 lx at 12.00 noon and 23.2 lx at 16.00 in the evening, and it has been determined that the illuminance level of 100 lx for general lighting cannot be achieved in any of the calculated hours (Figure 4.15).

Evaluation of windows that are considered to be in the south direction

It has been determined that the alternative with a 35% window-to-wall ratio, 180 cm wide and 220 cm high, when the window is placed above the X axis, provides the best performance. When the E_{ort} values obtained from the simulations are examined; on June 21, it is seen that there are 971 lx at 9.00 in the morning, 464 lx at 12.00 at noon and 963 lx at 16.00 in the evening, and it has been determined that the standards are met in all of the calculated hours (Figure 4.16).



On December 21; it is seen that it is 76 lx at 9.00 in the morning, 324 lx at 12.00 at noon and 145 lx at 16.00 in the evening, and it is seen that the illuminance level of 100 lx for general lighting is provided except in the morning. It is seen that the 300 lx illuminance level foreseen for daylight illumination is provided only at 12.00 noon (Figure 4.17).

It was determined that the windows with the worst performance in the south direction differed on 21 June and 21 December. It was determined that the window with the worst performance on 21 June was the alternative of the window with a window-to-wall ratio of 8%, 180 cm wide and 50 cm high, when it was placed under the X axis. When the E_{ort} values obtained from the simulations are examined; it is seen that it is 155 lx at 9.00 in the morning, 131 lx at 12.00 at noon and 179 lx at 16.00 in the evening, and it has been determined that the desired 100 lx luminance value for general illumination is provided in all of the calculated hours, but the desired 300 lx value for daylight illumination cannot be achieved (Figure 4.16).

On December 21, it was determined that the window alternative, which has an 8% window-to-wall ratio, but 60 cm in width and 140 cm in height, shifted to the side in the Y axis, showed the worst performance. When the E_{ort} values obtained from the simulations are examined; it is seen that it is 31.7 lx at 9.00 in the morning, 419 lx at 12.00 in the afternoon and 88.6 lx at 16.00 in the evening. It is seen that both the 100 lx illuminance level foreseen for general illumination and the 300 lx illuminance level foreseen for daylight illumination are provided only at 12.00 noon (Figure 4.17).

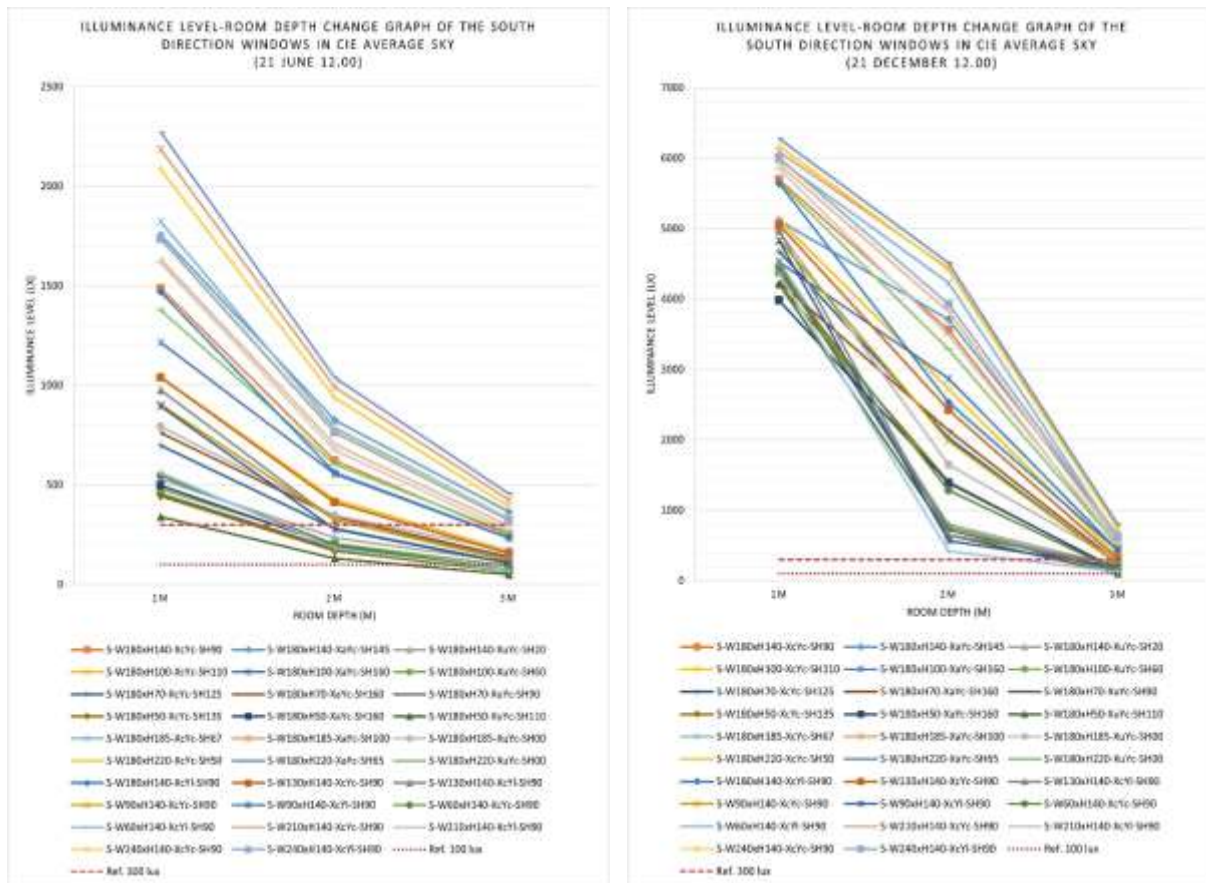


Figure 4.16-4.17. The illuminance levels of the windows assumed to be in the south direction vary according to the room depth in the CIE average sky model

5. CONCLUSION

Today, energy consumption is increasing day by day due to technological developments and changes in life style. It is seen that energy consumption for air conditioning and lighting has an



important share in general energy consumption in order to provide user comfort in buildings. While making maximum use of daylight in building design in a way that provides interior comfort conditions, reduces energy consumption in buildings, it also creates positive results on users both physiologically and psychologically.

The use of daylight in improving visual comfort in patient rooms in healthcare facilities is important in terms of both its positive contribution to the healing processes of patients and the reduction of energy consumption due to artificial lighting. Adequate use of daylight will help reduce energy consumption from lighting, as well as reduce energy consumption from heating and cooling.

In this study, window size and position, which are effective in the daylight performance of the building, are used as variable parameters and options for window size and location with the optimum solution in terms of energy efficient lighting design are obtained and it is tried to provide guidance to the designers for both newly designed and existing buildings. A patient room in Gazi University Faculty of Medicine Research and Practice Hospital was taken as an example, and the findings obtained from the simulation results of the scenarios produced on the current situation were evaluated.

Daylight simulations were made in CIE overcast sky and average sky models for 9.00, 12.00 and 16.00 hours, representing the usage time of the room on 21 June and 21 December, which is thought to represent the best and worst conditions in terms of daylight for the current situation of the sample patient room and the scenarios produced.

When the data obtained in the overcast sky model is evaluated, it can be stated in the most general sense that as the window-wall ratio increases, the daylight illuminance level in the room increases and decreases as it decreases. It has been determined that if the windows are located in the center of the axes, placed on the X axis and shifted to the side on the Y axis, sufficient daylight is provided on 21 June, and on 21 December, daylight is generally insufficient in the morning and evening hours. In case the windows are positioned below the X-axis, in other words, the parapet heights are reduced, considering the usage times of the room, daylight is insufficient for almost all of them.

Data from the average sky model was used to evaluate the differences in daylight performance if the scenarios were in different directions. In the east direction, on 21 June, the desired values for the illuminance level were generally provided in the standards, but on 21 December, it was observed that the use of artificial lighting was necessary in order to provide the necessary visual performance values in the morning and evening hours. This situation increases the energy consumption due to lighting.

When the values obtained for the west direction are examined, it has been determined that the illuminance levels generally approach the standards in the noon and evening hours on the calculation dates, and artificial lighting is absolutely needed on 21 December in the morning hours.

When the data obtained for the north direction were evaluated, it was determined that the illumination level was very close to each other in the morning and evening hours on 21 June and met the standards, and there was a need for artificial lighting in some window types at noon. It has been determined that the illuminance levels obtained in the evening hours on 21 December are close to twice the values in the morning hours, but the desired illuminance levels cannot be achieved in both times and artificial lighting load is seriously needed.

Considering the values obtained for the south direction, it was seen that the standards were met on 21 June, and on 21 December, there was a need for artificial lighting in some window types in the morning and evening hours.

In health buildings with high energy consumption, maximum use of daylight in patient rooms used throughout the day has positive physiological and psychological effects on the users of the room, while contributing significantly to reducing energy consumption. With this research, it has been



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tried to create a study as a suggestion to the designers about window openings and locations in order to increase the natural lighting performance of both existing patient rooms and patient rooms in new healthcare buildings.

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**MORPHOLOGICAL CHANGES AND GROWTH OF BLACK NEON TETRA
(*HYPHESSOBRYCON HERBERTAXELRODI*) IN EARLY LIFE STAGE**

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İhsan Çelik

Şükran Cirik

Abstract

In this study, morphological changes and growth patterns of black neon tetra in early life stage (*Hyphessobrycon herbertaxelrodi*) are described. Characterizing this early life stage is important for aquaculture studies. One-year-old black neon tetra were used for breeding in this study. They were fed with commercial ornamental fish feeds three times a day. Larvae were collected immediately after hatching and maintained at $24 \pm 0.5^\circ\text{C}$. They were transferred into 15 L glass aquariums for morphological development observations. The larvae were randomly sampled and photographed daily from hatching to 30 days after hatching. An image analysis program was used for the observation of general morphological changes. Also, the total length of larvae was measured using image analysis program. Growth patterns in early life stages were calculated as a power function of total length with the exponent and intercept obtained from linear regressions on log-transformed data.

The total length of the larva was 2.77 ± 0.08 mm on the first day, 3.47 ± 0.16 mm on the 5th day, 5.39 ± 0.11 mm on the 10th day, 6.85 ± 0.38 mm on the 15th day, 7.96 ± 0.20 mm on the 19th day, and 10.42 ± 0.66 mm on the 25th day and 12.26 ± 0.96 mm on the 29th day. According to obtained results, the average length of the larvae, which started the juvenile stage on the 28th–29th days, was 12.26 ± 0.96 mm.

In this study investigated the early life stage of black neon tetra and the morphological changes and growth patterns of larvae to provide basic information for the seed production of Characidae fish. In conclusion, morphological changes and growth findings indicate that early life stages of black neon tetra are the same as other characins.

Keywords: Aquarium, ornamental fish, characin, tetra, growth



INVESTIGATION OF HYBRID SHEEP HYDROXYAPATITE COMPOSITES PREPARED BY COLD ISOSTATIC PRESSING METHOD

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Abstract

Hydroxyapatite has been broadly employed for bone treatment applications. Hydroxyapatite, which can be obtained naturally or synthetically, is the major inorganic component of natural bones. In the present research, Hydroxyapatite was extracted from sheep bones. Composites were obtained by adding expanded perlite at the ratios of 1, 5 and 10 wt.% to sheep bone. Hybrid composites were obtained with two different composite ratios. The first were obtained by adding with 1, 5 and 10 wt.% of expanded perlite and also 5 wt.% of TiO₂, 5 wt.% of MgO and 5wt.% of P₂O₅ to sheep bone. The second were obtained by adding with 1, 5 and 10 wt.% of expanded perlite and also 5 wt.% of ZrO₂, 5 wt.% of MgO and 5wt.% of P₂O₅ to sheep bone. Hybrid composites were prepared by cold isostatic pressing method (250 MPa) and sintered at 900 ° C for 1 h. In order to evaluate the characteristics of the bio-composites, microhardness, density, X-ray diffraction (XRD), Fourier transform infra-red spectroscopy (FT-IR), scanning electron microscopy (SEM), and energy dispersive spectroscopy (EDS) analyses were carried out on them. The experimental results showed that the micro-hardness value increased in all samples with the increase of expanded perlite addition. The highest microhardness value was observed as 302 HV in the sample to which 5 wt.% by ZrO₂ was added. In XRD analysis, calcium silicate phases were observed with the addition of expanded perlite to sheep bone. In hybrid composites, phases such as hydroxyapatite, calcium silicate, calcium phosphate and sodium components were observed. In the FT-IR analysis, bands of inorganic hydroxyl, calcium and phosphate groups, which are the main components of the hydroxyapatite structure, were observed. In SEM/EDS analysis, it was observed that a dense microstructure was formed and the micropores were homogeneously distributed. According to the results obtained, it was concluded that the use of expanded perlite as an alternative to bioactive glasses is promising in terms of cost, ease of use and similarity to the chemical content of bioactive glass.

Keywords: Hydroxyapatite, expanded perlite, TiO₂, ZrO₂, MgO and P₂O₅



SOĞUK İZOSTATİK PRESLEME YÖNTEMİ İLE HAZIRLANAN HİBRİT KOYUN HİDROKSİAPATİT KOMPOZİTLERİNİN İNCELENMESİ

Özet

Hidroksiapatit, kemik tedavisi uygulamaları için geniş çapta kullanılmaktadır. Doğal ve sentetik olarak elde edilebilen hidroksiapatit, insan ve hayvan kemiklerinin ana bileşeni olan biyouyumlu bir malzemedir. Bu çalışmada, hidroksiapatit koyun kemiklerinden sentezlendi. Koyun kemiğine ağırlıkça % 1, 5 ve 10 oranlarında geliştirilmiş perlit ilavesi ile kompozitler elde edildi. Hibrit kompozitler iki farklı kompozit oranlarıyla elde edildi. Birincisi, koyun kemiğine ağırlıkça % 1, 5 ve 10 geliştirilmiş perlit, ağırlıkça % 5 TiO₂, % 5 MgO ve % 5 P₂O₅ ilavesiyle elde edildi. İkincisi, koyun kemiğine ağırlıkça % 1, 5 ve 10 geliştirilmiş perlit, ağırlıkça % 5 ZrO₂, % 5 MgO ve % 5 P₂O₅ ilavesiyle elde edildi. Hibrit kompozitler soğuk izostatik presleme yöntemiyle (250 MPa) hazırlandı ve 900 °C'de 1 saat sinterlendi. Numunelerin karakterizasyon özellikleri yoğunluk, mikrosertlik, X-ışını kırınımı (XRD), fourier dönüşümü kızıl ötesi spektroskopisi (FT-IR), Taramalı elektron mikroskobu (SEM) ve enerji dağılımlı spektroskopisi (EDS) analizleri ile belirlendi. Sonuç olarak; geliştirilmiş perlit ilavesinin artmasıyla tüm numunelerde mikro-sertlik değerinin arttığı gözlenmiştir. En yüksek mikro-sertlik değeri ağırlıkça %5 ZrO₂ ilave edilen numunede 302 HV olarak gözlemlendi. XRD analizlerinde koyun kemiğine geliştirilmiş perlit ilavesi ile kalsiyum silikatlı fazlar gözlemlendi. Hibrit kompozitlerde ise başta hidroksiapatit olmak üzere kalsiyum silikat, kalsiyum fosfat ve sodyum bileşenli fazlar gözlemlenmiştir. FT-IR analizinde hidroksiapatit yapının temel bileşenleri olan inorganik hidroksil, kalsiyum ve fosfat gruplarına ait bantlar gözlemlenmiştir. SEM/EDS analizlerinde yoğun bir mikroyapının oluştuğu ve mikro gözeneklerin homojen dağıldığı gözlemlenmiştir. Elde edilen sonuçlara göre geliştirilmiş perlitin biyoaktif camlara alternatif olarak kullanılması maliyet, kullanım kolaylığı ve biyoaktif camın kimyasal içeriğine benzer olması açısından umut vadetmekte olduğu sonucuna ulaşılmıştır.

Anahtar Kelimeler: Koyun hidroksiapatit, geliştirilmiş perlit, TiO₂, ZrO₂, MgO and P₂O₅

1. GİRİŞ

İnsan vücudundaki canlı dokuların görevlerini yerine getirmek ya da dokuları desteklemek için kullanılan doğal ya da sentetik malzemelere "biyomalzeme" denir. Biyomalzemeler; polimerler, metaller, seramikler ve bunların kompozitlerinden hazırlanabilir. Doğal kemik hücrelerini taklit eden biyouyumlu biyomalzemelerin geliştirilmesi kemik doku mühendisliği stratejileri arasında en önemli konulardan biridir. Hidroksiapatit (Ca₁₀(PO₄)₆(OH)₂), trikalsiyum fosfat ve biyoaktif camlar klinik olarak ilgi çeken biyoaktif inorganik malzemelerdir. Bu malzemeler arasında hidroksiapatit (HA) doğal kemiğe benzerliği dolayısıyla ortopedik implantlarda yaygın bir şekilde kullanılmıştır (Stevens, 2008). Koyun kemiği, sığır kemiği, mercan, yumurta kabuğu, balık kılçığı, geyik boynuzu gibi doğal maddelerden üretilen HA, sentetik HA'lara göre farklılık gösterirler. Koyunlar, kemik yapılarının ve kemik metabolizmasının insanlara benzer olması avantajına sahiptir (Newman vd. 1995). Doğal HA'lar yapılarında karbonat, sitrat grupları yanı sıra genellikle kimyasal yapılarında az da olsa magnezyum, potasyum, stronsiyum ve sodyum içerirler (Gutowska vd. 2005). Doğal HA'da kalsiyumun fosfor oranı (Ca/P) genel itibarı ile sentetik HA'dan daha fazladır. Bu gibi özelliklerden dolayı tıbbi uygulamalarda doğal HA kullanımı daha uygundur (Siwar vd. 2013). Fakat HA, mekanik dayanımının düşük olması ve gevrekliği nedeni ile klinik, ortopedik ve dişçilik uygulamalarında kullanımı kısıtlıdır (Ozden vd. 2012). Biyoaktif cam, biyoaktif seramik, doğal veya sentetik polimerler ve bunların kompozitleri olmak üzere pek çok kemik yerine kullanılan



malzeme son yirmi yılda kapsamlı bir şekilde araştırılmıştır (Terzioğlu ve Kalemtaş, 2017). Bunların yanı sıra Al_2O_3 , ZrO_2 , TiO_2 , MgO ve P_2O_5 gibi takviyelerde yaygın olarak kullanılmaktadır ve yapılan çalışmalarında bahsi geçen takviyelerin mekanik özellikleri iyileştirdiği gözlenmiştir (Oktar vd. 2007; Ozden vd. 2012; Guidara vd. 2017; Yao vd. 2018). Bu takviyeler genellikle korozyon direnci, iyi biyouyumluluk, yüksek aşınma direnci ve yüksek mukavemet gibi mükemmel özelliklerinden dolayı seçilmiştir.

Standart biyoaktif cam formülü genel olarak 45S5 olarak bilinmektedir ve FDA (Food and Drug Administration) tarafından onaylanmaktadır. Bu form ağırlık olarak % 45 SiO_2 , % 24,5 Na_2O ve CaO ile % 6 P_2O_5 içermektedir (Hench, 1991). Bunu yanı sıra yumuşak ve sert dokulara bağlanabilmeleri, enzimatik faaliyetleri, üç boyutlu vasküler yapı oluşumunu desteklemeleri, kemik dokudaki mezenkimal hücrelerin farklılaşmasına yardımcı olmaları ve kemik doku ile organik bağlarla bağlanmaları nedeniyle sıklıkla tercih edilir (Taygun vd. 2013; Khanmohammadi vd. 2019; Wen vd. 2021). Bu kapsamda perlit, doğada serbestçe bulunan, cama benzer bir kimyasal bileşime (% 74 SiO_2 , % 14,33 Al_2O_3 , % 4,95 K_2O , % 2,9 Na_2O_3 , % 0,97 Fe_2O_3 , % 0,5 CaO , % 0,28 MgO , % 0,12 TiO_2) sahiptir. Ayrıca ayarlanabilir bir yoğunluğa sahip bir volkanik silikat olan perlit, bu bağlamda biyoaktif cama daha iyi bir alternatif olabilir. Fakat perlitin biyoaktif cama alternatif olarak kullanıldığı çalışmalar kısıtlıdır (Walter vd. 2005; Erli vd. 2006; Karip ve Muratoğlu, 2021).

Bu çalışmada koyun kemiğinden HA sentezlendi. Daha sonra ağırlıkça % 1, 5 ve 10 genişletilmiş perlit, ağırlıkça % 1, 5 ve 10 genişletilmiş perlit ile ağırlıkça % 5 TiO_2 - MgO - P_2O_5 ve ağırlıkça % 1, 5 ve 10 genişletilmiş perlit ile ağırlıkça % 5 ZrO_2 - MgO - P_2O_5 takviyeleri ile hibrit kompozitler elde edildi. Soğuk izostatik presleme yöntemi kullanıldı (250 MPa, 900 °C, 1 saat). Numunelerin karakterizasyon özellikleri yoğunluk, mikrosertlik, XRD, FT-IR, SEM ve EDS analizleri ile belirlendi. Bu takviyelerden ZrO_2 ve TiO_2 mekanik ve fiziksel özelliklerin artırılması amacıyla, MgO ve P_2O_5 de fiziksel özelliklerin yanı sıra kemiksi yapı kazandırmak ve biyouyumluluğu arttırabilmek amacıyla seçilmiştir.

2. MALZEME VE YÖNTEM

Koyun kemikleri Fırat üniversitesi Veterinerlik Fakültesinden elde edildi. Koyun kemikleri ilik, sinir, yağ gibi yapıların uzaklaşması için 2 saat kaynatıldı. Daha sonra ağırlıkça % 5 $NaOH$ çözeltisi ile 30 dakika tekrar kaynatıldı (bu işlem 4 defa yapıldı). Temizlenen kemikler 2 saat 350 °C ön kalsinasyon yapıldı ve daha sonra 4 saat 700 °C de sinterlendi. Apatit forma dönüşen kemikler bilyeli değirmende 24 saat öğütüldü ve bir elek yardımıyla 100 mikron boyutuna ayarlandı. Genleştirilmiş perlit (100 mikron), ZrO_2 , TiO_2 ve MgO (% 98 saflık, 80 mikron) Nanografi Nano Teknoloji Bilişim İmalat ve Danışmanlık Ltd. şirketinden (Ankara) temin edildi. Genleştirilmiş perlite (GP) ait kimyasal bileşenler Tablo 1. de gösterilmiştir.

Tablo 1. Genleştirilmiş perlite (GP) ait kimyasal bileşimler.

SiO_2	Al_2O_3	K_2O	Na_2O_3	Fe_2O_3	CaO	MgO	TiO_2
% 74	% 14,33	% 4,95	% 2,9	% 0,97	% 0,5	% 0,28	% 0,12

Hibrit kompozitler, her numune 30 dakika olmak üzere elektronik karıştırıcı ile karıştırıldı. Daha sonra analizler için numuneler silindir şeklinde (11 mm çap ve 10 mm yükseklik) 250 MPa 'da soğuk izostatik preslendi. Bu işlem, her seferinde kalıplar çinko-sterat ile yağlanılarak gerçekleştirildi. Numuneler 900 °C sıcaklıkta 5 °C/dk sinterlenme hızı ile 1 saat boyunca sinterlendi. Kullanılan takviyeler ile hazırlanmış numuneler ve numune kodları Tablo 2. 'de verilmiştir.

Tablo 2. Numunelerin karışım yüzdeleri ve kodları.

I. Gurup	II. Gurup	III. Gurup
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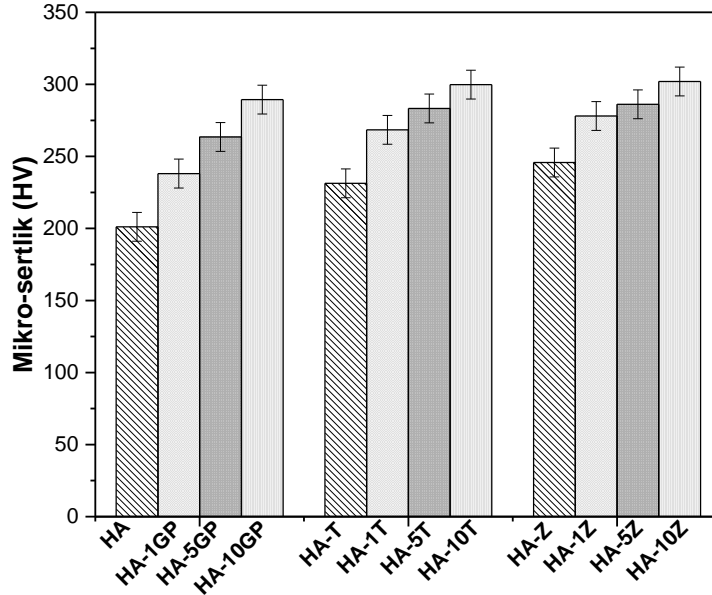
HA	Koyun HA	HA-T	HA+ % 5 TiO ₂ -MgO-P ₂ O ₅	HA-Z	HA+ % 5 ZrO ₂ -MgO-P ₂ O ₅
HA-1GP	HA+% 1 EP	HA-1T	HA + %5 TiO ₂ -MgO-P ₂ O ₅ + %1 EP	HA-1Z	HA + %5 ZrO ₂ -MgO-P ₂ O ₅ + %1 EP
HA-5GP	HA+% 5 EP	HA-5T	HA+%5 TiO ₂ -MgO-P ₂ O ₅ + %5 EP	HA-5Z	HA+%5 ZrO ₂ -MgO-P ₂ O ₅ + %5 EP
HA-10GP	HA+% 10 EP	HA-10T	HA+%5 TiO ₂ -MgO-P ₂ O ₅ + %10 EP	HA-10Z	HA+%5 ZrO ₂ -MgO-P ₂ O ₅ + %10 EP

Elde edilen numunelerin yoğunluk değerleri, numunelerin geometrik verilerinden yola çıkılarak hesaplanmıştır. Vickers mikro-sertlik, Tronic test cihazı kullanılarak mikro-sertlik değerleri 0,49 N'luk yük 15 saniye boyunca uygulanarak alınmıştır. Daha sonra numunelerin XRD ve FT-IR analizleri yapılmıştır. Numunelerin yüzeyleri Denton Vacuum-Desk V kullanılarak altın ile kaplanmıştır. Altın kaplanan numunelerin içyapıları Zeiss marka Eva/ Ma10 model taramalı elektron mikroskobu (SEM) ile belirlenmiş ve her numunenin EDS analizleri alınmıştır.

3. SONUÇLAR VE TARTIŞMA

Mikro-sertlik değerleri her numuneden alınan 5 değerın ortalamasının alınması ile tespit edilmiştir. Hibrit kompozitlere ait mikro-sertlik grafiği Şekil 1.'de gösterilmiştir.

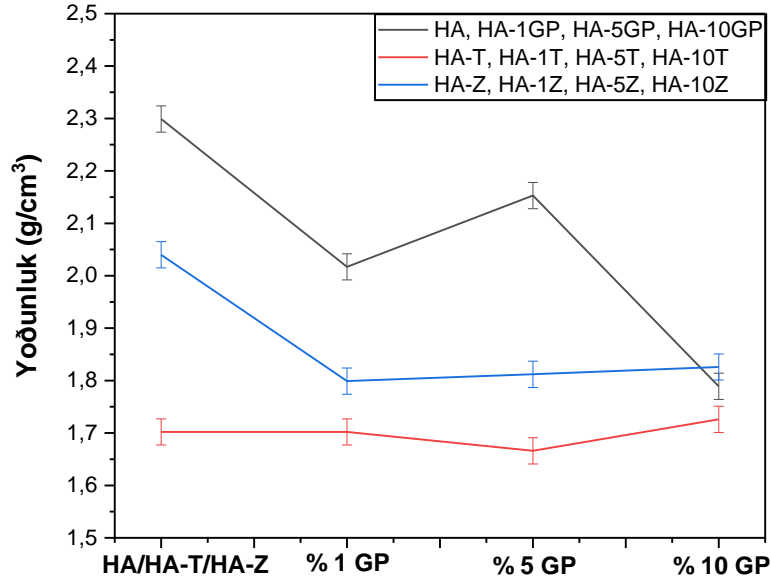
Genleştirilmiş perlitin (GP) takviye miktarı artırıldıkça tüm numunelerin mikro-sertliği artmıştır. Saf haldeki HA'nın mikro sertliği 201,1 HV iken ağırlıkça % 10 GP ilavesi (HA-10 EP numunesi) ile bu değer 289,4 HV 'ye çıkmıştır. Ayrıca ağırlıkça % 5 TiO₂-MgO-P₂O₅ ve ağırlıkça % 5 ZrO₂-MgO-P₂O₅ ilavesi ile hazırlanan hibrit kompozitlerin mikro-sertliği sırasıyla 231,3 HV (HA-T numunesi) ve 245,8 HV (HA-Z numunesi) olarak tespit edilmiştir. Bu değerler GP'nin ağırlıkça % 10 ilavesi ile sırasıyla 299,8 HV (HA-10 T numunesi) ve 302 HV 'ye (HA-10 Z numunesi) çıktığı tespit edilmiştir. En yüksek mikro-sertlik değeri HA-10Z numunesinde 302 HV olarak gözlenmiştir. Hibrit kompozitlere ait yoğunluk değerleri Şekil 2 'de gösterilmiştir.



Şekil 1. Mikro-sertlik grafiği.

Şekil 2 de görüldüğü gibi koyun HA'ya GP ilavesi arttıkça yoğunluk değerlerinde azalma gözlenmiştir. Bunu sebebi GP'nin yoğunluk değerinin HA'ya göre çok düşük olmasından kaynaklandığı düşünülmektedir. Ağırlıkça % 5 ZrO₂-MgO-P₂O₅ ilave edilen numunelerde GP

ilavesi ile yoğunluk önce düşmüş fakat GP'nin ilave oranı arttıkça yoğunluk değerinde artış gözlenmiştir. Ayrıca ağırlıkça % 5 TiO_2 - MgO - P_2O_5 ilavesinde de benzer bir sonuç gözlenmiştir.



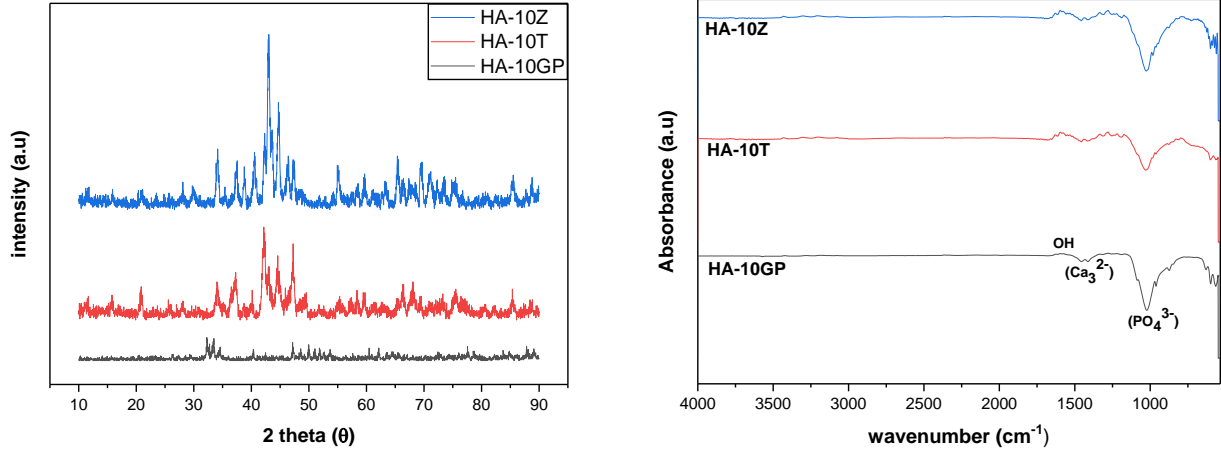
Şekil 2. Yoğunluk grafiği.

Sığır kemiklerine ağırlıkça % 5 ve 10 oranlarında SiO_2 , MgO , Al_2O_3 ve ZrO_2 takviyeleri yapılarak farklı sinterleme sıcaklıklarında (1000-1300 °C) mekanik özellikleri incelenmiştir (Oktar vd. 2007). Ölçülen en yüksek mikro-sertlik değeri ağırlıkça % 5 Al_2O_3 ve 1300 °C de sinterlenen numuneden 450 HV olarak ölçülmüştür. Ayrıca ağırlıkça % 5 SiO_2 , MgO ve ZrO_2 ilaveli kompozitlerde 1300 °C de sırasıyla 224, 305 ve 256 HV olarak gözlenmiştir.

Ozden ve çalışma arkadaşları sığır kemiğine ağırlıkça % 5, 10 ve 15 oranlarında Al_2O_3 , TiO_2 ve ZrO_2 ilavesi ile kompozitler hazırlamışlar ve 900-1100 °C de mekanik özelliklerinin incelemişlerdir (Ozden vd. 2012). Saf HA 'nın 1100 °C sinterleme de mikro-sertliğini 229 HV olarak tespit etmişlerdir. Takviye miktarlarının ağırlıkça oranları arttıkça mikro-sertliğin arttığını gözlemişlerdir. En yüksek mikro-sertlik değerini ağırlıkça % 15 TiO_2 ve 1100 °C de sinterlenen numunede yaklaşık 350 HV olarak tespit etmişlerdir.

Bu çalışmada sinterleme sıcaklığı 900 °C de sabit tutulmuştur. Fakat yine de takviye miktarlarının artması ile mikro-sertlik değerlerinin arttığı gözlenmiştir. Genleştirilmiş perlit içerisinde yüksek miktarda bulunan SiO_2 ve Al_2O_3 sertliğin artmasında doğrudan rol almıştır. Ayrıca hibrit kompozitlerin oluşumunda kullanılan ZrO_2 , TiO_2 ve MgO gibi diğer takviyelerde sertlik artışına neden olmuştur. Yoğunluk değerleri GP'nin düşük yoğunluğundan dolayı kısmen düşmüştür.

Mikro-sertlik değerinde gözlenen en yüksek artış GP ilavesinin ağırlıkça %10 olduğu numunelerde gerçekleştiği gözlenmiştir. Bu nedenle her üç grupta da ağırlıkça %10 GP ilave edilen numuneler ait XRD ve FT-IR analizleri alınmıştır. Numunelere ait XRD ve FT-IR analizleri sırasıyla Şekil 3.a ve Şekil3.b de verilmiştir.

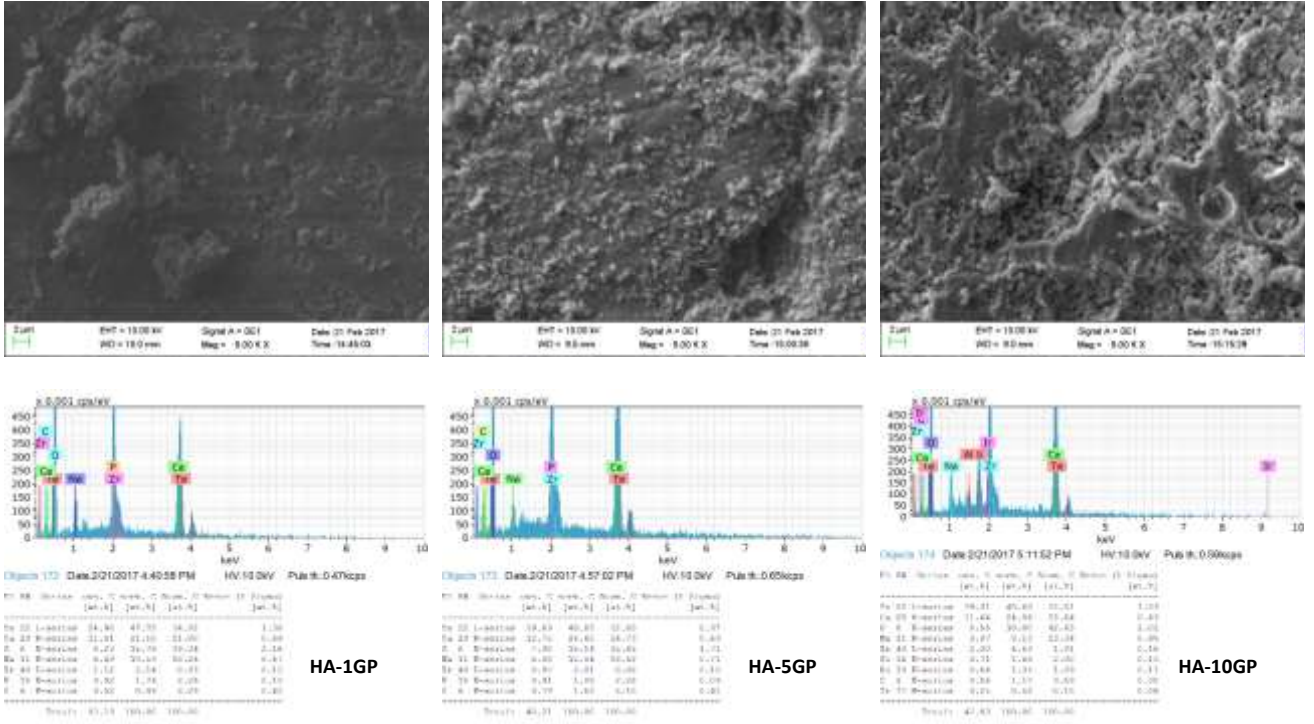


Şekil 3. a) XRD grafiği, b) FT-IR grafiği.

Şekil 3.a'da SiO₂, kalsiyum silikat fazlar (Ca₂SiO₄, CaSi₂O₅) ve kalsiyum alüminyum oksit (Ca₃Al₂O₆) gibi fazların HA-10GP numunelerde olduğu gözlenmiştir. Bu fazlar koyun kemiğinin yoğun kalsiyum içerikli yapısı ve GP'nin kimyasal içeriğinde yoğun miktarda bulunan SiO₂ ve Al₂O₃ 'ün bir kompozisyonu sonucu gerçekleşmiştir. HA-10GP numunesi, HA-10T ve HA-10Z numunelerine kıyasla çok daha düşük bir kristal faza sahiptir, daha çok amorf bir yapı gözlenmiştir. HA-10T ve HA-10Z numunelerinde kalsiyum silikat fazların yanı sıra, HA (Ca₁₀(PO₄)₆(OH)₂), kalsiyum fosfat (Ca₃(PO₄)₂ ve Ca₂P₂O₇) ve farklı formlarda sodyum bileşenli fazlar (CaNaO₄P, NaPO₃, Na₂Ca₂P₂O₇) gözlenmiştir. Kalsiyum fosfatlar, diğer bir adıyla whitlockite, Ca/P oranı 1,5 olan ve cerrahi kaplama malzemeleri olarak yaygın kullanım imkânına sahiptir (Dorozhkin, 2009). Koyun kemiğine ilave edilen ağırlıkça %5 P₂O₅ fosfat kaynağı olarak görev almış ve koyun kemiğinin kalsiyum yapısı ile bağ kurarak HA'yı oluşturmuştur. Bu sonuçlar benzer çalışmalarını desteklemektedir (Demirkol vd. 2012, Esfahanizadeh vd. 2018, Dimitrieva vd. 2020). XRD analizinde gözlenen bu fazların mikro-sertliği arttırdığı düşünülmektedir.

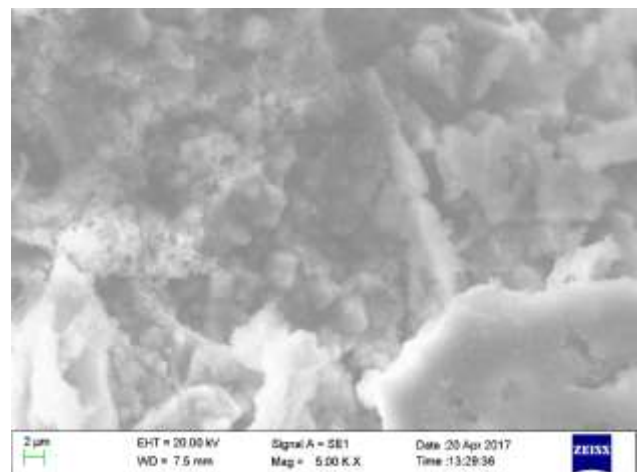
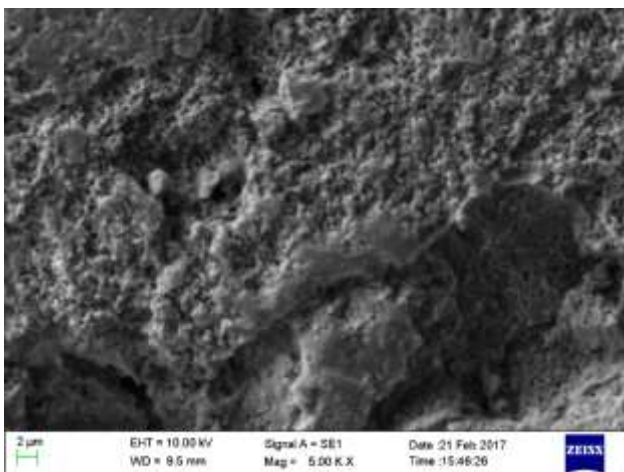
Şekil 3.b'de numuneler ait 4000-400 cm⁻¹ arasında elde edilen FT-IR analiz sonuçlarını göstermektedir. FT-IR analiz sonuçlarına göre tüm numunelerin 1700 ile 400 cm⁻¹ arasında benzer piklere sahip olduğu belirlendi. 700 ile 800 cm⁻¹ arasındaki bağlar ve 460 cm⁻¹'e yakın olan bağlar Si-O-Si gruplarının titreşim modlarını gösterirken, 415 cm⁻¹ civarındaki pikler O-Ca-O eğilme modlarını (Demirel ve Çanakcı, 2019) gösterir. Bu sonuç Şekil 3.a'da gözlenen kalsiyum silikat fazlarını açıklamaktadır. Ayrıca, 1087-915 cm⁻¹ arasında P-O-P titreşim bantlarını gösterir. Boskey ve Camacho, sinterleme işlemi sonrası organik bileşenlerin, kemiklerin yakılması ile verimli bir şekilde uzaklaşabileceğini ifade etmişlerdir ve bunu FT-IR analizi ile göstermişlerdir (Boskey ve Camacho, 2007). Şekil 3.b de ki FT-IR analizinde C-H bağlarıyla ilgili absorpsiyon bantları görülmemiştir. Bu da sinterleme sonrası koyun kemiğindeki organik maddelerin tamamen ortadan kalktığını göstermektedir. Ayrıca, Şekil 3.a'da görülen tüm bantlar inorganik hidroksil (OH), kalsiyum (Ca²⁺) ve fosfat (PO₄³⁻) gruplarına atfedilir.

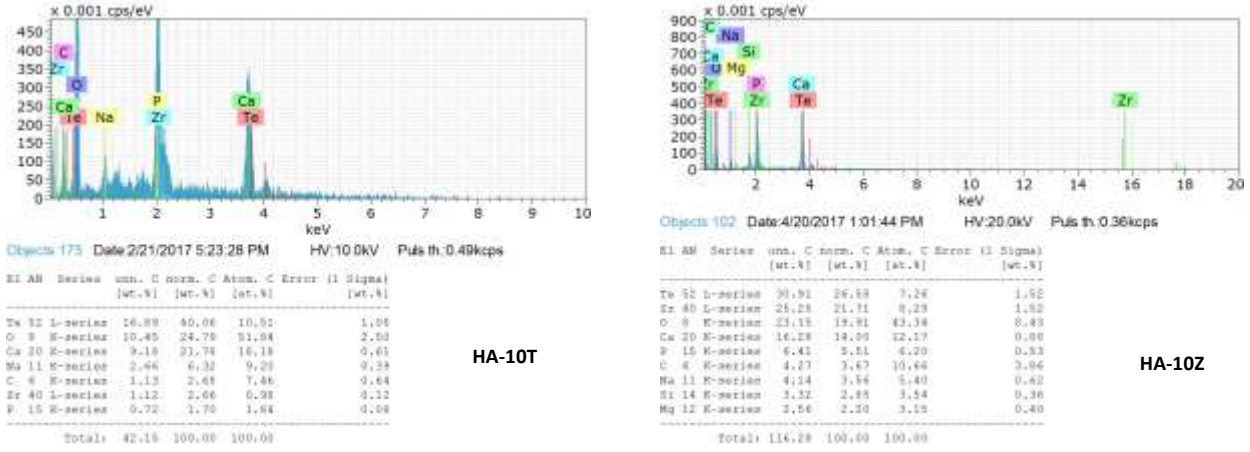
Şekil 4.'de koyun kemiğine ağırlıkça %1, 5 ve 10 GP ilave edilmiş numuneler ait SEM ve EDS analizleri verilmektedir.



Şekil 4. Koyun kemiğine ağırlıkça %1, 5 ve 10 GP ilave edilmiş numunelere ait SEM ve EDS analizleri.

HA-1GP numunesinde yoğun ve pürüzlü bir yapının yanı sıra mikro gözenekler görülmektedir. GP'nin takviye miktarı arttıkça yoğun bir mikroyapı oluşmuş ve mikro gözenekler yerini kapalı gözeneklere bırakmıştır. Bu sonuçlar şekil 1'de ki mikro-sertlik değerleri ile örtüşmektedir. Ayrıca GP ilavesinin artırılması ile numune yüzeyinde camı faz oluşumuna benzer mikroyapılar gözlenmiştir. Bunun nedeninin XRD analizinde gözlenen kalsiyum silikat ve Na yoğunluklu fazlardan kaynaklandığı düşünülmektedir. Numunelerin tüm yüzey alanını kapsayacak şekilde EDS analizi yapılmıştır. EDS analizinde GP'nin takviye miktarının artması ile Al, Si gibi elementlerin piklerinde artış gerçekleştiği gözlenmektedir. Yoğun bir Ca yapıya karşın P oranın ihmal edilecek kadar düşük olduğu gözlenmektedir. EDS analizinde gözlenen Te ve Ir gibi elementler kalsiyum veya başka bir elementle benzer şiddete sahip olduğu için gözlenmiştir. Bu çalışmada bu elementlerin varlığı o nedenle göz ardı edilmiştir. Şekil 5'de ağırlıkça % 10 GP'nin yanı sıra ağırlıkça %5 TiO_2 - MgO - P_2O_5 ve ağırlıkça %5 ZrO_2 - MgO - P_2O_5 ilave edilmiş hibrit kompozitlere ait SEM ve EDS analizleri verilmiştir.





Şekil 5. Sırasıyla HA-10T ve HA-10Z numunelerine ait SEM ve EDS analizleri.

Şekil 5’de görüldüğü gibi HA-10T numunesinin mikroyapı analizlerinde mikro gözenekler görülmektedir. HA-10Z numunesi daha yoğun bir mikroyapı sunmaktadır. Greft olarak kullanılacak malzemenin gözenekliliği, kemik dokunun kortikal (yoğun) ya da trabekular (gözenekli) olmasına bağlı olarak önemli bir faktör olmaktadır. Ayrıca biyoaktiflik ve biyobozunurluk, kemik implantının gözenekli olması açısından etkileyen diğer bir faktördür [18]. Yapılan literatür çalışmaları, yapay kemik implantı içerisinde vaskular dolaşımın oluşması ve hücre hareketleri için en az 100 µm’lik geçirgen gözeneklere sahip olunması gerektiğini göstermiştir. Ayrıca 1µm’den küçük gözeneklerin ise protein etkileşimine katkı sunarak, kemik implantın biyoaktifliğini belirlemede etkin olduğu gösterilmiştir [19, 20]. Ayrıca koyun kemiğine GP’nin yanı sıra ağırlıkça %5 P₂O₅ ilavesinin HA oluşumuna katkı sunduğu gözlenmiştir (Şekil 3).

Biyoaktif camlar (Ca- ve muhtemelen P içeren silika camlar), örneğin biyolojik sıvıya batırıldığında, hızla biyolojik dokuya bağlanabilen biyoaktif bir hidroksikarbonatlı apatit tabakası oluşturabilir. Ayrıca, Si gibi iyonları, karmaşık gen transdüksiyon yollarını aktive edebilen seviyelerde, gelişmiş hücre farklılaşmasına ve osteogenezise yol açacak şekilde uyarlanabilirler (Stevens, 2008). Elde edilen sonuçlara göre GP’nin biyoaktif camlara alternatif olarak kullanılması maliyet, kullanım kolaylığı ve biyoaktif camın kimyasal içeriğine benzer olması açısından umut vadetmektedir. Ayrıca, koyunlar, kemik yapılarının ve kemik metabolizmasının insanlara benzer olması avantajına sahiptir (Newman vd. 1995). Bu açısından, elde edilen hibrit kompozitlerin geliştirilmesi mevcut biyomalzemelere yeni bir bakış açısı sunmuş olacaktır.

SONUÇLAR

Bu çalışmada koyun kemiğinden sentezlenen HA’ya ağırlıkça % 1, 5 ve 10 genleştirilmiş perlit, ağırlıkça % 5 TiO₂-MgO-P₂O₅ ve ağırlıkça % 5 ZrO₂-MgO-P₂O₅ takviyeleri ile hibrit kompozitler elde edilmiştir. Numunelerin karakterizasyon özellikleri yoğunluk, mikrosertlik, XRD, FT-IR, SEM ve EDS analizleri ile belirlenmiştir. Sonuç olarak;

- GP’nin takviye miktarı arttıkça tüm numunelerde mikro-sertlik değeri artmıştır. En yüksek mikro-sertlik değeri HA-10Z numunesinde 302 HV olarak tespit edilmiştir.
- Ağırlıkça % 5 TiO₂-MgO-P₂O₅ ve % 5 ZrO₂-MgO-P₂O₅ ilave edilen hibrit kompozitlerde yoğunluk değerleri GP ilavesinin artması ile azda olsa artmıştır.
- XRD analizlerinde biyomalzemelerde biyoaktiflik özelliği ve mekanik özelliklerine katkı sunan fazlar tespit edilmiştir. Hibrit kompozitlerin tümünde HA yapının olduğu gözlenmiştir.



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- FT-IR analizinde HA yapının temel bileşenleri olan inorganik hidroksil (OH), kalsiyum (Ca_3^{2+}) ve fosfat (PO_4^{3-}) gruplarına ait bantlar gözlenmiştir.
- SEM analizlerinde biyomalzemelerin biyoaktifite ve biyoyumluluğu üzerine önemli katkılar sunan mikro gözeneklerin homojen dağıldığı gözlenmiştir.
- Elde edilen sonuçlara göre GP'nin biyoaktif camlara alternatif olarak kullanılması maliyet, kullanım kolaylığı ve biyoaktif camın kimyasal içeriğine benzer olması açısından umut vadetmekte olduğu sonucuna ulaşılmıştır.

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SOĞUK İZOSTATİK PRESLEME YÖNTEMİ İLE HAZIRLANAN HİBRİT KOYUN HİDROKSİAPATİT KOMPOZİTLERİNİN İNCELENMESİ

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Özet

Hidroksiapatit, kemik tedavisi uygulamaları için geniş çapta kullanılmaktadır. Doğal ve sentetik olarak elde edilebilen hidroksiapatit, insan ve hayvan kemiklerinin ana bileşeni olan biyouyumlu bir malzemedir. Bu çalışmada, hidroksiapatit koyun kemiklerinden sentezlendi. Koyun kemiğine ağırlıkça %1, 5 ve 10 oranlarında genişleştirilmiş perlit ilavesi ile kompozitler elde edildi. Hibrit kompozitler iki farklı kompozit oranlarıyla elde edildi. Birincisi, koyun kemiğine ağırlıkça % 1, 5 ve 10 genişleştirilmiş perlit, ağırlıkça % 5 TiO₂, % 5 MgO ve % 5 P₂O₅ ilavesiyle elde edildi. İkincisi, koyun kemiğine ağırlıkça % 1, 5 ve 10 genişleştirilmiş perlit, ağırlıkça % 5 ZrO₂, % 5 MgO ve % 5 P₂O₅ ilavesiyle elde edildi. Hibrit kompozitler soğuk izostatik presleme yöntemiyle (250 MPa) hazırlandı ve 900 °C'de 1 saat sinterlendi. Numunelerin karakterizasyon özellikleri yoğunluk, mikrosertlik, X-ışını kırınımı (XRD), fourier dönüşümü kızıl ötesi spektroskopisi (FT-IR), Taramalı elektron mikroskopu (SEM) ve enerji dağılımlı spektroskopisi (EDS) analizleri ile belirlendi. Sonuç olarak; genişleştirilmiş perlit ilavesinin artmasıyla tüm numunelerde mikro-sertlik değerinin arttığı gözlenmiştir. En yüksek mikro-sertlik değeri ağırlıkça %5 ZrO₂ ilave edilen numunede 302 HV olarak gözlemlendi. XRD analizlerinde koyun kemiğine genişleştirilmiş perlit ilavesi ile kalsiyum silikatlı fazlar gözlemlendi. Hibrit kompozitlerde ise başta hidroksiapatit olmak üzere kalsiyum silikat, kalsiyum fosfat ve sodyum bileşenli fazlar gözlemlenmiştir. FT-IR analizinde hidroksiapatit yapının temel bileşenleri olan inorganik hidroksil, kalsiyum ve fosfat gruplarına ait bantlar gözlemlenmiştir. SEM/EDS analizlerinde yoğun bir mikroyapının oluştuğu ve mikro gözeneklerin homojen dağıldığı gözlemlenmiştir. Elde edilen sonuçlara göre genişleştirilmiş perlitin biyoaktif camlara alternatif olarak kullanılması maliyet, kullanım kolaylığı ve biyoaktif camın kimyasal içeriğine benzer olması açısından umut vadetmekte olduğu sonucuna ulaşılmıştır.

Anahtar Kelimeler: Koyun hidroksiapatit, genişleştirilmiş perlit, TiO₂, ZrO₂, MgO and P₂O₅



4. GİRİŞ

İnsan vücudundaki canlı dokuların görevlerini yerine getirmek ya da dokuları desteklemek için kullanılan doğal ya da sentetik malzemelere "biyomalzeme" denir. Biyomalzemeler; polimerler, metaller, seramikler ve bunların kompozitlerinden hazırlanabilir. Doğal kemik hücrelerini taklit eden biyoyumlu biyomalzemelerin geliştirilmesi kemik doku mühendisliği stratejileri arasında en önemli konulardan biridir. Hidroksiapatit ($\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$), trikalsiyum fosfat ve biyoaktif camlar klinik olarak ilgi çeken biyoaktif inorganik malzemelerdir. Bu malzemeler arasında hidroksiapatit (HA) doğal kemiğe benzerliği dolayısıyla ortopedik implantlarda yaygın bir şekilde kullanılmıştır (Stevens, 2008). Koyun kemiği, sığır kemiği, mercan, yumurta kabuğu, balık kılıcı, geyik boynuzu gibi doğal maddelerden üretilen HA, sentetik HA'lara göre farklılık gösterirler. Koyunlar, kemik yapısının ve kemik metabolizmasının insanlara benzer olması avantajına sahiptir (Newman vd. 1995). Doğal HA'lar yapılarında karbonat, sitrat grupları yanı sıra genellikle kimyasal yapılarında az da olsa magnezyum, potasyum, stronsiyum ve sodyum içerirler (Gutowska vd. 2005). Doğal HA'da kalsiyumun fosfor oranı (Ca/P) genel itibarı ile sentetik HA'dan daha fazladır. Bu gibi özelliklerden dolayı tıbbi uygulamalarda doğal HA kullanımı daha uygundur (Siwar vd. 2013). Fakat HA, mekanik dayanımının düşük olması ve gevrekliği nedeni ile klinik, ortopedik ve dişçilik uygulamalarında kullanımı kısıtlıdır (Ozden vd. 2012). Biyoaktif cam, biyoaktif seramik, doğal veya sentetik polimerler ve bunların kompozitleri olmak üzere pek çok kemik yerine kullanılan malzeme son yirmi yılda kapsamlı bir şekilde araştırılmıştır (Terzioğlu ve Kalemtaş, 2017). Bunların yanı sıra Al_2O_3 , ZrO_2 , TiO_2 , MgO ve P_2O_5 gibi takviyelerde yaygın olarak kullanılmaktadır ve yapılan çalışmalarında bahsi geçen takviyelerin mekanik özellikleri iyileştirdiği gözlenmiştir (Oktar vd. 2007; Ozden vd. 2012; Guidara vd. 2017; Yao vd. 2018). Bu takviyeler genellikle korozyon direnci, iyi biyoyumluluk, yüksek aşınma direnci ve yüksek mukavemet gibi mükemmel özelliklerinden dolayı seçilmiştir.

Standart biyoaktif cam formülü genel olarak 45S5 olarak bilinmektedir ve FDA (Food and Drug Administration) tarafından onaylanmaktadır. Bu form ağırlık olarak % 45 SiO_2 , % 24,5 Na_2O ve CaO ile % 6 P_2O_5 içermektedir (Hench, 1991). Bunu yanı sıra yumuşak ve sert dokulara bağlanabilmeleri, enzimatik faaliyetleri, üç boyutlu vasküler yapı oluşumunu desteklemeleri, kemik dokudaki mezenkimal hücrelerin farklılaşmasına yardımcı olmaları ve kemik doku ile organik bağlarla bağlanmaları nedeniyle sıklıkla tercih edilir (Taygun vd. 2013; Khanmohammadi vd. 2019; Wen vd. 2021). Bu kapsamda perlit, doğada serbestçe bulunan, cama benzer bir kimyasal bileşime (% 74 SiO_2 , % 14,33 Al_2O_3 , % 4,95 K_2O , % 2,9 Na_2O_3 , % 0,97 Fe_2O_3 , % 0,5 CaO , % 0,28 MgO , % 0,12 TiO_2) sahiptir. Ayrıca ayarlanabilir bir yoğunluğa sahip bir volkanik silikat olan perlit, bu bağlamda biyoaktif cama daha iyi bir alternatif olabilir. Fakat perlitin biyoaktif cama alternatif olarak kullanıldığı çalışmalar kısıtlıdır (Walter vd. 2005; Erli vd. 2006; Karip ve Muratoğlu, 2021).

Bu çalışmada koyun kemiğinden HA sentezlendi. Daha sonra ağırlıkça % 1, 5 ve 10 genişletilmiş perlit, ağırlıkça % 1, 5 ve 10 genişletilmiş perlit ile ağırlıkça % 5 TiO_2 - MgO - P_2O_5 ve ağırlıkça % 1, 5 ve 10 genişletilmiş perlit ile ağırlıkça % 5 ZrO_2 - MgO - P_2O_5 takviyeleri ile hibrit kompozitler elde edildi. Soğuk izostatik presleme yöntemi kullanıldı (250 MPa, 900 °C, 1 saat). Numunelerin karakterizasyon özellikleri yoğunluk, mikrosertlik, XRD, FT-IR, SEM ve EDS analizleri ile belirlendi. Bu takviyelerden ZrO_2 ve TiO_2 mekanik ve fiziksel özelliklerin artırılması amacıyla, MgO ve P_2O_5 de fiziksel özelliklerin yanı sıra kemiksi yapı kazandırmak ve biyoyumluluğu arttırabilmek amacıyla seçilmiştir.



5. MALZEME VE YÖNTEM

Koyun kemikleri Fırat üniversitesi Veterinerlik Fakültesinden elde edildi. Koyun kemikleri ilik, sinir, yağ gibi yapıların uzaklaşması için 2 saat kaynatıldı. Daha sonra ağırlıkça % 5 NaOH çözeltisi ile 30 dakika tekrar kaynatıldı (bu işlem 4 defa yapıldı). Temizlenen kemikler 2 saat 350 °C ön kalsinasyon yapıldı ve daha sonra 4 saat 700 °C de sinterlendi. Apatit forma dönüşen kemikler bilyeli değirmende 24 saat öğütüldü ve bir elek yardımıyla 100 mikron boyutuna ayarlandı. Genleştirilmiş perlit (100 mikron), ZrO₂, TiO₂ ve MgO (% 98 saflık, 80 mikron) Nanografi Nano Teknoloji Bilişim İmalat ve Danışmanlık Ltd. şirketinden (Ankara) temin edildi. Genleştirilmiş perlite (GP) ait kimyasal bileşenler Tablo 1. de gösterilmiştir.

Tablo 1. Genleştirilmiş perlite (GP) ait kimyasal bileşimler.

SiO ₂	Al ₂ O ₃	K ₂ O	Na ₂ O ₃	Fe ₂ O ₃	CaO	MgO	TiO ₂
% 74	% 14,33	% 4,95	% 2,9	% 0,97	% 0,5	% 0,28	% 0,12

Hibrit kompozitler, her numune 30 dakika olmak üzere elektronik karıştırıcı ile karıştırıldı. Daha sonra analizler için numuneler silindir şeklinde (11 mm çap ve 10 mm yükseklik) 250 MPa 'da soğuk izostatik preslendi. Bu işlem, her seferinde kalıplar çinko-sterat ile yağlanılarak gerçekleştirildi. Numuneler 900 °C sıcaklıkta 5 °C/dk sinterlenme hızı ile 1 saat boyunca sinterlendi. Kullanılan takviyeler ile hazırlanmış numuneler ve numune kodları Tablo 2. 'de verilmiştir.

Tablo 2. Numunelerin karışım yüzdeleri ve kodları.

IV. Gurup		V. Gurup		VI. Gurup	
HA	Koyun HA	HA-T	HA+ % 5 TiO ₂ -MgO-P ₂ O ₅	HA-Z	HA+ % 5 ZrO ₂ -MgO-P ₂ O ₅
HA-1GP	HA+% 1 EP	HA-1T	HA + %5 TiO ₂ -MgO-P ₂ O ₅ + %1 EP	HA-1Z	HA + %5 ZrO ₂ -MgO-P ₂ O ₅ + %1 EP
HA-5GP	HA+% 5 EP	HA-5T	HA+%5 TiO ₂ -MgO-P ₂ O ₅ + %5 EP	HA-5Z	HA+%5 ZrO ₂ -MgO-P ₂ O ₅ + %5 EP
HA-10GP	HA+% 10 EP	HA-10T	HA+%5 TiO ₂ -MgO-P ₂ O ₅ + %10 EP	HA-10Z	HA+%5 ZrO ₂ -MgO-P ₂ O ₅ + %10 EP

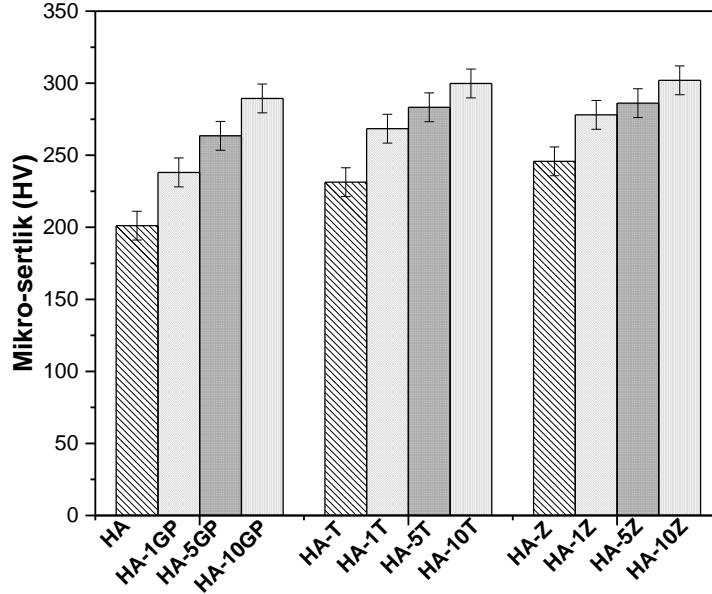
Elde edilen numunelerin yoğunluk değerleri, numunelerin geometrik verilerinden yola çıkılarak hesaplanmıştır. Vickers mikro-sertlik, Tronic test cihazı kullanılarak mikro-sertlik değerleri 0,49 N'lık yük 15 saniye boyunca uygulanarak alınmıştır. Daha sonra numunelerin XRD ve FT-IR analizleri yapılmıştır. Numunelerin yüzeyleri Denton Vacuum-Desk V kullanılarak altın ile kaplanmıştır. Altın kaplanan numunelerin içyapıları Zeiss marka Eva/ Ma10 model taramalı elektron mikroskobu (SEM) ile belirlenmiş ve her numunenin EDS analizleri alınmıştır.

6. SONUÇLAR VE TARTIŞMA

Mikro-sertlik değerleri her numuneden alınan 5 değerlerin ortalamasının alınması ile tespit edilmiştir. Hibrit kompozitlere ait mikro-sertlik grafiği Şekil 1.'de gösterilmiştir.

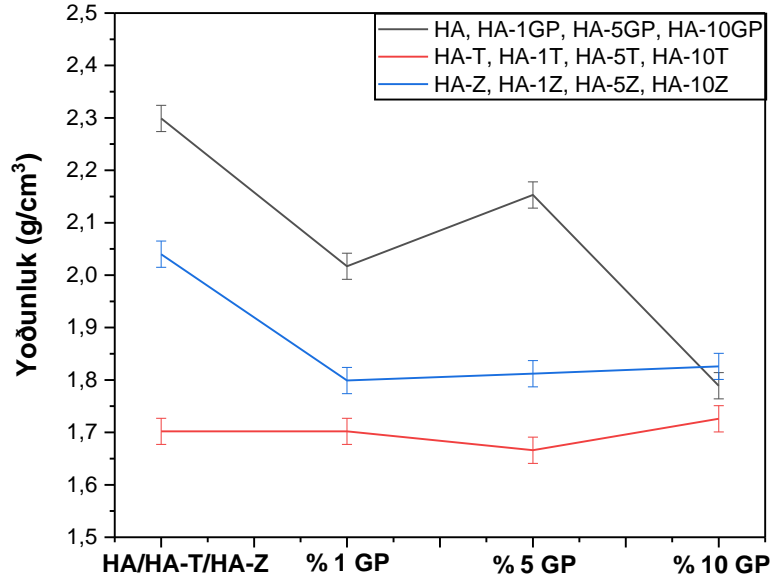
Genleştirilmiş perlitin (GP) takviye miktarı arttırıldıkça tüm numunelerin mikro-sertliği artmıştır. Saf haldeki HA'nın mikro sertliği 201,1 HV iken ağırlıkça % 10 GP ilavesi (HA-10 EP numunesi) ile bu değer 289,4 HV 'ye çıkmıştır. Ayrıca ağırlıkça % 5 TiO₂-MgO-P₂O₅ ve ağırlıkça % 5 ZrO₂-MgO-P₂O₅ ilavesi ile hazırlanan hibrit kompozitlerin mikro-sertliği sırasıyla 231,3 HV (HA-T

numunesi) ve 245,8 HV (HA-Z numunesi) olarak tespit edilmiştir. Bu değerler GP'nin ağırlıkça % 10 ilavesi ile sırasıyla 299,8 HV (HA-10 T numunesi) ve 302 HV 'ye (HA-10 Z numunesi) çıktığı tespit edilmiştir. En yüksek mikro-sertlik değeri HA-10Z numunesinde 302 HV olarak gözlenmiştir. Hibrit kompozitlere ait yoğunluk değerleri Şekil 2 'de gösterilmiştir.



Şekil 1. Mikro-sertlik grafiği.

Şekil 2 de görüldüğü gibi koyun HA'ya GP ilavesi arttıkça yoğunluk değerlerinde azalma gözlenmiştir. Bunu sebebi GP'nin yoğunluk değerinin HA'ya göre çok düşük olmasından kaynaklandığı düşünülmektedir. Ağırlıkça % 5 ZrO₂-MgO-P₂O₅ ilave edilen numunelerde GP ilavesi ile yoğunluk önce düşmüş fakat GP'nin ilave oranı arttıkça yoğunluk değerinde artış gözlenmiştir. Ayrıca ağırlıkça % 5 TiO₂-MgO-P₂O₅ ilavesinde de benzer bir sonuç gözlenmiştir.



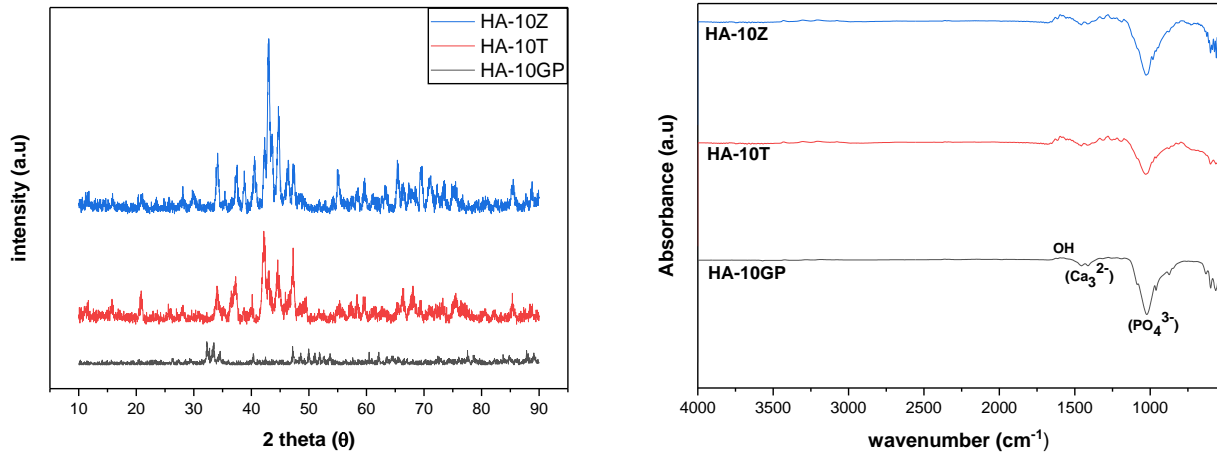
Şekil 2. Yoğunluk grafiği.

Sığır kemiklerine ağırlıkça % 5 ve 10 oranlarında SiO₂, MgO, Al₂O₃ ve ZrO₂ takviyeleri yapılarak farklı sinterleme sıcaklıklarında (1000-1300 °C) mekanik özellikleri incelenmiştir (Oktar vd. 2007). Ölçülen en yüksek mikro-sertlik değeri ağırlıkça % 5 Al₂O₃ ve 1300 °C de sinterlenen numuneden 450 HV olarak ölçülmüştür. Ayrıca ağırlıkça % 5 SiO₂, MgO ve ZrO₂ ilaveli kompozitlerde 1300 °C de sırasıyla 224, 305 ve 256 HV olarak gözlenmiştir.

Ozden ve çalışma arkadaşları sığır kemiğine ağırlıkça % 5, 10 ve 15 oranlarında Al_2O_3 , TiO_2 ve ZrO_2 ilavesi ile kompozitler hazırlamışlar ve 900-1100 °C de mekanik özelliklerinin incelemişlerdir (Ozden vd. 2012). Saf HA 'nın 1100 °C sinterleme de mikro-sertliğini 229 HV olarak tespit etmişlerdir. Takviye miktarlarının ağırlıkça oranları arttıkça mikro-sertliğin arttığını gözlemişlerdir. En yüksek mikro-sertlik değerini ağırlıkça % 15 TiO_2 ve 1100 °C de sinterlenen numunede yaklaşık 350 HV olarak tespit etmişlerdir.

Bu çalışmada sinterleme sıcaklığı 900 °C de sabit tutulmuştur. Fakat yine de takviye miktarlarının artması ile mikro-sertlik değerlerinin arttığı gözlenmiştir. Genleştirilmiş perlit içerisinde yüksek miktarda bulunan SiO_2 ve Al_2O_3 sertliğin artmasında doğrudan rol almıştır. Ayrıca hibrit kompozitlerin oluşumunda kullanılan ZrO_2 , TiO_2 ve MgO gibi diğer takviyelerde sertlik artışına neden olmuştur. Yoğunluk değerleri GP'nin düşük yoğunluğundan dolayı kısmen düşmüştür.

Mikro-sertlik değerinde gözlenen en yüksek artış GP ilavesinin ağırlıkça %10 olduğu numunelerde gerçekleştiği gözlenmiştir. Bu nedenle her üç grupta da ağırlıkça %10 GP ilave edilen numuneler ait XRD ve FT-IR analizleri alınmıştır. Numunelere ait XRD ve FT-IR analizleri sırasıyla Şekil 3.a ve Şekil3.b de verilmiştir.



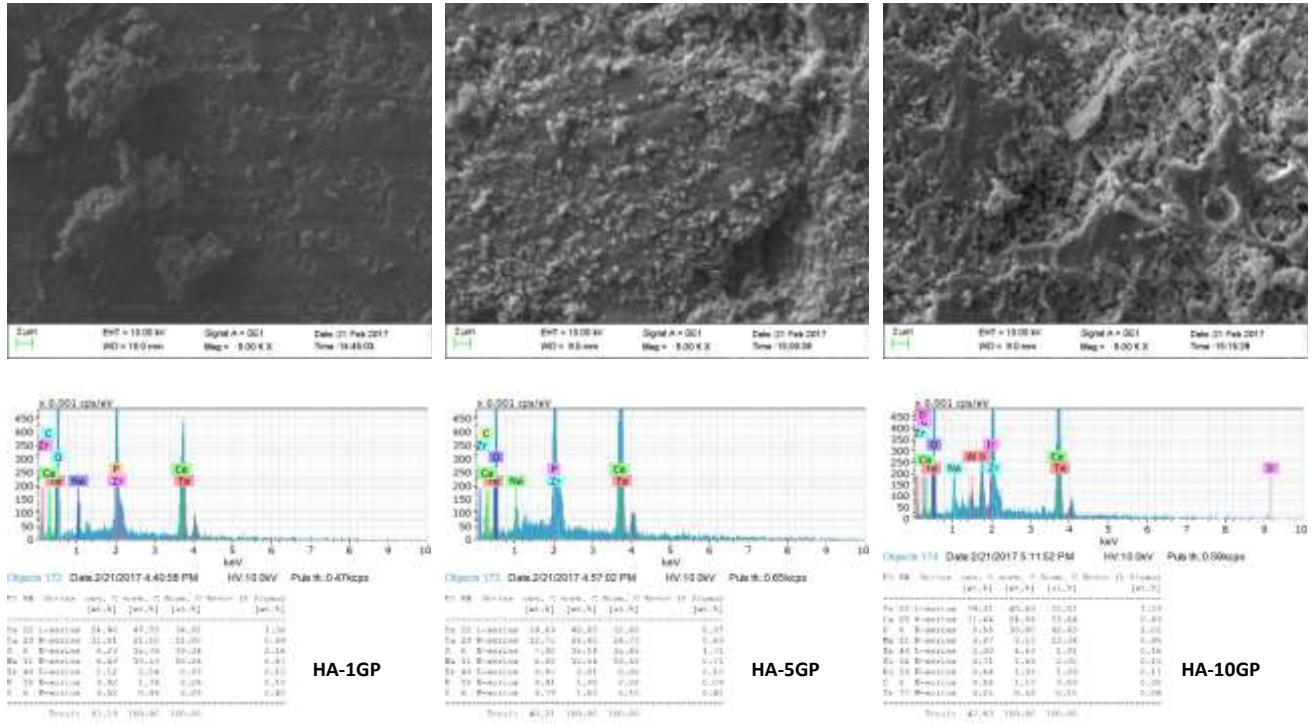
Şekil 3. a) XRD grafiği, b) FT-IR grafiği.

Şekil 3.a'da SiO_2 , kalsiyum silikat fazlar (Ca_2SiO_4 , $CaSi_2O_5$) ve kalsiyum alüminyum oksit ($Ca_3Al_2O_6$) gibi fazların HA-10GP numunelerde olduğu gözlenmiştir. Bu fazlar koyun kemiğinin yoğun kalsiyum içerikli yapısı ve GP'nin kimyasal içeriğinde yoğun miktarda bulunan SiO_2 ve Al_2O_3 'ün bir kompozisyonu sonucu gerçekleşmiştir. HA-10GP numunesi, HA-10T ve HA-10Z numunelerine kıyasla çok daha düşük bir kristal faza sahiptir, daha çok amorf bir yapı gözlenmiştir. HA-10T ve HA-10Z numunelerinde kalsiyum silikat fazların yanı sıra, HA ($Ca_{10}(PO_4)_6(OH)_2$), kalsiyum fosfat ($Ca_3(PO_4)_2$ ve $Ca_2P_2O_7$) ve farklı formlarda sodyum bileşenli fazlar ($CaNaO_4P$, $NaPO_3$, $Na_2Ca_2P_2O_7$) gözlenmiştir. Kalsiyum fosfatlar, diğer bir adıyla whitlockite, Ca/P oranı 1,5 olan ve cerrahi kaplama malzemeleri olarak yaygın kullanım imkânına sahiptir (Dorozhkin, 2009). Koyun kemiğine ilave edilen ağırlıkça %5 P_2O_5 fosfat kaynağı olarak görev almış ve koyun kemiğinin kalsiyum yapısı ile bağ kurarak HA'yı oluşturmuştur. Bu sonuçlar benzer çalışmalarını desteklemektedir (Demirkol vd. 2012, Esfahanizadeh vd. 2018, Dimitrieva vd. 2020). XRD analizinde gözlenen bu fazların mikro-sertliği arttırdığı düşünülmektedir.

Şekil 3.b'de numuneler ait 4000-400 cm^{-1} arasında elde edilen FT-IR analiz sonuçlarını göstermektedir. FT-IR analiz sonuçlarına göre tüm numunelerin 1700 ile 400 cm^{-1} arasında benzer piklere sahip olduğu belirlendi. 700 ile 800 cm^{-1} arasındaki bağlar ve 460 cm^{-1} 'e yakın olan bağlar Si-O-Si gruplarının titreşim modlarını gösterirken, 415 cm^{-1} civarındaki pikler O-Ca-O eğilme modlarını (Demirel ve Çanakçı, 2019) gösterir. Bu sonuç Şekil 3.a'da gözlenen kalsiyum silikat fazlarını açıklamaktadır. Ayrıca, 1087-915 cm^{-1} arasında P-O-P titreşim bantlarını gösterir. Boskey

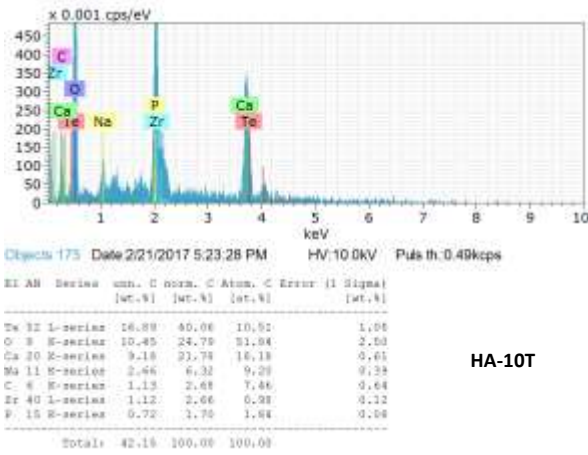
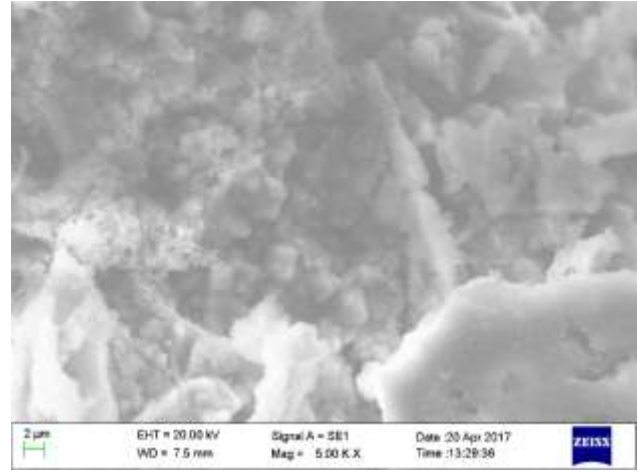
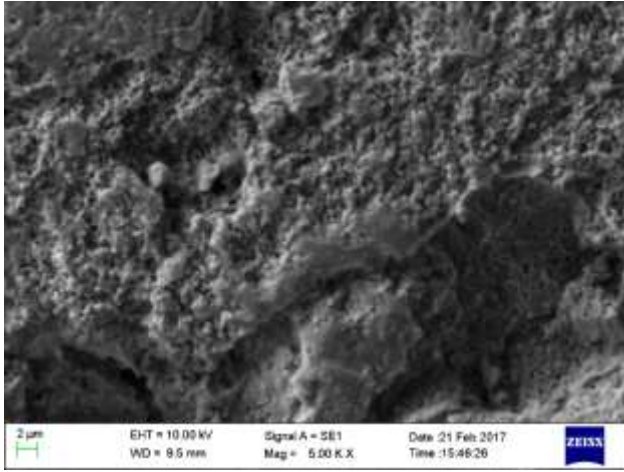
ve Camacho, sinterleme işlemi sonrası organik bileşenlerin, kemiklerin yakılması ile verimli bir şekilde uzaklaşabileceğini ifade etmişlerdir ve bunu FT-IR analizi ile göstermişlerdir (Boskey ve Camacho, 2007). Şekil 3.b de ki FT-IR analizinde C-H bağlarıyla ilgili absorpsiyon bantları görülmemiştir. Bu da sinterleme sonrası koyun kemiğindeki organik maddelerin tamamen ortadan kalktığını göstermektedir. Ayrıca, Şekil 3.a'da görülen tüm bantlar inorganik hidroksil (OH), kalsiyum (Ca_3^{2+}) ve fosfat (PO_4^{3-}) gruplarına atfedilir.

Şekil 4.'de koyun kemiğine ağırlıkça %1, 5 ve 10 GP ilave edilmiş numuneler ait SEM ve EDS analizleri verilmektedir.

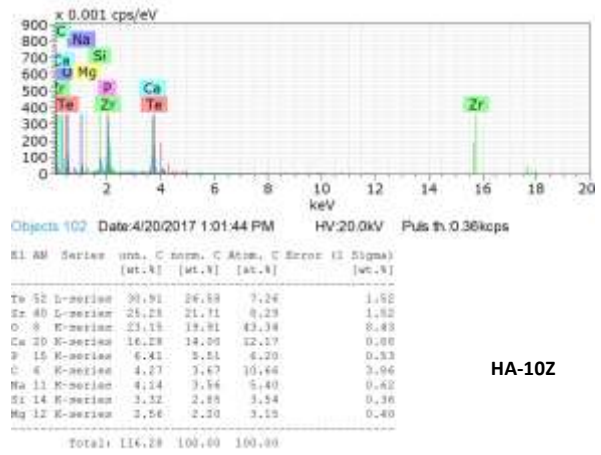


Şekil 4. Koyun kemiğine ağırlıkça %1, 5 ve 10 GP ilave edilmiş numunelere ait SEM ve EDS analizleri.

HA-1GP numunesinde yoğun ve pürüzlü bir yapının yanı sıra mikro gözenekler görülmektedir. GP'nin takviye miktarı arttıkça yoğun bir mikroyapı oluşmuş ve mikro gözenekler yerini kapalı gözeneklere bırakmıştır. Bu sonuçlar şekil 1'de ki mikro-sertlik değerleri ile örtüşmektedir. Ayrıca GP ilavesinin artırılması ile numune yüzeyinde camı faz oluşumuna benzer mikroyapılar gözlenmiştir. Bunun nedeninin XRD analizinde gözlenen kalsiyum silikat ve Na yoğunluklu fazlardan kaynaklandığı düşünülmektedir. Numunelerin tüm yüzey alanını kapsayacak şekilde EDS analizi yapılmıştır. EDS analizinde GP'nin takviye miktarının artması ile Al, Si gibi elementlerin piklerinde artış gerçekleştiği gözlenmektedir. Yoğun bir Ca yapıya karşın P oranın ihmal edilecek kadar düşük olduğu gözlenmektedir. EDS analizinde gözlenen Te ve Ir gibi elementler kalsiyum veya başka bir elementle benzer şiddete sahip olduğu için gözlenmiştir. Bu çalışmada bu elementlerin varlığı o nedenle göz ardı edilmiştir. Şekil 5'de ağırlıkça % 10 GP'nin yanı sıra ağırlıkça %5 TiO_2 - MgO - P_2O_5 ve ağırlıkça %5 ZrO_2 - MgO - P_2O_5 ilave edilmiş hibrit kompozitlere ait SEM ve EDS analizleri verilmiştir.



HA-10T



HA-10Z

Şekil 5. Sırasıyla HA-10T ve HA-10Z numunelerine ait SEM ve EDS analizleri.

Şekil 5’de görüldüğü gibi HA-10T numunesinin mikroyapı analizlerinde mikro gözenekler görülmektedir. HA-10Z numunesi daha yoğun bir mikroyapı sunmaktadır. Greft olarak kullanılacak malzemenin gözenekliliği, kemik dokunun kortikal (yoğun) ya da trabekular (gözenekli) olmasına bağlı olarak önemli bir faktör olmaktadır. Ayrıca biyoaktivlik ve biyobozunurluk, kemik implantının gözenekli olması açısından etkileyen diğer bir faktördür [18]. Yapılan literatür çalışmaları, yapay kemik implantı içerisinde vaskular dolaşımın oluşması ve hücre hareketleri için en az 100 µm’lik geçirgen gözeneklere sahip olunması gerektiğini göstermiştir. Ayrıca 1µm’den küçük gözeneklerin ise protein etkileşimine katkı sunarak, kemik implantın biyoaktivliğini belirlemede etkin olduğu gösterilmiştir [19, 20]. Ayrıca koyun kemiğine GP’nin yanı sıra ağırlıkça %5 P₂O₅ ilavesinin HA oluşumuna katkı sunduğu gözlenmiştir (Şekil 3).

Biyoaktif camlar (Ca- ve muhtemelen P içeren silika camlar), örneğin biyolojik sıvıya batırıldığında, hızla biyolojik dokuya bağlanabilen biyoaktif bir hidroksikarbonatlı apatit tabakası oluşturabilir. Ayrıca, Si gibi iyonları, karmaşık gen transdüksiyon yollarını aktive edebilen seviyelerde, gelişmiş hücre farklılaşmasına ve osteogenezise yol açacak şekilde uyarlanabilirler (Stevens, 2008). Elde edilen sonuçlara göre GP’nin biyoaktif camlara alternatif olarak kullanılması maliyet, kullanım kolaylığı ve biyoaktif camın kimyasal içeriğine benzer olması açısından umut vadetmektedir. Ayrıca, koyunlar, kemik yapılarının ve kemik metabolizmasının insanlara benzer olması avantajına sahiptir (Newman vd. 1995). Bu açısından, elde edilen hibrit kompozitlerin geliştirilmesi mevcut biyomalzemelere yeni bir bakış açısı sunmuş olacaktır.

SONUÇLAR



Bu çalışmada koyun kemiğinden sentezlenen HA'ya ağırlıkça % 1, 5 ve 10 genişletilmiş perlit, ağırlıkça % 5 TiO_2 -MgO- P_2O_5 ve ağırlıkça % 5 ZrO_2 -MgO- P_2O_5 takviyeleri ile hibrit kompozitler elde edilmiştir. Numunelerin karakterizasyon özellikleri yoğunluk, mikrosertlik, XRD, FT-IR, SEM ve EDS analizleri ile belirlenmiştir. Sonuç olarak;

- GP'nin takviye miktarı arttıkça tüm numunelerde mikro-sertlik değeri artmıştır. En yüksek mikro-sertlik değeri HA-10Z numunesinde 302 HV olarak tespit edilmiştir.
- Ağırlıkça % 5 TiO_2 -MgO- P_2O_5 ve % 5 ZrO_2 -MgO- P_2O_5 ilave edilen hibrit kompozitlerde yoğunluk değerleri GP ilavesinin artması ile azda olsa artmıştır.
- XRD analizlerinde biyomalzemelerde biyoaktiflik özelliği ve mekanik özelliklerine katkı sunan fazlar tespit edilmiştir. Hibrit kompozitlerin tümünde HA yapının oluştuğu gözlenmiştir.
- FT-IR analizinde HA yapının temel bileşenleri olan inorganik hidroksil (OH), kalsiyum (Ca^{2+}) ve fosfat (PO_4^{3-}) gruplarına ait bantlar gözlenmiştir.
- SEM analizlerinde biyomalzemelerin biyoaktifite ve biyouyumluluğu üzerine önemli katkılar sunan mikro gözeneklerin homojen dağıldığı gözlenmiştir.
- Elde edilen sonuçlara göre GP'nin biyoaktif camlara alternatif olarak kullanılması maliyet, kullanım kolaylığı ve biyoaktif camın kimyasal içeriğine benzer olması açısından umut vadetmekte olduğu sonucuna ulaşılmıştır.

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PRODUCTION OF APATITE-WOLLASTONITE GLASS-CERAMIC FOAM USING WASTE MATERIALS

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Abstract

The use of waste materials in ceramics provides both ecological and economical benefits by preventing improper disposal of the material. In fact, the reuse of waste materials may contribute with an added value to the final product, with a reduction of cost. In this study, Apatite-Wollastonite glass-ceramics were produced using soda silicate glass shards and eggshell as waste materials and their bioactivity were evaluated. Apatite-wollastonite glass ceramics, containing eggshells and soda-lime glass as wastes, P_2O_5 and MgO as raw materials, were produced by melt casting process. The replica method was used to produce ceramic foams from the cast Apatite-wollastonite glass-ceramics. For this purpose, ceramic slurries containing the milled apatite-wollastonite ceramic powders and PVA additive were impregnated into a polyurethane foam to produce the porous apatite-wollastonite glass-ceramics. After burning out the organic compounds and additives, ceramic structure was sintered at 1000 °C for 5h. The sintered A/W ceramics/ and its powder were characterized using Scanning Electron Microscopy (SEM), Energy Dispersive Spectroscopy (EDS), X-ray diffraction (XRD) analysis, Fourier transform infrared (FTIR) spectroscopy analysis. The bioactivity of the glass-ceramics was determined by immersing the glass-ceramics in Hanks's solution after various immersion durations. From SEM analysis, it is seen that the microstructure pore sizes of sintered A/W powders vary between 0.945 μm and 1.713 μm . According to the particle size analysis result, the average particle size of A/W glass powder is as 4.74 μm , and its density value determined by helium pycnometer is measured as 1.0004 g/ml. From the XRD analysis of the sintered porous A/W glass ceramic, apatite and wollastonite (calcium silicate) phases are identified.

Keywords: Apatite-wollastonite glass ceramic, replica method, waste materials



ATIK MALZEMELER KULLANILARAK APATİT-VOLLASTONİT CAM-SERAMİK KÖPÜK ÜRETİMİ

Özet

Atık malzemelerin seramikte kullanılması, malzemenin uygunsuz şekilde bertaraf edilmesini engelleyerek hem ekolojik hem de ekonomik faydalar sağlamaktadır. Gerçekte, atık malzemelerin yeniden kullanımı, nihai ürüne bir katma değerle, maliyetin düşmesiyle katkıda bulunabilir. Bu çalışmada atık madde olarak soda silikat cam kırıkları ve yumurta kabuğu kullanılarak apatit-vollastonit cam-seramikler üretilmiş ve biyoaktiviteleri değerlendirilmiştir. Atık olarak yumurta kabuğu ve soda-kireç camı, hammadde olarak P_2O_5 ve MgO içeren apatit-vollastonit cam seramikler eriyik döküm işlemi ile üretilmiştir. Döküm yöntemi ile üretilmiş apatit-vollastonit cam-seramiklerinden seramik köpükler üretmek için replika yöntemi kullanılmıştır. Bu amaçla, öğütülmüş apatit-vollastonit seramik tozlarını ve PVA katkı maddesini içeren seramik bulamaçlar, gözenekli apatit-vollastonit cam-seramikleri üretmek için bir poliüretan köpüğe daldırılmıştır. Organik bileşikler ve katkı maddeleri yakıldıktan sonra seramik yapı 1000 °C'de 5 saat sinterlenmiştir. Sinterlenmiş A/W seramikleri/ve tozu, Taramalı Elektron Mikroskobu (SEM), Enerji Dağılım Spektroskopisi (EDS), X-ışını kırınımı (XRD) analizi, Fourier dönüşümü kızılötesi (FTIR) spektroskopisi analizi kullanılarak karakterize edilmiştir. Cam-seramiklerin biyoaktivitesi, çeşitli bekletme sürelerinden sonra cam-seramiklerin Hanks çözeltisine daldırılmasıyla belirlenmiştir. SEM analizinden, sinterlenmiş A/W tozlarının mikroyapı gözenek boyutlarının 0.945 μm ile 1.713 μm arasında değiştiği görülmektedir. Partikül boyutu analiz sonucuna göre A/W cam tozunun ortalama partikül büyüklüğü 4.74 μm , helyum piknometresi ile belirlenen yoğunluk değeri 1.0004 g/ml olarak ölçülmüştür. Sinterlenmiş gözenekli A/W cam seramiğin XRD analizinden, apatit ve vollastonit (kalsiyum silikat) fazları tanımlanmıştır.

Anahtar kelimeler: Apatit-vollastonit cam-seramik; replika yöntemi; atık malzemeler

1. GİRİŞ

Son yıllarda, gözenekli apatit-vollastonit biyoaktif cam seramikler iyi biyolojik aktiviteye sahip olmasından, osteoindüktivite ve biyolojik olarak parçalanabilme özelliklerinden dolayı kemik doku mühendisliği araştırmacıları tarafından dikkat çeken bir malzeme olmuştur [1-3]. $MgO-CaO-SiO_2-P_2O_5$ sistemine sahip Apatit-vollastonit cam seramik malzeme, 1982 yılında ilk olarak Kukubo ve arkadaşları [4] tarafından geliştirilmiştir. Apatit-vollastonit cam seramik, ağırlıkça %38 kalsiyum florapatit, %34 vollastonit kristalleri ve 50-100 nm boyutunda $MgO-CaO-SiO_2$ camı matristen oluşan ana camın ısıtılmasından sonra elde edilir [5]. Yapısında bulunan apatit ve vollastonit kristalleri nedeniyle yüksek biyolojik aktiviteye ve iyi mekanik dirence sahip bu malzeme, vücut sıvı ortamına girdiği zaman üzerinde doğal kemikle güçlü bir bağ yapan ince bir hidroksiapatit tabakası oluşur.

Gözenekli seramikler, replika yöntemi, nişasta gibi gözenek yapıcılarla konsolidasyon, jel-döküm köpük yöntemleri gibi çeşitli yöntemler kullanılarak üretilirler [6]. Bu yöntemlerin içerisinde en popüler yöntem, organik köpük emdirme yöntemi diğer ismiyle replika yöntemidir ve 1963 yılında Brezny ve Green [7] tarafından polimerik köpük replika yönteminin patenti alınmıştır. Replika metodu yaklaşımında, sentetik (örneğin polimerik köpükler, tipik olarak poliüretan) ve doğal (örneğin mercan, ahşap) şablonları kullanarak makro gözenekli seramik imal etmek için kullanılabilir. Bu yöntemle yaklaşık %70-90 oranında gözenekli yapı elde etmek mümkündür.

Bu çalışmanın amacı, soda silikat cam kırığı, yumurta kabuğu atıklarından polimer köpük replika yöntemi kullanarak gözenekli apatit-vollastonit (A/W) cam seramik üretiminin gerçekleştirilmesidir. Öğütülmüş A/W camı tozlarından SEM analizi ve partikül boyut analizi alınmıştır. Ayrıca tozların piknometre ile yoğunlukları ölçülmüştür. Replika yöntemi ile üretilen A/W cam seramikler sinterleme sonrası mikroyapısı SEM analizi ile incelenmiştir ve gözenek boyutları belirlenmiştir. A/W cam seramik faz analizleri XRD yöntemi ile belirlenmiştir. Gözenekli cam seramiklerin Hank sıvısında bekletilerek biyolojik aktiviteleri incelenmiştir.

2. MALZEME, YÖNTEM VE ÇALIŞMALAR

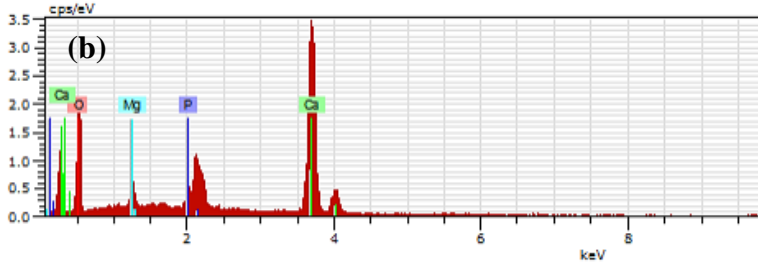
Bu çalışmada, soda-silikat düz renksiz cam kırıkları ve yumurta kabuğu kullanılarak apatit/vollastonit cam seramik üretimi gerçekleştirilmiştir. Etil alkol ile temizlenmiş cam şişe kırıkları havanda öğütüldükten sonra 1mm'lik elekten geçirilmiştir ve elek altı tozlar A/W üretiminde kullanılmışlardır. Kırık camlardan alınan numunenin 4 farklı bölgesinden alınan EDS (Bruker marka) analizi sonuçlarının ortalaması Tablo 1'de verilmektedir. Bu çalışmada, atık olarak kullanılan renksiz soda-kireç camının yapısındaki bileşenlerin apatit/vollastonit cam seramik bileşimine yakın olmasından dolayı apatit/vollastonit cam seramik üretiminde tercih edilmiştir.

Tablo 1: Soda-kireç camının EDS analizi

Element	Konsantrasyon yüzdesi (% ağı.)
O	52,94
Na	8,04
Mg	1,75
Si	29,17
Ca	7,91
Al	1,07

Bu çalışmada kalsiyum kaynağı olarak kullanılan ve diğer atık malzeme olan yumurta kabuğuna ait SEM görüntüsü Şekil 1(a)'da ve EDS analizi sonucu Şekil 1(b)'de verilmektedir. Yumurta kabuğunun bileşiminde %93.7 CaCO₃, %1 MgCO₃, %1 CaP, %3.3 organik madde ve %0.1 'de sudan oluşmaktadır [8]. Öncelikle yumurta kabukları sıcak suda 45 dk kaynatılmıştır ve soğumaya bırakılmıştır. Soğuyan yumurta kabuklarının içerisindeki zar kısımları temizlenmiş ve havanda öğütülerek kalsinasyon işlemi için hazır hale getirilmiştir. Toz haline getirilen yumurta kabukları, 1000 °C'de 20 dk boyunca kalsinasyon işlemine tabi tutulmuştur.





Element	O	Mg	P	Ca
% ağı.	57,32	1,56	6,84	37,27

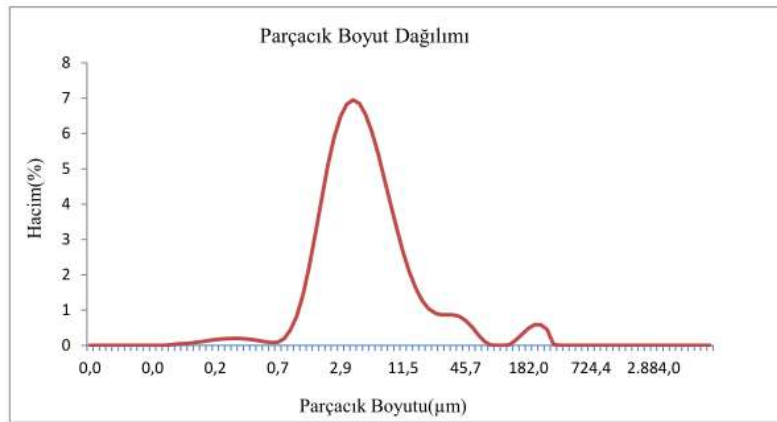
Şekil 1: (a) Yumurta kabuğunun SEM görüntüsü, (b) EDS analizi sonuçları

Apatit/vollastonit (A/W) cam seramik üretiminde, soda-kireç cam kırığı, yumurta kabuğu ve P_2O_5 (99%) ile MgO (99.8%) tozları kullanılmıştır. A/W cam seramik üretimi için kullanılan tozların yüzde miktarları Tablo 2'de verilmiştir.

Tablo 2: A/W üretimi için gerekli hesaplamalar

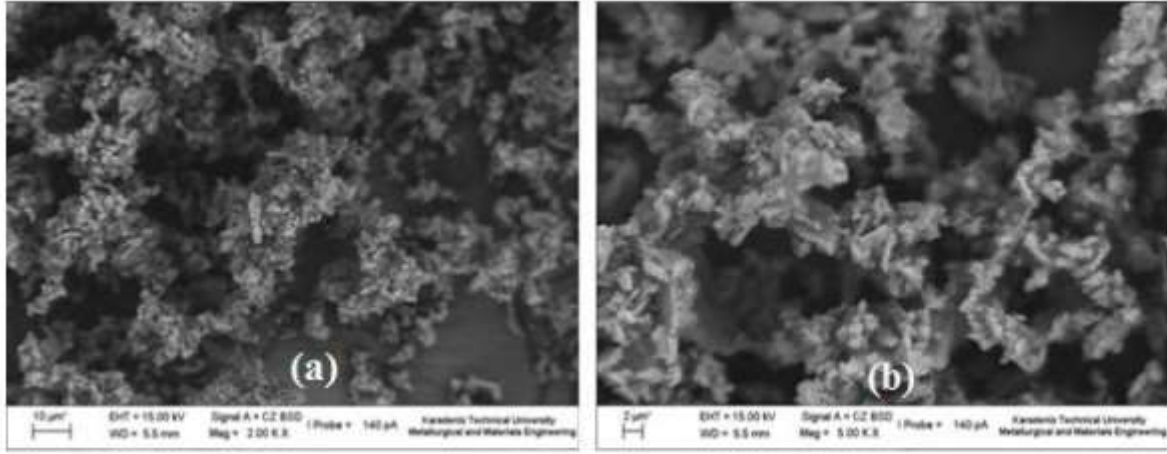
	SiO ₂	MgO	CaO	CaF ₂	P ₂ O ₅	Na ₂ O	Al ₂ O ₃	K ₂ O	SO ₃	TiO ₂	Fe ₂ O ₃	Organik
A/W (%)	34	4,6	44,7	0,5	16,2	-	-	-	-	-	-	-
Soda-Kireç Camı (%)	74	0,2	10,5	-	-	13,5	1,3	0,3	0,2	0,01	0,04	-
Yumurta Kabuğu (%)	MgCO ₃ =84, CaCO ₃ =1											3,3

10 gr A/W cam seramik üretiminde, öğütülmüş ve kalsine edilmiş yumurta kabuklarından 7.6 gr, öğütülmüş cam şişe kırıklarından 4.59 gr ve 1.62 gr P_2O_5 ve 0.4 gr MgO tozu kullanılmıştır. Platin kroze içerisine tozlar beslendikten sonra fırına yerleştirilerek 1450 °C sıcaklığa 5 °C/dk ısıtma hızıyla çıkılmıştır ve fırında 20 dk homojen bir ergiyik eldesi için beklenilmiştir. Platin kroze ergiyik amorf yapı elde etmek için buz dolu kalıba dökülmüştür. Döküm sonucu elde edilen A/W camı bilyeli değirmende seramik havan kullanılarak A/W cam/alümina bilye oranı 1:10 olacak şekilde etil alkol kullanılarak 300 devir/dk hızda 4 saat süreyle öğütülmüştür. Bilyalı değirmende öğütüldükten sonra 36 µm elekten geçirilmiş A/W cam tozların boyut dağılımı Mastersizer™ cihazı kullanılarak belirlenmiştir. Partikül boyut dağılımı Şekil 2'de verilen tozların D90 değeri 19.29 µm, D50 değeri 4.742 µm ve D10 değeri ise 1.875 µm olarak belirlenmiştir. Ortalama tane boyutları 5 µm altında olduğu görülmektedir.



Şekil 2: Parçacık boyut dağılımı grafiği

Tozların 2kX ve 5kX büyütmede alınan SEM fotoğrafları Şekil 3'de verilmiştir.



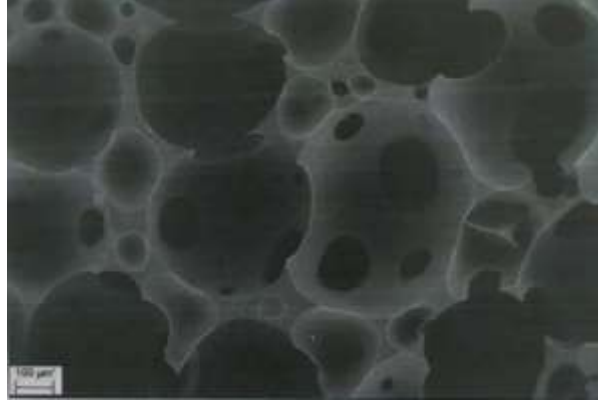
Şekil 3: 36 µm elekaltı A/W tozların farklı büyütmelede SEM görüntüleri (a) 2kX, (b) 5kX

Tozlar kuruması için 12 saat süresince 60 °C'de etüvde bekletilmiştir. Toz karışımı, A/W cam dökümü ve amorf A/W camı Şekil 4'de verilmektedir.



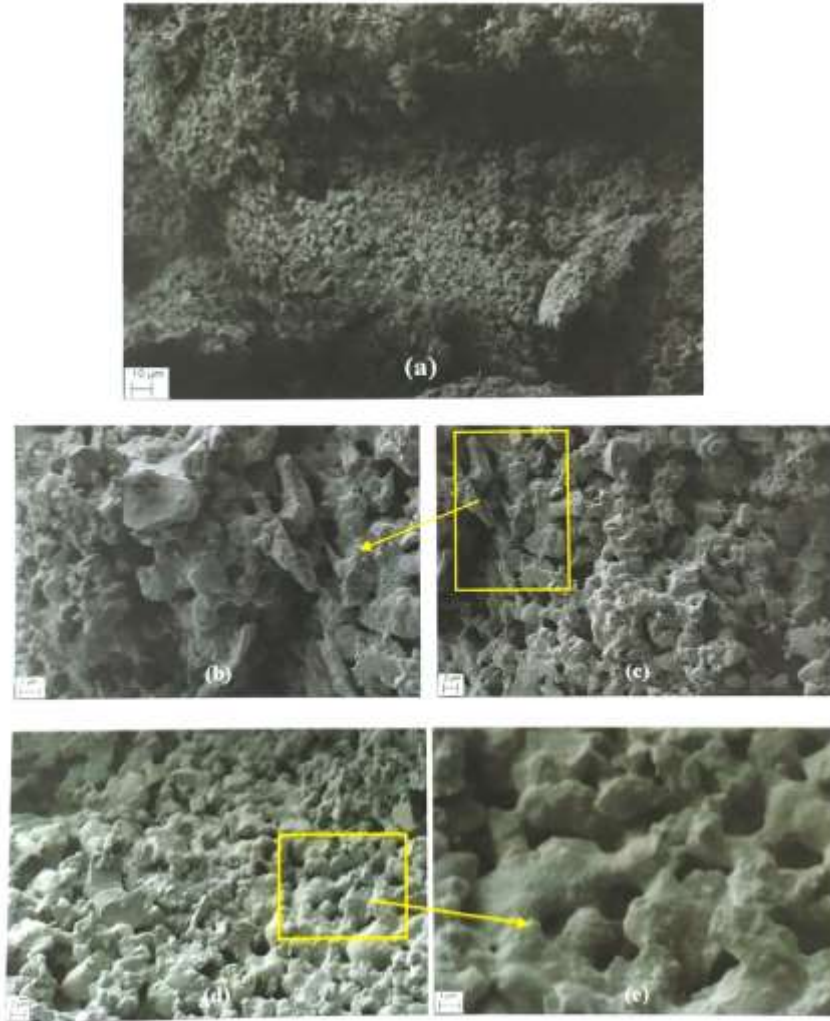
Şekil 4: Toz karışımı, platin kroze ile cam dökümü ve döküm sonrası A/W cam görüntüsü

Replika yöntemi için 1.94 gr öğütülmüş A/W cam tozu, polvinil alkol (PVA) ve 0.01 mol/L saf sudan oluşan bir çamur hazırlanmıştır. Homojen bir çözelti elde etmek için 50 ml'lik PVA ve su karışımı manyetik karıştırıcıda 1 saat bekletilmiştir. Daha sonra bu çözelti içerisinde A/W cam tozları ilave edilmiştir ve homojen bir karışım elde etmek için 1 saat süresince manyetik karıştırıcıda bekletilmiştir. Akgün Metal A.Ş.'den temin edilen açık gözenekli poliüretan şablonlar 10mm x 10mm x 10mm kesilmiştir ve şablon hazırlanan seramik çamura 20 dk. boyunca daldırıldıktan sonra etüvde 100 °C' de 12 saat süresince kurutulmuştur. Poliüretan şablonun SEM görüntüsü Şekil 5'de verilmektedir. Poliüretan şablonun daldırma işlemi 3 kere tekrarlanmıştır ve her defasında etüvde kurutma işlemi gerçekleştirilmiştir. Seramik çamur ile emdirilmiş poliüretan köpükler, fırında 2 °C/dk. ısıtma hızı ile 400 °C' de 1 saat bekletildikten sonra fırın sıcaklığı aynı ısıtma hızı ile 1000 °C'ye çıkarılarak 5 saat süresince sinterleme işlemi gerçekleştirilmiştir. Sinterleme sonrası A/W köpük seramikleri elde edilmiştir.



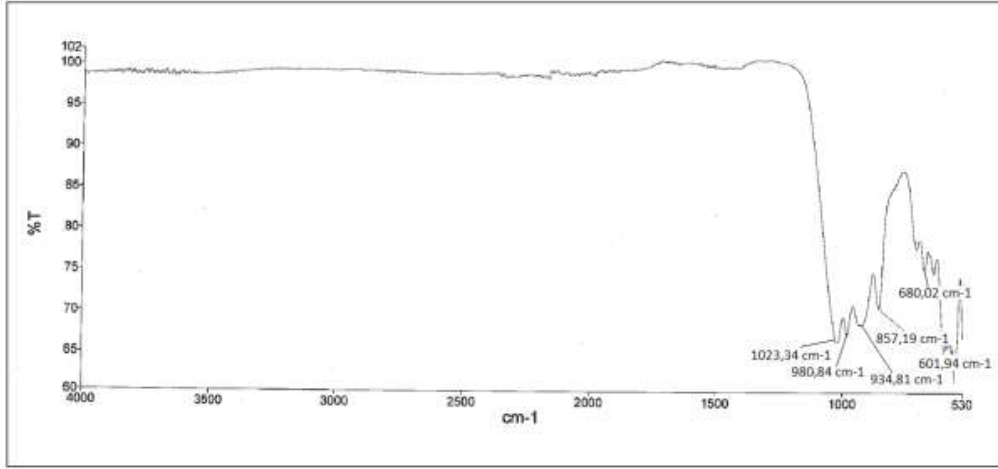
Şekil 5: Poliüretanın SEM fotoğrafı

Replika yöntemi ile üretilip 1000 °C'de 5 saat sinterlenen tozlardan alınan SEM görüntüleri Şekil 6'da verilmektedir. SEM 'de incelenen sinterlenmiş A/W tozların kemik gibi gözenekli bir yapıya sahip olduğu görülmüştür. MB-Ruler™ programı kullanılarak SEM görüntülerinden gözenek boyutları ölçülmüştür. Sinterlenmiş tozlarda da poliüretan içyapıya benzer bir yapıda olup, ortalama gözenek boyutları iç por çapı 0,945 ve 1,713 µm arasında değişmektedir.



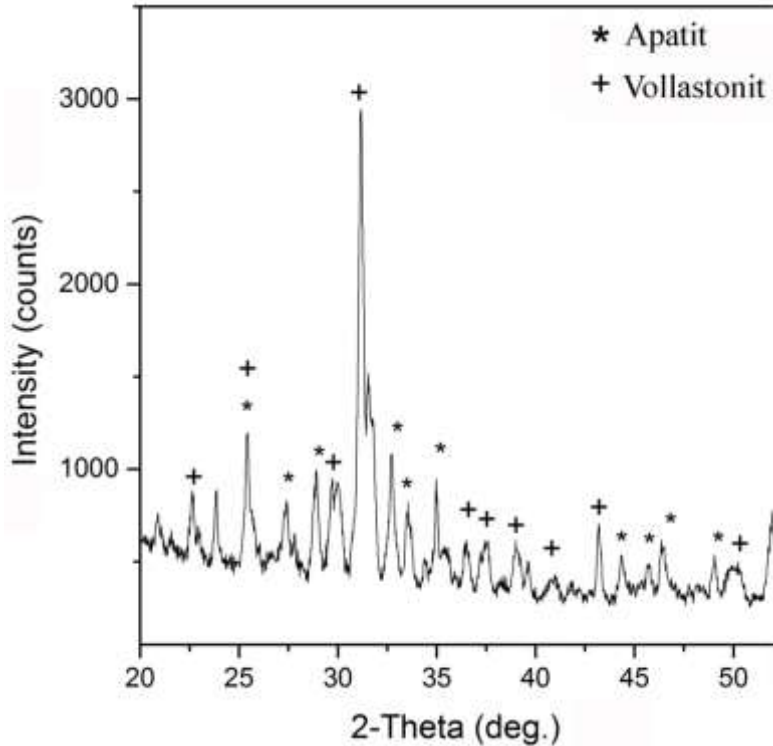
Şekil 6: Sinterlenmiş A/W tozunun farklı büyütmelelerdeki SEM görüntüleri (a) 1kX genel görünüm, (b) 7.5kX, (c) ve (d) 5kX, (e) 15kX büyütmede iç ve dış porların görünümü.

Sinterlenmiş A/W tozlardan alınan Fourier Infrared (FTIR) spektroskopisi sonucu Şekil 7'de verilmektedir.



Şekil 7: Sinterlenmiş A/W tozlarının FT-IR sonucu

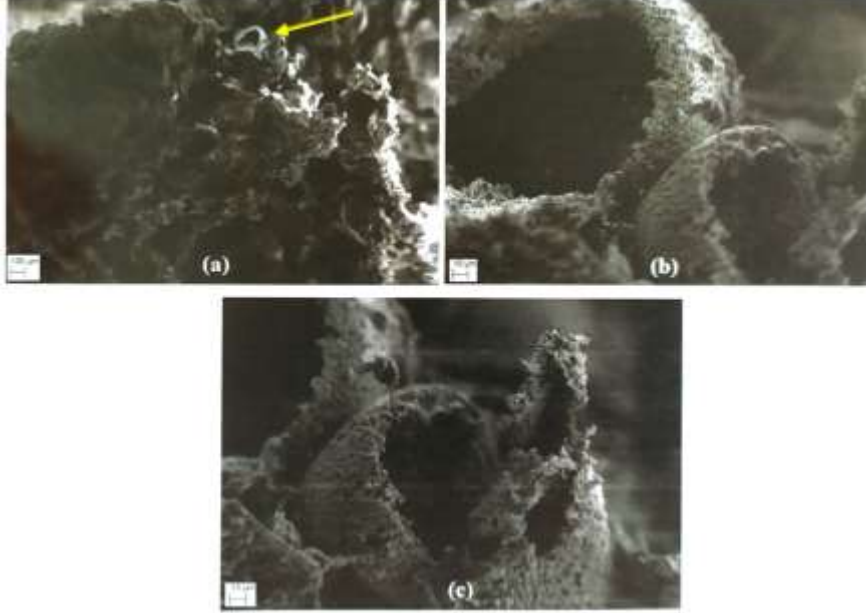
FT-IR grafiğinde 1023 cm^{-1} , 980 cm^{-1} , 934 cm^{-1} , 680 cm^{-1} , 640 cm^{-1} ve 602 cm^{-1} aralığında pikler görülmektedir. 1023 cm^{-1} 'de görülen pik asimetric Si-O-Si [9] bağından kaynaklanırken, 934 cm^{-1} piki simetric esnek Si-O-Si bağına ait olduğu görülmektedir. 680 cm^{-1} ve 640 cm^{-1} 'de görülen pik ise Si-O tetrahedra bağından kaynaklanmaktadır [10]. 602 cm^{-1} 'de görülen P-O (eğme modu) PO_4^{-3} fonksiyonel grupların ait pikler görülmektedir. Sinterlenmiş A/W cam seramik numunesine ait XRD analizi grafiği Şekil 8'de verilmektedir.



Şekil 8: $1000\text{ }^{\circ}\text{C}$ 'de 5 saat sinterlenmiş A/W cam seramik köpük malzemesine ait XRD analizi

Şekil 8'de verilen XRD grafiğinden apatit ($\text{Ca}_{10}[\text{PO}_4]_6[\text{OH}]_2$; JCPDS #9-432) ve vollastonit ($\text{CaO} \cdot \text{SiO}_2$; JCPDS # 10-0489) fazlarına ait pikler gözlemiştir. A/W cam seramik numuneleri, $37\text{ }^{\circ}\text{C}$ inkübatörde 3 ve 9 gün süreyle Hank sıvısı içerisinde bekletilmişlerdir. Hank sıvısının bileşiminde 75 mg/L KCl, 136 mg/L KH_2PO_4 , 58 mg/L NaCl, 142 mg/L Na_2HPO_4 , 180 mg/L d-glikoz bulunmaktadır. Hank sıvısında bekletilen numuneler, 3. günün sonunda %22.5 ağırlık kaybı

gözlenirken, 9. günün sonunda ağırlık kaybı %67 'ye ulaşmıştır. Hank sıvısında 3 gün bekletilen numunelere ait SEM görüntüleri Şekil 9'da verilmektedir. SEM görüntüleri alınan numunede, iskelet yapılar değişime uğrayarak partiküllerin içi boş küreler şeklinde konveks bir yapı oluşturarak büyüdüğü gözlenmiştir. Benzer boşluklu yapılar, PCL (polilaktik asit) kaplı hidroksiapatit iskelet yapılarının Hank sıvısında bekletilmesinde de karşılaşılmıştır [11].



Şekil 9: Hank sıvısında 3 gün bekletilmiş A/W cam seramik numunelerin farklı büyütme ölçeklerindeki SEM görüntüleri (a) 100x, (b) 1000x, c) 1000x

3. SONUÇLAR

Gözenekli yapıda apatit/vollastonit (A/W) cam seramik malzemesi, yumurta kabukları ve cam kırığı atıkları kullanılarak önce ergitme sonrasında öğütme ve çamur hazırlama işlemlerinden sonra poliüretan köpük kullanılarak replika yöntemi ile başarılı bir şekilde üretilmiştir. X-ışınları analiz sonuçları, apatit ve vollastonit fazlarının cam seramik bünyesinde bulunduğunu göstermektedir. Yapılan mikroyapı incelemelerinde, yüzeye açık ve iç porozite içeren cam seramik malzemenin por çaplarının 0,945 ve 1,713 μm arasında değiştiği görülmektedir. A/W tozlarından alınan FTIR analizlerinde P-O ve Si-O-Si bağları arasındaki titreşimlerin pikleri görülmektedir. Hanks sıvısında 3 ve 9 gün bekletilen numunelerde, 9. günde ağırlık kaybının daha fazla olduğu gözlenmiştir. Ayrıca 3. gün sonunda alınan numunelerin SEM görüntülerinden A/W cam yüzeylerinde içi boş konveks yapıda apatit yapısına benzer yapılar olduğu görülmüştür.

Teşekkür

Yapılan bu çalışmanın deneysel kısımlarında yardımcı olan Gamze Durutürk ve Tuğba Aktuna'ya, ayrıca bu çalışmada poliüretan köpük sağladığı için Akgün Metal A.Ş.'ye teşekkür ederiz.

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ATIK MALZEMELER KULLANILARAK APATİT-VOLLASTONİT CAM-SERAMİK KÖPÜK ÜRETİMİ

Özet

Atık malzemelerin seramikte kullanılması, malzemenin uygunsuz şekilde bertaraf edilmesini engelleyerek hem ekolojik hem de ekonomik faydalar sağlamaktadır. Gerçekte, atık malzemelerin yeniden kullanımı, nihai ürüne bir katma değerle, maliyetin düşmesiyle katkıda bulunabilir. Bu çalışmada atık madde olarak soda silikat cam kırıkları ve yumurta kabuğu kullanılarak apatit-vollastonit cam-seramikler üretilmiş ve biyoaktiviteleri değerlendirilmiştir. Atık olarak yumurta kabuğu ve soda-kireç camı, hammadde olarak P_2O_5 ve MgO içeren apatit-vollastonit cam seramikler eriyik döküm işlemi ile üretilmiştir. Döküm yöntemi ile üretilmiş apatit-vollastonit cam-seramiklerinden seramik köpükler üretmek için replika yöntemi kullanılmıştır. Bu amaçla, öğütülmüş apatit-vollastonit seramik tozlarını ve PVA katkı maddesini içeren seramik bulamaçlar, gözenekli apatit-vollastonit cam-seramikleri üretmek için bir poliüretan köpüğe daldırılmıştır. Organik bileşikler ve katkı maddeleri yakıldıktan sonra seramik yapı $1000\text{ }^{\circ}C$ 'de 5 saat sinterlenmiştir. Sinterlenmiş A/W seramikleri/ve tozu, Taramalı Elektron Mikroskobu (SEM), Enerji Dağılım Spektroskopisi (EDS), X-ışını kırınımı (XRD) analizi, Fourier dönüşümü kızılötesi (FTIR) spektroskopisi analizi kullanılarak karakterize edilmiştir. Cam-seramiklerin biyoaktivitesi, çeşitli bekletme sürelerinden sonra cam-seramiklerin Hanks çözeltisine daldırılmasıyla belirlenmiştir. SEM analizinden, sinterlenmiş A/W tozlarının mikroyapı gözenek boyutlarının $0.945\text{ }\mu m$ ile $1.713\text{ }\mu m$ arasında değiştiği görülmektedir. Partikül boyutu analiz sonucuna göre A/W cam tozunun ortalama partikül büyüklüğü $4.74\text{ }\mu m$, helyum piknometresi ile belirlenen yoğunluk değeri 1.0004 g/ml olarak ölçülmüştür. Sinterlenmiş gözenekli A/W cam seramiğin XRD analizinden, apatit ve vollastonit (kalsiyum silikat) fazları tanımlanmıştır.

Anahtar kelimeler: Apatit-vollastonit cam-seramik; replika yöntemi; atık malzemeler

1. GİRİŞ

Son yıllarda, gözenekli apatit-vollastonit biyoaktif cam seramikler iyi biyolojik aktiviteye sahip olmasından, osteoindüktivite ve biyolojik olarak parçalanabilme özelliklerinden dolayı kemik doku mühendisliği araştırmacıları tarafından dikkat çeken bir malzeme olmuştur [1-3]. $MgO-CaO-SiO_2-P_2O_5$ sistemine sahip Apatit-vollastonit cam seramik malzeme, 1982 yılında ilk olarak Kukubo ve arkadaşları [4] tarafından geliştirilmiştir. Apatit-vollastonit cam seramik, ağırlıkça %38 kalsiyum florapatit, %34 vollastonit kristalleri ve 50-100 nm boyutunda $MgO-CaO-SiO_2$ camı matristen oluşan ana camın ısı işleminden sonra elde edilir [5]. Yapısında bulunan apatit ve vollastonit kristalleri nedeniyle yüksek biyolojik aktiviteye ve iyi mekanik dirence sahip bu malzeme, vücut sıvı ortamına girdiği zaman üzerinde doğal kemikle güçlü bir bağ yapan ince bir hidroksiapatit tabakası oluşur.

Gözenekli seramikler, replika yöntemi, nişasta gibi gözenek yapıcılarla konsolidasyon, jel-döküm köpük yöntemleri gibi çeşitli yöntemler kullanılarak üretilirler [6]. Bu yöntemlerin içerisinde en popüler yöntem, organik köpük emdirme yöntemi diğer ismiyle replika yöntemidir ve 1963 yılında Brezny ve Green [7] tarafından polimerik köpük replika yönteminin patenti alınmıştır. Replika metodu yaklaşımında, sentetik (örneğin polimerik köpükler, tipik olarak poliüretan) ve doğal (örneğin mercan, ahşap) şablonları kullanarak makro gözenekli seramik imal etmek için kullanılabilir. Bu yöntemle yaklaşık %70-90 oranında gözenekli yapı elde etmek mümkündür.



Bu çalışmanın amacı, soda silikat cam kırığı, yumurta kabuğu atıklarından polimer köpük replika yöntemi kullanarak gözenekli apatit-vollastonit (A/W) cam seramik üretiminin gerçekleştirilmesidir. Öğütülmüş A/W camı tozlarından SEM analizi ve partikül boyut analizi alınmıştır. Ayrıca tozların piknometre ile yoğunlukları ölçülmüştür. Replika yöntemi ile üretilen A/W cam seramikler sinterleme sonrası mikroyapısı SEM analizi ile incelenmiştir ve gözenek boyutları belirlenmiştir. A/W cam seramik faz analizleri XRD yöntemi ile belirlenmiştir. Gözenekli cam seramiklerin Hank sıvısında bekletilerek biyolojik aktiviteleri incelenmiştir.

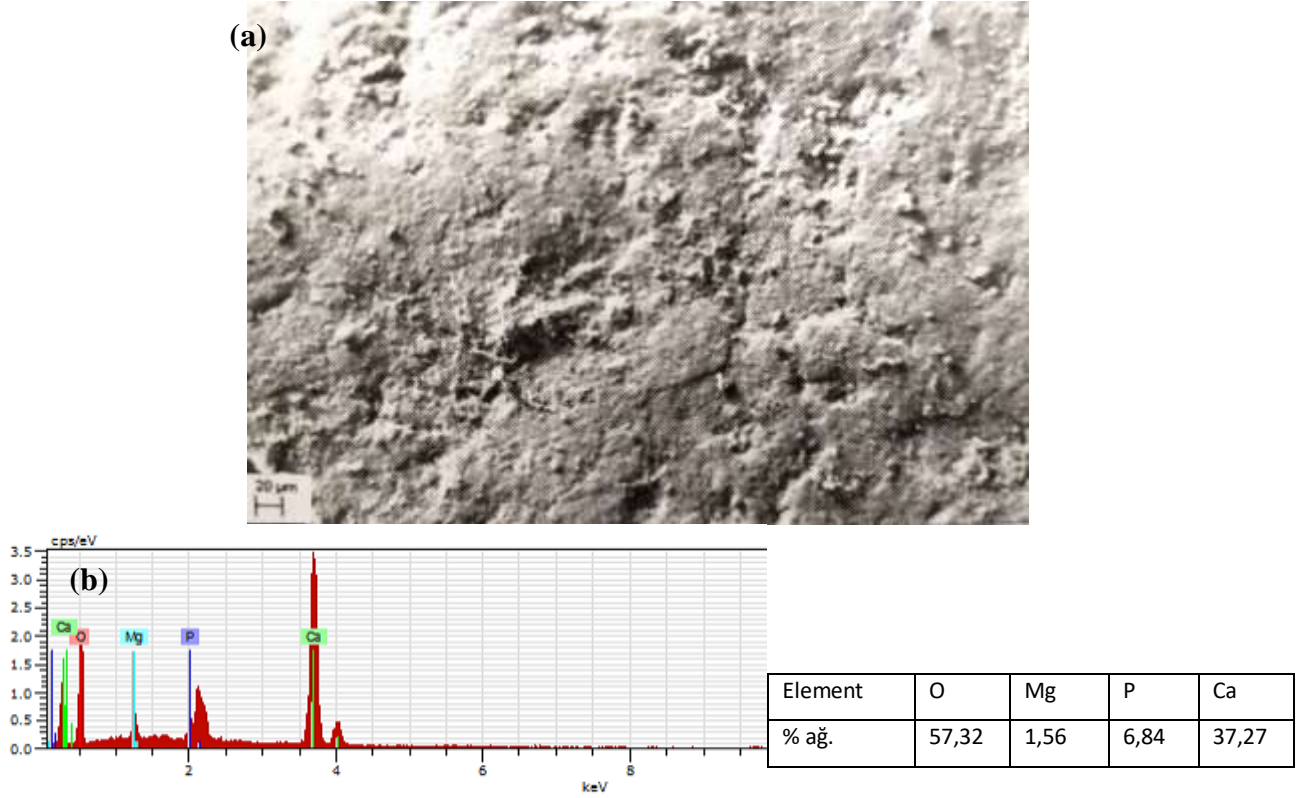
2. MALZEME, YÖNTEM VE ÇALIŞMALAR

Bu çalışmada, soda-silikat düz renksiz cam kırıkları ve yumurta kabuğu kullanılarak apatit/vollastonit cam seramik üretimi gerçekleştirilmiştir. Etil alkol ile temizlenmiş cam şişe kırıkları havanda öğütüldükten sonra 1mm'lik elekten geçirilmiştir ve elek altı tozlar A/W üretiminde kullanılmışlardır. Kırık camlardan alınan numunenin 4 farklı bölgesinden alınan EDS (Bruker marka) analizi sonuçlarının ortalaması Tablo 1'de verilmektedir. Bu çalışmada, atık olarak kullanılan renksiz soda-kireç camının yapısındaki bileşenlerin apatit/vollastonit cam seramik bileşimine yakın olmasından dolayı apatit/vollastonit cam seramik üretiminde tercih edilmiştir.

Tablo 1: Soda-kireç camının EDS analizi

Element	Konsantrasyon yüzdesi (% ağı.)
O	52,94
Na	8,04
Mg	1,75
Si	29,17
Ca	7,91
Al	1,07

Bu çalışmada kalsiyum kaynağı olarak kullanılan ve diğer atık malzeme olan yumurta kabuğuna ait SEM görüntüsü Şekil 1(a)'da ve EDS analizi sonucu Şekil 1(b)'de verilmektedir. Yumurta kabuğunun bileşiminde %93.7 CaCO₃, %1 MgCO₃, %1 CaP, %3.3 organik madde ve %0.1 'de sudan oluşmaktadır [8]. Öncelikle yumurta kabukları sıcak suda 45 dk kaynatılmıştır ve soğumaya bırakılmıştır. Soğuyan yumurta kabuklarının içerisindeki zar kısımları temizlenmiş ve havanda öğütülerek kalsinasyon işlemi için hazır hale getirilmiştir. Toz haline getirilen yumurta kabukları, 1000 °C'de 20 dk boyunca kalsinasyon işlemine tabi tutulmuştur.



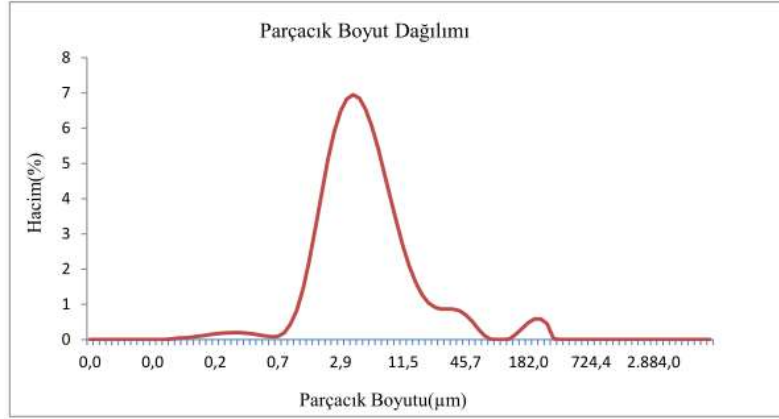
Şekil 1: (a) Yumurta kabuğunun SEM görüntüsü, (b) EDS analizi sonuçları

Apatit/vollastonit (A/W) cam seramik üretiminde, soda-kireç cam kırığı, yumurta kabuğu ve P_2O_5 (99%) ile MgO (99.8%) tozları kullanılmıştır. A/W cam seramik üretimi için kullanılan tozların yüzde miktarları Tablo 2'de verilmiştir.

Tablo 2: A/W üretimi için gerekli hesaplamalar

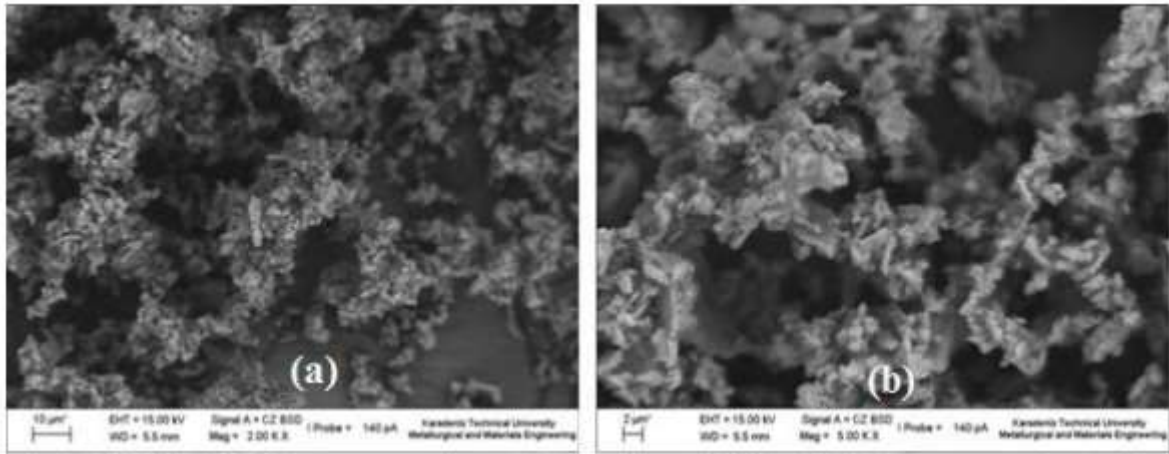
	SiO ₂	MgO	CaO	CaF ₂	P ₂ O ₅	Na ₂ O	Al ₂ O ₃	K ₂ O	SO ₃	TiO ₂	Fe ₂ O ₃	Organik
A/W (%)	34	4,6	44,7	0,5	16,2	-	-	-	-	-	-	-
Soda-Kireç Camı (%)	74	0,2	10,5	-	-	13,5	1,3	0,3	0,2	0,01	0,04	-
Yumurta Kabuğu (%)	MgCO ₃ =84, CaCO ₃ =1											3,3

10 gr A/W cam seramik üretiminde, öğütülmüş ve kalsine edilmiş yumurta kabuklarından 7.6 gr, öğütülmüş cam şişe kırıklarından 4.59 gr ve 1.62 gr P_2O_5 ve 0.4 gr MgO tozu kullanılmıştır. Platin kroze içerisine tozlar beslendikten sonra fırına yerleştirilerek 1450 °C sıcaklığa 5 °C/dk ısıtma hızıyla çıkılmıştır ve fırında 20 dk homojen bir ergiyik eldesi için beklenilmiştir. Platin kroze ergiyik amorf yapı elde etmek için buz dolu kalıba dökülmüştür. Döküm sonucu elde edilen A/W camı bilyeli değirmende seramik havan kullanılarak A/W cam/alümina bilye oranı 1:10 olacak şekilde etil alkol kullanılarak 300 devir/dk hızda 4 saat süreyle öğütülmüştür. Bilyalı değirmende öğütüldükten sonra 36 μm elekten geçirilmiş A/W cam tozların boyut dağılımı Mastersizer™ cihazı kullanılarak belirlenmiştir. Partikül boyut dağılımı Şekil 2'de verilen tozların D90 değeri 19.29 μm, D50 değeri 4.742 μm ve D10 değeri ise 1.875 μm olarak belirlenmiştir. Ortalama tane boyutları 5 μm altında olduğu görülmektedir.



Şekil 2: Parçacık boyut dağılımı grafiği

Tozların 2kX ve 5kX büyütmede alınan SEM fotoğrafları Şekil 3'de verilmiştir.



Şekil 3: 36 µm elekaltı A/W tozların farklı büyütmelerde SEM görüntüleri (a) 2kX, (b) 5kX

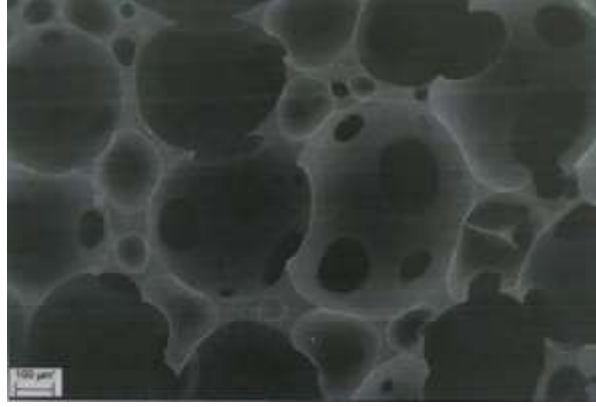
Tozlar kuruması için 12 saat süresince 60 °C'de etüvde bekletilmiştir. Toz karışımı, A/W cam dökümü ve amorf A/W camı Şekil 4'de verilmektedir.



Şekil 4: Toz karışımı, platin kroze ile cam dökümü ve döküm sonrası A/W cam görüntüsü

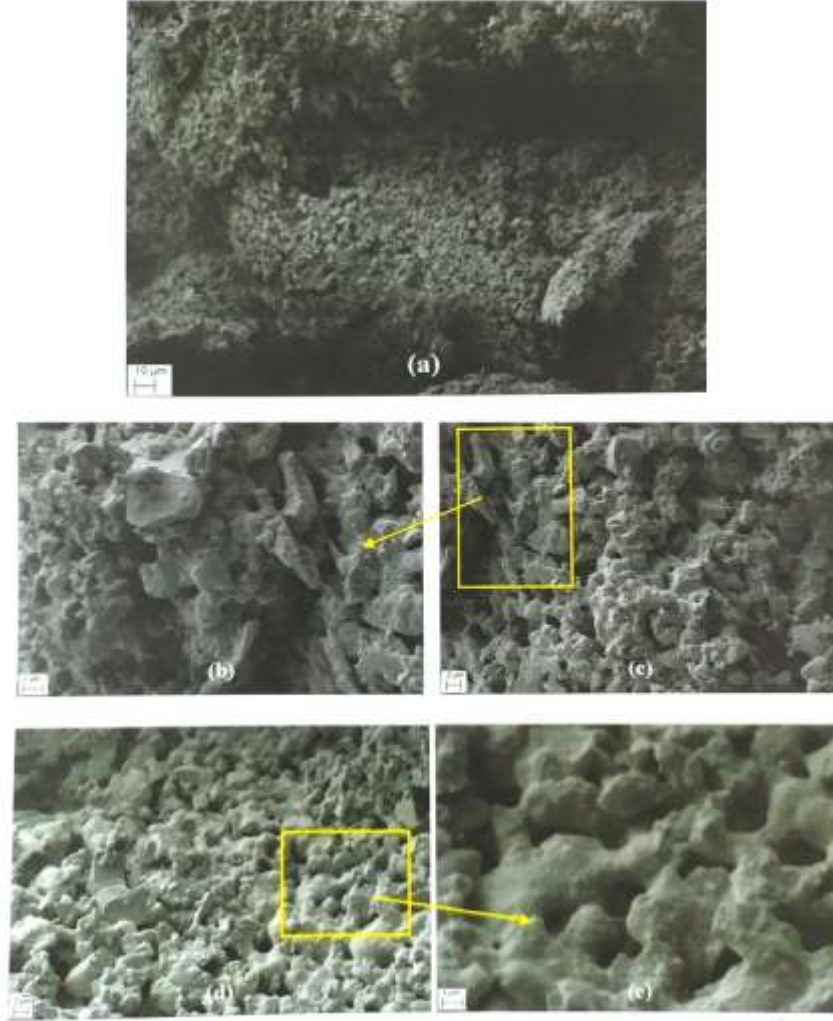
Replika yöntemi için 1.94 gr öğütülmüş A/W cam tozu, polvinil alkol (PVA) ve 0.01 mol/L saf sudan oluşan bir çamur hazırlanmıştır. Homojen bir çözelti elde etmek için 50 ml'lik PVA ve su karışımı manyetik karıştırıcıda 1 saat bekletilmiştir. Daha sonra bu çözelti içerisine A/W cam tozları

ilave edilmiştir ve homojen bir karışım elde etmek için 1 saat süresince manyetik karıştırıcıda bekletilmiştir. Akgün Metal A.Ş.'den temin edilen açık gözenekli poliüretan şablonlar 10mm x 10mm kesilmiştir ve şablon hazırlanan seramik çamura 20 dk. boyunca daldırıldıktan sonra etüvde 100 °C' de 12 saat süresince kurutulmuştur. Poliüretan şablonun SEM görüntüsü Şekil 5'de verilmektedir. Poliüretan şablonun daldırma işlemi 3 kere tekrarlanmıştır ve her defasında etüvde kurutma işlemi gerçekleştirilmiştir. Seramik çamur ile emdirilmiş poliüretan köpükler, fırında 2 °C/dk. ısıtma hızı ile 400 °C' de 1 saat bekletildikten sonra fırın sıcaklığı aynı ısıtma hızı ile 1000 °C'ye çıkarılarak 5 saat süresince sinterleme işlemi gerçekleştirilmiştir. Sinterleme sonrası A/W köpük seramikleri elde edilmiştir.



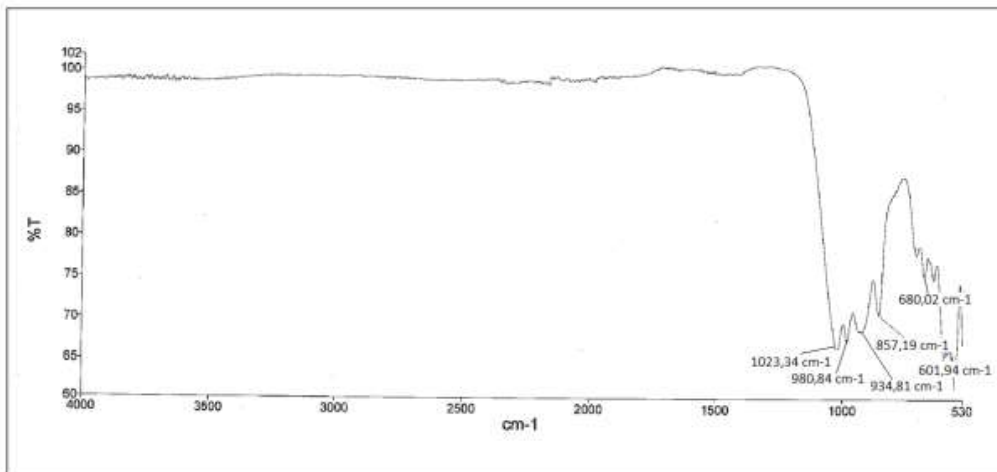
Şekil 5: Poliüretanın SEM fotoğrafı

Replika yöntemi ile üretilip 1000 °C'de 5 saat sinterlenen tozlardan alınan SEM görüntüleri Şekil 6'da verilmektedir. SEM 'de incelenen sinterlenmiş A/W tozların kemik gibi gözenekli bir yapıya sahip olduğu görülmüştür. MB-Ruler™ programı kullanılarak SEM görüntülerinden gözenek boyutları ölçülmüştür. Sinterlenmiş tozlarda da poliüretan içyapıya benzer bir yapıda olup, ortalama gözenek boyutları iç por çapı 0,945 ve 1,713 µm arasında değişmektedir.



Şekil 6: Sinterlenmiş A/W tozunun farklı büyütmelelerdeki SEM görüntüleri (a) 1kX genel görünüm, (b) 7.5kX, (c) ve (d) 5kX, (e) 15kX büyütmede iç ve dış porların görünümü.

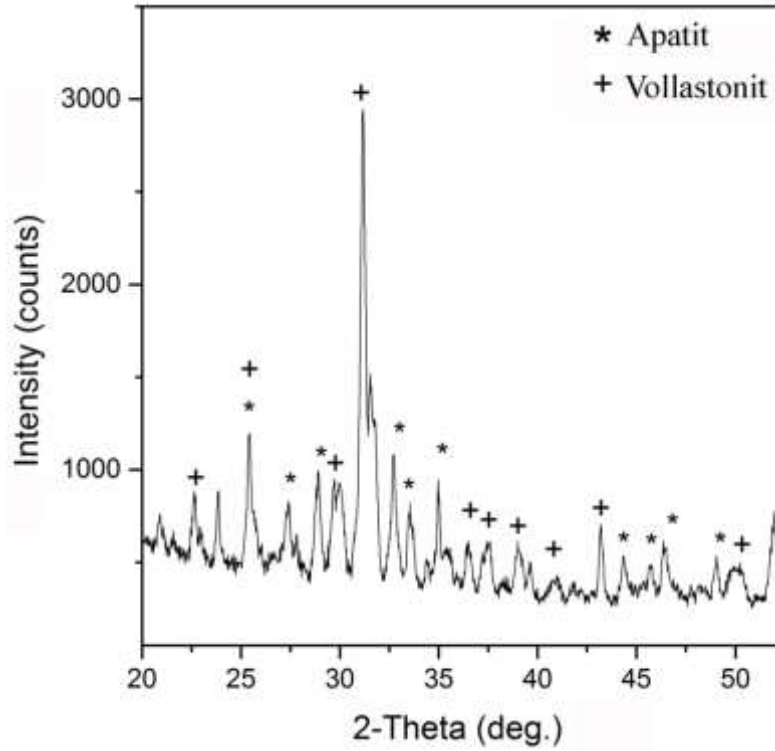
Sinterlenmiş A/W tozlardan alınan Fourier Infrared (FTIR) spektroskopisi sonucu Şekil 7'de verilmektedir.



Şekil 7: Sinterlenmiş A/W tozlarının FT-IR sonucu

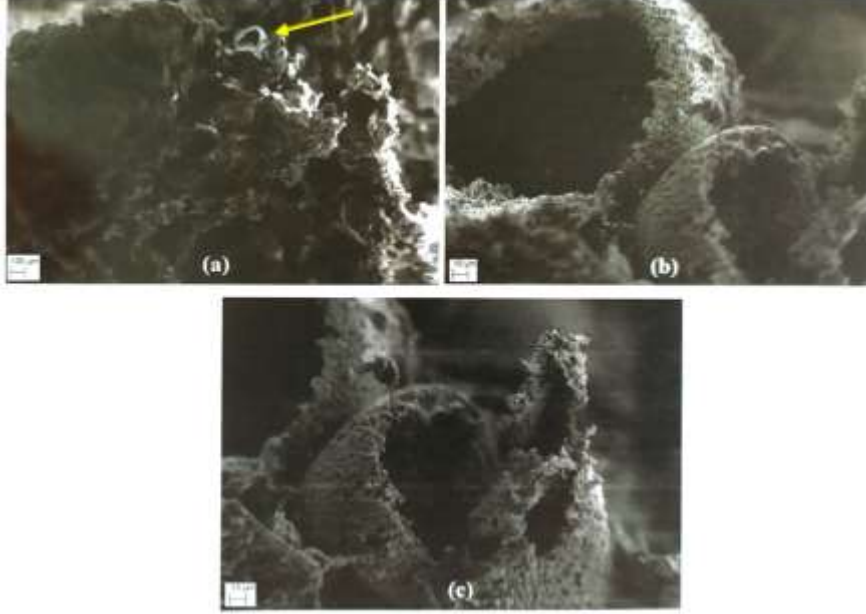
FT-IR grafiğinde 1023 cm^{-1} , 980 cm^{-1} , 934 cm^{-1} , 680 cm^{-1} , 640 cm^{-1} ve 602 cm^{-1} aralığında pikler görülmektedir. 1023 cm^{-1} 'de görülen pik asimetric Si-O-Si [9] bağından kaynaklanırken, 934 cm^{-1} piki simetric esnek Si-O-Si bağına ait olduğu görülmektedir. 680 cm^{-1} ve 640 cm^{-1} 'de görülen pik

ise Si-O tetrahedra bağından kaynaklanmaktadır [10]. 602 cm^{-1} 'de görülen P-O (eğme modu) PO_4^{-3} fonksiyonel grupların ait pikler görülmektedir. Sinterlenmiş A/W cam seramik numunesine ait XRD analizi grafiği Şekil 8'de verilmektedir.



Şekil 8: 1000 °C 'de 5 saat sinterlenmiş A/W cam seramik köpük malzemesine ait XRD analizi

Şekil 8'de verilen XRD grafiğinden apatit ($Ca_{10}[PO_4]_6[OH]_2$: JCPDS #9-432) ve vollandonit ($CaO.SiO_2$: JCPDS # 10-0489) fazlarına ait pikler gözlemiştir. A/W cam seramik numuneleri, 37 °C inkübatörde 3 ve 9 gün süreyle Hank sıvısı içerisinde bekletilmişlerdir. Hank sıvısının bileşiminde 75mg/L KCl, 136 mg/L KH_2PO_4 , 58 mg/L NaCl, 142 mg/L Na_2HPO_4 , 180 mg/L d-glikoz bulunmaktadır. Hank sıvısında bekletilen numuneler, 3. günün sonunda %22.5 ağırlık kaybı gözlenirken, 9. günün sonunda ağırlık kaybı %67 'ye ulaşmıştır. Hank sıvısında 3 gün bekletilen numunelere ait SEM görüntüleri Şekil 9'da verilmektedir. SEM görüntüleri alınan numunede, iskelet yapılar değişime uğrayarak partiküllerin içi boş küreler şeklinde konveks bir yapı oluşturarak büyüdüğü gözlenmiştir. Benzer boşluklu yapılar, PCL (polilaktik asit) kaplı hidroksiapatit iskelet yapılarının Hank sıvısında bekletilmesinde de karşılaşılmıştır [11].



Şekil 9: Hank sıvısında 3 gün bekletilmiş A/W cam seramik numunelerin farklı büyütmelerdeki SEM görüntüleri (a) 100x, (b) 1000x, c) 1000x

3. SONUÇLAR

Gözenekli yapıda apatit vollastonit (A/W) cam seramik malzemesi, yumurta kabukları ve cam kırığı atıkları kullanılarak önce ergitme sonrasında öğütme ve çamur hazırlama işlemlerinden sonra poliüretan köpük kullanılarak replika yöntemi ile başarılı bir şekilde üretilmiştir. X-ışınları analiz sonuçları, apatit ve vollastonit fazlarının cam seramik bünyesinde bulunduğunu göstermektedir. Yapılan mikroyapı incelemelerinde, yüzeye açık ve iç porozite içeren cam seramik malzemenin por çaplarının 0,945 ve 1,713 μm arasında değiştiği görülmektedir. A/W tozlarından alınan FTIR analizlerinde P-O ve Si-O-Si bağları arasındaki titreşimlerin pikleri görülmektedir. Hanks sıvısında 3 ve 9 gün bekletilen numunelerde, 9. günde ağırlık kaybının daha fazla olduğu gözlenmiştir. Ayrıca 3. gün sonunda alınan numunelerin SEM görüntülerinden A/W cam yüzeylerinde içi boş konveks yapıda apatit yapısına benzer yapılar oluştuğu görülmüştür.

Teşekkür

Yapılan bu çalışmanın deneysel kısımlarında yardımcı olan Gamze Durutürk ve Tuğba Aktuna'ya, ayrıca bu çalışmada poliüretan köpük sağladığı için Akgün Metal A.Ş.'ye teşekkür ederiz.



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ACCOUNTING SCANDALS AND TRANSITION TO INTERNATIONAL ACCOUNTING STANDARDS

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Özet

Muhasebe, finansal olayların kayıt altına alınması ile başlayan ve raporlama ile biten bir süreçtir. Firmaların büyüme içgüdüleri bazen hileli işlemlerle beslenebilmektedir. Bu durum şirketlerin sürdürülebilirliğinin tehlikeye girmesine neden olmaktadır. Muhasebe uygulamalarında hatanın ötesinde değerlendirilen hile konusu, tarihte birçok olaya neden olmuştur. Muhasebe skandallarının farklı zaman dilimlerinde ve farklı yöntemlerle yaşanması yatırımcılarda güven duygusunu zedelemiştir. Seçilen yöntemler ne olursa olsun, iç denetimin yetersizliği, mali tabloları düzenleyerek şirket hisselerinin değerini manipülatif yollarla artırma çabaları, muhasebe uygulamalarında kararlı ve katı bir duruş sergileme gerekliliğini ortaya çıkarmıştır. Muhasebe tarihinde birçok skandal yaşandı. Bu skandallar sadece meydana geldiği ülkeleri değil, tüm dünyayı etkiledi. Yatırımcıların şirketlere yatırım yapma istekleri ciddi şekilde zarar gördü. İç kontrol mekanizmasının tam olarak kurulamaması ve yetkili mercilerin kanun ve yönetmeliklerde bıraktığı boşluklar bu durumun altyapısını oluşturmuştur. Muhasebe skandalları, ülkelerin mevcut muhasebe uygulamalarındaki boşlukları tespit etmenin ve evrensel bir muhasebe dili oluşturmanın gerekliliğini de anlamalarını sağlamıştır. Muhasebe uygulamalarının tamamen gözden geçirilmesi ve bazı standartların oluşturulması süreci bu skandalların bir çıktısı olarak değerlendirilmektedir. Böylece Uluslararası Muhasebe Standartları, Uluslararası Finansal Raporlama Standartları ve Uluslararası Denetim Standartları ortaya çıkmıştır. Çalışmada dünyadaki muhasebe skandallarından bahsedilecek ve bu sürecin muhasebe dünyasındaki dönüşüme etkileri teorik bir temelde ifade edilecektir.

Anahtar Kelimeler: İç Denetim, Muhasebe, Uluslararası Muhasebe Standartları, Muhasebe Skandalları

Abstract

Accounting is a process that starts with the recording of financial events and ends with reporting. The growth instincts of the companies can sometimes be fed by fraudulent transactions. This situation causes the sustainability of the companies to be endangered. In accounting practices, the subject of fraud, which is evaluated beyond error, has caused many events in history. The fact that accounting scandals were experienced in different time periods and in different methods damaged the sense of trust among investors. Regardless of the methods chosen, the inadequacy of internal auditing, the efforts to increase the value of the company's shares by manipulative means by making up the financial statements have revealed the necessity of displaying a determined and strict stance in accounting practices. There have been many scandals in the history of accounting. These scandals affected not only the countries in which they took place, but also the whole world. Investors' willingness to invest in companies has been severely damaged. The failure of the internal control mechanism to be established properly and the gaps left by the competent authorities in the law and regulation formed the infrastructure of this situation. Accounting scandals have also made



the countries understand the necessity of identifying gaps in current accounting practices and establishing a universal accounting language. The process of completely reviewing accounting practices and establishing some standards is considered as an output of these scandals. In this way, International Accounting Standards, International Financial Reporting Standards and International Auditing Standards emerged. In the study, accounting scandals in the world will be mentioned and the effects of this process on the transformation in the accounting world will be expressed in a theoretical basis.

Keywords: Internal Audit, Accounting, International Accounting Standards, Accounting Scandals

INTRODUCTION

Accounting is one of the business functions. Accounting plays a critical role in the process from recording financial events to reporting. Accounting has an obligation to present some information to its parties. States benefit from accounting for the amount of tax they will collect, investors' investment decisions and performance measurements in businesses.

Essentially, accounting provides the information they need to all parties within the accounting information system in asset and village management. The quality level of the information produced by accounting is very important. Because behind the make-up financial statements, there may be fraudulent transactions and information that misleads the investors. In this case, the states incur huge losses in the taxes they will collect. With unrealistic financial statements, companies may cause unusual price movements in stock prices that directly affect the market value of companies.

In the study, accounting scandals will be discussed in general terms, and the transition process to International Accounting Standards, which has been put forward to make accounting more transparent all over the world by minimizing fraudulent transactions, will be expressed.

1. ACCOUNTING SCANDALS

Accounting scandals are revealed by taking advantage of loopholes in the law. Professionals can make fraudulent accounting transactions in the companies they work by using their audit deficiencies.

Some crimes may be legal, while others may appear to be legal. For example, in cases of privatization or acquisition, it may be easy for a top manager to reduce the share value of the firm due to asymmetric information. The manager may pre-record anticipated expenses, delay the accounting of expected revenues, resort to off-balance sheet transactions to temporarily undermine the firm's profitability, increase expected future earnings, or make overly cautious estimates of them. Such earnings rumors temporarily lower the share price, and the low share price makes it easy to buy the business. When the business is bought at a low price, the acquirer has the right to reduce the share price because of the previous manager's actions (Yardımcıoğlu & Şebnem, 2016).

In the projection of accounting scandals, accounting fraud is seen. Researches on this subject show that the financial and reputational consequences of fraud affect not only that company but also the economy in which the company is located (Karpoff, Lee, & Martin, 2008), fraud is respected by spreading to peer companies (Beatty, Liao, & Yu, 2013), resources examined the effects on the deterioration in allocation.

2. FACTORS CAUSING ACCOUNTING SCANDALS

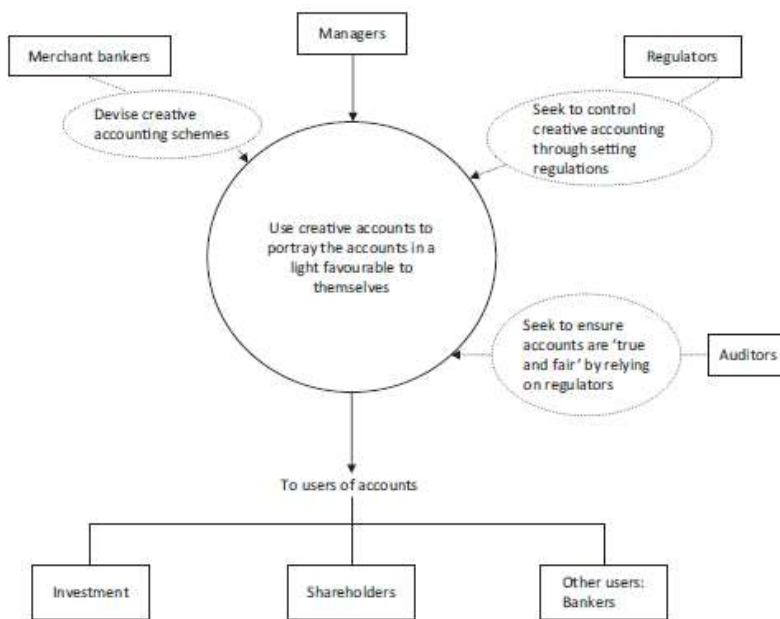
Due to the accounting scandals in world-renowned companies such as Enron, Parmalat and Worldcom, the trust of investors in these businesses has been shaken. These scandals caused the capital values of the enterprises to hit the bottom significantly and the increases in the borrowing levels decreased the credit ratings of the enterprises. Scandals occurring in these businesses are due to the negativities (error and fraud) in financial reporting and a weak internal control system in the business (Agrawal & Chadha, 2005).

Countries, businesses, investors, especially small investors, are adversely affected by such scandals and suffer great losses. In this process, investors lose money, the reputation of business management is damaged and employees lose their jobs. The macro-economic gains created by the country's economies by years of effort can be lost (Yilmaz, Elitaş, & Erkan, 2009).

It can be stated that accounting scandals are caused by the inadequacy of the internal control mechanism. It can be quite problematic that the internal control system is built on loopholes in the law or that the internal auditor is a paid employee. The quality of the audit can be increased with a common mind and audit standard that will be put forward all over the world. It can be said that in the nature of human beings, there is a tendency to cheat, evasion of information from the authority or manipulation of information. It can be said that frauds through creative accounting practices pave the way for accounting scandals. Figure 1 shows the sides of creative accounting practices.

In the study, three important accounting scandals affecting the whole world will be discussed.

Figure 1. Parties to Creative Accounting Practices



Resource: (M. Jones, 2011).



3. ENRON CASE

It has been observed that in the cases of balance sheet make-up and fraudulent reporting by world-renowned companies, companies generally use the practices of creating imaginary turnovers in companies, not recording the movements in time, hiding expenses and liabilities, not making the definitions correctly and valuing the assets incorrectly (M. J. Jones, 2010). Although there have been many cases up to the Enron scandal, no corruption case has been encountered that includes all elements of the economic and administrative system. Credit rating agencies lost their credibility with Enron's bankruptcy. Enron, which received a creditable rating in mid-October 2001, was downgraded to B2, which is called Junk Bond (Failed stock) towards the end of November. Enron has expanded into different sectors with strategic business outside of its current business line. The main reason for Enron's bankruptcy was by carrying the risks and losses off the balance sheet of the firm. It can be said that it is hiding from investors through Special Purpose Enterprises. Financial statements and reports required by Enron and Special Purpose Ventures have been manipulated in line with accounting principles. With this fraudulent technique, which hides the losses from the investor, Enron transferred the investment losses it made to the balance sheets of its joint ventures and hid its losses by not including the financial results in the consolidated financial statements (Ertikin, 2017).

Enron company boasted of its internal audit and control systems throughout this process, and they hoped that they could delay the collapse by manipulation by getting consultancy services from the independent audit company Artun Anderson they work with. Today, it is still debated whether the Enron case is a cheat or a system error. The scope of the study is to draw attention to this situation. With this study, which was limited to the Enron event, the necessity of internal audit and internal control systems was once again brought to the agenda (Aslan, 2018).

The Enron Incident is an event that has effects beyond the period in which it occurred. With the Enron Case, the necessity of reconsidering internal auditing in accounting practices and the necessity of handling this situation with certain standards has revealed. It can be said that it was at the beginning of the events that paved the way for International Accounting Standards.

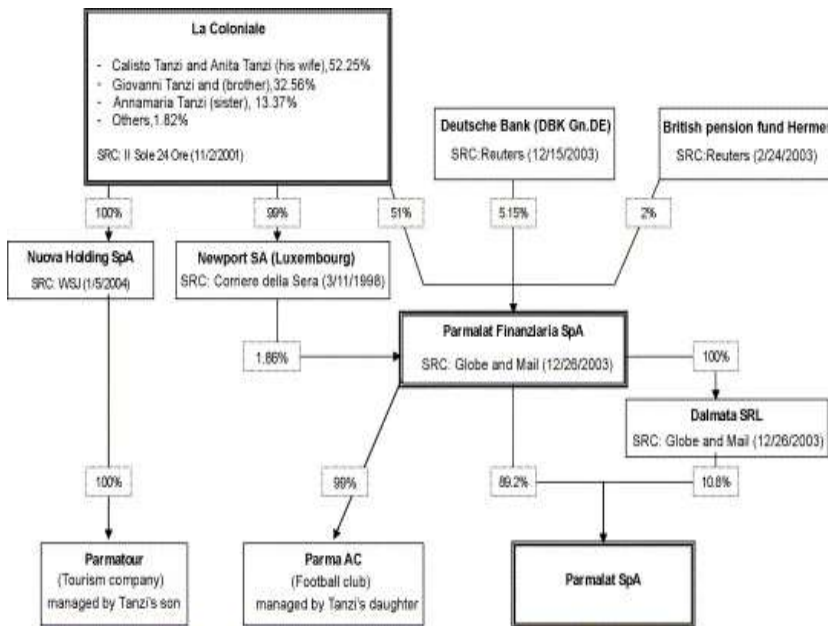
3. PARMALAT CASE

The Parmalat case, known as Europe's Enron, is essentially a case of how the majority-owned family business turned into an accounting scandal by misleading minority shareholders (Buchanan & Yang, 2005). Family members control the entire Parmalat group. Looking at the corporate governance problems in the country, it is seen that weak managers, the existence of shareholders controlling the company (blockholders) and vulnerable minority shareholders are the main problems. Shareholders controlling the company may unlawfully transfer company resources from the company they are in to another company and use their interests to the detriment of minority shareholders. In the Parmalat case, resources were transferred to subsidiary companies. In November 2003, it was revealed that the company transferred 500 million euros to the Epicurum fund established in the Cayman Islands (Melis, 2005). As in the Enron scandal, they are big mistakes made in the control of Parmalat company. The most critical point here is that DeloitteTouche, which controls Parmalat, and AA, which controls Enron, are the same companies. After AA's bankruptcy, DeloitteTouche established AA's dealership in Italy (Gavridis & Ficarella, 2004).

The International Auditing and Assurance Standards Board (IAASB) introduced two new standards after the Parmalat scandal. First; "International Quality Control 1 (ISQC1)" states a company's obligations to establish and implement a system of quality control for all audit and assurance engagements. The second standard, ISA220, "Quality Control for the Audit of Historical Financial Information", provides a basis for the requirements of ISQC1 and the quality control standards

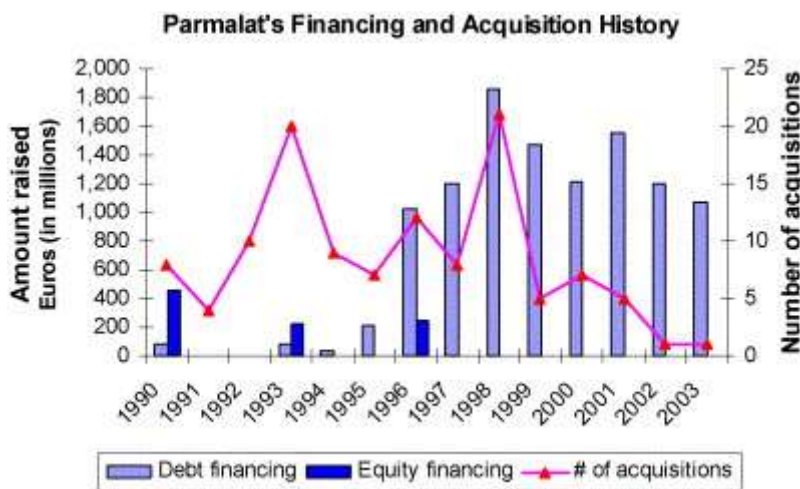
established for the company as a whole, establishing standards for certain obligations of firm personnel in an individual audit engagement.

Figure 2. Parmalat Company Ownership Structure



Source: (Buchanan & Yang, 2005)

Figure 3. Parmalat’s Financing and Acquisition History



Source: (Buchanan & Yang, 2005)

As it can be seen in Figure 3, the firm plays a key role in debt financing. The disappearance of his own capital is revealed historically. The Parmalat case may have been an opportunity to reveal vulnerabilities in accounting systems. Because, right after the scandal, standards were set to eliminate these deficits.

4. WORLDCOM

Founded in 1983 by Bernard Ebbers, Worldcom has managed to increase its market value to 180 billion dollars in a short period of 7 years. It provides employment to 80,000 people. The value of the valuable papers traded in the stock market in 1999 was over 64 dollars. Worldcom is recognized as the second largest company of the United Nations. It has been determined that the company's profit of \$1.4 billion in 2001 and the profit announced in the first quarter of 2002 are fake. In the



accounting records, approximately 4 million dollars of irregularities made by the deputy general manager of financial affairs were disclosed by the company. It was disclosed that \$3.8 billion of firm expense was recorded as an equity investment. Accounting manager Scott Sullivan was fired. Accordingly, the firm has announced that it will rearrange its results covering the first three months of 2001 and 2002 to show a net loss. Higher profitability than the current one has negatively affected the value of stocks traded in the stock exchange. With this scandal, companies that own many communication stocks traded in the stock exchange began to suffer losses. Qwest Communications, Lucent Technologies, and Nortel Networks are the leading companies that experienced loss of value (Süer, 2004).

Enron, Parmalat and Worldcom can be seen as the memorable trio in the accounting scandals. Although the situation in Worldcom is similar to other scandals, sectoral differences are striking. Being a telecommunication company caused the IT sector to suffer a lot and questioned its perspective on the accounting profession. It has taken a long time to compensate for the wounds inflicted by the hypocrisy in control.

5. CONCLUSION

Accounting scandals did not only affect the period in which they were experienced in the historical dimension. The period in which it lived has directly affected the sector at a critical level. This situation revealed that there is a need for accounting standards at the international level. It confirmed the fact that a common language in accounting is mandatory. This is how the necessity of International Accounting Standards emerged in the world order after the accounting scandals. Compliance with the International Accounting Standards still continues in many countries. The vital role of Internal Audit has emerged. By increasing the efficiency of supervisory and regulatory institutions, internal audit should be ensured to reach the consistency of independent auditing.

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COMPANY MERGENS IN THE FRAMEWORK OF INTERNATIONAL ACCOUNTING STANDARDS: A SAMPLE PRACTICE

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Özet

Uluslararası Muhasebe Standartları, muhasebede ortak bir dil oluşturmak için oluşturulmuş standartlardır. Küreselleşmenin doğal sonucu olarak dünya ticareti bir köy haline gelmiştir. Teknoloji aracılığıyla bilgiye erişimin kolaylaşması şirketlerin muhasebe uygulamalarını da etkilemiştir. Büyümek isteyen işletmeler birçok farklı nedenden dolayı birleşme yolunu tercih etmektedirler. Firmaların karlılıklarını artırma isteği, marka değerini maksimize etme isteği, büyüme isteği, teşvikler ve uzmanlaşma gibi nedenler birleşmelerin önünü açmaktadır. Bu nedenler bazen rakip firmayı ele geçirme ihtiyacı bazen de stratejik hamleler olabilir. Bu durum ticaretin artırılması ve finansal olayların daha dikkatli değerlendirilmesi ihtiyacını ortaya koymaktadır. Birleşmeler de muhasebe uygulamalarında uyum sürecinin devam ettiği standartlar çerçevesinde ele alınmaktadır. Türkiye Finansal Raporlama Standardı 3. standart, işletme birleşmeleri sonucunda finansal akışın nasıl değerlendirilmesi gerektiğini ele almaktadır. İster küreselleşme nedeniyle uluslararası bir birleşme, isterse yerel düzeyde bir birleşme olsun, birleşme sonucunda şirketlerin mali tabloları TFRS 3 Standardında belirtilmektedir. Uygulamada, halka arz edilmiş tüm şirketlerin birleşmesi ile sona eren süreçler, uluslararası muhasebe standartlarına göre ele alınan birleşme standardı ile değerlendirilmektedir. Çalışmada birleşme standardı kavramsal altyapısı ile ele alınacaktır. Birleşen örnek bir işletmenin finansal tablolarının nasıl değerlendirilmesi gerektiği örnek bir uygulama ile sunulacaktır.

Anahtar Kelimeler: Şirket Birleşmeleri, Muhasebe, Uluslararası Muhasebe Standartları, UFRS 3.

Abstract

International Accounting Standards are standards created to establish a common language in accounting. As the natural outcome of globalization, world trade has become a village. The facilitation of access to information through technology has also affected the accounting practices of companies. Businesses that want to grow prefer the way of merger for many different reasons. The reasons such as the desire of the companies to increase their profitability, maximizing the brand value, desire for growth, incentives and specialization pave the way for mergers. These reasons may sometimes be the need to seize the rival company, and sometimes the strategic moves. This situation reveals the need to increase trade and to evaluate financial events more carefully. Mergers are also handled within the framework of the standards in which the compliance process continues in accounting practices. The Turkish Financial Reporting Standard 3rd standard deals with how the financial flow should be evaluated as a result of business combinations. Whether it is an international merger due to globalization or a merger at the local level, the financial statements of the companies as a result of the merger are specified in the TFRS 3 Standard. In practice, the processes that end with the merger of all companies that have been offered to the public are evaluated with the merger standard, which is handled according to international accounting standards. In the study, the merger standard will be discussed with its conceptual infrastructure.



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How the financial statements of a sample business that has merged should be evaluated will be presented with a sample application.

Keywords: Company Mergens, Accounting, International Accounting Standards, UFRS 3.

INTRODUCTION

Companies may merge for a number of reasons. Although there are different reasons leading to this preference, in general, many reasons such as gaining competitive advantage by incorporating competitors, accelerating the specialization process by making strategic marriages, and opening up to the world can be mentioned. The question of how the assets and resources balance of the companies that merged for various reasons should be handled and how they should be managed were the questions that the businesses sought answers to. By answering these questions, the IFRS 3 standard provides the information investors need. The IFRS 3 standard guides the company management about what to do before and after the merger by revealing the methodology for evaluating the assets and liabilities of the businesses that prefer the merger route. Because all parties of the business are affected by this merger. It can be mentioned that the most basic issue needed is a structure that is established so that the shareholders of the company, especially the investors, do not have any problems in their investment decisions at the end of the whole process.

1. OBJECTIVE AND SCOPE OF THE STANDARD

The acquiree's identifiable assets, liabilities and minority how it will account for and measure its interests in its financial statements, how to account for and measure goodwill and bargaining gains from mergers. How financial statement users determine what information to disclose so they can evaluate the nature and effects of a business combination is set out in the standard (IFRS-3, md.). Matters that meet the definition of a business combination are considered within the scope of this standard.



2. ACCOUNTING FOR BUSINESS COMBINATIONS ACCOUNTING TO THE STANDART

According to the standard, the merger should be done through acquisition and can take place in four stages.

- Identification of the acquiring business,
- Determination of the merger date,
- Accounting for acquired assets, liabilities and minority interests,
- Recognition and measurement of goodwill.

2.1. Identification of the Acquiring Business

In the determination of the acquirer during the merger, it is necessary to look at the power-bearing rights that it has acquired over the acquiree. For example, companies X and Y merge to form new entity C. 70% of the capital of the newly established enterprise belongs to enterprise X and 30% belongs to enterprise Y. Here, entity X is the acquirer and entity Y is the acquiree (Özerhan & Yanık, 2012). This is essentially a serious advantage of being a dominant company. Because, all business managements adopt and desire to be strong in the decision mechanism after the merger.

2.2. Determination of the Merger Date

The date the acquirer acquires control of the acquiree is referred to as the merger date. Generally, the acquisition date is the date on which the acquirer transfers the consideration, acquires the assets of the acquiree and assumes its liabilities (Gökçen, Ataman, & Çakıcı, 2011).

2.3. Accounting for Acquired assets, Liabilities and Minority Interests

Fairness of assets and liabilities in the standard there is no explanation as to how the values will be determined. In this regard, in determining the fair values of assets and liabilities, the provisions of TAS and TFRS regarding fair value measurement should be taken into account. However, in the annex of the standard, additional explanations are included regarding the measurement of some items. These disclosures can be summarized as follows: Assets acquired in business combinations are measured at their fair values, so they are probable to occur in the future.

No separate provision can be made for impairments. If the acquiree is a lessee under an operating lease and the terms of the lease are advantageous or disadvantageous, it cannot be accounted for as an additional asset or liability. Even if the acquirer is not likely to use it due to competition or other reasons, it should measure the intangible asset it has acquired at fair value.

2.4. Recognition and Measurement of Goodwill

In the international literature, it occurs in two ways according to the way of acquiring goodwill. These; It is the goodwill created within the business and the goodwill obtained by paying the price. Goodwill created within the business is the goodwill that can provide an economic benefit in the future as a result of the natural activities of the business and can create an added value for the business. However, since goodwill is not obtained by paying a price, the cost of this benefit and added value cannot be measured reliably. Therefore, it is not possible for the goodwill created within the business to be included in the financial statements according to the TFRS - 3 Business Combinations standard. Goodwill obtained by paying the price is divided into two as positive and negative goodwill. If the purchase price of the acquired business is more than the value of its net assets, there is positive goodwill, and in the opposite case, there is negative goodwill (Kırlioğlu & Şişman, 2010).



The valuation of goodwill is very important. Because this money paid in the purchase of the business is in the status of an intangible asset on behalf of the business. In this case, it gives an opportunity to increase the quality of assets.

3. CONSOLIDATION OF FINANCIAL STATEMENTS

The acquirer has the power to control the acquiree, and has the obligation to collect the assets, liabilities, income and expenses of the two enterprises under a single roof (Demir & Bahadır, 2009). Consolidation of financial statements is one of the most sensitive issues. The careful arrangement of assets and liabilities will directly affect the valuation of the company. On the other hand, it can be emphasized that it plays an extremely important role in the investment decision of investors, and in stock pricing if the company is a publicly traded company. On the other hand, the fact that the ratio analysis of companies will also be reshaped should not be ignored.

4. PRACTICE

Delta Inc. and Beta A.Ş. have decided to merge. The pre-merger balance sheet is as follows. In the merger agreement, the valuation of Fixtures as 100.000₺, Cash Assets as 30.000₺ and Commercial Goods as 140.000₺ was deemed appropriate. No change is foreseen in other balance sheet items and will be transferred as is. ¹

Pre-merger Balance Sheet of Delta A.Ş.			
100 KASA	180.000	320 SATICILAR	40.000
102 BANKALAR	20.000	500 SERMAYE	200.000
121 ALACAK SENETLERİ	50.000	540 YASAL YEDEKLER	90.000
153 TİCARİ MALLAR	100.000	570 GEÇMİŞ YIL. KAR.	50.000
255 DEMİRBAŞLAR	20.000		
257 B. AMOR. (-)	10.000		
TOTAL ASSETS	380.000	TOTAL LIABILITIES	380.000

According to the information given, the pre-merger balance sheet and post-merger balance sheet will be as follows.

¹ (Akay, 1997) adapted and useful.



Wealth Value Before Merger		Wealth Value at the Time of Merger	
Kasa	180.000	Kasa	210.000
Bankalar	20.000	Bankalar	20.000
Alacak Senetleri	50.000	Alacak Senetleri	50.000
Ticari Mallar	100.000	Ticari Mallar	240.000
Demirbaşlar (Net)	20.000	Demirbaşlar	120.000
<i>Varlıklar Toplamı</i>	<i>380.000</i>	<i>Varlıklar Toplamı</i>	<i>640.000</i>
Satıcılar	40.000	Satıcılar	40.000
Özsermaye	340.000	Özsermaye	600.000

Merger Profit = Value of Wealth at the Time of Merger – Value of Wealth before the Merger
= 600.000 – 340.000 = 260.000₺

In the Sample Application, 260.000₺ profit was obtained from the Business Combination. However, it should be noted that if the acquired company's liabilities are excessive, the business will suffer a merger loss.

5. CONCLUSION

Mergers are the merger models preferred by businesses with very different motives. With the merger, companies can choose the way of integration by sharing their fields of expertise, R&D studies and information. In this way, the financial structures of the enterprises are also integrated. TFRS 3 Standard, besides being a standard that comprehensively addresses the issues to be considered in business combinations, emphasizes that it is important to consider the merger and financial consolidation carefully in terms of transparency and predictability. Investors are directly affected by the aforementioned merger. From the emergence of merger trends, it may be appropriate to share this situation with investors through the Public Disclosure Platform.

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DIAGNOSTIC PRINCIPLES OF DIABETIC FOOT

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Abstract

One of the serious and common complications of type II diabetes mellitus is diabetic foot. The duration of the history, chronic tissue ischemia (angiopathy) and its degree of development in diabetic foot require a detailed study of the state of blood supply, neuropathy and chronic tissue hypoxia.

The results of a diagnostic study of 154 patients with diabetic feet in patients with type II diabetes mellitus are summarized. The male to female ratio was 81:73 respectively.

To clarify the state of blood supply and the degree of ischemic tissue lesions, the level and extent of occlusive processes and alterations, as well as to assess the state of the roundabout (collateral) blood supply, microcirculation, we used ultrasound duplex scanning, Doppler sonography, Doppler manometry, load test tread-mil, transcutaneous oximetry (Tc pO₂), thermography and radiopaque angiography.

For the diagnosis of diabetic neuropathy, the neuropathic dysfunctional score scale (NDS). First of all, the preservation of the "protective" types of sensitivity (vibration, temperature, tactile) and the state of tendon reflexes were determined. When determining the degree and level of decrease or loss of sensitivity, we took into account the age and the threshold of sensitivity, which decreases with age. The functional state of the flexors and extensors of the toes (decrease and loss of balance between them), as well as the Achilles and knee reflexes were investigated.

Our studies have shown that the frequency of impaired Achilles reflexes exceeds the knee. The state of these reflexes has prognostic significance. Since neurotrophic changes and a violation of the distribution of pressure on the plantar surface in violation of the Achilles and knee reflexes underlies the development of necrotic ulcerative lesions of the feet. The use of this set of studies creates a fairly complete picture of the state of blood vessels and nerves of the foot in type II diabetes, which allows not only choosing a successful treatment regimen, but also preventing possible complications leading to a significant decrease in the quality of life, amputations and early loss work capacity.

Key words: type II diabetes mellitus, diabetic foot, angiopathy, neuropathy, diagnostic tests.



STEADY STATE GROWTH OF VIETNAM ECONOMY

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Abstract

The paper estimates the steady state economic growth rate of Vietnam, defined as the equilibrium that the economy converge without new shocks.

The method employs a bayesian structural vector autoregressive model (BSVAR) which captures the Triffin policy trilemma at international financial integration.

On a quarterly sample over Q2/2008-Q4/2019, the evidence records that the steady state growth based on Minnesota prior is 6.13%. This result is robust by normal-diffuse prior, normal-wishart prior and timely average method.

For future research revenue, the model can be extended to account for additional variables. Accounting for liquidity supply can be a potential future extension. Recently, Brunnermeier and Yunnikov (2014) stress the role of liquidity constraint for the economic growth.

For policy implication, the Vietnam government's objective of annual growth rate at 7% over 2021-2030 can only be attained for economic expansion periods.

There is a research gap on the estimation of steady state growth rate of Vietnam economy. The paper is one of first papers filling in this gap. The paper also makes contributions on three important lines of research, including economic growth, macroeconomic fluctuations and international capital flows.

Key words: Economic Growth; Vector Autoregression; Vietnam Economy.

JEL classification: E52; F21; F41.

INTRODUCTION

The steady state economic growth rate of GDP (Gross Domestic Products) plays a central role on economic development. On the neoclassical growth model (Solow, 1956; Swan, 1956), there exist an unique steady state of capital accumulation per effective unit of labor. At that point, the domestic output (GDP) grows with an exogenous rate of technology progress and labor force. Then, the steady state economic growth rate jointly with population growth rate determines the GDP per capita, a measure of living standard. Over the business cycle (Plosser, 1989), the steady state is the point that the economy would converge without new shock, thus, generating the balancing force to adjust the expansion and recession. Thus, the steady state economic growth rate is a signal for the market participants, such as investors and policy makers, to adjust their investment plan. In brief, the steady state economic growth rate is important for both academic research and policy discussion.

The paper employs a quantitative model to estimate the steady state growth rate of Vietnam economy.

We construct a time-series econometric model (BSVAR). A vector autoregression (VAR) model with a structural variance-covariance matrix (S - Structural) is estimated with Bayesian technique (B). This technique is appropriated to a sample of small size with only 47 observations over Q2/2008-Q4/2019 for Vietnam economy. The structure of model reflects the Triffin policy trilemma in the international finance among three objectives: independent monetary policy through the relationship between output growth and inflation, free capital mobility through the foreign direct



investment (FDI) capital inflows and exchange rate management through the exchange rate fluctuation.

The evidence records that the steady state growth rate of Vietnam is 6.13%. This result, based on the Minnesota prior, is closed to the evidence by other methods, including normal-diffuse prior (6.09%), normal-wishart prior (6.06%) and averaged growth rate over time period (6.04%). Moreover, the fluctuation of economic growth is almost within the band $\pm 1\%$ of the steady state growth rate. For policy implication, the result can be a reference to assessing the feasibility of long-term target on recent economic social strategy of Vietnam government.

The paper makes contributions on three important lines of research, including economic growth, macroeconomic fluctuations and international capital flows.

Our paper belongs to the literature on the economic growth rate. On the neoclassical growth model, there exists a unique capital per effective unit of labor ratio at the steady state. At this equilibrium, the GDP grows with a growth rate as sum of technology progress and labor force growth rate. But the growth rate is exogenous, and is an ad-hoc assumption in the neoclassical growth model. Extending these model, the endogenous growth model focuses on the source of technology progress. Aghion and Howitt (1992) shows that the economic growth is driven by the probability of successful innovation, which, in turn, is based on the research and development (R&D) expenditure. At the steady state, the economic growth is jointly determined by the distance to world technology frontier and the intensity of R&D activities. On other types of endogenous growth model, the economic growth rate is also originated by the accumulation of capital (AK model by Frankel (1962)), by the expansion of product varieties (Romer, 1992).

Our paper differs these papers by providing an alternative determination of steady state economic growth rate. We estimate the economic growth rate by a time-series model which captures the macroeconomic fundamentals of an open economy. Our evidence records that the economic growth rate is determined by the inflation rate, exchange rate and foreign capital inflows.

The paper is closely related to the literature on the macroeconomic fluctuations of Vietnam economy. Beside an updated sample up to Q4/2019, our paper contributes on the literature by including the exchange rate and foreign capital inflows.

Thanh et al (2000) employ a VAR model of three endogenous variables including economic growth, inflation rate and monetary supply to analyze the exchange rate (VND/USD). They show that the exchange rate affects the interaction of three endogenous variables. According to this set-up, the exchange rate is an exogenous variable, and is given outside the model. This approach is also employed by Nguyen et al (2017). These authors construct a VEC (Vector Error Correction) model with six endogenous variables including output, FDI, export, import, inflation and public investment. Their evidence records the existence of interrelationship across these macroeconomic variables.

Our paper complements to these papers by accounting for the role of exchange rate fluctuation on the economic growth rate. The exchange rate is endogenous within our model while it is exogenous in Thanh et al (2010) and even not mentioned in Nguyen et al (2017). By our set-up, the exchange rate is a macroeconomic fundamental variable. Then, their interaction with other fundamental variables determines the steady state economic growth rate.

The exchange rate is also mentioned in some other papers. Hang and Thanh (2010) use a VAR model of six endogenous variables, including inflation, output, money supply, interest rate, exchange rate and world oil price to access the determinants of inflation in Vietnam. Their result shows that the past experience and future expectation of households are crucial for the inflation. And the inflation rate is also determined by domestic rather than foreign determinants. Also using a VAR model of Vietnam economy, Bhattacharya (2014) records that the inflation is driven by the fluctuation of exchange rate in the short-run, by the growth rate of domestic credit in the median-run and by the GDP growth rate in the long-run. The common feature of these two papers is the lack of foreign capital inflows on the macroeconomic set-up.



Our paper differs these two papers by showing that the foreign capital inflows are a key macroeconomic fundamental variable of Vietnam economy. This feature is grounded on the finding by Thanh et al (2019). Accordingly, the FDI can substitute for the trade openness on affecting the economic growth rate. Recently, Hung (2021) on the trade-off between the output and inflation in Vietnam. By a time-varying-coefficient (TVC-VAR) model, the author proves that the output growth rate is largely determined by the foreign capital inflows while the inflation rate is mostly driven by the domestic credit supply.

The paper also makes contribution on the cross-border capital flows. The foreign capital has a positive impact on the domestic economic growth by financing the domestic investment. Gourinchas and Jeanne (2013) construct a small open economy version of neoclassical growth model to show that an economy with a higher productivity growth rate tends to have a huge investment, then, to receive more capital inflows. By a large sample of both advanced and developing economies, Alfaro et al (2014) confirms this results by recording that a higher averaged growth rate of GDP per capita, a proxy for productivity growth rate, is associated with more net total capital inflows. But the positive impact of foreign capital inflows on the economic growth does not necessarily hold. For developing economies, this impact only works if the domestic economy has a high financial development level (Prasad et al, 2007). Only when the credit supply per GDP ratio is higher than its median level, the positive impact of foreign capital would be kicked off. But a higher economic growth rate can also be associated with huge outflows of capital. In another model by Coeurdacier et al (2015), the young agent borrows to consume with borrowing constraints, the middle-age agent works and saves, while the old agent only consumes. When the borrowing constraint become tighter, the borrowing by young agents reduces while the savings by middle-aged agents raises. For developing economies with a high economic growth rate combined with tight borrowing constraint, the high growth rate can be associated with huge savings, then, great capital outflows, which are difference between domestic savings and investment.

Our paper complements to these aforementioned papers by constructing an empirical model to account for the role of foreign capital inflows. The existence of foreign capital is important so that it is considered as an endogenous variable which contributes to the stability of macroeconomic fundamentals. Then, the foreign capital can even affect the economic growth rate at the steady state of an open economy.

The paper is structured as following. After the introduction, the second section discusses the literature review. The third section presents the model, method and data. Then, the fourth section analyzes the estimated result on the steady state economic growth of Vietnam. And the fifth section concludes and discusses the policy.



LITERATURE REVIEW

The steady state economic growth rate can be quantified by various theoretical and empirical methods.

On the neoclassical growth model, the steady state is the equilibrium that the capital per effective unit of labor tends to converge at the long-run. Due to the set-up of model with concave production function, usually with a labor-augmented technology, the steady state is unique and globally stable (Galor, 1996). There are also alternative models in which there exists multiple equilibria at the steady state. Among them, the overlapping generations model (OLG), postulated by Samuelson (1958), exhibits the heterogeneity of age across agents. Diamond (1965) employs this class of model to prove the potential inefficiency of long-run capital accumulation. Matsuyama (2004) also builds up an OLG model to analyze the existence of two symmetric steady states, one with high capital accumulation level and one with low capital level. On the extended version of neoclassical growth model with uncertainty, the steady state is defined as the long-run equilibrium in which agents do not anticipate the effect of future shocks. This steady state can be solved by assuming small enough shocks, then taking first-order Taylor approximation of perfect-foresight path (Plosser, 1989). Recently, calling this long-run equilibrium as the deterministic steady state, Coeurdacier et al (2014) characterize a risky steady state. In particular, the risky steady state is the long-run equilibrium at which state variables stay constant in presence of expected future shocks and the innovations for these shocks turn out to be zero. And the associated method is numerical method, based on an system of equations formed by second-order Taylor expansion around expected future variables. This method is closed related to the one employed by Tille and Wincoop (2010) and Devereux and Sutherland (2010) on solving the dynamic stochastic general equilibrium (DSGE) model with portfolio choice.

The common feature of these models is that the economic growth rate is exogenous given outside the model. The growth rate can be introduced as a deterministic technology progress on the neoclassical growth model or as a stochastic technology progress on the DSGE model. At steady state, the ratio of endogenous variables, such as output, consumption and capital, over total efficient units of labor grow with the same rate of technology progress. On other words, the growth rate of output is equal to the growth rate of technology progress. But the source of technology progress is unknown. This indetermination issue underlines the difficulty of computing the steady state economic growth rate.

The steady state economic growth rate can also be derived by the endogenous growth models, with a synthesis in Aghion and Howitt (2008). For AK model (Frankel, 1962), the economic growth rate is determined by the accumulation of capital across firms within the economy. For product variety model (Romer, 1990), the economic growth is attained by the expansion of new type of product which is new to the existing types of products. And for the Schumpeterian model, based on the principle of creative destruction, the economic growth rate is determined by the innovation process, including both invention of new technology and imitation of existing advanced technology. For macroeconomic perspective, the third model can be used to estimate the steady state economic growth rate. In particular, the steady state economic growth rate of an economy is its distance to world technology frontier multiplied by the frequency of innovation. The first item is exactly the ratio of technology level of leading economy compared with the level of an economy. And the second item is assumed on the model as an increasing, concave function of R&D expenditure.

But the computation of two items is also difficult on data. For the first item, the technology level can only be estimated indirectly such as by the method of Solow residual. This method, in turn, suffers from various issues such as the choice of initial capital stock, the share of capital over output, and the value of capital depreciation rate. For the second item, the concave function is an ah-hoc assumption, so that, there is not a consensus of function form in the data. Thus, the estimation of steady state economic growth based on theory is not so promising.

An alternative method for the steady state growth rate can be based on the data. This line of research is originated from the structural VAR model (Blanchard and Quah, 1989), which is based



on the VAR model postulated by Sims (1980). Each macroeconomic variable can be affected by exogenous shocks from other variables. At the same time, these variables also interact with each other to form a structural model. When there is no new shocks, each macroeconomic variable tends to converge to its steady state. The fluctuation of each variable tends to be around the steady state: if it raises over (reduces below) the steady state, there is a pressure to push it down (up) to be at steady state. For the estimation, this approach first constructs a VAR model of economic growth and other variables, then, estimates the coefficients, and finally, computes directly the steady state economic growth rate. Recently, Kohlscheen and Nakajima (2021) employs a stochastic volatility VAR model to estimate that the economic growth rate of Unites States reduces from 3.0% per year in the 1990s to 2.4% in the 2010s.

In Vietnam, there is currently not any research on the steady state economic growth rate. A clue can be found on recent 10-years economic social development strategy. For the 2011-2020, the Vietnam government proposes a target of 7.0-8.0% on the economic growth per year. And for the future 2021-2030 period, it proposes a target of 7.0% per year. As an implication, the annual steady state economic growth rate that the policy makers think can be around 7.0%. In brief, this lack of studies, especially the quantitave model, opens a research gap on the steady state growth rate of Vietnam economy.

On the next sections, we construct a VAR model to fill in this research gap.

FRAMEWORK

Model

The regression equation, with $t=1,2,...T$, is on reduced-from as following:

$$Y_t = A_1 \cdot Y_{t-1} + A_2 \cdot Y_{t-2} + A_3 \cdot Y_{t-3} + C + \varepsilon_t \quad (1)$$

Whereby,

- $Y_t = (Dycpi, VNgdp, VND, Gfdi)$, is a vector (4x1) of 4 endogenous variables, including: inflation (*Dycpi*), economic growth (*VNgdp*), VND depreciation rate (*VND*), and foreign direct investment (*Gfdi*).

- A_1, A_2, A_3 , is matrix (4x4) containing estimated coefficients, each of which is varying over time.

- C , is a matrix (4x1) containing estimated constant coefficients.

- ε_t is a vector of residuals assumed with multivariate normal distribution as

$$\varepsilon_t \sim \mathcal{N}(0, \Sigma)$$

ε_t is assumed to be non-autocorrelated, thus, the unconditional expectation satisfies $E(\varepsilon_t, \varepsilon_t') = \Sigma$, and $E(\varepsilon_t, \varepsilon_s') = 0$, for $t \neq s$. Moreover, Σ is a symmetric positive definite variance-covariance matrix, with variance being at diagonal and covariance being off diagonal.

The model belongs to a class of vector autoregression model (BSVAR). In details, the vector autoregression model (VAR) accounts for the interaction of endogenous variables, reflecting the macroeconomic fundamentals. This model is a structural (S) model capturing the impact of shock from each variable. We also employ Cholesky for the variance-covariance matrix (Σ). And the variable is ordered as inflation, economic growth, exchange rate and FDI. Finally, the SVAR model is estimated by Bayesian (B) method which is becoming popular in macroeconometrics (Sims, 2007).

The choice of variable is based on recent evidence and theory on Vietnam economy. For evidence, the role of each variable is recorded by recent empirical analysis, such as Hang and Thanh (2010) on the inflation rate, Nguyen et al (2017) on the economic growth, Bhattacharya (2014) on the exchange rate. For theory, the interaction of variables illustrates the Triffin policy trilemma in the international finance that a typical economy faces. The nominal exchange rate (VND/USD) captures the foreign exchange rate management, the disbursed FDI presents the cross-border capital flows, and the interaction between inflation and economic growth rate illustrates independence of monetary policy. Recent authors stress the role of policy trilemma on the macroeconomic stability



(Farhi and Werning, 2014) for both advanced economies (Rey, 2015) and emerging and developing economies (Obstfeld et al, 2005; Obstfeld et al, 2019).

Method

The structure of model has $15=5 \times 3$ estimated coefficients for each endogenous variable. With 4 variables, there are $60=15 \times 4$ coefficients for the BSVAR model.

The estimation is based on Bayesian method with Minnesota prior which considers the sample to be fixed and the coefficient is random. Then, the method is useful to capture the small sample of Vietnam with only 47 observations. This feature is also emphasized by Sims (2007) as a reason for the increasing popular employment of Bayesian method in macroeconometrics.

At the long-run equilibrium, the endogenous variables are constant. Then, with the estimated coefficients $(\hat{A}_1, \hat{A}_2, \hat{A}_3)$, the steady state economic growth is the solution for the following equation:

$$\begin{bmatrix} \overline{Dycpi} \\ \overline{VNgdP} \\ \overline{VND} \\ \overline{Gfdi} \end{bmatrix} = (I - \hat{A}_1 - \hat{A}_2 - \hat{A}_3)^{-1} \hat{C} \quad (2)$$

Then, the steady state economic growth rate is the value of (\overline{VNgdP}) . This value is the rate of growth that the economy would converge in the absence of new shocks.

Data

The data is a quarterly sample including 47 observations from second quarter of 2007 to fourth quarter of 2019 (the first four observations is used to take first difference and growth rate of variables). The economic growth rate, inflation rate and disbursed foreign direct investment (FDI) are from the Vietnam General Statistics Office (GSO); the nominal exchange rate (VND/USD) is from Bloomberg database.

Each variable is computed from the raw data to attain stationary data, such as by taking the growth rate (year on year) of the exchange rate to have the depreciation rate of domestic currency, or by taking the first difference of the inflation rate. In particular, the inflation rate (*ycpi*) is the year-on-year change of consumer price index (CPI), on percentage (%). This variable is computed as first difference to be stationary, and is denoted by (\overline{Dycpi}) . The economic growth rate (\overline{VNgdP}) is the year-on-year growth rate of gross domestic product (GDP) on percentage. Similarly, the depreciation rate of domestic currency (\overline{VND}) is the year-on-year growth rate of nominal VND/USD exchange rate on percentage. This variable is used as a proxy for the exchange rate because of its large deviation which can illustrate closely the fluctuation of financial market. Recently, Bhattacharya (2014) also use the nominal VND/USD exchange rate in a vector autoregression model (VAR) to analyze the impact of monetary policy on the inflation rate in Vietnam. Finally, the foreign capital inflows are the year-on-year growth rate of disbursed FDI on percentage.



Table 1: Descriptive Statistics

Variables	Observations	Mean	Standard Deviation	Min	Max
Inflation Rate (Dycpi) (yoy,%)	47	-0.3	3.16	-8.64	7.4
Economic Growth Rate (VNgdp) (yoy,%)	47	6.03	0.89	3.1	7.46
VND Depreciation Rate (VND) (yoy,%)	47	3.23	3.12	-0.59	9.92
Disbursed Foreign Direct Investment (Gfdi) (yoy,%)	47	7.54	23.00	-57.65	78.88

Table 1 illustrates the data description of variables in the model. The economic growth rate has a mean of 6.03%, with a standard deviation of 0.89%. Compared with this variable, the inflation rate has lower mean (-0.3%) and greater deviation (3.16%), while the VND depreciation rate has a lower mean (3.23%) but larger deviation (3.12%). The FDI also has quite large standard deviation at 23.00%. Thus, all variables have large deviation to facilitate the estimation of Vietnam steady state economic growth.

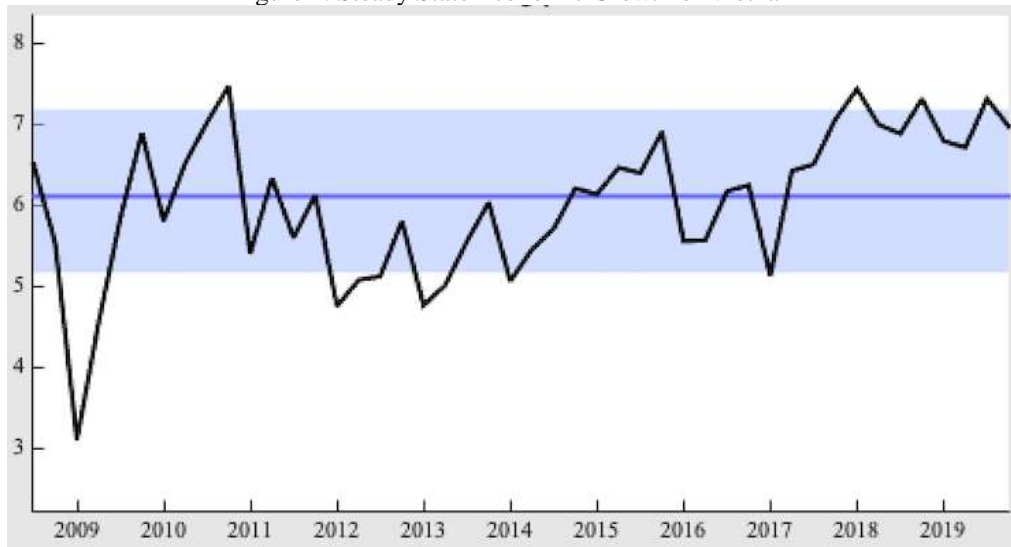
EVIDENCE

Steady State Economic Growth

Figure 1 shows the steady state economic growth rate of Vietnam economy over Q2/2007 to Q4/2019. The estimated growth rate is 6.13%. This value is depicted as the horizontal blue line at 6.13%, while the economic growth is expressed by the black line. The economic growth at steady state is attained at Q4/2011, Q1/2015 and Q3/2016. The growth rate is lower than its steady state from Q1/2011 to Q3/2014, increases to overcome its steady state during 2015 before falling below the steady state during 2016. From Q2/2017 to Q4/2019, the Vietnam economy maintains a higher growth rate than the steady state. In brief, the economic growth rate tends to fluctuate around the steady state value.

On the Figure 1, the economic growth rate is almost within the band +/- 1% of the steady state. The upper bound is 7.1%. The highest growth rate is 7.47% at Q4/2010, which is approximatedly equal to 7.43% at Q1/2018. And only for two other time periods, including Q4/2018 and Q3/2019, the growth rate is higher than the upper bound. The lower bound is 5.1%. The lowest growth rate is 3.10% at Q1/2009. And only two other time periods, including Q1/2012 and Q1/2013, have a lower economic growth rate than the lower bound. In brief, the fluctuation of economic growth falls almost within the upper and lower bound of steady state economic growth rate.

Figure 1: Steady State Economic Growth of Vietnam



Source: Estimated results from BSVAR model.

As literature review shows, there does not exist an empirical evidence on the steady state growth rate of Vietnam. But the policy makers usually proposes a target of economic growth rate on the recent 10-years economic social strategy: 7-8% over 2011-2020 and 7% over 2021-2030. Thus, the steady state economic growth rate mentioned on the policy discussion can be approximatedly 7%. This value falls within the upper bound of estimated economic growth by our BSVAR model. As a result, the target can only be achieved if the economy experiences an expansion.

Robustness Analysis

The steady state economic growth can be estimated by three other methods. The BSVAR model can be estimated by different priors, with Normal-Diffuse by the first method and with Normal-Wishart by the second method. Moreover, we also compute the average growth rate over time period as the third method.

There is difference across Bayesian methods. The Minnesota prior (Litterman, 1986), as our focal method, assume that the VAR residual variance-covariance matrix is known. The Normal-Wishart (Karlsson, 2013) prior relaxes the Minnesota prior by assuming that both the coefficients (β) and the variance-covariance (Σ) are unknown. As an alternative setting, the Normal-Diffuse prior relies on a diffuse (uninformative) prior for the variance-covariance (Σ).

For the first and second method, the model is also presented as the equation (1), and the associated steady state economic growth is computed as the equation (2). And for the third method, the steady state economic growth rate is the average value of quarterly growth rate from the second quarter of 2008 to fourth quarter of 2019, covering 47 quarters:

$$\overline{VNgdp}_1 = \frac{\sum_{Q1/2007}^{Q4/2019} VNgdp_t}{47} \quad (3)$$

Table 2: Estimation Results by Different Methods

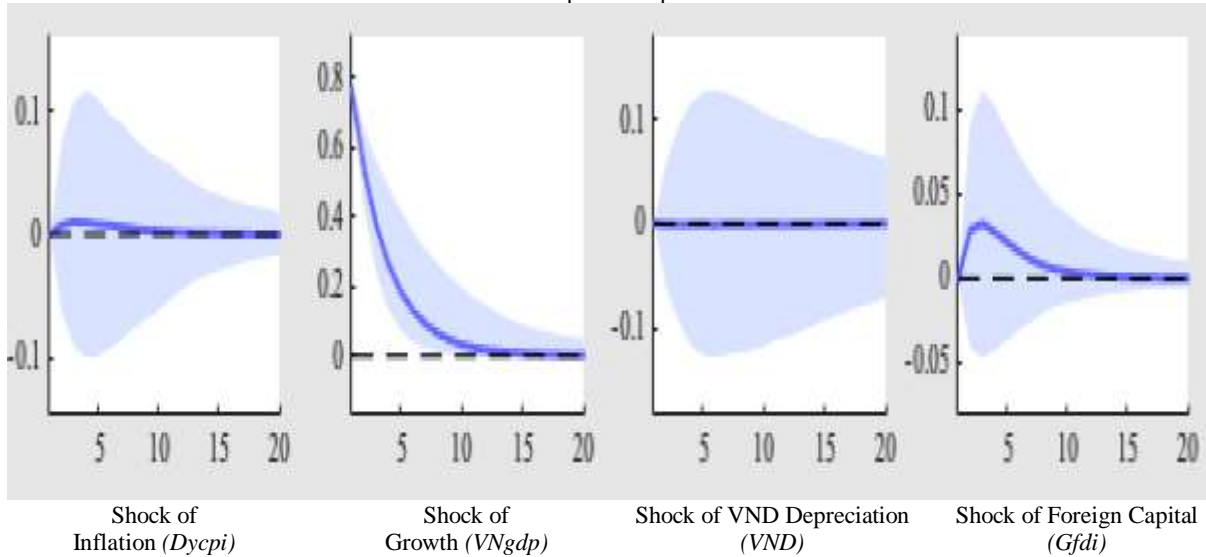
Method	Normal-Diffuse	Normal-Wishart	Time Average
Quarterly Economic Growth Rate	6.09 %	6.06 %	6.04 %
Notes	Diffuse prior for variance-covariance (Σ)	Coefficients (β) and variance-covariance (Σ) are unknown	47 observations from Q2/2008-Q4/2019

Table 2 presents the estimated steady state growth by different methods. On the first column, when the BSVAR model is estimated with the normal-diffuse prior, the growth rate is 6.09%. On the second column, with the normal-wishart prior, the growth rate is 6.06%. On the third column, the steady state growth rate is 6.04%. These number are closed to the result of 6.13% by the main result based on BSVAR model with the Minnesota prior.

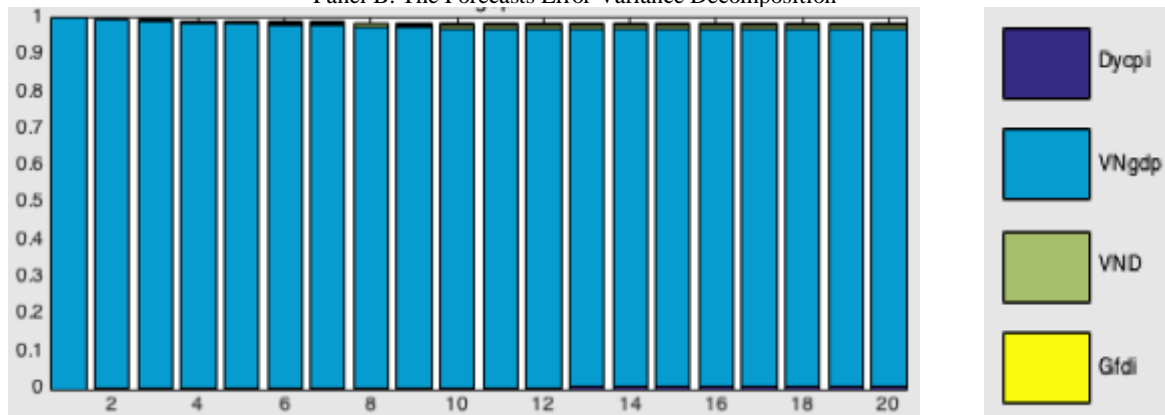
Further Analysis

The estimation of BSVAR model also provides some relevant results to the steady state economic growth rate. We focus on two main evidence, including the impulse response function (IRF) and forecasts error variance decomposition (FEVD). The IRF shows the change of economic growth rate for a shock on other endogenous variables. And the FEVD records the share of other endogenous variables on forecasting the economic growth rate.

Figure 1: Analysis of Economic Growth Rate
 Panel A: The Impulse Response Function



Panel B: The Forecasts Error Variance Decomposition



Source: The estimation result from the BSVAR model with Minnesota prior

For the impulse response function (IRF), shown in Panel A, the economic growth rate raises for a shock on the inflation and foreign capital inflows while it is quite neutral for a shock on the depreciation rate of domestic currency. The impact of inflation on growth shows that there can exist a trade-off between output and inflation in the Vietnam economy. As Lucas (1973), Ball et al (1988) prove, this trade-off originates from the impact of monetary supply: an expansion of money raises both economic growth and inflation rate. Moreover, the impact of foreign capital inflows on growth is consistent to the theory (Gourinchas and Jeanne, 2013) and evidence (Prasad et al, 2007) which show that the foreign capital inflows provide external finance for domestic investment. Moreover, the FDI firms also contributes significantly on the economic growth through international trade by accounting for about 65% of exports and 55% of imports since 2012 (Vietnam General Statistics Office, 2021).

For the factor error variance decomposition (FEVD), shown in Panel B, the exogenous shock of other variables plays a moderate role on explaining the forecast error variance of economic growth. Thus, the forecasted economic growth is accounted mostly by itself.



CONCLUSION

The paper employs a quantitative model with a quarterly sample to estimate the steady state economic growth of Vietnam. The Bayesian structural vector autoregression (BSVAR) model with Minnesota prior is employed on 47 observations over Q2/2008-Q4/2019. The evidence records that the steady state growth rate of Vietnam is 6.13%. It is closed to the results by other methods, with normal-diffuse prior, normal-wishart prior and averaged value over time period.

The result provides an important policy. The steady state economic growth rate can be used as reference to suggest the economic growth rate on the short-run economic social development plan. Recently, Vietnam government (2020) announces the target growth rate of 2021 is 6.5%. This number is closed to the economic growth rate at 6.13% estimated by our model. Thus, according to our evidence, the target can be attainable.

For future research revenue, the model can be extended to account for additional variables. Accounting for liquidity supply can be a potential future extension. Recently, Brunnermeier and Yunnikov (2014) stress the role of liquidity constraint for the economic growth. Moreover, the BSVAR model can be accompanied by a theoretical model such as dynamic general equilibrium model as recent approach in macroeconometrics (Gali and Monacelli, 2005). For this combination, the steady state can be estimated by the empirical model, then, used as input for the simulation of theoretical model.

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RECENT CHALLENGES OF CHINA'S SUPREMACY ON THE GLOBAL RARE EARTHS MARKET

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Abstract

China's spectacular economic development over the last four decades or so, and its atypical evolution during this process placed the country both at the forefront of the global rare earth trade, and at the centre of international concerns and debates on the implications this ascent has on the regulations governing global trade. Now an uncontested contemporary reality, China's supremacy on the global rare earth market has fuelled the fears of strongly industrialised countries for the future security of the supply of these raw materials, as a direct result of the extent to which Chinese governmental authorities will from now on choose to comply or not to comply with the international trade rules and practices in force. In these conditions, our article seeks to provide an overview of the evolution of Chinese policies in the field of rare earths, of how they helped transform natural resources endowment into a competitive advantage, and of the recent trends on this global market on which China is the leader.

Keywords: rare earth (RE), China's leadership on global rare earth production, rare earth world market;

JEL Classification: L61, Q02, Q37, Q38, O13, O53



THE IMPACT OF THE COVID-19 PANDEMIC ON THE ADOPTION OF E-COMMERCE IN INDIA: A CASE STUDY OF AMAZON

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Abstract

The COVID-19 pandemic has deeply transformed the global trends. During COVID-19 pandemic, when people were mainly confined to their homes, it became mandatory for them to some extent to shift to online shopping. The goods that were traditionally been brought offline are now made available online by large number of e-retailers. The present study attempts to review the performance of largest ecommerce platform Amazon. Amazon hasn't only been surviving the COVID-19 pandemic, they succeeded in becoming one of the most preferred platforms as far as reliability and security is concerned. Amazon has achieved greater heights in online grocery shopping during the COVID-19 pandemic. Consumers have turned to online grocery shopping and delivery like never before, to avoid spending time inside stores after the spread of COVID-19 all over the world. Amazon has given an upgraded shopping experience to its customers, with a dedicated app-in-app for grocery, and convenient features like personalised widgets and reminders. Even though many consumers have turned to e-commerce during the pandemic, not all will stick with it after the pandemic ends. Amazon has given an upgraded shopping experience to its customers, with a dedicated app-in-app for grocery, and convenient features like personalised widgets and reminders. The purpose of this study is to provide important insights for e-retailers, marketers, consumers and academicians.

Keywords: COVID-19, E-commerce, Digital Platforms



EXPERIENCES OF EMOTIONAL LABOUR IN THE SERVICE INDUSTRY: SOME REFLECTIONS

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Abstract

Based on my personal research experiences and also of guiding student research as well as engaging with them, the paper draws upon examples of exploring instances of emotional labour in diverse contexts. Data have been drawn from three different service environments; that of call centre industry, caring professions and in teaching and research contexts while interacting with and teaching undergraduate college students. Qualitative data was collected by conducting semi-structured interviews as well as critical incidents technique, -in case of the educational context- at undergraduate level. Data was analyzed using thematic analysis and the interpretive framework that privileges the lived reality of the research participants as well as co-constructed nature of reality. Signs of surface and deep acting as well as emotional exhaustion were evident in these contexts. Data revealed aspects of self-monitoring, reflexivity, questioning the self about one's efficacy and commitment to work, as well as our behavior towards our stakeholders, towards whose well-being we are responsible. Elements of both kinds; that of positive gratification as well as self depreciating beliefs, guilt and subsequent justifications to alleviate it were evident. In this process of analyses the paper highlights instances of both acknowledgements accorded to the self as well as let-offs for any seeming transgressions and lapses in conduct. Psychological implications for construction of identity, as well as a need to focus on bringing about systemic changes in work organizations are brought to the fore. Ways to cope with the burdens of emotional labour to enable both personal and collaborative growth are deliberated upon. By doing so however, the aim is to only bring some key areas of concern to attention, rather than suggesting prescriptive remedies.

Keywords: Emotional labour, Identity, Qualitative, Service industry



KİŞİSEL ÖZELLİKLER KAPSAMINDA İNSAN KAYNAKLARI YÖNETİMİ UYGULAMALARINA BAKIŞ AÇISI

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Özet

Kişilik, bireyin özel ve ayırt edici yanlarını ele alan bir kavramdır. Kişiye özeldir, çünkü bireyin sıklıkla yaptığı ya da tipik davranışlarını temsil eder. Ayırt edicidir, çünkü bu davranışlar kişiyi başkalarından ayrı tutmaktadır. Belli başlı kişilik özellikleri ise; ağırkanlı, agresif, heyecanlı, duygusal vb. şeklinde sınıflandırılmıştır. Çalışma yaşamında, Beş Faktör Kişilik Özelliği (Big Five Factor), A ve B tipi kişilikler; Popüler Optimistler ve Mükemmeliyetçi Melankolikler gibi farklı kişilik sınıflandırmaları mevcuttur. Bu çalışmada Beş Faktör Kişilik Özelliği (Big Five Factor) olarak literatürde yer alan ve dışa dönüklük, uyumluluk, sorumluluk, nevroz ve deneyime açıklık alt başlıkları altında incelenen kişilik tipleri ele alınmıştır. İnsan kaynakları örgütlerin rekabet etmesinde rol alan en önemli kaynaklardan birisidir. Bu kaynağın planlanması, politikalarının belirlenmesi, sevk ve idare edilmesi insan kaynakları yönetiminin görevleri başında gelmektedir. Örgütlerin hem mevcut hem de geleceğe yönelik durumunu belirlemesi, bir örgüt için gerekli olan insan kaynağının planlanması, işe alımı ve seçimi, yerleştirilmesi, eğitim ve geliştirilmesi, performans ölçümü, ücret ve kariyer planlaması insan kaynakları yönetiminin fonksiyonları arasında yer almaktadır.

Bu çalışma kapsamında, beş faktör kişilik özellikleri kapsamında, araştırmaya katılanların, insan kaynakları yönetimine bakış açıları incelenmiş ve bu iki değişken arasındaki ilişkiyi belirlemek amacıyla Akdeniz Bölgesindeki bir ilin, 2020 yılı ISO 500'de faaliyet gösteren tekstil sektörü firmalarında çalışan beyaz yakalı personeller örneklem olarak ele alınmıştır. Araştırmada veri toplama tekniği olarak anket tercih edilmiştir. Anket sonucu elde edilen verilerde SPSS analiz programı ile güvenilirlik, frekans, korelasyon ve regresyon analizleri yapılmıştır. Araştırma sonucunda, kişilik özelliklerinden deneyime açıklık ile insan kaynakları yönetimi uygulaması algıları arasında pozitif yönde anlamlı bir ilişki olduğu, dışa dönüklük, uyumluluk, sorumluluk ve nevroz kişilik özellikleri ile insan kaynakları yönetimi algıları arasında anlamlı bir ilişkinin olmadığı tespit edilmiştir.

Anahtar Kelimeler: Kişilik, Beş Faktör Kişilik Özelliği, İnsan Kaynakları



PERSPECTIVE ON HUMAN RESOURCES MANAGEMENT PRACTICES WITHIN THE SCOPE OF PERSONALITY TRAITS

Abstract

Personality is a concept that deals with the special and distinctive aspects of the individual. It is personal because it represents the individual's frequent or typical behavior. It is distinctive because these behaviors set the person apart from others. Certain personality traits are classified as; slow, aggressive, excited, emotional etc. In working life, Big Five Factor, A and B type personalities; There are different personality classifications such as Popular Optimists and Perfectionist Melancholics. In this study, personality types that are included in the literature as the Big Five Factor and examined under the subheadings of extroversion, agreeableness, conscientiousness, neuroticism and openness to experience. Human resources are one of the most important resources that play a role in the competition of organizations. Planning this resource, determining its policies, and managing it are among the duties of human resources management. Determining both the current and future situation of organizations, planning, recruitment and selection, placement, training and development of the human resources required for an enterprise, performance measurement, wage and career planning are among the functions of human resources management.

Within the scope of this study, the perspectives of five factor personality traits on human resources practices were examined and in order to determine the relationship between these two variables, white-collar personnel working in the textile industry operating in the ISO 500 in 2020, in a province in the Mediterranean Region, were taken as a sample. Questionnaire technique was preferred as data collection technique in the research. Reliability, frequency, correlation and regression analyzes were performed with the SPSS analysis program on the data obtained as a result of the survey. As a result of the research, it was determined that there is a positive and significant relationship between the five-factor personality traits and human resources management practices. It has been determined that there is a positive and significant relationship between openness to experience from personality traits and human resources management practices, and there is no relationship between extraversion, agreeableness, conscientiousness and neuroticism personality traits and human resources management.

Keywords: Personality, Big Five Factor Personality Traits, Human Resources Management

Giriş

Kişilik, bireyi diğerlerinden ayıran doğuştan getirdiği ve sonradan kazanılan, tutarlı olarak sergilenen özelliklerin bütünü olarak ifade edilebilir (Taymur ve Türkçapar, 2012). Bireylerin kişilik özellikleri, örgütler için farklı açılardan önemlidir. Özellikle de bireylerin örgüt ile olan etkileşiminde, kişilik unsuru bir uyum ya da uyumsuzluk nedeni olarak ön plana çıkmaktadır (Çer ve Eysel, 2021). İş hayatında yer alan bireylerin de buldukları örgüt ile uyumlu ve koordineli olarak çalışarak işlerini yürütmesi beklenmektedir.

Yöneticiler, her zaman bir şirketi diğerlerinden daha başarılı yapan şeyin ne olduğunu merak ederler. Daha iyi ürünlerin, daha iyi teknolojilerin, daha iyi hizmet yöneliminin ve belki de daha iyi fiyatlandırmanın başarıya yol açabileceği düşünülebilir. Ancak bir örgüt için, en önemli kaynak olarak ifade edilen insan kaynağı işe alınmadıkça, örgüt rekabet üstünlüğü ortaya çıkaramaz veya rekabet avantajını sürdürmez (Shukla vd., 2014). Teknolojinin artmasıyla beraber gelişen rekabet ortamı içerisinde yer alan örgütler için, büyük önem arz eden insan kaynağının yeri her geçen gün giderek daha önemli hale gelmektedir. Teknolojiyle gelişen üretim imkânları tüketici tercihlerinde



de dönüşüme yol açarak rekabetin geleneksel yöntemlerden ziyade inovatif fikirlerle yapılmasının gerekliliğini ön plan çıkarmıştır. Bu yaratıcı iş sonuçlarını üretebilecek unsur da nitelikli iş gücüdür. Küreselleşmenin etkisiyle ortaya çıkan teknolojik gelişmelerle birlikte gelen değişim ve yenilikler, eski rutin iş süreçleri yerini çok daha yaratıcı ve rekabetçi olmayı gerekli kılan iş süreçlerine bırakmıştır. Bu süreç içerisinde örgütlerin varlıklarını koruyabilmesi ve devamlılığını sürdürebilmesi için taklit ve ikame edilemeyen kaynaklara ihtiyaç duyulmaktadır. Bu kaynakların başında ise insan kaynakları önemli bir yer tutmaktadır (Ünüvar, 2021). İşletmeler, sürdürülebilirliklerini devam ettirebilmek ve rekabet edebilmek için nitelikli insan kaynağını seçmeli, bu kaynağa gerekli olan yaptırımı yapmalı ve sürdürülebilirliğini sağlamalıdır (Aşçı, 2019).

İnsan kaynakları, örgütler için sahip olunan en değerli sermayelerden birisidir. Bu değerli sermayenin etkili bir şekilde yönetilmesi de örgütlere rekabet avantajı kazandırmakla beraber temel bir yetenek de katmaktadır (Toros, 2021). İnsan kaynakları yönetimi uygulamalarının rolü, bir işyerindeki insanları örgütün misyon ve vizyonunu gerçekleştirmek ve kültürü güçlendirmek için yönetmektir. İnsan kaynakları yönetimi işlevlerinin etkili bir şekilde yapılması, örgütlerin varlıklarını sürdürebilmesi ve yoğun rekabet ortamında hedeflerine ulaşabilmesi için önem arz etmektedir. (Ünüvar, 2021). İnsan kaynakları yönetimi, örgütün hedeflerine ulaşması adına, insan kaynağının planlanmasında, gerekli yetkinliklere sahip, yeni çalışanların işe alımında ve hedeflere ulaşmada mevcut çalışanların eğitim ve gelişimi, çalışanların performans ve ücret yönetimi konusunda gerekli çalışmaları yapar. Aynı zamanda, örgütün rekabetçi kalmasına yardımcı olmak için çalışanların performans ve ücret yönetimi iş piyasasının durumunu izleyebilir. İnsan kaynakları yönetimi, çalışanların tükenmesini önlemek için etkinliklerin planlanmasında ve iş rollerinin piyasaya göre uyarlanmasında gerekli çalışmaların yerine getirilmesinde de rol oynar.

Kişilik konusunda yapılan araştırmalar incelendiğinde, birçok farklı araştırmanın olduğu ve araştırmacıların da kendi yaklaşımlarına dayalı birçok farklı değerlendirmelerde bulunduğu görülmektedir. Bu değerlendirmeler, araştırmacıların kendi deneyim ve gözlemlerine dayanır. Ayrıca araştırmacıların kendi önerilerini de içermektedir. Fakat literatürde yer alan, kişilik araştırmaları konusunda en fazla ön plana çıkan kuram, Beş Faktör Kişilik Özellikleri'dir. Beş faktör kişilik özelliklerinin, bireylerin kişilik özellikleri ile davranışları arasındaki ilişkilerin sistematik bir biçimde ele alınmasına olanak sağlaması sebebi ile birçok araştırmacı tarafından öncül bir model olarak ele alındığı görülmektedir (Horzum vd., 2017).

Bu araştırmada, bireylerin beş faktör kişilik özelliklerinin, insan kaynakları yönetimi uygulamaları algıları üzerinde anlamlı bir etkiye sahip olup olmadığı ölçülmüştür. Değişkenler arasındaki ilişkiyi belirleyebilmek için Akdeniz Bölgesindeki bir ilin, 2020 yılı ISO 500'de faaliyet gösteren tekstil sektöründe çalışan beyaz yakalı personeller örneklem olarak ele alınmıştır. Araştırmada, veri toplama tekniklerinden anket kullanılmıştır. Anket sonucu elde edilen verilerde SPSS programı ile frekans, güvenilirlik, faktör, korelasyon ve regresyon analizleri yapılmıştır.

Kavramsal Çerçeve

Kişilik

Kişiliği, doğuştan gelen, çevresel, fiziksel ve zihinsel özelliklerle beraber etkileşim içerisinde bulunan ve kısmen de bu özelliklerin bir sonucu olan, belirli ölçüde özgün, tutarlı, duygu, düşünce ve davranış kalıpları şeklinde tanımlamak mümkündür. Bu sebeple, kişilik özellikleri bireyi diğerlerinden ayıran ve özgün kılan ve bireyin yoğunlukla sergilemiş olduğu davranışlarına verilen isim olarak açıklanabilir (Özsoy ve Yıldız, 2013).

Literatürde kişilik tipleri konusunda yapılmış farklı çalışmalar mevcuttur (Soysal, 2008). Bu çalışma kapsamında "Beş Faktör Kişilik Özellikleri" incelenmiştir. Beş faktör kişilik özellikleri,



çok sayıda kişilik tiplerini sınıflandırarak 5 başlık altında toplamıştır (Benet-Martinez ve John, 1998).

Beş Faktör Kişilik Özellikleri

Beş faktör kişilik özelliklerini aşağıdaki başlıklar halinde açıklamak mümkündür:

Dışa dönüklük: Dışa dönük bireyler, grup içerisinde yer alan diğer bireylerle kolay bir şekilde iletişim içerisine girerler, kaynakların bulunmasına ve kullanılmasına öncü olurlar. Dolayısıyla, dışa dönük bireyler için, dış dünyaya açık bireyler olduğu söylenebilir. Bu boyutun tam zıttı ise, içe dönüklük olarak ifade edilebilir (Soysal, 2008). Toplum içerisinde önde olma, dikkat çekme, beğenilme ve kazanma arzusu dışa dönük bireylerin sahip olduğu genel karakteristik özellikler arasındadır (Barrick vd., 2002).

Uyumluluk: Uyumlu olan bireylerin sahip olduğu genel karakteristik özellikler arasında sıcak, güvenli, birlikte iş yapma, mütevazı, nezaket, düşünceli, sevimli, sakin, yardımsever ve cömert olma özelliklerinden söz etmek mümkündür (Tozkoparan, 2013). Diğer bireylerle iyi geçinme ve onlarla ilgilenme konusunda güçlü bir eğilimi olan kişilerin, fedakârlık, karşılıklılık ve sosyal yükümlülük (görev), motivasyon benimseme gibi özellikleri, daha az uyumlu insanlardan yüksek olduğu söylenebilir (Lyyn, 2021). Ayrıca bu özellikler, diğer bireylerle beraber birlikte çalışarak etkili bir performans ortaya konulması gerektiğinde öne çıkmaktadır. Dolayısıyla takım çalışmasında çok önemli bir yeri vardır (Tozkoparan, 2013) ve bu kişilik özelliğine sahip bireylerin iş hayatına angaje olmaya yatkın bireyler olduğu söylenebilir (Öngöre, 2015).

Sorumluluk: Bireyin, çalışkan, azimli, güvenilir, istekli, kuvvetli, dikkatli ve temkinli olma gibi özellikleri, sorumluluk bilincinin yüksek olduğunu gösterir. Sorumluluğu yüksek olan bireyler aynı zamanda, işlerini yerine getirirken planlı ve programlı bir şekilde çalışırlar (Soysal, 2008). Plansız çalışan, işlerini erteleyen, dikkati kolay dağılan, dağınık ve düzensiz olan bireyler ise sorumluluk düzeyi düşük olan bireylerdir (Yelboğa, 2006).

Nevrotiklik: : Nevrotiklik boyutu ise, suçluluk, kızgınlık, üzüntü ve korku gibi olumsuz duygular içerisinde kalma eğilimindedir. Bu bakımdan nevrotikliği yüksek olan bireyler, kaygıya kapılmış, kendini güvensiz hisseden ve içine kapanık, sinirli bireyler; nevrotikliği düşük bireyler ise rahat, özgüveni yüksek ve sabırlı olarak nitelendirilebilir (Costa ve McCrae, 1995). İçine kapanık, kendini mutsuz hisseden, endişeli ve kararsız olan bireylerin duygusal dengesizlik düzeyi yüksek; daha sakin ve endişeli olmayan bireyler duygusal dengesizlik düzeyi düşük bireyler olarak tanımlanabilir (Tabak vd., 2010).

Deneyime Açıklık: Bilişsel tarafı en fazla olan boyuttur. Dolayısıyla yüksek düzeyde gelişime açık bireyler, hayal eden, maceracı, özgün, yaratıcı, araştırmacı, kendi fikir ve duygularına yönelen bireyler; düşük seviyedeki bireyler ise geleneksel, tutucu, ilgisi olmayan bireyler olarak tanımlanabilir (Costa ve McCrae, 1995). Konu ile ilgili çalışmalarda, iş yaşamında deneyime açık olan bireylerin, işe angaje olmada eğilimli oldukları tespit edilmiştir (Öngöre, 2015).



İnsan Kaynakları Yönetimi

Toplumların refahında önemli rolü olan örgütlerin kurulması, gelişmesi, sosyal sorumlulukların yerine getirilmesi ve stratejik amaçların geliştirilmesi, onların etkin bir insan gücüne sahip olmasına bağlıdır. Bu güç, örgütlerin entelektüel sermayesinin en önemli unsuru olan insan sermayesidir. İnsan sermayesi, sadece örgütlerdeki nicel açıdan insanlar değildir, fakat aynı zamanda bu insanların beraberlerinde örgüte getirdikleri bilgi, beceri, yetenek, deneyim, kapasite vs. gibi girdiler ve örgütsel başarıya yaptıkları katkılardır. İnsan sermayesi, bir örgütün tüm çalışanlarının kapasitelerinin, yeteneklerinin, bilgisinin, becerilerinin, deneyimlerinin ve motivasyonlarının toplam değerini ifade eder (Martin, 2010; akt. Bingöl, 2019). İşletmeler için olduğu gibi ülkeler için de önemli bir yeri bulunan insan sermayesinin daha iyi bir şekilde yönetimi, insan kaynaklarının etkili kullanımı ve onların bilgi, beceri ve gelişmelerinden yararlanılması anlamında önemli bir yer tutar. Dolayısıyla insan kaynakları, örgütler için önemli bir yer tutar. Çünkü bir örgüt, insan kaynağı olmadan fonksiyonlarını yerine getiremez. İnsan kaynakları ve onların sahip olduğu potansiyel, örgütlerin başarısında kilit rol oynar. Örgütsel etkililiği de en üst seviyeye çıkarmak için de çalışanların bilgi, beceri, yetenek ve potansiyelleri en iyi şekilde yönetilerek onlardan azami ölçüde yararlanılmalıdır (Haslinda, 2009). İnsan kaynakları yönetimi ilk olarak personel yönetimi olarak ortaya çıkmış ve önce insan kaynakları yönetimine ardından stratejik insan kaynakları yönetimi olarak etkinliğini artırmıştır (Ertuğrul, 2018). Organizasyon için daha değerli hale gelmeleri, çalışanları işe alma ve geliştirme süreci İnsan Kaynakları Yönetimi olarak tanımlanabilir. İnsan Kaynakları Yönetimi, iş analizlerini, insan kaynakları planlamasını, işe alma ve seçme, oryantasyon, eğitim ve geliştirme, ücret ve maaşların yönetimini, performansı değerlendirmeyi, fayda ve teşvik sağlamayı, anlaşmazlıkları iletmeyi ve çözmeyi içerir (BusinessDictionary, 2013).

Kişilik Özellikleri ile İnsan Kaynakları Yönetimi Arasındaki İlişki

Toplumsal örgüte hayat veren, örgütlere dinamizm kazandıran unsur olması sebebiyle insan kaynakları örgüt içi ilişkiler bakımından özel ve önemli bir yer tutmaktadır. Örgütün etkin bir şekilde, sürekliliğini sağlaması ve dengesini koruması önemli ölçüde sosyal yapısının düzenli olması ve uyumu sağlamasıyla yakından ilgilidir. Örgütsel olarak sosyal yapının düzenliliğinin sağlanması ise, işgören-örgüt bütünleşmesiyle ilgilidir. Örgüt-ışgören bütünleşmesini sağlamanın en belirgin göstergesi, işgörenlerin veya işgören grupların örgütün amaçlarına uygun davranarak kendilerini örgüte adama düzeyidir. Dolayısıyla, işgören-örgüt bütünleşmesinde çalışanların kişilik faktörünün önemli bir yeri vardır (Erdoğan, 1983; akt. Sarıtaş, 1997).

İşgören-örgüt bütünleşmesinin örgüte sağladığı önemli yararlar söz konusudur. Bu yararlardan birisini de örgütsel etkililiğinin artması şeklinde ifade etmek mümkündür. İşgörenin içerisinde bulunduğu örgütün ve çalışma grubunun kural ve normlarına isteyerek uyum göstermesiyle, zihinsel ve bedensel tüm bilgi, beceri ve deneyimlerini en üst seviyede örgütsel etkililiği artırma yönünde harekete geçirmeye çalışır. Dolayısıyla tüm işgörenlerin de bu şekilde davranışlarını sergileyerek örgütsel verimliliğinin maksimum düzeye çıkması sağlanmış olur. Aynı zamanda İşgören-örgüt bütünleşmesi işyerindeki çalışma gruplarına süreklilik sağlayarak işgörenlerin örgütü terk etmelerini önler ve kendilerini örgüte adanmalarını sağlar. İşgörenlerin çoğunluğu, örgütün sosyal yapısını benimsemedikleri durumlarda örgütün sürekliliği tehlikeye girmektedir (Sarıtaş, 1997).

Bu çalışmanın amacı, beş faktör kişilik özelliklerinin, insan kaynakları yönetim uygulamalarına ilişkin algılar üzerinde anlamlı bir etkiye sahip olma durumunu açığa çıkarmaktır. Bir başka deyişle, araştırmanın amacı, iş gören planlaması, seçimi ve yerleştirilmesi, iş koşulları, ücret, eğitim ve geliştirilmesi, performans yönetimi, kariyer yönetimi ve işçi sağlığı ve işçi güvenliği ilkeleri kapsamında örgütün tamamını ilgilendiren insan kaynakları yönetiminin beş faktör kişilik özelliklerinden ne derecede etkilendiğini ortaya koymaktır.

Yöntem

Delhi, India

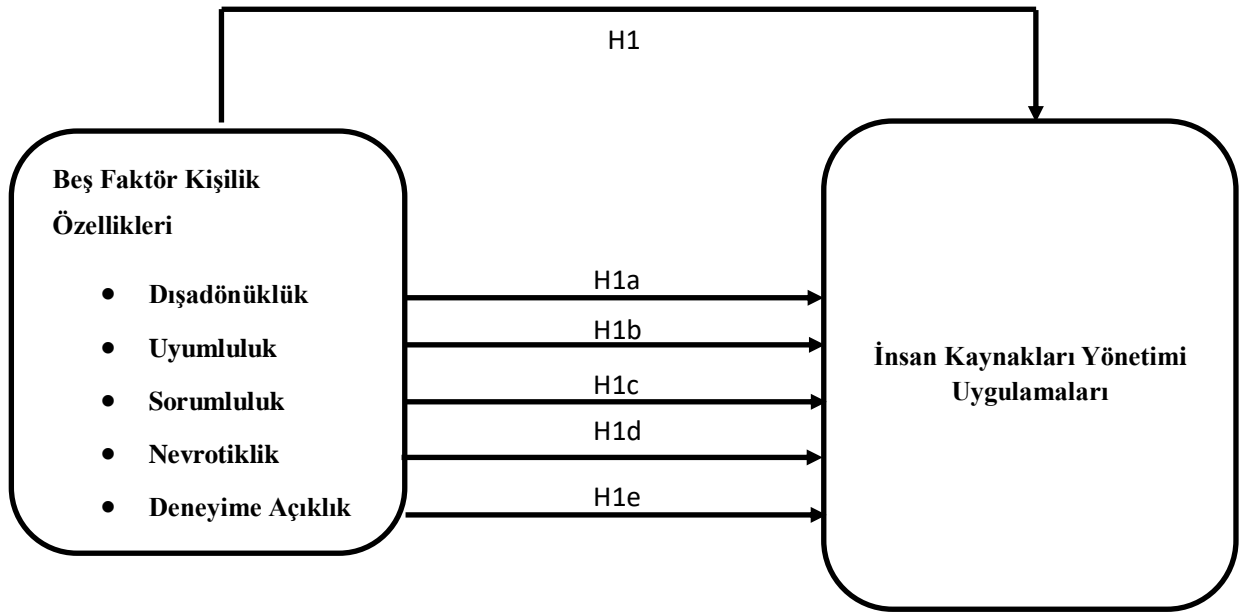
December 15-16 , 2021

Araştırma Yöntemi

Bu çalışmanın temel amacı doğrultusunda, Akdeniz Bölgesindeki bir ilin, 2020 yılı ISO 500'de faaliyet gösteren tekstil firmalarında çalışan beyaz yakalı personeller örneklem olarak ele alınmıştır. Araştırmada veri toplama tekniği olarak anket kullanılmış ve 134 kişiye anket uygulanmıştır. Araştırmada kolayda örnekleme yöntemi kullanılmıştır. Anket sorularında açık ve kapalı uçlu soruların yanı sıra likert tarzı önermelere yer verilmiştir. Anketteki likert tarzı önermeler ile araştırmanın amacında belirtilen beş faktör kişilik özellikleri ve insan kaynakları yönetim uygulamaları değişkenlerini ölçmek için iki ölçek kullanılmıştır. Beş faktör kişilik özelliklerini ölçmek için Benet-Martinez, V. ve John, O.P. (1998) tarafından geliştirilen 5 alt boyutlu 44 ifadeden oluşan ölçek kullanılmıştır. İnsan kaynakları uygulamaları değişkenini ölçmek için ise Ertuğrul (2018) tarafından geliştirilen 4 boyutlu 16 ifadeden oluşan ölçek kullanılmıştır. Ölçekler, "1: Kesinlikle katılmıyorum, 2: Katılmıyorum, 3: Kararsızım, 4: Katılıyorum ve 5: Kesinlikle katılıyorum" şeklinde beşli likert ölçeğine göre hazırlanmıştır. Elde edilen veriler SPSS istatistik paket programı kullanılarak analiz edilmiş ve araştırmada geliştirilen hipotezleri test etmek amacıyla frekans, faktör, güvenilirlik, korelasyon ve regresyon analizleri yapılmıştır.

Araştırma Modeli

Beş faktör kişilik özelliklerinin insan kaynakları yönetimi uygulamaları üzerindeki etkisini araştırmak için "H1: Beş faktör kişilik özellikleri temel boyutu, insan kaynakları yönetimi uygulamalarına ilişkin algıları anlamlı ve pozitif yönde etkiler" ana hipotezi oluşturulmuştur. Ayrıca çalışmada yer alan değişkenlerin alt boyutları incelemeye alınmış ve geliştirilen hipotezler doğrultusunda analiz edilmiştir. Geliştirilen hipotezler doğrultusunda araştırmanın modeli Şekil 1'de gösterilmektedir.



Şekil 1. Araştırma Modeli

Bu model kapsamında oluşturulan hipotezler şu şekildedir:

H1: Beş faktör kişilik özellikleri temel boyutu, insan kaynakları yönetimi uygulamalarına ilişkin algıları anlamlı ve pozitif yönde etkiler.

H1a: Beş faktör kişilik özellikleri alt boyutlarından dışa dönüklüğün, insan kaynakları yönetim uygulamaları üzerinde anlamlı ve pozitif yönde bir etkisi vardır.



H1b: Beş faktör kişilik özellikleri alt boyutlarından uyumluluğun, insan kaynakları yönetim uygulamaları üzerinde anlamlı ve pozitif yönde bir etkisi vardır.

H1c: Beş faktör kişilik özellikleri alt boyutlarından sorumluluğun, insan kaynakları yönetim uygulamaları üzerinde anlamlı ve pozitif yönde bir etkisi vardır.

H1d: Beş faktör kişilik özellikleri alt boyutlarından nevrotikliğin, insan kaynakları yönetim uygulamaları üzerinde anlamlı ve pozitif yönde bir etkisi vardır.

H1e: Beş faktör kişilik özellikleri alt boyutlarından deneyime açıklığın, insan kaynakları yönetim uygulamaları üzerinde anlamlı ve pozitif yönde bir etkisi vardır.

Araştırma Bulguları

Araştırmaya katılan kişilerin demografik özellikleri Tablo 1’de verilmiştir. Araştırmada yer alan kişilerin %26,1’i kadın, %73,9’u erkeklerden oluşmaktadır. Araştırmaya katılan kişilerin %20,1’i 18-25 yaşlarında iken, %56’sı 26-35 yaş arasında, %14,2’si 36-45 yaş aralığında ve %9,7’si 46-55 yaş gruplarında yer almaktadır. Araştırmaya katılanların %33,6’sı bekar, %66,4’ü evlidir. Katılımcıların “iş hayatındaki toplam süreleri” incelendiğinde %84,3’ünün 6-10 yıl üzerinde çalışmakta oldukları görülmüştür. “Günlük ortalama çalışma süresi” sorusu incelendiğinde ise katılımcıların %38,8’inin 6-8 saat arasında, %58,2’sinin 9-11 saat ve %3’ünün 12 saat ve üstü çalıştıkları görülmüştür. Normal mesai saatleri 6-8 saat arası iken, katılımcılardan 9-11 saat arası çalışılanların %50’den fazla olmasının sebebi beyaz yakalı çalışanların işlerini bitirebilmek için fazla mesai yapmış olduğu söylenebilir.



Tablo 1. Katılımcıların Demografik Özellikleri

	Frekans	Yüzde		Frekans	Yüzde
Cinsiyet			Medeni Durum		
Erkek	99	73,9	Bekâr	45	33,6
Kadın	35	26,1	Evli	89	66,4
Yaş			Eğitim Düzeyi		
18-25	49	20,1	Lise	41	30,6
26-35	72	56	Ön Lisans	32	23,9
36-45	79	14,2	Lisans	55	41
46-55	31	9,7	Lisans Üstü	6	4,5
İş Hayatındaki Toplam Süre			Kaç Yıldır Aynı İş yerinde Çalışıyorsunuz		
1 yıldan az	21	15,7	1 yıldan az		
1-5 yıl	36	26,9	1-5 yıl	28	20,9
6-10 yıl	39	29,1	6-10 yıl	51	38,1
11-15 yıl	21	15,7	11 yıl ve üstü	33	24,6
16-20 yıl	10	7,5			
21 ve üstü	7	5,2			
İşyerindeki Pozisyon			Departman		
Üst düzey yönetici	15	11,2	Muhasebe	39	29,1
Orta düzey yönetici	22	16,4	Finansman	19	14,2
Alt düzey yönetici	13	9,7	Pazarlama	37	27,6
Personel/Teknik Eleman	84	62,7	İnsan Kaynakları	12	9
			Ar-Ge	27	20,1
Günlük Ortalama Çalışma Süresi					
6-8 saat					
9-11 saat	52	38,8			
12 ve üstü	78	58,2			
	4	3			

Araştırmada kullanılan insan kaynakları yönetimi uygulamaları ölçeğinin KMO değeri 0,944; Bartlett's Küresellik Testi sonucunda ise Ki-kare 1784,846, serbestlik derecesi değeri (df) 120 ve anlamlılık değeri (sig) 0,000 olarak bulunmuştur. Bu bilgiler doğrultusunda ölçeğin faktör analizi için uygun olduğu görülmüştür. İnsan kaynakları yönetim uygulamaları ölçeğinin faktör analizi sonuçları Tablo 2'de verilmiştir. İnsan kaynakları yönetimi ölçeği Ertuğrul (2018) tarafından hazırlanan doktora tezi çalışmasından alınmıştır. Ertuğrul tarafından dört boyutlu (1. planlama, seçme ve yerleştirme, iş koşulları, 2. eğitim ve geliştirme, performans yönetimi, kariyer yönetimi, 3. ücret yönetimi ve ilkeleri ve 4. işçi sağlığı ve iş güvenliği) olarak ele alınırken, bu araştırmada yapılan faktör analizi sonucunda, faktörlerin tek bir boyut altında toplandığı ve normal dağılım gösterdiği görülmüştür. Dolayısıyla bu çalışmada insan kaynakları yönetimi uygulamaları tek bir boyut altında ele alınmıştır.



Tablo 2. İnsan Kaynakları Yönetim Uygulamaları Ölçeğine İlişkin Faktör Değerleri

KMO ve Bartlett's Test		
Kaiser-Meyer-Olkin örnekleme yeterliliği ölçüsü		0,944
Bartlett's küresellik testi	Ki-kare	1784,846
	Sd	120
	Anlamlılık	,000
Açıklanan toplam varyans		63,206
Boyut	Madde	Faktör Yüğü
İnsan Kaynakları Yönetim Uygulamaları	S4: Kurumumuzda doğru ve hakkaniyete uygun olarak çalışanların başarılarını ölçen bir performans değerlendirme sistemi mevcuttur.	,855
	S7: Çalışanların kariyer planları hem bireylerin hem de kurumun ihtiyaçları göz önüne alınarak yapılmaktadır.	,853
	S8: Kurumumuzda "eşit işe eşit ücret" ödenmesini sağlayan adaletli bir ücret yapısı mevcuttur.	,841
	S12: Kurumumuzda insan kaynakları bölümünün; çalışanların motive edilmesi için, gerekli çabayı gösterdiğini düşünüyorum.	,834
	S3: Kurumumuzdaki hem örgütsel hem de bireysel ihtiyaçlar göz önünde bulundurularak eğitim planlaması yapılmakta ve buna uygun olarak gerekli eğitimler verilmektedir.	,824
	S5: Performans değerlendirme sonuçlarının ücret, terfi, nakil ve bunun gibi insan kaynaklarıyla ilgili kararlarda etkin bir şekilde kullanıldığını düşünüyorum	,821
	S15: Kurumumuzda personel özlük işlerinin, çalışanlara herhangi bir sorun yansıtmayacak şekilde yapıldığını düşünüyorum.	,788
	S11: Kurumumuzda insan kaynakları bölümü; çalışanlar sağlık sorunlarıyla karşılaştığında, çözüm için gerekli desteği sağlamaktadır.	,784
	S10: Kurumumuzdaki iş sağlığı ve iş güvenliği uygulamalarının, çalışanları iş kazalarına ve meslek hastalıklarına karşı koruyucu nitelikte olduğunu düşünüyorum.	,783
	S9: Ücret dışında sağlanan yan haklar (prim, ikramiye, özel sağlık sigortası, cep telefonu, araç vb.) tatmin edici düzeydedir.	,782
	S2: Kurumumuzdaki eleman temin ve seçim süreci, her zaman işe en uygun elemanın seçimini sağlayacak niteliktedir.	,780
	S6: İşimde benden ne beklendiği, iş tanımında açık ve net bir şekilde ifade edilmiştir.	,766
	S13: Kurumumuzda insan kaynakları bölümü tarafından takip edilen, çalışanların şikâyetlerini ve önerilerini iletebileceği etkin bir sistem mevcuttur.	,748
	S1: Kurumumuzda insan kaynakları planlamasının yeterli sayıda ve nitelikte elemanı istihdam edecek şekilde yapıldığını düşünüyorum	,740
	S14: Kurumumuzda yemek, ulaşım ve bunun gibi hizmetler en iyi şekilde sunulmaktadır.	,735
	S16: Kurumumuzda çalışanları istihdamı ve işten çıkarılması sırasında yasal düzenlemelere ve hakkaniyete uygun bir süreç işletildiğini düşünüyorum.	,732



Araştırmada yer alan araştırma değişkenlerinin güvenilirliği, Cronbach Alfa değerleri ile ölçümlenmiştir. Araştırmada kullanılan ölçeklerin güvenilirlik sonuçları Tablo 3’te verilmiştir. Güvenirlik analizi sonucu hesaplanılan alfa katsayısı 0 ile 1 arasında bir değere sahiptir. Güvenirlik analizinin yapılması ile elde edilen alfa (α) katsayısına bağlı olarak ölçeğin güvenilirliği aşağıdaki gibi değerlendirilmektedir (Kayış, 2018):

- $0,00 \leq \alpha < 0,40$ ise ölçek güvenilir değil
- $0,40 \leq \alpha < 0,60$ ise güvenilirliği düşük
- $0,60 \leq \alpha < 0,80$ ise oldukça güvenilir
- $0,80 \leq \alpha < 1,00$ ise yüksek derecede güvenilir bir ölçek olduğu ifade edilmektedir.

Cronbach alfa değerleri; beş faktör kişilik özellikleri için 0,672, insan kaynakları yönetimi uygulamaları ölçeğinin ise 0,946 olduğu görülmüş ve ölçeklerin güvenilirlik düzeyleri geçerli olarak kabul edilmiştir.

Tablo 3. Araştırmanın Değişkenlerinin Güvenilirliği

Değişkenler	Cronbach Alfa Değeri	Önerme Sayıları
Beş Faktör Kişilik Özellikleri	,672	44
Dışadönüklük	,476	8
Uyumluluk	,529	9
Sorumluluk	,658	9
Nevrotiklik	,659	8
Deneyime Açıklık	,609	10
İnsan Kaynakları Yönetim Uygulamaları	,960	16

Araştırmada incelenen beş faktör kişilik özellikleri ve alt boyutları ile insan kaynakları yönetim uygulamaları arasındaki ilişkiyi araştırmak için yapılan korelasyon analizi sonuçları Tablo 4’de verilmiştir. Yapılan korelasyon analizi sonuçlarına göre beş faktör kişilik özellikleri temel boyutu ve insan kaynakları yönetim uygulamaları arasında pozitif yönde, $p < 0.05$ düzeyinde anlamlı ilişkilerin olduğu görülmüştür. Beş faktör kişilik özellikleri alt boyutlarından deneyime açıklık ile insan kaynakları yönetim uygulamaları arasında pozitif yönde $p < 0.01$ düzeyinde anlamlı ilişkiler olduğu görülmüştür. Beş faktör kişilik özellikleri bağımsız değişkeninin alt boyutları olan “dışadönüklük” (H1a), “uyumluluk” (H1b), “sorumluluk” (H1c) ve “nevrotiklik” (H1d) ile araştırmanın bağımlı değişkeni olan insan kaynakları yönetimi uygulamaları arasında $p < .05$ düzeyinde anlamlı ilişkiler bulunamadığından dolayı regresyon analizi yaparak etki düzeylerine bakılmaksızın araştırmanın ilgili hipotezleri reddedilmiştir.

Tablo 4. Araştırma Değişkenlerinin Korelasyon Değerleri

Değişkenler	İnsan Kaynakları Yönetimi
Beş Faktör Kişilik Özellikleri	,188*
Dışadönüklük	,102
Uyumluluk	,044
Sorumluluk	,111
Nevrotiklik	,001
Deneyime Açıklık	,235**

** Korelasyon 0.01 düzeyinde anlamlıdır.

* Korelasyon 0.05 düzeyinde anlamlıdır.

Araştırmada ön görülen hipotezleri test etmek amacıyla yapılan regresyon analizi sonuçları Tablo 5 ve 6’ da verilmiştir. Araştırmada geliştirilen “H1: Beş faktör kişilik özellikleri temel boyutu, insan kaynakları yönetimi uygulamalarına ilişkin algıları anlamlı ve pozitif yönde etkiler”, “H1e: Beş



faktör kişilik özellikleri alt boyutlarından deneyime açıklığın, insan kaynakları yönetim uygulamaları üzerinde anlamlı ve pozitif yönde bir etkisi vardır”, hipotezlerini test etmek amacıyla yapılan regresyon analizi sonuçlarına göre, beş faktör kişilik özelliklerinin (H1) insan kaynakları yönetim uygulamalarını ($\beta = ,188$; %3,5), beş faktör kişilik özellikleri alt boyutlarından deneyime açıklığın (H1e), insan kaynakları yönetim uygulamaları ($\beta = ,235$; %5,5) bağımlı değişkenini anlamlı ve pozitif yönde etkiledikleri anlaşılmaktadır. Bu bulgulardan hareketle H1 ve H1e hipotezleri kabul edilmiştir.

Tablo 5. Beş Faktör Kişilik Özelliklerinin İnsan Kaynakları Yönetim Uygulamaları Üzerindeki Etkisine Yönelik Regresyon Analizi

Değişkenler	Beta	t değeri	P değeri
İnsan Kaynakları Yönetimi	,188 $\Delta R^2 = ,035$	2,194 $F = 4,812$,030

** p<0.01

* p<0.05

Tablo 6. Beş Faktör Kişilik Özelliklerinin Alt Boyutlarından Deneyime Açıklık ile İnsan Kaynakları Yönetim Uygulamaları ve Alt Boyutlarına Yönelik Regresyon Analizi

Değişkenler	Beta	t değeri	P değeri
İnsan Kaynakları Yönetimi	,235 $\Delta R^2 = ,055$	2,781 $F = 7,735$,006

** p<0.01

* p<0.05

Sonuç ve Değerlendirme

Kişilik, bireyin iç dünyasında başlayan ve onu diğer bireylerden ayıran kendisine özgü tutarlı tutum ve davranışlardır. İş hayatında çalışanların kişilik özelliklerinin, bireysel farkındalığının temeli olduğu bilinmektedir. Ayrıca örgütsel çevredeki faktörler ile bireysel farklılıkların da çalışanların tutum ve davranışlarını etkilediği söylenebilir (Yavaş, 2020). Yani her bir çalışan birbirinden farklı kişilik özelliklerine sahiptir.

Bu araştırma kişilik özelliklerinin insan kaynakları yönetimi uygulamalarına ilişkin çalışan algıları üzerindeki etkisini incelemek amacıyla yapılmıştır. Elde edilen veriler üzerinde yapılan korelasyon analiz sonucuna göre beş faktör kişilik özellikleri temel boyutu ve beş faktör kişilik özellikleri alt boyutlarından olan “deneyime açıklık” ile insan kaynakları yönetimi uygulamaları arasında pozitif yönlü ilişkilerin olduğu görülmüştür. Regresyon analizi sonuçlarına göre bağımsız değişken olan beş faktör kişilik özellikleri temel boyutu (H1) ve beş faktör kişilik özellikleri alt boyutlarından olan deneyime açıklığın (H1e) bağımlı değişken olan insan kaynakları yönetimini anlamlı olarak etkilediği görülmüştür.

Kardaş (2018) tarafından yapılan bir çalışmada deneyime açıklık ile iş tatmini arasında anlamlı bir ilişki olduğu görülmüştür. Yine Bozkaya (2013) tarafından yapılan başka bir çalışmada ise, deneyime açık kişilik özelliğinin duygusal ve normatif bağlılığı pozitif ve anlamlı düzeyde etkilediği görülmüştür. Bu çalışmada ise deneyime açık bireylerin, çalıştıkları işletmelerdeki insan kaynakları uygulamalarına daha olumlu yaklaşımları bulgusuna ulaşılmıştır.

Sonuç olarak deneyime açık bireyler, entelektüel meraklı, hayal gücü yüksek, açık fikirli ve yenilik için meraklı ve heyecanlıdır. Dolayısıyla deneyime açık bireylerin diğer kişilik özelliklerine göre



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daha aktif, çevresine karşı daha meraklı olduğundan dolayı örgüt içerisinde yer alan insan kaynakları yönetimine olan bakış açıları da farklı olmaktadır. İnsan kaynakları uygulamalarını yaparken, firmaların istihdam ettikleri bireylerin kişilik özelliklerini de göz önünde bulundurarak uygulamalarını şekillendirmelerinin daha yararlı olacağı söylenilebilir.

Bu araştırma yalnızca bir ildeki tekstil firması çalışanları üzerinde yapılmış olup bulguların genelleştirilmesine olanak sağlamamaktadır. Ayrıca, yalnızca anket verisi kullanılmış olup, başka veri toplama tekniklerinden faydalanılmamış olması da araştırmanın bir başka sınırlı yönüdür. Farklı illerde ve farklı veri toplama teknikleri kullanılarak benzer araştırmaların gelecekte yapılması önerilir.

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DECISION MAKING MECHANISM AND CRISIS SOLVING CAPACITY

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Abstract

Concept of crisis has not concrete definition in the international relations literature that can be described as a sudden development between states and generally unexpected at least one of them. International crisis can easily escalate and lead the parts to military conflict. Due to the great risks as an existential issue, decision makers, who has the responsible authority taking decisions on behalf of the state, are in difficult position compared the normal one. In many perspectives crisis is difficult and complicated to manage. Depending on what kind of crisis dealing with, decision making units and process can be differentiated. Decision making unit describes using states legal system, depending on crisis nature there are wide range of options from diplomatic to military while determine the unit.

Crisis management can be focused at four main levels: local, national, regional, international. Classification of levels depends on parties and effects involved the situation, though any level of crisis can easily trigger other one. One local crisis spread to regional level or regional or international one affect to local. So, decision making mechanism is changed under the condition and effects of the crisis. In this paper focusing on between states crisis and its effects on India. India is very important state in regional and international level, and she has faced many regional and systemic level crisis. Her foreign policy decision making units are forming generally leader (prime minister) and his/her advisers or small groups determined per issues condition such as military, bureaucrats, diplomats, politicians etc. In this framework, paper tries to explain that how India's foreign policy decision making mechanism works and under the crisis condition if it is any change of mechanism. And this paper tries to demonstrate the crisis solving capacity of India. Because of that this paper tries to understand how to handle international and regional problems and for doing this how India makes and conducts her own foreign policy with challenges and limits of.

Key Words: Crisis, Foreign Policy, Decision Making Unit

Özet

Kriz teriminin uluslararası ilişkiler literatüründe kesin tanımlı bir karşılığını bulmak pek mümkün değildir. Ancak taraflarında en azından biri için beklenmedik ani gelişmeler olarak ifade etmek mümkündür. Uluslararası krizleri önemli kılan hızla yükselerek askeri çatışmalara yol açabilme potansiyelleridir. Nitekim askeri çatışma riskinin yaratacağı varoluşsal sorun dikkate alındığında karar alıcılar konusu diğer konulardan daha farklı bir önem arz etmektedir. Devletin kendi yapısı içinde belirlenmiş, tanımlanmış karar alıcılar için krizler pek çok anlamda kontrolü ve yönetilmesi daha zor konulardır. Özellikle başka devletlerle yaşanan krizler söz konusu olduğunda tek taraflı karar verme gücü olduğu gibi kararın sınırları da tartışmalıdır. Karar alma mekanizması her konu ve zaman için farklı oluşmakla birlikte kriz zamanlarından ve krizin niteliğine göre farklı bir dış politika karar alıcı grubu, diplomatlar, askerler vs, oluşabilmektedir.

Kriz yönetimi genellikle dört ayrı seviyede ele alınmaktadır: yerel, ulusal, bölgesel, sistemik/uluslararası. Bu sınıflandırma her ne kadar krizin tarafları ve etkileri ile belirleniyor olmakla birlikte yerel krizler kolaylıkla bölgesel bir krize uluslararası kriz ise yerel bir krize dönüşebilmektedir. Bu nedenle krizler karmaşılaştıkça sınırları kaybolmaya başlar. Bu durum



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karar alma mekanizmasını da etkilemektedir. Bu çalışmada devletler arası krizler ele alınarak Hindistan'a etkileri tartışılmaya çalışılacaktır. Hindistan bölgesi ve uluslararası sistem içindeki konumu nedeniyle önemli bir aktördür. Dış politika karar alma birimleri genellikle güçlü lider, başbakan ve danışmanları ya da her koşulda yeniden içeriği ve yapısı belirlenen küçük gruplardan oluşmaktadır. Bu çalışmada amaçlanan Hindistan'daki karar alma mekanizmasının krizler karşısında nasıl yapılandığını izah edebilmek, kriz çözebilme kapasitesini değerlendirmeye çalışmaktır. Bu bağlamda da Hindistan dış politikasının belirlenmesi ve yürütülmesi süreçlerini, sınırlılıkları ve zorluklarını anlamaya çalışmaktır.

Anahtar Kelimeler: Kriz, Dış Politika, Karar Alıcı Birim



FİNANSAL PİYASALARIN VE KÜRESEL FİNANSAL SİSTEMİN GELİŞİMİNDE SİYASAL DOKTRİNLERİN ETKİSİNİN TRUMP VE REAGAN DOKTRİNLERİ ÇERÇEVESİNDE KARŞILAŞTIRMALI ANALİZİ

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Özet

Özellikle küresel ölçekte ortaya çıkan siyasal ve finansal krizlerin dünyada yeni siyasal akımların doğmasına neden olmuştur. Bu siyasal akımlar son 100 yılda küresel ekonomi ve düzenin merkezinde yer alan ABD'de ortaya çıkmaktadır. 1970'ler petrol krizi sonrası, 1980'da ABD Cumhuriyetçi parti politikaları eksenini ve başkan Ronald Reagan'ın kişiliği ekseninde "Yeni Sağ" akımı ortaya çıkmıştır. Bu akımın iktisadi politikaları iz düşümü arz yanlı iktisat, finansal piyasalara ise finansal neoliberalizasyon olarak gerçekleşmiştir. "Reagonomics" olarak isimlendirilen Reagan ekonomi doktrini, kamu harcamalarının azaltılması, askeri harcamaların artırılması, vergi oranlarının azaltılması, finansal neoliberalizasyon ve para politikası yolu ile enflasyonun kontrol edilmesi esasına dayanarak, düşük enflasyon, yüksek büyüme, yüksek istihdam ve finansal piyasalarda yüksek hisse senedi getirileri hedeflemekte idi. Temel siyasal ve iktisadi rakibinin Sovyetler Birliği olduğu küresel ekonomi politik çerçevede Reagan doktrini; yüksek büyüme, yüksek istihdam, 1.döneminde düşük enflasyon-caridenge-dış ticaret dengesi, doların düşük değeri, vergi gelirlerinde ve oranlarında azalış ve ilk döneme göre daha sonra azalsada yüksek faiz parametrelerini ortaya çıkarmıştır. Yüksek faiz oranları, artan finansal deregülasyonlar ve finansal serbestleşme döneminde küresel finansal sistemin gelişimi tarihin en hızlı artış ivmelerini yakalamış ve maksimum düzeyde hisse senedi getirileri ortaya çıkmıştır. 2008 Küresel finansal kriz sonrası artan terör olayları ve jeopolitik riskler 2016'da kökeni 1920'lerin Cumhuriyetçi parti izolasyonist dış politika ve aşırı sağ popülüzmi ile başkan Donald Trump'ın şahsında birleşen Trump Doktrini ortaya çıkmıştır. "Trumponomics" olarak isimlendirilen Trump ekonomi doktrini, dış ticarete korumacılık-ticaret savaşları, devletin ekonomide etkisinin artması, düşük vergi oranları, yüksek alt yapı yatırımları, düşük faiz oranları ve küresel ABD dolarının millileşmesi esaslarına dayanmaktadır. Çin'in ABD'nin temel siyasi ve iktisadi rakibinin olduğu ekonomi politik çerçevede Trump Doktrini; dış ticaret fazlası, düşük faiz, düşük enflasyon, değerli milli dolar, yüksek istihdam ve yüksek büyüme hedeflemiştir. Trump Doktrinine ilişkin hedefsel parametreler Covid-19 Pandemi krizine kadar olan bölümde, yüksek büyüme, düşük faiz, düşük enflasyon, değerli milli dolar, kamu ve askeri harcamalarda artış, dış ticaret dengesine ve cari dengeye yakınsama parametrelerini ortaya çıkarmıştır. Düşük faiz oranları, korumacı politikalarla azalan iktisadi serbestlik sonucunda bu dönemde küresel finansal sistemin gelişimi durağanlaşmış küresel hisse senedi getirileri ise 1940'lar seviyesine düşmüştür. Covid 19 Pandemi krizi sonrası ise Trump Doktrini tüm parametrelerde başarısız olmuştur. Sonuç olarak Reagan doktrini 1980'larda büyük ölçüde iktisadi hayatta ABD ölçeğinde hedeflerine ulaşmış ve getirdiği finansal serbestleşme ile küresel finansal sistemin çok hızlı gelişmesini sağlamıştır. Bu dönemde başkan Reagan'ın finans kesiminin yanı sıra neoconlarında ortak adayı olması nedeniyle askeri harcamaları artırması teoriden sapma olarak

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yorumlanabilir. Trump doktrini ise Covid-19 Pandemisine kadar başarılı olmuş ancak daha sonra başarısız olmuştur. Trump'ın doktrinin en büyük stratejik açmazları ise dış ticarete bilhassa Çin'e uyguladığı korumacı politikalara rağmen, küresel ABD dolarını milli paraya çevirerek dolarları yeniden ABD'ye çağırarak doların yuan karşısındaki değerinin 2018 sonrası artmasına neden olarak çok yüksek cari açık ve dış ticaret açığı vermesi ve Covid 19 Pandemi Krizidir. Bir diğer yünden düşük faizle dolarları geri çağırmaya çalışması ise doktrinin bir başka yapısal açmaz noktasıdır. Yine aynı şekilde FED üzerinden yapılan kısmi faiz artışları ise yine doların yuan karşısında değerini yükseltmiştir. Düşük faiz ve korumacı politikaları sebebiyle Çinde yatırımları olan küresel sermaye sınıfı ile yaşadığı çatışma ise doktrinin bir başka açmazı olmuştur. Kısaca Reagan doktrini döneminde başarılı olup küresel finansal sistemin gelişimini hızlandırıp yüksek finansal karlar sağlamışken, Trump doktrini küresel finansal sistemin gelişimini yavaşlatıp, küresel finansal karları düşürürken Covid 19 pandemi krizi, küresel sermaye sınıfı ile olan çatışma ve politika tasarımı kaynaklanan yapısal hatalar sonucu 2020 sonrası dönemde başarısız olmuştur.

Anahtar Kelimeler: Küresel Finansal Sistem, Finansal Piyasalar, Siyasal Doktrinler

COMPARATIVE ANALYSIS OF THE EFFECT OF POLITICAL DOCTRINES ON THE DEVELOPMENT OF FINANCIAL MARKETS AND THE GLOBAL FINANCIAL SYSTEM WITHIN THE FRAMEWORK OF TRUMP AND REAGAN DOCTRINES

Abstract

Particularly, the political and financial crises that have emerged on a global scale have led to the emergence of new political movements in the world. These political movements have emerged in the USA, which has been at the center of the global economy and order in the last 100 years. After the oil crisis of the 1970s, the "New Right" movement emerged in 1980 on the axis of the US Republican party policies and the personality of President Ronald Reagan. The projection of this trend to economic policies has been realized as supply-side economics and financial neoliberalization to financial markets. The Reagan economic doctrine, called "Reagonomics", aims at low inflation, high growth, high employment and high stock returns in financial markets, based on reducing public spending, increasing military spending, reducing tax rates, controlling inflation through financial neoliberalization and monetary policy. was. The Reagan doctrine in the global political economy where the main political and economic rival is the Soviet Union; high growth, high employment, low inflation-current balance-foreign trade balance in the first period, low value of the dollar, decrease in tax revenues and rates, and high interest parameters, although they decreased later than in the first period. In the period of high interest rates, increasing financial deregulations and financial liberalization, the development of the global financial system has captured the fastest growth accelerations in history and stock returns have emerged at the maximum level. Increasing terrorist incidents and geopolitical risks after the 2008 global financial crisis In 2016, the Trump Doctrine, whose origins merged with the Republican party isolationist foreign policy and far-right populism of the 1920s, and the person of President Donald Trump, emerged. The Trump economic doctrine, called "Trumponomics", is based on the principles of protectionism-trade wars in foreign trade, the increase of the state's influence in the economy, low tax rates, high infrastructure investments, low interest rates and the nationalization of the global US dollar. The Trump Doctrine in the political economy where China is the main political and economic rival of the USA; foreign trade surplus, low interest, low inflation, valuable national dollar, high employment and high growth. The target parameters of the Trump Doctrine revealed the parameters of high growth, low interest, low inflation, valuable national dollar, increase in public and military expenditures, convergence to the foreign trade balance and current account balance in the part up to the Covid-19 Pandemic crisis. As a result of low interest rates and economic liberalization reduced by



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protectionist policies, the development of the global financial system stagnated in this period, and global stock returns fell to the level of the 1940s. After the Covid 19 Pandemic crisis, the Trump Doctrine failed in all parameters. As a result, the Reagan doctrine achieved its goals in economic life on the scale of the USA in the 1980s, and with the financial liberalization it brought, it provided a very rapid development of the global financial system. In this period, President Reagan's increase in military expenditures, as he was a partner candidate in the neocons as well as the finance sector, can be interpreted as a deviation from the theory. on the other hand ,The Trump doctrine, was successful until the Covid-19 Pandemic, but later failed. The biggest strategic dilemmas of Trump's doctrine are that despite his protectionist policies in foreign trade, especially against China, he turned the global US dollar into national currency and called the dollar back to the USA, causing the dollar to increase in value against the yuan after 2018, causing a very high current account deficit and foreign trade deficit and the Covid 19 Pandemic Crisis. On the other hand, trying to recall the dollars with low interest rates is another structural deadlock point of the doctrine. Likewise, partial interest rate hikes through the FED again increased the value of the dollar against the yuan. The conflict with the global capital class, which has investments in China due to low interest and protectionist policies, has been another dilemma of the doctrine. In short, while the Reagan doctrine was successful and accelerated the development of the global financial system and provided high financial profits, the Trump doctrine slowed the development of the global financial system and reduced global financial profits, it failed in the post-2020 period as a result of the Covid 19 pandemic crisis, the conflict with the global capital class, and structural errors arising from policy design has been.

Keywords: Global Financial System, Financial Markets, Political Doctrines



**EFFECT LEVEL OF DYNAMICS IN THE PROCESS OF CONSUMPTION GOODS
VARIABILITY: THE CASE OF TURKEY**

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Abstract

In this study, we tried to explain which correlation dynamics in the process affect the demand for consumer goods in Turkey and the scale effect these dynamics have on possible deviations in consumer goods. It has been revealed that the variations and variability in the recent demand for consumer goods in Turkey depend on different correlations based on other macro variables with some significant values in the last two decades. It is possible to talk about a process in which potential changes in national income and sectoral industrial production index values are also very effective in operations where changes in consumer goods are expressed with investment volumes and targets. In addition, it appears that the domestic investment demand and the variability in investment goods related to this demand have a significant direct impact. We emphasized that the differences of this effect with structural values also reveal a considerable level of influence through an accelerating impact on mutual investments and national investments in the consumer goods index. In this respect, changes in the demand for consumer goods created different correlation effects. We have determined that the difference in the effect values of creating variability on consumption goods is significant with the effect values of these dynamics in the process on other macroeconomic balances. But, it should be highlighted that consumer preferences and seasonal consumption variability are not considered in this process. Still, the variability of investments in consumption goods based on assets is more positively affected by economic growth trends based on GDP makes the process meaningful. In this context, we questioned the structural significance and reasons why developing countries that invest in their economic growth targets prefer investments in consumer goods rather than real sectoral investments. An essential element of our determinations is that the high consumer expectations of developing countries such as Turkey are the factors that create significant added value in reaching their targeted economic growth trends.

Key Words: Consumer Expectations; Consumption Goods; Domestic Investments; Gross Domestic Product; Industrial Production Index.

JEL Codes: E21; E23; E71.

1. INTRODUCTION

It is observed that the recent changes in consumer goods in Turkey show different variables, especially in a process where economic growth targets are also in question. However, our findings reveal also that this phenomenon is related to a supply and demand balance related to the market and GDP per capita within the economic growth trend (OECD, 2021: 8). These values are also directly related to other macro-dynamics that can be evaluated based on different impact levels. Changes in investment limits made in the last fifteen years in Turkey are at the forefront of these impact levels (World Bank, 2021). It is considering that economic growth cannot be thought of only as a result of the added value created in investment values, but also in a direct positive correlation, it is seen that investments in consumption goods also affect consumption margins (OECD, 2002: 13). This fact means also that revealing a significant variability and a positive correlation with an



accelerating effect in the process. In other words, there is a demand for consumer goods in which all scale values created by the macro variability of each value make a real deal with different characteristics (Asgharian et al, 2013: 16). It appears that equating the demand for consumption goods in the markets with the scale of only consumption goods investments reveals some significant deviations in this respect. At the beginning of these, there is the determination and opinion that each increasing consumption expenditure is insufficient in explaining the expanding consumption of goods (Çelikok and Saatçioğlu, 2020: 406-407).

In this context, we are faced with the fact that the real national domestic investment contribution values are higher than the foreign investments related to the increases in the GDP and have different meanings on the GDP as the probable investment deviation assets (TOBB, 2018: 45). The necessity of not considering the increase in investment goods separately from foreign real capital investments shows that the demand for consumption goods constitutes the import scale for foreign countries. Undoubtedly, it is impossible to consider the aggregated effects of all investment scales on economic growth differently from the demand for consumer goods (Cingano, 2014: 35-36). However, in our econometric model, it is understood that the effective real contribution value of domestic investments is significant in terms of the variability in consumer goods; as a result, and it comes to the forefront with an accelerating striking impact on domestic investments. In this respect, it is seen that the expectations regarding the contribution levels of investments that can create macro-level differences in meeting consumption demands and the target, as mentioned earlier, effects in countries such as Turkey, are higher (Taşkın, 2014: 39). Evaluation of the impact on national income, of which domestic investments are an essential element, is crucial in emerging economies in this respect and creates a preferable domestic investment portfolio in terms of investment costs. A real contribution level, which can be shaped by other values that can have a positive effect, rather than the investment instruments of the last twenty years in Turkey makes the impact level on the annual changes in consumer goods production more meaningful with the changes (PwC, 2016: 7). In the limits of national investment goods, this structural phenomenon in which the industrial production index is positively affected has expanded consumer investments values presently seen as related to the growing economic investments to the future (KPMG, 2020: 21).

2. THE MACRO-COMPONENTS AND EFFECT DYNAMICS IN THE VARIATION OF CONSUMABLE GOODS

Therefore, it appears that the values related to the changes in the industrial production index in Turkey reveal a consumption increase margin that is affected by both the changes in domestic investment values and the actual changes in the GDP related to the process (Şamiloğlu and Savaş, 2010: 26). In this context, it can be said that the increases in consumption goods in Turkey express a process that is shaped in line with other economic-financial expectations rather than target welfare levels and deviates from the expectations of a rational consumption margin, albeit partially. The process in which the positive effect of the industrial production index values creates an effect level based on real domestic investments is often seen to reveal an inverse correlation with a structure in which consumption limits increase in favour of consumption goods in Turkey (Macovei, 2009: 23). Undoubtedly, this process is a situation that negatively affects the financial costs of real domestic investments and emerges as the cause of sectoral problems, which are the more expanding consumer investments than the others as related to GDP for Turkey (OECD, 2018: 42).

Considering the change in per capita national income in Turkey and its effects on consumption-related values directly, it can be thought that the increase in national income should be more effective on the consumption of other consumer goods. It is a fact that a structure that affects the indices at a real level cannot be ignored as related to the other macroeconomics balances and their infrastructures (McKinsey & Company, 2020: 22). Along with all this, it is seen that the values in all kinds of investment limits create an impact value within the scope of national income, especially



at a level where domestic investments are a priority and the increasing household income values. This fact is the dominant factor that directly affects the industrial production index (Alkin, 2016: 58 and 60). It appears that these increases in investment stages create a significant increase in the consumption spectrum with the accelerating effect of consumption limits. Still, the prices of the goods can only differ from the prices of the goods. And, it has been compared and the fact that the quality of the goods in terms of content has been at different prices rather than different matches constitutes an important contribution value of the consumption values (OECD, 2020: 6).

On the other hand, there are also opinions defending that price changes are not very effective on consumption variability. In other words, there are opinions that consumption habits and options do not have a significant effect other than per capita income for underdeveloped and developing countries. In addition to a structure in which the production index is directly affected by the variability in consumption matches in recent years, it should not be ignored that the export-oriented approaches of foreign trade and market demand also play an essential role in this structural approach (Coşar, 2002: 23-24). In this context, it can be thought that the changes in the consumption stage with the increase in the amount of investment for the markets, the real change values of the mother national Industry index can be expressed. Besides, it can be said that it is a more meaningful reason for comparison to consider the change in consumption in Turkey in recent years, not as one-sided but multi-dimensional, and to view these analyses in the medium-short-term. It appears that considering the effect level of sectoral developments is more meaningful in terms of national income level rather than explaining the increase in each consumption salary in Turkey with the income level per household (TUIK, 2021).

Undoubtedly, on the other hand, estimating how household consumption habits will be shaped concerning future income expectations and what level of index effect this shaping will create is an essential step of this approach (United Nations, 2008: 153). It may be considering that there is a significant level of influence between the income effect or the substitution effect via the income of the consumption-oriented households. Namely, this means that the demand variability for consumption goods at this level develops in a different medium apart from the increased industrial production index (Günay, 2018: 14). This fact means that the positive real contribution values in the increases in the industrial production index will bring to the export-based global foreign trade options due to specific increases also being gained a critical justification. Therefore, the increase in consumption margins, the increasing national production level, and the economic growth trend revealed by the industrial production index values are targeted on an export-oriented basis (Republic of Turkey Ministry of Industry and Trade, 2010. 36). However, in all kinds of econometric analysis, the variability based on consumption goods has a positive effect on the positive impact of the increase in national income on households and the increase in the variability in national investments as a factor income (Özdamar, 2015: 650). Besides, it is an undeniable fact that this process directly affects consumer goods demands for consumption preferences. Apart from this, it can be claimed that it is incomplete to explain the effect of consumption limits only by positive increases in the industrial production index and the increase in national investments (Öztürk and Agan, 2017: 7). Despite all this, the fact that the increases in the production limits are still directly affected by the increases in the consumption margins, and the national investments directly as a reciprocal cycle in the analyses, is still valid in the first place (Atiyas and Bakis, 2015: 1218-1219).

3. ECONOMETRIC APPROACH AND FINDINGS

It is possible to express Turkey's recent consumption goods variability within the framework of an econometric model with the correlation values within the framework of the effect values created by other macro variables. In other words, this model has been put forth to determine the effect values of national investments and changes in national income and the directly related industrial



production index relationship on consumer goods. First of all, it is aimed to determine the unit root tests of the sequences related to the dependent and independent variables we have revealed.

3.1. Creating the Econometric Model and Testing Its Accuracy

After determining the stationarity of the sequences, it is aimed to reveal the structural effect values in the econometric model. Within the scope of the model. Dickey-Fuller test was used to determine the stationarity of the series (Fixed and Trend Model), and it was aimed to provide $H_0: \sigma_u^2 = 0$; $H_1: \sigma_u^2 \neq 0$ positions. However, the understanding of the significance of the symbolic expressions of the variables used in the model is shown in the table. below:

Econometric Model:

$$Y = \beta_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \dots + \beta_n X_n \dots \dots \dots (1)$$

Establishment of econometric forecasting model within the scope of dependent and independent Variables as ARDL econometric approach:

Estimation Command:

$$\text{ARDL CONSASCH_ DOMINVD_ GDP_ INDPRODINDEX @} \dots \dots \dots (2)$$

Estimation Equation:

$$\text{CONSASCH} = + C(1)*\text{CONSASCH} (-1) + C(2)*\text{DOMINVD} + C(3)*\text{GDP} + C(4)*\text{INDPRODINDEX_} + C(5) \dots \dots \dots (3)$$

Table 1. Meanings Modelling of Dependent and Independent Components in The Econometric Model

CONSASCH	Monthly Changes in Goods for the Year of Consumption
DOMINVD	Monthly Changes in Domestic Investments for the Year
INDPRODINDEX	Monthly Changes in the Industrial Production Index for the Year
GDP	Monthly Changes for the Year Based on GDP

The structural generated framework of Dickey-Fuller intended to evaluate Unit Root Test was taken up considering as analytical like below:

$$\Delta X_t = \alpha_0 + \beta t + \rho X_{t-1} + \sum_{i=1}^k \beta_i \Delta X_{t-i} + \varepsilon_t \dots \dots \dots (4)$$

Fixed and Trendless Model:

$$\Delta Y_t = \alpha + \beta t + \delta Y_{t-1} + \sum_{j=2}^k \delta_j \Delta Y_{t-j+1} + e_t \dots \dots \dots (5)$$

Dickey Fuller (Fixed and Trend Model)

$H_0 : \sigma_u^2 = 0$

$H_1 : \sigma_u^2 \neq 0$



The fact that the probability value of the findings determined according to the Dickey-Fuller unit root test is less than 0.05 ($0.05 >$), especially in the lag periods, shows that the series of our variables is in a stationary institution, and there is no need for a dummy variable. Table 2 and Table 3 below show the cumulative values determined within the scope of the Dickey-Fuller test and also the Unit Root Test values determined for each variable:

Table 2. Group Unit Root Test: Summary

Series: CONSASCH_, DOMINVD_, GDP___, INDPRODINDEX_
 Sample: 2007M01 2019M12
 Exogenous variables: Individual effects

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t^*	-0.57459	0.2828	4	610
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-2.06124	0.0196	4	610
ADF - Fisher Chi-square	17.5107	0.0252	4	610
PP - Fisher Chi-square	21.2899	0.0064	4	620

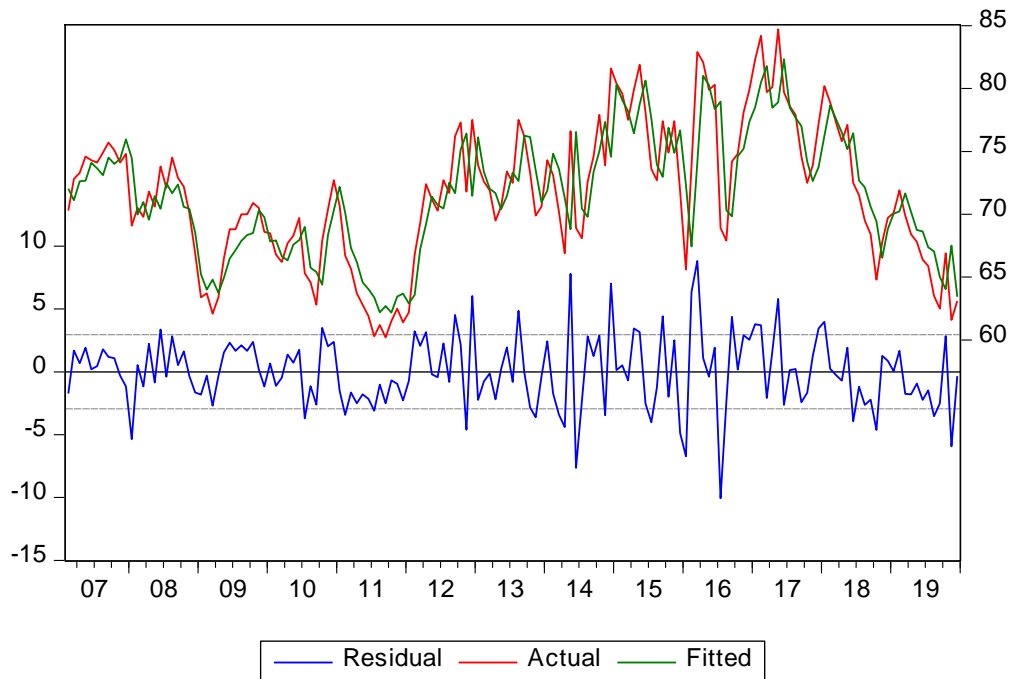
In addition, it was aimed to compare the probability values in understanding the stationarity specific to each series in the series in our model, and it was determined by comparing the statistical values and probability values within the framework of the Augmented Dickey-Fuller test as $0.05 >$. Besides, in which the standard errors of the variables were included within the determined values was fixed determined as meaningful via compared values determined. In these determinations, it has been determined that the series with the lagged values have significant stops and that the series will give meaningful results when the series is used in the model. Table 3 below shows a comparison of the Augmented Dickey-Fuller test's standard deviation values by evaluating the probability values within the scope of statistical values:



Table 3. Stability of Variables with Standard Deviation and Probability Values

Variables	Augmented Dickey-Fuller Test Statistic			
	Fixed Values			
	Coefficient	Std. Error	t-Statistic	Prob
CONSASCH	-0.154733	0.045315	-3.414601	0.0008
DOMINVD_(-1)	-0.046523	0.034613	-1.344095	0.0809
D(DOMINVD_(-1))	-0.294779	0.079542	-3.705954	0.0003
INDPRODINDEX_(-1)	-0.092566	0.031486	-2.939895	0.0039
D(INDPRODINDEX_(-1))	0.038683	0.081855	0.472575	0.0163
D(INDPRODINDEX_(-2))	0.020169	0.080848	0.249465	0.0403
D(INDPRODINDEX_(-3))	0.581178	0.079909	7.272962	0.0000
D(INDPRODINDEX_(-4))	-0.048125	0.093852	-0.512774	0.6089
D(INDPRODINDEX_(-5))	0.143795	0.091488	1.571740	0.1183
D(INDPRODINDEX_(-6))	-0.043514	0.082901	-0.524895	0.0556
D(INDPRODINDEX_(-7))	-0.164216	0.082801	-1.983268	0.0493
D(INDPRODINDEX_(-8))	-0.047508	0.073193	-0.649086	0.0517
GDP__(-1)	-0.035017	0.017331	-2.020484	0.0451
D(GDP__(-1))	0.328231	0.076678	4.280629	0.0000

The unit root test in our model's dependent and independent variable values was put forth in the following analytical framework with the Dickey-Fuller test. The cumulative structural values were reached within the scope of a model in a fixed trendless that is that as related to the structural position. While this shows the cumulative values, it appears that the expression of each value of the dependent and independent variables within the framework of the unique unit root test is also significant. However, the stationarity distribution image of the series is important within the scope of the residual test graph distribution test as a time series in order to understand and monitor the stance in the series we use in the model. Graph 1 below shows the structural distribution of the distribution values of the time series used in the model within the scope of a time series and within the sample group of the time period, which we consider as a time period:



Graphic 1. Residual and Fitted Distribution of Series Stationary and Co-integration Appearance

A second test was needed to test the stop of the series, and a second test called the cointegration test was used to compare the numerical values of the independent and dependent variables. It reveals that the results of the cointegration test in the determinations are compatible with the results of the Unit Root test calculated within the scope of the Augmented Dickey-Fuller test. A cointegration test is a technical approach to variables, especially for the comparison of non-stationary time series. The cointegration test reveals that it is compatible with the probability significance values of the Dickey-Fuller test, which expresses the differences and delays in the presentation of the series by taking the difference of more degrees.

Cointegrating Equation:

$$\begin{aligned}
 D(\text{CONSASCH}) = & 15.730261569318 - 0.215779598216 * \text{CONSASCH} (-1) \\
 & - 0.017477108781 * \text{DOMINVD} ** \\
 & + 0.389553826267 * (\text{CONSASCH}) \\
 & - (-0.08099519 * \text{DOMINVD} (-1) + 1.80533206 * \text{GDP} (-1) \\
 & - 0.75359725 * \text{INDPRODINDEX} (-1) + 72.89967031) \\
 & - 0.162610912815 * \text{INDPRODINDEX} **
 \end{aligned}$$

Besides, it is possible to see our cointegration test determinations regarding this in Table 4 below:



Table 4. Cointegration test of Standard Deviation Values, and Comparison Cointegration Values

1 Cointegrating Equation(s):		Log likelihood	-1305.752
Normalized cointegrating coefficients (standard error in parentheses)			
CONSASCH_	DOMINVD_	GDP_	INDPRODINDEX_
1.000000	0.594126 (0.16969)	-5.450182 (0.91817)	2.722929 (0.51085)
Adjustment coefficients (standard error in parentheses)			
D(CONSASCH)	-0.100643 (0.03300)		
D(DOMINVD)	-0.023253 (0.03669)		
D(GDP)	0.023423 (0.00982)		
D(INDPRODINDEX_)	-0.059736 (0.02226)		

It is meaningful to compare some values, as seen in the table above, as a cointegration test for the verification of the econometric model and the verification of the stationarity of the time series. Especially in a time series in which the variability in consumer goods is accepted as a whole, it is seen that there is a decrease in the GDP value of "- 5.450182" with the increase in the lag length. This effect is compatible with the deviations related to the variables D(DOMINVD) -0.023253 and D(GDP) 0.023423 within the scope of domestic investments.

At the same time, it is understood that these variability values in standard deviations are compatible with the production index as the variability of D(INDPRODINDEX) -0.059736 and completes the cointegration. Indeed, the fact that the standard deviation value in the production index approximate national income has emerged quite close to each other and that this value creates an opposite variability within a variability associated with national investments, which also creates an opposite effect level, reveals the accuracy of the stagnation in our model.

3.2. Empirical Findings

After the establishment of our econometric model and testing that it would give meaningful results, the coefficient values revealed by the independent and dependent variables in the model and the determination of the coefficients of variability, especially on the variability of consumer goods, were carried out. At this stage, it reveals that it is primarily affected by national income, with the coefficient values revealed by the production indices for consumption goods and the variability of private consumption preferences.

It is understood that the significance values of the coefficient values, especially in the medium and long term, have quite striking effects on consumer goods. Within the framework of the model we have established, it is possible to express the coefficient values with the coefficient values of the dependent and independent variables in the following order:



Estimation Equation:

$$\text{CONSASCH} = \text{C}(1)*\text{CONSASCH}(-1) + \text{C}(2)*\text{DOMINVD} + \text{C}(3)*\text{GDP} + \text{C}(4)*\text{INDPRODINDEX} + \text{C}(5)$$

Substituted Coefficients:

$$\begin{aligned} \text{CONSASCH} = & + 0.784220401784*\text{CONSASCH}(-1) \\ & - 0.0174771087806*\text{DOMINVD}_ + 0.389553826268*\text{GDP} \\ & - 0.162610912815*\text{INDPRODINDEX} + 15.7302615693 \end{aligned}$$

Table 5. Effect values of independent variables and Meaningfully Criteria

Dependent Variable: CONSASCH_

Method: ARDL, Selected Model: ARDL (1, 0, 0, 0)

Sample (adjusted): 2007M02 2019M12; Included observations: 155 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
CONSASCH_(-1)	0.784220	0.049201	15.93922	0.0000
DOMINVD_	-0.017477	0.029674	-0.588971	0.0508
GDP__	0.389554	0.157910	2.466938	0.0148
INDPRODINDEX_	-0.162611	0.086576	-1.878237	0.0423
C	15.73026	3.655813	4.302808	0.0000
R-squared	0.728783	F-statistic	100.7657	
Adjusted R-squared	0.721551	Prob(F-statistic)	0.000000	
Log likelihood	-384.4853	Schwarz criterion	5.123791	

As seen in Table 5 above, it is seen that the independent variables have a different level of effect on the dependent variable. There is a structure in which it is significant that the effective value in GDP has a positive value of "0.389554". Namely, each unit increased value of GDP causes to increase as "0.389554" for consumption assets values (CONSASCH). Besides, it appears that the other criteria values are meaningful on the consumption assets variables. It should be emphasized that the positive national income effect here is short-term. However, it is observed that the value in the industrial production index (INDPRODINDEX) creates a negative effect as "-0.162611" and the domestic investments (DOMINVD) at a certain level as "-0.017477".

In other words, it is understood that an increasing value in each unit of national income investments and the effects of each unit of industrial production index increase on consumption goods as dependent variables create a contraction effect at the rates of -0.162611 and "-0.017477" respectively. After the short-term effects of this effect, the medium and long-term effects are neutral; however, it is seen that the long-term effects show a positive coefficient. It can be said that these coefficient values do not significantly affect the variability of consumption goods. However, the determination of the R-Squared value as "0.728783" as the coefficient of significance reveals that the variability of consumption goods is cumulatively significantly affected by other independent variables.

In addition, it is meaningful to question the variable authority of independent variables on consumption goods in the medium and long term, as changes in domestic investments and industry indices, and the variability effect of independent variables on consumption goods in the medium and long term. The aforementioned criteria effects levels can be seen in Table 6 below:



Table 6. Medium- and Long-Term Scale Effects of Independent Variables

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.245327	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66
			Finite	Sample:
Actual Sample Size	155		n=80	
		10%	2.474	3.312
		5%	2.92	3.838
		1%	3.908	5.044

As seen in Table 6 above, the criteria effect values of both variables in the medium and long term, as the domestic investment goods and industrial production index values, were determined based on the 5% significance value and significant striking findings were obtained. In both values, the effect of especially domestic national investments on consumption goods variability in the medium and long term is approximately "2.92"; It has been determined that the variable, which is the other variable, directly provides a positive contribution value of "3.838" as the variability of the industrial production index. Considering the significance values, it can be said that these values are the highest values in the medium and long term by comparing them with this standard deviation value. The fact that the values related to the error coefficients are higher in the "5%" significance frame compared to the error coefficient, as 3, also supports the current deviations in the "5%" significance value of five percent as current values. In the other words, it shows that the positive contribution values in the sample sizes also reveal a result stating that all independent variables in the model reveal a positive contribution level.

4. CONCLUSION

Differences in consumer goods variability in Turkey in recent years reveal that they are directly related to some other important dynamics related to economic growth. The consideration of consumption goods variables in a situation where consumer preferences are not in question represents an important approach of our model. It has been tried to express this difference with a structure based on the direct correlation of the variability of consumption goods with national income and economic growth. This phenomenon can be explained by different variability effects on the basis of consumer goods. It has been determined that the economic growth is primarily targeted and the contribution of the effect on economic growth in the consumption goods variable to economic growth as an accelerating effect has a direct positive effect. In other words, it is seen that each value increase in national income creates a positive contribution effect of approximately one percent (0.784220) in the consumption goods concept and creates an increase effect. On the other hand, it is seen that the effects of the variability in the industrial production index and domestic national investments on the concept of consumer goods are not very effective and their short-term effects are negative although they do not cause great deviations especially. In Turkey, if this fact is taken into consideration intended to the fiscal shocks process has put forth more meaningful empirical findings.

Therefore, especially in the fiscal shocks process after 2008, it should be emphasized that it is noteworthy that there is a probability coefficient where the medium and long-term effects are



positive, along with national investments the medium and long-term effects of the industrial production index. Namely, it appears that the numerical values of each variable in consumption goods are primarily in interaction with certain dynamics that are directly related to the national income variables and the level of current account deficits. Indeed, it is seen that the effect of the variability in consumption goods on the national income in the medium and long term is quite high, and it reveals that the economic growth efficiency. Especially in the variability that may arise after the financial crisis, is directly affected by an economic investment index based on consumer goods. The positive contribution value on the consumption and export goods investments that can be made for the medium and long-term investments, can also be explained as the positive contribution value of the national investments together with the positive cumulative effect values on the variability of national investments. This approach shows that the negative effect of the values obtained in the values of the independent two variables is very short-term and also especially directly related to the financial shocks. However, together with the short-term financial shocks, the national value of the negative production index coefficient values and the effect value on the national investments in the medium and long term support our empirical findings in this empirical model. And then, together with the middle-term financial shocks, it is seen that it makes a significant contribution to economic growth as a contribution value with an absolute positive effect.

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Annex 1.

Table 1. The Effect Locations of Restricted Constant and No-Trend Situation

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DOMINVD_	-0.080995	0.140679	-0.575743	0.5657
GDP__	1.805332	0.738949	2.443107	0.0157
INDPRODINDEX_	-0.753597	0.403948	-1.865580	0.0641
C	72.89967	8.086455	9.015035	0.0000

$$EC = CONSASCH_ - (-0.0810*DOMINVD + 1.8053*GDP - 0.7536 *INDPRODINDEX + 72.8997)$$

Table 2. Contribution Level of Prediction Evaluations and Model Accuracy Values

Forecast Evaluation

Sample: 2007M01 2019M12

Included observations: 156

Variable	Inc. obs.	RMSE	MAE	MAPE	Theil
CONSASCH	156	5.331883	4.319567	6.062061	0.037293
DOMINVD_	156	8.578163	6.988424	10.94542	0.065587
GDP	156	3.535149	2.357654	78.26213	0.336118
INDPRODINDEX	156	5.668912	3.318424	82.07682	0.403802

RMSE: Root Mean Square Error

MAE: Mean Absolute Error

MAPE: Mean Absolute Percentage Error

Theil: Theil inequality coefficient



SAVOURY FERN CHIPS AS AN AFFORDABLE AND NUTRITIOUS SNACK FOR LOW INCOME COMMUNITIES

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Abstract

The purpose of this project was to create a new recipe of ferns, a wild plant that grows abundantly, which can offer a new alternative of a cheaper and healthier snack for the low-income communities in Sabah, an island state in Malaysia. Majority of the low-income families were hit hard by the pandemic as many farmers, small business owners and employees lost their source of income and this resulted in extended deprivation of nutrients as many could no longer afford to buy food. Thus, this project aimed to create savory fern chips that can be made from basic ingredients like flour with fern as its main ingredient. Ferns grow wildly across the country but it is rarely consumed by the community due to its lack of aesthetic appeal and its limited economic value. However, the plant can serve as main source of food that provides nutrients to the locals if they are introduced to a recipe on how it can be made into a snack that costs little. This research will be conducted on a selected number of respondents who will sample the snack and rate it based on several criteria including taste, aroma, texture, appearance and its nutritious content.

Keywords: fern, snacks, nutrients, chips, low-income communities



EXPLORING GENDERED VULNERABILITY OF MIGRANT WOMEN- A CASE OF HO CHI MINH CITY

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Abstract

This research map and explain the complex vulnerabilities experienced by women rural dwellers in Vietnam who migrate to urban areas. Through a qualitative in-depth life story interview, this research captures the histories, stories, and experience of vulnerability of 15 informal sector migrant women workers in Ho Chi Minh City. To explain their vulnerability, I develop a theoretical framework which combines the theory of gender and power with insights from feminist political-economists and embed this within the concrete manifestation of hegemonic masculinity in contemporary Vietnam which is Confucianism. I demonstrate the depth and intersecting nature of the three strands of vulnerability through a sharing of their stories and conceptualisation of what these demonstrate. Social vulnerability is a potential key which leads to economic and physical vulnerability and this vulnerability stems from their hometowns. Due to cultural gendered norms and their intersection with state policy and political economy, the women migrants often face inequities in power and autonomy and are valued as the ‘lowest of the low’ in the social hierarchy. As a result, they are subject to complex forms of violence which intersect with the consequences of economic reform which has strengthened the informal economy and the demand for feminised, unregulated, and low paid labour. Perhaps the most pernicious form of this vulnerability is when the women come to internalise and naturalise their precarity and the sufferings they experience due to fate and their gender and class status. This research is the first of its kind in the Vietnamese case because other studies have tended to focus on a unidimensional understanding of vulnerabilities of female migrants. It also contributes to the development of more nuanced and multidimensional policies with the aim of reducing the vulnerability of women migrants and thus improving their quality of life.

Keywords: women migrants, vulnerability, hegemonic masculinity, Confucianism, Vietnam.



**RESEARCH FOR THE TRANSFORMATION OF LIVELIHOODS FOR WOMEN
THROUGH TOURISM DEVELOPMENT IN MARINE PROTECTED AREAS IN
CENTRAL VIETNAM**

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Abstract

Climate change impacts on coastal communities, especially marine protected areas, forcing women to change their livelihood strategies towards being less dependent on natural resources. The study assesses the transformation of livelihoods for women through tourism development in marine protected areas in Central Vietnam, thereby providing policy implications that contribute to women's livelihood transformation in these areas. Descriptive statistics and expert methods were used in the study. The results show that women in Marine Protected Areas are one of the active actors in conservation work, however, most of the women in MPAs lack knowledge and have no occupation, family was very early, they stayed at home as housewives, did not have jobs to generate additional income for the family and had to rely on their husbands working in the sea. From these results, the study proposes a number of policy implications that contribute to improving women's livelihoods in coastal protected areas in Central Vietnam.

Keywords: livelihood, women, Vietnam

1. INTRODUCTION

Vietnam is one of the countries with the advantage of the sea, a favorable geographical position located on the international maritime route, a deep-sea port, and conditions for maritime development, aviation, sea tourism, and fishing. With a coastline of 3,260 km, 1 million square kilometers of exclusive economic waters 3 times larger than the mainland, more than 3,000 islands, Vietnam has 28 direct coastal provinces and cities, under the central government, accounting for 42% of the land area and 45% of the national population (TMTuan, 2013).

Vietnam's rich marine resources are being overexploited. With a long coastline that is home to more than 11,000 marine species and at the same time supports tourism and fisheries, overfishing and loss of biological habitat are the main causes. to the gradual decline of marine ecosystem health (VDR 2011). Other causes include overfishing, illegal, unreported and unmanaged fishing (Pomeroy et al. 2009). The decline in coastal resources has resulted in economic losses, including reductions in catches and reductions in densities and numbers of species of high economic value (Nguyen Chu Hoi 2003, Nguyen Thi Thinh, 2006). Dieu Thuy and Symington 2008). These impacts are exacerbated in the context that Vietnam's economy is growing and heavily influenced by global climate change. Therefore, in order to protect the marine environment as well as the environment in general, the Vietnamese government has researched and established marine protected areas Marine Protected Area (MPA).

Vietnam's coastal areas are increasingly threatened by rising sea levels, storms, floods and droughts. The main livelihoods that will be most directly affected are fisheries (especially aquaculture), agriculture, tourism and shipping (Jeremy Carew-Reid, 2008, p. 7). About 58% of coastal livelihoods in Vietnam are based on agriculture, fishing and aquaculture (Peter Chaudhry and Greet Ruyschaert, 2007, p. 2), which are highly dependent on climate and water availability. This will directly affect coastal communities that are highly dependent on natural resources, especially



aquatic resources, to implement livelihood strategies.

There is a relationship between the degree of weather risk and the choice of alternative livelihoods to different degrees. As risks increase, people tend to choose more diversified, planned and sustainable livelihood strategies. Specifically, from traditional livelihoods that mainly rely on natural resources and marine resources, people carry out activities to improve livelihoods, diversify livelihoods, supplementary livelihoods and alternative livelihoods (possibly, as ancillary or non-agricultural livelihoods). Subsequent livelihood strategies aim at multiple goals such as: increasing income, minimizing risks, reducing dependence on resources, and developing stably and sustainably in the long term. The idea behind alternative livelihoods is to create an incentive for people to stop their current unsustainable livelihood activities and switch to more sustainable livelihoods. To do this, alternative livelihoods need to be more economically beneficial. (D.T. Diep, 2016).

Central Vietnam receives many big storms every year. Protected areas in Central Vietnam have attracted many economic sectors to participate in sustainable management and at the same time implemented community development activities to support local people living in the area when limited fishing activities. The role of gender, especially women in conservation work is very important, so it is necessary to conduct research and surveys to develop plans to improve capacity and the role of women in conservation. In particular, creating alternative income opportunities for women or diversifying income sources is a priority issue to be addressed (Nguyen Huy Dung, 2006).

2. RESEARCH METHODS

2.1. Related studies

A MPA is a resource management tool used to slow and ultimately reverse the decline of coastal ecosystems. Around the world, scientists have recognized the value of MPAs, especially strict protection zones, in improving ecosystem health, including the survival and development of fisheries (NCEAS 2001). Furthermore, MPAs help support alternative livelihoods by promoting sustainable use of coastal resources such as ecotourism (Agardy 1993). Science-based MPA planning is underway in many countries (as in Osmond et al. 2010) with positive results, benefiting the communities and ecosystems involved (Samonte et al. 2010, Palumbi 2002).

Marine protected areas (MPAs) aim to conserve marine biodiversity and better ensure the sustainable use of marine resources in the future. It must be said that, in order to achieve optimal success for a MPA, the government needs to work with the communities in the MPAs to devise a conservation approach that helps to reduce the community's dependence on natural resources, increasingly exhausted while still able to develop livelihoods in a sustainable way (Vietnam National University, Hanoi, 2005).

2.2. Research Methods

Expert method and survey of MPA residents were carried out in the study. The experts (10 experts) are knowledgeable about the protected area, job change and livelihood, especially tourism development in marine protected areas. Regarding the survey of people, the author selected 140 people from two protected areas in Central Vietnam (Cu Lao Cham, Nha Trang Bay), 145 questionnaires were distributed, the results had 140 respondents.

Most of the interviewees had knowledge of MPAs, livelihoods, tourism and data collection experience. The selected interviewers were trained before conducting the questionnaire to familiarize them with the questionnaire. The survey uncovered a number of common problems for marine protected areas. It takes a long time to reach the household head who can provide accurate information in the questionnaire.

The data collected may be affected by some perceived biases of the respondents, even though the questionnaire was carefully prepared. Coastal people usually don't keep records, so one has to recall based on memory, when asked for some details about past activities. Re-checking the data during and after the survey did not find any wrong or impossible answers, so the answers of the people of the Central Vietnam MPA can be trusted.



3. RESEARCH RESULTS AND DISCUSSION

3.1. Central Vietnam Marine Protected Area

Vietnam Marine Protected Area

After many times of planning and supplementing management regulations, on May 26, 2010, in Decision 742/QĐ-TTg, the Prime Minister of Vietnam approved the planning of the system of marine protected areas in Vietnam to 2020 with a list of 16 marine protected areas. By 2020, Vietnam has established and put into operation a network of 10 out of 16 marine protected areas in Vietnam, including: Cat Ba, Bach Long Vy, Con Co, Cu Lao Cham, Ly Son, Nha Trang Bay, Nui Chua, Hon Cau, Con Dao, Phu Quoc. 6 Marine protected areas that have completed detailed planning and are completing documents for planning approval are: Hon Me, Hai Van - Son Cha, Phu Quy, Nam Yet, Co To, Tran Dao. According to statistics of the General Department of Seas and Islands of Vietnam (2020), this system of marine protected areas occupies an area of about 0.24% of Vietnam's sea area, owns nearly 70,000 hectares of coral reefs, 20,000 hectares of coral reefs, seagrass beds and a part of mangroves; most of the breeding grounds, spawning grounds and habitats of economic aquatic species; nearly 100 endemic and endangered species. All 16 marine protected areas of Vietnam are concentrated in coastal waters, the furthest is Nam Yet marine protected area in Truong Sa island district, Khanh Hoa province.

Research by the Institute of Strategy, Policy on Natural Resources and Environment (Ministry of Natural Resources and Environment, 2020) shows that marine resources in Vietnam are currently being over-exploited, lacking in sustainability; The destruction of coral reefs, seagrass beds and mangroves is increasing in many places. According to estimates, the whole sea area of Vietnam from Quang Ninh province to Kien Giang province is about 40-60% seagrass, 70%; Mangroves have disappeared and about 11% of coral reefs have been completely destroyed, unable to recover on their own. Over the past 20 years, Vietnam has lost 12% of its coral reefs; another 48% of coral reefs are in a state of serious deterioration. The area of coral reefs lost is concentrated mainly in inhabited areas such as Ha Long Bay, central coastal provinces and some inhabited islands of Truong Sa archipelago, Vietnam.

According to current studies and assessments, the existing biodiversity conservation model in Vietnam's waters only reaches 0.4% of the marine protected area. Meanwhile, the target set out in the Strategy for Sustainable Development of Vietnam's Marine Economy to 2030, with a vision to 2045, is to cover at least 4% of the marine protected area by 2030 and 6% of the marine protected area by 2030, marine conservation by 2045. Therefore, it is necessary to add a new approach to marine biodiversity protection in Vietnam. In order to realize a mobile marine protected area, Vietnam needs to conduct research now to develop a set of criteria and establish a system of portable marine protected areas in Vietnam's waters, especially in the coastal areas, offshore waters close to the Spratly and Paracel Islands.

Central Vietnam Marine Protected Area

For nearly 10 years, each protected area in central Vietnam has had different ways of dealing with the relationship between conservation and marine economic development. In this study, focus on 2 marine protected areas, Cu Lao Cham and Nha Trang Bay.

Nha Trang Bay, Khanh Hoa Province and Cu Lao Cham, Quang Nam Province are the first two marine protected areas of Vietnam. For nearly 10 years, each protected area has had different ways of dealing with the relationship between conservation and marine economic development. Many localities have strongly developed tourism but have not taken into account conservation and economic development. Therefore, it is necessary to join hands and unify actions in the conservation and sustainable development of the marine economy.

+ Cu Lao Cham Marine Protected Area, Quang Nam Province, Vietnam

Cu Lao Cham Marine Protected Area, 15 km from Hoi An, in Quang Nam province. Established in 2004, this MPA includes 8 islands. Separation buoys are used to divide the MPA into four zones: strict protection zone, sustainable development zone, ecological restoration and tourism development. The strictly protected zoning extends only a few hundred meters from the coast. The

severe protected zone fragmentation buoys are designed to house submersible companies operating in the area and to reduce the negative impact of boat mooring on sensitive habitats, sensations of coral reefs. When the Cu Lao Cham marine protected area was established, 80% of the marine population in Tan Hiep island commune, Hoi An city, Quang Nam province were very worried about the restricted fishing. However, when the NR deploys sustainable livelihoods to support people to change jobs, now only 40% of the population lives on fishing, the rest switch to services, tourism, and seafood processing.

When Cu Lao Cham Marine Protected Area was formed, coastal people were also greatly supported by the MPA to switch to tourism. Recognized by UNESCO as the world biosphere, marine conservation was formed, when the tourist population to Cu Lao Cham Island was crowded, the people developed very strongly from exchange, trade and development of professions. In 2009, UNESCO recognized Cu Lao Cham as a world biosphere reserve. This organization highly appreciates the community's role in marine conservation. The protected marine environment helps Cu Lao Cham become a bright spot for tourism in Quang Nam province. Accordingly, income from tourism has significantly changed the lives of people on the island, and the situation of fishing in the core zone of the reserve has decreased. People benefit from conservation work, considering the marine environment as part of their property. After the MPA was assessed as successful in co-management, the Quang Nam Provincial Committee also had a policy of allocating an area in the MPA to the authorities and communities of Bai Huong village, will manage and exploit the entire water surface area.

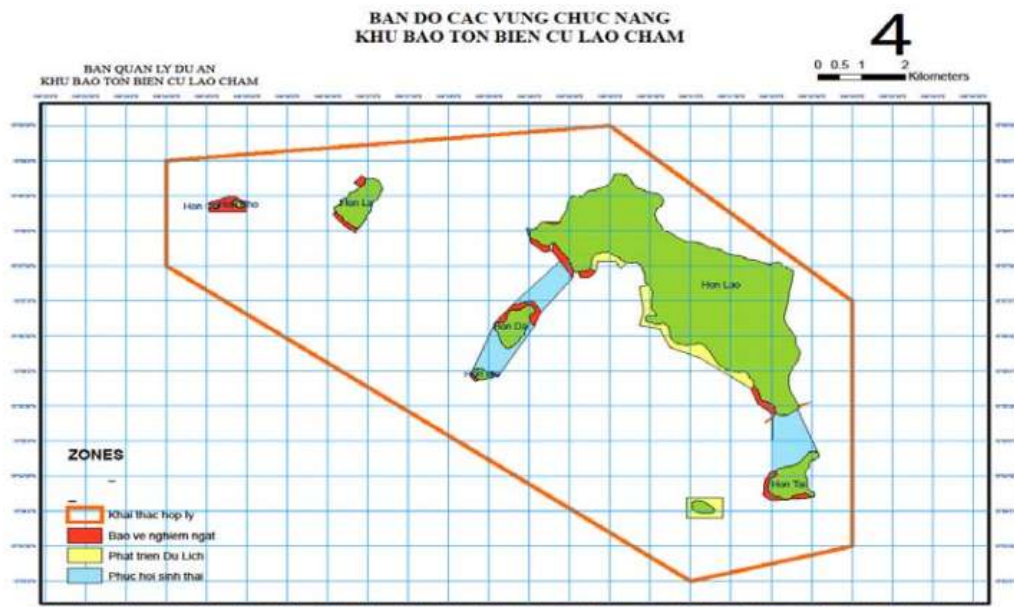


Figure 1: Map of Cu Lao Cham Marine Protected Area with different subdivisions

Source: <http://culaochamma.com.vn/>

+ Nha Trang Bay Marine Protected Area, Khanh Hoa Province, Vietnam

Nha Trang Bay Marine Protected Area includes islands such as Hon Tre, Hon Mieu, Hon Tam, Hon Mot, Hon Mun, Hon Cau, Hon Vung, Hon Rom, Hon Noc and surrounding waters. The area is about 160 km² including about 38 km² of land and about 122 km² of water around the islands. Since 2001, Hon Mun Marine Protected Area (later renamed Nha Trang Bay Conservation Area) - the first marine conservation project in Vietnam was officially born. Nha Trang Bay is one of the most important areas for marine conservation and marine tourism in Vietnam. Coral reefs of international importance and biodiversity are among the highest in Vietnam with more than 350 species of reef-building corals including 40 new species recorded for Vietnam, over 230 species of reef fish, 112 species of molluscs, 112 species of crustaceans, 27 species of echinoderms, 69 species of seaweed and 7 species of seagrasses.. (Nha Trang Bay Management Board, 2020).

Meanwhile, Nha Trang Bay Conservation Area was allowed by Khanh Hoa Provincial People's

Committee to invest in too many large tourism projects in Nha Trang Bay, creating pressure on the reserve. Over the past 10 years, Nha Trang Bay has had nearly 100 hectares of sea surface filled up for urban areas and tourism. Leveling activities have destroyed a very large area of coral. Dozens of sewage drains pour directly into the bay, polluting the marine environment. Livelihood support programs have expired, and coordination mechanisms are still confusing. Management mechanism, coordination mechanism is not clear, there are many contradictions, making it difficult for marine conservation agencies to implement.



Figure 2: Boundaries of Nha Trang Bay Marine Protected Area

Source: <http://www.nhatrangbaympa.vnn.vn/>

3.2. Livelihood for Central Vietnam Marine Protected Area

- Expert survey:

The combined expert results from the questionnaires show that unsustainable fishing and financing are the biggest problems facing MPA managers. However, the responses also indicate that overall, marine species populations are increasing again and strong efforts have been made to improve management in the MPA. Both MPAs have been established with management plans and most have conducted baseline surveys and regularly conducted internal monitoring.

- Survey of households in marine protected areas

The survey results of 140 samples of the study show that the main economic activity in the MPA is fishing, with 65.32% of the household heads being fishermen. Most of these fishermen have no other economic activities, so they depend a lot on the results of their catch. For 34.68% of non-fishing households, their main activities are aquaculture, small trading and other side activities. Agricultural activities (including animal husbandry) account for only a small proportion (of which men engaged in aquaculture accounted for 26.1%, women accounted for 6.25%). The level of education in the island communities is very low, 1% have a university degree (male), the primary level accounted for 90.32% (male) and 75% (female).

Table 1: Demographic survey results of local population in Central Vietnam MPA (Unit: %)

	Male	Female
1. Education level of household head		
Don't go to school	0.81	0
Level 1	90.32	75.00
Level 2	8.06	25.00
Level 3		
Short-term apprenticeship		
Intermediate		
College, university	0.81	
After university		
2. Main occupation		
Fisheries	65.32	
Aquaculture	26.1	6.25
Tourism	3.23	25.00
Is different	4.84	68.75



(Source: Investigation results)

Most of the women in the MPA lack knowledge and do not have a job, so they get married very early (about 16 years old). Therefore, they stay at home as housewives, do not have jobs to generate additional income for the family, and have to rely on their husbands working in the sea. Due to the decrease in catches, the family's economic situation is increasingly difficult. Furthermore, due to the stereotype of “respecting men and despised women”, women are dependent and have little role in the family in coastal communities.

The reserve has engaged all economic sectors to participate in the sustainable management of the bay and at the same time implemented community development activities to support local people living in the area while limiting activities fishing in the bay. Research results show that the role of gender, especially women in conservation work should be very important. Therefore, it is necessary to have a plan to strengthen the capacity and role of women in conservation work. In particular, creating alternative income opportunities for women or diversifying income sources is an issue that needs to be prioritized to be addressed.

The study also shows that livelihood strategies for Central Vietnam MPA need to focus more on creating a favorable economic environment for the community, not just on small income generating projects female individuality. An enabling environment is a more inclusive approach that aims to improve shared livelihood resources for households and communities as a whole, reducing insecurity and increasing living conditions for them with multiple new livelihood options. This form of livelihood support needs to be prioritized over small individual business ventures, because it is less risky and focuses on helping communities improve their own livelihoods. This approach also allows, in conjunction with poverty reduction programs and other important livelihood activities, to increase the accessibility of people and communities to these programs.

Building an alternative source of income for individual women can help shape a successful livelihood strategy in the Central Vietnam MPA site. It allows testing, testing and improvement of income generating projects targeting specific segments of the community (e.g. fisherman households) whose livelihoods are completely dependent on the resources being degraded, depletion (unsustainable), and/or adverse impacts on biodiversity. A range of factors – including project implausibility, inadequate credit systems and mechanisms, lack of sound administrative and financial management, lack of rigorous evaluation of proposals, lack of project effectiveness monitoring, poor community awareness, ineffective organization and support, and a host of other issues – creating barriers and impediments to success and sustainability of project. Therefore, new implementation initiatives should only be implemented after a thorough and thorough evaluation.

Livelihood support during the MPA period in Central Vietnam is more beneficial if a consistent and systematic approach is taken to evaluate, select and implement projects, as well as monitor progress.

On the operational front, the implementation initiative needs to be guided by the community and the community must play a leading role in all steps. In this regard, it is necessary to establish a local Community Organization that is representative of the target groups. These community organizations need training and capacity building to promote, coordinate, manage projects and prepare proposals. An Operational Manual should be developed to guide Community Organizations and their partners as they participate in the process. Care should be taken to ensure that the CSO is truly representative of the community and represents the interests of different socioeconomic groups, especially the target group. It should be noted that the funding from the Fund is not used for other activities such as spending on existing projects and plans of the state.

Credit provision is considered a key livelihood support activity. This study suggests that the Women's Union should be given a role as a partner agency with conservation projects to manage activities that provide credit to MPA sites. With an extensive network of facilities, the Women's Union has an active role in the community, takes responsibility and effectively manages to ensure that the target group can access and use credit. Banks and other small credit institutions operating at higher levels (districts, provinces) often do not understand the nature of the community, as well as



do not have a mechanism to distinguish between targeted and non-direct beneficiaries, directly or indirectly participate in MPA management like the Women's Union

In general, from the experiences learned in the Central MPA of Vietnam, the credit mechanism needs to be better focused on the target beneficiaries (ie the group with the most precarious life and most affected by regulations, nature and zoning of the MPA). Criteria for borrowing should be established to ensure that credit is used in a manner consistent with the MPA's objectives. Credit can be provided concurrently with training and implementation of services and other forms of support towards the development of a “favorable economic environment”, piloting promising implementation initiatives, meet the defined criteria. It is necessary to train the staff of the Women's Union so that they have the necessary management skills for the credit-savings and loan assistance program.

Livelihood projects often do not or do not pay enough attention to the target beneficiary groups. The target audiences in livelihood support, whether in the form of creating a favorable economic environment or implementing initiatives, must be households or individuals most affected by the MPA, or those who are engage in fishing practices that threaten biodiversity and the long-term sustainability of resources.

Some MPAs already have a significant source of income from ecotourism. Tourist numbers are growing in most MPAs, and there are many job creation opportunities, while conserving resources due to a focus on high-end tourists, who place great importance on places with a healthy environment, the field is clean and undamaged. This is also the case with the Thai marine tourism industry, which has been very successful, especially in attracting returning tourists.

In fact, tourism activities are seasonal, combined with the increasingly obvious effects of climate change, leading to more difficulties for coastal communities. Seasonality has a great influence on fishing activities, fishery services, agriculture, construction and tourism. In addition, the erratic weather, especially frequent storms along the coast, also causes serious losses to coastal communities in terms of people, property and infrastructure. In addition, tourism infrastructure in coastal provinces is generally limited, service quality is still low, tourism promotion is still weak, and products are not diversified and attractive. In the context of the risk of pollution and destruction of the marine environment, Vietnam's coastal provinces are facing great challenges that need to be dealt with and need new livelihood solutions. Although people have initially taken some measures to respond to climate change, they are coping rather than adapting to the livelihood risks posed by climate change. Researching the impact of climate change on coastal provinces is in dire need of supportive policies from the state to achieve sustainability in livelihoods for coastal communities in the context of climate change.

4. CONCLUSION



Ecotourism in Central Vietnam is studied from the perspective of people's livelihoods participating in tourism and local conservation, which has shown many advantages in analyzing the current development status of this activity - specifically, may be the role of women. Ecotourism in Central Vietnam has been making a great contribution to the socio-economic development as well as the conservation of the locality. At the same time, the current development status of ecotourism in Central Vietnam and conservation have shown close relationships, changes in the quality of conservation will inevitably affect tourism and vice versa again.

The study results also suggest some policy implications for livelihood development in marine protected areas in Central Vietnam: (i) Building gender capacity for women and men, allocating adequate resources finance and human resources and ensure budget for gender sensitive issues in MPA programs and plans in Central Vietnam; (ii) MPA actions in Central Vietnam at all levels should be developed in a participatory manner with all stakeholders, including men and women of all ages and levels; (iii) Promote communication and awareness raising on gender equality and policy frameworks in the MPA to different authorities at different levels, including through training programmes; (iv) Ensure the collection and synthesis of sex-disaggregated data and gender-related information at the local level.

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MCQS IN SOCIAL SCIENCES: CHALLENGES AND NEGOTIATIONS

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Abstract

The paper traces the increasing use of Multiple Choice Questions(MCQs) in Social Sciences as a means for assessment and its widespread implementation at various educational levels in India. Drawing upon national level examinations conducted through this mode, the paper reviews arguments for and the contestations on the application of this assessment form. The paper addresss how a teacher-practioner could address these challenges and negotiate its limitations, by deliberating on ways to frame questions such that validity of the test as well as nature of social sciences are not compromised.

Keywords: 3-6 words. MCQs, Social Sciences, Assessment, Teacher practioner, Educational Sciences



WOMEN WELL-BEING IN INDIA: AN APPLICATION OF SEN'S CAPABILITY APPROACH

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Abstract

Sen's capability approach characterizes well-being as a rich and multifaceted concept. He emphasized on the importance of considering the opportunity of transforming the characteristics of available resources into functioning rather than the possession of resources.

The present paper provides a range of indicators reflecting the well-being of Indian women and enlightens the several basic functionings, such as food intake, educational attainment, asset ownership and reproductive health affecting well-being of Indian women.

The paper uses data collected by the National Family Health Survey (NFHS-4), and applied factor analysis method on a set of variables to highlight basic functioning. It intends to find out the effect of a set of factors, which includes the household and individual characteristics along with the social variables, on the level of achieved functionings by applying logistic regression models.

This study contributes significantly to the literature by focusing on the achieved functioning of women who are currently breastfeeding and their perception on domestic violence. The breastfeeding women have better access to food compared to their counterpart and have limited freedom to mobility, but enjoy better level of overall well-being than non-breastfeeding women. The study concludes that the likelihood of women being intolerant to domestic violence is more for Hindu women as compared to Muslim or Christian women, and for unmarried women in comparison with the married women. Also, the women belonging to female-headed households are more likely to have better reproductive health than male-headed households but less likely to have access to a better quality of life goods than the latter.

It concludes that individual and societal factors affects the well-being of an individual, which are further determined by functionings. It is important to look for factors constraining the opportunity to achieve, what an individual value, and provide more freedom to them.

Keywords: Capability Approach, Gender, functionings, Domestic violence



GAZIANTEP GASTRONOMİSİNE KARŞILAŞTIRMALI BİR BAKIŞ

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Özet

Boş-zaman rekreasyon açısından belirli bir destinasyonu ziyaret eden turistler için yerel lezzetlerin en güzel olanlarını tatmak, en önemli rekreatif faaliyetlerden biri olarak karşımıza çıkmaktadır. İlgili destinasyonun mutfak zenginliği açısından, çekiciliğinin artması, marka kimliğinin önemli bir unsuru olması sebebiyle, Gaziantep'in gastronomisi ve eşsiz yemekleri ile tanınan bir şehir olması, gastronomi açısından üzerinde akademik çalışmalar yapılması ve literatüre çalışmalar katılması gereken önemli bir husustur. Bu araştırmada gastronomi kavramını boş-zaman rekreasyon açısından ele alınmış, Gaziantep'in mutfak kültürünü yeniden keşfetmekle birlikte, Gaziantep'te yöresel lezzetlerin oluşturduğu unsurları daha iyi anlamaya çalışmak amaç edinilmiştir. İlk uygarlıkların doğduğu Mezopotamya ile Akdeniz arasında yer alan ve hareketli bir metropol olan Gaziantep, çeşitlilik ve çok kültürlülük ile karakterize olmuş, zengin bir tarihe sahiptir. Roma'dan Osmanlı'ya, Hititlerden Asurlulara kadar pek çok medeniyete ev sahipliği yapan Gaziantep, kendine has mutfağını şekillendiren kültürlerin kaynaştığı bir potaya dönüşmüştür. Kullanılan tekniklerden, kullanılan malzemelere ve tariflere kadar, Gaziantep'te yeme-içme faaliyetine katılmak gerçekten sıra dışı bir faaliyettir. Gaziantep mutfağı dört ana unsur tarafından şekillendirilmiştir. Bunları coğrafi konum, iklim, kaynak ve kültür şeklinde sıralayabiliriz. Özellikle Gaziantep'in Halep'e giden eski İpek Yolu üzerinde stratejik bir konumda bulunması ve Akdeniz ile Mezopotamya'nın harika karışımı olan yemeklerin Türk, Arap, Hitit ve Asur mutfaklarının canlı ve nadir bir karışımından etkilendiği anlamına gelir. Gaziantep'in gastronomik mirasına sayısız medeniyetler tarafından katkıda bulunmuştur. Lakin 2. Dünya Savaşı'ndan bu yana yaşanan en büyük sivil krizlerden biriyle karşı karşıya kalmıştır. Tarihi boyunca birçok göçle zenginleşmiş ve muazzam bir yemek kültürü oluşturmuş bir şehir olarak Gaziantep, mültecilere açık kollarla karşılık vermiştir. Bu açık yürekli mantradan etkilenen yerel mutfak hakkında ise daha fazla araştırma yapılması elzemdir.

Anahtar Kelimeler: Gastronomi, Gaziantep Gastronomisi, Gaziantep Yöresi, Gastronomi ve Gaziantep

A COMPARATIVE LOOK AT GAZIANTEP GASTRONOMY

Abstract

Especially for tourists visiting a particular destination, tasting local flavors is often a separate and important motivation. Since Gaziantep is a city known for its gastronomy and unique dishes, due to the increasing attractiveness of the relevant destination in terms of culinary richness and being an important element of brand identity, it is a matter that academic studies should be conducted, and studies should be added to the literature in terms of gastronomy. In this research, it is aimed to re-discover the concept of gastronomy for Gaziantep, and to try to better understand the elements of Gaziantep comparative local tastes. Gaziantep, a bustling metropolis located between Mesopotamia and the Mediterranean, where the first civilizations were born, has a rich history characterized by diversity and multiculturalism. This city, which has hosted many civilizations from the Romans to the Ottomans, from the Hittites to the Assyrians, has become a melting pot of cultures that have



combined and shaped its unique cuisine. From the techniques used to the ingredients and recipes used, food in Gaziantep is truly extraordinary. Its cuisine is shaped by four factors; geographic location, climate, resource, and culture. A strategic location on the old Silk Road to Aleppo and the wonderful mix of Mediterranean and Mesopotamia means the food is influenced by a vibrant and rare mix of Turkish, Arabian, Hittite, and Assyrian cuisines. Influencing all this, astronomy in Gaziantep underlines the diverse and diverse nature of the city. Countless civilizations have contributed to its legacy, so today it has responded with open arms to refugees as a city that has historically been enriched by immigration, facing one of the worst civil crises since World War II. Influenced by this lighthearted mantra, local cuisine is consumed communally, and further research is essential.

Keywords: Gastronomy, Gaziantep Gastronomy, Gaziantep Region, Gastronomy and Gaziantep

INTRODUCTION

In this research, it is aimed to re-discover the concept of gastronomy for Gaziantep, and to try to better understand the elements of Gaziantep comparative local tastes. Gaziantep, a bustling metropolis located between Mesopotamia and the Mediterranean, where the first civilizations were born, has a rich history characterized by diversity and multiculturalism. This city, which has hosted many civilizations from the Romans to the Ottomans, from the Hittites to the Assyrians, has become a melting pot of cultures that have combined and shaped its unique cuisine (Özdemir, 2018).

Especially for tourists visiting a particular destination, tasting local flavors is often its own and important motivation. Gaziantep being a city known for its gastronomy and unique dishes, given the increasing attractiveness of the destination in question in terms of culinary richness and as an important element of brand identity, it is a concern to conduct academic studies and add studies to the literature on gastronomy (Arslan, 2010). From the techniques used to the products and recipes used, it is time to eat in Gaziantep. Gaziantep's cuisine is shaped by four factors: Alignment, Climate, Resources and Culture. Its strategic location on the ancient Silk Road to Aleppo means that the Mediterranean and Mesopotamia are within easy reach, and the cuisine is influenced by the lively and rare combination of Turkish, Arabic-Hittite and Assyrian. Gaziantep's gastronomy, which has influenced all of this, highlights the diverse and varied nature of the city (Williams & Omar, 2014). Countless civilizations have contributed to its heritage, so that today, as a city historically enriched by immigration, it responds with open arms to refugees facing one of the worst civil crises since World War I II. Influenced by this lighthearted mantra, local cuisine is commonly consumed and further research is essential (Alonso & Liu, 2011).

1. Local Tastes and Gastronomy

Tasting local delicacies, especially by people or tourists from other regions, is an important event for visitors to this destination. For these reasons, the attractiveness of the culinary richness and brand awareness of this region or destination are increasing. According to the results of this region for tourists visiting the above particular destination, gastronomic identity consists of several dimensions (Akgöl, 2003):

- Gastronomic culture and reputation
- Food quality,
- Gastronomic facilities and



- Gastronomic activities.

2. Gastronomy with the example of Gaziantep

Gaziantep is an important Turkish city in terms of gastronomy and unique dishes and is most frequently mentioned in the literature. Exploring the concept of gastronomic identity, trying to better understand its components using Gaziantep as an example, and examining the differences between tourists and locals in relation to the gastronomic identity of this city, although similar studies have been conducted in the literature, is a topic that needs further investigation and research. According to the results of the research, the evaluation of the following points regarding gastronomic identity supports the explanation we mentioned in the first article (Aksoy & Sezgi, 2015):

- Gastronomic culture and reputation,
- Food quality,
- Gastronomic facilities and
- Gastronomic activities.

Moreover, it is no coincidence that there are some differences in the quality and evaluation of activities among both tourists and locals. This is due to the fact that local delicacies are the subject of motivation to be sampled. The fact that Gaziantep is known for its gastronomy and unique dishes makes it imperative to discover the gastronomic concept and make it the subject of further investigation if necessary (GPDCT, 2019).

3. Preserving the core of traditional gastronomy

Gaziantep, which has made it its mission to protect the concept of the core structure of traditional cuisine culture and does not compromise in the complete fulfillment of this mission, was named the City of Gastronomy in the field of gastronomy by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in December 2015. This situation even goes as far as Gaziantep being included in the Creative Cities Network. The traditions, customs and beliefs of the people of Gaziantep play an important role in shaping the culinary culture. It is useful to emphasize that the special foods and presentation styles of Gaziantep's special days have a different style and flavor, from the past to the present. The relationships strengthened by the gathering of people on special days enhance the sense of unity and togetherness. In this context, the meals and tables prepared for special occasions require more attention and care as part of the above culture (Koçoğlu, 2019).

4. The concept of destination in relation to local cuisine

The concept of destination has become one of the most important tourism activities for tourists when it comes to experiencing local food, and it has become information used together with this term for gastronomy (Özdemir & Kaya, 2011). In terms of marketing, destination also includes information about the stronger presentation of local dishes, the fact that they can be highlighted with more differences and thus attract more tourists. On this basis, the perspectives of domestic and foreign tourists visiting Gaziantep express the difference that we have mentioned in some points. It is right to list the points that are important for evaluating the perception of food regarding this destination and it will be constructive for future literature studies (Birdir & Karakan, & Çolak, 2015):

- Cultural experience based on perception of local cuisine,
- Restaurant service,
- Taste,



- Health and hygiene, variety and
- Table design.

5. Side Factors in Gastronomy and Gaziantep Example

Incidental factors in the restaurant industry and the example of Gaziantep. Tourist demand for local taste experiences at destinations and the availability and quality of accommodation facilities are also important for the development of gastronomic tourism. At this stage, tourism enterprises should also reflect this awareness in their facilities for gastronomic tourism, both for domestic and foreign tourists (Buhalis, 2000).

Today, the tourism sector, in conjunction with the food and beverage sector, has led to the emergence of the hospitality industry and its understanding as a people-oriented sector. Accommodation, catered or not, generally prefers to eat out. This brings to the fore the phenomenon of recognizing and tasting the local dishes of the region. In other words, the local dishes of the destination have become an important tool to get to know and learn more about another culture (Charters & Knight, 2002).

6. Conclusion and recommendations

The need to present the richness of Gaziantep's regional cuisine in the media is the first of the conclusions and recommendations. It is important for the region in question to take advantage of the opportunities available so that gastronomic tourism becomes more important. Separate from this is the question of whether this task should be undertaken by the public. In other words, it is clear that in addition to the locals, experts, academics and the power of the state should be more involved in this regard.

- As far as gastronomic tourism and its development in Gaziantep is concerned, research, studies and projects should be carried out at national and international levels,
- National and international publications should be produced to promote gastronomic destinations in Gaziantep, Panel discussions, workshops and seminars should be organized to promote gastronomic tourism in Gaziantep and attract the attention of local and foreign tourists,
- National and international food and gastronomy festivals should be organized to introduce gastronomic destinations in Gaziantep to tourists.



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MODERN İPEK YOLU PROJESİ'NİN BÖLGESEL ENTEGRASYON KAPSAMINDA TÜRKİYE VE ORTA ASYA ÜLKELERİNE ETKİSİ

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Özet

Tarihi, ilk çağa kadar uzanan İpek Yolu, Doğu ve Batı medeniyetleri arasında ulaşımın sağlandığı yegâne güzergâh olmuştur. Tabiatın ve iklimin sunmuş olduğu geniş vadi yatakları içerisinde kervanların konaklamalarına olanak sağlayan bu yol, çağlar boyunca Çin, Ortadoğu ve Batı medeniyetleri arasında ulaşım ve ticaretin yapılmasına olanak sağlamış ve medeniyetler arasındaki kültürel alışverişin yapıldığı en önemli bağlantı yolu olmuştur. Bu çalışmada İpek Yolu'nun tarihçesi, modern İpek Yolu'nun Türkiye ve Orta Asya Türk devletlerine şimdi ve gelecekteki katkıları ile bölgesel bütünleşme kapsamındaki etkileri çeşitli coğrafi yöntem ve teknikler kullanılarak incelenmiştir.

Günümüzde yeniden canlandırılmaya çalışılan tarihi İpek Yolu'nun bu yeniden yapılanma (*Bir Kuşak Bir Yol Projesi*) sürecinde beş ilke - a) parasal dolaşımın artırılması, b) karayolu bağlantılarını geliştirme, c) engelsiz ticareti teşvik etme, d) politika iletişimini hızlandırma, e) insanlar ve toplumlar arasındaki iletişimi artırma- ana hedef olarak belirlenmiştir. Bu fırsatlar doğrultusunda Modern İpek Yolu Projesi, Türkiye ile Orta Asya arasındaki ticari ilişkilerin artmasında ve bölgesel bütünleşmenin sağlanmasında oldukça önemli bir yere sahip olacaktır.

Modern İpek Yolu Projesi ile birlikte Türkiye'nin Orta Asya Türk Devletleri ile yeni bir dış politika geliştirmesi de bir zorunluluk olmuştur. Projenin sağlayacağı güvenlik ve istikrar ortamı, bugün Afganistan ve Pakistan'dan bölge ülkelerine yayılan terör ve şiddet eğilimlerinin birer tehdit unsuru olmaktan çıkmasını sağlayacak ve ekonomik refah artacaktır. Sağlanacak güvenlik ortamı, Orta Asya'nın işlevsel bir bölge olmasında bir kaldıraç görevi göreceği gibi, bölge ülkeleri ile Türkiye arasında ekonomik bütünleşmenin yaşanmasını da sağlayacaktır. Ayrıca Modern İpek Yolu Projesi, bütünüyle uygulamaya konulduğu takdirde Doğu-Batı arasında yapılacak olan ticaret kara, deniz, demir ve hava yoluyla gerçekleşecektir. Zira proje kapsamında Türkiye de dâhil olmak üzere pek çok ülke hızlı ve kolay ulaşımın yanında, ekonomi, gümrük, üretim, denizcilik, e-ticaret vb. gibi pek çok alanda çok sayıda projeye imza atmış ve atmaya devam etmektedirler.

Anahtar Kelimeler: Modern İpek Yolu, Türkiye, Orta Asya, Bölgesel Bütünleşme.



THE EFFECT OF THE MODERN SILK ROAD PROJECT ON TURKEY AND CENTRAL ASIAN COUNTRIES WITHIN THE SCOPE OF REGIONAL INTEGRATION

Abstract

The Silk Road was an ancient trade route that linked the Western World with the middle East and Asia. This road, which allowed caravans to stay in the wide valleys that nature and climate offered, provided transportation and trade between China, the Middle East, and Western civilizations for centuries, and was the main connecting road on which cultural exchanges between civilizations took place. In this study, the history of the Silk Road, the present and future contributions of the modern Silk Road to Turkey and the Central Asian Turkic States, and its implications within the scope of regional integration were examined using a variety of geographical methods and techniques

In the restructuring of the historic Silk Road (One Belt One Road Project), which is being revived today, five principles - (a) increasing the circulation of money, (b) improving road links, (c) promoting unimpeded trade, (d) speeding up political communication, (e) improving communication between people and societies - were set as the main objectives. In line with these opportunities, Modern Silk Road Project project will play a very significant role in expanding trade relations between Turkey and Central Asia and ensuring regional integration.

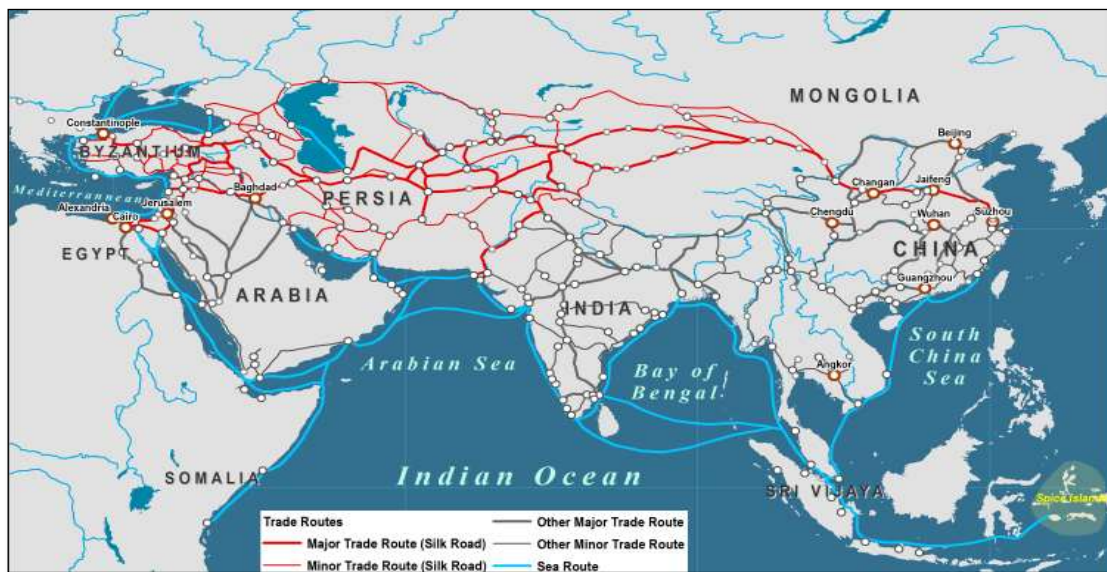
Together with the Modern Silk Road project, it has become a necessity for Turkey to develop a new foreign policy towards the Turkic states of Central Asia. The security and stability environment created by the project will ensure that terrorism and violence spreading from Afghanistan and Pakistan to the countries of the region will no longer be a threat and economic prosperity will increase. The emerging security environment will not only serve as a lever for the development of Central Asia into a functioning region, but also ensure economic integration between the countries of the region and Turkey. When the Modern Silk Road project is fully implemented, trade between East and West will take place by land, sea, rail and air. This is because under the project, many countries, including Turkey, have fast and easy transportation, as well as economy, customs, production, shipping, e-commerce and so on. They have signed many projects in many fields and will continue to do so.

Keywords: Modern Silk Road, Turkey, Central Asia, Regional Integration

INTRODUCTION

The use of the Silk Road, the trade route between China, the Middle East and the West, which today is being attempted to revive under the name of Modern Silk Road, dates back to the First Age. The Silk Road, whose history dates back to the First Age, was the only route between Eastern and Western civilizations. This road, which allows caravans to stay in the wide valley beds offered by nature and climate, has facilitated transportation and trade between China, the Middle East, and Western civilizations over the centuries, and has been the most important connecting route on which cultural exchanges between civilizations have taken place. In this study, the history of the Silk Road, the present and future contributions of the modern Silk Road to Turkey and the Central Asian Turkic States, and its implications in the context of regional integration were examined using geographic methods and techniques (Koray, 2017).

Figure 1: Historical Silk Road Map



Source: <https://nereye.com.tr/ipek-yolunun-ticaret-rotalari-eski-imparatorluklarin-birlesimi>

Five principles are important in this restructuring process (One Belt One Road Initiative) of the historic Silk Road that is being revived today. These are (Tuerdi, 2018):

- increasing the circulation of money,
- improving road links,
- promoting barrier-free trade,
- speeding up political communication,
- improving communication between people and societies has been set as the main objective.

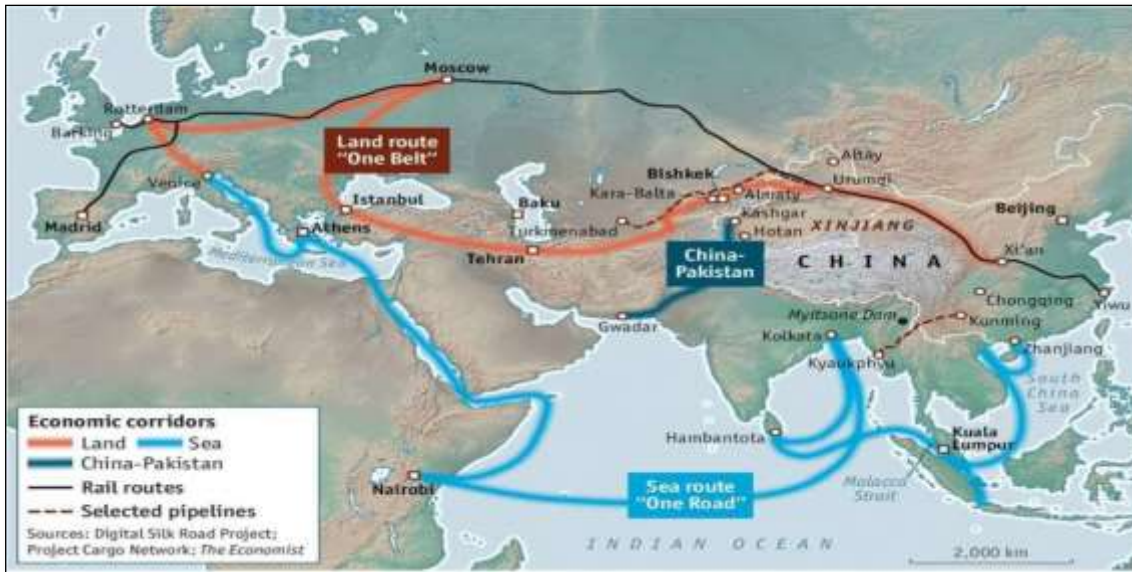
In line with these opportunities, the Modern Silk Road project will play a very important role in expanding trade relations between Turkey and Central Asia and ensuring regional integration. Therefore, with the modern Silk Road project, it has become a necessity for Turkey to develop a new foreign policy towards the Turkish states of Central Asia (Ukaragöl, 2017).

1. Economic and geopolitical implications of the Silk Road Project

The historical Silk Road allowed transfer between continents only through a road connection. However, this new project, which is being sought to be implemented, will use land, rail, sea and air routes. Many countries, including Turkey, have signed and are still in the process of signing various projects and plans in the fields of transportation, cargo, infrastructure, energy, communication, customs, software, economy and trade, industrial production, e-commerce and maritime transport within the framework of the modern Silk Road project. In particular, the security and stability environment created by the project will ensure that the trends of terrorism and violence spreading from Afghanistan and Pakistan to the countries of the region will no longer be a threat and economic prosperity will increase (Abbasova, 2019).

The security environment to be created will not only serve as a lever for the development of Central Asia into a functioning region, but will also ensure economic integration between the countries of the region and Turkey. When the Modern Silk Road project is fully implemented, trade between East and West will take place by land, sea, rail and air. This is because under the project, many countries, including Turkey, have fast and easy transportation, as well as economy, customs, production, shipping, e-commerce, etc. They have signed many projects in many fields and will continue to do so (İşıktaş & Duran, 2018).

Figure 2: Modern Silk Road Map



Source:

<https://www.21yyte.org/tr/merkezler/zyzyilin-konsepti-bir-kusak-bir-yol>

Impact of the Modern Silk Road project on Turkey and Central Asian countries in the context of regional integration (Kankavi, 2019).

2. Impact of the Modern Silk Road project on Turkey and Central Asian countries in the context of regional integration

It should not be overlooked that ensuring security and stability in Central Asia is also necessary for regional and global security and stability. The regional and global actors and the administrations of the Central Asian Turkic republics must be able to deal with different identities and interests by adopting a people-centered security approach instead of a state-centered security approach. In this context, it should not be forgotten that national, regional and global security are interdependent. Regional integration, on the other hand, can be developed in the form of a 'functional region' based on common goals such as economic integration, prosperity, democracy and integration with the West, as well as the concept of 'formal region', which should be developed through common identities such as 'Turkishness' or 'Islam'. As a regional development project, the modern Silk Road project gives Afghanistan a central role in the new trade route to be established between Asia and the West, like the historic Silk Road (Tezcan, 2014). Thus, Afghanistan, hitherto considered a barrier between Central Asia and South Asia, will now act as a bridge between the two regions. All Central Asian republics, especially Uzbekistan and Kazakhstan, support efforts to bring stability and open trade routes to Afghanistan. However, it is difficult to predict the extent to which an economic integration plan involving Pakistan, India and Bangladesh will successfully link Afghanistan, which is culturally part of the Central Asian geography, with Central Asia. We can conclude that economic development that integrates the region will depend on the level of private sector investment and jobs to be created, as well as substantial international support (Yılmaz, 2020). This project, formed on the basis of common interests, aims to combat organized crime, arms and drug smuggling, etc., which are increasingly spreading in Central Asia. is of great importance in addressing the problems. This situation is equally important in reducing the effectiveness of radical groups, which the Central Asian governments are determined to combat.

It is very likely that the modern Silk Road project will be a new foreign policy option for the Central Asian republics. If peace prevails in the region concerned, violence and terrorism emanating from South Asia, and especially from Afghanistan and Pakistan, could no longer pose a threat to Central Asia (Camgöz, 2017).

Historical linguistic and cultural integrity cannot prevent rivalries from history. Even if the rivalry between the Kazakh and Uzbek peoples is not very pronounced, competition at the leadership level



is one of the main factors hindering efforts to unify. Moreover, Uzbekistan, Turkmenistan and Tajikistan prefer to let the failure of unification initiatives stand. Kazakhstan, on the other hand, is the only country in the region that is fully opening up to the outside world and trying to integrate into the global order (Karadaş and the others, 2015).

Modern Silk Road Project; In ensuring regional and economic integration, i.e. economic prosperity, in resolving conflicts between the countries of the region, in preventing conflicts between ethnic groups, in stopping the acts of terrorism and violence emanating from Afghanistan and Pakistan, as a result of the change and transformation that the project will experience, and in the "functional region" of Central Asia. It can be a very important means of pressure. The most important Silk Road corridor for Turkey is the part of the railway project between Kazakhstan, Kyrgyzstan, Uzbekistan, Turkmenistan and Baku-Tbilisi-Kars, which we call the Turkish Republics. This road, which we can also call the Turkish Corridor, is one of the main arteries of the modern Silk Road project stretching from Beijing to London. It is said that this road, when completed, will affect world balances. This is because this route will be the modern trade, transport and logistics route connecting the three continents. The recent victory in Karabakh has further strengthened the links of this corridor with Turkey, Central Asia and the Turkish republics (Camgöz, 2017).

3. CONCLUSION

Undoubtedly, the Modern Silk Road project will be an important element in the resurgence of Eastern societies. The project will connect all countries through which it passes to global trade and promote their economic development. As the cost of transporting trade between Eastern and Western countries will decrease, so will the time required for transportation. Turkey, on the other hand, will be among the countries that will benefit most from the project, thanks to its religious and ethnic ties to Central Asia, as well as its geopolitical location. Turkey, one of the important countries through which the historic Silk Road passed, is located at the crossroads of Asia, Europe and Central Asia in the modern Silk Road project, and this situation makes Turkey a key country.

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ÇEVRECİ (YEŞİL) BAKIŞ AÇISIYLA ÖRGÜTSEL VATANDAŞLIK DAVRANIŞI

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Özet

Artan çevresel sorunlar tüm dünyanın ortak gündemi olmaya devam ederken özellikle iklim değişikliği ile ilgili topyekun bir mücadele gerektiği konusunda tüm ilgililer hemfikir olmuştur. Birçok ülkede iklim değişikliği bakanlıkları kurulmuş, İskoçya'nın Glasgow şehrinde 31 Ekim - 12 Kasım 2021 tarihleri arasında küresel ısınma ve sera gazı salınım oranlarını azaltma amacıyla 197 ülkenin katılımıyla 2021 Birleşmiş Milletler İklim Değişikliği Konferansı gerçekleştirilmiştir. Tüm bu gelişmeler konunun toplumlar nezdindeki önemini vurgulamak açısından önem taşımakta, çevresel sorunlar ile mücadelenin evrensel bir mücadele olduğunun göstergesi olmaktadır. Bu mücadelede bireylerin, devletlerin, gönüllü kuruluşların yanında işletmelere ve çalışanlara da büyük görevler düşmektedir. Yeşil yönetim anlayışı her geçen gün daha fazla işletme tarafından kabul görmekte, işletmelerin hedef ve politikaları arasında çevresel performansı iyileştirmek giderek önem kazanmaktadır. Akademik çalışmalarda da bu alana doğru bir yönelim giderek öne çıkmakta işletmelerin yeşil performans hedeflerine nasıl ulaşacağı ve çalışanların bu hedeflere ulaşmadaki rolü üzerine yapılan çalışmalar giderek artmaktadır. Yeşil örgütsel vatandaşlık kavramı da bu çalışmalar arasında yer alan önemli bir başlıktır. Çalışanların ödül ya da ceza beklentisi olmadan kendi istek ve inisiyatifleriyle işyerlerinde sergiledikleri çevreci davranışların yaygınlaşması çevresel sürdürülebilirlik açısından önem taşımaktadır. Bu nedenle bu çalışmada yeşil örgütsel vatandaşlık davranışları ile ilgili bir kavramsal çerçeve çizilmeye çalışılmış, konu ile ilgili literatürde yer alan çalışmalardan yola çıkarak yeşil örgütsel vatandaşlık davranışlarının öncülleri ve ardılları tartışılmaya çalışılmıştır. Ulusal yazında yeşil örgütsel vatandaşlık kavramını doğrudan ele alan çalışmaların yer almaması nedeniyle çalışmanın alana katkı sağlayacağı düşünülmektedir. Bununla birlikte yeşil örgütsel vatandaşlığa ilişkin Türkiye bağlamında yapılacak ampirik çalışmalara da ihtiyaç olduğu, Türk kültüründe nasıl bir liderlik anlayışının yeşil örgütsel vatandaşlık davranışlarını artıracığı, kamu sektöründe ve özel sektörde bu davranışların ne şekilde sergilendiği ve bu davranışları motive etmek için neler yapılabileceği gibi başlıkların önümüzdeki dönemlerde sıkça tartışılacak önemli başlıklar olacağı düşünülmektedir.

Anahtar kelimeler: Çalışanın yeşil davranışları, yeşil örgütsel vatandaşlık, sürdürülebilirlik.



ORGANIZATIONAL CITIZENSHIP BEHAVIOR FROM AN ENVIRONMENTAL (GREEN) PERSPECTIVE

Abstract

While increasing environmental problems continue to be the common agenda of the whole world, all concerned have agreed on the need for an all-out struggle, especially regarding climate change. Climate change ministries have been established in many countries and the 2021 United Nations Climate Change Conference was held in Glasgow, Scotland, between 31 October - 12 November 2021 with the participation of 197 countries, in order to reduce global warming and greenhouse gas emissions. All these developments are important in terms of emphasizing the importance of the issue in the eyes of the societies, and it is an indication that the fight against environmental problems is a universal struggle. In this struggle, besides individuals, states, voluntary organizations, businesses and employees have major duties. The green management approach is being accepted by more and more businesses and improving environmental performance is becoming increasingly important among the goals and policies of businesses. In academic studies, an orientation towards this field is becoming increasingly prominent, and studies on how businesses can reach their green performance goals and the role of employees in reaching these goals are increasing. The concept of green organizational citizenship is also an important topic among these studies. It is important for environmental sustainability to spread the environmental behaviors that employees display in workplaces with their own freedom and initiative without the expectation of reward or punishment. For this reason, in this study, a conceptual framework about green organizational citizenship behaviors was tried to be drawn, and the antecedents and successors of green organizational citizenship behaviors were tried to be discussed based on the studies in the literature on the subject. The study will contribute to the field because of no studies that directly address the concept of green organizational citizenship in the national literature. In addition, there are some topics such as the need for empirical studies on green organizational citizenship in the context of Turkey, what kind of leadership understanding in Turkish culture will increase green organizational citizenship behaviors, how these behaviors are exhibited in the public and private sectors, and what can be done to motivate these behaviors in the coming periods. It is thought that there will be important topics that will be discussed frequently.

Keywords: Employee green behaviors, green organizational citizenship, sustainability.

GİRİŞ

Yeşil örgütsel vatandaşlık davranışları, örgütsel vatandaşlık kavramından hareketle ortaya atılan, yabancı yazında “organizational citizenship behaviour for environment”, ”**organizational environmental citizenship behaviors**”, “voluntary workplace green behavior” ya da “green organizational citizenship behavior” şeklinde farklı biçimlerde ifade edilen ve öncülleri ve ardılları bağlamında pek çok farklı çalışmada ele alınmış olan bir kavramdır. Çalışanın yeşil davranışları arasında yer alan yeşil örgütsel vatandaşlık davranışlarını Türkçe yazında doğrudan ele alan çalışmaya rastlanılmamakla birlikte yeşil çalışan davranışlarını ele alan çalışmaların uluslararası yazınla paralel biçimde Türkçe yazında da artmaya başladığı görülmektedir (Eroymak, İzgüden ve Erdem, 2018; Vatansever vd., 2018; Akandere, 2019; Erbaşı, 2019; Bayrakçı ve Dinç, 2020; Kerse vd., 2021). Ancak çevresel sorunların her geçen gün dünyanın gündemini daha fazla meşgul etmesi, yeşil örgütsel vatandaşlık davranışlarının önemini artırmakta ve konunun tek başına ele alınarak incelenmesi ihtiyacını ortaya çıkarmaktadır. Bu ihtiyaçtan hareketle bu çalışmanın amacı Türkiye’de pek çok farklı bağlamda değerlendirilmiş, oldukça popüler bir kavram olan örgütsel vatandaşlık davranışlarını (Basım ve Şeşen., 2006; Bolat ve Bolat, 2008; Can ve Kerse, 2020)



çevreci bir bakış açısıyla ele alan yeşil örgütsel vatandaşlık davranışları ile alan yazına katkı sunmak ve kavramın çevresel sürdürülebilirlik açısından önemini ortaya koymaktır. Bu amaçla bu çalışmada literatürde yer alan çalışmalar incelenerek yeşil örgütsel vatandaşlık kavramı, boyutları, öncülleri ve ardılları değerlendirilmiştir. Bunun yanında yeşil vatandaşlık davranışlarının yaygınlaşması için yapılabilecekler için yönetsel önerilerin yanında ulusal yazın için yeni bir kavram olan yeşil örgütsel vatandaşlık kavramıyla ilgili Türkiye’de yapılabilecek ampirik çalışmalara yönelik öneriler sunulmuştur.

Sürdürülebilirlik ve Çalışanın Yeşil Davranışları

İklim değişikliğinin sonuçlarına ilişkin kaygıların ve çevresel sorunların artmasıyla birlikte çevresel sürdürülebilirlik her geçen gün önemi daha da anlaşılan ve farklı kesimlerce altı çizilen bir kavram olarak öne çıkmaktadır. En basit haliyle çevresel sürdürülebilirlik, doğal kaynakların devamlılığını sağlayarak gelecek kuşaklara aktarabilmek şeklinde ifade edilebilir. Morelli (2010) tarafından “*şimdiki ve gelecek nesillerin kaynak ve hizmet ihtiyaçlarını ekosistemlerin sağlığından ödün vermeden karşılamak*” biçiminde tanımlanan çevresel sürdürülebilirlik kavramı günümüzde işletmelerin de gündeminde yer almaya başlamış, işletmeler faaliyetlerini yürütürken çevresel sürdürülebilirlik konusunda daha duyarlı olmaya başlamışlardır. Zira işletmeler çevrelerinden bağımsız yapılar olmadığından yaşanan her türlü çevresel sorun işletmeleri de etkilemekte, en temel amaçları olan varlıklarını sürdürme amaçlarına ulaşabilmeleri ancak sürdürülebilir bir dünya ile mümkün olmaktadır. Bunun yanında yeşil uygulamaları hayata geçiren, çevreci misyonlar edinen ve hedef ve politikaları arasında çevre performansını iyileştirmeye yer veren işletmeler rekabet üstünlüğü elde etmektedir. Toplumun çevresel konulardaki duyarlılığı da işletmeleri daha çevreci tercihler yapmaya itmekte, çevresel sürdürülebilirliğe katkı sunmaya çalışan işletmeler paydaşları nezdinde daha çok kabul görmektedir. Yeşil (çevreci) yönetim uygulamaları üretim, muhasebe, pazarlama, finans, İKY gibi işletme fonksiyonlarında belli biçimlerde tezahür etmekte (Ceyhan ve Ada, 2015); çalışanların çevreci davranışlar sergilemesi de işletmelerin çevresel performansı açısından belirleyici olmaktadır. Bu davranışlar işletmelerin çevresel performansını artırırken sürdürülebilirliğe de katkı sağlamaktadır. Çalışan nüfusun sayısı dikkate alındığında bu davranışların ne kadar anlamlı sonuçları olabileceği daha iyi anlaşılmaktadır. Çalışanların çevreci alternatifleri tercih etmeleri, tüketimlerini azaltmaları, atıklarını ayrıştırmaları, iş süreçlerini çevreci biçimde dönüştürmeleri, sürdürülebilir bir dünya ve çevresel sorunların çözümü açısından önemli katkılar sağlayacaktır.

Çalışanın yeşil davranışları biçiminde ifade edilen işyerinde çevresel sürdürülebilirliğe katkı sağlayan davranışlar sergilenmesi, çevreye zarar veren davranışlardan kaçınılması olarak tanımlanabilen davranışlara ilişkin literatürde farklı sınıflandırmalar bulunmaktadır. Yeşil çalışan davranışları türlerine göre koruma, zarar vermekten kaçınma, dönüştürme, başkalarını etkileme ve inisiyatif alma (Ones ve Dilchert, 2012); etki derecesine göre doğrudan (direk) ve dolaylı (indirek) (Homburg ve Stolberg, 2006); iş tanımlarına dahil olma derecelerine göre rol-içi ve rol-ötesi (Ramus ve Killmer, 2007); öncüllerine göre ise içsel ve dışsal kaynaklı yeşil davranışlar (Blok, Wesselink, Studynka ve Kemp, 2015) şeklinde sınıflandırılmaktadır. Bu sınıflandırmalar arasında yer alan rol-içi yeşil davranışlar, görev tanımında yer alan davranışları; rol-ötesi ya da ekstra rol davranışları ise çalışanın kendi isteğiyle sergilediği görev tanımı içinde yer almayan çevreci davranışları, bir diğer ifadeyle, yeşil örgütsel vatandaşlık davranışlarını ifade etmektedir.



Yeşil Örgütsel Vatandaşlık Davranışları

Örgütlerin hedeflerine ulaşabilmelerinde çalışanların sergilediği rol içi davranışlar kadar rol ötesi vatandaşlık davranışlarının da önemli olduğu bilinmektedir. Günümüzde artan çevresel sorunlar tüm dünya için bir tehdit oluştururken işletmeler de bu sorunlar konusunda her geçen yıl daha somut adımlar atmakta, yeşil performansları artırmak hedefler arasında yer almaktadır. Örgütlerin yeşil performans hedeflerine ulaşmaları ise çalışanlarının sergilediği yeşil davranışlarla mümkün olmaktadır. Bu nedenle çalışanın yeşil davranışları ve yeşil örgütsel vatandaşlık başlıkları literatürde önemli konular olarak öne çıkmaktadır. Konuyla ilgili Francauer vd. (2019) tarafından yapılan sistematik inceleme çalışması, 1977-2016 yılları arasında yayınlanan çalışanın yeşil davranışlarını ele alan 53 makalenin incelemesini içermekte ve konuya yönelik akademik yönelimin önemli bir göstergesi olma özelliği taşımaktadır. Ancak Türkçe yazında çalışanın yeşil davranışlarına ilişkin sınırlı sayıda çalışmaya rastlansa da yeşil örgütsel vatandaşlığa ilişkin herhangi bir çalışmanın bulunmaması, yeşil örgütsel vatandaşlık kavramının kavramsal olarak incelenmesinin gerekli olduğunu düşündürmektedir.

Yeşil örgütsel vatandaşlık kavramının, örgütsel vatandaşlık kavramından hareketle ortaya koyulmuş bir kavram olduğu söylenebilir. Barnard'ın (1938) çalışmalarının temelini oluşturduğu, Kahn ve Katz (1966) tarafından rol ötesi davranış biçiminde ifade edilen ve Organ (1988) tarafından örgütsel vatandaşlık biçiminde tanımlanarak literatüre kazandırılan örgütsel vatandaşlık, uzun yıllardır tartışılmakta ve hem uluslararası hem de ulusal yazında pek çok ampirik çalışmaya konu olmaktadır (Podsakoff vd., 2000). Bu çalışmalarda ekstra rol davranışı, rol-ötesi davranış, özgecilik, gönüllülük gibi farklı biçimlerde ifade edilen örgütsel vatandaşlık, örgütün biçimsel ödül sisteminde açıkça tanımlanmayan, sergilendiğinde herhangi bir ödül ya da cezayla karşılık görmeyen, isteğe ve tercihe bağlı olarak sergilenen, bununla birlikte örgütün etkinliğine ve verimliliğine katkı sağlayan davranışlar biçiminde ifade edilmiş ve literatürde genellikle özgecilik, vicdanlılık, centilmenlik, nezaket ve sivil erdem biçiminde beş boyutlu bir yapı olarak ele alınmıştır (Bolat ve Bolat, 2008; Kerse ve Can, 2020). Buradan hareketle yeşil örgütsel vatandaşlık davranışı ise çevresel performansı iyileştirmeye yönelik resmi iş tanımlarında ve ödül sisteminde açıkça yer almayan, biçimsel rol tanımının ötesine geçen gönüllü davranışlar biçiminde tanımlanabilir (Boiral, 2009; Daily vd., 2009). Bu davranışlar örgütsel vatandaşlıkta olduğu gibi farklı şekillerde sınıflandırılabilir ve sergilenebilir. Örneğin Boiral ve Paille'ye (2012) göre yeşil örgütsel vatandaşlık eko-girişim, eko-sivil katılım ve eko-yardım olmak üzere 3 davranıştan oluşur. Eko-girişim; işyerinde çalışan tarafından yönlendirilen çevre yanlısı girişimleri ifade etmekte ve kurum kültürünün uygun ve merkezi olmayan karar alma yapısının olduğu örgütlerde daha fazla sergilenmesi beklenmektedir. Eko-sivil katılım, örgütün çevre ile ilgili etkinliklerine isteyerek katılmayı ve katkı sunmayı, örgütün imajını ve faaliyetlerini gönüllü olarak desteklemeyi; eko-yardım ise iş arkadaşlarının çevresel kaygılarını dikkate almayı, fikirlerini ifade etmelerine ve sorumlu davranışlar sergilemelerine yardımcı olmayı ifade etmektedir (Boiral ve Paille, 2012). Kharas vd. (2017) ise yeşil örgütsel vatandaşlık davranışlarını örgütsel gerekçelerle sergilenen ve bireysel gerekçelerle sergilenen davranışlar biçiminde değerlendirmişlerdir. Bu araştırmacılar bireysel gerekçelerle sergilenen örgütsel vatandaşlık davranışlarının temelinde maliyet-fayda analizleri yerine ahlaki zorunluluk duygusunun yer aldığını, bu çalışanların sürdürülebilirliğin önemli olduğunu düşünerek iş dışında da bu davranışları sergilediklerini belirtmişlerdir. Örgütsel gerekçelerle sergilenen yeşil örgütsel vatandaşlık davranışlarının ise çevre için önemli olduğu gerçeğinden bağımsız olarak, işletmenin amaç ve hedeflerine ulaşması için sergilenen yeşil örgütsel vatandaşlık davranışları olduğu ifade edilmiş; bireysel gerekçelerin temelinde “doğru davranmanın”, örgütsel gerekçelerin temelinde ise “akıllıca davranmanın” yattığını belirtilmiştir (Kharas vd., 2017). Ciocirlan (2017) ise yeşil örgütsel vatandaşlık davranışlarını düşük yoğunluklu ve yüksek yoğunluklu davranışlar olarak sınıflandırmıştır. Araştırmacı düşük yoğunluklu davranışları evde sergilenen davranışların benzerleri olan ışıkları kapatma, gereksiz tüketimi



azaltma ve geri dönüştürme davranışları olarak; yüksek yoğunluklu davranışları ise kısa vadede işletme için maliyetli ancak uzun vadede faydalı olan davranışlar olarak betimlemiş ve üst düzey çevresel önlemler almayı bu davranışlar arasında saymıştır.

Çevresel faaliyetlere gönüllü katılım, çevresel farkındalık oluşturmaya yönelik öneriler sunma, asansör yerine merdiven kullanma, kullanılmayan ışıkları söndürme, çıktı almayı azaltma, çift taraflı baskı yapma, gün ışığından yararlanma, klima-kalorifer vb. araçları özenli kullanma gibi davranışlar yeşil örgütsel vatandaşlık davranışlarıdır. Bu noktada bu davranışların öncelikle çevresel sürdürülebilirliğe destek olmak için sergilendiği ancak ikincil olarak örgüte de kazanım sağladığının altı çizilmelidir. Bir diğer ifadeyle, yeşil örgütsel vatandaşlık davranışları aynı zamanda örgütsel vatandaşlık davranışlarıdır ancak öncelikli amacı çevreye verilen zararı azaltmak olduğundan yeni bir kavram olarak ortaya atılmış ve kavram yazında kabul göreyek pek çok araştırmada kullanılmıştır (Cheema, Afşar ve Javed, 2019).

Literatür incelendiğinde araştırmacıların yeşil örgütsel vatandaşlık davranışını belirlemede farklı ölçeklerden faydalandığı görülmüştür. Boiral ve Paille (2012) tarafından geliştirilen 10 maddeli yeşil örgütsel vatandaşlık ölçeğinden yararlanılarak yapılan pek çok çalışma ile bu davranışların öncülleri ve ardılları araştırılmıştır. Lamm vd. (2013) tarafından bir başka yeşil örgütsel vatandaşlık ölçeği önerilmiş, Kharas vd. (2017) önceki ölçeklerden yararlanarak 10 soruluk yeni bir ölçek oluşturmuş, Robertson ve Barling (2017) ise mevcut ölçeklere ilişkin metodolojik ve kavramsal eleştirilerden yola çıkarak 13 maddeli başka bir ölçek geliştirmiştir. Geliştirilen ve önerilen bu ölçeklerden birçok araştırmacı yararlanarak konuyla ilgili çalışmalar yapmış ve alan yazına katkı sunmuştur. Tüm bu çalışmalar incelendiğinde yeşil örgütsel vatandaşlığa ilişkin kapsamlı bir literatürün varlığından söz etmek mümkündür. Örgütsel vatandaşlık kavramının çevreci bir bakış açısıyla ele alınmasıyla yeşil örgütsel vatandaşlık kavramı ortaya çıkmış, daha sonra bu davranışları ölçmek için çeşitli ölçek önerileri sunulmuş, kavramın boyutlarını ortaya koyacak çalışmalar yapılmış, sonrasında bu davranışların öncüllerinin ve ardıllarının belirlenmesine yönelik farklı bağlamlarda, farklı teorik temellerde çeşitli araştırmalar yapılmıştır. Yeşil örgütsel vatandaşlık davranışlarının öncüllerine ilişkin yapılan çalışmaların bireysel ve örgütsel öncüller biçiminde değerlendirilebileceği düşünülmekte, bununla birlikte bu davranışların sonuçlarının ve çalışanlar ve örgütler için ne gibi çıktılar sağladığının anlaşılmasına yönelik de pek çok çalışma bulunduğu bilinmektedir.

Öncülleri ve Ardılları Bağlamında Yeşil Örgütsel Vatandaşlık Davranışı

Çevreye yönelik örgütsel vatandaşlık davranışları, örgütler açısından istenilen ve teşvik edilen davranışlar arasında giderek daha çok öne çıkmaktadır. Çünkü çevresel sorunların geldiği nokta toplumun her kesimince kritik olarak değerlendirilmekte, işletmeler de çevresel performanslarını iyileştirme noktasında giderek daha istekli hale gelmektedir. Bu nedenle öncelikle bu davranışların neden bazı çalışanlarca sergilenirken bazılarınca sergilenmediğinin anlaşılması gerekmektedir. Literatürde bu amaçla yapılan çalışmalarda bireysel ve örgütsel öncüllerin etkileri anlaşılmaya çalışılmıştır. Bununla birlikte bu davranışların sergilenmesinin örgütler ve çalışanlar için ne gibi sonuçlar doğurduğu da pek çok çalışmada incelenmiştir.

Çevreye yönelik örgütsel vatandaşlık davranışlarının bireysel öncülleri arasında kişilik, çevreye yönelik farkındalık, bilinç, tutku inanç ve değerler olduğunu ortaya koyan çalışmalara rastlanılırken (Boiral vd., 2016; Mohammad vd., 2020; Zhang vd., 2021); yeşil insan kaynakları yönetimi, örgüt kültürü, örgüt iklimi, yeşil eğitim, liderlik gibi örgütsel öncüllerin de bu davranışlar üzerinde etkili olduğuna dair sonuçlar elde edilmiştir (Hooi vd., 2021; Malik vd., 2021; Pham vd., 2019).



Werf vd. (2013) yapmış oldukları çalışmada kendini çevre dostu olarak tanımlayan bireylerin (çevresel öz kimlik olarak ifade etmişlerdir) yeşil içsel motivasyonlarının daha fazla olduğunu ve çevre yanlısı davranışları daha çok sergilediklerini ortaya koymuş, bu sonuçlardan hareketle çevresel öz kimliği güçlendirmenin, çevre yanlısı davranışları teşvik etmenin uygun maliyetli bir yolu olduğu sonucuna ulaşmışlardır (Werf, Steg ve Keizer, 2013). Bissing-Olson vd. (2013) ise olumlu duygulanımın yeşil çalışan davranışları üzerindeki etkisi ve çevreci tutumun bu ilişkideki aracı rolünü inceledikleri çalışmalarında, olumlu duygulanımın proaktif yeşil çalışan davranışları üzerinde etkili olduğunu ve çevreci tutumun bu ilişkide aracı rol oynadığını belirtmiş; örgütlerin çalışanlarının yeşil davranışlarını artırmalarında çevreci tutuma sahip çalışanları seçmelerinin ve bu davranışları teşvik etmenin önemli olduğunu altını çizmişlerdir (Bissing-Olson vd., 2013). Bu çalışmaların yanında yeşil insan kaynakları yönetimi uygulamalarının rol içi ve rol ötesi yeşil çalışan davranışlarına etkisinde yeşil psikolojik iklimin aracı, bireysel yeşil değerlerin düzenleyici rolünün test edildiği başka bir çalışmada, bireysel yeşil değerlerin rol ötesi yeşil davranışlar üzerinde düzenleyici rolü olduğu sonucuna ulaşılmıştır (Dumont, Shen ve Deng, 2017). Liderlerin rol ötesi yeşil davranışlarının bireysel öncüllerinin anlaşılmasına yönelik yapılan başka bir araştırmada ise liderlerin bireysel deneyimleri, bakış açısı, referansları ve geçmişinin rol ötesi yeşil davranışlar üzerinde etkili olduğu, bu nedenle yeşil örgütsel vatandaşlık davranışlarının kısmen örgütsel politikalarından etkilenebileceği, ancak tamamen örgüt tarafından belirlenemeyeceği ortaya konularak bireysel faktörlerin öneminin altı çizilmiştir (Boiral, Raineri ve Talbot, 2016).

Yeşil örgütsel vatandaşlık davranışlarının sergilenmesinde bireysel faktörlerin yadsınamayacak derecede önemli olduğu bilinmekle beraber örgütsel öncüllerin de bu davranışlar açısından oldukça belirleyici olduğu düşünülmektedir. Nitekim literatürde yer alan çalışmalar da bu görüşü desteklemektedir. Yeşil insan kaynakları yönetimi uygulamaları uzun zamandır literatürde incelenmekte (Dumont vd., 2017; Al-Gazali ve Afşar,2020; Erbaş, 2021) ve birçok örgütte uygulanmaya çalışılmaktadır. Literatürde Renwick vd. (2013) tarafından yeşil işe alım, yeşil eğitim ve geliştirme, yeşil performans yönetimi, yeşil ücret ve ödül sistemi, yeşil katılım şeklinde 5 boyutta değerlendirilen yeşil insan kaynakları yönetiminin, yeşil örgütsel vatandaşlık davranışları üzerindeki etkisini araştıran pek çok çalışmaya rastlanılmaktadır. Örneğin Xiang ve Yang (2020) çalışmalarında yeşil insan kaynakları yönetimi uygulamalarının yeşil örgütsel vatandaşlık davranışlarını hem doğrudan hem de örgütle özdeşleşme üzerinden etkilediğini ortaya koyarken, konaklama sektörü çalışanlarının örgütsel vatandaşlık davranışları ile yeşil insan kaynakları yönetimi arasındaki ilişkiyi karma yöntemle araştırdıkları çalışmalarında Pham vd. (2018) de benzer sonuçlara ulaşmışlardır. Ayrıca İKY boyutlarından yalnızca yeşil eğitim ve geliştirmenin yeşil örgütsel vatandaşlık davranışları üzerindeki etkisini araştıran ve olumlu yönde bir etki olduğunu ortaya koyan çalışmalar da İKY uygulamalarının gerekliliğini ortaya koymaları açısından önem taşımaktadır (Amrutha ve Geetha, 2021).

Literatür incelendiğinde yeşil örgütsel vatandaşlık davranışlarının sıklıkla birlikte ele alındığı ve ilişkilerinin incelendiği bir diğer örgütsel öncülün liderlik olduğu görülmektedir. Güncel liderlik tarzları arasında yer alan yeşil dönüştürücü liderlik ve yeşil etik liderlik gibi liderlik tarzlarının çalışanların çevreye yönelik örgütsel vatandaşlık davranışları üzerindeki etkisini inceleyen çalışmaların yanında Boiral vd. (2018) tarafından yapılan liderlerin yeşil örgütsel vatandaşlık davranışlarının incelendiği ve nicel ve nitel yöntemin bir arada kullanıldığı çalışmada liderlerin davranışlarına odaklanılmış, örgütlerin yeşil performanslarında liderlerin hem doğrudan hem çalışanlar üzerinden etkili olduğunu altı çizilmiştir. Bir başka araştırmada ise yeşil etik liderliğin yeşil örgütsel vatandaşlık davranışlarını olumlu yönde etkilediği, ayrıca yeşil örgüt iklimi ve cinsiyetin bu ilişkide düzenleyici rol oynadığı, yani kadınlarda yeşil etik liderliğin yeşil örgütsel vatandaşlığa etkisinin daha yüksek düzeyde olduğu sonucuna ulaşılmıştır (Khan vd., 2019). Sorumlu liderliğin yeşil örgütsel vatandaşlığa etkisinin araştırıldığı bir diğer çalışmada ise bu liderliğin yeşil örgütsel vatandaşlık davranışlarının önemli bir yordayıcısı olduğunu altı çizilmiştir



(Zhang vd., 2021). Örgütün çevresel hedeflerinin takipçilerce içselleştirilmesini sağlayan, çalışanların yeşil bilincini artırmayı hedefleyen, bu bilincin davranışa dönüşmesi konusunda rol model olabilen ve çalışanları örgütün çevresel hedeflerine ulaşması için beklenenden fazlasını yapmaya motive eden bir liderlik yaklaşımı olan yeşil dönüştürücü liderliğin (Kerse vd., 2021) de yeşil çalışan davranışları ve yeşil örgütsel vatandaşlık davranışları üzerinde etkili olduğuna dair araştırma sonuçları ortaya konulmuştur (Kura, 2016; Khan vd., 2021).

Literatürde örgütlerin insan kaynakları yönetimi uygulamaları ve sergilenen liderlik tarzlarının yanında çalışanlarca algılanan örgütsel desteğin ve örgüt ikliminin vatandaşlık davranışları üzerinde etkili olduğuna dair çalışma sonuçları da mevcuttur. Lamm vd. (2013) çalışmalarında algılanan örgütsel desteğin yeşil örgütsel vatandaşlık davranışlarını olumlu etkilediğini belirtmişler, örgütlerinin sürdürülebilirliğe ilişkin çabalara değer verdiğini hissetmelerinin çalışanları olumlu yönde etkilediğini ortaya koymuşlardır (Lamm vd., 2013). Beş değişkenli bir modelle çevreye ilişkin algılanan örgütsel desteğin sonuçlarını inceleyen çalışmalarında Bhatnagar ve Aggarwal (2020) de benzer sonuçlara ulaşmış, çevreye ilişkin algılanan örgütsel desteğin işin anlamlılığını artırarak işe yabancılaşmayı azalttığını, psikolojik sermayeyi güçlendirdiğini ve yeşil örgütsel vatandaşlık boyutları arasında sayılan eko girişim davranışlarını artırdığını ortaya koymuşlardır (Bhatnagar ve Aggarwal, 2020).

Yazında çokça ele alınan bir diğer örgütsel öncül de örgüt iklimidir. Çalışanların örgütlerinin ve iş arkadaşlarının çevreye yönelik tutumlarını nasıl algıladıkları şeklinde ifade edilen yeşil örgüt ikliminin çalışanların yeşil davranışlarını olumlu yönde etkilediğini, örgütün çevreye ilişkin tutumunun rol içi yeşil davranışlar üzerinde, iş arkadaşlarının çevreye ilişkin tutumunun ise rol ötesi davranışlar üzerinde etkili olduğunu ortaya koyan çalışmaları ile Norton, Zacher ve Askanasy (2014) çevreci iş yeri davranışlarına örgüt iklimi perspektifinden bakarak alan yazına katkı sağlamıştır. Daha sonrasında yeşil örgüt iklimi başlığı pek çok farklı çalışmada da ele alınmıştır (Khan vd.,2019; Saleem vd.,2020).

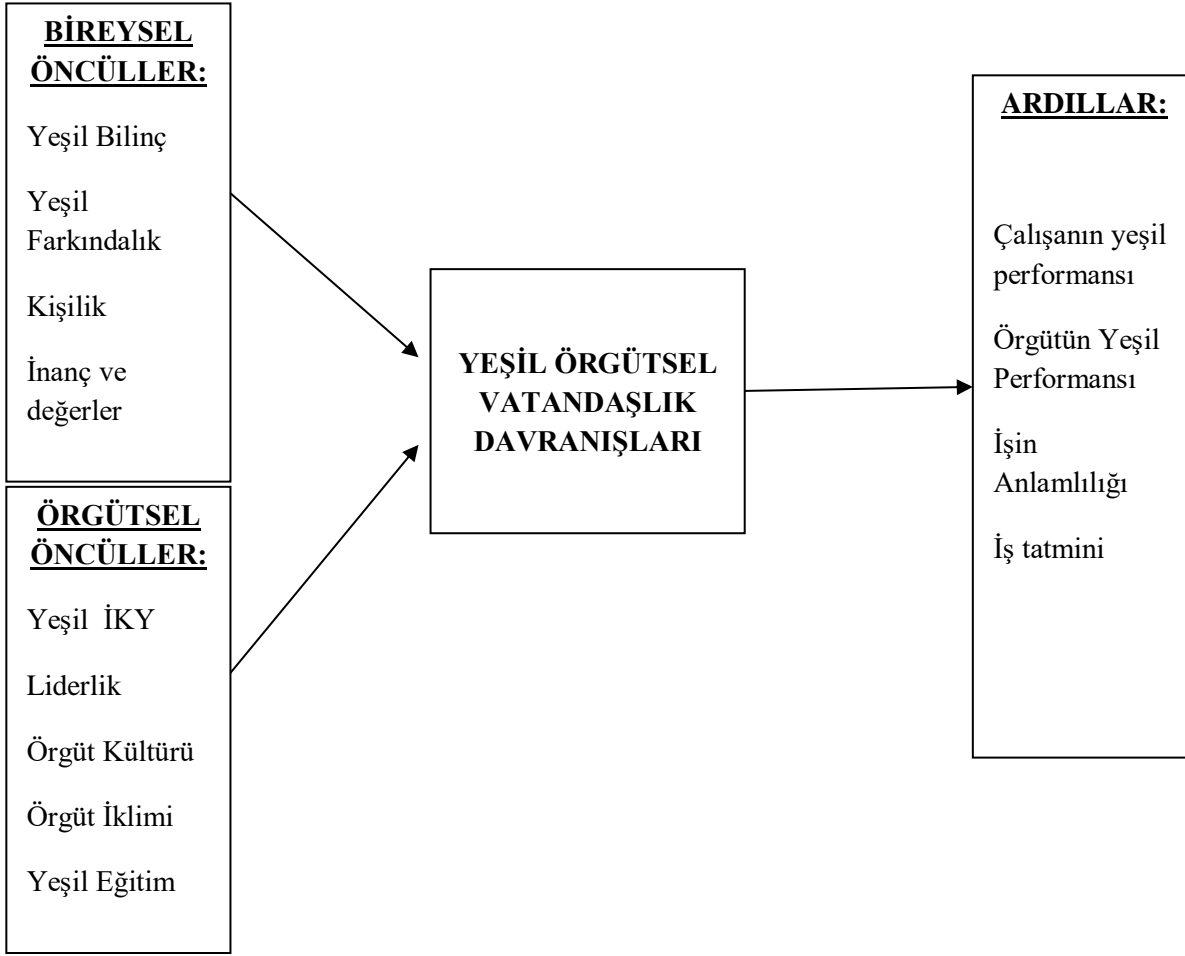
Yeşil örgütsel vatandaşlık davranışları, çevresel sürdürülebilirlik açısından büyük önem taşıyan davranışlardır. Zira dünya genelinde her gün milyonlarca insan zamanlarının çoğunu işyerlerinde geçirmektedir. Bu çalışanlar işe gitmek için evden çıktığı andan evine geri döndüğü ana kadar çevreci tercihler yaparak ya da gönüllü çevreci davranışlar sergileyerek -örneğin tüketimi azaltarak, çevreye zarar vermektan kaçınarak ve başkalarını etkileyerek- çevresel sürdürülebilirliğe büyük katkılar sağlayabilirler. Bu davranışların sergilenmesinde bireysel yeşil değerler, yeşil öz yeterlilik, çevre bilincinin ve farkındalığın yanında liderlik, yönetim uygulamaları, yeşil içsel motivasyon, algılanan örgütsel destek ve örgüt ikliminin de etkili olduğu gözlenmekte ve bu durum ampirik çalışmalarla da desteklenmektedir. Yeşil örgütsel vatandaşlık davranışlarının öncülleri kadar ardıkları da literatürde sıkça ele alınmaktadır. Çünkü bu davranışlar hem örgütler hem çalışanlar açısından önemli sonuçlar açığa çıkarmaktadır. Örgütlerin nihai hedefleri arasında yer alan çalışanın ve örgütün performansını artırmak, iş tatmini sağlamak ve özellikle son yıllarda giderek daha önemli hale gelen yaratıcılığı artırmak noktasında yeşil örgütsel vatandaşlık davranışlarının etkili olduğuna dair pek çok araştırmaya rastlanmaktadır.

Örgütsel vatandaşlık ve iş performansı ilişkisi literatürde oldukça tartışılmış ve pek çok çalışmada ele alınmıştır (Çelik ve Çıra,2013). Benzer biçimde yeşil örgütsel vatandaşlık davranışlarının da çalışanın ve örgütün yeşil performansı üzerinde etkili olacağı ve yeşil örgütsel vatandaşlık davranışları sergilemenin iş tatminini ve yeşil yaratıcılığı da beraberinde getirebileceği düşünülmektedir. Yazında yer alan araştırmalar da bu görüşleri destekler niteliktedir. Saputra ve Nawangsari (2021) yeşil örgütsel vatandaşlık davranışlarının performans üzerinde, Cheng vd. (2018) ise yeşil ürün geliştirme üzerinde önemli etkisi olduğunu ortaya koymuşlardır. Bununla birlikte iş tatmini her ne kadar yazında genellikle gönüllü davranışların öncülü olarak ele alınıyor



olsa da (Demirel ve Özçınar, 2009), yeşil örgütsel vatandaşlık davranışları olarak değerlendirilen iş yerindeki gönüllü çevreci davranışların sergilenmesinin iş tatminini artıracakı düşünölmektedir. Çünkü bu davranışlar yalnızca örgüt için fayda sağlamanın ötesinde toplumsal bir iyiliğe de katkı sunmaktadır. Benzer bir bakış açısıyla konuyu ele alarak ampirik olarak test eden Kim vd. (2018) de “doing good-feeling good (iyi yap-iyi hisset)” biçiminde bir süreci ifade etmiş ve yeşil örgütsel vatandaşlık davranışları sergilemenin akabinde iş tatmini sağlanabileceğini öne sürmüştür. Aynı çalışmada hem çalışanların iş tatmininin yeşil örgütsel vatandaşlık davranışlarının sergilenmesini sağlayacağı hem de bu davranışların akabinde iş tatmininin hissedileceği belirtilmiştir (Kim vd., 2018). Yani iş tatmini, yeşil örgütsel vatandaşlık davranışlarının hem öncülü hem ardılı olarak değerlendirilmektedir. Bunların yanı sıra Norton vd. (2015) çalışmalarında çevreci davranışların kurumsal düzeyde rekabet avantajı, örgütsel düzeyde maliyet avantajı, liderlik düzeyinde liderin etkinliği, çalışan düzeyinde içsel tatmin ve ekip düzeyinde olumlu sosyal normlar şeklinde olumlu katkılar sunacağını ancak ampirik çalışmalarla bu görüşlerin desteklenmesi gerektiğini belirtmişlerdir.

Yeşil örgütsel vatandaşlık davranışlarının performans, tatmin, yaratıcılık üzerindeki etkileri şüphesiz örgütler için büyük önem taşımaktadır. Ancak halen yazında bu davranışların örgütsel çıktılara etkisine ilişkin yeterli çalışma olmadığı düşünölmektedir. Örneğin bu davranışların yaygınlaşması örgütte somut olarak ne kadar maliyeti düşürmektedir ya da tüketimde veya atıklarda ne derece azalma sağlamaktadır? Çalışanların çift yönlü baskı almaları ya da dijital dosyalama yapmaları ne kadarlık bir kağıt tasarrufu sağlamakta, asansör yerine merdiven kullanmaları elektrik tüketimini ne kadar azaltmaktadır? Literatür bu ve benzer soruların yanıtlarına ilişkin somut sonuçları içeren araştırmalarla zenginleştiğinde yeşil çalışan davranışlarının, özellikle yeşil örgütsel vatandaşlık davranışlarının sonuçlarının daha iyi anlaşılacağı ve bu davranışların yaygınlaşması için bireysel düzeyde de örgütsel düzeyde de daha fazla çaba gösterileceği düşünölmektedir. Yukarıdaki çalışmalar ve teorik bilgiler ışığında yeşil örgütsel vatandaşlık davranışlarının öncülleri ve ardıllarına ilişkin aşağıdaki şekil oluşturulmuştur:



Şekil 1: Yeşil örgütsel vatandaşlık davranışının öncülleri ve ardılları

SONUÇ

Örgütsel davranış yazınında çalışanın yeşil davranışlarına ilişkin yıllar içinde artan bir yönelim olduğunu söylemek mümkündür. Yeşil örgütsel vatandaşlık davranışları da bu kapsamda ele alınan ve çok yönlü biçimde araştırılan bir kavram olarak değerlendirilmektedir. Literatür incelendiğinde öncelikle bu davranışların anlaşılması ve boyutlarının ortaya konulmasına yönelik çalışmalar yapıldığı, ardından çeşitli ölçek geliştirme çalışmalarıyla literatürün zenginleştiği, daha sonra da yeşil örgütsel vatandaşlık davranışlarının öncülleri ve ardılları bağlamında ele alındığı çalışmaların yapıldığı görülmektedir. Bu çalışmaların tamamının ortak niteliği, çalışanın yeşil davranışlarının örgütlerin yeşil hedefleri ve çevresel sürdürülebilirlik açısından önemli olduğunun altını çizmeleridir. Bu davranışların hem bireysel hem örgütsel öncülleri olduğu görülmekte, dolayısıyla, çevreye yönelik eğitim ve geliştirme faaliyetlerinin yaygınlaşması gerektiği düşünülmektedir. Yeşil örgütsel vatandaşlık davranışlarının somut çıktılarına ilişkin çalışmalara rastlanılmamış olması nedeniyle disiplinler arası ya da karma yöntemli çalışmalarla bu somut verilerin sağlanmasının literatüre önemli katkılar sağlayacağı düşünülmektedir. Ulusal yazının çalışanın yeşil davranışları açısından görece sınırlı olması, çalışanların yeşil farkındalıkları ve sergiledikleri yeşil davranışların açığa çıkarılması için yapılabilecek nitel araştırmalara yönelik ihtiyaç doğurmaktadır. Ayrıca



Türkiye bağlamında kamu ve özel sektörde hangi yeşil örgütsel vatandaşlık davranışlarının sergilendiğinin belirlenmesi, liderliğin bu davranışlar üzerindeki etkisi, üniversitelerde sergilenen yeşil örgütsel vatandaşlık davranışları, hangi kişilik özelliklerine sahip çalışanların daha çok yeşil örgütsel vatandaşlık davranışları sergilediği gibi pek çok farklı araştırma sorusuna yönelik yapılacak araştırmalarla da ulusal yazının zenginleştirilmesi mümkündür. Bununla birlikte özellikle son yıllarda artan çalışma sonuçlarının değerlendirildiği meta-analiz çalışmaları sonraki çalışmalara da ışık tutacaktır. Sonuç olarak çevresel sorunlar dünyanın gündemini giderek daha çok meşgul etmekte, bu sorunların çözümü için hem işletmeler hem de çalışanlar nezdinde adımların atılması gerekmektedir. Bu nedenle yeşil yönetime dair yapılan her araştırmanın büyük önem taşıdığı işletmeler ile üniversitelerin birlikte atacağı adımlarla teorik çıktıların yönetsel çıktılara dönüştürülmesi gerektiği düşünülmektedir.

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SOSYAL HİZMET UYGULAMALARINDA DİRENÇLİ MÜRACAATÇILARLA ÇALIŞMADA MOTİVASYONEL GÖRÜŞMENİN KULLANIMI

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Özet

Motivasyonel görüşme, özellikle son yıllarda, insani hizmet veren meslekler açısından önemi fark edilmeye başlayan bir yaklaşım olarak karşımıza çıkmaktadır. Sosyal hizmet mesleği açısından da motivasyonel görüşmenin kullanımı özellikle belirli özelliklere sahip müracaatçılar açısından önemli bir yere sahiptir. Örneğin mesleki görüşmelerde çeşitli nedenlerle direnç gösterme eğiliminde olan müracaatçılara yönelik olarak, öncelikle motivasyonel görüşmenin tekniklerinden ve özelliklerinden yararlanılması, bu görüşmelerin verimliliğini ve devamlılığını artıracaktır. Aksi takdirde sosyal hizmet uzmanı ve müracaatçı arasında nedeni anlaşılamayan ve süregiden bir gerginlik ortamının, yaşanan sorun ve gereksinimlerin giderilmesi odağının önüne geçmesi riski doğacaktır. Literatüre bakıldığında bu tür davranışlar gösteren müracaatçılara dirençli veya zor müracaatçılar dendiği görülmektedir. Motivasyonel görüşme ile, bu müracaatçıların öncelikle dirençlerinin altında yatan nedenlerin anlaşılması ve onlarla empati kurulması esastır. Bunun yanında, motivasyonel görüşmenin bazı temel ilkelerinin ve tekniklerinin bilinmesi bu direncin kırılması açısından önem taşımaktadır.

Bu çalışmada sosyal hizmet görüşmelerinde dirençli davranışlar sergileyen müracaatçıların direncini kırma açısından motivasyonel görüşmeden yararlanmanın önemini ortaya konması amaçlanmıştır.

Çalışma konuya ilişkin literatür bilgilerinden yararlanılarak yazarların mesleki deneyimleri ile birlikte aktaracakları bilgilerden ve örneklerden oluşan bir derleme çalışmasıdır.

Yapılan literatür taraması ve yazarların mesleki deneyimleri göstermektedir ki, dirençli davranışlar gösteren müracaatçılarla çalışmada motivasyonel görüşmeden yararlanılması, direncin nedenlerinin anlaşılması ve bu direncin kırılması açısından etkilidir ve görüşmelerin niteliğini artırmaktadır.

Çalışmanın sonuç kısmında dirençli müracaatçılarla çalışmada motivasyonel görüşmenin kullanılmasının gerekliliğine ilişkin sosyal hizmet mesleği açısından önerilere yer verilecektir.

Anahtar Kelimeler: Motivasyonel görüşme, sosyal hizmet görüşmesi, dirençli müracaatçı.



USING MOTIVATIONAL INTERVIEWING IN WORKING WITH RESISTANT CLIENTS IN SOCIAL WORK PRACTICES

Abstract

Motivational interviewing, especially in recent years, emerges as an approach whose importance has begun to be noticed in terms of professions that provide humanitarian service. In terms of the social work profession, the use of motivational interviewing has an important place especially for clients with certain characteristics. For example, for clients who tend to resist for various reasons in professional interviews, first of all, using the techniques and features of motivational interviewing will increase the efficiency and continuity of these interviews. Otherwise, there will be a risk that an environment of unexplained and ongoing tension between the social worker and the client will precede the focus of addressing the problems and needs. When we look at the literature, it is seen that the clients who show such behaviors are called resistant, difficult or involuntary clients. With motivational interviewing, it is essential to understand the underlying causes of these clients' resistance and to empathize with them. In addition, knowing some basic principles and techniques of motivational interviewing is important in breaking this resistance.

In this study, it is aimed to reveal the importance of using motivational interviewing, understanding the principles and techniques of motivational interviewing in terms of breaking the resistance of clients who exhibit resistant behaviors in social work interviews.

The study is a compilation study consisting of the information and examples that the authors will convey together with their professional experiences by using the literature on the subject.

The literature review and the professional experiences of the authors show that the use of motivational interviewing in working with clients with resistant behaviors is effective in understanding the causes of resistance and breaking this resistance, and increases the quality of the interviews.

In the conclusion part of the study, suggestions will be given in terms of the social work profession regarding the necessity of using motivational interviewing and related techniques that can be used in working with resistant clients.

Keywords: Motivational interview, social work interview, resistant client.

GİRİŞ

Motivasyonel görüşme, dezavantajlı gruplarla gerçekleştirilen sosyal hizmet uygulamalarında etkili tekniklerden biridir. Özellikle bazı sorun ve gereksinim durumları içindeki müracaatçıların değişimi gerçekleştirme konusunda dirençli davranışlar sergilemeleri söz konusu olabilmektedir. Bu nedenle motivasyonel görüşmenin bu gibi direnç durumlarının kırılmasına katkısının ve bu teknikten nasıl yararlanılabileceğinin üzerinde durulması önemli bir gerekliliktir.

Motivasyonel görüşme tekniğinin öncüleri olan Miller ve Rollnick (2002) motivasyonel görüşmeyi, danışanların ambivalansı (ikilikleri, zıtlıkları) keşfedip çözümlemelerine yardımcı olarak, davranış değişikliğini yaratmak için kullanılan danışan merkezli bir yaklaşım olarak tanımlamışlardır. Onlara göre motivasyon, dış etmenlerden etkilenen içsel bir durumdur ve değişmeye hazır ya da istekli olmayı ifade eden, zamana ve duruma göre değişkenlik gösteren bir kavramdır.

Motivasyonel görüşme, kişi merkezli yaklaşımdan temellerini almaktadır ve Livingston (2019)'un da belirttiği üzere son yıllarda sosyal hizmet uygulamalarında birçok yaklaşımın esası haline gelmiştir. Wahab (2005) motivasyonel görüşmenin sosyal hizmet disiplindeki yerinin dar bir



çerçeveyle sınırlandırılmaması gerektiğini, bu tekniğin, sosyal hizmet uzmanları için dezavantajlı gruplarla çalışırken ortaya çıkan zorlukları aşmada kilit bir rol oynadığını belirtmiştir. Hanson ve Gutheil (2004), motivasyonel görüşmede otoriteden ziyade iş birliği ile hareket etmenin benimsenmesi gerektiğini, değişim için gerekli olan motivasyonun müracaatçıda var olduğuna inanmanın ve onun güçlü yanlarına odaklanmanın önemini vurgulamıştır. Payne (2020) de bu konuyla ilgili olarak müracaatçı ve sosyal hizmet uzmanı arasında bir uzlaşma olması gerektiğini, otoriter ve baskıcı bir tutum ile müracaatçıya yardım edebilmenin ve etkili hizmet sunabilmenin olanaksız olduğunu ve bu nedenle de motivasyonel görüşme tekniğinin sosyal hizmet disiplini için oldukça önemli olduğunu vurgulamıştır.

Motivasyonel görüşmenin kullanım alanları açısından bakıldığında, özellikle sigara, alkol, madde kullanım bozukluğu olan bireyler, yeme bozukluğu olan bireyler, davranış bozuklukları gösteren ergen bireyler, egzersiz veya ilaç tedavisine uyum sağlama güçlüğü yaşayan bireyler gibi, birlikte çalışma konusunda dirençli davranışlar geliştirme olasılığı yüksek olan zor müracaatçılarla çalışmada daha sık başvurulduğu görülmektedir. Bunun yanında literatüre bakıldığında, farklı dezavantajlı gruplarla görüşmelerde motivasyonel görüşmeden yararlanmanın olumlu sonuçlar doğurduğunu gösteren çalışmalar olduğu görülmektedir. Örneğin Dicle (2012) engelli bireylerle ve aileleriyle çalışmada motivasyonel görüşmenin olumlu sonuçlar ortaya çıkardığını, Kalaycı Kırlioğlu (2019) da benzer şekilde denetimli serbestlik uygulamalarında madde kullanım bozukluğu olan bireylerle sosyal hizmet uygulamalarında motivasyonel görüşmenin olumlu sonuçlar ortaya çıkardığını belirtmiştir.

Motivasyonel görüşmeden, farklı dezavantajlı gruplarla görüşmede yararlanılabilmesi için temel özelliklerinin bilinmesi faydalı olacaktır.

Motivasyonel Görüşmenin Amacı ve Temel Özellikleri

Sosyal hizmet uygulamalarında motivasyonel görüşmeden yararlanılabilmesi için, öncelikle amacının ve temel özelliklerinin anlaşılması önemlidir.

Motivasyonel görüşme ile, yaşadığı sorun veya gereksinime yönelik değişim göstermesi gereken ancak bununla ilgili olarak hazır hissetmeme, kabul etmeme, sosyal hizmet uzmanı ile etkileşiminden memnun olmama ve diğer pek çok çeşitli gerekçe ile direnç davranışları sergileyen müracaatçıların değişim için hazır olmalarının sağlanması amaçlanmaktadır. Burada ifade edilen değişim kavramının üzerinde durulması gerekmektedir.

Değişim sürecine yönelik olarak müracaatçı farklı aşamalarda bulunabilir (Teater, 2015). Bununla ilgili Prochaska ve DiClemente (1983) çeşitli aşamalar sunmuştur. Bu aşamalar, ön niyet, niyet, hazırlık, eylem, devamlılık, relaps (nüks) aşamalarıdır. Bu aşamalardan kısaca söz edilecek olursa, ön niyet aşaması, bireyin henüz değişim gerekliliğinin farkında olmadığı ve bu nedenle herhangi bir harekete geçmenin söz konusu olmadığı aşamadır. Niyet, bireyin çözülmesi gereken bir sorun olduğunu fark ettiği, çözüme ilişkin düşünmeye başladığı, ancak değişimi gerçekleştirmek için kendisini hazır hissetmediği aşamadır. Mesleki görüşmelerde müracaatçıların uzun süre bu aşamada kalmaları dahi söz konusu olabilmektedir. Hazırlık aşaması müracaatçının değişim konusunda karar kıldığı ve kararını sürdürme eğiliminde olduğu aşamadır. Eylem aşaması, değişimin gerçekleştiği, bireyin harekete geçtiği aşamadır. Devamlılık aşaması ise, gerçekleşen değişimin altı aydan uzun süre devam ettiğinin görüldüğü aşamadır. Son olarak relaps (nüks) aşaması ise, değişimin gerçekleşmesinden önceki eski davranışa dönüşün gözlemlendiği aşamadır.

Sosyal hizmet uzmanlarının yaptıkları görüşmelerde, değişime direnç gösteren müracaatçıların bu aşamalardan hangisinde olduğunun farkında olmaları önem taşımaktadır.

Söz edilen bu aşamalara ek olarak motivasyonel görüşme açısından önem taşıyan bazı kavramlar bulunmaktadır.



Motivasyonel görüşmede üç temel kavram oldukça önemlidir. Bunlar önem, güven ve hazır bulunma kavramlarıdır (Prochaska, DiClemente ve Norcross, 1992). Önem ile, müracaatçının gerçekleştirmesi gereken değişime yönelik olarak ne kadar istekli ve niyetli olduğunun; güven ile, bu değişimi gerçekleştirebileceğine yönelik kendisine duyduğu inanç; hazır bulunma ile ise, bu değişime hazır bulunup bulunmadığı ifade edilmektedir. Motivasyonel görüşme açısından bu üç temel kavramın bulunması, motivasyonun var olması anlamına gelmektedir.

Motivasyonel görüşmeden yararlanırken sosyal hizmet uzmanlarının dikkat etmesi gereken belli başlı bazı hususlar bulunmaktadır. Bunlardan ilki, müracaatçı kendisi talep etmediği ve değişimi gerçekleştirme konusunda kararlılık göstermediği sürece, ona doğrudan çözüm önerileri sunulmaması gerektiğidir (Ögel, 2009). Aksi takdirde müracaatçının hazır bulunuşluk haline geçmesinin geciktirilmesi ve direncinin artması dahi söz konusu olabilir. Bunun yanında, merkezdeki kişinin sosyal hizmet uzmanı değil, müracaatçı olduğunun unutulmaması (Allsop, 2007), müracaatçının bulunduğu yerden başlama ilkesinin göz önünde bulundurulması esastır. Sosyal hizmet uzmanının, müracaatçının hazır bulunuşluk halinden emin olmadığı durumlarda, onunla tartışmaya girmemeye, onun direnciyle zıtlaşmamaya özen göstermesi gerekmektedir (Teater, 2015).

Motivasyonel görüşmede uygulamanın en güç olduğu önemli hususlardan bir diğeri ise müracaatçının içinde bulunduğu durumu, değişimi gerçekleştirmeye yönelik gösterdiği dirençli davranışları var olduğu haliyle, yargılamadan kabul etmektir. Bu noktada müracaatçının kararlarına saygı duyulması gerekmektedir. Kalaycı Kırılıoğlu (2019)'un da ifade ettiği üzere, motivasyonel görüşme tekniğinde müracaatçı adına değil, müracaatçı ile birlikte değişimin yaratılması önemlidir ve değiştirilecek davranışa karar veren, davranış değişikliği için istekli olan, davranış değişikliğiyle ilgili eylemi gerçekleştirecek olan kişi müracaatçidir.

Son bir husus ise, müracaatçının gösterdiği direnç davranışının onun bir kişilik özelliği olduğu yanılığına düşülmemesi, bunun yerine sosyal hizmet uzmanı ile ilişkisinde rahatsız olmuş olabileceği noktaların (Ögel, 2009) veya değişimi gerçekleştiremeyeceğine dair duyduğu güvensizliğin neler olduğu konusunda ipuçları verebilecek bir fırsat olarak değerlendirilmesi gerekliliğidir. Bu nedenle, daha önce de belirtildiği üzere, empati kurma, motivasyonel görüşmenin en önemli gerekliliklerinden biridir. Ayrıca bu noktada, sosyal hizmet uzmanının müracaatçının hazır bulunuşluk halini doğru değerlendirip değerlendirmedikten emin olması, onun bulunduğu noktanın ilerisine geçerek onu korkutmaması önem taşımaktadır.

Motivasyonel Görüşmede Kullanılabilecek Teknikler

Müracaatçılarla yapılan mesleki görüşmelerde, onların değişimi gerçekleştirmeye yönelik motivasyonlarını artırma konusunda kullanılabilecek bazı görüşme teknikleri bulunmaktadır.

Motivasyonu artırmaya yönelik kullanılabilecek tekniklerden ilki açık uçlu sorular sormaktır. Bu sorular, hem müracaatçının yaşadığı sorunun sosyal hizmet uzmanı tarafından daha iyi anlaşılmasını sağlayacak, hem de müracaatçının soruları yanıtlarken kendi kendisini de dinleyerek bazı konularda farkındalık kazanmasını sağlayacaktır. Örneğin müracaatçıya doğrudan “madde kullanıyor musunuz?” diye sormak yerine, “madde kullanımına ilişkin süreçlerinizden bahsedebilir misiniz?” şeklinde bir soru yöneltmek daha uygun olacaktır.

Kullanılabilecek bir başka görüşme tekniği onaylamadır. Onaylama, müracaatçı sosyal hizmet uzmanı ile ne paylaşırsa paylaşsın, onu yargılamadan güçlendirici geribildirimler vermeyi içermektedir. Örneğin madde kullanım bozukluğundan söz eden müracaatçıya “bu zorlu süreç hakkında yaşadıklarınızı benimle paylaştığınız için çok teşekkür ederim” şeklinde bir geribildirim vermek onun onaylandığını ve yargılanmadığını hissettirecek ve motivasyonunu artıracaktır.

Bir başka motivasyon artırmaya yönelik görüşme tekniği ise yansıtma. Yansıtma, müracaatçının anlattıklarının önemli kısımlarının tekrarlanması veya anlattıklarının kişide yarattığı duyguların ortaya konması şeklinde yapılabilir. Örneğin madde kullanım bozukluğu bulunmadığını veya bu



sorunun çevresindeki kişiler tarafından anlaşılmadığını belirten müracaatçıya, “bunun bir sorun olduğunu düşünmüyorsunuz” veya “çevrenizdeki insanların bu konudaki tepkileri sizi rahatsız ediyor” şeklinde geribildirimler vermek, müracaatçının dinlendiğini ve anlaşıldığını düşünmesini sağlayacaktır.

Bunlara ek olarak, derecelendirme, karar dengesi, geriye-ileriye bakma, plan geliştirme gibi teknikler de yine dirençli davranışlar gösteren müracaatçılarla çalışmada motivasyonu artırmaya yönelik olarak kullanılabilir tekniklerdir (Rollnick, Miller ve Butler, 2008). Örneğin müracaatçının değişime yönelik motivasyonunu, duygularını anlayabilmek için derecelendirme tekniğinden yararlanılabilir. Olumsuzdan olumluya doğru giden bir ölçeklendirme yoluyla, müracaatçının değişim konusunda kendisini hangi noktada gördüğünü anlamak mümkün olabilir. Karar dengesi tekniği ile, müracaatçının içinde bulunduğu mevcut durum ve değişimin gerçekleşmesi durumunda olacaklara ilişkin olumlu ve olumsuz yanlar konuşulur. Böylelikle konunun geniş kapsamlı bir biçimde ele alınması sağlanmış olur. Bir diğer teknik ise geriye-ileriye bakma tekniğidir. Bu teknik ile, müracaatçının değişim gerektiren durum ortaya çıkmadan önceki hayatına ve bu değişimin gerçekleşmesi durumunda doğacak olası sonuçlara ilişkin bir vurgu yapılması amaçlanır. Son olarak plan geliştirme tekniği ile, müracaatçı ile birlikte değişim için gerekli adımlar planlanır.

Görüldüğü üzere, motivasyonel görüşmeden yararlanılabilmesi için öncelikle değişimin anlaşılmasına, motivasyonel görüşmenin ilkelerinin ve tekniklerinin öğrenilmesine gereksinim vardır. Bu temel bilgiler ışığında, farklı dezavantajlı müracaatçılarla çalışmada motivasyonel görüşmeden nasıl yararlanılabileceği daha iyi anlaşılabilir.

Sosyal Hizmet Görüşmelerinde Motivasyonel Görüşme Tekniğinin Kullanımına İlişkin Örnekler

Sosyal hizmet uygulamalarında motivasyonel görüşme tekniğinden pek çok alanda yararlanılabilir. Sigara, alkol veya madde kötüye kullanım bozukluğu olan bireylerin (Glasgow ve diğ., 2000), bu alışkanlıklarını bir anda bırakmaları beklenemez. Bu açıdan, ortada bir sorun olduğunu fark etmeleri, kabul etmeleri ve bu sorunun çözümüne yönelik eyleme geçme konusunda kendilerini hazır hissetmeleri bakımından motivasyonel görüşme önemli bir yere sahiptir. Ayrıca yine sağlığı olumsuz yönde etkileyen bazı davranışların, örneğin ilaç tedavisini reddetme (Kemp ve diğ., 1998), egzersiz veya diyet programını yerine getirmeme, rutin kontrollerini aksatma gibi dirençli davranışların kırılması için de motivasyonel görüşme etkili bir tekniktir. Bu gibi dirençli müracaatçılarla çalışırken özellikle empati ve onaylamaya başvurulması faydalı olacaktır. Öncelikle müracaatçının direncinin nedenlerini ortaya koyabilmek, değişim için hazır hissetmesine yönelik neler yapılabileceğini açık uçlu sorular eşliğinde konuşmak, paylaştığı hiçbir bilgi için onu yadırgamadığımızı, hatta açık bir biçimde kendisini ifade ettiği için kendisini takdir ettiğimizi belirtmek olumlu sonuçlar verecektir.

Söz edilen kullanım alanlarına ek olarak, ergen bireylerle çalışmada da motivasyonel görüşmeden yararlanılması mümkündür. Ergenlik dönemi, diğer tüm gelişim dönemleri içinde bireyleri en çok zorlayan gelişimsel özelliklerin yaşandığı ve çevresel etmenlerden etkilenmeye oldukça açık bulunduğu bir dönemdir. Her ne kadar ergen bireylerle motivasyonel görüşme denince akla ilk gelen sorun madde kullanım bozukluğu olsa da, ergen bireylerin pek çok riskli durumla karşı karşıya kalmaları söz konusudur ve yaşadıkları pek çok sorunun giderilmesine ve beklenen değişimin sağlanmasına yönelik olarak motivasyonel görüşmeden yararlanılabilir. Ergenlik dönemi, erken gebelik, okuldan kaçma, akran zorbalığı, kazalar, saldırgan davranışlar ve daha pek çok açıdan riskli durumların görülebileceği bir dönemdir. Bu gelişimsel dönemde, kimlik arayışı, sosyalleşme, kendini kanıtlama gibi özelliklerin ön planda olmasından dolayı, zaten sorun yaşamakta olan ve bu sorunu gözünde epey büyütmekte olan ergen birey, sosyal hizmet uzmanıyla karşı karşıya gelmek istemeyebilir veya onu bir düşman gibi görebilir. Özellikle de kendi rızası yerine ebeveynlerinin ısrarı nedeniyle görüşmeye gelen ergen bireyler açısından bu olasılık daha yüksek olabilir. Bu



noktada, sosyal hizmet uzmanının öncelikle empatik bir tutum sergilemesi, sabırlı olması, ergen bireyin direnciyle zıtlaşmaması, direnç davranışının altında yatan nedenleri anlaması ve yansıtma tekniğini kullanarak onu anlamaya çalıştığını ifade etmesi oldukça önemlidir. Buna ek olarak motivasyonel görüşmenin önemli tekniklerinden derecelendirmeyi kullanarak ergenin soruna ve bu sorunun çözümüne ilişkin algısını ve hazır bulunuşluk halini anlaması faydalı olacaktır. Daha sonra ise karar dengesi, plan geliştirme gibi teknikleri kullanarak daha fazla yol alınması ve ergen bireyin sorunun çözümüne ve beklenen değişimi sağlamaya yönelik eyleme geçmesi mümkün olacaktır.

Ergen bireylerin kendilerinin yanı sıra, yaşanan soruna ilişkin olarak ebeveynleriyle de motivasyonel görüşmeler yapılması gerekebilmektedir. Sorunun çözümü noktasında ebeveynlerin güven kazanmaları, hazır hissetmeleri motivasyonel görüşme teknikleri ile sağlanabilir. Buna ek olarak çiftler arasında yaşanan gerginliklerin, ilişki sorunlarının giderilmesi için de yine sosyal hizmet uzmanının onlar adına müdahalede bulunması etkili olamayacağından, çiftlerin değişim için hazır olmalarının sağlanması önemlidir. Geriye/ileriye bakma tekniğini kullanarak yaşanan sorundan önceki ilişkileri ve gelecekte olmasını istedikleri yaşamları üzerine konuşmak, değişim motivasyonlarını artırabilecektir. Ayrıca yine empati, yansıtma ve onaylama gibi tekniklerin kullanılması, çiftlerin değişim konusunda dirençlerini kırarak tekniklerdendir.

Suçta yönelen bireylerle sosyal hizmet uygulamaları açısından da, özellikle suç davranışının azaltılmasına yönelik olarak motivasyonel görüşmeden yararlanılması mümkündür (Mann ve Rollnick, 1996). Bu konu sosyal hizmetin en temel ilkelerinden biri olan, gerekli koşullar sağlandığında bireyin değişip gelişebileceğine dair inanç ile de ele alınmalıdır. Ceza ve yaptırım, suç davranışının giderilmesi için yeterli uygulamalar değildir. Suç davranışının altında yatan nedenlerin anlaşılması ve bu bireylerle iş birliği halinde çalışılması, değişim motivasyonunu artıracaktır. Bu noktada öncelikle suçta yönelen bireyin motivasyon için ön niyet, niyet, hazırlık, eylem veya diğer aşamalardan hangisinde olduğunun anlaşılması ve bu hazır bulunuşluk halinin göz önünde bulundurulmasıyla gerekli tekniklerin kullanılması önemlidir.

Motivasyonel görüşmenin söz edilen alanlarda ve diğer pek çok alanda sosyal hizmet uygulamalarında kullanılması, müracaatçı ile iş birliği içinde çalışmasını ve değişimin sağlanmasını kolaylaştırıcı bir etken olduğu görülmektedir.

SONUÇ

Değişim, motivasyon, motivasyonel görüşme gibi temel kavramların üzerinde durulmasının ve motivasyonel görüşme tekniklerinin ve ilkelerinin açıklanmasının önemli olduğunu vurgulayan bu çalışmada, dirençli davranışlar gösteren müracaatçıların bu davranışlarının altında yatan nedenlerin anlaşılması için neler yapılabileceği, müracaatçı ile iş birliğinin nasıl geliştirileceği ve değişim için hazır hissetmesi noktasında neler yapılabileceği açıklanmaya çalışılmıştır. Tüm bu açıklamalardan ve dezavantajlı gruplara yönelik olarak verilen çeşitli örneklerden de anlaşılacağı üzere, motivasyonel görüşme aynı zamanda bireyin sahip olduğu güçlü yanların ortaya çıkarılması ve dolayısıyla güçlenmesi açısından da etkili bir tekniktir. Burada önemli olan, sosyal hizmet uzmanının motivasyonel görüşmenin ilkelerini benimsemiş olması, empati, sabır, bireyin kendi kaderini tayin hakkına saygı, bireyin bulunduğu yerden başlama konularında yetkin olması ve müracaatçının içinde bulunduğu durumu doğru değerlendirip duruma uygun teknikleri kullanabilme becerisine sahip olmasıdır. Böylelikle gerçekleşmesi beklenen değişime ilişkin olarak daha güvenli bir biçimde yol alınabilecektir.

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SOSYAL BİLGİLER ÖĞRETMEN ADAYLARININ OKYANUS OKURYAZARLIĞI ÜZERİNE BİR ARAŞTIRMA

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Özet

Denizler ve okyanuslar üzerine yapılan çalışmaların birçoğu, karar vericilerin halkın ve genç neslin okyanus okuryazarlığı hakkında politikalar geliştirilmesi gerektiği üzerinde birleşmektedir. Vatandaşların okyanus okuryazarlığının geliştirilmesinin deniz ve okyanuslara yönelik kirlilik sorunlarının ortadan kaldırılmasında gerekli eylem planlarının geliştirilmesine önemli katkılar sunacağı açıktır. Bir ülkede gerek vatandaşların gerekse öğrencilerin okuryazarlıklarının iyileştirilmesinde öğretmenler ön planda yer almaktadır. Öğretmen yetiştirme programlarının bu doğrultuda güncellenmesi gerekmektedir. Bu çalışmada eğitim fakültesinde öğrenim gören sosyal bilgiler öğretmen adaylarının okyanus okuryazarlık durumlarının ortaya çıkarılması amaçlanmıştır. Çalışma 2021-2022 öğretim yılında gerçekleştirilmiş olup, çalışmaya 75 sosyal bilgiler öğretmen adayı (28 Erkek, 47 Kadın) katılmıştır. Çalışmada Mogias ve arkadaşları tarafından geliştirilen okyanus okuryazarlık testi kullanılmıştır. Çalışmadan elde edilen bulgular öğretmen adaylarının okyanus okuryazarlıkları konusunda bariz eksikliklere sahip olduklarını ortaya koymuştur. Öğretmen adaylarının özellikle, atmosferik oksijenin kökeni, küresel su döngüsü ve buharlaşan suyun kökeni, küresel okyanusun bağlantılı oluşu ve dünya suyunun çoğunun denizlerde ve okyanuslarda bulunduğu ile ilgili sorularda ciddi sorunlara sahip olduğunu göstermiştir. Bununla birlikte, okyanusların korunması, insan etkisi sonucu okyanusların kirlenmesi, mal ve hizmetlerin taşınmasında okyanusların kullanılması, okyanusların canlılara ev sahipliği yapması konusundaki sorulara ise anlamlı düzeylerde doğru cevaplar verilmiştir. Bu çalışmadan elde edilen sonuçların öğretmen yetiştirme programlarının düzenlenmesinde önemli katkılar sunacağı öngörülmektedir. Ayrıca okyanus okuryazarı olan öğretmenlerin denizlere ve okyanuslara yönelik koruma çalışmalarının eğitimin ilk dönemlerinden itibaren verilmesinde önemli roller oynayacaktır.

Anahtar Kelimeler: Okyanus okuryazarlığı, sosyal bilgiler, öğretmen adayları



AN INVESTIGATION ON THE OCEAN LITERACY OF PRESERVICE SOCIAL SCIENCES TEACHERS

Abstract

Many of the studies on the seas and oceans agree that policy makers should develop policies about ocean literacy of the public and the younger generation (Brent, et al, 2005; Barringer, 2004; Mogias et al., 2019). It is clear that the development of the ocean literacy of the citizens will make significant contributions to the development of the necessary action plans to eliminate the pollution problems of the seas and oceans. Teachers are at the forefront in improving the literacy of both citizens and students in a country. Especially teacher training programs need to be updated in this direction. In this study, it is aimed to reveal the ocean literacy level of pre-service social studies teachers studying at the faculty of education. The study was carried out in 2021-2022 teaching semester, and 75 pre-service social studies teachers (28 Male, 47 Female) participated in the study. The ocean literacy test developed by Mogias et al. was used in the study. Findings from the study revealed that teacher candidates have obvious deficiencies in ocean literacy. It showed that pre-service teachers had particularly serious problems with questions about the origin of atmospheric oxygen, the global water cycle and the origin of evaporating water, the interconnectedness of the global ocean, and the fact that most of the world's water is found in seas and oceans. In addition, the questions about the protection of the oceans, the effects of humans on the pollution of the oceans, the use of the oceans for the transportation of goods and services, and the oceans as home to living things were answered correctly at significant levels. It is thought that the results obtained from this study will make an important contribution to the regulation of teacher training programs. In addition, ocean literate teachers will play an important role in teaching the protection of the seas and oceans from the early stages of education.

Keywords: Ocean literacy, social sciences, preservice teachers

Giriş

Okyanus ve denizler, dünyayı tanımlayan ana fiziksel özelliklerden birisi olup, dünyanın %70'inden fazlasını oluşturmaktadır. Okyanus ve denizler, yaşam için çok önemli olan oksijenin %50'sinden fazlasını üretmekte ve aynı zamanda hava ve iklim olaylarını düzenlemektedir. Ayrıca dünyadaki yaşam çeşitliliğinin oluşmasını sağlarken canlıların besin ihtiyacının önemli bir kısmını sağlamaktadır (Cava et al., 2005). Avrupa Birliğinde çevre sorunlarına yönelik girişimlerin hızlanarak arttığı bir dönem içerisinde geçilmektedir. Bu çerçevede Türkiye Ticaret Bakanlığı tarafından hazırlanan Yeşil Mutabakat Eylem Planı içerisinde “İklim değişikliği neticesinde muhtemel kıyı ve tatlı su kaybının belirlenmesi ve kıyıları ile göl ve/veya sulak alanlar için doğa temelli iklim değişikliğine uyum tedbirleri ortaya konması sağlanacaktır.” hedefi yer almıştır (Yeşil Mutabakat Eylem Planı, 2021).

Okyanuslar ve denizler yüksek öneme sahip olmasına karşın insanlar tarafından yeterince önemsenmemektedir. Denizel kaynakların aşırı kullanımı, hızlı nüfus artışı, kirlilik, teknolojik gelişmeler, sucul sistemler üzerinde olumsuz etki bırakarak ekosistemlerin bozulmasına yol açmaktadır. İklim değişikliği ve küresel ısınma ise gün geçtikçe ciddiyetini artırarak dünyamızı tehdit eder hale gelmiştir (Öncü ve diğerleri, 2021). WWF Yaşayan Gezegen raporu, 1970-2016 yılları arasında 3.741 tatlı su popülasyonundan izlenen 944 türün, dünya çapında %84 oranında azaldığını ve aşırı avlanma, kirlilik gibi unsurların tüm okyanusu derinden etkilediğini göstermektedir (WWF, 2020). Bu gibi sebeplerden dolayı, okyanusu ve üzerinde yaşadığımız gezegeni anlamak ve bilgi sahibi olmak önemlidir. Denizel kaynaklarının korunması, sürdürülebilirliğinin sağlanması ve muhafaza edilmesi, hangi yaşta olduğu farketmeksizin tüm



vatandaşların görevidir. İnsanların “okyanusun sizin üzerinizdeki etkisinin ve okyanus üzerindeki etkinizin anlaşılması” şeklinde tanımlanmış olan okyanus okuryazarlığını benimsemeleri gerekmektedir (Cava et al., 2005). 2015 yılında Birleşmiş Milletler tarafından 17 adet sürdürülebilir kalkınma hedefi belirlenmiştir. Bunlardan 14.sü deniz dibindeki yaşam ile ilgilidir. Yapılan açıklamada, “Sürdürülebilir kalkınma için okyanusları, denizleri ve deniz kaynaklarını korumak ve sürdürülebilir şekilde kullanmak” cümlesi yer almaktadır. 2017’de ise bu hedefin uygulanmasını desteklemek için bir konferans düzenlenmiş ve konferans sonucunda bir eylem çağrısında bulunularak okyanus ile ilgili eğitimin teşvik edilmesi, okyanus okuryazarlığını destekleme, okyanusun korunması gibi konular yer alarak okyanus okuryazarlığının önemi vurgulanmıştır (Wright ve diğerleri, 2017). Bu hedefe başarıyla ulaşmak için konuya dikkat çekilmesi ve sonuç olarak ilk ve ortaöğretimdeki öğrencilerin yanı sıra öğretmen adaylarının da okyanus okuryazarlığının desteklenmesi gerekmektedir (Visbeck, 2018). Öğrenciler bu bilince ulaştıkları zaman çevrelerini de beraberinde etkileme potansiyeline sahip sorumlu davranışlar sergileyerek bir farkındalık yaratabileceklerdir (Hartley ve diğerleri, 2015). İlk ve ortaöğretim çağındaki çocuklar için okyanusal ilişkiler kurmak, okyanusun doğasını, tarihini ve kültürünü anlamak onların zihinsel gelişimi ve yaşadığımız dünyanın geleceği için özel bir öneme sahiptir (Ocean Policy Research Foundation, 2011). Dünya genelinde öğretim programları incelendiğinde ise okyanus okuryazarlığına gereken önemin ne yazık ki verilmediği görülmektedir (Visbeck, 2018).

Türkiye'nin üç tarafı denizlerle çevrili bir konumda olması sebebiyle denizel ilişkileri gelişmiş bir ülkedir. Fakat bu duruma rağmen öğretim programlarında okyanus ve denizler hakkında verilen öğrenci kazanımlarının son derece sınırlı olduğu görülmektedir. Aynı şekilde eğitim fakültelerinde de okyanus okuryazarlığı ile ilgili konuların çok sınırlı düzeylerde anlatıldığı tespit edilmiştir. Bu çerçevede öğretmen adaylarının okyanus okuryazarlığı bakımından teşvik edilmesi ülkemizin denizleri ve mavi vatan yaklaşımı açısından çok büyük önem arz etmektedir.

Bu çalışmanın amacı öğretmen adaylarının okyanus bilimlerine ilişkin bilgi düzeylerini belirlemektir. Elde edilen bulgular kullanılarak öğretim programlarında gerekli kazanımların güncellenmesi için raporların sunulması planlanmaktadır.

Yöntem

Araştırma yöntemleri nitel ve nicel araştırmalar olmak üzere iki kısma ayrılmaktadır. Nicel araştırmalarda daha çok betimsel araştırmaların kullanıldığı görülmektedir. Betimsel analiz araştırmacıların farklı olgu ve olaylar hakkında özet bilgi elde edebilmeleri için sıklıkla başvurulan bir yöntem olduğu belirtilmiştir (Büyüköztürk, Çakmak, Akgün, Karadeniz ve Demirel, 2008). Bu çalışmada eğitim fakültesi sosyal bilgiler öğretmenliği öğrencilerinin okyanus okuryazarlık düzeyi test yoluyla nesnel bir şekilde ölçülmüş ve sayısal verilerle açıklanmıştır.

Problem Durumu

Sosyal Bilgiler Öğretmen adaylarının Okyanus Okuryazarlıkları düzeyleri nasıldır?

Örneklem

Araştırma İzmir'deki bir eğitim fakültesinde öğrenim gören sosyal bilgiler öğretmenliği öğrencilerine yapılmıştır.

Ölçme Aracı

Ölçme aracı olarak Mogias ve arkadaşları (2019) tarafından geliştirilen ölçek kullanılmıştır. Bu ölçekte Okyanus Okuryazarlığı Çerçevesinin yedi temel ilkesi (Ulusal Okyanus ve Atmosfer İdaresi [NOAA], 2013) ve Okyanus Okuryazarlığı Kapsamı ve Sırası (NMEA, 2010) dikkate alınmıştır. Bu ölçeğin Türkçeye çevirisi bilim eğitimi, deniz bilimleri uzmanları tarafından yapılmıştır. Ölçekte yer alan maddelerin Okyanus Okuryazarlığı Çerçevesinin yedi temel ilkesine göre dağılımı şu şekildedir:



Okyanus Okuryazarlığı Temel İlkeler

1. Dünya, birçok özelliği olan bir okyanusa sahiptir. (Sorular: 1,7,13)
2. Okyanus ve okyanustaki yaşam, Dünya'nın özelliklerini şekillendirir. (Sorular 2,10)
3. Okyanus iklim ve hava üzerinde büyük bir etkiye sahiptir. (Sorular 5, 11)
4. Okyanus Dünyayı yaşanabilir hale getirmiştir. (Sorular 3, 8)
5. Okyanus, yaşamın çeşitliliğini ve ekosistemleri desteklemektedir. (Sorular 4, 9)
6. Okyanus ve insanlar ayrılmaz bir şekilde birbirine bağlıdır. (Sorular 12, 14, 16)
7. Okyanuslar büyük ölçüde keşfedilmemiştir. (Sorular 6, 15)

Katılımcılar

Çalışmaya Dokuz Eylül Üniversitesi Buca Eğitim Fakültesi Sosyal Bilgiler Öğretmenliği programından toplam 75 öğretmen adayı (47 Kadın, 28 Erkek) katılmıştır. Çalışma 2021-2022 Eğitim ve Öğretim yılının güz döneminde online şekilde uygulanmıştır. Çalışmaya katılan öğrencilerin %45,33'ü hayatlarının büyük bir bölümünü denizden uzak bir il/ilçe/köyde geçirirken, %30,67'si denize yakın ve %24'ü ise denize kısmen yakın bir yerde geçirdiklerini belirtmişlerdir.

Bulgular



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1. SORU	N	%	Grafik
A. Kesinlikle hayır	12	16,00	
B. Evet, tüm okyanuslara.	17	22,67	
C. Sadece bazı okyanuslara	30	40,00	
D. Bilmiyorum	16	21,33	

2. SORU	N	%	Grafik
A. Fosil hayvanlar bir zamanlar dağlarda yaşıyordu.	15	20,00	
B. Fosiller basit taşlardır.	1	1,33	
C. Fosilli kaya denizde oluşmuştur.	51	68,00	
D. Bilmiyorum.	8	10,67	

3. SORU	N	%	Graph
A. Kıtalarda	9	12,00	
B. Denizde	60	80,00	
C. Ormanlarda	1	1,33	
D. Bilmiyorum.	5	6,67	

4. SORU	N	%	Graph
A. Denizin her yerindeki aynı hayvanlara	8	10,67	
B. Denizin farklı yerlerindeki farklı hayvanlara	64	85,33	
C. Çok az hayvana çünkü nefes alacak hava yoktur	1	1,33	
D. Bilmiyorum.	2	2,67	

5. SORU	N	%	Graph
A. Ülkenizden uzaktaki daha sıcak denizlerden	8	10,67	
B. Ülkenize daha yakın denizden	40	53,33	
C. Daha önce yağmur yağmış bir karadan	13	17,33	
D. Bilmiyorum.	14	18,67	

6. SORU	N	%	Graph
A. Ay'ın yüzeyi	5	6,67	
B. Himalayalar	2	2,67	
C. Okyanus dibi	58	77,33	
D. Bilmiyorum	10	13,33	

7. SORU	N	%	Grafik
A. Tüm okyanuslarla	18	24,00	
B. Sadece Akdeniz ile	32	42,67	
C. Sadece içine dökülen nehirler ile	6	8,00	
D. Bilmiyorum	19	25,33	

8. SORU	N	%	Grafik
A. Okyanuslar	16	21,33	
B. Tropikal ormanlar	13	17,33	
C. Ormanlar ve çayırlar	41	54,67	
D. Bilmiyorum	5	6,67	

9. SORU	N	%	Graph
A. Tyrannosaurus rex (etçil bir dinazor türü)	10	13,33	
B. Katil balina	8	10,67	
C. Mavi balina	47	62,67	
D. Bilmiyorum	10	13,33	

10. SORU	N	%	Graph
A. Deniz suyunun hareketleriyle	64	85,33	
B. Deniz kirliliği ile	1	1,33	
C. Bunlardan hiçbiri, kıyı şeridi hep aynı kalır.	3	4,00	
D. Bilmiyorum	7	9,33	

11. SORU	N	%	Graph
A. Yazları daha sıcak ve kışları daha soğuk	48	64,00	



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B. Yazları daha soğuk ve kışları daha sıcak	10	13,33
C. Şimdikiyle aynı iklim	7	9,33
D. Bilmiyorum.	10	13,33

12. SORU	N	%	Graph
A. Trenlerle	0	0,00	
B. Uçaklarla	7	9,33	
C. Gemilerle	65	86,67	
D. Bilmiyorum	3	4,00	

13. SORU	N	%	Graph
A. Denizlerde ve okyanuslarda	40	53,33	
B. Göllerde ve nehirlerde	2	2,67	
C. Kuzey ve Güney Kutuplarında buzun içinde donmuş bir şekilde	30	40,00	
D. Bilmiyorum	3	4,00	

14. SORU	N	%	Graph
Katılıyorum	51	68,00	
Bilmiyorum	9	12,00	
Katılmıyorum	15	20,00	

15. SORU	N	%	Graph
Katılıyorum	73	97,33	
Bilmiyorum	2	2,67	
Katılmıyorum	0	0,00	

16. SORU	N	%	Graph
Katılıyorum	64	85,33	
Bilmiyorum	9	12,00	
Katılmıyorum	2	2,67	



Sonuçlar

Sonuçlar Okyanus okuryazarlığının temel ilkelerine göre açıklanmıştır. Her bir temel ilke için hazırlanan sorular ve elde edilen bulgular ışığında yorumlar aşağıda yer almaktadır:

Temel İlke 1: Dünya, birçok özelliği olan bir okyanusa sahiptir. (Sorular: 1. Bir balık olsaydınız, her okyanusa yüzerek ulaşabilir miydiniz? 7. Ege Denizi şunlarla bağlantılıdır: 13. Dünya'daki en fazla su nerededir?)

Bu soruda öğrencilerin okyanusların birbiri ile bağlantılı olma özelliği konusunda yanılıya düştükleri görülmektedir. Özellikle 1. (%22,67) ve 7. (%24) sorulara verilen cevaplara bakıldığında öğretmen adaylarının doğru cevap yüzdelerinin oldukça düşük olduğu görülmektedir. 13. soruda ise dünyada en çok su bulunan yer konusunda verdikleri cevaplarda (A: %53,33; C: %40) ikilemde oldukları görülmektedir.

Temel İlke 2. Okyanustaki yaşam, Dünya'nın özelliklerini şekillendirir. (Sorular: 2. Dağlarda dolaşırken içinde balık fosili bulunan bir kaya görürseniz, bunun anlamı şudur; 10. Kıyı şeridi şu şekilde şekillenir)

Okyanusların dünyanın özelliklerini ne ölçüde değiştirdiğine yönelik iki soru sorulmuştur. 2. soruda öğretmen adaylarının %68'inin doğru cevap verdiği görülürken, bu oran 10. soruda %85 olmuştur. Öğrencilerin bu temel ilke konusunda bilgilerinin daha iyi olduğu anlaşılmaktadır.

Temel İlke 3. Okyanus iklim ve hava üzerinde büyük bir etkiye sahiptir. (Sorular: 5. Karaya düşen yağmur suyu aslen nereden gelir? 11. Ege Denizi olmasaydı şehrinizin iklimi nasıl olurdu?)

Okyanusların iklim ve hava durumu üzerine olan etkisinin araştırıldığı 5. soruda öğretmen adaylarının su döngüsü ve yağmur oluşumu konusunda bazı yanlış bilgilere (B: %53,33) sahip oldukları; 11. soruda ise çoğu öğretmen adayının (%64) "Ege Denizinin olmaması durumunda" karasal iklimin oluşacağı bilgisine sahip oldukları görülmektedir.

Temel İlke 4. Okyanus Dünyayı yaşanabilir hale getirmiştir. (Sorular: 3. Dünya'daki ilk canlı organizmalar nerede yaşamıştır? 8. Canlıların soluduğu oksijenin ana kaynağı aşağıdakilerden hangisidir?)

Öğretmen adaylarının %80'inin 3. soruyu doğru cevapladığı görülmüştür. Bununla birlikte atmosferik oksijen kaynağının birçoğunun okyanuslar tarafından sağlanması ile ilgili soruya öğretmen adaylarının sadece %21,33'ünün doğru cevap verdiği tespit edilmiştir.

Temel İlke 5. Okyanus, yaşamın çeşitliliğini ve ekosistemleri desteklemektedir. (Sorular: 4. Deniz ortamı aşağıdaki canlılardan hangisine ev sahipliği yapar? 9. Dünya'da yaşayan en büyük hayvan)

Okyanus yaşamı, biyoçeşitlilik ve ekosistemler ile ilgili hazırlanan sorular olan 4. ve 9. sorulara öğretmen adaylarının sırasıyla %64 ve %62,67 oranında doğru cevap verdikleri saptanmıştır. Her iki soru içinde öğretmen adaylarının yeterli bilgiye sahip olmadıkları anlaşılmıştır.

Temel İlke 6. Okyanus ve insanlar ayrılmaz bir şekilde birbirine bağlıdır. (Sorular: 12. Dünya'daki ürünlerin çoğu (örneğin oyuncaklar) nasıl taşınır? 14. Kıyıda yaşasam da deniz hayatımı etkiliyor 16. Lavaboya attığım her şeyin deniz üzerinde etkisi vardır)



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Dünyadaki mal ve hizmetlerin taşınmasında okyanusların ve denizlerin kullanılması ile ilgili 12. soruya öğretmen adaylarının %86,67'si doğru cevap vermiştir. 14 ve 16. sorular daha çok okyanusların öğrencileri duyuşsal açıdan nasıl etkilediği ile ilgilidir. Bu sorularda ise öğrencilerin büyük bir kısmının okyanus ve denizlerin öğrencileri etkilediğini göstermiştir.

Temel İlke 7. Okyanuslar büyük ölçüde keşfedilmemiştir. (Sorular: 6. Aşağıdaki ortamlardan hangisi en az keşfedilmiştir? 15. Denizi korumak için çalışmalıyız ve bilmeliyiz.)

Okyanusların bilimsel anlamda henüz tam olarak keşfedilmemiş olması ile ilgili sorularda ise öğretmen adaylarının büyük oranının (sırasıyla %77,33 ve %97,33) bu sorulara katıldıklarını göstermektedir.

Öneriler

Bu çalışmadan elde edilen sonuçlar ele alındığında sosyal bilgiler öğretmen adaylarının özellikle atmosferik oksijenin kökeni, küresel su döngüsü ve buharlaşan suyun kökeni, küresel okyanusun bağlantılı oluşu ve dünya suyunun çoğunun denizlerde ve okyanuslarda bulunduğu gibi konularda bilimsel açıdan yetersiz oldukları ortaya çıkmaktadır. Bu bilimsel bilgilerin giderilmesi için sosyal bilgiler öğretmenliği lisans programının ders içeriklerine okyanuslar ve denizler konusunda yeterince içerik eklenmesinin gerekliliği ortaya çıkmaktadır. Bu çalışmada nicel araştırma yöntemi kullanılarak veriler toplanmıştır. İleri düzey çalışmalarda nicel verilere ilaveten nitel verilerinde toplanması ile derinlemesine çalışmaların yapılması daha net sonuçların ortaya konulmasını sağlayacağı kuşkusuzdur.

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**KÜRESEL DOĞAN VE AŞAMALI ULUSLARARASILAŞAN İŞLETMELERİN
KARŞILAŞTIRILMASI: İMALAT SANAYİ ÜZERİNE BİR ARAŞTIRMA**

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Özet

Günümüzde yaşanan değişim ve dönüşümler, ticaret engellerinin azaltılmasına yönelik çabalar, yapılan uluslararası ticari anlaşmalar ile ortadan büyük oranda kalkan sınırlar dünyayı tek bir pazar haline getirmiştir. Küreselleşmenin etkileri ile iş dünyasında uluslararası pazarlara açılma ve uluslararası pazarlarda faaliyetlerde bulunma işletmeler açısından bir zorunluluk haline gelmiştir. Ekonomik ve coğrafi sınırların ortadan kalktığı günümüz iş dünyasında; yurt içi pazarlar hem piyasa koşullarında rekabet etmek hem de karlarını maksimize etmek isteyen işletmeler için yeterli bir seçenek oluşturmamaktadır. Bu anlamda artan uluslararasılaşma eğilimi ile uluslararasılaşma sürecinde işletmeleri etkileyen çevresel faktörler, sahip olunan kaynaklar ve yetenekler araştırılması gereken önemli bir konu haline dönüşmüştür. Yine işletmelerin yapısal, yönetsel ve kültürel farklılıkları onların uluslararasılaşma süreçlerini de birbirinden farklı kılmaktadır. İşletme yazınında özellikle küresel pazarlarda faaliyet gösteren işletmelerin varlıklarını devam ettirebilmesi, rekabet güçlerini artırabilmesi ve pazarda kendilerine yer bulabilmeleri adına bu firmaların ortaya çıkışları ve süreçleri ile birlikte, uluslararası pazarlarda rekabet avantajı elde etmelerini sağlayan pazara giriş ve rekabet stratejileri, örgütsel yetenek ve becerilerini anlamak ve açıklamak önem arz etmektedir. Bu anlamda Kayseri ilinde imalat sanayinde faaliyet gösteren küresel doğan bir işletme ile aşamalı şekilde uluslararasılaşan bir işletmenin süreçleri görüşme yöntemi ile ele alınmıştır. Yine bu iki işletmenin uluslararasılaşma eğilimleri, çabaları, pazara giriş ve rekabet stratejileri, uluslararasılaşma nedenleri ve süreçte karşılaştıkları sıkıntı ve engeller karşılaştırmalı olarak incelenmiştir. İmalat sanayi ülkenin ekonomik, sosyal ve teknolojik rekabet gücünü artıran yapısı ile üzerine önemle eğinilmesi gereken bir alan oluşturmaktadır. Yine bu sanayi dalının sürdürülebilir ekonomik büyüme için ulusal ekonomilerde kritik öneme sahip oluşu; bu sektörde sağlanan verimlilik artışı ile ekonomik büyüme arasındaki sıkı ilişki araştırmanın bu alanda yapılmasına ilham vermiştir.

Anahtar Kelimeler: Uluslararasılaşma, Uluslararasılaşma Modelleri, Küresel Doğan İşletmeler, İmalat Sanayi.

Abstract

Today's changes and transformations, efforts to reduce trade barriers, borders that have been largely eliminated by international trade agreements have brought the world to a single



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market. With the effects of globalization, go to international markets in the business world and operating in international markets has become a necessity for businesses. In today's business world, where economic and geographical borders have disappeared; for businesses that want to compete in market conditions and maximize their profits domestic market does not constitute an adequate option. In this sense, increasing internationalization environmental factors affecting businesses in the process of internationalization, resources and capabilities have become an important issue to be (searched). Again, the structural, managerial and cultural differences of the enterprises also affect their internationalization processes and makes it different from each other. In business literature, especially those operating in global markets businesses can maintain their existence, increase their competitiveness and together with the emergence and processes of these companies so that they can find a place for themselves, market entry and competition that enable them to gain a competitive advantage in international markets and it is important to understand and explain strategies, organizational abilities and skills. In this sense, in this study, the processes of a born global company operating in the manufacturing industry in the province of Kayseri and a business that gradually internationalizes are discussed with the interview method. Again, the market entry and competition strategies of these two enterprises, the reasons for internationalization, organizational skills and competencies were examined comparatively. The manufacturing industry, with its structure that increases the economic, social and technological competitiveness of the country, constitutes an area that should be emphasized. Again, for the sustainable economic growth of this industry branch, national its critical importance in economies; The close relationship between the productivity increase achieved in this sector and economic growth inspired the research to be conducted in this field.

Keywords: Internationalization, Internationalization Models, Global Born Companies, Manufacturing Industry.

GİRİŞ

Bilgi, haberleşme, teknoloji ve ticaretin sınır tanımayan bir hale dönüşmesi, dünyanın bir küresel pazar niteliği taşıması ve rekabetin uluslararasılaşması gibi birçok etken neredeyse uluslararası pazarlara açılma faaliyetlerini zorunlu hale dönüştürmüştür. Hem piyasa koşullarında rekabet etmek hem de karlarını maksimize etmek isteyen işletmelerin yurt içi pazarlarda faaliyet göstermesi yeterli bir seçenek olmaktan çıkmıştır. Bu nedenle işletmelerin uluslararası faaliyetlere katılımı, stratejileri ve yöntemlerinin yanı sıra bu faaliyetlere ayırdığı emek ve sermaye oranı da önemli bir konu haline gelmiştir.

Günümüzde yaşanan değişim ve dönüşümler, ticaret engellerinin azaltılmasına yönelik çabalar, yapılan uluslararası ticari anlaşmalar ile ortadan büyük oranda kalkan sınırlar dünyayı tek bir pazar haline getirmiştir. Gelişmiş, az gelişmiş veya gelişmekte olan ülkelerin tümünde uluslararası pazarlarda ticaret yapmak elbette ekonomik, sosyal ve teknolojik alanlarda ülkenin gelişimine katkı sağlamaktadır. Uluslararası işletmecilik faaliyetlerinin yoğun olduğu ülkelerde, dış ticaret faaliyetleri de aynı oranda artış göstermektedir. Bu da ülkelerin ihracat, cari açık, istihdam ve döviz rezervi oranlarını iyileştirirken, ülkenin refah seviyesini, milli geliri ve girişimciliğine de katkı sağlamaktadır.



İmalat sanayi sektörü, Türkiye’ de mal üretiminin yoğun olarak yaşandığı sektörler arasında yer almaktadır. Ayrıca imalat sanayisinde üretilen ürünlerin dış ticarete konu olması da yine bu sektörün küresel gelişmelerden en fazla etkilenen sektörlerden biri olma özelliği taşımasına neden olmaktadır. Türkiye’de imalat sanayi sektörü, 2020 yılından bu yana GSYİH’ da %19,1, istihdamda %19,8, ihracatta %93,2 oranında bir paya sahiptir (TUİK, 2020). Bu oranlar, imalat sanayinin, istihdam, üretim ve dış ticaret konularında önemli bir yere sahip olduğunu kanıtlamaktadır (Balaylar, 2011: 139). Ruzzier ve arkadaşları (2006: 476) yüksek teknoloji ve imalat sektörlerinde faaliyet gösteren işletmelerin, dış ve küresel rekabetin sunduğu risk ve fırsatları dikkate almadan piyasada hareket etmelerinin mümkün olmadığına dikkat çekmişlerdir. Bu anlamda artan uluslararasılaşma eğilimleri, çabaları, pazara giriş ve rekabet stratejileri, uluslararasılaşma nedenleri ve süreçte karşılaştıkları sıkıntı ve engellerin incelenmesi önemli bir konu haline dönüşmüştür. Yine işletmelerin yapısal, yönetsel ve kültürel farklılıklarının uluslararasılaşma süreçlerine de yansıtacağı düşünülmektedir. Bu nedenle, dış ticaret alanında önemli bir paya sahip olan imalat sanayi sektörünün uluslararasılaşma faaliyetlerinin irdelenmesi bu çalışmanın amacını oluşturmuştur.

1. KAVRAMSAL ÇERÇEVE

1.1. Uluslararası İşletmecilik Kavramı

Uluslararasılaşma kavramı, işletmelerin üretim, ar-ge ve satış gibi faaliyetlerini uluslararası pazarlara doğru genişletmesi (Hollensen, 2007: 41), işletmelerin strateji, yapı, kaynak gibi operasyonlarını uluslararası ortamlara uyarlaması (Calof ve Beamish, 1995: 116) ya da uluslararası operasyonlara katılımı artırma süreci (Welch ve Luostarinen, 1988: 36) şeklinde tanımlanmaktadır. Uluslararasılaşma kavramı son yıllarda, organizasyon teorisi, pazarlama, stratejik yönetim ve uluslararası yönetim gibi birçok alanda araştırma konusu olarak adından söz ettirmiştir (Ruzzier, Hisrich ve Antoncic, 2006: 476).

Ruigrok ve Wagner (2003: 65-67) uluslararasılaşmanın faydalarını doğrudan yabancı yatırım ve çok uluslu firma teorileri ile ilişkilendirmiştir. Ekonomik odaklı olan ve bu nedenle işletmenin dış ortamında bulunan faktörlere odaklanan doğrudan yabancı yatırım teorileri, çok uluslu şirketlerin var olma nedenlerini açıklamaktadır. Uluslararası ürün, faktör ve finansal piyasalardaki kusurların, uluslararasılaşan işletmelere katkı sağladığı varsayılmaktadır. Daha yönetsel bir bakış açısı benimseyen çok uluslu şirket teorileri ise işletmenin iç ortamına odaklanmaktadır. Fayerweather (1978) çok uluslu şirketlerin, yerel olarak faaliyet gösteren işletmelere kıyasla uluslararası kaynak aktarımının ve dünya çapındaki kurumsal yapıların, süreçlerin ve sistemlerin entegrasyon potansiyelinin işletmeye özgü yetkinlikler kazandırabileceğini ileri sürmüştür. Benzer şekilde (Wernerfelt, 1984) işletmenin kaynak temelli görüşü, küresel kaynaklar ve temel yetkinliklerin kurumsal öğrenmeyi ve bilgi gelişimini artırdığı yönündedir. Operasyonel esneklik teorisi ise (Kogut, 1989) özellikle başarılı bir küresel ağ yapısı geliştiren çok uluslu şirketlerin uluslararası pazarlarda arbitraj ve kaldıraç fırsatları yakalama olanağının yüksek olabileceğine vurgu yapmaktadır.



Hollensen (2007: 42) işletmelerin uluslararasılaşma nedenlerini proaktif ve reaktif güdüler olmak üzere iki farklı kategoride sınıflandırmıştır. Proaktif güdüler, işletmenin benzersiz yeteneklerinden veya pazar olanaklarından yararlanma konusundaki ilgisine dayalı olarak strateji değişikliğini teşvik eder. Proaktif güdülere; kar ve büyüme hedefleri, yönetsel dürtü, teknoloji yetkinliği/benzersiz ürün, dış pazar fırsatları/pazar bilgisi, ölçek ekonomileri ve vergi avantajları örnek verilebilir. Reaktif güdüler ise, işletmenin kendi iç veya dış pazarlarındaki baskılara veya tehditlere tepki verdiğini ve zaman içerisinde faaliyetlerini değiştirerek bunlara pasif olarak uyum sağladığını gösterir. Reaktif güdüler, rekabet baskısı, küçük ve doymuş iç pazar yapısı, aşırı üretim/fazla kapasite, istenmeyen yabancı siparişler, sezonluk ürünlerin satışını artırma, uluslararası müşterilere yakınlık/psikolojik mesafedir.

1.2. Uluslararasılaşma Modelleri

Aşamalı uluslararasılaşma modellerinden olan Uppsala modeli, Johanson ve Wiedersheim-Paul (1975) tarafından Uppsala Üniversitesi'nde gerçekleştirilen, İsveç firmalarının (Sandvik, Atlas Copco, Facit ve Volvo) uluslararasılaşma sürecine ilişkin vaka çalışmasına dayanmaktadır (Johanson ve Wiedersheim-Paul, 1975). Ardından Johanson ve Vahlne (1977) tarafından yapılan çalışma ile modelin literatüre kazandırılması sağlanmıştır.

Johanson ve Wiedersheim-Paul (1975) uluslararasılaşmanın önündeki en büyük engelin bilgi ve kaynak eksikliği olduğunu fakat bu engellerin aşamalı karar verme ve dış pazarlar hakkında bilgi edinme yolu ile azaltılabileceğini ileri sürmüşlerdir. Dolayısıyla, bu engellerin en aza indirilmesi ve uluslararasılaşma sürecinin etkin bir şekilde yürütülmesindeki temel varsayım, işletmenin önce iç pazarda gelişimini tamamlamasıdır. Modelde, yabancı ülkeler hakkındaki bilgi eksikliği ve belirsizlikten kaçınma eğilimi nedeniyle işletmelerin öncelikle komşu ülkelere veya nispeten iyi bilinen ve iş açısından benzer ülkelere ihracat yapması gerektiği varsayılır. Burada modelin üzerinde durulduğu önemli bir nokta olan psikolojik yakınlık faktörüne vurgu yapılmaktadır. Bilgi akışı ve pazara girişi engelleyen tüm faktörler (dil, eğitim, kültür ve endüstriyel gelişimdeki farklılıklar vb.) psikolojik yakınlık olarak adlandırılmaktadır (Johanson ve Vahlne, 1977: 24). Johanson ve Wiedersheim-Paul (1975) uppsala modelinde uluslararasılaşma sürecini; düzenli ihracat faaliyetinin olmaması, bağımsız temsilciler aracılığıyla ihracat, satış yan kuruluş ve üretim/imalat olarak dört aşamada ele almıştır.

İşletmelerin uluslararasılaşma modellerinin bir diğer ayağını ise yenilikle ilgili olanlar oluşturmaktadır. Rogers'ın (1962) benimseme süreci aşamalarından türetilmiş olan yenilikle ilgili uluslararasılaşma modelleri, uluslararasılaşmanın (Andersen, 1993: 212) ve sonraki her aşamanın işletme için bir yenilik olarak kabul edildiği ve odak noktasında yalnızca ihracat geliştirme süreçlerinin yer aldığı modelleri kapsamaktadır (Gankema vd, 2000; Ruzzier, 2006: 483). Yenilikle ilgili uluslararasılaşma modelleri (Bilkey ve Tesar, 1977; Czinkota, 1982; Cavusgil, 1980; Reid, 1981) aşama sayılarında ve bu aşamaların açıklanması bakımından farklılıklar taşımaktadır. Bilkey ve Tesar, (1977) ve Czinkota (1982)'nin modellerinin birinci aşamasında işletmenin ihracat yapmakla ilgilenmediğini ikinci aşamada ise, istenmeyen siparişleri karşılama kısmen istekli olduğu varsayılmaktadır. Bu da işletmenin uluslararası faaliyetlere katılmasında "itme mekanizması" olarak adlandırılan faktörlerin rol oynadığını göstermektedir. Cavusgil (1980) ve Reid (1981)'in modelinde ise işletme uluslararasılaşmanın



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daha ilk aşamalarında ilgili ve aktif bir rol oynamaktadır. Burada ise işletmenin uluslararası platformlarda yer almasının “çekme mekanizmaları” ile gerçekleştirildiğine vurgu yapılmaktadır (Andersen, 1993: 212). Andersen (1993: 212) hem uppsala modelinin hem de yenilikle ilgili uluslararasılaşma modellerinin davranışsal yaklaşımı benimsediklerini ve her iki modelin de uluslararasılaşma sürecini aşamalı olarak ele almasının; işletmenin bilgi eksikliği (özellikle deneyimsel bilgi) ve uluslararasılaşma kararıyla ilgili belirsizlik şeklinde iki temel nedene dayandırmıştır.

Uluslararasılaşma modellerinden ağ yaklaşımı modeline göre, işletmenin uluslararasılaşması, yabancı bir ağdaki muadillerine göre pozisyonlar oluşturması ve bu pozisyonları geliştirmesi anlamına gelir. Uluslararası hale getirilen bir işletme, başlangıçta öncelikle yerel olan bir ağ ile meşgul olur ve daha sonra diğer ülkelerdeki ağlarda iş ilişkilerini daha da geliştirir. Bu, işletme için yeni olan ülke ağlarında ilişkilerin kurulması (uluslararası genişleme), bu ağlardaki ilişkilerin geliştirilmesi (nüfuz etme) ve farklı ülkelerdeki ağların bağlanması (uluslararası entegrasyon) yoluyla elde edilir. Uluslararasılaşma ağ modelinin gücü, çok uluslu veya uluslararası işletmelerin varlığından ziyade uluslararasılaşma sürecini açıklamada yatmaktadır. Ağ perspektifinden, bir işletmenin uluslararasılaşma stratejisi; bilgi geliştirme ihtiyacını en aza indirmek, ayarlama ihtiyacını en aza indirmek ve yerleşik ağ konumlarından yararlanmak gibi ihtiyaçlarla karakterize edilir (Johanson ve Mattsson, 1993; Ruzzier vd, 2006: 485).

1.3.Küresel Doğan İşletmeler

Küresel doğan işletmeler, “kuruldukları andan itibaren veya yakın bir zamanda birden fazla ülkede ürün satışından önemli rekabet avantajı elde etmeyi amaçlayan bir iş organizasyonu” şeklinde tanımlanmaktadır (Autio vd, 2000; Knight ve Cavusgil, 1996; Oviatt ve McDougall, 1994; Rennie, 1993; Knight ve Cavusgil, 2004: 124). Küresel doğan işletmelerin, proaktif, risk alabilen ve yenilikçi bir organizasyon kültürü ile karakterize edildiği (Freeman, Edwards ve Schroder, 2006: 36) ileri sürülmektedir.

Hollensen (2007: 80-81) küresel doğan işletmelerin uluslararası pazarlarda yer almaları ve faaliyet göstermelerinin bir takım nedenlere bağlı olduğunu vurgu yapmaktadır. Bu nedenler; niş pazarların artan rolü, üretim teknolojisindeki gelişmeler, küresel doğanların esnekliği, küresel ağ, bilgi teknolojisindeki gelişmeler ve hızıdır. Hollensen (2007)’e göre son yıllarda popüler olan ortak araştırma ve geliştirme platformları, uluslararası teknoloji transferleri ve sınır ötesi eğitim ve bilim, mühendislik ve işletme alanlarındaki öğrenci değişimlerinin tümü teknolojinin küreselleşmesini işaret etmektedir. Ve bu etken ise küresel doğan işletmelerin ortaya çıkmasında bir diğer önemli eğilimdir. Bu nedenle, imalat, ürün inovasyonu ve genel operasyonlara yönelik yeni ve daha iyi yaklaşımlar, küçük firmalar için çok daha kolay erişilebilir hale gelmiştir.

Chetty ve Campbell-Hunt (2004: 66) küresel doğan ve aşamalı uluslararasılaşan işletmelerin, uluslararası pazarlara katılım süreç ve stratejilerinde bir takım farklılıkların olduğuna dikkat çekmişlerdir. İşletmeler arasındaki bu farklılıklara Tablo 1’de yer verilmiştir.



Tablo 1. Geleneksel Aşamalı Teoriler İle Küresel Doğan İşletmelerin Karşılaştırılması

Uluslararasılaştırma Nitelikleri	Geleneksel aşamalı teoriler	Küresel doğan işletme teorisi
İç Pazar	Önce iç pazar gelişir.	İç pazar büyük ölçüde alakasızdır.
Önceki uluslararasılaşma deneyimi	Beklenmeyen	İşletme kurucusu, ilgili uluslararası pazarda geniş deneyime sahiptir.
Uluslararasılaşmanın kapsamı	Seri bir şekilde gelişen uluslararası pazarlar mevcuttur.	Birçok uluslararası pazar aynı anda gelişir.
Uluslararasılaşma hızı	Kademelidir.	Hızlıdır.
Psikolojik yakınlık	Psikolojik yakınlık sırası dikkate alınır.	Psikolojik yakınlık alakasızdır.
Uluslararasılaşmayı öğrenmek	(Yavaşça) birikmiş deneyimlerden öğrenme yeteneği tarafından yönetilen bir hızla.	Üstün uluslararasılaşma bilgisi nedeniyle öğrenme daha hızlı gerçekleşir.
Firma stratejisi	Firmanın uluslararasılaşma motivasyonunun merkezinde değildir.	Rekabet avantajının geliştirilmesinde tam ve hızlı uluslararasılaşma gereklidir. Firma, ürün-pazar odaklıdır.
Bilgilendirme ve iletişim teknolojisinin kullanımı	Uluslararasılaşmanın merkezinde değildir.	Küresel pazar erişiminin ve öğrenmenin etkinleştiricisi olarak kilit rol oynar.
İş ortaklarının ağları	Uluslararasılaşmanın ilk aşamalarında kullanılır ve kademeli olarak firmanın kendi kaynakları ile değiştirilir.	Küresel erişimin hızlı gelişimi, hızlı ve kapsamlı bir ağ gerektirir.
Uluslararasılaşma zamanı	Firma başarısı için çok önemli değil; yavaştır.	Kuruluştan sonraki birkaç yıl içinde firma başarısı için çok önemlidir.

Kaynak: Chetty, S., & Campbell-Hunt, C. (2004). A strategic approach to internationalization: a traditional versus a “born-global” approach. *Journal of International marketing*, 12(1), 57-81.

2. ARAŞTIRMA YÖNTEMİ

2.1. Araştırmanın Örneklemi ve Veri Toplama Yöntemi

Çalışmada, Kayseri imalat sanayi sektöründe faaliyet gösteren küresel doğan ve aşamalı uluslararasılaşan iki işletmenin uluslararasılaşma çabaları ve pazara giriş stratejileri, uluslararasılaşma nedenleri, pazara girişte karşılaştıkları sorunlar, tercih ettikleri rekabet stratejileri ve örgütsel yapılarının karşılaştırılması amaçlanmıştır. Çalışmada, nitel araştırma yöntemlerinden olan görüşme yöntemi tercih edilmiş ve her iki şirketinde yöneticileri ile en az 30 dakika süre ile görüşmeler gerçekleştirilmiştir. Yöneticilere, görüşme sırasında Yıldırım ve Erdem (2016)'in çalışmasından uyarlanmış sorular yöneltilmiştir. Görüşme (Stewart ve Cash, 1985), ‘önceden belirlenmiş ciddi bir amaç için yapılan soru sorma ve yanıtlama tarzına dayalı karşılıklı ve etkileşimli bir iletişim süreci’ şeklinde tanımlanmaktadır. Yazarlara göre tanımda belirtilen süreç; iletişimdeki sürekliliği ve dinamikliği, karşılıklı; iki veya daha fazla kişi arasında gerçekleşen etkileşimi, etkileşim; görüşmeye dahil olan bireyler arasındaki bağı, önceden belirlenmiş ve ciddi bir amaç; görüşmeye dahil olan kişilerden en az birinin bir amaca sahip olduğu ve bu amaç doğrultusunda bilgi toplamaya çalıştığını ifade etmektedir (Yıldırım ve Şimşek, 2018: 129).

3. ARAŞTIRMA BULGULARI



Araştırmanın bu bölümünde araştırmaya konu olan işletmelere ait genel bulgulara yer verilmiştir. Araştırmanın bundan sonraki bölümünde araştırmaya katılmayı kabul eden işletmeler A ve B işletmesi olarak anılacaktır.

Tablo 2. İşletmelere Ait Genel Bulgular

İşletme	Kuruluş yılı	Personel Sayısı	Uluslararasılaşma Faaliyetlerin başlangıç yılı	Firma yöneticisi	Ar-Ge Bölümü	Uluslararası Pazarlara Giriş Stratejileri	İşletmelerin Dış Ticaret Faaliyetlerini Gerçekleştiren Birimlerine Ait Bulgular	Toplam Satışların İhracata Oranı	Faaliyet gösterilen ülke sayısı	Faaliyet alanları
A	1989	94	2004	Sahip Yöneticisi	Var	Doğrudan İhracat	Dış Ticaret Bölümü	%15	13	Profil Panel Orman Ürünleri
B	2008	65	2011	Sahip Yöneticisi	Yok	Doğrudan İhracat	Pazarlama/Satış Bölümü	%35	6	Zimba Teli İnşaat Ürünleri

Tablo 2 incelendiğinde, B Şirketi'nin kuruluşundan üç yıl sonra uluslararasılaşma faaliyetlerine başladığı görülmektedir. Daha önce yapılan tanımlamalardan yola çıkarak bu şirketin küresel doğan bir işletme olduğu söylenilebilir. Yine tablo 2'de yer alan bilgilere göre A Şirketi'nin kuruluş tarihinden uluslararası pazara giriş tarihi baz alındığında, bu işletmenin aşamalı olarak uluslararasılaştığı tespit edilmiştir. Her iki işletmenin de yönetim kadrosunu sahip yöneticilerin oluşturduğu ve işletmelerin uluslararası pazarlara giriş stratejilerinde doğrudan ihracat türünü tercih ettikleri görülmektedir. İşletmelerde istihdam ettirilen personel sayıları dikkate alındığında, A Şirketi'nde 94, B Şirketi'nde ise toplamda 65 personelin olduğu görülmektedir. İşletmelerin Ar-Ge bölümüne sahip olup olmadığı incelendiğinde, A Şirketi Ar-Ge bölümüne sahipken, B Şirketi'nin sahip olmadığı tespit edilmiştir. A Şirketine dış ticaret faaliyetlerini gerçekleştiren birimin Dış Ticaret Bölümü olduğu, B Şirketi'nde ise Pazarlama/Satış Bölümü olduğu tespit edilmiştir. Bu bulguya istinaden B Şirketi yöneticilerine “ İşletmenizde Dış Ticaret bölümünün olmaması sizin iş yükünüzü artırabilir, kar payı oranımızı düşürebilir. Bu görüşe katılıyor musunuz?” sorusuna “*Evet, Dış Ticaret faaliyetlerimizde bu yıl pandemi nedeniyle biraz düşüşler yaşandı fakat ilerleyen dönemlerde dış ticaret faaliyetlerimizin artış göstereceğini siparişlerden ön görebiliyoruz. Buda elbette iş yükünü artıran bir etkidir. Dış ticaret faaliyetlerinin daha kontrollü bir şekilde takip edilmesi ve satışların artması için yalnızca dış ticaretle ilgilenecek bir departmana ihtiyaç duyuyoruz. İlerleyen zamanlarda bu eksikliğin giderileceğini düşünüyoruz*” şeklinde yanıt verilmiştir.

Şirketlerin toplam satışların ihracata oranı incelendiğinde A Şirketi'nin %15, B Şirketi'nin ise %35 oranla ihracat faaliyetlerine devam ettikleri görülmektedir. Şirketlerin ürünleri incelendiğinde A Şirketi'nin profil, panel ve orman ürünleri ürettiği, B Şirketi'nin ise zimba teli ve inşaat ürünleri ürettiği tespit edilmiştir. Yine işletmelerin uluslararası pazarlarda faaliyet gösterdikleri ülke sayıları baz alındığında, A Şirketi'nin 13, B Şirketi'nin ise 6 ülkede uluslararası faaliyetlere katılım sağladığı belirlenmiştir.



3.1. İşletmelerin Uluslararasılaşma Amaçları, Hedeflenen Uluslararası Pazarlara İlişkin İhtiyaç Duyulan Bilgiler ve Bu Bilgilerin Elde Ediliş Yöntemleri

Araştırmanın bu bölümünde işletmelerin uluslararası pazarlara açılmaya ilişkin nedenleri, hedeflenen uluslararası pazarlarla ilgili ihtiyaç duyulan bilgiler ve bu bilgilerin nasıl ve hangi kaynaklardan elde edildiği karşılaştırmalı olarak incelenmiştir. (Bknz. Tablo 3,4)

Tablo 3. İşletmelerin Uluslararası Pazara Açılma Amaçlarına Ait Bulgular

Uluslararası Pazarlara Açılma Nedenleri	A	B
Satışları artırmak	✓	✓
Karlılığı artırmak	✓	✓
Vergi avantajlarından yararlanmak		✓
Devlet teşviklerinden yararlanmak		✓
İç pazardaki olumsuz koşulların etkisini azaltmak		✓

Tablo 3'te yer alan bilgilere göre işletmelerin uluslararası pazarlara açılma nedenleri incelendiğinde A Şirketi'nin satış oranlarını ve karlılığını artırmak amacı ile uluslararası pazarlara açıldığı görülmektedir. B Şirketi A şirketinin nedenlerine ek olarak vergi avantajlarından, teşviklerden yararlanmak ve iç pazardaki olumsuz koşulların etkisini azaltmak amacıyla uluslararası faaliyetlere yöneldiğini belirtmiştir. Yine B şirketi yöneticisi *'yurt içindeki ödemelerin aksaması, dövizde meydana gelen dalgalanmalar, inşaat sektöründe yaşanan krizler, rakiplerin uluslararası pazarlarda çok fazla paya sahip olması ve hammaddelerin dolar bazında satın alınması'* nı uluslararası pazarlara giriş sebebi olduğunu ifade etmiştir.

Tablo 4. İşletmelerin Hedeflenen Uluslararası Pazarlara İlişkin İhtiyaç Duyduğu Bilgiler

Şirket	A	B
İşletmelerin Pazara Gireceği Ülkede İhtiyaç Duyduğu Bilgiler		
Ekonomik	✓	✓
Demografik bilgiler		✓
Politik bilgiler		✓

Tablo 4'e göre B Şirketi'nin uluslararası pazara gireceği ülkede ihtiyaç duyduğu bilgilerin ekonomik, politik ve demografik bilgiler olduğu; A Şirketi'nin ise yalnızca ekonomik bilgilere ihtiyaç duyduğu tespit edilmiştir. İşletmenin dış ticaret yöneticilerine diğer iki bilgiye neden ihtiyaç duyulmadığı sorulduğunda, yöneticiler *'Daha önce de belirttiğim gibi bizim uluslararası pazarlarda önceliğimiz geçmiş müşterilerimizdir. Ayrıca ürettiğimiz ürünlerde genellikle müşteri odaklı çalışıyoruz bu yüzden diğer bilgilere ulaşmak için bir neden olmuyor'* şeklinde yanıt verilmiştir.

Tablo 5. İşletmelerin Uluslararası Pazarlar ile İlgili Bilgi Elde Etme Yöntemlerine Ait Bulgular



İşletmelerin Bilgi Elde Etme Yöntemleri	A	B
Fuar ve Sergiler	✓	✓
Bireysel ziyaret	✓	✓
İnternet	✓	✓
Müşteriler	✓	✓

Tablo 5 incelendiğinde A ve B Şirketi'nin uluslararası pazarlar ile ilgili bilgi elde etmede Fuar ve Sergiler, Bireysel Ziyaret, İnternet ve Müşteriler olmak üzere tüm yöntemleri kullandıkları tespit edilmiştir. Fakat A Şirketi'nin kuruluşu baz alınarak uzun vadeli bir şirket olmasına atıfta bulunarak *“Bireysel ziyaret ve müşteri ilişkileri bizim için çok önemlidir. Firma müşterilerimiz geçmiş yıllardan çalıştığımız kişiler olduğu için önceliğimiz bireysel ve müşteri ziyaretleridir”* şeklinde ekleme yapılmıştır.

3.2.Uluslararası Pazarlara Girişte Karşılaşılan Mikro ve Makro Sorunlar

Araştırmanın bu bölümünde işletmelerin uluslararası pazarlara girişte karşılaştıkları sorunlar mikro ve makro düzeyde ele alınmıştır. İlgili bölümde, işletmelerin uluslararası pazar faaliyetlerini etkileyen çevre unsurları ve teşviklerden yararlanma durumuna ilişkin bulgular karşılaştırmalı olarak incelenmiştir.

Tablo 5. İşletmelerin Uluslararası Pazara Girişte Karşılaştıkları Mikro Unsurlara Ait Bulgular

Uluslararası Pazara Girişlerde Karşılaşılan Mikro Sorunlar	A	B
Gümrük ve lojistik sorunlar		✓
Sevkiyat		
Teşvik yetersizliği	✓	✓
Vergi sorunları		
Kota sorunları	✓	
Bürokratik sorunlar	✓	✓

Tablo 5 incelendiğinde B Şirketi'nin uluslararası pazarlara girişte Gümrük ve lojistik sorunlar, Teşvik yetersizliği ile Bürokratik sorunlarla karşılaştıkları görülmektedir. B Şirketi'nin yöneticisi *“Lojistik maliyetleri çok pahalı”, “Teşvikler yeterli fakat devletin teşvik vermesindeki süreç çok uzun, mesela bir teşvikten yararlandığımızda ödemeyi en az 1 yıl içerisinde alıyoruz. Bu bizim için hem zaman kaybı hem de ekstra çaba demektir”* şeklinde yanıt vermişlerdir. A Şirketi yöneticisi ise *“Bizim firmamızı en fazla kota sorunu etkilemektedir. Kayda bağlı ihracat olarak adlandırılan bir kota sınırlaması getirildi. Örneğin, sunta ve medefe üreten firmalar üretimlerinin yalnızca %20 sini satabiliyorlar. Biz tedarikçi firma olarak ihracat yapamıyoruz, bu durum bizi çok etkiliyor”* şeklinde yanıt vermiştir.

Tablo 6. İşletmelerin Uluslararası Pazar Faaliyetlerini Etkileyen Makro Unsurlarına Ait Bulgular

İşletmelerin Faaliyetlerini Etkileyen	A	B
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Makro Unsurlar		
Ekonomik deęişkenler	✓	✓
Pazara giriş engelleri	✓	✓
Yasal kolaylıklar		✓
Politik deęişkenler	✓	✓

Tablo 6 incelendiğinde, B Şirketi'nin uluslararası pazar faaliyetlerini etkileyen makro unsurlarının tümünden (ekonomik deęişkenler, pazara giriş engeller, yasal ve politik deęişkenler), A Şirketi'nin ise yasal kolaylıklar dışındaki dięer tüm unsurlardan etkilendięi görülmektedir.

İşletmelere uluslararasılaşma sürecinde karşılaştıkları başka olumsuz durumlar olup olmadığı sorulduğunda,

A Şirketi, *'uluslararası faaliyetlerimizde mevzuatlar bizi çok zorluyor. Türk Parasını Koruma Kanunu ve DAP ile getirilen kararların takibi ve vergi daireleri ile muhatap olmak bizi biraz zorladı. Kayda baęlı ihracatta ve üreticinin dışında ihracat yapılmaması yani kota sınırlamaları da bunlara örnek verilebilir'* yanıtını vermiştir. B Şirketi ise *'Bizim önümüzde en büyük engel Çin oluyor. Çin ürünlerinin maliyetleri çok düşük ve büyük projelerde genellikle kaybeden taraf biz oluyoruz. Şirketimizde bir dış ticaret departmanı yok bu da uluslararası pazarlara girişte kısmen engeller yaratıyor. Pandemi döneminde uluslararası faaliyetlerde azalmalar oldu. Katar gibi girişlerin kolay olduęu ülkeler elbette var ama mevzuat yönünden zorlamalarla karşılaşıyoruz. Dış ticarete gerekli evrakların düzenlenmesi için birkaç acente ile çalıştık fakat acentelerin özellikle evrak temin ve tercümanlık konularında büyük sıkıntıları olduęunu gördük.'* şeklinde belirttiler.

3.3.İşletmelerin Uluslararası Pazarlarda Tercih Ettikleri Rekabet Stratejileri

Örgütlerin amaç ve hedefleri doğrultusunda birbirinden farklı rekabet stratejileri uyguladıęı bilinmektedir. Bu bağlamda örnekleme oluşturan iki işletmenin tercih ettikleri rekabet stratejilerine ilişkin bulgular aşıęıda yer almaktadır.



Tablo 7. İşletmelerin Uluslararası Pazarda Uyguladıkları Rekabet Stratejilerine Ait Bulgular

Uluslararası Pazarda Uygulanan Büyüme stratejileri	A	B
Ürün geliştirme	✓	✓
Çeşitlendirme	✓	✓
Pazar geliştirme	✓	✓
Maliyet liderliği	✓	

Tablo 7 incelendiğinde B Şirketi'nin uluslararası pazarda ürün geliştirme, çeşitlendirme ve pazar geliştirme stratejilerini kullandıkları A Şirketi'nin ise bu stratejilere ek olarak maliyet liderliği stratejilerini kullandıkları tespit edilmiştir. Ek olarak, A Şirketi yöneticisi bu soruya ‘ ‘*Uluslararasılaşma süreci boyunca bu stratejileri zaman zaman kullandık fakat şuan biz genellikle müşteri kaybetmemek için daha çok fiyat odaklı stratejiler uyguluyoruz*’ ’ yanıtını vermişlerdir.

Şirket yöneticilerine yöneltilen bir diğer soru ise;

‘ ‘Müşteri istek ve ihtiyaçlarını karşılamada yeni ürün ve hizmet üreten yenilikçi işletmeler sadece kendilerinin ürettiği farklı özellikteki üretimlerle rakiplerine karşı rekabet üstünlüğü sağlamaktadır’ ’ görüşüne katılıyor musunuz? sorusu sorulduğunda,

A Şirketi, ‘ ‘*Biz şirket olarak müşteri odaklı çalışıyoruz, hatta bazı müşterilerimize özel üretim yapıyoruz. Müşteri odaklı olmak kesinlikle rakiplere karşı bir üstünlük göstergesidir, bizimde hitap ettiğimiz bir portföy grubu var. Profil alanında renk skalaları önemlidir. Mesela bir firmanın renk skalası bizimkinden daha fazla olduğu zaman müşterinin bazen beklentilerini karşılayamıyoruz ve müşteri başka firmaya gidiyor. Biz fiyat, renk ve teslimat sürelerinde sürekli iyileştirmeler yapıyoruz.*’ ’ B Şirketi, ‘ ‘*Dış ticaret politikamız büyük projelerde yer almaktır. Bu yüzden projeye özel ürün üretme, sayı ve ambalajlarda değişikliğe gitme gibi çeşitli uygulamalar gerçekleştiriyoruz.*’ ’ şeklinde görüş bildirmişlerdir.

4. SONUÇ VE TARTIŞMA

Çalışmanın amacı, Kayseri imalat sanayi sektöründe faaliyet gösteren küresel doğan ve aşamalı uluslararasılaşan iki firmanın uluslararasılaşma eğilimleri, çabaları, pazara giriş ve rekabet stratejileri, uluslararasılaşma nedenleri ve süreçte karşılaştıkları engeller tanımlanmaya çalışılmıştır. Çalışmada öncelikle uluslararası işletmecilik kavramı ve önemi, uluslararasılaşma nedenleri ve uluslararasılaşma modellerine değinilmiştir. Daha sonra araştırmaya konu olan işletmelere ilişkin genel bilgilere yer verilmiştir. İşletmelerin yanıtları kapsamında elde ettiğimiz bilgilere göre B Şirketi'nin kuruluşundan üç yıl sonra uluslararası faaliyetlere başladığı ve bu nedenle B Şirketi'nin bir küresel doğan işletme modeli olduğu tespit edilmiştir (Knight ve Cavusgil, 2004; Freeman ve Cavusgil, 2007: 1). Yine A Şirketi'nin kuruluş ve uluslararası faaliyetlere başlama yılı baz alındığında ise bu işletmenin aşamalı uluslararasılaşan bir işletme olduğu görülmektedir.



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Her iki işletmeninde sahip yöneticiler tarafından yönetildiği, her iki işletmeninde benzer şekilde uluslararası pazarlara girme konusunda doğrudan ihracat yöntemini tercih ettiği görülmektedir. İşletmelerin toplam satışlarının ihracata oranı göz önüne alındığında aşamalı olarak uluslararasılaşmayı tercih eden A şirketinin yaklaşık 13 ülkede gerçekleştirdiği faaliyetlerden toplam satışlarının ihracata oranı %15 seviyelerinde iken; küresel doğan B şirketinin 6 ülkede gerçekleştirdiği ihracat faaliyetlerinin oranı %35 'tir. Bu anlamda ülke sayısından ziyade işlem hacminin belirleyici olduğu söylenebilir. Son olarak aşamalı bir şekilde uluslararasılaşan A şirketinin bünyesinde bir dış ticaret departmanı bulunurken; küresel doğmuş olan B şirketinin uluslararası faaliyetlerini Pazarlama/Satış bölümü tarafından gerçekleştirilmektedir. Bu anlamda aşamalı olarak uluslararasılaşan A şirketinin dış ticaret bölümüne sahip olması bu işletmenin uluslararasılaşmaya ilişkin çabalarının daha profesyonelce yürütüldüğünü göstermektedir. Ancak görüşme sırasında B şirketinin yöneticisinin bu eksikliğin farkında olduklarını ve yakın gelecekte bir dış ticaret departmanı kurarak bu eksikliğini gidereceklerini belirtmiştir. Bu eksikliğin giderilmesi ile küresel doğan bir işletme olan B Şirketi'nin ihracatta lider desteği sunan ve uluslararasılaşmaya destek olan örgüt yapısına kavuşması (Cavusgil ve Knight, 2015: 10) daha muhtemel görünmektedir. Konuya ilişkin özel bir departmanın varlığı uluslararası platformlarda hem işletme hem de çalışanlar açısından büyük kazançlar sağlayabilecektir.

İşletmeleri uluslararasılaşmaya iten nedenler, hedeflenen uluslararası pazarlara ilişkin ihtiyaç duyulan bilgiler ve bu bilgilerin elde edilmiş yöntemleri göz önüne alındığında; A şirketinin uluslararasılaşma ile satışları ve karlılığı artırmayı amaçladığı görülmektedir. Küresel doğan işletme özelliklerine sahip B şirketinin ise satışları artırmak, karlılığı artırmak, vergi avantajlarından yararlanmak, devlet teşviklerinden yararlanmak ve iç pazardaki olumsuz koşulların etkisini azaltmak gibi nedenler ile dış pazarlara açıldığı görülmektedir. Bu yanıtlar bize, küresel doğan bir işletme olan B Şirketi'nin uluslararası pazarlara giriş nedenlerinin aşamalı uluslararasılaşan A Şirketi'ne göre daha kapsamlı olduğu sonucunu vermektedir. Bunlara ek olarak ekonomik dalgalanmalar, dolar üzerinden alınan hammadde, yaşanan krizler ve rakiplerin payının fazlalığı B şirketinin uluslararası faaliyetlere giriş nedenleri arasında yer almıştır. Burada B Şirketi yöneticilerinin uluslararasılaşma faaliyetlerinde çok yönlü bir bakış açısına sahip oldukları sonucu çıkarılabilmektedir. Bu çıkarım ise işletme yöneticilerinin uluslararasılaşma süreci üzerinde önemli bir etkiye sahip olduğunu göstermektedir (Caligiuri, Lazarova ve Zehetbauer, 2004; Sullivan, 1994; Freeman ve Cavusgil, 2007: 2).

Aşamalı uluslararasılaşan ve küresel doğan işletmelerin uluslararası pazarlara girerken hangi bilgilere ihtiyaç duydukları sorulduğunda A şirketinin yalnız ekonomik bilgileri esas aldığı buna karşın B şirketinin ekonomik, demografik, politik ve yasal tüm bilgileri elde etme çabasında olduğu görülmüştür. A şirketinin konuya ilişkin söyleminde "***bizim uluslararası pazarlarda önceliğimiz geçmiş müşterilerimizdir***" ifadesi Chetty ve Campbell-Hunt (2004)'un çalışmasında ifade ettiği hali ile aşamalı uluslararasılaşan işletmelerin (Yavaşça) birikmiş deneyimlerden öğrenme yeteneği ile paralellik göstermektedir. Bilmenin bir güç olarak değerlendirildiği çağımız iş dünyasında güç ve başarının elde edilmesi yeterli bilgiye sahip olmakla mümkündür. Bu anlamda küresel doğan B işletmesinin daha köklü ve sistemli bir uluslararasılaşma yaklaşımı içinde olduğu; bilgiye verdiği değer, bulunduğu atıf ile A şirketinden önemli ölçüde ayrıştığı söylenebilir.



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Yine yukarıda bahsi geçen bilgilere her iki işletme içinde fuar ve sergi, bireysel ziyaretler, internet ve müşterilerden elde edilmektedir. Özellikle aşamalı bir şekilde uluslararasılaşan A şirketi yöneticileri bireysel ziyaret ve müşteri ilişkilerinin kendileri için büyük önem arz ettiğini belirtmektedir. Bu söylemler A şirketinin B şirketinden daha uzun bir geçmişe sahip olması ve güven temelli ilişkiler ile uluslararasılaşma sürecine yön verdiği şeklinde yorumlanmıştır.

Şirketlerin pazara girişte karşılaştıkları mikro ve makro sorunlar ele alınmıştır. Daha çok ana ülke ile ilgili olduğu görünüm bu sıkıntılardan A ve B şirketleri farklı şekillerde etkilenmektedir. Kademeli bir şekilde uluslararasılaşmış olan A şirketi mikro anlamda kota sorununa; küresel bir şekilde uluslararasılaşan B şirketi ise gümrük ve lojistik sorununa dikkat çekmiştir. Ancak her iki işletmeninde teşvik yetersizliği ve bürokratik sorunlardan ortak bir şekilde mustarip olduğu görülmektedir. Devletlerin çeşitli yasal sınırlama ve düzenlemelerinin uluslararası faaliyetleri önemli ölçüde etkilediği bilinen bir gerçektir. Görüşme sürecinde aşamalı uluslararasılaşan A şirketi özellikle kendi iş sahalarını ilgilendiren (kayda bağlı ihracat²) bir düzenleme ile ilgili sıkıntı yaşadıklarını belirtmiştir. B şirketi ise kendi özellerinde lojistiğin pahalı olmasından ve devletin teşvik verme sürecinin çok uzun ve çetrefilli olmasından yakınmıştır.

Örgütler üzerinde önemli etki ve güce sahip olduğunu bildiğimiz makro unsurlardan ekonomik ve politik değişkenler ile pazara giriş engellerinden her iki şirkette benzer şekilde etkilendiği; B şirketinin bunlara ek olarak yasal sıkıntılara maruz kaldığı görülmektedir. A Şirketi ülke içi para politikalarının, yasal kısıtların ve prosedürlerin kendileri için önemli sıkıntılar oluşturduğunu; B şirketi ise uluslararası faaliyetlerin önündeki en büyük engelin Çin olduğunu belirtmiştir. Çin'in özellikle düşük maliyetler ile büyük projelerde rakip olması firmaların pazara girişlerinde engel teşkil etmektedir. Yine B şirketi Katar gibi pazara girişin kolay olduğu ancak mevzuat yönünden sıkıntılar yaşanan ülkelerdeki, evrak ve prosedür işlerinin zorluğundan dem vurmıştır. Bu problemlerin üstesinden gelmek adına geçmişte pazara girişlerde acentelerin tercih edildiğini ancak bu konuda evrak takibi ve dil konularında büyük sıkıntılar yaşandığını belirtmiştir. B şirketinin bu deneyimi Chetty ve Campbell-Hunt (2004)'un aşamalı uluslararasılaşan şirketler ile küresel doğan işletmeleri karşılaştırdığı çalışmasını onaylamaktadır. B şirketinin küresel doğan işletme özelliklerinden olan psikolojik yakınlığı (dil, din, kültür) gözetmeden faaliyetlerine yön verdiği söylenebilir.

Son olarak işletmelerin uluslararası pazarlarda tercih ettikleri rekabet stratejilerinin birbirine paralel olduğu söylenebilir. Her iki işletmede ürün geliştirme, çeşitlendirme, Pazar geliştirme stratejilerini kullanmaktadır. A şirketi bunlara ek olarak **“biz genellikle müşteri kaybetmemek için daha çok fiyat odaklı stratejiler uyguluyoruz.”** ifadesine yer vermiştir. B şirketinin fiyat odaklı olmaktan çok ürün ve pazar geliştirme ile çeşitlendirmeye yönelik eğilimi küresel doğan işletme yapılarının katma değerleri yüksek, inovasyon odaklı, ikamesi olmayan ürünleri piyasaya satmak eğiliminde olduklarının bir kanıtıdır (Cavusgil ve Knight, 2015: 10).

² Firmalar üretimlerinin yalnızca %20'sini satabiliyorlar.



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İşletme yöneticilerinin çağın en önemli rekabet unsurlarından olan inovasyon ve müşteri memnuniyetine ilişkin algılarında fark olup olmadığını belirlemek adına sorulan sorularda; A şirketinin müşteri odaklı olduğu; hatta müşterileri için özel üretimler gerçekleştirdikleri ifade edilmiştir. Yine iş sahasının önemli bir unsuru olan profil alanında renk skalalarının müşteri beklentilerini karşılamak adına sürekli yenilendiğini, fiyat, renk ve teslimat sürelerinde sürekli iyileştirmeler ve yenilikler yapıldığı belirtilmiştir. B şirketi yöneticisi ise bu soruyu **“dış ticaret politikamız büyük projelerde yer almaktadır”** şeklinde cevaplamıştır. Yine projelere özel ürün, sayı ve ambalaj üretmek sureti ile müşteri istek ve beklentilerini yenilikçi yaklaşımlar ile karşılamaya çalıştıklarını belirtmiştir. Bu anlamda iki uluslararası işletmeninde yenilikçi yaklaşımlarının olduğu, inovasyon ve iyileştirmelere önem verdikleri söylenebilir. Ancak küresel doğan B işletmesinin büyük projelerde yer almaya ilişkin istekliliğinin kullandıkları rekabet stratejilerine de yansıdığı söylenebilir. Tüm bu amaç ve isteğe karşın B işletmesinin bünyesinde bir Ar-Ge Departmanının bulunmaması bu stratejik amaç ve hedeflerine ulaşma konusunda problem teşkil edeceği düşünülmektedir.

Son olarak çalışmanın bir takım kısıtlarından bahsetmekte yarar vardır. Çalışmada zaman ve maliyetin sınırlı olması ve pandemi sürecinde işletmelerin görüşme taleplerini kabul etmemesi nedeniyle Kayseri imalat sanayi sektöründe yalnızca iki işletme ile görüşmeler sağlanabilmiştir. Yine görüşmelerin yalnız bir üst düzey ve sahip yönetici ile yapılmış olması kısıt olarak değerlendirilebilir. Yürütülen çalışma bulgularının gelecekteki araştırmacılara yol göstereceği umulmaktadır. Yine gelecekte araştırmaların farklı sektör ve örneklem üzerinde farklı tekniklerle irdelemesi önerilmektedir.

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NEW STRATEGIES OF THE GREEN ECONOMY CONCEPT: EDIBLE MATERIALS BASED ON BIOPOLYMERS AND ESSENTIAL OILS, USED FOR PACKAGING MEAT PRODUCTS

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Abstract

For a long time, a major problem has been the environmental pollution due to the packaging waste. Fortunately, the strategies of NGOs and governmental organizations have not been without results. Researchers around the world have tested and identified various ways to replace conventional plastic-based packaging materials with some partially or completely natural compositions. A very good alternative to these synthetic materials is the use of biopolymers. According to studies and literature, their properties are comparable to those of conventional materials. The aim of the present study was to develop, test and characterize the biopolymeric materials obtained from agar, sodium alginate, water and glycerol, intended for meat products packaging. To improve the existing properties, 0.5 μ l, 1.0 μ l and 1.5 μ l cinnamon, clove and rosemary essential oils have been added. Tween 80 was used for emulsification. After development, the physical properties were tested. Thus, the taste, the smell, the uniformity of the foil and the regularity of the edges, the presence of the insoluble compounds, the thickness, the retraction ratio, but also the color, transmittance or opacity were evaluated. The tests were supplemented by the evaluation of water solubility, moisture content, swelling ratio, hydrophobicity, water activity index, but also by testing mechanical properties, such as tensile strength and elongation. As the packaging is edible, the incidence of microorganisms was also evaluated on plates with dehydrated culture media, specific for the total number of germs, coliforms, enterobacteria, *Escherichia coli*, *Staphylococcus aureus*, *Listeria monocytogenes*, or yeasts and molds. According to the results, the best characteristics were highlighted for the samples with 1% essential oil added, regardless of its type. Samples with essential oil in the matrix were finer, glossier, and more pleasant to the touch than control sample, without essential oil. The addition of essential oil has decreased the hydration and solubility of the films, which is important when these materials are intended for meat products packaging. None of the microorganisms tested did not grow on the surface of the foils. This fact is reinforced by the low values of the water activity index (less than 0.4). The use of these types of materials for packaging meat products is of real interest, especially if we take into account the fact that the raw material produces zero-waste and it is obtained from algae, often considered waste and that, unlike conventional, multilayer materials, they are edible, completely biodegradable, obtained with low costs, from renewable resources.

Keywords: agar, sodium alginate, cinnamon, clove, rosemary, environment, zero-waste



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USE OF BIOPOLYMERS AND NATURAL ESSENTIAL OILS FOR THE DEVELOPMENT OF EDIBLE PACKAGING FOR FOOD SUPPLEMENTS

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Abstract

The food supplement industry has always been expanding. Recently, due to the effects of the COVID-19 pandemic around the world, the population has turned even more attention to the consumption of dietary supplements to strengthen the immune system. These categories include herbal products, natural powders, vitamins or minerals, which can be consumed without a doctor's prescription. Often, these products are packaged in conventional materials, based on oil, multilayer, difficult to sort and almost impossible to recycle. Moreover, they are often disposable, being extremely polluting to the environment. According to statistics, if urgent measures are not taken to reduce the waste generated by these types of packaging, the situation will be much worse in the near future. Currently, research is pursuing the development of materials that can replace conventional packaging. The study aimed at the development, testing and characterization of biopolymeric materials, with of essential oils added in the composition; edible, biodegradable, vegan and non-toxic films. Agar, sodium alginate, glycerol and water were used to obtain the films. All ingredients are recognized by GRAS and can be consumed in *quantum stasis* doses. For the development of films with improved properties, 0.5 μ l, 1.0 μ l, and 1.5 μ l orange, lemon and grapefruit essential oil were added, specially chosen to obtain materials for packaging food supplements. The samples were evaluated at first impression (smell, taste, film uniformity and regularity of edges, gloss, the possibility of multiple bends), but also tested to identify the thickness, retraction ratio, color, transmittance and opacity. Solubility is of real interest because the study aims to develop materials that can be consumed with the product by immersing them in water with temperatures higher than ambient. The essential oil in the composition of the material has improved the sensory properties of the packaged product. Unlike the control, the films with the addition of essential oil in the composition were finer, glossier, had higher thickness, lower retraction ratio and lower transparency. The color parameters L*, a*, b* have been improved after the addition of essential oils. Tested to verify water solubility, food supplements packaged in newly developed materials were completely dissolved after 1 minute of immersion in water at a temperature of 40°C. Raising the temperature to 60°C facilitated the higher solubility of the product and biopolymeric material in a shorter time. According to the results, the newly developed materials can be successfully used for packaging food supplements, facilitating the obtaining of more attractive products for the consumer, more beneficial for the environment, with a technology that can be easily adapted for a wide range of food products.

Keywords: agar, sodium alginate, glycerol, lemon, grapefruit, orange, solubility, environmental



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**PERIODIC SOLUTION FOR A CLASS OF EVOLUTION EQUATION IN
NONDENSELY CASE**

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Abstract

In this work, we study the existence of a periodic solutions for a class of partial functional differential equation with delay, where the generator A is not necessarily densely defined linear operator on a Banach space X . We suppose that A satisfies the Hille-Yosida condition.

The present work would be a continuation of the work of Ezzinbi and al, in the nonhomogeneous linear case. We establish the existence and the uniqueness of periodic solution for partial functional differential equations with delay without considering the compactness of the semigroup, but by the use of the theory of semi-Fredholm operators. To achieve this goal, we assume that the solution of our Equation is bounded and by using the the perturbation theory of semi-Fredholm operators and Chow and Hale fixed point theorem for affine map, we give some sufficient conditions on linear part to derive the existence of periodic solution of Equation. Moreover, we give some sufficient conditions to assure the existence and uniqueness of periodic solution of Equation.

Key word: poincaré map, delay, Hille-Yosida, decomposition of the phase space



**KARBON ÇELİK YÜZEYİNDEKİ POLİ(ANİLİN-CO-O-ANİSİDİN-CO-PIROL)
TERPOLİMER KAPLAMA**

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Özet

Poli(anilin-co-o-anisidin-co-pirol) terpolimer film 0.05 M anilin + 0.05 M o-anisidin + 0.05 M pirol içeren 0.30 M okzalik asit çözeltisinde dönüşümlü voltametri tekniği ile karbon çelik yüzeyine sentezlendi. Poli(anilin-co-o-anisidin-co-pirol) filmi, AC empedans spektroskopisi ve anodik polarizasyon eğrileri ile karakterize edildi. Anodik polarizasyon eğrileri poli(anilin-co-o-anisidin-co-pirol) kaplı elektrodun kaplamasız elektroda göre daha düşük akım değerlerine sahip olduğunu gösterdi.

Anahtar Kelimeler: Anilin, o-anisidin, pirol, voltametri

**POLY(ANILINE-CO-O-ANISIDINE-CO-PYRROLE) TERPOLYMER COATING ON
CARBON STEEL**

Abstract

Poly(aniline-co-o-anisidine-co-pyrrole) terpolymer was synthesized on carbon steel with cyclic voltammetry technique from 0.05 M aniline + 0.05 M o-anisidine + 0.05 M pyrrole containing 0.30 M oxalic acid solution. The corrosion performance of poly(aniline-co-o-anisidine-co-pyrrole) terpolymer film was investigated by AC impedance spectroscopy and anodic polarization curves in 3.5% NaCl solution. The Anodic polarization curves showed that poly(aniline-co-o-anisidine-co-pyrrole) coated electrode had lower current values than the uncoated electrode.

Keywords: Aniline, o-anisidine, pyrrole, voltammetry

1. GİRİŞ

Son yıllarda oldukça üzerinde oldukça çalışılan iletken polimerler, monomer içeren elektrolit çözeltilerden uygun potansiyel aralığı ve tarama hızı gibi parametreler belirlenerek çelik [1–7], alüminyum [8, 9] ve bakır [10, 11] gibi elektrotların yüzeylerine elektrokimyasal olarak sentezlenebilmektedirler. Elektrokimyasal olarak homopolimerler sentezlenebildiği gibi kopolimer ve terpolimerler de sentezlenebilirler. Bu çalışmada Poli(anilin-co-o-anisidin-co-pirol) terpolimer film 0.05 M anilin + 0.05 M o-anisidin + 0.05 M N-metilpirol içeren 0.30 M



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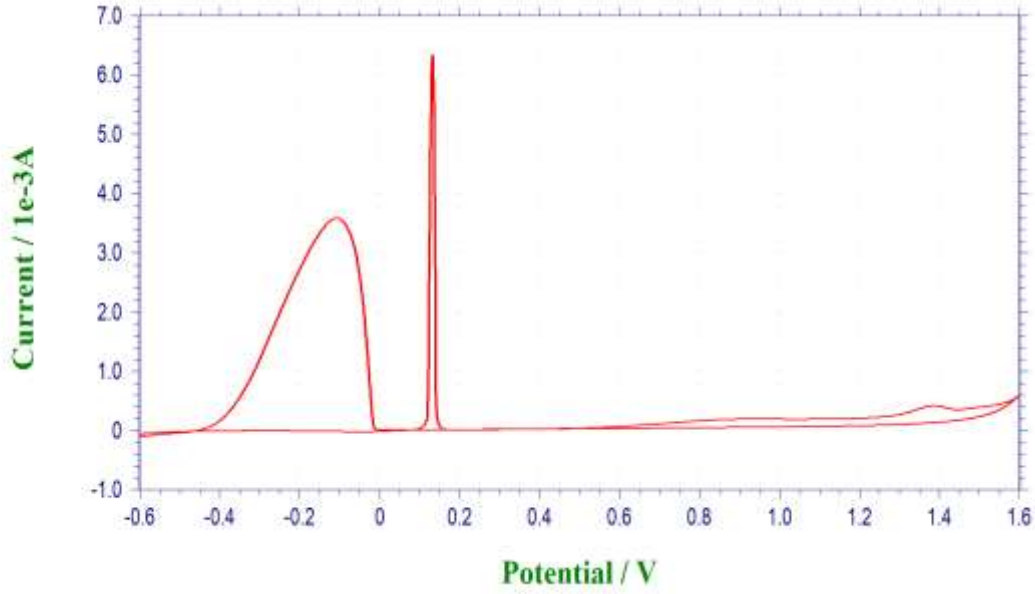
okzalik asit çözeltisinde dönüşümlü voltametri tekniği ile karbon çelik yüzeyine sentezlenen korozyon performansının belirlenmesi amaçlanmıştır.

2. MATERYAL VE METOD

Elektrokimyasal çalışmalar CHI660E cihazı kullanılarak üç elektrot tekniği ile tek hücrede yapılmıştır. Çalışma elektrodu olarak yüzey alanı 0.05 cm^2 olan silindirik karbon çelik elektrotlar kullanılmıştır. Çalışmada kullanılan silindirik karbon çelik elektrotların elementel bileşimi kütlece % 0.0561 C, % 0.4498 Mn, % 0.0103 P, % 0.0036 S, % 0.1409 Si ve % 99.3394 Fe'dir. Çalışma elektrot yüzeyleri 1200 grid zımpara kağıdında parlatıldıktan sonra önce 1/1 etanol/aseton karışımı daha sonra da distile su ile yıkanmıştır. Karşı elektrot platin, referans elektrot ise Ag/AgCl'dür. Poli(aniline-co-o-anisidine-co-pyrrole) terpolimer film sentezi 0.30 M okzalik asit çözeltisinde dönüşümlü voltametri tekniği kullanılarak gerçekleştirilmiştir. Elektrotların empedans ölçümleri % 3,5'lik NaCl çözeltisine daldırıldıktan sonra açık devre potansiyellerinin dengeye ulaşmasının ardından 10^5 Hz ile 10^{-3} Hz frekans aralığında 7 mV genlik kullanılarak gerçekleştirilmiştir. Anodik polarizasyon eğrileri 96 saat % 3.5'lik NaCl çözeltisinde bekletildikten sonra 4 mV/s tarama hızı ile gerçekleştirilmiştir.

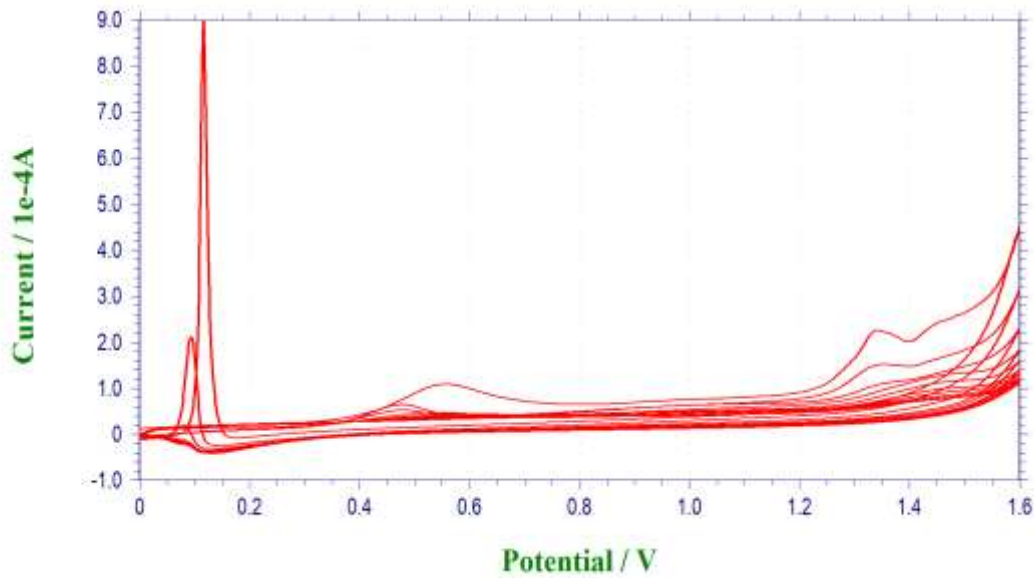
3. BULGULAR VE TARTIŞMA

0.05 M anilin + 0.05 M o-anisidin + 0.05 M pirol içeren 0.30 M okzalik asit çözeltisinde karbon çelik elektro için elde edilen dönüşümlü voltammogram eğrileri Şekil 1 ve Şekil 2'de verilmiştir. Şekil 1'de -0.40 V ile 0.00 V potansiyel aralığında görülen pik oksidasyon/pasivasyon piki olup elektrot yüzeyindeki demirin çözünmesi ve çözünen iyonların elektrolit çözeltideki okzalit iyonlarıyla birleşmesi sonucu yüzeyin pasifleşmesine karşılık gelmektedir. 0.60 ile 1.50 V arasındaki akım artışları monomerlerin oksidasyonundan kaynaklanmaktadır. Geri tarama esnasında 0.10 ile 0.15 V arasında görülen keskin pik repasivasyon pikidir



Şekil 1. Karbon çelik elektrodun 0.05 M anilin + 0.05 M o-anisidin + 0.05 M pirol içeren 0.30 M okzalik asit çözeltisinde elde edilen birinci voltammogram eğrisi

Şekil 2'deki film gelişim eğrilerinde repasivasyon pik akım değerlerinin herbir taramadan sonra azaldığı görülmüş olup bu durum her taramadan sonra yüzeyin biraz daha kapandığına işaret etmektedir.

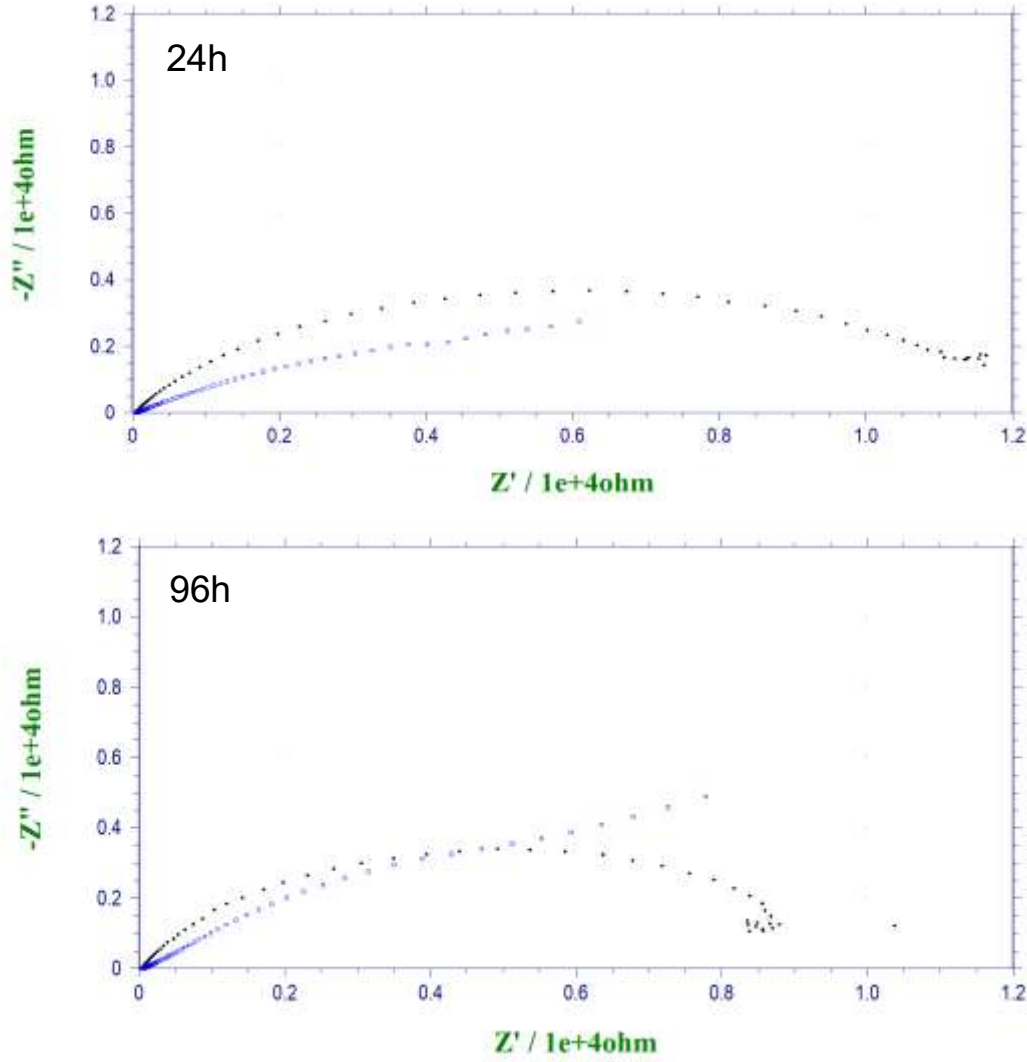


Şekil 2. Karbon çelik elektrodun 0.05 M anilin + 0.05 M o-anisidin + 0.05 M pirol içeren 0.30 M okzalik asit çözeltisinde elde edilen film gelişim eğrileri

CS ve CS/Poly(anilin-co-o-anisidin-co-pirol) elektrotların Nyquist eğrileri Şekil 3'de verilmiştir. Bu eğrilerde 24 ve 96 saatlik ölçümlerde CS ve CS/Poly(anilin-co-o-anisidin-

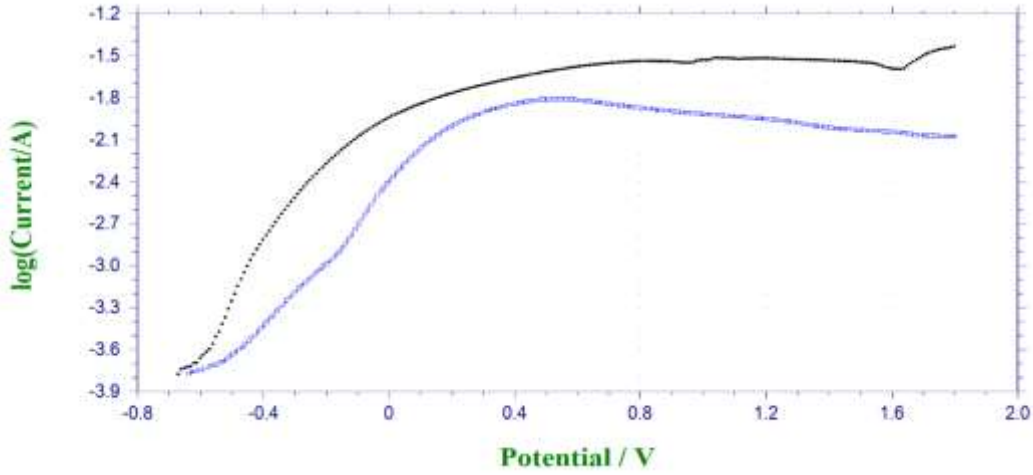


pirol) elektrotların polarizasyon dirençleri birbirine yakın olup önemli oranda bir fark gözlenmemiştir.



Şekil 3. CS (●) ve CS/Poly(anilin-co-o-anisidin-co-pirol) (□) elektrotların % 3.5'lik NaCl çözeltisinde 24 ve 96 saat sonundaki Nyquist eğrileri

CS ve CS/Poly(anilin-co-o-anisidin-co-pirol) elektrotların % 3.5'lik NaCl çözeltisinde 96 saat sonundaki anodik polarizasyon eğrileri Şekil 3'de verilmiştir. Şekil 3'deki bu eğrilerde Poly(anilin-co-o-anisidin-co-pirol) kaplı elektrodun kaplamasız elektroda göre daha düşük akım değerlerine sahip olduğu görülmekte olup bu durum terpolimer filmin korozyona karşı bariyer özelliği ile ilişkilidir.



Şekil 4. CS (●) ve CS/Poly(anilin-co-o-anisidin-co-pirol) (□) elektrotların % 3.5'lik NaCl çözeltisinde 96 saat sonundaki anodik polarizasyon eğrileri

SONUÇLAR

Poli(anilin-co-o-anisidin-co-pirol) terpolimer film 0.30 M okzalik asit çözeltisinde dönüşümlü voltametri tekniği ile karbon çelik yüzeyine sentezlendi. Anodik polarizasyon eğrileri poli(anilin-co-o-anisidin-co-pirol) kaplı elektrodun kaplamasız elektroda göre daha düşük akım değerlerine sahip olduğunu gösterdi.

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ZnNi KAPLI KARBON ÇELİK YÜZEYİNDEKİ POLİ(PİROL-CO-O-FENİLDİAMİN) KAPLAMA

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Özet

Çinko-nikel (ZnNi) alaşımı asidik ortamda galvanostatik yöntemle karbon çelik (KÇ) yüzeyine kaplanmıştır. Daha sonra poli (pirol-co-o-fenildiamin) film 0.05 M pirol + 0.05 M o-fenildiamin içeren 0.20 M sodyum okzalat çözeltisinde sentezlendi. Sentez ZnNi kaplı karbon çelik (CS/ZnNi) yüzeyine dönüşümlü voltametri tekniği kullanılarak gerçekleştirildi. Yüzeyinde polimer olan ZnNi kaplı CS elektrodun korozyon davranışı A.C. empedans spektroskopisi ve anodik polarizasyon eğrileriyle % 3.5'lik NaCl çözeltisinde incelendi. Sonuçlar poli (pirol-co-o-fenildiamin) kaplamanın CS/ZnNi elektrodun korozyonunu engellemede etkisiz olduğunu gösterdi.

Anahtar Kelimeler: Pirol, o-fenildiamin, ZnNi, korozyon

POLY(PYRROLE-CO-O-PHENILENEDIAMINE) COATING ON ZnNi PLATED CARBON STEEL

Abstract

Zinc-nickel (ZnNi) alloy was deposited on carbon steel (CS) by galvanostatic technique, in acidic solution medium. Then, Poly(pyrrole-co-o-phenylenediamine) film was synthesized from 0.05 M pyrrole + 0.05 M o-phenylenediamine containing 0.20 M sodium oxalate solution. The syntheses were achieved on ZnNi alloy plated carbon steel (CS/ZnNi) by using cyclic voltammetry technique. The corrosion behaviour of ZnNi deposited CS electrodes with polymer films in 3.5% NaCl solution were investigated with AC impedance spectroscopy technique and anodic polarization curves. The results showed that the Poly(pyrrole-co-o-phenylenediamine) coating was not effective in preventing corrosion of the CS/ZnNi electrode.

Keywords: Pyrrole, o-phenylenediamine, ZnNi, Corrosion

1. GİRİŞ

Çinko çeliğin korozyonunu önlemede oldukça çok kullanılmaktadır. Çinko alaşımları ile çeliğin korozyonunu önleme üzerine yapılan çalışmalar yalnız çinko ile yapılan kaplamalara göre daha iyi olabilmektedir [1, 6]. Son yıllarda bu alaşım kaplamaların yüzeyinin iletken polimer filmlerle kaplanıp daha iyi koruma sağlamaya yönelik olan çalışmalar yapılmaktadır



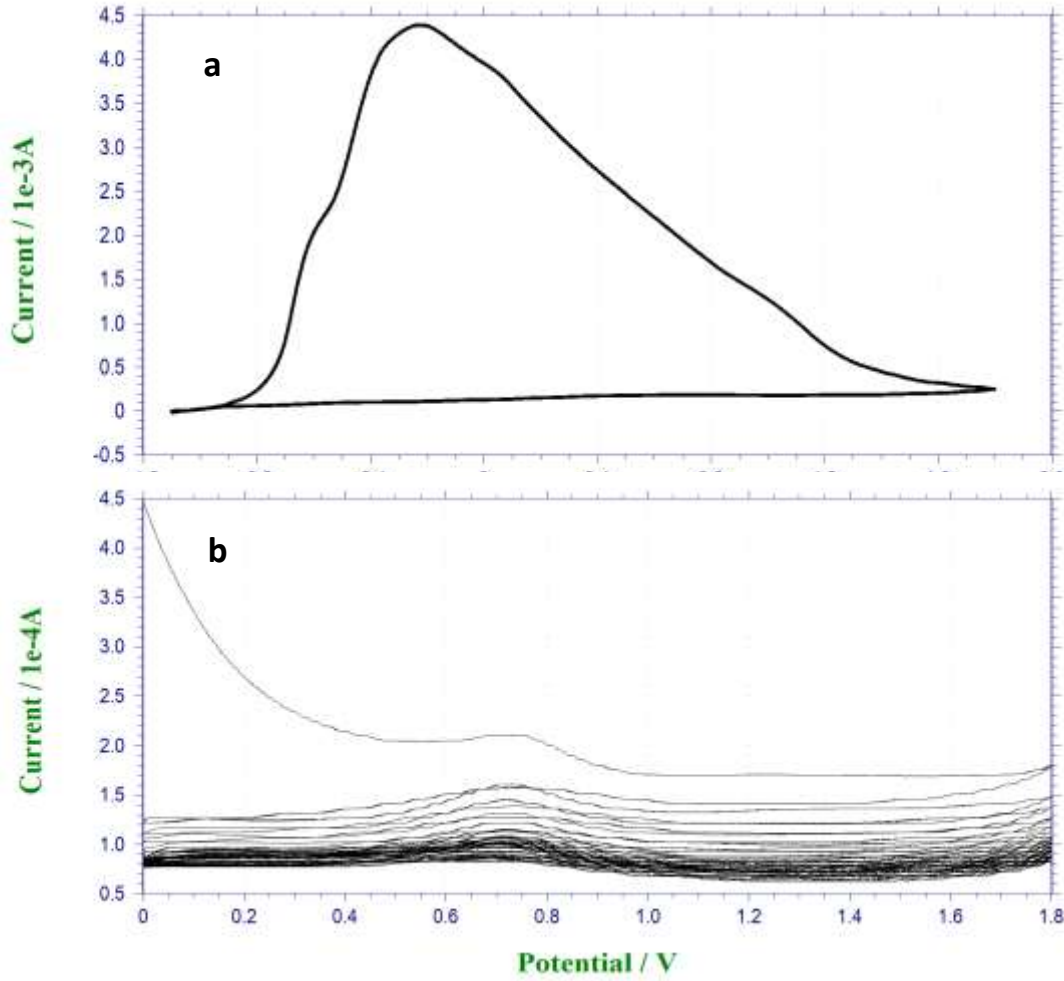
[7-9]. Bu çalışmada ZnNi kaplı karbon çelik elektrodun yüzeyinin poli(pirol-co-o-fenildiamin) kopolimeriyle kaplanıp antikorozyf özelliğinin incelenmesi amaçlanmıştır.

2. MATERYAL VE METOD

Poli(pirol-co-o-fenildiamin) filmin elektropolimerizasyonu dönüşümlü voltametri ile üç elektrot tekniği kullanılarak tek hücrede gerçekleştirilmiştir. Karşı elektrot olarak yüzey alanı 0.18 cm² olan platin levha, referans elektrot olarak da Ag/AgCl (3 M, KCl) kullanılmıştır. Çalışmada kullanılan yüzey alanı 0.05 cm² olan silindirik karbon çelik elektrotların elementel bileşimi kütlece % 0.0561 C, % 0.4498 Mn, % 0.0103 P, % 0.0036 S, % 0.1409 Si ve % 99.3394 Fe'dir. Çalışma elektrot yüzeyleri 1200 grid zımpara kağıdında parlatıldıktan sonra önce 1/1 etanol/aseton karışımı daha sonra da distile su ile yıkanmıştır. Elektrokimyasal ölçümler CHI 660E elektrokimyasal analiz cihazı kullanılarak yapılmıştır. ZnNi kaplama banyosu içeriği 200 g l⁻¹ ZnSO₄.7H₂O, 140 g l⁻¹ NiSO₄.6H₂O, 20 g l⁻¹ H₃BO₃, 2 g l⁻¹ CH₃C₆H₄SO₃H.H₂O olup kaplama 400 saniye boyunca 1 mA sabit akımda pH'ı yaklaşık 5.5 olan sülfat banyosunda yapılmıştır [10]. Kaplı elektrot karakterizasyonları % 3.5 NaCl çözeltisinde elektrokimyasal empedans spektroskopisi, anodik polarizasyon eğrileri kullanılarak gerçekleştirilmiştir. AC empedans ölçümleri elektrotların korozyf çözeltiye bırakılmalarından sonra farklı zaman dilimlerinde açık devre potansiyellerinde 10⁵ Hz ile 10⁻³ Hz frekans aralığında 7 mV genlik kullanılarak gerçekleştirilmiştir. Anodik polarizasyon eğrileri ise 168 saat sonra ölçülen denge potansiyelinden başlanarak anodik yönde 1.80 V'ye kadar 4 mVs⁻¹ tarama hızı ile elde edilmiştir.

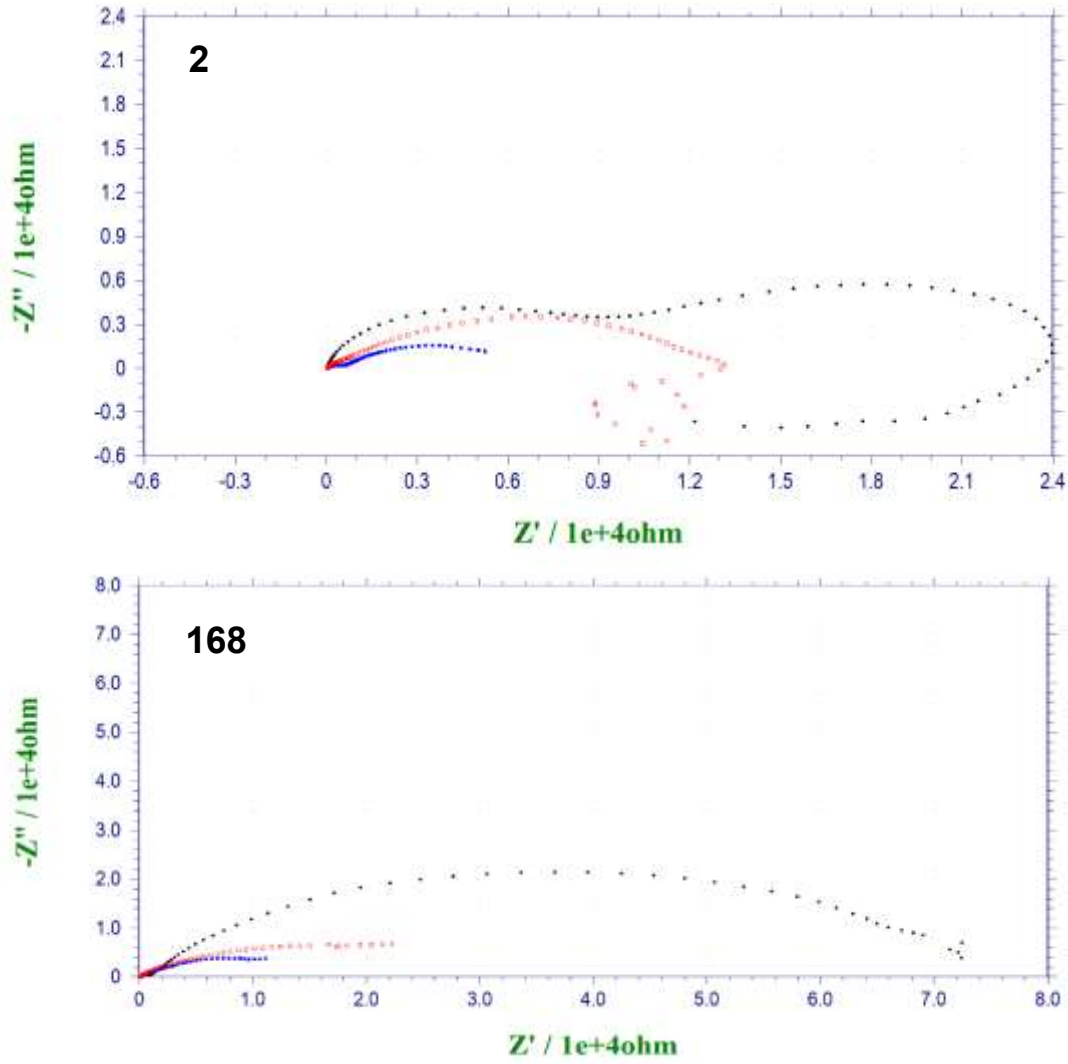
3. BULGULAR VE TARTIŞMA

CS/ZnNi elektrodun 0.05 M pirol + 0.05 M o-fenildiamin içeren 0.20 M sodyum okzalate çözeltisinde elde edilen birinci voltammogram eğrisi Şekil 1a'da verilmiştir. Şekil 1'de -1.10 V ile 1,80 V potansiyel aralığında alınan eğrilerde anodik taramada görülen geniş pik oksidasyon/pasivasyon piki olup elektrodun yüzeyinin pasifleşmesi hakkında bilgi vermektedir. Şekil 1b'deki film gelişim eğrilerinde tarama sayısının artmasıyla akım değerlerinde azalma olduğu belirlenmiştir.



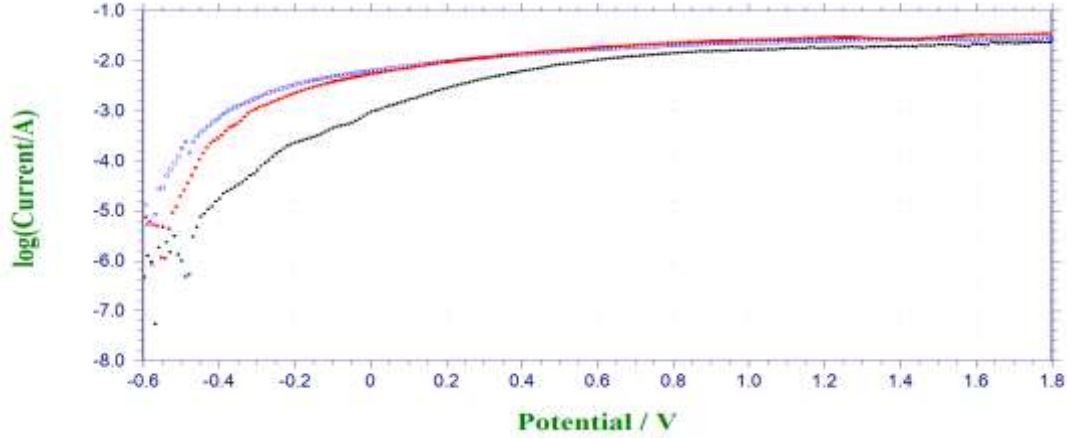
Şekil 1. CS/ZnNi elektrodun 0.05 M pirol + 0.05 M o-fenildiamin içeren 0.20 M sodyum okzalot çözeltisinde elde edilen birinci voltammogram eğrisi (a) ve film gelişim eğrileri (b)

CS ve ZCS/ZnNi ve CS/ZnNi/Poli (pirol-co-o-fenildiamin) elektrotların Nyquist eğrileri Şekil 2’de verilmiştir. Bu eğrilerde 2 ve 168 saatlik ölçümlerde CS/ZnNi/Poli(pirol-co-o-fenildiamin) elektrodun polarizasyon direncinin 2 ve 168 saatlik ölçüm sonuçlarında CS ve CS/ZnNi elektrotlara göre daha düşük olduğu görülmüştür.



Şekil 2. CS ve CS/ZnNi ve CS/ZnNi/Poli (pirol-co-o-fenildiamin) elektrotların % 3.5'lik NaCl çözeltisinde 2 ve 168 saat sonundaki Nyquist eğrileri

CS ve ZCS/ZnNi ve CS/ZnNi/Poli (pirol-co-o-fenildiamin) elektrotların % 3.5'lik NaCl çözeltisinde 168 saat sonundaki anodik polarizasyon eğrileri Şekil 3'de verilmiştir. Bu eğrilerde CS/ZnNi/Poli(pirol-co-o-fenildiamin) elektrodun akım değerlerinin CS ve CS/ZnNi elektrotlara göre daha yüksek olduğu görülmüştür.



Şekil 3. CS ve CS/ZnNi ve CS/ZnNi/Poli (pirol-co-o-fenildiamin) elektrotların % 3.5'lik NaCl çözeltisinde 168 saat sonundaki anodik polarizasyon eğrileri

SONUÇLAR

Poli (pirol-co-o-fenildiamin) film 0.20 M sodyum okzalot çözeltisinde dönüşümlü voltametri tekniği ile ZnNi kaplı CS yüzeyine sentezlendi. Nyquist ve anodik polarizasyon eğrileri Poli (pirol-co-o-fenildiamin) kaplı elektrodun CS/ZnNi elektrodun korozyonuna karşı koruyucu etkisi olmadığını gösterdi.

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DETERMINATION OF PHYSICAL AND CHEMICAL PARAMETERS OF FRUIT AND FOAM LEATHERS (PESTIL) OFFERED FOR SALE IN ELAZIG (IN TÜRKIYE)

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Abstract

This study was planned to examine some physical and chemical quality parameters of fruit and foam leathers sold at different points in Elazığ. For this purpose, a total of 34 fruit leather samples (10 plum, 6 apricot, 6 cherry, 2 peach, 10 foam) from different sales points in the market were examined. Physical (thickness) and chemical [pH, total acidity, water activity (aw), total dry matter, total ash, ash insoluble in 10% HCl, water soluble dry matter determination (brix)] analyzes of the pestil samples were performed. The thickness measurements of the samples were determined as 1.74, 2.06, 2.14, 3.38 and 2.85 mm on average in plum, apricot, cherry and foam leathers, respectively. As a result of the analyzes made, the average pH values of plum, apricot, cherry and foam leathers 3.45, 4.73, 4.15, 4.07 and 3.97; acidity value (% citric acid) 4.05, 1.90, 2.66, 4.02 and 1.19; water activity (aw) values 0.488, 0.483, 0.464, 0.719 and 0.485; total dry matter values (%) 68.14, 65.99, 66.65, 78.14 and 74.22; total ash content (%) 1.37, 2.12, 1.18, 2.32 and 0.72; ash values insoluble in 10% HCl were 0.81, 1.86, 0.43, 1.65 and 0.43; water-soluble dry matter (brix) (g/100g) as 23.70, 19.83, 27.00, 20.00 and 21.50 were determined. When the findings were evaluated, it was determined that the pH, acidity, and ash values insoluble in 10% HCl of the leather samples were higher than the Turkish Standards Institute (TSE). As a result, the differences in production techniques and the lack of a standard production affect the physical and chemical parameters of fruit and foam fruit leathers. The application of food safety systems such as HACCP at all stages from production to consumption, and optimum application of packaging and storage conditions will be beneficial for public health.

Keywords: Fruit, fruit leather (pestil), physicochemical parameter, traditional product.

1. INTRODUCTION

Today, although vegetables and fruits can be found in all seasons, healthy eating individuals prefer to consume them in season (Slavin and Lloyd, 2012). Pestil (fruit leather) produced from fruits contain various fruits together and offer a delicious and healthy alternative snack for individuals who do not like fruit consumption (Karabacak and Çopur, 2021).

Pestil (Fruit leather) is a natural and widely consumed traditional Turkish product (Sengul et al., 2010; Sengul et al., 2020). Pestil is a product that it is dried after thickening by adding



additives such as sugar and starch into fruit juice and fruit pulp (Cagindi and Otles, 2005; Şengül et al., 2010; Chowdhury et al., 2011; Gökçe, 2015; Raab and Oehler, 2000; Kara and Küçüköner, 2019; Yıldız et al., 2011, Yıldız, 2013). Pestil can be produced from various fruits such as apple, grape, mulberry, cranberry, plum, apricot, banana, cherry, orange, strawberry, pear, pineapple, peach, carob and fig (Şengül et al., 2010; Yıldız, 2013; Kara et al. Küçüköner, 2019; Ünver, 2019). Pestil can be produced from various fruits such as apple, grape, mulberry, cranberry, plum, apricot, banana, cherry, orange, strawberry, pear, pineapple, peach, carob and fig (Nas S, 1987, Nas, 1993, Batu et al., 2007, Yıldız, 2013; Tas et al., 2018).

This study was carried out to determine the physical and chemical quality parameters of fruit and foam leathers sold at different sales points in the Elazığ market (in Türkiye).

2. MATERIAL and METHOD

2.1. Material

The fruit leather samples used in the research were obtained from markets, shops and neighborhood markets in Elazığ province (in Türkiye). Samples were taken between August 2021 and October 2021, and a total of 34 fruit leather samples (10 plum, 6 apricot, 6 cherry, 2 peach, 10 foam) were examined. Samples were duly taken in sterile bags in an amount of at least 300 g and brought to the laboratory in the cold chain.

2.2. Method

2.2.1. Physical analysis

The thickness measurement in the pestils was determined by using a digital caliper (Loyka 5110-150 (IP54), China) according to TS 9776 (TSE, 2000). Measurements were made from at least 10 different points of the pestils and the evaluation was made by taking the arithmetic averages of the measurement results.

2.1.2. Chemical analyzes

The pH values of the samples were measured with a calibrated pH meter (HI 11310, Hanna Instruments, USA) using pH 4 and 7 buffer solutions. Total acidity was determined as % citric acid (SSA) by alkali titration method (AOAC, 2010). Total dry matter, total ash, ash insoluble in 10% HCl were made according to TS 9776 (TSE, 2000). The water activity value (aw) of the pestils was determined by an automatic water activity analyzer (Testo-650, Germany) (Lang & Sternberg, 1998). Determination of water-soluble dry matter (brix) was determined by hand refractometer (FG 103/113) (TSE, 2000).

2.1.3. Statistical analyzes

The descriptive statistics of the fruit leather samples analyzed in the study and the relationships between the values were made using the SPSS 22 (IBM SPSS, IBM Corporation, USA) package program. After the normality test applied to the fruit leather samples, the One Way ANOVA Test and the Post Hoc Test were applied as the Scheffe multiple comparison test. Results are given as mean \pm standard deviation. All data were evaluated at the $p \leq 0.05$ level. (Petrie and Watson, 2013).

3. RESULTS

The thickness values of the pestil samples are shown in Table 1, and the analysis values of their chemical properties are shown in Table 2.

Table 1. Thickness values of fruit and foam leather (Mean \pm Standard Deviation)



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Pestil Types	Thickness		
	Min	Max	Mean±Std.Dev.
Foam	1.27	4.23	2.85±1.06 ^{ab}
Plum	1.33	2.25	1.74±0.36 ^b
Apricot	1.88	2.26	2.06±0.15 ^{ab}
Cherry	2.04	2.26	2.14±0.09 ^{ab}
Peach	3.37	3.39	3.38±0.01 ^a

a, b: Expresses differences between groups.



Table 2. Chemical analysis values of fruit and foam leather (Mean±Standard Deviation)

Properties	Pestil Types														
	Foam			Plum			Apricot			Cherry			Peach		
	Min	Max	Mean±SD	Min	Max	Mean±SD	Min	Max	Mean±SD	Max	Mean±SD	Min	Max	Mean±SD	
pH	3.19	4.8	3.97±0.50 ^{bc}	3.25	3.64	3.45±0.14 ^c	4.30	5.13	4.73±0.34 ^a	3.93	4.28	4.15±0.16 ^{ab}	4.04	4.1	4.07±0.04 ^{ab}
Acidity (%citric acid)	0.70	2.08	1.19±0.51 ^b	1.70	6.52	4.05±1.76 ^a	1.70	2.28	1.90±0.24 ^{ab}	2.00	3.60	2.66±0.67 ^{ab}	4.00	4.04	4.02±0.28 ^a
Water activity (aw)	0.36	0.66	0.485±0.09 ^a	0.33	0.65	0.488±0.12 ^a	0.36	0.64	0.483±0.12 ^a	0.40	0.50	0.464±0.34 ^a	0.69	0.73	0.719±0.03 ^b
Dry Matter	68.2	82.1	74.22±5.82 ^a	63.8	73.3	68.14±3.01 ^b	62.1	70.4	65.99±3.44 ^b	65.8	67.4	66.65±0.65 ^b	77.9	78.3	78.14±0.23 ^a
Ash	3	3	0.72±0.58 ^b	5	2	1.37±0.51 ^{ab}	5	1	2.12±0.68 ^b	0.31	2.02	1.18±0.90 ^a	7	2.35	2.32±0.05 ^b
Ash Insoluble in %10'HCl	0.17	1.8	0.43±0.27 ^c	0.29	1.9	0.81±0.61 ^{bc}	1.21	2.69	1.86±0.28 ^a	0.16	0.83	0.43±0.25 ^c	2.28	1.84	1.65±0.27 ^{ab}
Brix	0.11	0.93	21.50±2.27 ^b	0.23	0.85	23.70±1.89 ^a	1.52	2.27	19.83±1.94 ^b	0.16	0.83	27.00±3.41 ^a	1.46	2.0	20.00±0.00 ^b

a, b, c: Expresses differences between groups.

Table 3. Chemical values of Turkish Standards Institute plum and apricot leather (TS 2000a, TS 2000b)

Properties	Limits	
	Plum Pestil	Apricot Pestili
Humidity, % (m/m), max	20	18
Titration Acidity, % (in SSA) max	2.3	6.2
pH value	2.5-4.0	2.5-4.0
Total ash, % (m/m), max	1.6	3.5
Ash Insoluble in %10'HCl, % (m/m), max	0.1	0.1



4. DISCUSSION

4.1. Physical Properties

Thickness: The thickness values of the fruit leather samples we used in our study were found to be 1.74, 2.06, 2.14, 3.38 and 2.85 mm on average, for the plum, apricot, cherry and foam leathers, respectively (Table 1). The statistical difference between the groups was found to be significant ($p < 0.05$) ($p = 0.002$). In their study, Yıldız and Boyracı (2020) determined the thickness (mm/diameter) of all fruit leather samples to be between 0.92-1.12 mm, and they determined the thickness of the fruit leather to be 0.92 mm in hazelnut fruit leather, 1.12 mm in walnut fruit leather, and 25.66 mm in köme. Nakilcioglu-Tas et al. (2018) determined the thickness of mulberry leather with carob added at different rates at the level of 0.91-1.02. Ulusal-Bayram (2018) determined of 0.6-0.9 mm the thickness of the leather in plain, hazelnut and walnut leather products made with the traditional Gümüşhane production method. In the present study, while the thickness ratios of plain, hazelnut and walnut leather products produced by industrial method and having geographical indications were 0.6, 0.8, 0.9 mm, respectively, the thickness ratios were determined as 0.7, 0.9, 1.1 mm, respectively, in market-produced products. Thickness ratios were determined as 0.6, 0.7, and 0.8 mm in plain, hazelnut and walnut fruit leather collected from the field, respectively. Yüksekaya (2013) determined the thickness of pomegranate leather dried at different temperatures as 34.19-39.19 mm, Sengül et al. (2010) stated that the thickness of the plum fruit leather was 4.90 mm in their study, and the thickness ratios of the apricot leathers in the study of Cagindi and Otles (2005) were 1.46-1.72 mm, in the study of Kaya and Maskan (2003), they found the thicknesses between 0.5-1.2 mm. It is thought that the differences in thickness ratios are caused by the production techniques, the difference in the flavors such as hazelnut and walnut.

4.2. Chemical Properties

pH: Acidic amino acids and free fatty acids released during proteolysis and lipolysis cause a decrease in pH. In line with our findings in our study, the pH values of the fruit leather samples were found to be 3.45, 4.73, 4.15, 4.07 and 3.97 on average in the plum, apricot, cherry and foam fruit leathers, respectively (Table 2). The statistical difference between the groups was found to be significant ($p < 0.05$) ($p = 0.000$). Şengül et al., (2020) determined the pH value of the plum fruit to be 3.80, the pH value of the fruit pulp to be 3.0, the pH value of the pulp to be 3.68, the pH value of the pulp with hazelnut added (HNAPS) to be 3.84. Latif and Abdel-Aleem (2019) found the pH value of 3.61-3.98 in their study on pomegranate leather; Seymen (2019), in a study on the pulp produced from pumpkin, the pH value of the leather was 3.75; Nakilcioglu-Tas et al. (2018) pH values of 6.19-6.88 in mulberry leathers with carob added at different rates; in the study conducted by Ulusal-Bayram (2018), the pH ratios of plain, hazelnut and walnut pestils produced by the traditional method were 4.5, 4.7 and 5.1, respectively; while the pH values of plain, hazelnut and walnut pestils produced by industrial method and having geographical indications were 4.6, 4.6 and 5.1 respectively, pH values were determined as 5.8, 5.2 and 5.1 in market produced products, respectively. The pH values of the plain, hazelnut and walnut leathers collected from the field were 5.1, 5.14, 5.71, respectively; Ahmad et al.(2017) found pH value of 3.2 in pineapple leather; Tontul and Topuz (2017) determined the pH values of the pomegranate leather, which they applied different drying methods, to be 3.61-3.68; Boz et al., (2016) determined the pH value of the leather was 5.70-5.89 in study which examined the effects on fruit leathers of sugar syrup and cooking time; Atıcı and Fenercioğlu (2014) found the pH value of 3.29-3.33 in plum pulp,



3.19-3.40 in plum leather dried by different methods; Onsekizoglu (2013) determined the pH value of pomegranate concentrations as 3.35-3.38; Sengul et al. (2010) determined the pH value of plum leather to be 3.39 in their study.

Total acidity (% citric acid): Total acidity (% citric acid) in the market-provided fruit leathers was determined as 4.05, 1.90, 2.66, 4.02 and 1.19 on average in plum, apricot, cherry and foam leathers, respectively (Table 2). A significant difference was detected between the groups ($p < 0.05$) ($p = 0.000$). Considering that the required acidity of apricot and plum leather is 0.2% according to TSE (Table 3), it was determined that the acidity values of the samples were higher and did not comply with this limit (TSE, 2000a; TSE, 2000b). Yıldız and Boyracı (2020) stated that they found the acidity levels to be 0.25% in hazelnut fruit leathers and 0.20% in walnut fruit leathers in their study. In the study of Ekşi and Artık (1984), the acidity values of the plum and apricot leather samples were determined as 2.3% and 6.2%, respectively. Yuksel et al. (2020) in their study on the leather samples enriched with coconut flour, the highest acidity was determined as 0.22% and the lowest acidity was 0.15%. Latif and Abdel-Aleem (2019) found the acidity value of 3.22-4.08 in their study on pomegranate leather; in a study conducted by Seymen (2019) on the leather produced from pumpkin, the acidity rate of the leather was 4.29%; in the study of Ulusal-Bayram (2018), the acidity ratios of plain, hazelnut and walnut pestils were determined as 0.16, 0.19 and 0.2, respectively; While the acidity ratios of plain, hazelnut and walnut pestils produced by industrial method and having geographical indications were 4.6, 4.6 and 5.1 respectively, the acidity ratios were determined as 5.8, 5.2 and 5.1 in market produced products, respectively. The acidity ratios of plain, hazelnut and walnut leathers collected from the field were found to be 0.21, 0.3, 0.35, respectively. Boz et al., (2016) in study examined the effects on fruit leathers of sugar syrup and cooking time, the acidity ratios of the leather were 0.29-0.59; Suna et al. (2014) found the acidity ratio of 0.69-0.81 in apricot leathers applied different drying methods; Atıcı (2014) the acidity ratio of plum leather by different methods dried was 1.11-2.47; Sengul et al. (2010) found that the acidity rate of plum fruit leather was 4.69%.

Water activity (a_w): Water activity (a_w) values are one of the important barriers that affect storage time, shelf life of the products and the growth of microorganisms. Every factor that causes to change the vapor pressure of the existing water in the product affects the water activity. The lower the a_w value, the longer the shelf life of the products. The water activity (a_w) values in the fruit leather samples we used in our study were determined as 0.488, 0.483, 0.464, 0.719 and 0.485 in the plum, apricot, cherry and foam fruit leathers, respectively. There was a statistically significant difference between the groups ($p < 0.05$) ($p = 0.048$). Yuksel et al. (2020) in their study on leather samples enriched with coconut flour, water activity (a_w) value was 0.56-0.72; in another study on the stability of the bioactive components of pomegranate leather (Tontul and Topuz, 2019), the a_w value was 0.591-0.560; Tontul and Topuz (2018) found a_w values of 0.311 and 0.464 in pomegranate leathers produced using different hydrocolloids; Tontul and Topuz (2017) determined the a_w value of the pomegranate leather to which they applied different drying methods as 0.552-0.570; in the study on plum fruit leather made with different presses and different fruit combinations (Momchilova et al., 2016), the a_w value was 0.460-0.542; Irwandi et al. (1998) reported that the water activity of durian leathers varied in the range of 0.517-0.623 with an initial water activity of 0.597. In another study, water activity of mango leathers increased during storage (Azeredo et al., 2006). In addition, water activity has been reported over a wide range of 0.395 and 0.70, depending on formulation, drying conditions, and storage. (Phimpharian et al., 2011; Quintero Ruiz, Demarchi, & Giner, 2014; Ruiz, Demarchi, Massolo, Rodoni, &



Giner, 2012; Sepulveda, Saenz, & Alvarez, 2000). Differences between studies may be related to the relative humidity of the storage location and packaging materials.

Total dry matter (%): Total dry matter values (%) were determined as 68.14, 65.99, 66.65, 78.14 and 74.22 in plum, apricot, cherry and foam leathers. When the differences between the groups were evaluated statistically, significant differences were found ($p < 0.05$) ($p = 0.000$). Şengül et al., (2020) found that the dry matter amount of the plum fruit was 19.34%, the dry matter amount of the fruit pulp was 21.67%, the dry matter amount of the leather was 88.15%, and the substance amount of the hazelnut-added leather was 89.67%. They stated that the dry matter values of the hazelnut-added leather samples were higher due to hazelnuts. Yıldız and Boyracı (2020) stated that they found the dry matter amount to be 85.58% in hazelnut fruit pulp and 83.52% in walnut fruit leather in their study. In a study on the leather produced from pumpkin (Seymen, 2019), the dry matter content of the leather was 78.48%; In the study conducted by Ulusal-Bayram (2018), the total dry matter amount in plain, hazelnut and walnut pestils produced with the traditional method was 87.45, 86.39 and 84.88, respectively; while the dry matter amounts in plain, hazelnut and walnut pestils produced by industrial method and having geographical indications were 85.15%, 84.99 and 85.58%, respectively, dry matter in market produced products was determined as 85.90%, 85.80 and 86.74. Total dry matter amounts in plain, hazelnut and walnut leathers collected from the field were determined as 88.03%, 86.92 and 86.58, respectively. The dry matter ratios of the plum leather made with different presses and different fruit combinations (Momchilova et al., 2016) were 60.00-77.00%; Atıcı and Fenercioğlu (2014) found that the dry matter content of the plum leather dried and stored using different methods is 19.90-34.91, and the dry matter content of the plum leather is 84.70-92.60%; Ekşi and Artık (1984) found the dry matter amount in the leather to be 80.5%. Suna et al. (2014) found that the dry matter content of apricot leather with added starch was between 85.61% and 86.88%. Kaya and Maskan (2003) found the amount of dry matter in grape leathers supplemented with starch was to be 88.8%. Cagindi and Otles (2005) determined the amount of dry matter in apricot leathers between 81.7% and 87.00%. Sengul et al. (2010) determined the dry matter amount of plum leather to be 75.30% in their study. Ertem (2003) subjected the dried apricots, which had been sorted and washed, to the drying process in a pilot scale industrial microwave (MD) oven and determined the moisture content of the apricots before and after drying. Fruit leather mortar was prepared from apricots that had been washed. Apricot leather was obtained by drying this wet mortar in the MD oven and on the fabric in the sun, and their moisture determination was made. The moisture content of the pestil mortar was 66.6%, the moisture content of the MD oven-dried leather was 7.4%, and the moisture content of the sun-dried leather was 13.9%.

Ash amount (%): Ash amount is defined as the amount of inorganic matter of the products. It is undesirable to have too much in the products. Because it is accepted as an indication that the products are not produced under hygienic conditions and may contain some inorganic substances (heavy metals) that may harm human health, and that the nutritional value of the product decreases. Total ash content (%) in fruit leather samples collected from the market was determined as 1.37, 2.12, 1.18, 2.32 and 0.72 in plum, apricot, cherry and foam fruit leathers, respectively. The statistical difference between the groups was found to be significant ($p < 0.05$) ($p = 0.001$) (Table 2). Considering that the maximum ash amount determined by TSE for plum and apricot leather is 1.6% and 3.5% (Table 3), it is seen that the samples are within the standards (TSE, 2000a; TSE, 2000b). Şengül et al., (2020) determined the ash amount of the plum fruit to be 2.32%, the ash amount of the fruit pulp to be 2.08%, the ash amount of the leather to 4.15%, and the ash amount of the hazelnut-added leather to



be 3.66%. Ekşi and Artık (1984) reported the ash content of plum leather as 1.60%, Cagindi and Otles (2005) reported as 0.2-3.6% for grape, mulberry and apricot leather. Yıldız and Boyracı (2020) stated that they found the amount of ash in their study to be 0.69 in hazelnut leather, 0.49 in walnut leather. Yuksel et al. (2020) stated that the amount of ash varied between 0.83-1.62 g/100 g in their study on leather samples enriched with coconut flour. In the study of Ulusal-Bayram (2018), the amount of ash in plain, hazelnut and walnut pestils produced by traditional method was 0.4, 0.55 and 0.75; while the amounts of ash in plain, hazelnut and walnut pestils produced by industrial method and having geographical indications were 0.35, 0.50 and 0.75, respectively, ash amounts were determined as 0.40, 0.45 and 0.61 in market-produced products. Total ash amounts were determined as 0.4, 0.51 and 0.61 in plain, hazelnut and walnut fruit leather collected from the field, respectively. Sengul et al. (2010) in their study, the ash content of the plum fruit leather was 2.86%; Cagindi and Otles (2005) found the ash content of the leather produced from apricot fruit to be 3.1-3.6%.

Ash value insoluble in 10% HCl: The ash value insoluble in 10% HCl in the market-collected fruit leather samples was found to be 0.81, 1.86, 0.43, 1.65 and 0.43 on average in plum, apricot, cherry and foam leathers, respectively (Table 2nd). It was determined that the differences between the groups were significant ($p < 0.05$) ($p = 0.000$). Considering that the insoluble ash value in 10% HCl is at most 0.1% according to TSE (Table 3), it was determined that the fruit leather samples were not within these limits.

Determination of water-soluble dry matter (brix) (g/100g): Brix determination was determined as 23.70, 19.83, 27.00, 20.00 and 21.50 on average in plum, apricot, cherry and foam leathers, respectively (Table 2). It was determined that the differences between the groups were significant ($p < 0.05$) ($p < 0.000$). In a study conducted on leather samples enriched with coconut flour (Yüksel et al., 2020), the °Brix (Bx) value was 28.9-30.75; in a study with medlar fruit (Suna, 2019), the brix value of the fruit leather was 23-42°Bx; in a study on pumpkin (Seymen, 2019) 70.5-71.14; Boz et al., (2016) examined the effects of sugar syrup and cooking time on fruit leathers, in which the °Brix (Bx) value of the fruit leather was 70.00-76.21; Atıcı and Fenercioğlu (2014) found it to be 18.17-32.83 in plum leather.

CONCLUSION

Pestil is an important traditional food product belonging to our country. It is produced industrially (commercially) and locally from different fruit varieties, either as a single or as a mixture. Differences in production techniques and drying methods have a great effect on the color, flavor, thickness and texture of the product. This study provides basic information about some physical (thickness) and chemical analyzes of fruit and foam leathers sold in the Elazığ market. According to the results of the study; it has been determined that the pH, acidity, and ash insoluble in 10% HCl values of the fruit leather (pestil) samples sold in the market are higher than the Turkish Standards Institute (TSE) and do not comply with the standards. It is thought that it will be more beneficial for public health to comply with production standards throughout the entire food chain from production to consumption, to implement food safety systems such as HACCP at enterprises and sales points, to comply with appropriate packaging and storage conditions at production and sales points.



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**FİZİKSEL VE PSİKOLOJİK MESLEK HASTALIKLARI BAĞLAMINDA
ÇALIŞANLARIN ÇEŞİTLİ İŞ YERİ UYGULAMALARINA İLİŞKİN
DÜŞÜNCELERİ**

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Özet

Toplumun sosyal ve ekonomik kalkınması, çalışma koşullarının iyileştirilmesini, genel ve meslek hastalıklarının düzeyinin düşmesini öngörmektedir.

Dünyanın her yerindeki çalışanlar, fiziksel, sosyal, ekonomik ve politik ortamlarındaki büyük farklılıklara rağmen, meslek hastalıkları ile karşı karşıya kalmaktadır. Meslek hastalığı, çalışma koşullarından kaynaklanan bir hastalıktır. Meslek hastalıkları yapıları, karakterleri ve gelişimleri yıllar itibari ile değişim göstermektedir. Son zamanlarda bu tehlikeler kimyasal, biyolojik, fiziksel, psikolojik ve ergonomik olarak beş tipte sınıflandırılır. Meslek hastalıkları listesi, hastalıkları, bunlara katkıda bulunan faktörleri veya aralarında bir nedensellik bağı kurulmuş olan maruziyet maddelerini içerir.

Çalışanların sağlıklı ve güvenli bir ortamda çalışma hakları ve ilgili görevleri bulunurken, işverenler bu ortamı ve hizmetleri sağlamakla yükümlüdür. Her yıl önemli sayıda çalışan, yasal olarak önlenmesi gereken meslek hastalıkları nedeniyle mağdur durumda kalmaktadır. Çalışanların karşılaştığı bu yüksek ve önlenemez hastalık yükünün mütevazı bir maliyetle önemli ölçüde azaltılabileceği savunulmaktadır.

Endüstriyel hijyenistler ve diğerleri tarafından yıllardır endüstriyel ülkelerde geliştirilen yaralanma ve meslek hastalıklarını kontrol etme stratejileri, gelişmekte olan ülkelerde de tamamen uygulanabileceği ifade edilmektedir.

Son yıllarda meslek hastalıkları alanında gerek düzenleyici gerekse bilimsel ve teknik alanlarda bir değişim ve gelişim süreci görülmektedir. Bu bağlamda, meslek hastalıklarına ilişkin mevcut politikalar hem sosyal güvenlik hem de mesleki risk önleme alanında uyum göstermektedir.

Ülkemizde de son zamanlarda Meslek Hastalıkları düzenleme alanında bir iyileşme sürecine tanık olunmaktadır.

Bu çalışmada amaç, meslek hastalıkları bağlamında çalışanların çeşitli iş yeri uygulamalarına ilişkin algılarını incelemektir. Bu amaç doğrultusunda Gaziantep ilinde faaliyette bulunan ve Uluslararası Nakliyeciler Derneği (UND)'ne kayıtlı olan 61 firma içinden 38 firmaya ulaşılmış ve toplam çalışan sayısının 750 kişi olduğu bilgisine erişilmiştir. Bu evrenden hareketle, anket tesadüfi örneklem yöntemiyle seçilen 200 çalışana uygulanmıştır. Daha sonra elde edilen veriler SPSS programı aracılığıyla çeşitli analizlere tabi tutulmuştur. Son olarak da elde edilen bulgulara yer verilerek literatüre katkıda bulunmaya çalışılmıştır.



Anahtar Kelimeler: Meslek Hastalıkları, Fiziksel Meslek Hastalıkları, Psikolojik Meslek Hastalıkları

OPINIONS OF EMPLOYEES REGARDING VARIOUS WORKPLACE APPLICATIONS WITHIN THE CONTEXT OF PHYSICAL AND PSYCHOLOGICAL OCCUPATIONAL DISEASES

Abstract

The social and economic development of the society envisages the improvement of working conditions and the decrease in the level of general and occupational diseases.

Workers around the world face occupational diseases despite the great differences in their physical, social, economic and political environments. Occupational disease is a disease caused by working conditions. Occupational diseases structures, characters and developments have changed over the years. Recently, these hazards are classified into five types as chemical, biological, physical, psychological and ergonomic. The list of occupational diseases includes diseases, contributing factors or exposures for which a causal link has been established.

While employees have the right to work and related duties in a healthy and safe environment, employers are obliged to provide this environment and services. Every year, a significant number of workers suffer from occupational diseases that must be legally prevented. It is argued that this high and preventable disease burden faced by workers can be significantly reduced at a modest cost.

It is stated that the strategies to control injuries and occupational diseases developed in industrial countries for years by industrial hygienists and others can be fully implemented in developing countries.

In recent years, there has been a change and development process in the field of occupational diseases, both in regulatory and scientific and technical fields. In this context, current policies regarding occupational diseases are compatible with both social security and occupational risk prevention.

Recently, an improvement process has been witnessed in the field of Occupational Diseases regulation in our country.

The aim of this study is to examine the perceptions of employees about various workplace practices in the context of occupational diseases. For this purpose, 38 companies were reached out of 61 companies operating in Gaziantep and registered with the International Transporters Association (UND), and it was learned that the total number of employees was 750. Based on this universe, the questionnaire was applied to 200 employees selected by random sampling method. Then, the obtained data were subjected to various analyzes through the SPSS program. Finally, it was tried to contribute to the literature by including the findings obtained.

Keywords: Occupational Diseases, Physical Occupational Diseases, Psychological Occupational Diseases



GİRİŞ

Meslek hastalıkları, hemen hemen tüm hastalıklar gibi çok nedenli olsalar bile, hastalık ve iş arasında “doğrudan nedensel” bir ilişkiye sahip olduğu varsayıldığından, açık nedeni olan hastalıklardır. Kısacası meslek hastalıkları nedensel anlamda işle ilgili olan hastalıklardır. Birçok ülkede meslek hastalıkları, mali ve diğer tazminatlarla yakından ilişkili olarak algılanan bir kavram sayılmaktadır. İşle ilgili depresyon, tükenmişlik, kronik obstrüktif akciğer hastalığı (KOAH), kardiyovasküler hastalıklar ve kronik bel ağrısı meslek hastalıklarından sayılmaktadır. Meslek hastalıkları çalışanlara, sağlık sistemlerine ve topluma önemli maliyetler getirmekte ve üretkenliği azaltmaktadır. Uluslararası Çalışma Örgütü (ILO), her yıl dünya çapında 160 milyon insanın işle ilgili hastalıklardan etkilendiğini ve 2,78 milyon insanın aynı nedenlerle öldüğünü tahmin etmektedir. Meslek hastalıkları, gerekli önlemler alındığında önlenilmekte ancak teşhis ve tedavi edilmedikçe ve önleyici tedbirler alınmadıkça ilerleyici ve tekrarlayıcı olabilmektedir. Önleyici politikalar geliştirmek için vakaları, yaygınlıkları, dağılımları ve eğilimleri bilmek önemli sayılmaktadır (Şen vd., 2019: 420-421).

Bu çalışmada meslek hastalığı kavramı, türleri hakkında bilgi verilmiş daha sonra önemli bulgular bir araya getirilerek, sonuçlar ortaya çıkarılmıştır.

TANIM VE SINIFLANDIRMA

Meslek Hastalığının Tanımı

Meslek hastalığı, işten kaynaklanan veya çalışma nedeniyle ağırlaşan bir hastalık olarak tanımlanabilir. Uluslararası Çalışma Örgütü (ILO), meslek hastalığını, iş faaliyetinden kaynaklanan risk faktörlerine maruz kalmanın bir sonucu olarak bulaşan bir hastalık olarak ifade etmektedir (ILO,1996). Bununla birlikte, meslek hastalığı terimi, genel olarak, sigorta veya işverenler tarafından sağlanan bir fon aracılığıyla tazmin edilecek olan işten kaynaklanan bir hastalığı vurgular (Akt. Kang ve Kim, 2010:4).

Meslek hastalığı, Mesleki Güvenlik ve Sağlık İdaresi (OSHA) tarafından “işle ilgili bir yaralanmadan kaynaklananlar dışında, istihdamla ilişkili faktörlere maruz kalmanın neden olduğu herhangi bir anormal durum veya bozukluk” olarak tanımlanmaktadır (Piñosová vd., 2021: 3).

Sosyal Sigortalar ve Genel Sağlık Sigortası Kanununda meslek hastalığı, “sigortalının çalıştığı veya yaptığı işin niteliğinden dolayı tekrarlanan bir sebeple veya işin yürütüm şartları yüzünden uğradığı geçici veya sürekli hastalık, bedensel veya ruhsal özür lülük halleridir” (Sosyal Sigortalar ve Genel Sağlık Sigortası Kanunu, *SSGSSK, 2006: Mad.14; Akt. İlman, 2015:23).

Dünya çapında genel kabul görmüş bir meslek hastalığı listesi mevcut değildir. Ülkeler, hangi olayların meslek hastalığı olarak kabul edilmesi gerektiğini değerlendiren standartları kendi koşullarını göz önünde bulundurarak belirlemektedir. Bunun yanı sıra, bazı durumlarda bir hastalığın mesleki olduğuna dair kesin bir kanıt bulunmadığından ötürü, tartışmaları önlemek adına meslek hastalıklarını gösteren listeler hazırlanmış ve ilgili birey bir işte çalışıyorsa hastalık meslek olarak kabul edilmiştir (Fidancı ve Öztürk, 2015: 17-18).

Meslek hastalıkları aile ve sosyal hayatı etkilemektedir. Meslek hastalıklarının teşhis edilebilmesi için özel organizasyon ve düzenlemeler şarttır. Bunun nedeni, meslek hastalıklarının ancak bilinçli olarak araştırıldığı takdirde teşhis edilebilmesidir. Meslek hastalıklarının diğer hastalıklardan ayırt edici tanısı ve tarama yöntemleri vardır. Mevzuatın gerektirdiği periyodik çevre ölçümleri ve tıbbi muayeneler ile meslek hastalıkları çalışanların şikayeti olmadan teşhis edilebilmekte ve gerekli önlemler alınabilmektedir. Birçok çalışan



meslek hastalığı olduğunun farkında değildir. İşverenlerin ve çalışanların meslek hastalıkları konusunda bilgilendirilmesi ve bilinçlendirilmesi önemlidir. Meslek hastalığı teşhisi, hastalığa yakalanan çalışanın yakın çalışma arkadaşlarına erken teşhis şansı sağlar. Meslek hastalığı teşhisi "tazminat", "yüksek iş göremezlik ücreti", "çalışma ortamını geliştirmeye yönelik yatırım" ve "cezai sorumluluk" getirdiğinden gizlenme gibi bir hata yapılabilir (Fidancı ve Öztürk, 2015: 17-18).

Meslek hastalıkları sadece çalışanların sağlığına ve kişisel ekonomilerine zarar vermekle kalmaz, aynı zamanda işletmelerin üretkenliği ve karlılığı üzerinde ve nihayetinde tüm toplumların refahı üzerinde bir etkiye sahiptir (Ding ve diğerleri, 2013: 1423).

Meslek Hastalığının Sınıflandırılması

Meslek hastalıklarının ortaya çıkması, çalışma koşullarının ve çalışma ortamının kalitesinin önemli bir göstergesidir. Küresel düzeyde ele alınması gereken önemli meslek hastalıkları, kimyasal, biyolojik, fiziksel, ergonomik ve psikolojik riskleri içerir (Přenosová ve diğerleri, 2021: 2).

Maruz kalma limitlerini, gerekli muayeneleri ve hassas popülasyonlara özel muameleyi belirtebilecek yerel düzenlemelere uymak gerekmektedir (Buford, 2019).

Temel iş sağlığı hizmetleri kapsamında birçok meslek hastalığının teşhisi konulabilmektedir. Ancak birçoğunda uzmanlaşmış mesleki tıp kliniklerine başvurulmalıdır (Fidancı ve Öztürk, 2015:18).

İşyerinde mevcut olan kimyasal, fiziksel, biyolojik ve diğer tehlikelere aşına olunmadığında tazmin gündeme gelir (Buford, 2019). Çoğu ülkede meslek hastalığı İşçi Tazminat Sigortası veya Sosyal Güvenlik Fonu aracılığıyla tazmin edilir. Bu tür olaylardan işverenler sorumludur. Tazminat koşulları, her ülkede farklıdır (ILO, 2010).

Meslek hastalıkları sebeplerine göre sınıflandırılabilir. Bunlar (Fidancı ve Öztürk, 2015:18):

1. Kimyasal kaynaklı meslek hastalıkları
 - 1.1. Ağır metaller
 - 1.2. çözücüler
 - 1.3. gazlar
2. Fiziksel kaynaklı meslek hastalıkları
 - 2.1. Gürültü ve titreşim
 - 2.2. Yüksek ve alçak basınç altında çalışma
 - 2.3. Soğuk ve sıcak ortamda çalışmak
 - 2.4. Tozlar
 - 2.5. Radyasyon
3. Biyolojik kaynaklı meslek hastalıkları
 - 3.1. Bakteri kaynaklı olanlar
 - 3.2. Virüs kaynaklı olanlar
 - 3.3. Biyoteknolojik olanlar.
4. Psikolojik kaynaklı meslek hastalıkları
5. Ergonomik ihmale dayalı meslek hastalıklarıdır.

Fiziksel Kaynaklı Meslek Hastalıkları

Fiziksel sağlık, hastalıktan veya yaralanmadan uzak olma durumudur. Sağlıklı beslenme, sağlıklı kilo, diş sağlığı, kişisel hijyen ve uyku gibi çok çeşitli alanları kapsayabilir. Fiziksel sağlık, genel refah için hayati önem taşır. Kronik bir fiziksel hastalık, ortadan kalkmayan uzun vadeli bir sağlık sorunudur (<https://www.boltonft.nhs.uk/>).



Fiziksel etkenlere baęlı meslek hastalıkları gürültüden kaynaklanan işitme bozukluğu; titreşimden kaynaklanan hastalıklar (kas, tendon, kemik, eklem, periferik kan damarları veya periferik sinir bozuklukları); sıkıştırılmış veya sıkıştırılmamış havanın neden olduęu hastalıklar; iyonlaştırıcı radyasyonların neden olduęu hastalıklar; aşırı sıcaklıklara maruz kalmanın neden olduęu hastalıklar; işyerindeki dięer fiziksel etkenlerin neden olduęu hastalıklar (ILO,2010:2; Negash, 2002:53; Newman, 1995: 1129).

Ergonomiden yararlanmak bu tür zararlı etkileri ortadan kaldıracaktır (Demirer, 2015).

Psikolojik Meslek Hastalıkları

Dünya Saęlık Örgütü (WHO), saęlığın sadece fizyolojide deęil, aynı zamanda psikolojide ve sosyal refahta da bir durum olduęunu tanımlar (Gallagher ve dięerleri, 2015). Psikolojik saęlık, bireylerin yeteneklerini fark etmelerini, hayatın normal stresleriyle baş etmelerini, üretken ve verimli çalışmalarını ve içinde buldukları topluma katkı saęlamalarını saęlayan bireylerin iyi olma durumu olarak düşünülebilir. Olumsuz çalışma koşullarının hem kötü psikolojik saęlık hem de mesleki tükenmişlik üzerinde önemli etkileri üzerinde durulmaktadır (Akt.Lu ve dięerleri, 2021: 442).

Mesleki psikolojik rahatsızlıklar işkoliklik, tükenmişlik, depresyon ve kaygı gibi olumsuz duygular, deęişmiş düşünce ve davranışlarla ilişkili sıkıntı ve kişinin yeteneklerinin işlev bozukluğu ile karakterize edilen durumlarıdır (Fordjour ve dięerleri, 2020:2).

Çalışanlardan beklenenler ile koşullarla baş etme yetenekleri arasındaki fark, sıklıkla mesleki psikolojik rahatsızlıkların yaşanmasına neden olur. Daha önce yapılan araştırmalar, stres gibi psikolojik rahatsızlıkların bireyler ve inşaat organizasyonu üzerinde önemli etkileri olduęunu ortaya koymuştur ((Bowen, et al., 2014b, Boschman, et al., 2013; Yang, et al., 2017; Akt. Fordjour ve dięerleri, 2020:2).

Meslek hastalıkları önlenabilmektedir. Hekimler tarafından işle ilgili hastalık kümelerinin tanımlanması, meslek hastalıklarını ortaya çıkarmanın ve nihai olarak önlemenin zamanla test edilmiş bir yolu olmaktadır. Mesleki ve tıbbi alanındaki son gelişmeler, çeşitli işlerle ilgili rahatsızlıkları tanımak için en etkili stratejilerin anlaşılmasına yol açmıştır. Meslek hastalığını tespit etmenin anahtarı tanıdan şüphelenmekten geçmektedir. Hasta iş yerinde akut, travmatik bir yaralanma bildirdiğinde işle ilgili hastalık aşıkardır. Bununla birlikte, rahatsızlık tekrarlayan hareketlerden veya uzun süreli veya çoklu maruziyetlerden kaynaklandığında, tespit edilmesi daha zor olabilmektedir (Newman, 1995:1128).

Meslek hastalıklarından korunmak için yeterli sürede çalışmak, aktivite düzeyini uzatmak ve hastalıklara yönelik dięer tıbbi risk faktörlerini yönetmek gereklidir (Lee ve Koo, 2015:125).

YÖNTEM

Fiziksel ve psikolojik meslek hastalıkları bağlamında çalışanların çeşitli iş yeri uygulamalarına ilişkin düşüncelerin belirlenmesi amaçlanan bu araştırmada nicel araştırma yöntemi kullanılmış ve verilerin elde edilmesi için anket tekniğine başvurulmuştur. Araştırmada kullanılan anket formu iki bölümden oluşmakta ve hazırlanırken meslek hastalıkları için National Hazard Exposure Worker Surveillance (NHEWS) (2008) tarafından oluşturulan sorulardan faydalanılmıştır. İlk bölümde katılımcıların demografik özelliklerine ilişkin sorular yer almıştır. İkinci bölümde ise katılımcıların sektörde var olan çalışma koşulları ve çalışma sırasında maruz kalınan etkiler (fiziksel ve psikolojik) ile ilgili ifadeler yer almıştır. Elde edilen veriler SPSS 22 programı ile analiz edilmiştir.



Araştırmanın Evreni ve Örneklemi

Araştırmanın evrenini Gaziantep ilinde faaliyette bulunan ve Uluslararası Nakliyeciler Derneği (UND)'ne kayıtlı olan 61 firma içinden 38 firma çalışanları oluşturmaktadır. 38 firmanın toplam çalışan sayısının 750 kişi olduğu öğrenilmiştir. Bu bilgiler doğrultusunda 200 çalışana ulaşılmış ve anket uygulanmıştır.

BULGULAR

Bu bölümde katılımcılardan elde edilen verilerin analizi sonucu ortaya çıkan bulgulara yer verilmiştir.

Demografik Özellikler

Fiziksel ve psikolojik meslek hastalıkları bağlamında çalışanların çeşitli iş yeri uygulamalarına ilişkin düşüncelerini belirlemek amacıyla yapılan çalışmada katılımcıların %43'ü 25 yaş ve altı, %46'sı 25-34 yaş arasında, %30,5'i 35-44 yaş arasında, %8'i 45-54 yaş arasında, %2'si 55 ve üstü yaşta; %76,5'i erkektir ve %58'i evlidir. Eğitim düzeyleri açısından bakıldığında, katılımcıların %2'sinin ilköğretim ve altı, %21,5'nin ilköğretim ve ortaokul, %28'nin lise, %7'sinin meslek lisesi, %41,5'nin yükseköğretim ve üstü eğitim düzeyine sahip olduğu görülmüştür. Katılımcıların %2'si 1000 TL ve altı, %2,5'i 1001-2000 TL, %65,5'i 2001-3500 TL, %30'u 3501-5000 TL gelir düzeyine sahiptir.

Tablo 1. Demografik Özellikler

	Demografik	Sayı	Yüzde (%)
Cinsiyet	Kadın	47	23,5
	Erkek	153	76,5
Yaş	25 yaş altı	77	43
	25-34	92	46
	35-44	61	30,5
	45-54	16	8
	55 ve üstü	4	2
Medeni Durum	Bekar	74	37
	Evli	116	58
	Boşandı	10	5
Eğitim Durumu	İlkokul ve Altı	4	2
	İlköğretim ve Ortaokul	43	21,5
	Lise	56	28
	Meslek Lisesi	14	7
	Yükseköğretim ve üstü	83	41,5
Aylık Gelir	1000 TL ve altı	4	2
	1001-2000 TL	5	2,5
	2001-3500 TL	131	65,5
	3501-5000 TL	60	30

Araştırmada Yer Alan Meslek Hastalıklarının Tanımlayıcı İstatistikleri

Katılımcıların fiziksel ve psikolojik meslek hastalığına sahip olup olmama sorusuna verdiklerin yanıtların frekans dağılımı Tablo 2'de gösterilmektedir. Fiziksel meslek hastalığına sahip olanların oranı %69, psikolojik meslek hastalığına sahip olanların oranı ise %48,5'dir.

Tablo 2. Meslek Hastalıkları Gruplarından Fiziksel ve Psikolojik Hastalık Durumu

	Fiziksel				Psikolojik			
	n	Yüzde (%)	S.S	A.O	n	Yüzde(%)	S.S	A.O
Evet	138	69	,4636	1,31	97	48,5	,5010	1,51
Hayır	62	31			103	51,2		



T-Testi Sonuçları

Bu bölümde katılımcıların çeşitli ifadeler açısından fiziksel ve psikolojik hastalıklara maruz kalıp kalmama durumları arasında farklılık olup olmadığına ilişkin sonuçlara yer verilmiştir. Tablo 3’de, “ağır yükleri taşımak ve kaldırmaya maruz kaldınız mı?”, “aynı el ve kol hareketlerini tekrar tekrar yaptınız mı?”, “Öne doğru eğilmiş şekilde çalıştınız mı?”, “ellerinizi kafanızın üzerinde tutacak şekilde çalıştınız mı?” vb. soru puanlarının fiziksel ve psikolojik hastalığa maruz kalma durumuna göre incelenmesi amacıyla yapılan t-testi sonuçlarına yer verilmiştir. Tablo 3’de görüldüğü gibi; fiziksel hastalığa maruz kalma ve kalmama durumu ile “ağır yükleri taşımak ve kaldırmaya maruz kaldınız mı?” ($p=0,002$), “oturarak çalışır mısınız?” ($p=0,003$), “güç kullanarak itme veya çekme yapar mısınız?” ($p=0,003$) ve “bir yerde ayakta durarak çalışır mısınız?” ($p=0,009$) ifadelerine ilişkin puanlar karşılaştırıldığında anlamlı bir farklılık ortaya çıkmıştır. Fiziksel bir hastalığa maruz kalan katılımcıların “ağır yük taşımak ve kaldırmaya maruz kalma”, “güç kullanarak itme veya çekme yapma” ve “bir yerde ayakta durarak çalışma” ifadelerine ilişkin ortalamalarının, fiziksel hastalığa maruz kalmayan katılımcılarınkinden daha yüksek olduğu görülmüştür. Ayrıca, fiziksel bir hastalığa maruz kalmayan katılımcıların “oturarak çalışma” ifadesine ilişkin ortalamalarının, fiziksel hastalığa maruz kalanlara göre daha yüksek olduğu da ortaya çıkmıştır. Öte yandan, “ağır yükleri taşımak ve kaldırmaya maruz kaldınız mı?” ($p=0,001$), “oturarak çalışır mısınız?” ($p=0,013$), “çömelerek çalışır mısınız?” ($p=0,046$), ve “güç kullanarak itme veya çekme yapar mısınız?” ($p=0,007$) ifadelerinin puanları ile psikolojik hastalığa maruz kalma ve kalmama durumu arasında anlamlı farklılık olduğu görülmüştür. Farklılıklar incelendiği zaman, “oturarak çalışma” ifadesine ilişkin farklılık daha önce bir psikolojik rahatsızlığa maruz kalan katılımcıların lehine, “çömelerek çalışma”, “ağır yük taşımak ve kaldırmaya maruz kalma” ve “güç kullanarak itme veya çekme yapma” ifadelerine ilişkin farklılıklar ise daha önce bir psikolojik rahatsızlığa maruz kalmayan katılımcıların lehine olduğu görülmüştür. Farklılıkların ortaya çıktığı ifadelerle bakıldığında, çalışanların fiziksel meslek hastalıklarına maruz kalmalarına sebebiyet verebilecek hareketleri içerdiğini rahatlıkla söyleyebiliriz.



Tablo 3. Çeşitli İfadelere Göre Fiziksel ve Psikolojik Meslek Hastalıklarına Maruz Kalma Düzeylerine İlişkin T-Testi Sonuçları

İfadeler	FİZİKSEL						t	p
	1.Grup(evet)			2.Grup(hayır)				
	n	A.O	S.S	n	A.O	S.S		
Ağır yükleri taşımak ve kaldırmaya maruz kaldınız mı?	138	2,39	1,26	62	1,82	1,06	3,29	0,002
Aynı el ve kol hareketlerini tekrar tekrar yaptınız mı?	138	2,83	1,31	62	2,76	1,28	0,35	0,733
Öne doğru eğilmiş şekilde çalıştınız mı?	138	2,58	1,26	62	2,55	1,20	0,17	0,869
Vücut dönük veya farklı bir posturde çalıştınız mı?	138	1,98	1,02	62	2,02	1,12	-0,23	0,821
Ellerinizi kafanızın üzerinde tutacak şekilde çalıştınız mı?	137	1,54	0,80	62	1,44	0,88	0,83	0,425
Oturarak çalışır mısınız?	138	3,56	1,18	62	4,10	1,11	-3,03	0,003
Çömelerek çalışır mısınız?	138	1,84	0,91	62	1,69	0,97	1,03	0,314
Güç kullanarak itme veya çekme yapar mısınız?	138	2,35	1,23	62	1,81	0,99	3,31	0,003
Bir yerde ayakta durarak çalışır mısınız?	138	2,59	1,17	62	2,13	1,11	2,70	0,009
PSİKOLOJİK								
İfadeler	1.Grup(evet)			2.Grup(hayır)			t	p
	N	A.O	S.S	n	A.O	S.S		
Ağır yükleri taşımak ve kaldırmaya maruz kaldınız mı?	97	1,91	1,10	103	2,50	1,28	-3,544	0,001
Aynı el ve kol hareketlerini tekrar tekrar yaptınız mı?	97	2,82	1,20	103	2,79	1,39	0,209	0,835
Öne doğru eğilmiş şekilde çalıştınız mı?	97	2,60	1,20	103	2,54	1,27	0,31	0,758
Vücut dönük veya farklı bir posturde çalıştınız mı?	97	2,03	1,06	103	1,95	1,05	0,533	0,594
Ellerinizi kafanızın üzerinde tutacak şekilde çalıştınız mı?	96	1,50	0,89	104	1,51	0,75	-0,124	0,902
Oturarak çalışır mısınız?	97	3,94	1,16	103	3,52	1,18	2,5	0,013
Çömelerek çalışır mısınız?	97	1,66	0,90	103	1,92	0,95	-2,008	0,046
Güç kullanarak itme veya çekme yapar mısınız?	97	1,95	1,11	103	2,40	1,22	-2,724	0,007
Bir yerde ayakta durarak çalışır mısınız?	97	2,35	1,16	103	2,54	1,18	-1,17	0,243

Tablo 4’te görüldüğü üzere araştırmaya dahil olan çalışanların fiziksel ve psikolojik hasatlığa maruz kalma ve kalmama durumu ile cevaplamış oldukları çeşitli ifade ortalamaları arasında t-testi analizi yapılmıştır. Analiz sonuçlarına göre; “baş ağrısına ne kadar süre maruz kaldınız?” ifadesinin ortalaması ile hem fiziksel (p=0,008) hem de psikolojik (p=0,000) hastalığa maruz kalma, “sırtınızda veya boynunuzda ağrı oluşur mu?” (p=0,023) ifadesinin ortalaması ile ise sadece fiziksel hastalığa maruz kalma durumu arasında anlamlı bir fark bulunmuştur. Farklılıkların sebebini belirlemek adına ortalamalara bakıldığında; fiziksel bir hastalığa maruz kalmayan çalışanların “baş ağrısına maruz kalma” ifadesine ilişkin ortalamalarının, maruz kalanlara göre daha yüksek olduğu görülmüştür. Ayrıca, fiziksel bir hastalığa maruz kalan çalışanların “sırtta ve boyunda ağrı oluşma” ifadelerine ilişkin ortalamalarının, maruz kalmayanlara göre daha yüksek olduğu tespit edilmiştir. Yine psikolojik hastalığa maruz kalan çalışanların “baş ağrısına maruz kalma” ifadesine ilişkin ortalamasının, kalmayanlara göre daha yüksek olduğu belirlenmiştir.

“Baş ağrısına maruz kalma”nın çalışanları psikolojik açıdan, “sırtta ve boyunda ağrı oluşma”nın ise çalışanlarda sadece fiziksel açıdan rahatsızlık oluşturabileceği göz önünde bulundurulduğunda ortaya çıkan sonuçların beklenen bir durum olduğunu söyleyebiliriz.



Tablo 4. Çeşitli İfadelere Göre Fiziksel ve Psikolojik Meslek Hastalıklarına Maruz Kalma Düzeylerine İlişkin T-Testi Sonuçları

İfadeler	FİZİKSEL						t	p
	1.Grup(evet)			2.Grup(hayır)				
	n	A.O	S.S	n	A.O	S.S		
Yorgunluğa ne kadar süre maruz kaldınız?	138	3,71	0,98	62	3,95	0,91	-1,65	0,1
Baş ağrısına ne kadar süre maruz kaldınız?	138	3,09	1,26	62	3,58	1,05	-2,70	0,008
Sırtınızda veya boynunuzda ağrı oluşur mu?	138	3,71	1,02	62	3,35	0,99	2,32	0,023
Omuz, kol veya bileklerde ağrı oluşur mu?	138	3,43	1,10	62	3,11	1,09	1,93	0,056
Kalça, bacak, diz veya ayaklarda ağrı oluşur mu?	138	2,71	1,24	62	2,60	1,27	0,59	0,558
PSİKOLOJİK								
İfadeler	1.Grup(evet)			2.Grup(hayır)			t	p
	n	A.O	S.S	n	A.O	S.S		
	Yorgunluğa ne kadar süre maruz kaldınız?	97	3,85	0,95	103	3,73		
Baş ağrısına ne kadar süre maruz kaldınız?	97	3,63	0,96	103	2,87	1,32	4,65	0,000
Sırtınızda veya boynunuzda ağrı oluşur mu?	97	3,57	1,04	103	3,63	1,01	-0,44	0,659
Omuz, kol veya bileklerde ağrı oluşur mu?	97	3,37	1,08	103	3,30	1,13	0,45	0,654
Kalça, bacak, diz veya ayaklarda ağrı oluşur mu?	97	2,65	1,29	103	2,70	1,21	-0,28	0,78

Tablo 5’de çeşitli ifadelerin, fiziksel ve psikolojik meslek hastalıklarına maruz kalıp kalmama durumu açısından farklılık gösterip göstermediğine t-testi analizi ile bakılmıştır. Analiz sonucunda; “ulaşılabilir son teslim tarihleri ile uğraşıyorum”, “aynı anda birden fazla şeyi idare etmek zorundayım” ve “yaptığım işte bir şeyler söyleme hakkım var” ifadelerinin fiziksel açıdan; “ulaşılabilir son teslim tarihleri ile uğraşıyorum”, “yapacağım iş çok olduğu için bazı görevleri görmezden gelmek zorunda kalıyorum”, “aynı anda birden fazla şeyi idare etmek zorundayım”, “yaptığım işte bir şeyler söyleme hakkım var” ve “zorbalığa maruz kaldım” ifadelerinin ise psikolojik açıdan anlamlı fark bulunmuştur. Farkın hangi grupta olduğunu tespit etmek için ortalamalara bakıldığında, fiziksel açıdan mesleki hastalıklara maruz kalmayanların, psikolojik açıdan ise mesleki hastalığa maruz kalanların lehine olduğu tespit edilmiştir.

Tablo 5. Çeşitli İfadelere Göre Fiziksel ve Psikolojik Meslek Hastalıklarına Maruz Kalma Düzeylerine İlişkin T-Testi Sonuçları

İfadeler	FİZİKSEL						t	Sig.
	1.Grup(evet)			2.Grup(hayır)				
	n	A.O	S.S	n	A.O	S.S		
Uzun süreli çalışma saatlerine maruz kalıyorum.	138	3,14	1,04	62	3,34	1,05	-1,21	0,229
Ulaşılabilir son teslim tarihleri ile uğraşıyorum.	138	2,19	1,13	62	2,68	1,18	-2,74	0,007
Çok hızlı çalışmak zorundayım.	138	2,78	1,03	62	2,92	1,06	-0,90	0,372
Yeteri kadar ara verme imkânım yok.	138	3,02	1,02	62	3,08	1,15	-0,35	0,73
Yapacağım iş çok olduğu için bazı görevleri görmezden gelmek zorunda kalıyorum.	138	1,66	0,85	62	2,21	1,12	-3,45	0,185
Farklı insanlardan gelen iş isteklerini idare etmek benim için zordur.	138	1,94	0,96	62	2,15	1,07	-1,28	0,203
Aynı anda birden fazla şeyi idare etmek	138	3,01	1,26	62	3,63	1,16	-3,26	0,001



İfadeler	1.Grup(evet)			2.Grup(hayır)			t	Sig.
	n	A.O	S.S	n	A.O	S.S		
zorundayım.								
İşim bölünmez bir dikkat gerektiriyor.	138	3,26	1,15	62	3,45	1,20	-1,05	0,294
Ne zaman ara vereceğime ben karar verebilirim.	138	2,90	1,01	62	3,13	1,35	-1,20	0,232
Yaptığım işte bir şeyler söyleme hakkım var.	138	3,17	1,08	62	3,68	1,11	-3,03	0,003
Cinsel tacize maruz kaldım.	138	1,00	0,00	62	1,03	0,25	-1,00	0,321
Zorbalığa maruz kaldım.	138	1,20	0,53	62	1,39	0,80	-1,66	0,1
PSİKOLOJİK								
İfadeler	1.Grup(evet)			2.Grup(hayır)			t	Sig.
	n	A.O	S.S	n	A.O	S.S		
Uzun süreli çalışma saatlerine maruz kalıyorum.	97	3,34	0,91	103	3,08	1,14	1,8	0,075
Ulaşılamaz son teslim tarihleri ile uğraşıyorum.	97	2,56	1,14	103	2,14	1,16	2,587	0,01
Çok hızlı çalışmak zorundayım.	97	2,96	1,01	103	2,69	1,06	1,843	0,067
Yeteri kadar ara verme imkânım yok.	97	3,16	1,08	103	2,92	1,04	1,624	0,106
Yapacağım iş çok olduğu için bazı görevleri görmezden gelmek zorunda kalıyorum.	97	2,03	1,10	103	1,64	0,79	2,887	0,005
Farklı insanlardan gelen iş isteklerini idare etmek benim için zordur.	97	2,02	1,03	103	1,99	0,98	0,214	0,831
Aynı anda birden fazla şeyi idare etmek zorundayım.	97	3,62	1,06	103	2,82	1,32	4,767	0,000
İşim bölünmez bir dikkat gerektiriyor.	97	3,45	1,16	103	3,19	1,16	1,576	0,117
Ne zaman ara vereceğime ben karar verebilirim.	97	3,08	1,18	103	2,86	1,07	1,375	0,172
Yaptığım işte bir şeyler söyleme hakkım var.	97	3,57	1,05	103	3,10	1,13	3,044	0,003
Cinsel tacize maruz kaldım.	97	1,02	0,20	103	1,00	0,00	1,031	0,32
Zorbalığa maruz kaldım.	97	1,36	0,72	103	1,17	0,51	2,225	0,029

Tablo 6’da çeşitli ifadelerin, fiziksel ve psikolojik meslek hastalıklarına maruz kalıp kalmama durumu açısından farklılık gösterip göstermediğine t-tesit analizi ile bakılmıştır. Analiz sonucunda; “İşinizi ne kadar stresli bulursunuz?” ifadesinin hem fiziksel hem de psikolojik açıdan anlamlı fark tespit edilmiştir. Farkın hangi grupta olduğunu tespit etmek için ortalamalara bakıldığında, fiziksel açıdan mesleki hastalıklara maruz kalmayanların, psikolojik açıdan ise mesleki hastalığa maruz kalanların lehine olduğu tespit edilmiştir.

Tablo 6. Çeşitli İfadelere Göre Fiziksel ve Psikolojik Meslek Hastalıklarına Maruz Kalma Düzeylerine İlişkin T-Testi Sonuçları

FİZİKSEL								
İfadeler	1.Grup(evet)			2.Grup(hayır)			t	Sig.
	n	A.O	S.S	n	A.O	S.S		
İşinizi ne kadar stresli bulursunuz?	138	3,2	0,78	62	3,56	0,95	-2,67	0,009
PSİKOLOJİK								
İfadeler	1.Grup(evet)			2.Grup(hayır)			t	Sig.
	n	A.O	S.S	n	A.O	S.S		
İşinizi ne kadar stresli bulursunuz?	97	3,44	0,85	103	3,18	0,84	2,17	0,032

SONUÇ VE ÖNERİLER

Dünyada meslek hastalıkları nedeniyle her yıl yüzbinlerce insan hayatını kaybetmektedir. Meslek hastalıklarını önlemek kesinlikle tazminattan daha ucuz sayılmaktadır. Meslek hastalıkları, ağır ve tehlikeli işlerin yapıldığı küçük ve orta ölçekli işlerde yoğunlaşmaktadır (Fidancı ve Öztürk, 2015:19).

Pek çok tehlikeye maruz kalma devam etmektedir, ancak maruz kalan çalışan sayısı, maruz kaldıkları düzeyler ve ilgili risklerin zamanla azalması beklenebilmektedir. Bunun yanı sıra,



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bu tehlikelerin yerini yeni iş türleri ve yeni çalışma biçimleriyle ilişkili farklı tehlikeler almaktadır (Driscoll vd., 2004:136).

Meslek hastalıklarının önlenmesi temel olarak, çeşitli stratejilerin kullanılması yoluyla işyerinde karşılaşılan, altta yatan olumsuz biyolojik, kimyasal, fiziksel, ergonomik ve psikolojik etkenlerin kontrolüne bağlıdır. Bunlar mühendislik, yönetim, eğitim, mevzuat, ergonomi, hijyen, halk sağlığı, sosyal konular ve tıp alanlarında müdahaleleri içerir. Sağlık ve güvenliği korumayı ve geliştirmeyi ve işyerinde hastalık ve yaralanmaları önlemeyi amaçlayan çok sayıda stratejinin kullanımı, daha geniş insan hakları bağlamında yer almalıdır. Sözleşmelere ve Tavsiyelere Uyum veya Uluslararası Çalışma tarafından belirlenen çalışma standartları, yaşam ve çalışma koşullarını iyileştirmek için örgütlenme, bu hedefe giden nihai yolu oluşturmalıdır. Sağlıklı bir iş gücü bir ulus için paha biçilemez bir varlık olduğundan, onu korumayı ve geliştirmeyi amaçlayan herhangi bir yatırım muazzam bir kâr payıyla sonuçlanacaktır (Negash, 2002:54).

Çalışmanın sınırlılığı, çalışmanın tek bir coğrafi alanda odaklanmasını içermesidir. Gelecekteki bir çalışma, çalışmadan elde edilen bulguların diğer coğrafi ortamlardan farklı olup olmayacağını belirlemek için kültürler arası çalışmalar yapabilir.

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**EFFECT OF NEBIVOLOL ON CHANGES IN CEREBELLUM TISSUE AFTER
TRAUMATIC BRAIN INJURY**

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Abstract

Traumatic brain injury (TBI) is one of the most common causes of human and animal death. In this study, it was aimed to show the effects of Nebivolol on cerebellum tissue against traumatic brain injury. At the end of the experiment, the entire cerebellum was excised for the routine paraffin tissue protocol. Blood samples were collected for serum biochemical markers (MDA, SOD, CAT and GSH-x). Hematoxylin Eosin Staining and ADAMTS-1 and TNF- α immunostaining were performed. Histopathological and immunohistochemical evaluations were performed under the light microscope. SOD, GPx and CAT values were lowest in the TBI group. Dilatation of vessels, inflammation, degeneration of neurons, apoptosis in microglia, MDA value and histological scores of ADAMTS-1 and TNF-alpha expressions were highest in the TBI group compared to the control and TBI+Nebivolol groups. Portions of the control group showed normal cerebellar histology. Degeneration, pycnotic nuclei and apoptotic Purkinje cell nuclei were observed in the ganglion cells in the trauma group. Vascular thrombus were seen in substantia alba and substantia grisea. In the trauma + Nebivolol group, most of the pathologies seen in the TBI group were resolved. In the control group, ADAMTS-1 protein was expressed in granular cells, Purkinje cells and microglia cells. Increased ADAMTS-1 expression was observed in glial processes, granular and Purkinje cells in the trauma group. In the trauma + Nebivolol group, ADAMTS-1 expression was positively observed in some Purkinje cells in the glial processes in the molecular layer. In the trauma group, TNF- α expression was positive in granular cells, some Purkinje cells and glia cells. TNF- α expression was mild in the trauma + Nebivolol group, purkinje cells, granular cells and glial cells. It was thought that nebivolol reduced the inflammation and apoptotic process developing in the cerebellum tissue after trauma and might be effective in the regulation of angiogenesis.

Key words: Traumatic brain injury, Nebivolol, ADAMTS-1, TNF- α



INTRODUCTION

The cerebellum is a tissue that is vulnerable to developmental defects, damage from various sources such as degenerative diseases, infectious processes, chronic alcoholism, trauma and tumors [1]. It has been reported that some of the neurological findings after traumatic brain injury (TBI) may be due to damage to the cerebellum, including ataxia, postural instability, tremor, impaired balance and fine motor skills, and possibly even cognitive deficits [2,3]. Loss of motor control and neurological coordination during TBI is important for the cerebellum. Although neurodegeneration and neuron death in the cerebellum are shown and signs of glial activation are observed after traumatic brain injury, it has been stated that there are many signs such as the mechanisms of cell death, the response of glial cells and synaptic changes in this structure [4]. Both the inflammatory and anti-angiogenic properties of ADAMTSs have the potential to contribute to repair following ischemic stroke, other brain injury and certainly in a range of different neurodegenerative disease states. In fact, ADAMTSs have great speculative potential for their role in neural and synaptic plasticity and repair mechanisms involving the turnover of ECM proteoglycans [5]. Nebivolol (NB) is a relatively new highly cardio selective β adrenergic receptor antagonist that possesses endothelium dependent vasodilator properties and antioxidant capacities [2]. TNF- α has been shown to have both neurotoxic and neuroprotective activity, its expression and timing of receptor activation dependent on many factors, including ligand concentration and crosstalk between different signaling pathways [6].

In this study, the antioxidative and anti-inflammatory effects of Nebivolol on cerebellar damage resulting from diffuse traumatic head trauma were assessed by analysis of biochemical markers, immunohistochemical. The presence of the functional effect of nebivolol administration on neurons, glial cells and nerve extensions and blood vessels was investigated.

Material and Method

Traumatic brain injury model procedure.

Thirty animals were anesthetised via an intraperitoneal injection of 5 mg/kg xylazine HCl (Rompun, Bayer HealthCare AG, Germany) and 40 mg/kg ketamine HCl (Ketalar, Pfizer Inc., USA) after which they were allowed to breathe spontaneously. Control group (n=10): Isotonic saline solution was administered i.p. for 14 days. TBI group (n=10): The diffuse brain injury model was used Briefly, a trauma device dropped a constant weight (300 g) from a specific height (1 m) through a tube, inducing mild trauma. Following trauma, the rats' cerebellum tissues were removed. TBI + nebivolol group (n=10): 15 min following injury, the rats were given Nebivolol(10 μ mol/kg/i.p) orally with gastric lavage every day for 14 days . Resveratrol was obtained from SIGMA Chemical, (Pool, Dorset), it was added to the drinking water of the animals following the graft procedure, and was given at 5 mg/kg/day for 14 days. The drinking solutions were changed twice per week and protected from light in animal drinking bottles.

At the end of the study, animals were sacrificed and cerebellum tissues were removed. Blood samples were collected from the inferior vena cava for serum biochemical markers determination in all groups. In this way, MDA, SOD, CAT, and GSH-x values were measured biochemically. And, cerebellum tissue taken from anterior lobe was extracted, fixed in a 10% formalin solution, and embedded in paraffin blocks for histopathologic examination in all groups. Sections (5 μ m thick) were obtained from paraffin blocks and stained with Haematoxylin and Eosin (H&E).



Malondialdehyde and glutathione peroxidase assays

Malondialdehyde (MDA) levels and glutathione peroxidase (GSH-Px) activities were determined in the cerebellum of each rat, and the average values of each group were calculated. Each cerebellum sample was prepared as a 10% homogenate (according to weight) in 0.9% saline using a homogenizer on ice. Then, the homogenate was centrifuged at 2000 rpm for 10 min, and the supernatant was collected. MDA levels were determined using the double heating method. MDA is an end product of fatty acid peroxidation that reacts with thiobarbituric acid (TBA) to form a coloured complex. Briefly, 2.5 mL of TBA solution (100 g/L) was added to 0.5 mL of homogenate in a centrifuge tube, and the tubes were placed in boiling water for 15 min. After cooling with flowing water, the tubes were centrifuged at 1000 rpm for 10 min, and 2 mL of the supernatant was added to 1 mL of TBA solution (6.7 g/L); these tubes were placed in boiling water for another 15 min. After cooling, the amount of TBA-reactive species was measured at 532 nm, and the MDA concentration was calculated using the absorbance coefficient of the MDA–TBA complex. MDA values were expressed as nanomoles per gram (nmol/g) of wet tissue. The GSH-Px activity was measured. An enzymatic reaction was initiated by the addition of hydrogen peroxide (H₂O₂) to a tube that contained reduced nicotinamide adenine dinucleotide phosphate, reduced glutathione, sodium azide, and glutathione reductase. The change in absorbance at 340 nm was monitored by spectrophotometry. Data were expressed as U/g protein.

Measurement of superoxide dismutase activity

Total superoxide dismutase (SOD) activity was determined with a SOD detection kit (RANSOD kit, Randox Co., UK) according to the manufacturer's instructions. SOD accelerates the conversion of the toxic superoxide (produced during oxidative energy processes) to hydrogen peroxide and molecular oxygen. This method employs xanthine and xanthine oxidase to generate superoxide radicals that react with 2-(4-iodophenyl)-3-(4-nitrophenyl)-5-phenyltetrazolium chloride (INT) to form a red formazan dye. The SOD activity is measured by the degree of inhibition of this reaction. One unit of SOD causes 50% inhibition of the rate of reduction of INT under the assay's conditions. Absorbance measurements were taken at 505 nm, and SOD levels were determined through a standard curve and expressed as U/mg protein .

Measurement of catalase activity

Tissue catalase (CAT) activity was assayed spectrophotometrically by monitoring the decomposition of H₂O₂ using the procedure of Aebi . Briefly, 0.5 mL of 30 mM H₂O₂ in 50 mM phosphate buffer (pH 7.0) was added to 1 mL of tissue supernatant (diluted 1:10), and the consumption of H₂O₂ was followed spectrophotometrically at 240 nm for 2 min at 25°C. The molar extinction coefficient was 43.6 L/mol per cm for H₂O₂. CAT activity was expressed as mmol H₂O₂ consumed/min per mg tissue protein.

Hematoxylin – Eosin staining procedure

After the deparaffinizing procedure of sections with 2 changes of xylene for 10 minutes each, they were re-hydrated in 2 changes of absolute alcohol, 5 minutes each. After being applied with 95% alcohol for 2 minutes and 70% alcohol for 2 minutes, sections were washed briefly in distilled water. Then, sections were stained in Harris hematoxylin solution for 8 minutes, washed in running tap water for 5 minutes, and differentiated in 1% acid alcohol for 30 seconds. After bluing in 0.2% ammonia water for 20 seconds, they were washed in



running tap water for 5 minutes and rinsed in 95% alcohol. Then, they were counterstained in eosin-phloxine solution for 30 seconds and dehydrated through 95% alcohol, 2 changes of absolute alcohol, 5 minutes each. They were cleared in 2 changes of xylene, 10 minutes each and mounted with xylene based mounting medium.

Immunohistochemical staining

Antigen retrieval was done in microwave (Bosch®, 700 watt) for 3minx90o C. They were subjected to a heating process in a microwave oven at 700 watts in a citrate buffer (pH 6) solution for proteolysis. Sections were washed in 3x4 min PBS and incubated with hydrogen peroxide for 10 min. Sections were washed in 3x5 min PBS min and blocked with Ultra V Block (lot # PHL150128, Thermo Fischer, USA) for 8 min. After draining, primary antibodies were directly applied to sections distinctly TNF- α and ADAMTS-1 monoclonal antibodies. Sections were incubated and left overnight at 4oC. Sections were washed in 3x5 min PBS and then incubated with Biotinylated Secondary Antibody for 25 min. After washing with PBS, Streptavidin Peroxidase was applied to sections for 15 min. Sections were washed in 3x4 min PBS and DAB were applied to sections up to 10 min. Slides showing reaction were stopped in PBS. Counter staining was done with Harris's Haematoxylin for 20 sec, dehydrated through ascending alcohol and cleared in xylene. Slides were mounted with Entellan and examined under light microscope (Zeiss, Germany)

Statistical analysis

The data were recorded as arithmetic mean \pm standard deviation with mean rank value. Statistical analysis was done using the IBM SPSS 25.0 software (IBM, Armonk, New York, US). Kruskal-Wallis test was used for multiple comparisons. Within-group comparisons, Mann-Whitney U and were used. P <0.05 was used as the significance level.

Result

Statistical analysis of biochemical was shown in Table 1. SOD, GPx and CAT values were decreased in TBI group compared to control and TBI+Resveratrol groups, and the decrease was statistically significant. MDA value, dilatation in vessels, inflammation, degeneration in neurons, , ADAMTS-1 and TNF- α expressions were increased in TBI group compared to control and TBI+ Nebivolol groups, and the increase was statistically significant. Graphical illustration of Table was shown in Figure 1, 2 and 3.

Table 1: Biochemical (SOD, GPx, CAT and MDA), histopathological (vascular dilatation, inflammation, degeneration in neurons and apoptosis in microglia) and immunohistochemical scores (ADAMTS-1 and TNF- α expression) of control, traumatic brain injury (TBI) and TBI+Nebivolol groups.

Parameter	Groups	n	Mean+S.D.	Kruskal-Wallis		Mann-Whitney U Test (p<0.05)
				Mean Rank	H test P value	
SOD	(1) Control	10	37.86 \pm 0.83	40.19	41.998 P=0.001	(2) (3)
	(2) TBI	10	25.47 \pm 0.77	8.50		(1) (3)
	(3) TBI+ Nebivolol	10	34.56 \pm 1.93	24.81		(1)(2)
GPx	(1) Control	10	346.97 \pm 0.75	40.50	42.796 P=0.001	(2) (3)
	(2) TBI	10	182.81 \pm 0.64	8.50		(1) (3)
	(3) TBI+ Nebivolol	10	318.65 \pm 0.86	24.50		(1)(2)
CAT	(1) Control	10	2.53 \pm 0.01	40.50	41.155	(2) (3)

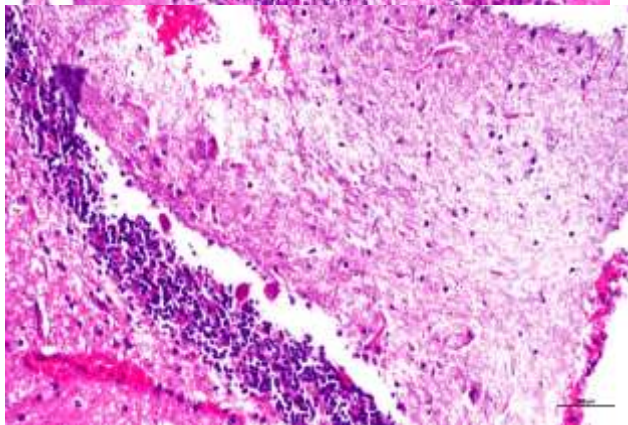
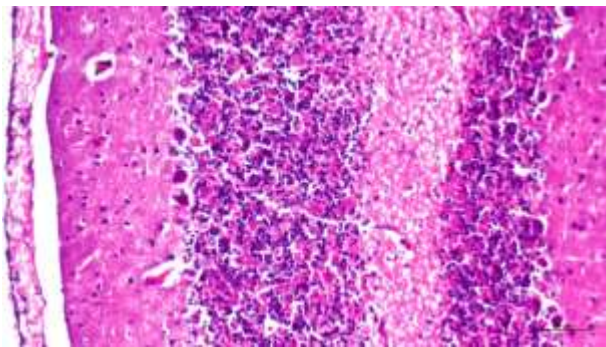


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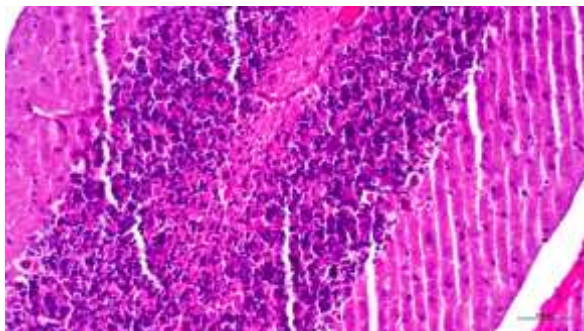
	(2) TBI	10	1.62±0.01	8.50	P=0.001	(1) (3)	
	(3) TBI+Nebivolol	10	2.12±0.01	24.50		(1)(2)	
	MDA	(1) Control	10	6.04±0.07		8.50	42.814
	(2) TBI	10	11.04±0.61	40.50	P=0.001	(1) (3)	
	(3) TBI+ Nebivolol	10	8.54±0.61	24.50		(1)(2)	
Dilatation	(1) Control	10	0.6±0.53	6.25		25.401	(2)(3)
	(2) TBI	10	3.1±0.42	25.50	P=0.001		(1) (3)
	(3) TBI+ Nebivolol	10	1.7±0.48	14.75			(1) (2)
Inflammation	(1) Control	10	0.5±0.52	6.40	23.976	(2)(3)	
	(2) TBI	10	3.3±0.52	25.50		P=0.001	(1) (3)
	(3) TBI+Nebivolol	10	1.6±0.48	14.60			(1) (2)
Degenerated Neurons	(1) Control	10	0.8±0.48	6.20	22.789	(2)(3)	
	(2) TBI	10	2.8±0.67	23.90		P=0.001	(1) (3)
	(3) TBI+ Nebivolol	10	1.9±0.67	16.40			(1) (2)
ADAMTS-1 expression	(1) Control	10	1.5±0.52	7.30	19.423	(2)(3)	
	(2) TBI	10	3.1±0.42	23.90		P=0.001	(1) (3)
	(3) TBI+Nebivolol	10	2.3±0.52	15.30			(1) (2)
TNF-α expression	(1) Control	10	2.1±0.79	12.40	13.122	(2)	
	(2) TBI	10	3.4±0.48	23.40		P=0.001	(1) (3)
	(3) TBI+Nebivolol	10	2.2±0.57	10.70			(2)

In the histopathological examination of our study, dendrite extensions extending parallel to the molecular layer and oval shaped Purkinje cells were seen in normal appearance in the control group, while basket and glial cells were seen in normal appearance, while the zen nuclei from the chromatin and the glomus areas between them were eozonophilic. pycnosis in the cells, inflammation around the blood vessel in the glomus area and dilatation in the vessels were evident.

In the trauma + Nebivolol group, Purkinje cells were polygonal in appearance, and chromatin structures of granular cells with degeneration in some areas, decreased inflammation in the dense glomus area, and the vascular structure was close to normal.



trauma



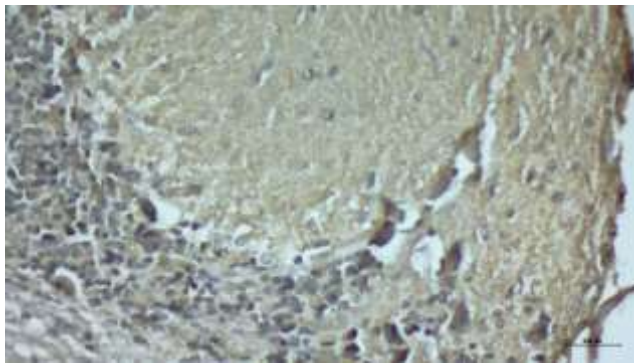
Trauma+Nebivolol

In immunohistochemistry, the expression of ADAMTS-1 was found to be moderate in Purkinje, granular and glial cells in the control group. An increase in the expression of ADAMTS-1 was observed in Purkinje, granular cells and glial cells in the trauma group, as well as in the extracellular matrix in the vascular endothelium and glomus area. It was observed that the expression was weakened and ADAMTS-1 expression in the glomus area was reorganized in the matrix structure.

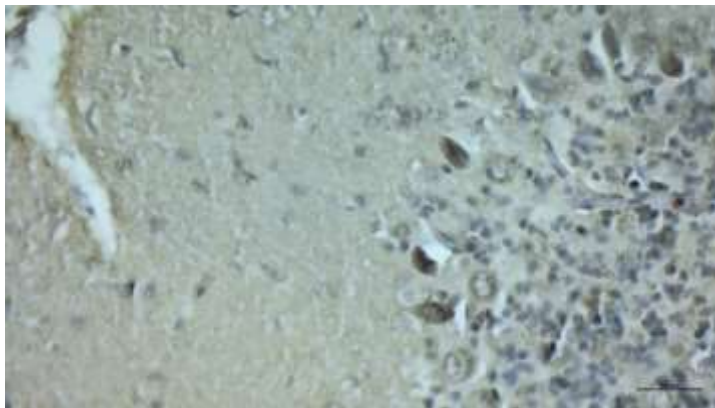
TNF- α expression was weak or negative in cells located in the substantia grisea and alba in the control group, whereas TNF- α expression was increased due to progressive apoptosis in glial cells around blood vessels due to increased inflammation, endothelial cells and Purkinje cells in the trauma group. In the nebivolol group, a decrease in TNF- α expression was observed in glial cells, endothelial cells and Purkinje cells in reorganization due to inflammation and improvement in blood vessels.



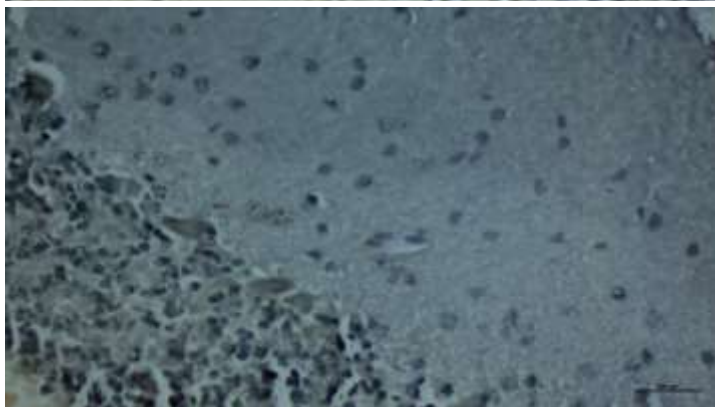
control adams-1



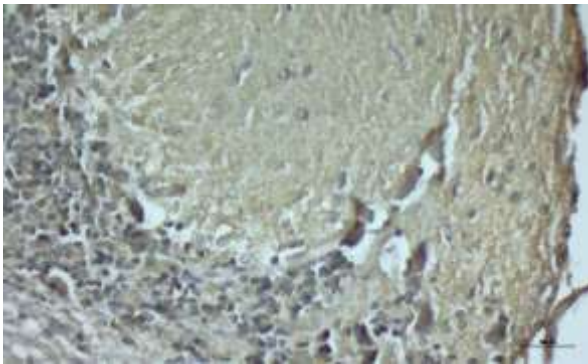
Trauma adams-1



Travma+Nebivolol adams-1



control tnf-α



Trauma tnf- α



Trauma+Nebivolol tnf- α

DISCUSSION

The increase in inflammation and lipid peroxidation indicator MDA value, which increases with the effect of oxidative stress that increases after trauma, and the change in SOD, GSH and CAT values have been shown as the beginning of cellular destruction.

Many pathological changes are observed after traumatic brain injury, including impaired motor function in the cerebellum, temporary cell loss, altered metabolism, and white matter damage [7,8]. In a study conducted in the TBI group, histopathological findings such as dilatation of the capillaries in the granular layer and inflammatory cell infiltration around the hemorrhage, Purkinje cells, some pycnotic nuclei and degenerative changes in the ganglion cells were observed. In addition, cerebellar Purkinje cell damage and loss, degeneration and degeneration of glial cells were observed after trauma. Disruptions in synaptic connections including traumatic axonal injury were observed [9].

In our study, increased inflammation in the ganglion area and granular region, blood vessel dilatation and degeneration in Purkinje and glial cells, together with deterioration in coordination between cells and fibers were observed.

Demonstrated the oxidative stress-reducing effect of NB and the antioxidant and anti-apoptotic effects of NB with cerebral ischemia-reperfusion injury [10]. Gandhi et al. showed that NB has a protective effect against renal ischemia/reperfusion damage due to its beta 1 adrenoreceptor blocking activity and apoptotic and anti-inflammatory properties [11].

In our study, the decrease in MDA values with the antioxidant effect of nebigivolol after trauma indicates the role of balancing SOD, GSH and CAT values in preventing cellular damage and reducing inflammation, parallel to its effect on preventing lipid peroxidation. In addition, histopathological examination of the nebigivolol group showed a decrease in degeneration in neurons and glial cells and reorganization of dilatation in blood vessels among the important findings. ADAMTSs modulate remodeling of components of the extracellular matrix, inhibition of angiogenesis and regulation of inflammatory processes. The importance of ADAMTS proteoglycans has been predicted to be involved in the neuroinflammatory response after CNS injury by promoting infiltration of macrophages into



the CNS. ADAMTS-4 has been shown to play an important role in macrophage infiltration into the CNS directly or indirectly after injury by promoting the leakage of the blood brain / spinal cord barrier [12]. In our study, it was observed that ADAMTS-1 expression increased in some glial cells and neuronal structures around blood vessels in the trauma group, In the nebivolol group, ADAMTS-1 expression was moderate in some neuronal structures and weak in vascular endothelial cells in glial cells. It was thought that this might be a sign indicating that reorganization has occurred in the inflammation and angiogenetic process as well as apoptosis. TNF- α has been shown to be increased in rats exposed to diffuse brain damage and hypoxia [13]. One study found that other damaged brain parts, including the cortex and hippocampus, contributed to the observed increase in plasma cytokine levels and delayed glial cell activation. Considering inflammatory mediators (TNF- α), it has been shown that even a single mTBI in the absence of behavioral disturbance or inflammation can cause permanent changes in glial cell activation in the cerebellum [14].

In our study, TNF- α expression increased due to progressive apoptosis in glial cells around blood vessels, endothelial cells and Purkinje cells due to increased inflammation in the trauma group. This was thought to be a sign that degenerative signaling in cells was progressing. In the nebivolol group, there was a decrease in TNF- α expression in glial cells, endothelial cells and Purkinje cells in reorganization due to inflammation and improvement in blood vessels. It was predicted that the effect of nebivolol may be effective in preventing inflammatory cell signaling.

It was thought that nebivolol reduced the inflammation and apoptotic process developing in the cerebellum tissue after trauma and might be effective in the regulation of angiogenesis.

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**EVALUATION OF MICROENVIRONMENT (NICHE) AND ITS ROLE IN
DIFFERENTIATION OF STEM CELLS**

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Abstract

The ability of stem cells to continue their lifelong functions is possible by locating in the special microenvironment called “niche” and escaping from harmful effects. Stem cell functions and fate are determined by this microenvironment. It is this microenvironment that directs the maintenance of the stem cell by staying at rest (G₀), homing, self-renewal, differentiation, mobilization, migration and other biological functions. Niche components include cells and non-cellular mediators. As a result of the signaling between them, a complex and dynamic structure occurs. For example, in the tissue stroma, which is the production center of hematopoietic cell lines such as bone marrow, osteoblasts, endothelial cells and other cell types, adhesion molecules with extracellular matrix (ESM) molecules, receptor/ligand interactions, as well as autocrine/paracrine interactions such as cytokine, chemokine hormones, nerve inputs. Under the influence of soluble factors, they tend to the aforementioned biological behaviors according to the needs of the organism. The physical and biochemical components of the microenvironment play a decisive role in these functions.

Keywords: Microenvironment, Cell Differentiation, Stem cell, regeneration

INTRODUCTION

Stem cell niches are specialized microenvironments that promote the maintenance of stem cells and regulate their function. Recent advances have improved our understanding of the niches that preserve adult hematopoietic stem cells (HSCs). These advances include new markers for HSCs and niche cells, systematic analyzes of expression patterns of niche factors, genetic tools to functionally identify niche cells in vivo, and improved imaging techniques. Together, they showed that HSC niches are perivascular in the bone marrow and spleen. Endothelial cells and mesenchymal stromal cells secrete HSC maintenance-promoting factors



in these niches, but other cell types directly or indirectly regulate HSC niches. In this review, the cells that make up the bone marrow stroma and the microenvironment elements will be discussed. Hematopoietic stem cells (HSC) are located in their niches, which are specialized areas in the bone marrow microenvironment, and they are self-renewing. The bone marrow (KI) niche regulates silencing, proliferation, differentiation and migration of stem cells. Stem cells interact with the niche by altering various molecular signals, including adhesion mechanisms. Two different microenvironment niches in the CI, osteoblastic (endosteal) and vascular niches have been shown to work in harmony [1]. The osteoblastic niche is localized on the inner surface of the bone cavity with abundant bone-forming osteoblasts. In the osteoblastic niche, HSCs and osteoblasts are interconnected by adhesion molecules, and this attachment contributes to the maintenance of stem cell silencing [2]. Bone marrow cell types can be functionally classified as hematopoietic, parenchymal, stromal, or mesenchymal. Normal hematopoiesis, hematopoietic cells, stromal cells and ECM occurs in a complex bone marrow microenvironment consisting of components. Hematopoietic progenitor proliferation and differentiation is regulated by cytokines or receptor-mediated signals initiated by interactions between progenitors and stromal cells or extracellular matrix (ECM) components in this microenvironment [3]. Uncovering the anatomical and functional diversity of the bone marrow microenvironment is crucial for understanding the behavior of HSCs and using this information for clinical applications. Bone marrow stroma is a connective tissue that is not directly involved in hematopoiesis. However, mesenchymal cells within the stroma provide a structural microenvironment that facilitates hematopoiesis. Mesenchymal cells produce cytokines, growth factors and ECM proteins. Mesenchymal cells promote hematopoiesis by modulating stem cell silencing and self-renewal, but also provide signals that lead to proliferation, maturation and apoptosis of more mature hematopoietic cells. The types of mesenchymal cells that make up the bone marrow stroma include: mesenchymal stem cells (MSCs), fibroblasts, adventitious reticular cells, adipocytes, osteoblasts, osteoclasts, endothelial cells, and endothelial precursor cells. Mesenchymal stem cells Pittenger et al. They are non-hematopoietic stem cells found in the bone marrow. Researchers have previously used various terms for this population, such as colony-forming unit fibroblast (CFU-F), stromal stem cell, bone marrow stromal stem cells, bone marrow cells, mesoderm progenitor cells, multipotent stromal cells, or skeletal stem cells [4]. Under certain conditions, MSCs can differentiate into fibroblasts, osteoblasts, osteocytes, chondrocytes, adipocytes, adventitious reticular cells, smooth muscle cells, endothelial cells, myelosupportive stroma, and nerve tissue [5]. MSC can be identified by the expression of certain markers such as Stro-1, Thy-1, vascular cell adhesion molecule-1, endoglin, $\alpha 1$ integrin, and MUC-18/CD146. Human bone marrow stromal cell (hMSC) can be identified by SH-2, SH-3 and SH-4 monoclonal antibodies and lack of expression of CD14, CD34 and CD45 when analyzed by flow cytometry. MSC produces a large number of cytokines and chemokines. Human MSCs are estimated to occur at a frequency of 1 in 105 bone marrow cells. Like hematopoietic stem cells (HSC), MSCs can host bone marrow [6]. MSCs are adult-type stem cells. They are of stromal origin and have the potential to be used in many fields of medicine due to their "support cell" feature. They can differentiate into cells such as fat, bone, cartilage, muscle, tendon, ligament, nerve [7]. MSCs are not a homogeneous community and contain different stem cells. These include multipotent adult progenitor cells, multilineage inducible stem cells, and very small embryonic cell-like stem cells; These stem cells are thought to be the precursors of classical MSC and hematopoietic stem cells. MSCs can be isolated from bone, muscle tissue, liver, dental pulp and maxillofacial tissues, lipoaspiration materials, cord blood, cord stroma, placenta and membranes, endometrium, amniotic fluid, synovial fluid,



and even mobilized peripheral blood. When MSCs obtained from different tissues were examined in terms of proliferation, differentiation and immunomodulatory effects, some differences were found between them. For example, it was found that the proliferation capacity of MSCs obtained from fetal membranes is better, but their differentiation capacity is weak. However, in vitro immunosuppressive effects of these cells have been shown to be better than those of bone marrow and cord blood cells [8]. Thanks to culture methods, it has become possible to recognize stem cells and progenitor cells from the most undifferentiated to the most mature. As the cell differentiates, its proliferation capacity decreases and its differentiation increases. Differentiation occurs from HSC to progenitor cells and from them to morphologically identifiable precursor cells in bone marrow aspiration smears. Precursor cells complete their maturation and form peripheral blood cells. HSCs can form different mature cell types such as neutrophils, monocytes/macrophages, basophils/mast cells, eosinophils, erythrocytes, platelets, dendritic cells, B and T lymphocytes, and NK cells. HSCs are multipotent adult stem cells that can self-renew, have the capacity to form cells for a long time, and have the ability to differentiate into more mature cells. Development of HSCs, self-renewal, differentiation, resting, mobilization into peripheral blood or returning to the microenvironment after stem cell transplantation is provided by various cytokine combinations, transcription and growth factors [9,10]. In the bone marrow, osteoblasts, fibroblasts originating from MSCs, bone marrow stroma cells such as adipose form the niche; They regulate the self-renewal and differentiation of HSCs by secreting cytokines and intercellular signals initiated by cell adhesion [11]. HSC transplantation has become a successfully applied treatment component in some malignant and benign diseases today. Autologous HSC transplantation is done by administering the patient's own HSCs; It allows to give high-dose chemotherapy to the patient. Although allogeneic HSC transplantation from related or unrelated donors with suitable tissue type has become less toxic and efficient today, transplant-related mortality that can be reduced to 10%-30% still remains a major problem. Despite the significant mortality reduction with reduced-intensity chemotherapy in the preparatory regimen, developments in supportive treatments and sensitivity in HLA typing, posttransplant-developing graft-versus disease, disease recurrence, decreased quality of life and secondary cancers constitute important problems. Although HSC transplants from haploidentical relative donors are risky in terms of mortality and complication development, they have been successfully performed in our country and have been used in patients with indications [9].

CONCLUSION

The fields of use of stem cells reveal new treatment methods together with developing technologies. Stem cells are used extensively in medicine, especially in cancer research, with the creation of a microenvironment. The micro-environment created by stem cells has many importance such as regeneration and prevention of tissue loss. Thus, with the technologies developed in stem cells, that is, the development of treatments and methods will make it possible in the future.



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EVALUATION OF FACTORS AFFECTING SPERM MORPHOLOGY AND QUALITY

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Abstract

Despite a 1-year unprotected period, 15% of couples who want to have children have infertility problems. In 50% of couples who have infertility problems, it is thought that the male factor plays a role in the root of the problem. Spermatogenesis is the formation of mature sperm in the seminiferous tubes in the testicles as a result of the stimulation of anterior pituitary gonadotropic hormones during the active sexual life process. Spermatogenesis begins with puberty (13–16 years) and although its rate slows down with aging, it can last until the last stages of old age. Mature sperm are composed of spermatogonium germ cells. This process includes spermatocytogenesis, which is the stage of proliferation of spermatogonia by mitosis, the stage in which the DNA structure of the formed spermatogonia is halved by meiosis, and the spermiogenesis stages in which the sperm reach the mature state. Sperm parameters are affected by personal health factors (diet, exercise, obesity and physiological stress), abused substances (alcohol, smoking, anabolic steroids, etc.) and environmental factors (radiofrequency electromagnetic radiation, environmental pollution, heat). High (BMI > 25 kg/m²) or low (BMI < 20 kg/m²) body mass index, high consumption of dietary saturated fats negatively affect male fertility. On the other hand, omega-3, omega-6, vitamin C and E, zinc, selenium, folate, carnitine, and carotenes in the diet increase sperm quality and number. Male fertility depends on the functional functioning of the reproductive system at every stage. Exposure of the reproductive system to serious chemicals causes various defects in reproductive capacity. Recent studies on sperm quality have revealed that the effect of environmental factors is greater than the effect caused by genetic defects. Revealing the mechanisms of these toxic effects will allow the development of new strategies in the treatment of infertility.

Keywords: infertility, sperm morphology, sperm quality, environmental factors.



INTRODUCTION

The harmful effects of smoking, radiation, heavy metal ions, aluminum, fluorine, pesticides, aflatoxin and organic solvents on sperm are known [1]. These environmental factors are thought to affect the fertilization ability of sperm in particular [2,3]. Overstreet et al. showed that sperm cells are more sensitive to environmental and occupational exposure than somatic cells [4]. When the effects of xenotoxins on somatic and sperm cell DNA are compared, it has been shown that spermatozoa are more vulnerable to toxins, and this is due to the lack of an enzymatic repair mechanism that can repair DNA damage in mature sperm cells. The resulting DNA damages cause sperm cells to be more sensitive to environmental stress factors [5]. All of these studies have shown us that sperm cells are more sensitive to environmental toxins than somatic cells. The mechanism of the negative effect of environmental factors on sperm cells is still not fully explained. Each factor causes sperm damage by separate mechanisms. External factors such as radiation, temperature, drugs, alkylating chemotherapeutic drugs, pesticides, as well as lifestyle, habits and addictions affect fertility by disrupting the nuclear integrity of sperm [6]. Aitken et al. showed in their study that DNA damage is a complex mechanism that occurs both in the testicular and post-testicular areas [7]. Delbes et al. argued that this damage mechanism could not be fully explained, and that it developed depending on the genetic background, lifestyle and the effects of various toxins. Hyperthermia and electromagnetic radiation are two of the factors that negatively affect sperm parameters. Quality spermatogenesis requires a temperature 2–4°C lower than body temperature. Compared to the control group, obese patients and patients with varicocele had higher scrotal temperature, lower total sperm concentration, and higher follicle stimulating hormone (FSH) level. It is thought that the increase in outdoor temperature, such as saunas and hot water bags, impairs spermatogenesis. Levine et al. showed that semen parameters worsened in summer months [8]. These data are confirmed when external workers are compared with the control group. Depending on technological developments; mobile phones, wireless internet services and laptop computers cause people to be exposed to more electromagnetic frequencies. Ionizing radiation, ultraviolet and microwave radiation are known biological enemies of sperm cells. Studies have shown that even infrared radiation impairs male reproductive function. In an animal study, it was shown that animals exposed to short-term infrared radiation (900 nm) affected the steroid synthesis steps, decreased testosterone levels, and consequently decreased fertility. In today's society, modern people need to work in an income-generating job in order to be more productive and to survive. Working life is a concept that is generally used to express the time individuals spend dealing with their jobs. In a broader sense, it is seen that working life is a concept that has a great impact on individuals for a lifetime and has a dominant role in the development and planning of non-work life [9]. Research on the effects of working life on reproductive health has increased especially since the last 20 years. Although it has been known for nearly 100 years that those who work in jobs that use lead have problems with having children, this issue has begun to be emphasized more and more with the increasing technology in recent years. The health of men, who make up the majority in working life and who work in risky work areas, is generally ignored, especially issues related to reproductive health are seen as taboo. Many physical, chemical and ergonomic factors in working life affect male reproductive health. Workers working in a hot environment such as glass workers, bakery workers; Agricultural workers, heavy metal workers, those who work standing or sitting all the time, workers who work in heavy physical work are in the risk group, who are likely to be exposed to chemicals. Their rates of impact on reproductive health; The duration of exposure to the agent may vary



with the dose of the agent, the combination with other environmental factors and sensitivity to some substances. An increase in temperature for the testicles located outside the body cavity in an environment 2–4°C colder than normal body temperature, which will facilitate spermatogenesis, is an important risk factor for infertility. Many factors such as the use of sauna/steam room causing scrotal hyperthermia, driving for a long time, being in places with high ambient temperature such as an oven for a long time are associated with spermatogenetic insufficiency [10,11]. An increase in the temperature in the scrotum by 1–2°C results in both spermatogenesis in men. It also negatively affects sperm motility. Those who have to work outdoors in hot climates, or who work in iron casting, glassblowing, etc. There is heat exposure for those who work in jobs. In the study of Dada, Gupta and Kucheria [12] in 2003, it was stated that heat disrupts sperm morphology and also causes infertility by restricting sperm motility and production in men exposed to high heat. In a study conducted in 2003, it was stated that heat disrupts sperm morphology and also causes infertility by limiting sperm motility and production in men exposed to high heat. Air pollution; It is the entry of substances such as sulfur dioxide, carbon monoxide, nitrogen dioxide into the atmosphere from motor vehicle exhausts, industrial emissions, coal mines or similar sources. Although the negative effects of air pollution on health have attracted attention in recent years, little is known about its effects on reproductive health. In a study conducted in the Czech Republic, a sample group of young men living in a province was followed for two years. Semen analysis was performed in cases where air pollution was more or less (a total of seven times in two years). As a result of the study, it was observed that air pollution damaged sperm DNA and the rate of male infertility increased. In men exposed to high air pollution; abnormal sperm morphology, decreased sperm motility, and increased DNA sequence changes were more common. As a result of exposure to radiation, structural changes occur in some cells, while cell death occurs in others. The changes that occur in the cell with the effect of radiation are often not repaired, and as a result, diseases occur. The damage to human health as a result of exposure to various amounts of radiation depends on the age of the person and the dose exposed, and as a result, it can cause permanent infertility. Mobile phones, which have made life easier in recent years, also negatively affect human health. Cell phones are devices in the electromagnetic wave spectrum, in the group of radio waves, that send and receive low-power radioactive signals [13].

CONCLUSION

According to the information obtained as a result of the researches, many environmental factors affect male infertility. Thus, it creates a very important factor in sperm morphology and has a great impact on having children. Keeping the environmental factors affecting sperm morphology at a minimum level and maintaining a healthy life are the most important ways to avoid infertility.



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**EFFECT OF BONE MARROW MESENCHYMAL STEM CELL THERAPY ON
INTRAUTERINE ADHESION MODEL**

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Abstract

In this study, the Asherman model, which describes the formation of intrauterine adhesions in rats, was created chemically and the treatment process was followed with bone marrow-derived mesenchymal stem cells isolated from the tibia and femur bone of rats. Treatment of intrauterine adhesion model by chemically forming in a single horn of uterus; Four different groups were formed, which were tried to be provided with medium (BC), bone marrow-derived mesenchymal stem cell (CHMSC) and 48-hour medium (Nis). First group (G1); Asherman+ BY, second group (G2); Asherman + Niche, third group (G3); Asherman + KIMCH and the fourth group (G4); Asherman + KMKH + Niche. In the immunohistochemical staining evaluations of the groups, a statistically significant difference ($p < 0.05$) was found in the groups given CIMR and CIMR+ Niche compared to the other groups. It was observed that CIMH and Nisin can remove adhesions in uterine adhesions.

Keywords: Bone Marrow Mesenchymal Stem cell, Infertility, Intrauterine adhesion

Introduction

Asherman syndrome (AS) is an intrauterine adhesion (IUA) condition that can occur after both pregnancy complications and multiple gynecological operations. Due to its increasing prevalence in recent years, the search for alternative treatments continues [1]. Intrauterine adhesions, or AS, is a condition that leads to the emergence of multiple deficiencies, with the number of diagnosed cases increasing day by day. In the last half century, hysteroscopy has become the standard treatment for diagnosing and treating this condition. Various techniques have been proposed to prevent adhesion and scar formation [2]. In clinical practice in recent years, AS and IUA are used synonymously. However, complaints of menstrual irregularity, abnormal placentation and pelvic pain should also be present for AS. The incidence of AS is unknown due to a very large group of asymptomatic patients. Considering a wide range of cases from incidentally detected cases to postpartum abortion cases, an incidence of 0.3% to 21.5% has been reported [3].



In this study, the AS model, which describes intrauterine adhesion formation in rats, was created chemically, and the success of these cells in preventing adhesion was investigated by following the treatment process with bone marrow-derived mesenchymal stem cells isolated from the tibia and femur bone of rats.

Material and Methods

A total of 23 rats, including 20 adult females and 3 male Wistar albino rats, were used. Care was taken to ensure that the subjects to be used were not particularly mated before and were not used in any study.

As a model of implantation failure, Asherman's syndrome was chemically induced in the single horn of the uterus in female rats with trichloroacetic acid. One day after application of 0.1 ml trichloroacetic acid (IL 33\, Istanbul Ilac Sanayi ve Ticaret AS, Umraniye, Istanbul, Turkey) to the left uterine horn after the right and left uterine horns were determined by opening the abdomen with a midline incision under ketamine/xylazine anesthesia. The applications were carried out according to the groups [4].

Groups:

Asherman +BY (G1); The group given freshly prepared medium,
Asherman + Niche (G2); The group given 48-hour medium,
Asherman + BMSC (G3); the group that was given only BMSC, the medium removed,
Asherman + BMSC + Niche (G4); A total of four groups were formed, including the group that was given with BMSCs medium.



Figure 1. Experimental Asherman model.

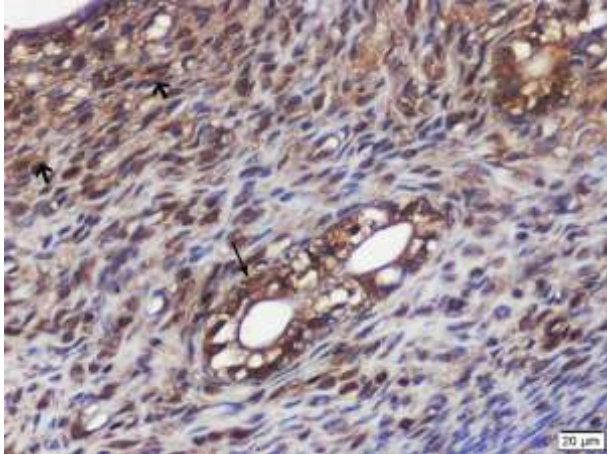
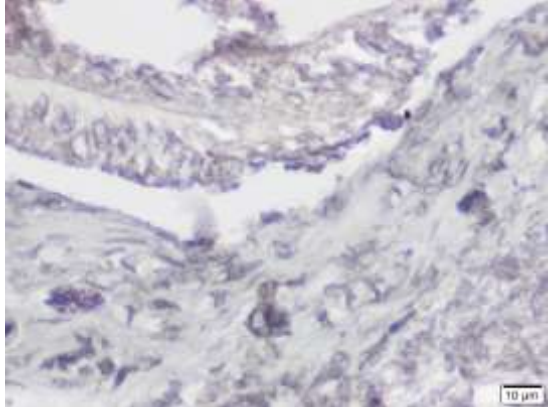
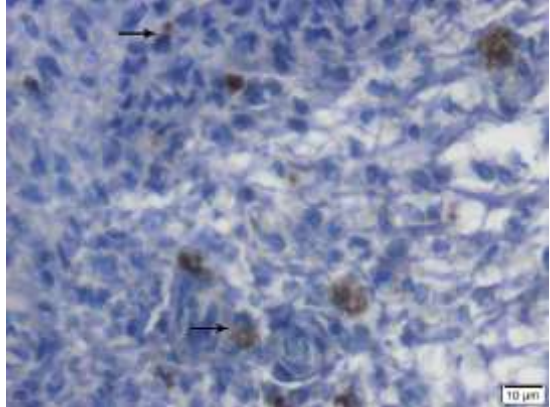
Taking and Tracking Tissue Samples

Uterine tissues of the first groups, in which Asherman was formed by applying chemicals to the left uterine horn, were sacrificed by cervical dislocation under general anesthesia (10 days later) after the treatment. Tissues were fixed in 10% formalin solution for 48 hours for histochemical and immunohistochemical examinations. Tissues fixed in formalin were washed under running water for 1 night to remove fixative. Afterwards, it was passed through series of ethyl alcohol increasing to 60%, 70, 80 and 100% for 30 minutes each for dehydration. Then, they were kept in xylene-alcohol mixture in a one-to-one ratio for 15 minutes and in two changes of xylene for transparency for 30 minutes, and after applying xylene-paraffin in a one-to-one ratio for 15 minutes in a 60°C oven, immersed with two changes of paraffin for 60 minutes, the tissues were embedded in paraffin blocks.



Findings

Immunohistochemical staining with c-Kit antibody revealed positive areas in the uterine surface epithelium, endometrial glands and myometrium (Figure 2). It was observed that the c-kit positivity of the lower first and second groups (BY-G1-1 and NIS-G2-1) was in the form of very pale staining around the endometrial glands. It was observed that the c-kit positivity of the stem cell group only (BMSCs-G3-1) was in the form of intense staining in both endometrial gland cells, myometrium and stroma.

c-KIT staining of groups	
RIGHT UTERINE HORN	
(Short arrow: c-kit positive cells in the stroma, long arrow: positive endometrial gland cells)	
	
LEFT UTERINE HORN	
BY (G1-1)	Niche (G2-1) (long arrow: positive cells)
	
BMSCs (G3-1) (long arrow: positive cells))	BMSCs+Niche (G4-1) (long arrow: positive cells))

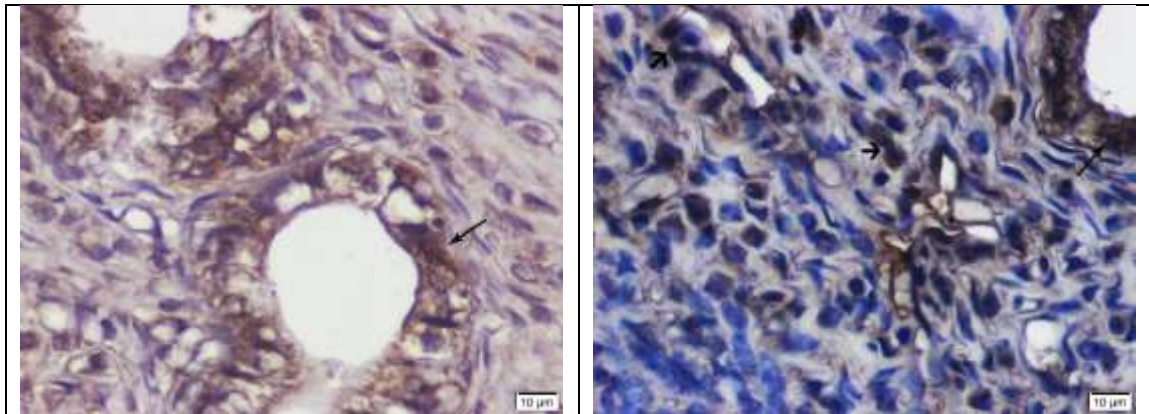


Figure 2. c-Kit staining images of the endometrium of the groups.

Discussion

In our study; Changes in the uterus of the BY, Nis, BMSCs and BMSCs+ Niche groups that we treated in the rat uterus in which we created AS were evaluated by macroscopic, histological, and immunohistochemical stainings. In this study, histological images were examined in uterine samples obtained from non-pregnant and pregnant groups. The role of BMSCs and its niche in adhesions caused by AS was investigated.

Although the uterine tissue is surgically restored, the re-formation of adhesions and the risk of complications from uterine surgeries have revealed the need for new treatment options. For the treatment of intrauterine formations such as synechia; There were various interventions such as serial flexible hysteroscopies [5], intrauterine adhesion barrier systems [6], fresh amniotic graft, intrauterine insertion of seprafilm, hysteroscopic surgery and hyaluronic acid gels [7]. One of the main problems with intrauterine fillers is the need for concomitant use of antibiotics since a foreign body is present in the uterus. Clinical or subclinical pelvic infections in contact with the vagina may increase secondary infertility.

Stem cell therapy for endometrial restoration has recently moved from being an edge treatment to becoming a central treatment option. In particular, stem cells obtained from bone marrow have become the most frequently used stem cell source. These cells are isolated directly from the bone marrow by aspiration. BMSCs can be easily obtained from both humans and rodents due to their extensive migratory and pluripotent potential. Stem cells with endometrial regeneration and angiogenesis effects are purified from the bone marrow by immunomagnetic isolation [8,9]. Ultimately, they prepare the endometrium for implantation. The movement of stem cells into the uterus may be a reparative mechanism against injury or pregnancy rather than replacing the endometrial cells lost with menstruation. In fact, a recent study suggests that male bone marrow-derived stem cells may not contribute at all [10].

We know that surgical operations only serve to divide adhesions within the cavity, but can do little about endometrial regeneration and adhesion recurrence. So women with Asherman syndrome require more than one approach to provide optimal clinical outcomes. Although stem cells are still in the research phase, new advancing discoveries in this field are leading to new therapeutic strategies every day. We hope that the findings in this study will shed light on stem cell applications in reproductive medicine.



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EVALUATION OF THE SUCCESS OF STEM CELL IN OVARIAN DAMAGE

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Abstract

Stem cells play a very important role in fetal and postnatal life, starting from the embryonic period. The self-renewal, differentiation and survival features of stem cells are features that are not found in any other cell in the organism. Stem cells have the potential to transform into different cell types and renew themselves according to the signal they receive. Recently, stem cells have become products suitable for clinical use and can be evaluated in restructuring of many organs, including ovarian damage, in wound repair and when regeneration is required. Investigating the behavior of differentiated stem cells in the ovary will greatly contribute to a better understanding of ovarian function and fertility, and to the development of future new treatment approaches and the causes of diseases such as PCOS, preovarian insufficiency and cancer. This study was carried out by compiling the current use of stem cells, the popularity of which is increasing day by day, and their effects on female infertility.

Keywords: Stem cell, primordial germ cell, ovary, infertility

INTRODUCTION

In the process that has come from the first moments of human existence to the present day, one of its first goals has been to defeat diseases and prevent aging. The biggest proof of this is the use of herbal medicines on the papules of 1500 BC, and the depiction of the replacement of diseased organs in ancient Egyptian hieroglyphs [1]. Today, with the human genome project solving 99.99% of our genetic code, there have been intense developments in stem cell therapy, gene therapy, preimplantation genetics, biotechnology and cloning. In addition, in recent years, with the clarification of the genetic code and a better understanding of cell behavior, various tissues such as brain, skin, bone, heart muscle have begun to be produced using human stem cells. Stem cells play a very important role in the development and maintenance of tissues and organs in fetal and postnatal life, starting from the embryonic



period. The ability of stem cells to self-renew, differentiate and survive as long as they are alive are features that are not found in any other cell in the organism. Stem cells have the potential to transform into different cell types according to the signal they receive, and they have the power to renew themselves. Also, these cells turn into whatever cell type is needed, depending on changes in the body, death and damage.

ovaries; There are two pieces, one on the right and one on the left, based on the lateral wall of the pelvic cavity. The ovaries have two interrelated functions. They produce female sex cells (oogenesis) and secrete steroid hormones (estrogen and progesterone) (steroidogenesis). Steroids secreted from the ovaries control the development and maturation of sex cells, the development and growth of secondary sex organs and mammary glands, and are also responsible for the control of pregnancy. Investigating the behavior of differentiated stem cells in the ovary will greatly contribute to a better understanding of ovarian function and fertility, and to a large extent, the causes of diseases such as polycystic ovarian syndrome (PCOS), preovarian insufficiency and cancer, and new treatment approaches in the future. Repair of tissue damaged by transplantation with directed stem cells is very promising.

ovaries; they produce female sex cells (oogenesis) and secrete steroid hormones (estrogen and progesterone) (steroidogenesis). Steroids secreted from the ovaries control the development and maturation of the sex cells, the development and growth of the secondary sex organs and mammary glands, and are also responsible for the control of pregnancy. Stem cells are cells that have the capacity to renew themselves, regenerate and form functionally differentiated cells [2]. Marrow stromal stem cells can be distinguished from other marrow cells by their tendency to adhere to tissue culture plastics, and these cells have many properties that are potentially useful for cell and gene therapy. These cells are of mesenchymal origin and are multipotent cells with the potential to differentiate into osteoblasts, chondrocytes, adipocytes, myoblasts, and cells in tissues such as tendons [3,4]. In addition to the effectiveness of transplantation treatments, it is known that the support to be provided by stem cell referral is important. In IVF studies, stem cells were not considered for any application other than producing germ cells, and the niche environment where stem cells were brought together was not used for clinical applications. However, the collection, culture and reproduction of stem cells, especially from adult bone marrow, is an extremely simple application with the technology available today. Although many different stem cells can be obtained, adult bone marrow stem cells are a group of cells that can transform into any type of cell, create an ideal microenvironment, and multiply rapidly in a culture medium. Oxidative stress and programmed cell death, which are the mechanisms used by stem cells, seem to be an important weapon that will take its place in clinical medicine as preventive and therapeutic if used wisely. The contribution of this expression to the decreasing reproductive ability is the most important interpretation in terms of its future function. Oxidative stress and apoptosis were investigated by NOS and TUNEL staining to examine the mechanisms used by the significant and positive effects of stem cell application in wound injury in the ovarian biopsy model. It was observed that i and e-NOS immunoreactivity, which started especially on the first day after the wound and decreased with healing, increased and accompanied by TUNEL positivity. Stem cells were thought to accelerate wound healing by using these mechanisms. It has been shown in previous studies that NO is an intraovarian regulatory factor and that all three isoforms of i, e, and n-NOS are present at a basal level, and they are found in the cytoplasm of the oocyte, where they are essential for oocyte maturation [5,6].

Embryonic oocytes in the ovary originate from non-ovarian sources, while fetal and postnatal ones originate from OSE. While fetal primary follicles are formed in the second trimester of



intrauterine life, primary follicles are formed with the menstrual cycle and their fresh eggs ensure that they are constantly ready for productivity. In diseases such as premature ovarian failure or in cases such as menopause, oocyte resources become insufficient, and in such cases, returning to stem cells of non-ovarian origin promises great hope for the future. Lee et al. In a study he carried out in 2007, the idea that oogenesis could be performed with non-ovarian stem cell sources emerged and in vitro oocyte was obtained by using transgenic mouse embryonic stem cells carrying green fluorescent protein [7]. Dyce et al. In 2006, using skin stem cells of fetal pigs, granulosa cells expressing VASA and DAZL and after a while, follicle development were followed. Ghadami showed in 2008 that hormone-sensitive differentiated bone marrow cells can be formed. They revealed that stem cells obtained from the ovarian surface epithelium show embryonic stem cell characteristics by expressing Sox 2, Oct 4 and Nanog, and they can make cells expressing germ cell markers from these stem cells [8]. In many studies, contradictory results have been revealed with many of the transcriptional factors belonging to the embryonic period, and in the latest study, the presence of some markers in follicles at all levels in the adult mouse ovary has been found, among which SSEA-1 has been shown to be specific.

CONCLUSION, COMMENTS AND SUGGESTIONS

In this study, the most active wound formation was observed on the 3rd day, while the most active wound formation was observed on the 14th day, and it was determined that the stem cell accelerated the healing significantly and provided positive contributions in the seventh-day groups. It was found that mesenchymal stem cells taken from the bone marrow stroma, whose presence was revealed by STRO-1 staining, gained a homogeneous structure and behaved like classical stem cells when they reached the 4th Passage.

It was determined that the contribution of the stem cell to the damage in the ovarian tissue, both the repair of the parenchyma and the support it gives to the cells that participate in the formation of the follicle during the oogenesis process. It was observed that the primary oocyte made positive contributions to the graaf follicle and to the theca and granulosa cells.

It was determined that i-NOS immunostaining increased much more than basal, with NOS staining being more pronounced, e-NOS, in which the process was caused by oxidative damage.

The relationship and effect of oxidative stress on cell death was determined by the increase in TUNEL staining.

It was thought that the stem cell reduced the formation of free radicals and prevented the damage, and accordingly apoptosis regressed.

It made us think that these positive effects of stem cells may be important in regaining the ovarian health, which is deteriorated due to nutrition, technology and related factors, and the decreased reproductive ability of today's women.

Adding the niche factor to the positive effects of stem cells in the ovary, determining its contribution to the production and removal of follicles, revealing the interaction of all support cells that provide the formation and removal of the graaf follicle and the connective tissue cells that contribute to these cells, and revealing the mechanisms used here are the suggestions brought by the results of the study. Oxidative stress and programmed cell death,



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which are the mechanisms used by stem cells, seem to be an important weapon that will take its place in clinical medicine as preventive and therapeutic if used wisely. The contribution of this expression to the decreasing reproductive ability is the most important interpretation in terms of its future function.

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PHYTOCHEMICAL SCREENING, TLC PROFILING AND ANTIBACTERIAL POTENTIAL OF METHANOL, ETHANOL AND AQUEOUS EXTRACTS FROM SEED, BARK AND LEAF OF *BAUHINIA TOMENTOSA* L.

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Abstract

The present study dealt with the comparative phytochemical analysis, TLC profiling and *in vitro* antibacterial studies of the crude methanol, ethanol and aqueous extracts from leaf, seed and bark of *Bauhinia tomentosa* L. Qualitative preliminary phytochemical analysis revealed the presence of maximum 8 phytochemicals (alkaloids, glycosides, flavonoids, phenols, saponins, tannins, terpenoids & amino acids) in aqueous extracts of seeds followed by 7 (except flavonoids) and 6 (except glycosides and flavonoids) in the leaves and bark extracts. Similarly, methanol extract of leaves exhibited maximum 6 phytochemicals (alkaloids, glycosides, phenols, saponins, tannins & terpenoids) followed by 5 and 3 in seed and bark extracts respectively. TLC profile of leaf, seed and bark showed the maximum number of bands (12) in the leaf methanol extracts ranging in their R_f value 0.33 to 0.83 followed by 10 bands in leaf ethanol extracts with R_f value 0.31 to 0.84. The minimum numbers of bands (3, 4 and 4) were observed in the aqueous extracts of leaf, bark and seeds respectively with R_f value in the range of 0.30 to 0.57. In case of seeds, the ethanol & methanol extracts were found to be effective against all the tested bacteria *Enterobacillus*, *Micrococcus*, *Klebsiella*, *Thermophilus* and *Haemophilus* at 75mg and 100 mg concentrations whereas in case of bark, it is the aqueous extract which showed significant zone of inhibition against all of these strains as comparison to ethanol & methanol extracts at the same concentrations. On the other hand, all the leaf extracts (ethanol, methanol & aqueous) showed inhibitory effect against *Enterobacillus*, *Micrococcus* and *Thermophilus* bacterial strains except *Klebsiella* and *Haemophilus*, which were inhibited only by methanolic & aqueous extracts, and ethanolic & aqueous extracts, respectively at the concentrations of 75 and 100 mg.

Keywords: Bauhinia, TLC, Phytochemicals, Antibacterial activity



INDIA'S THRIVING ORGANIC FOOD MARKET

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Abstract

The 'organic philosophy' is often emphasized in definitions of organic goods. Organic foods have never been exposed to synthetic inputs like pesticides or chemical fertilizers, have never been irradiated, and have never included genetically modified organisms (GMOs).

Despite high food spending, India's retail food industry has remained unorganized. Indians' consumption of home meals has been continuously decreasing. India's organic food industry is still in its infancy as most products are exported to wealthier countries. Organic vegetables and fruits are in high demand in India. The vast majority of Indian organic producers (more than 80%) are small and marginal. India now has over 15,000 organic certified farms, and the number is proliferating. Bangalore alone has over 181 organic retail establishments. These organic markets are disorganized, and their prices vary significantly. Despite this tremendous potential, customers are deterred by the high expense of organic food. In a survey of organic consumers in North India, 71% said that high pricing prevented them from choosing organic. They said that the future of organic agriculture is contingent on consumer demand for organic goods and their willingness to pay a premium. A consumer-oriented approach is required for better management of the organic food business in India. This process is influenced by infrastructure, high-quality production, regulations, certification, and the market environment. However, it is vital to understand how customers purchase organic food choices and how their beliefs, attitudes, and responses to organic items impact their willingness to pay a premium price. The bulk of prior research has been undertaken in more affluent nations with a high level of food awareness. Organic food knowledge and preferences are unknown in developing nations. As a result, it is critical to evaluate organic food consumption, particularly in growing economies such as India. This article highlights that consumers' attitudes and behaviors regarding organic foods may be used to help consumers and marketers grow the organic food industry.

Keywords: India, Organic, Food, market



**A FRAMEWORK FOR GREEN GOVERNANCE AS FOUNDATION FOR
SUSTAINABLE DEVELOPMENT**

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Abstract

Human civilization has progressed through three stages: primitive, agricultural, and industrial cultures. Each stage of human growth is inextricably linked to the natural world. After entering the industrial era, humans steadily developed a self-centered master mindset and the ability to manipulate nature at a whim, deepening the struggle between people and environmental carrying capacity. Environmental challenges such as global warming, resource scarcity, pollution, and ecological degradation have grown in severity, pushing people to reconsider and better appreciate humanity's place in nature and the link between economic progress and the environment.

Environmental challenges caused by human behavior have risen in importance over the last several decades, propelling global green governance to the top of the research priority list in recent years. Appropriate governance structure design and governance mechanism organization can effectively manage the relationship between people and nature. The literature has presented a contradictory image of the economy, society, and environment growing in harmony. On the other hand, very little research has examined the balance of interests between human appeal and the natural environment from a governance and policy perspective. Organizations may efficiently address externalities such as resource depletion and environmental degradation via open innovation initiatives, enabling them to strike a relative balance between their economic and environmental priorities. It is an effective style of green governance that reflects the primary topic composition and mechanism operation features of green governance. This article develops a green governance framework for collaborative, sustainable development among enterprises, governments, social organizations, the general public, and the environment. This study examines the synergy between people and the natural environment via the lens of green governance, innovation subjects, innovation processes, and innovation mode. According to the suggested framework, each country and area may establish green governance norms suitable for their particular nations' or areas' environmental carrying capacity. Green development plans for enterprises may be created utilizing the framework offered to match the organization's economic and environmental principles.

Keywords: Green, governance, sustainable development, environment



ZOOPLANKTON OF SOME PONDS IN FIRAT UNIVERSITY CAMPUS (TURKEY-ELAZIG)

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Abstract

The zooplankton of four ponds in Firat University campus were investigated. Zooplankton samples were collected from Firat University campus ponds by using a plankton net with 55 µm mesh size. The net was thrown from the ponds shore to the interior pulling it from the surface to the shore, this process was done at least 15 times. A total of 17 species were identified, 14 Rotifera (82%), 2 Cladocera (12%) and 1 Copepoda (6%).

Rotifera was the most dominant group among the zooplankton groups. The rotifers *Keratella cochlearis* and *Lecane luna* were observed in all ponds. The most species of Rotifera (4 species) belong to the Lecanidae family (*Lecane bulla*, *Lecane closterocerca*, *Lecane luna*, *Lecane lunaris*) were determined. From Rotifera *Brachionus angularis*, *Cephalodella gibba*, *Euchlanis dilatata* *Keratella cochlearis*, *Lecane bulla*, *Lecane closterocerca*, *Lecane luna*, *Lecane lunaris*, *Lepadella patella* were seen in all samplings. *Colurella adriatica* has only seen in October. From Cladocera *Daphnia magna* and *Moina micrura* from Copepoda *Cyclops vicinus* were identified in all samples.

In August the total zooplankton density was found to be 30 % in the first pond, 27% in the second and third pond, and 16% in the fourth pond. In September the total zooplankton density was found to be 32 % in the first pond, 25% in the second pond 29 % in the third pond, and 14% in the fourth pond. In October the total zooplankton density was found to be 22 % in the first pond, 28% in the second pond 28 % in the third pond, and 22 % in the fourth pond. This study has got an importance for being the first zooplanktonic research in Firat University Campus' ponds.

Anahtar kelimeler: Zooplankton, Rotifera, Cladocera, Copepoda, pond

Introduction

Ponds are small (1 m² to about 5 ha), man-made or natural shallow waterbodies which permanently or temporarily hold water (De Meester et al., 2005). They are numerous, typically outnumbering larger lakes by a ratio of about 100 to 1 (Oertli et al., 2005), and occur in virtually all terrestrial environments, from polar deserts to tropical rainforests. Despite this they have, until recently, been mostly ignored by freshwater biologists or regarded simply as smaller versions of larger lakes. Ponds support considerably more species, and specifically more scarce species, than other freshwater water body types. Ponds create links (or stepping stones) between existing aquatic habitats, but also provide ecosystem services such as nutrient interception, hydrological regulation, etc. In addition, ponds are powerful model systems for studies in ecology evolutionary biology and conservation biology, and can be used as sentinel systems in the monitoring of global change. Small water reservoirs and shallow lakes are, as group, extremely rich in point of biodiversity (Chmielewski, et al., 1997; Williams, at al. 2004; Fahd, et al., 2009) but they have only recently been recognized as important habitats



(Biggs, et al., 2005). Compared to pools and ponds, smaller reservoirs are larger and therefore more stable temporarily. On average, it is reported that local species diversity in lentic systems tends to increase from small and temporary reservoirs to larger and more permanent systems (De Bie et al., 2008; 8 Davies et al., 2008).

Zooplankton are small animals that live in the water column of almost all water bodies, including oceans, lakes and ponds, although they mostly cannot survive in rivers and streams. Zooplankton are commonly included in biomonitoring programs because their densities and species composition can be sensitive to changes in environmental conditions. (URL, 1).

The study was made out to determine the zooplankton fauna of the ponds located in the Firat University campus, where various waterfowl live and used as a recreation area.

Materials and Methods

Zooplankton samples were collected from Firat University campus ponds by using a plankton net with 55 μm mesh size. The net was thrown from the ponds shore to the interior pulling it from the surface to the shore. This process was done at least 15 times. Samples were collected in August, September and October 2021. The samples were fixed in 4 % formalin, analysed under an inverted microscope and identified under a compound microscope. The species were identified according to Ruttner-Kolisko (1974), Koste (1978) Negrea (1983) and Einsle (1996). Firat University has got two millions m^2 area. It's third biggest campus of Turkey. The location of the ponds were given in figure 1



Figure 1. Location of sampling stations in Firat University Campus

Results and Discussion

A total of 17 species were identified in the study, 14 from Rotifera, 2 from Cladocera and 1 from Copepoda. The most species of Rotifera (4 species) belong to the Lecanidae family were determined (Table 1).



Table 1. Zooplankton species identified in the study

Rotifera	Month											
	Aug.2021				Sep.2021				Oct.2021			
	Ponds											
	1	2	3	4	1	2	3	4	1	2	3	4
<i>Brachionus angularis</i> Gosse, 1851	+	+	-	-	+	+	-	-	-	+	-	-
<i>Cephalodella gibba</i> (Ehrenberg, 1830)	-	+	+	-	-	-	+	-	+	-	+	-
<i>Colurella adriatica</i> Ehrenberg, 1831	-	-	-	-	-	-	-	-	-	-	+	-
<i>Conochilus hippocrepis</i> (Schränk, 1803)	-	-	-	+	-	-	-	+	-	-	-	-
<i>Euchlanis dilatata</i> Ehrenberg, 1832	-	-	+	-	-	+	+	-	+	-	-	-
<i>Encentrum witsinewskii</i> Wulfert, 1939	-	+	-	-	-	-	-	+	-	-	-	-
<i>Keratella cochlearis</i> (Gosse, 1851)	+	+	-	+	+	+	+	+	+	+	-	-
<i>Keratella tecta</i> (Gosse, 1851)	-		+	-	-	-	+	-	-	-	-	-
<i>Dicranophorus epicharis</i> Harring & Myers, 1928	+		+	-	-	+	-	-	-	-	-	-
<i>Lecane bulla</i> (Gosse, 1886)	-	+	-	-	-	+		+	+	-	-	-
<i>Lecane closterocerca</i> (Schmarda, 1859)	-	-	+	+	+	-	+	-	-	-	-	+
<i>Lecane luna</i> (Müller, 1776)	-	+	-	-	+	+	-	-	-	+	+	+
<i>Lecane lunaris</i> (Ehrenberg, 1832)	+	+	-	-	+	+	+	-	-	+	-	+
<i>Lepadella patella</i> (Müller, 1773)	+	-	+	-	+	-	-	-	-	+	-	-
Cladocera												
<i>Daphnia magna</i> (Straus, 1820)	+	-	-	+	+	-	+	-	-	-	+	-
<i>Moina micrura</i> Kurz, 1875	+	-	-	-	+	-	-	-	-	-	+	-
Copepoda												
<i>Cyclops vicinus</i> Uljanin, 1875	+	-	+	-	+	-	+	-	-	-	-	+

Note: + = present - = absent

From Rotifera *Brachionus angularis*, *Cephalodella gibba*, *Euchlanis dilatata* *Keratella cochlearis*, *Lecane bulla*, *Lecane closterocerca*, *Lecane luna*, *Lecane lunaris*, *Lepadella patella* were seen in all sampling time. *Colurella adriatica* has only been seen in October From Cladocera *Daphnia magna* and *Moina micrura* from Copepoda were identified all sampling time (Table 1).

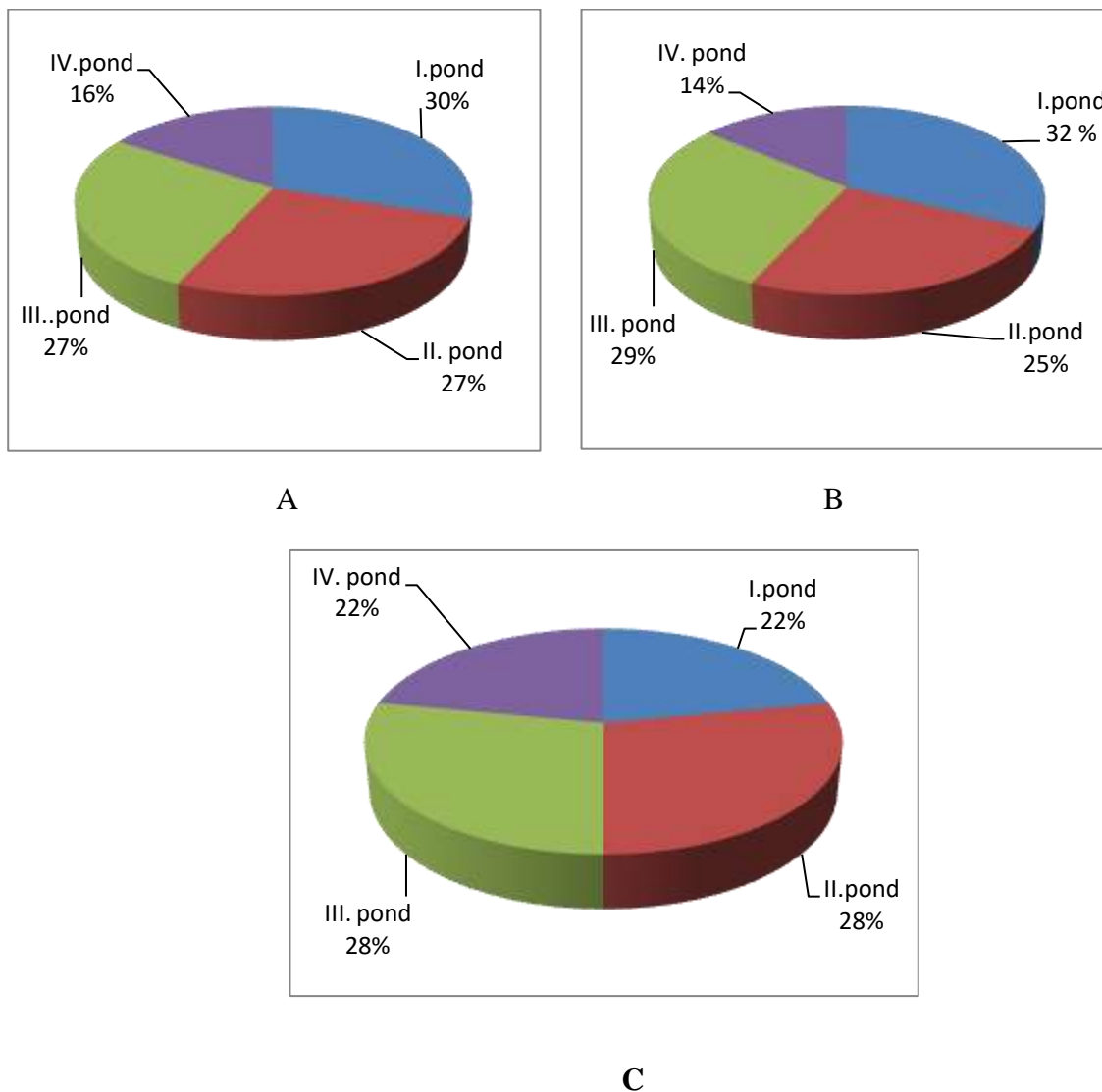


Figure 2. Relative density (%) of zooplankton of the ponds located in Firat University campus (A=August, B= September, C= October)

In the samples taken in August 2021, the total zooplankton density was found to be 30 % in the first pond, 27% in the second and third ponds, and 16% in the fourth pond. In the samples taken in September 2021 the total zooplankton density was found to be 32 % in the first pond, 25% in the second pond 29 % in the third pond, and 14% in the fourth pond. In the samples taken in October 2021 the total zooplankton density was found to be 22 % in the first pond, 28% in the second pond 28 % in the third pond, and 22 % in the fourth pond (Figure 2). The most zooplankton was detected in the first pond in September sampling.

Rotifers are more sensitive to environmental changes than cladocerans and copepods, and are known to be characteristic indicators of water quality (Kolisko, 1974). Furthermore, Sladecek (1983) and Saksena (1987) indicated that rotifer species were bioindicators of water quality and rotifer density was characteristic of eutrophic waters. Rotifera is the predominant group amongst all zooplankton groups qualitatively and quantitatively in freshwater ecosystem (Saksena, 1987). This result was parallel in our study. It was reported that almost all species



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in the study wide spread, common, cosmopolitan and the species were reported from lots of study inland waters of Turkey (Ustaoglu et al., 2012, Tepe et al., 2019).

Ruttner-Kolisko (1974) reported that *Polyarthra dolichoptera* and *Keratella cochlearis* are perennial species. The result obtained in the study was similar with results of Ruttner-Kolisko (1974).

Generally, rotifer species are more in eutrophic waters, copepod species are more intense in oligotrophic waters (Herzig, 1987). Accordingly, *Brachionus angularis*, *Keratella cochlearis*, *Lecane luna*, *Daphnia magna*, *Moina micrura* identified in the study area were reported as having eutrophic characters (Petrusek, 2002).

The Lecanidae constitutes a group of common fresh and saline-water monogonont rotifers. Lecane are of biogeographical interest and, in particular, abound in littoral habitats (Segers, 1996). Our study was seen the most species of Rotifera (4 species) belong to the Lecanidae family.

The zooplankton detected in the ponds are similar to those recorded in other freshwater bodies in the province where this study was conducted (Bulut, 2018: Saler et al., 2018: Bulut and Saler, 2019). This study is to determine the zooplankton fauna of the ponds located in Firat University campus.

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ZOOPLANKTON OF ZIKKIM STREAM (ELAZIĞ)

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Abstract

This study was performed for determination of seasonal variations of zooplankton in Zıkkım Stream. Zooplankton samples have been taken seasonally from three stations between January-December 2020. This stream is one of the important flowing water that pours into Hazar Lake. Sampling was done between 10 am to 12 pm morning time. Water temperature, pH, dissolved oxygen values measured in situ. A zooplankton net of mesh size 55 µm fitted in a circular frame of 25 cm diameter and fixed with 90 cm long rope was dipped and towed in the water to allow about 50 liters of water to pass through it horizontally for five minutes. The contents were preserved in 100 ml plankton tubes with 4 % formalin solution.

A total of 34 species, 20 species from Rotifera, 10 species in Cladocera, 4 species from Copepoda, were detected in this study. The most number of species were recorded in spring (18 species from 3rd station), the less number of species was recorded in winter (2 species from 3rd station). Species from Rotifera took the first place in terms of frequency of occurrence and number of individual followed by Cladocera. *Polyarthra dolichoptera* and *Keratella cochlearis* from Rotifera were most detected species in Zıkkım Stream. In winter 72%, in spring 59% in summer 59% and in autumn 50% of the recorded species were identified from Rotifera group.

Since the number of Brachionus species determined in Zıkkım Stream as 1 and the number of Trichocerca species as 2, the Q value was found to be 0.5. In this case, the stream is oligotrophic in terms of zooplankton according to the rotifer index.

Key words: Zooplankton, Rotifera, Cladocera, Copepoda, Zıkkım Stream, Turkey

Introduction

Zooplanktons play a key role in freshwater bodies within food chains acting as primary and secondary linkages. The zooplankton community and population dynamics helps to determine the flowing processes going on in fresh water (Uma *et al.*, 2018). Zooplankton plays an important role in maintenance of stable and healthy ecosystem. Zooplankton can be studied in against a fixed place to find out the changes in their species composition and their patterns of assemblage. The pattern of zooplankton species composition can bring out changes in the interlinked micro-invertebrate and fish composition of any water body, so both the compositions shape up dynamic nature of whole community (Das *et al.*, 2020).

There are some zooplanktonic studies conducted by Tokat (1976) and Tellioğlu (1998) in Hazar Lake, where the Zıkkım Stream spills into. Also Ercan (1998) studied the algae and Saler and Şen (2001) determined the rotifers of Zıkkım Stream.

Most of the studies about zooplankton were carried out in lakes and dam lakes. Studies in rivers are very few. In previous studies on Hazar Lake, the streams pouring into the lake were neglected. More studies are needed to reveal the physical, chemical and biological properties of Turkey's rivers.

Material and Methods

Study Area and Sampling

Hazar Lake is approximately 25 km south of Elazığ, at an altitude of 1248 m from the sea level and its surface area is 86 km². There are many large and small streams pouring into Hazar Lake. Kürk Stream, which mixes with the lake from the west, Behramaz Stream and Zıkkım Stream, which mixes from the east, are important streams feeding the lake. In this study the zooplankton of Zıkkım Stream was determined.

Zıkkım Stream is formed by the confluence of two separate springs emerging from the southern skirts of the Mastar Mountains, located in the north-east of Hazar Lake, near Küçükova Village. Here, by adding a branch coming from the east in its main bed in the east-west direction, it takes the name Zıkkım Stream. Although the Zıkkım Stream is quite short (the length of the creek is approximately 2 km, and the width of the bed is 2 m), it has the appearance of a wide-floored valley because it has filled the waterbed on which it is located, with material brought to the faulted depression area from both sides. From a distance of 300-350 m from the lake, it starts to gain a delta feature and finally reaches the lake by forming Gezin Delta on the lake shore (Figure 1) (Günek ve Yiğit, 1995, Ercan, 1998).

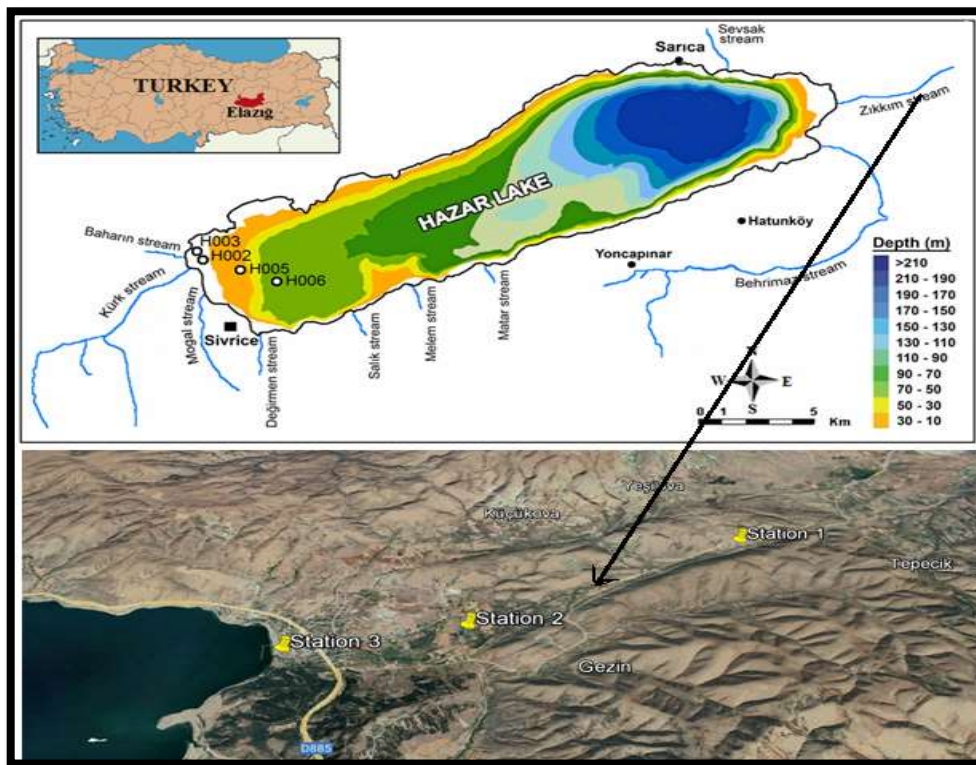


Figure 1. Location of stations in Zıkkım Stream

Sampling was done from January to December 2020, once in each season. Sampling was done between 10 am to 12 pm morning time. A zooplankton net of mesh size 55 μ m fitted in a circular frame of 30 cm diameter and fixed with 90 cm long rope was dipped and towed in the water to allow about 50 liters of water to pass through it horizontally for five minutes. The contents were preserved in 100 ml plankton tubes with 4 % formalin solution For quantitative analysis, the zooplanktons were counted with Sedgewick-Rafter Chamber. The genus, species and subspecies determinations of these materials, which were classified according to systematic groups under the microscope, were determined under the light microscope, for



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Rotifera, Ruttner-Kolisko (1974), Koste (1978 a,b), Segers (1995, 2007), Flössner and Krebstiere (1972), Negrea (1983), Einsle (1996), Dussart and Defaye (2001), Kiefer (1978). Rotifer species are used as an indicator in determining the trophic status, and this index is reported with the formula ($QB/T = \text{Brachionus species number} / \text{Trichocerca species number}$). $Q = 1.0 <$ oligotroph, $Q = 1.0-2.0$ mesotroph, $Q = 2.0 >$ eutrophic (Sládeček 1983). Some physical and chemical features as dissolved oxygen, pH, water temperature values were measured in situ by using YSI multiparameter.

RESULTS

In Zıkkım Stream, a total of 34 species, 20 species from Rotifera, 10 species in Cladocera, 4 species from Copepoda, were detected in this study (Table 1).

Table 1. Seasonal distribution of zooplanktonic species according to stations

	SEASONS											
	winter			spring			summer			autumn		
	stations											
	1	2	3	1	2	3	1	2	3	1	2	3
Rotifera												
<i>Asplanchna priodonta</i> Gosse, 1850				+	+		+			+	+	
<i>Asplanchna priodonta</i> Gosse, 1850												
<i>Brachionus calyciflorus</i> Pallas, 1766			+		+	+	+			+	+	
<i>Cephalodella gibba</i> (Ehrenberg, 1838)												+
<i>Dicronophorus grandis</i> (Ehrenberg, 1832)				+						+		
<i>Euclanis dilatata</i> Ehrenberg, 1832				+	+	+						
<i>Kellicottia longispina</i> (Kellicott, 1879)	+			+	+	+	+	+	+		+	+
<i>Keratella cochlearis</i> (Gosse, 1851)												
<i>Keratella tecta</i> (Lauterborn, 1900)		+		+	+	+		+				
<i>Keratella quadrata</i> (Müller, 1786)				+	+	+						
<i>Lecane bulla</i> (Gosse, 1886)					+							
<i>Lecane fl exilis</i> (Gosse, 1886)					+	+		+				
<i>Lecane closteroerca</i> (Schmarda, 1859)								+				
<i>Lecane luna</i> (Müller, 1776)						+						
<i>Lecane lunaris</i> (Ehrenberg, 1832)					+						+	
<i>L. (Lepadella) ovalis</i> (Müller, 1786)												
<i>Notholca squamula</i> (Müller, 1786)	+	+		+	+	+	+	+		+	+	+
<i>Polyarthra dolichoptera</i> Idelson, 1925				+		+	+		+		+	+
<i>Synchaeta pectinata</i> Ehrenberg, 1832		+								+		
<i>Trichocerca capucina</i> (Wierzejski&Zacharias, 1893)			+									
<i>Trichocerca similis</i> (Wierzejski, 1893)	+											
Cladocera												
<i>Bosmina longirostris</i> (Müller, 1785)				+	+	+				+	+	
<i>Ceriodaphnia quadrangula</i> (Müller, 1785)		+		+	+	+		+	+		+	
<i>Coronatella rectangula</i> (Sars, 1862)				+	+	+			+	+		
<i>C. sphaericus</i> (Müller, 1776)							+				+	
<i>Cornigerius lacustris</i> (Spandl 1923-1924)						+						
<i>D. longispina</i> O.F.Müller, 1875				+	+	+					+	+
<i>Diaphanasoma brachyurum</i> (Liévin, 1848)								+				
<i>D. lacustris</i> Korinek, 1891									+			+
<i>Macrothrix laticornis</i> (Jurine, 1820)					+		+					
<i>Moina micrura</i> Kurz, 1874									+			
Copepoda												
<i>Acanthocyclops robustus</i> (G.O.Sars, 1863)						+						
<i>Acanthodiaptomus denticornis</i> (Wierzejski, 1887)					+	+	+	+	+		+	
<i>Cyclops vicinus</i> Uljanin, 1875		+		+	+	+			+		+	+
<i>Nitocra hibernica</i> (Brady, 1880)						+					+	
TOTAL	3	5	2	13	17	18	9	7	8	7	13	7

The values of water temperature, pH, dissolved oxygen of Zıkkım Stream was given in Table 2.

Table 2. Some physical and chemical Parameters of Zıkkım Stream

Parameters	Winter	Spring	Summer	Autumn
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Temperature C°	8.2	14.2	24.3	19.6
pH	8.4	8.2	8.6	8.5
Dissolved oxygen mg/L	9.3	8.8	8.6	8.9

Distribution of zooplankton according to groups have been calculated and given as graphics in Figure 2.

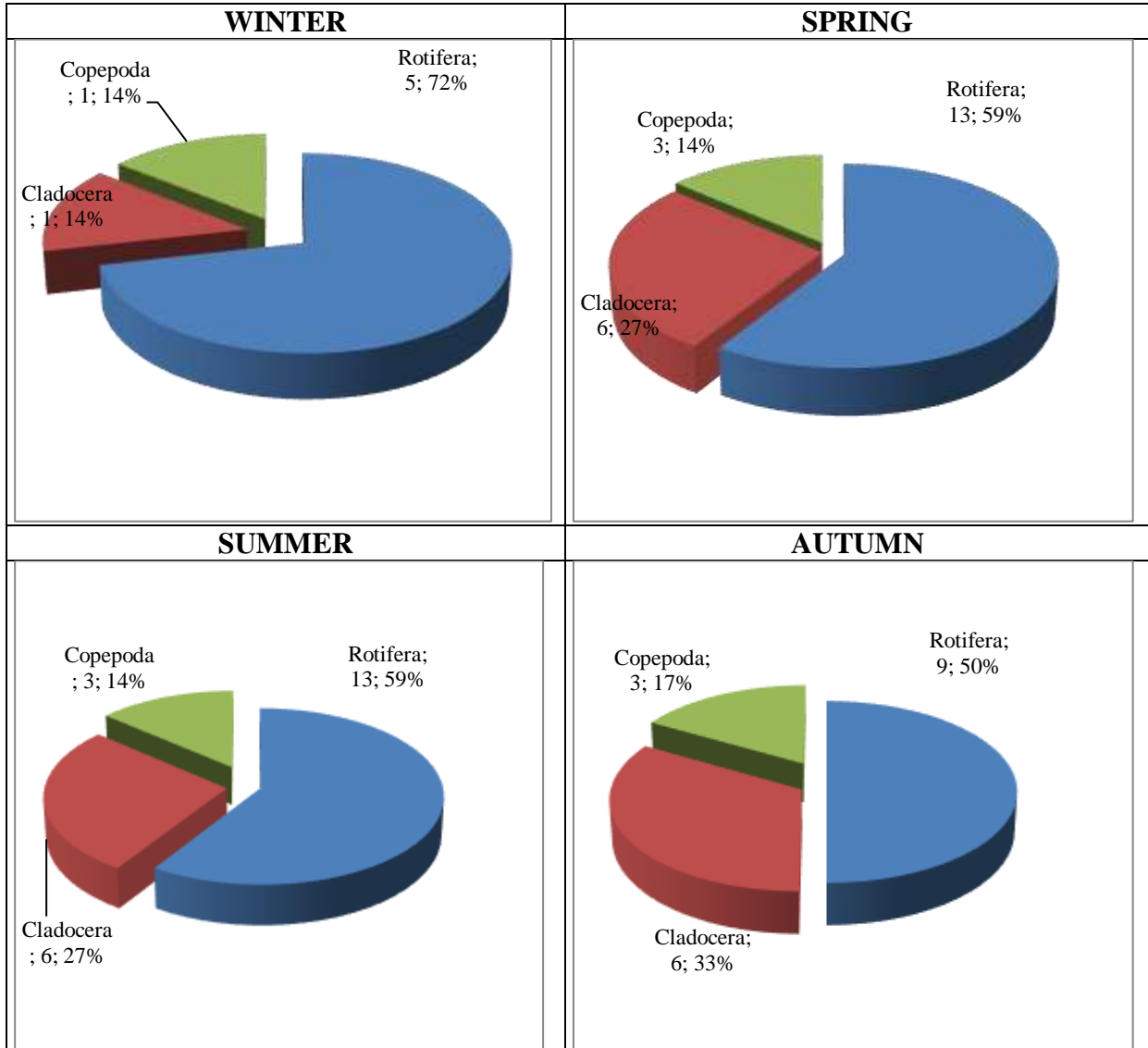


Figure 2. Distribution of zooplankton according to groups

DISCUSSION

In the study zooplankton species were recorded in every season. The most number of species were recorded in spring (18 species from 3rd station), the less number of species was recorded in winter (2 species from 3rd station) (Table 1).

In all stations most of the species recorded in spring. In many zooplanktonic studies from Turkey it was stated that spring months were very rich in terms of total zooplankton species, number of individuals and frequency of occurrence. For example, Baysal and Saler (2014) recorded 27 zooplankton species from Çalgan Stream, and in winter months a certain decline in zooplankton species diversity has been recorded. Contrary to this finding, increases were recorded in the spring and summer months. In Geban and Görgüşan Streams and in Ohi Stream it has been determined that the most zooplankton species diversity in streams is in spring, while it is least in winter (İpek and Saler, 2012-2013). In Murat River 33 species were



recorded. During the study a decrease in at zooplankton species diversity in winter and an increase at the zooplankton species diversity in spring and in summer months have been recorded (Bulut and Saler, 2014).

A previous study has been conducted on the Rotifera fauna of Zıkkım Stream (Saler and Şen, 2001). In the study only Rotifera species have been identified and 18 rotifer species were recorded. In our study 20 Rotifer species were recorded. Among these species 7 rotifer species as *B. angularis*, *B. calyciflorus*, *C. gibba*, *K. cochlearis*, *L. luna*, *S. pectinata*, *N. squamula* were common species. Saler and Şen (2001) stated that among all rotifers, *Polyarthra vulgaris* and *Keratella cochlearis* took attention as individual numbers and occurrence of frequency. In our study *P. dolichoptera* and *K. cochlearis* were the most recorded species. *Polyarthra* species was represented as *P. dolichoptera* in 10 months and *K. cochlearis* was found in 9 months.

K. cochlearis and *P. dolichoptera* were recorded in some lotic habitat as, Gediz River (Ergönül *et al.*, 2015), Görgüşan and Geban Streams (İpek and Saler, 2012), Gönen Stream, (Gürleyen and Ustaoglu, 2017), Meric River (Güher, 2012), Murat River (Bulut and Saler, 2014), Pulumur River (Saler and Haykır, 2011).

The most recorded cladoceran species was recorded as *Ceriodaphnia quadrangula* and found in 7 months. *Cyclops vicinus* was also recorded in 7 months and this species was the most observed copepod species in this stream. In many studies these species were recorded as most recorded cladoceran and copepod species (Saler *et al.*, 2017; İpek and Saler, 2012; Bulut, Saler, 2014, Gürleyen and Ustaoglu, 2017, Saler, *et al.*, 2018; Güher and Demir, 2018; Celik *et al.*, 2019).

In all stations in every season Rotifera is the most recorded group followed by Cladocera. In winter 72%, in spring 59% in summer 59% and in autumn 50% of the recorded species were identified from Rotifera group (Figure 2). In many studies in Turkey Rotifera was found most important group according to number of species, frequency of occurrence and individual numbers (Bozkurt and Kara, 2020; Saler, *et al.*, 2018; Saler and İpek Alish, 2020).

Water quality parameters and zooplankton communities together form a comprehensive ecosystem having interaction between both zooplankton and phytoplankton and the water quality parameters. These interactions are directly or indirectly subjected to the complex influences, some of which results in quantitative changes. Water quality parameters in the study were observed to be within the normal values for animals in the water. According to this, water temperature values (8.2-24.3 °C) in the study generally reflect the climatic conditions of the region and they are ideal for zooplankton and their development. Mean dissolved oxygen concentrations were above 5 mg/l (8.6-9.3 mg/L) which was enough to support aquatic life, especially the zooplankton community (Karpowicz and Ejsmont-Karabin, 2017).

Since the number of *Brachionus* species determined in Zıkkım Stream as 1 and the number of *Trichocerca* species as 2, the Q value was found to be 0.5. In this case, it is oligotrophic in terms of zooplankton according to the rotifer index.

The remaining species in the study are widely distributed in the inland water of Turkey and have been identified in many studies (Ustaoglu *et al.*, 2012; Ustaoglu, 2015).



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INVASIVE ALIEN SPECIES IN THE SIWALIK HILLS OF SUKRALA DEVI DISTRICT KATHUA, JAMMU AND KASHMIR, INDIA

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Abstract

A case of Jammu and Kashmir is one of threats to plant biodiversity of the region through the invasion of invasive alien species. The whole Himalayan belt is a mega-hotspot having 8 critical areas including Jammu and Kashmir. Species which are either introduced or spread outside of their natural habitat may out-compete native species and become invasive and noxious weeds. Such species are designated as Invasive Alien Species (IAS). The study aimed to document the invasive alien species prevalent in the area along with their harmful effects. Most of the invasive alien weeds have naturally intruded into the region due to its geographical position in the vicinity of northern plains of India and found successfully colonized in the area of study. The invasive alien species studied over the period of time have been enlisted and described along with other relevant information. All the invasive alien species seriously affect the native biodiversity together with negative impacts to agriculture, animal husbandry and other allied activities in the rural area of Siwalik Hills of North Western Himalayas. The study aimed to document the invasive alien species present in the region, determine dispersal mechanisms, impact on biodiversity, agriculture, allied activities, control and eradication measures undertaken and to be needed to mitigate the losses. The present study in part will support the implementation of the Strategic Plan for Conservation of Biodiversity

Keywords: mega-hotspot, invasive alien species, native range, biodiversity, eradication.



**PEDOCLIMATIC INFLUENCES ON ANIMAL BREEDING IN THE PLAIN OF
NORTH-WEST OF ROMANIA**

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Abstract

The study follows the situation registered in Miersigului Plain from different point of view: soil, climate, vegetation and animal husbandry. Miersigului Plain is situated in the North-West of Romania. It is a Piedmont type of plain. It has altitudes between 100 m to the west and 170 m. The climate is temperate. The structure of the soil includes especially: clay, fine sandy clay and medium clay (taxonomic unit: Stagnic Luvisols - WRB-SR-1998, Epiquic Hapludalfs - USDA-ST-1999). The analysis of the vegetation from the Miersigului Plain identify especially hemicryptophyte species (46.81%), and therophytes (30.87%). Corelated with the soil, temperature and vegetation characteristics of the Miersigului Plain, people from that area are involved especially in sheep breeding.

Keywords: plain, species, soil, climate, sheep

INTRODUCTION

Miersigului Plain is located in the North-West of Romania and it is part of a larger geographical structure: Crișurilor Plain (Land Law, 1991). Located on a Carpathian foundation covered with Quaternary sediments (clays, clayey sands, fine and coarse sands, gravels etc.) on top of which the current landscape was formed, Crișurilor Plain comprises two main orographic stages: one high, from glaciers to hills and another low, alluvial, to the west (Posea G, 1997).

Miersigului Plain is located between Crișul Repede and Crișul Negru rivers. It is part of the high subunits of the Crișurilor Plain; it has altitudes between 100 m and 170 m (Mahara, 1977, 2003).

MATERIALS AND METHODS

The study follows the situation registered in Miersigului Plain from different point of view: soil, climate, vegetation and animal husbandry.

The information presented in this paper has been gathered from different data bases: data base of the Weather station of Oradea, data base of Animal Husbandry in Bihor County. Also, it was performed a field flora analysis and statistical research. The floristic composition of a meadow and the appreciation of the participation of the component species are done by one of the classical methods: phytosociological, pratological, and gravimetric.

The analysis of the physico-chemical parameters of the soil consisted in performing the whole set of physico-chemical analyzes, with general and special character (FAO, 2010). The



following general physico-chemical analyzes were performed: particle size analysis; specific density or mass; current acidity or soil pH; humus content; total nitrogen; mobile phosphorus content; mobile potassium content.

The aim of the study was to identify the correlations between grassland characteristics of the plain and the animal development in the area.

RESULTS

From a climatic point of view, the Miersigului plain falls within the temperate-continental area. According to Köppen's climate classification, the Miersigului Plain is integrated into the Cfbx region (where most of the rainfalls are in late spring and early summer, and the least in winter). The average annual temperature is 10.5 °C. The month with the highest average temperature is June with 21.2 °C, and the month with the lowest average temperature is January with 1.5 °C. The absolute minimum temperature is -29 °C and it was recorded in January 1942 (Pop G, 2005). Average daily temperatures above 0 °C are recorded from the second decade of February and last until the second decade of December. The sum of the temperatures during the vegetation period (March-October) is 3,530 °C, which satisfies the requirements of most cultivated plants. The warmest days are recorded in July and August.

The annual amount of precipitation is 605 mm, with a relatively uniform distribution during the year. The months with the richest rainfall are: June, May and July, and the months with the lowest rainfall are March, February, October, January, September. The relative humidity of the air, expressed in monthly and annual average values, shows more pronounced decreases in May, July and August and higher levels in the winter months.

The wind regime indicates the predominance of winds during the winter months, December, January, February from the south, southwest, so that during the summer the dominant direction is from the east, southeast and north (Figure 1).

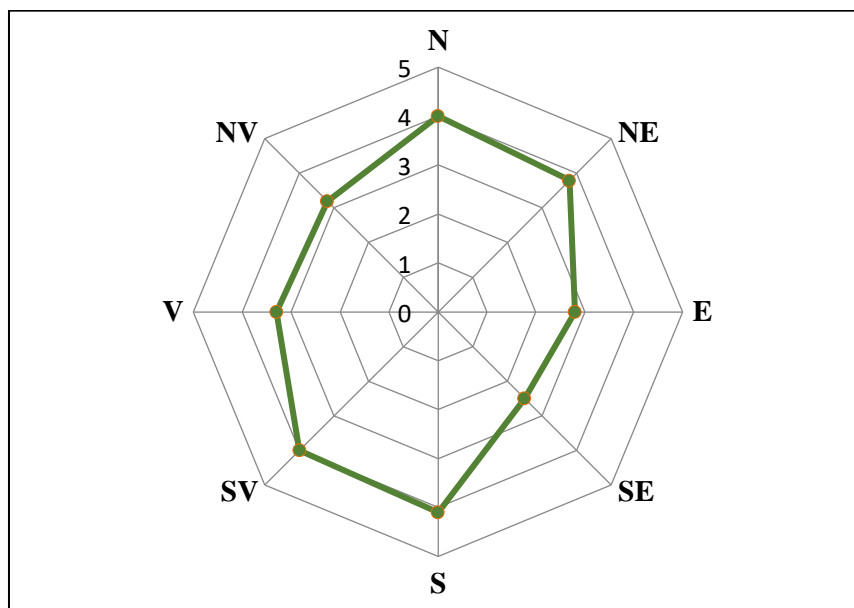


Figure 1. Average wind speed by cardinal directions

In the Miersigului Plain, water erosion manifests itself in two forms:



- Surface water erosion, recorded on sloping relief units, is manifested during torrential rains when the soil cannot store the entire amount of water, the surplus drains to the soil surface causing soil material from the top of the slope and its deposition at the bases of the slopes. Along with the soil material, the nutrients from the upper part of the soil profile are washed.
- Deep water erosion is less common (Pop G, 2004).

The erosion resistance of soils located on sloping relief units is given by the texture, the medium-textured soils having the highest resistance, due to the high-water stability. In the Crișurilor Plain, the excess humidity is manifested on an area of over 18,847 ha, occupied by the type of stagnosol. Representative areas are found in the Miersigului Plain - 3304.6 ha. The soil types found in the Miersigului Plain are presented in Table 1.:

Table 1. Soil types found in the Miersigului Plain (hectares)

Total surface	21496,6
Eutricambosols	934,7
Preluvosols	2339,9
Phaeozems	4639,4
Gleiosols	162,8
Alluvials	885,9
Solonetz	-
Luvosols	9211,1
Stagnosols	3304,6
Vertisols	-
Planosols	-

Dominant soil characteristics:

- texture: it is medium in the first 34 cm.
- soil reaction: it is moderately acidic on 0-55 cm.
- humus content: it is small at a depth 0-18 cm, the reserve on the depth of 0-50 cm is 137.9t / ha
- nitrogen content: it is very low
- Potassium content: small in all depth, poor supply
- phosphorus content: it is small at a depth of 0-18cm, poor supply

Vegetation. The analysis of the bioforms from the meadow afferent to the Miersigului Plain represents a fundamental element in the characterization of the flora, because it highlights some characteristics of the habitats and the influences exerted on them by various factors (O'Mara, 2012).

The results obtained after the analysis of the bioforms (table 2, figure 2) highlight the high share of the group of hemicryptophyte species (46.81%), they being the main components of the grass layer in the meadows. The high percentage of hemicryptophytes indicates the belonging of the researched area to the climate of temperate regions. Therophytes have a substantial participation (30.87%), their spread being correlated with the influences of the zoo-anthropic factor (expansion of agricultural crops and intensive grazing). A lower presence is observed in helohydatophytes (11.35%), which are closely related to the existence of accumulation lakes, collecting channels, ponds, swamps, excess moisture microdepressions and clogged collecting basins. Geophytes (5.57%) have a modest representation, vegetating in

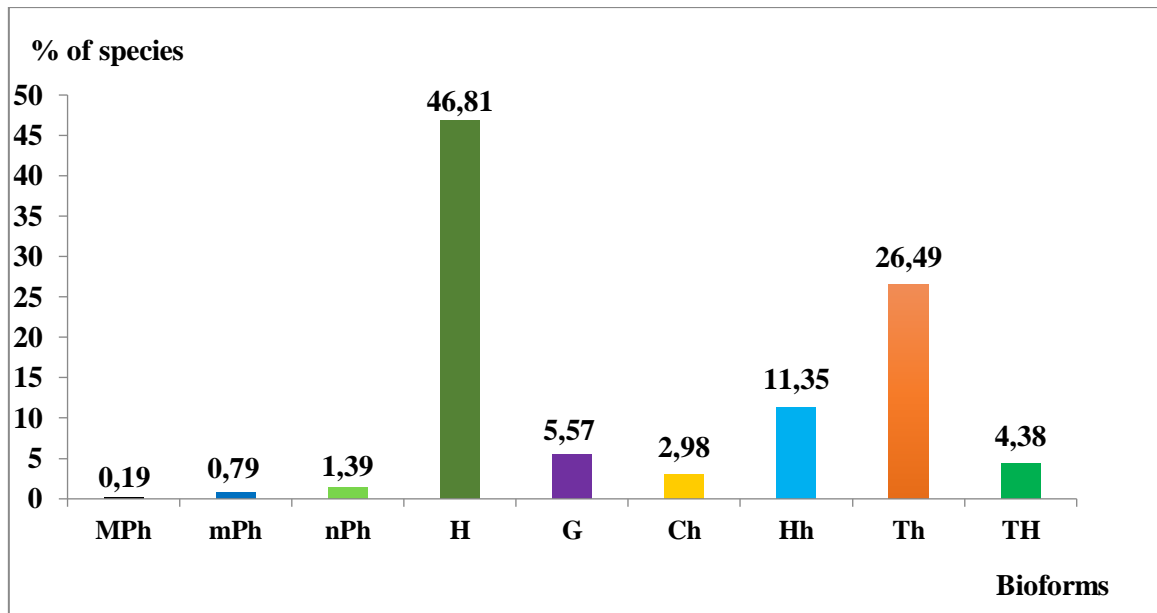


some meadows on which no maintenance works are performed (fertilization, weed removal, repeated mowing, control of weeds, over seeding). Phanerophytes (2.37%), imprint the physiognomy of the woody vegetation, with a very low existence in the studied area. Camephytes (2.98%) are poorly represented in the researched area.

Table 2. Bioform statistics

Bioforms	Ph			H	G	Ch	Hh	T		Total species
	MPh	mPh	nPh					Th	TH	
No. of species	1	4	7	235	28	15	57	133	22	502
%	0,19	0,79	1,39	46,81	5,57	2,98	11,35	26,49	4,38	100

Figure 2. The spectrum of bioforms (%)



The capitalization of the vegetal potential of this region was established by analyzing the plants by economic categories (Smit et al, 2008). The analysis of plants of forage importance identified a number of 97 species (Table 3)

Table 3. The number of species of forage importance

Nutritional value	No of species
Excellent nutritional value	4
Very good nutritional value	14
Good nutritional value	19
Moderate nutritional value	32
Poor nutritional value	28



DISCUSSION

The pedo-climatic conditions and the specific vegetation of the meadows, which we find in the Miersigului Plain, allowed the development of specialized zootechnical units for growing ruminants. From table 4, it is observed that the exploitation of sheep is dominating (88% -94%).

Table 4. Number of animals in farms from Miersigului Plain

Year	No. of cattle	No. of sheep	Nr. of goats	No. of pigs
2016	103	2791	0	77
2017	108	1905	26	46
2018	112	2024	26	68
2019	100	2015	105	36
2020	115	1714	95	23

In 2016 there were 2791 sheep belonging to 8 big farms. By 2020 only 4 farms remained, with a total of 1714 animals, but still representing the major branch of animal husbandry and agriculture in that area. Although the conditions of climate, soil and vegetation have remained relatively constant over the last 5 years, there has been a decrease in the number of sheep heads exploited. This is explained by the relocation of some zootechnical units in the area (independent of environmental factors)

CONCLUSIONS

- Miersigului Plain is located in North-West of Romania.
- It is a plain with an altitude between 100 and 170 m.
- The climate is temperate-continental, with an average annual temperature of 10.5°C.
- The area is made up of luvisols, preluvisols and stagnosols, which allowed the development of a vegetation specific to the meadows.
- Correlated with the soil, temperature and vegetation characteristics of the Miersigului Plain, people from that area are involved especially in sheep breeding.

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**DETERMINATION OF OPTIMUM PARAMETERS IN STARTER CULTURE
SELECTION IN KASHAR CHEESE PRODUCTION**

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Abstract

Kashar cheese is smooth, dry and yellowish crusted, homogeneous, sharp and slightly salty semi-hard cheese variety. Starter culture used in the production of Kashar cheese, in addition to ensuring the acidity of the cheese curd to the acidity of processing, develops the desired structural and sensory properties in accordance with the expectations of the consumer and manufacturer. In this study, Kashar cheese production was carried out with 6 (C1-C6) different commercial starter cultures used in the production of Kashar cheese and sold for sale in the market. The pre-activation acidity (pH) of the used cheese cultures and the acidity developments of the cultures in the milk to be processed for cheese were followed up to the curd processing acidity. Before the starter cultures were used in production, the morphological structures of the lactic acid bacteria were also examined under the microscope. Fat %, fat-free dry matter % and protein % values were determined in whey. The proteolysis values were examined in Kashar cheese samples after production, as well as the burning test and the melting test were performed.

In research, the specific total lactic acid bacteria numbers of the culture were determined to be 10^8 - 10^{11} cfu g⁻¹. It was found that the sample with the lowest acidity development during the pre-activation of cultures was the C5 sample with the fastest acidity development in the process, while the C2 sample was the fastest sample during the pre-activation, but it did not provide the desired acidity development in the process. It was determined that the cheese with the lowest degree of proteolysis was the Kashar cheese made with the C5 culture, and the cheeses with the shortest melting time were C5 and C6. The Kashar cheese sample, which gave the best values in the burning test result, was C6. As a result of the study, it was found that C5 culture, which is active at the stage of culture development, will not advance the ripening stage quickly in Kashar cheese due to the low degree of proteolysis. Its melting ability is good, and it can be a culture for the use of producers with optimum acidity progression as the time to reach the desired acidity in the process. C3 and C6 cultures showed similar acidity improvements in pre-activation and production stage. As a result, it should not be considered that the culture that showing rapid acidity progress during production, based only on the results of pre-activation, may be the most suitable culture for Kashar cheese.



BOVER-GE – MYCOPESTICEDES FOR THE CONTROL BROWN MARMORATED STINK BUG - *HALYOMORPHA HALYS* (STÅL) (HEMIPTERA: PENTATOMIDAE)

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Abstract

The brown marmorated stink bug, *Halyomorpha halys* (Stål) (Hemiptera: Pentatomidae) (BMSB) is an exotic invasive insect which has spread extensively and established in new area of Black sea regions of Georgia and has become a key pest in many crops in West Georgia (Lee et al., 2013). At present BMSB is very active and characterized by the massive increase and formation of foci in agricultural and urban landscapes of Western Georgia, and damage economical important product such hazelnuts. Georgia is the third hazelnut-producing country worldwide after Turkey and Italy (FAOSTAT 2017).

In 2019, proposed product, mycopesticide, trade mark- Bover-Ge™, was registered by National food agency (NFA) of Georgia as a biopesticides. Bioformulation are based on local strain of entomopathogenic fungus *Beauveria bassiana* (Bb007), isolated from soil of High Mountain Caucasus region, gave a unique cultural number (code) - IMI # 501799, and kept in CABI Genetic Recourse Collection.

The aim of our study was to tested Bover-Ge on the *H. halys* and evaluate their potential for the its control.

The adults target insects - *H.halys* performed for the bioassay and treated with suspension of Bover-Ge with tree concentration 1×10^6 ; 1×10^7 and 1×10^8 conidia ml⁻¹.

The infected adults were counted 3,5,7,9 days after treatment. All dead specimens showed symptoms of infection with fungi developing on the surface and into adult bodies. Significant differences were observed between concentrations. At the end of experiment (9 days), cumulative mortality at high concentration (1×10^8 conidia/ml) reached 93.3% and 53.3% on 9 days, whereas at concentrations of 1×10^7 and 1×10^6 ; conidia/ml the mortality range d 80-33.3% on 7 day and 46.6-13.3%73.3 on 5 Day. Also, established post migration efficacy on the migration stage was tested and it achieved 64,6%.

Keywords: Bover-Ge, mycopesticedes, *Halyomorpha halys*, control

INTRODUCTION

Brown Marmorated Stink Bug

The brown marmorated stink bug (BMSB), *Halyomorpha halys*, is native for East Asia and distributed throughout the US, Canada, Europe and become a severe invasive agricultural pest (Lee et al., 2015; Wiman et al., 2014). BMSB is highly polyphagous, it feeds on over 170 host plants, many of them are of agricultural importance, such as fruit, vegetables, row crops, and ornamentals. It is also a structural pest, with high reproductive output, potentially enabling its spread and success in invaded regions, as large populations invade houses, trying



to overwinter. BMSB is capable of long-distance flight (Hoebeke and Carter 2003; Leskey et al., 2012).

Following its first detection in 2015, *H. halys* has spread extensively and established in new areas of Black sea regions and has become a key pest in many crops in West Georgia (Lee et al., 2013). At present BMSB is very active and characterized by the massive increase and formation of foci in agricultural and urban landscapes of Western Georgia, where situation is quite alarming. Georgia is the third hazelnut-producing country worldwide after Turkey and Italy (FAOSTAT 2017). Nowadays, due to the lack of specific natural enemies, population density of this insect is not downregulated.

Entomopathogenic fungi

Entomopathogenic fungi (EPF) are important natural enemies of many harmful pest species, providing important ecosystem services. They possess many positive attributes including broad host range, but restriction to and thus safety for non-target organisms and the environment; ease of mass-production and application; rapid host mortality; and potential for recycling in the environment. The EPF-based bioinsecticides have significant advantages over other entomopathogenic microorganisms, because of their ability to actively penetrate directly through natural openings and the cuticle of insects; they do not have to be eaten unlike viruses or bacteria. They infect harmful pests of 48 families from orders Hemiptera, Coleoptera, Lepidoptera, Thysanoptera, Orthoptera Entomopathogenic fungi *Beauveria bassiana* (Bals.-Criv.) Vuill. (Hypocreales: Cordycipitaceae), are ubiquitous organisms that are pathogenic to various arthropod pests (Leskey et al., 2015; Wiman et al., 2014; Hoebeke and Carter 2003; Leskey et al., 2012; Lee et al., 2013; Gapon 2016; Sugie et al., 1996; Zhang et al., 2013).

Bover-Ge

In 2019, proposed product, mycopesticide, trade mark- Bover-Ge™, was registered by National food agency (NFA) of Georgia as a biopesticides. Bioformulation are based on local strain of entomopathogenic fungus *Beauveria bassiana*, isolated from soil of high mountain Caucasus region, gave a unique cultural number (code) - IMI # 501799, and kept in CABI Genetic Recourse Collection.

The aim of our study was to tested Bover-Ge on the *H. halys* in Georgia and evaluate their potential for the control.

MATERIALS AND METHODS

Insect collection

Overwintering adult *H.halys* were collected from gardens and hazelnut orchards from different regions of West Georgia (Samegrelo, Guria, Imereti) during 2020-2021. *H.halys* were transferred in the laboratory and kept a few days at room temperature 22–23°C, 60–65% RH, 16 h light (L):8 h dark (D) photoperiod before the bioassay. As a food source for the insects, fresh apples and carrots were used.

Bioassay

The adults target insects - *H.halys* performed for the bioassay and treated with suspension of Bover-Ge with tree concentration, based on *Beauveria bassiana* (Bb007 strain). Formulations contained 12.5 % fungal conidia and as active ingredients 87.5% inert material (2.2×10^{10} conidia g⁻¹). The formulation was diluted to deliver the desired test concentrations 1×10^6 ; 1×10^7 and 1×10^8 conidia ml⁻¹. For control treatments normal, tap



water were used. *H.halys* were placed in a glass jar with carrot and corn and kept at room temperature $\sim 23^{\circ}\text{C}$ (day) / $18 \sim ^{\circ}\text{C}$ (night), RH with 14/10 light/dark regime. Dead or infected larvae with fungal symptoms were removed and placed in moister environment for development of conidia. Mortality of larvae was recorded on 3-18 days after treatment (Copping 1998).

Data analysis

The recorded mortality data were corrected for mortality in the control group using the Abbott equation (Abbot, 1925). In order to calculate significant differences between doses and exposure times, a one-way analysis of variance (ANOVA) using the SPSS 23.0 software package at $P < 0.01$ and $P < 0.05$ levels was carried out.

RESULTS & DISCUSSION

Experimental data showed that Bover-Ge in all tested concentrations were able to kill *H. halys* (Figure 1). The infected adults were counted 3,5,7,9 days after treatment. All dead specimens showed symptoms of infection with fungi developing on the surface and into adult bodies (Figure 2).

Significant differences were observed between concentrations. At the end of experiment (9 days), cumulative mortality at high concentration (1×10^8 conidia/ml) reached 93.3% and 53.3%, whereas at concentrations of 1×10^7 and 1×10^6 ; conidia/ml the mortality range d 80-33.3% on 7 day and 46.6-13.3%73.3 on 5 Day. (Figure 1).

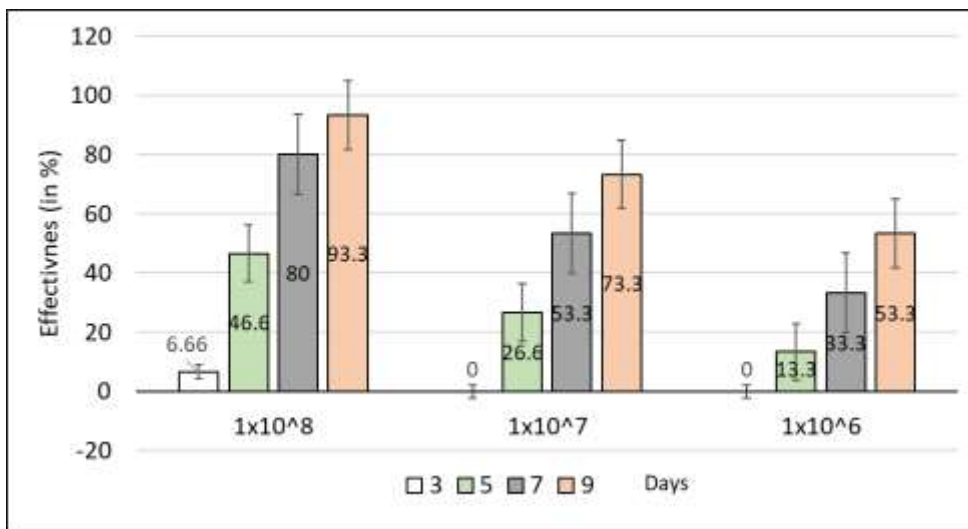


Figure1. Efficiencies of Bover-Ge on the adult *H.halys* according to days in laboratory

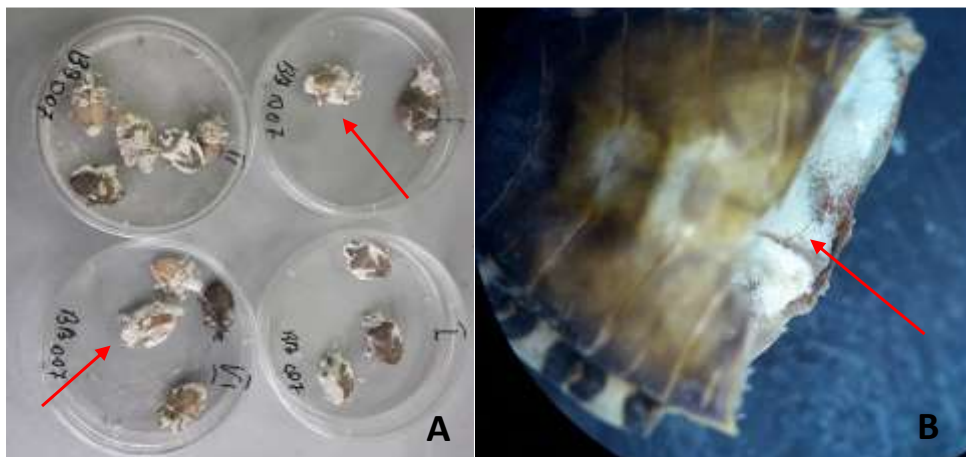


Figure 2. Efficiencies Bover-Ge on the adult *H. halys* in laboratory

The susceptibility of *H. halys* to a particular concentration is a key factor for LC50 levels. The concentration required to cause 50% mortality of *H. halys* for different are presented in Figure 1. All three concentration are pathogenic with a mean mortality ranging from 33.3 to 93.3% ($P \leq 0.05$). The highest percentage of mortality was observed 9 days after treatment. Bover-Ge in high concentration 1×10^8 conidia/ml significantly more virulent than the other tested concentrations.

One-way ANOVA analysis shows that the average mortality was significantly ($P \leq 0.05$) affected by exposure of *H. halys* insects to different concentrations of Bover-Ge suspensions. Also to establish post migration efficacy of mycopesticides, Bover-Ge was tested on the migration stage of *H. halys* adults, and mortality reached 64.6% (Table 1).

Table 1. Effectiveness of Bover-Ge on the post migration forms of *H. halys*

Variation	Data of insects in %		C (variation coefficient)
	Alive	Dead	
Control (no treatment)	93,2	6,8	± 8,9
Control (With water)	62,0	38,0	± 42,51
Bover-Ge (1×10^8 conidia ml^{-1})	35,4	64,6	± 11,8

Bover-Ge was tested in field condition. For established its effectiveness in experiment were used 4 entomopathogenic fungal strains from local collection (MB103, MB 34) and from Agricultural Research Service Collection of Entomopathogenic fungal cultures (ARSEF 8318, ARSEF 8319) for comparison. As a control Tween 0.01%, water-treated and untreated options were used. MB103 strains isolated from the population of *H. halys* showed the highest results - 86%, in case of Bover-Ge 85% and 60%, 75% and 65% in case of ARSEF 8318, ARSEF 8319 and MB 34 respectively (Table 2).



Table 2. Efficiencies of the Bover-Ge and other entomopathogenic strains against adult *H. halys*

Pesticides/Isolates	Concentration	repetition	Number of insects	Efficiency %
Bover-Ge	1x10 ⁸	3	60	85
MB103 (<i>Beauveria H.halys</i> , Zugdidi)	1x10 ⁸	3	60	86
ARSEF 8318 (<i>Beauveria Bassiana</i>)	1x10 ⁸	3	60	60
ARSEF 8319 (<i>Metarhizium anizopliae</i>)	1x10 ⁸	3	60	75
MB 34 (<i>Metarhizium anizopliae</i>)	1x10 ⁸	3	60	65
C- Tween 0.01%	0	3	60	7
C- water	0	3	60	3
C- non treated	0	3	60	0

CONCLUSION

These bioassay results confirm that significant mortality of *H.halys* can occur following a spray treatment of the Bb007 strain of *B. bassiana* found in the commercial fungal-based product Bover-Ge.

At 9 days after treatment with the Bb007 strain applied at a concentration of 1×10⁸ conidia/ml, 93.3% mortality was obtained for adults.

The infected adults were counted 3,5,7,9 days after treatment. All dead specimens showed symptoms of infection with fungi developing on the surface and into adult bodies (Figure 2). Significant differences were observed between concentrations. At the end of experiment (9 days), cumulative mortality at high concentration (1×10⁸ conidia/ml) reached 93.3% and 53.3%, whereas at concentrations of 1×10⁷ and 1×10⁶; conidia/ml the mortality range d 80-33.3% on 7 day and 46.6-13.3%73.3 on 5 Day.

Based on these results and those from our previous research, the adult stages of *H.halys* are impacted by treatment with the Bb007 strain. In addition, the immature stage is more sensitive to infection than the adults, therefore, growers may want to specifically target that stage to maximize reduction of the pest population. However, although these results show promise, trials are still needed to fully assess the efficacy of these fungal formulations under different environmental field conditions. In general, many comparisons of results from lab-based and field trials on the lethality of various chemical pesticides to *H.halys* have shown that mortality is considerably less in the field than in the laboratory.

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GÜRCİSTAN VE ERMENİSTAN ARASINDAKİ KÜLTÜREL İLİŞKİLER

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Özet

Ermeniler genellikle kılık değiştirmiş oldukları gürcü topraklarını “kardeşler” kılığında ele geçirmeye çalışıyorlar. Bu an, tarihi bilimler Adayı Tamara Vardanyan'ın “Noravank” Bilim ve Eğitim Vakfı tarafından düzenlenen yuvarlak masada dile getirdiği görüşte böyle bir nokta açıkça görülmektedir. Vardanyan konuşmasında ermenilerin Tiflis'i sevdiğini, ancak gürcüleri sevmediğini kaydediyor. Ermenilerin her alanda kendilerini gürcülerle kıyasladıkları, gürcü topraklarını ele geçirmeye çalıştıkları, eğitim adı altında bir “Büyük Ermenistan” hayalini gerçekleştirmeye çalıştıkları, eski Ermenistan Cumhurbaşkanı Serj Sarkisyan'ın görüşünden anlaşılmaktadır. Sarkisyan konuşmasında ermenilere gürcülerle sürekli rekabetin önemini aşıladı ve bunun ermeni çocuklarına bir vasiyet olduğunu belirtti. Gürcistan'da bir ermeni diasporası var. Bu bağlamda, örneğin Ermenistan'ın yardımıyla Gürcistan'daki Ermeni Apostolik Kilisesi'nin Piskoposluğu'na bağlı olarak faaliyet gösteren “Ayartun” adlı “Kültür, Eğitim ve Gençlik Merkezi” başkentte faaliyetlerine devam etti. Görünüşe göre bu merkezin asıl amacı, çocuklara ermeni ideolojisini körü körüne tanıtmaktır. İlginç bir nokta, ebeveynlerin çocuklarını ermeni okullarına göndermeleri gerektiğidir. Bu açıdan bakıldığında, Gürcistan'daki ermenilerin yürüttüğü her şeyin ermenileştirilmesi politikası, merkez müdürü Levon Çidilyan'ın görüşünden de açıktır. O, merkezin asıl amacının her şeyi ermenileştirmek olduğunu belirtiyor. Ermeniler, kültür merkezlerini sinsî niyetleri için suistimal etmekten çekinmiyorlar. Levon Çidilyan, ermeni etnosunun asimile edildiğine herkesi ikna etmeye çalışıyor. Ona göre gürcülerin ermeni soyadlarını aldıkları iddia ediliyor. Ancak Çidilyan'ın görüşünü dinleyen gazeteci, yaptığı bir röportajda aslında yanıldığını söyledi. Ermeni “bilim adamları”nın sahte eserler yazdığını, ermeni “tarihçileri”n sahte röportajlar verdiğini, ancak çoğu durumda bu röportajlar sırasında gerçeği kendi dillerinde farkında olmadan itiraf ettiklerini de belirtmek gerekir. Örneğin, Ermeni Bilimler Akademisi Tarih Enstitüsü araştırmacısı ermeni tarihçi Harutyun Hudanyan'ın gürcü haber ajansı Sputnik'e verdiği röportaj tesadüf olarak kabul edilemez. Görüşme sonucunda Harutyun Hudanyan'ın ermeni-gürcü ilişkileri tarihinin çeşitli yönlerini araştıran Ermenistan'ın Gürcistan'a karşı tarihsel olarak büyük hatalar yaptığını kaçınılmaz olarak kabul ettiği ortaya çıktı. Harutyun Hudanyan'ın görüşünden, sahtekarlıkla adından söz ettiren ermeni tarihçi Mesrop Maştos'un, iddiaya göre gürcü dilini bilmeden gürcüler için bir alfabe oluşturduğu anlaşılmaktadır. Görünüşe göre, onların varlığı sırasında, Mesrop, kendisi gibi sahtekarlık yapan öğrencisi Koryunu tarafından ifşa edildi. Böylece Koryun, Mesrop'un aslında gürcüce bilmediğini itiraf etti. Bu açıdan bakıldığında Mesrop'un öğrencisi Koryu'nun gürcü alfabesini oluşturması mümkün değildir.

Anahtar Kelimeler: Gürcistan, Gürcü kültürü, Ermenistan, ermeni diasporası, Ermeni Bilimler Akademisi, ermeni bilim adamları, ermeni sahtekarlığı, tarihin sahteleştirilmesi



CULTURAL RELATIONS BETWEEN GEORGIA AND ARMENIA

Summary

As a rule, armenians try to seize the georgian lands where they live, calling themselves “brothers”. Such a point is clearly seen in the opinion expressed by the armenian candidate of historical sciences Tamara Vardanyan at the table organized by the “Noravank” scientific-educational foundation. During his speech, Vardanyan noted that armenians love Tbilisi but do not love Georgians. It is obvious from the opinion of former Armenian President Serzh Sargsyan that armenians compare themselves with georgians in all spheres, try to seize georgian territories, try to realize the dream of a “Greater Armenia” under the guise of education. During his speech, Sargsyan instilled in armenians the importance of constant competition with georgians, noting that this is a testament to armenian children. There is an armenian diaspora in Georgia. In this regard, the “Culture, Education and Youth Center” called “Ayartun” operating under the Diocese of the Armenian Apostolic Church in Georgia with the help of Armenia, for example, continued its activities in the capital. Apparently, the main purpose of this center was to blindly introduce armenian ideology to children. An interesting point is that parents are required to send their children to armenian schools. From this point of view, the policy of armenianization of armenians in Georgia is also clear from the opinion of the director of the center Levon Chidilyan. He notes that the main goal of the center is to armenianize everything. Armenians do not hesitate to abuse cultural centers for their insidious intentions. Levon Chidilyan tries to convince everyone that the armenian ethnos is being assimilated. According to him, georgians allegedly take armenian surnames. However, the journalist, who listened to Chidilyan's opinion, said in an interview that he was in fact wrong. It should also be noted that armenian “scientists” write fake works, armenian “historians” give false interviews, but in most cases during these interviews they often admit the truth in their own language without realizing it. For example, the interview of the armenian historian, researcher of the Institute of History of the Armenian Academy of Sciences Harutyun Khudanyan to the Georgian news agency Sputnik cannot be considered accidental. As a result of the interview, it became clear that Harutyun Khudanyan, researching various aspects of the history of armenian-georgian relations, inevitably admits that Armenia has historically made great mistakes against Georgia. It is clear from Harutyun Khudanyan's opinion that the armenian historian Mesrop Mashtos, who made a name for himself by fraud, allegedly created an alphabet for georgians without knowing the georgian language. Apparently, during their existence, Mesrop was exposed by his student Koryunu, who, like him, was engaged in fraud. Thus, Koryun admitted that Mesrop did not actually know georgian. From this point of view, it is impossible for Mesrop's student Koryu to create the georgian alphabet.

Keywords: Georgia, Georgian culture, Armenia, armenian diaspora, Armenian Academy of Sciences, historical falsification, armenian falsification, armenian scientists

2010'un sonlarında - 2011'in başlarında, Gürcistan ve Ermenistan'ın eski cumhurbaşkanlarının çabaları sayesinde ermeni-gürcü okulları arasında matematik, fizik ve bilgisayar bilimlerinde bir olimpiyat düzenlendi [1]. Olimpiyatlara 30'dan fazla ülke katıldı. Gürcü takımı gürcüler



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tarafından temsil edildi ve ermeni takımı ülkenin farklı bölgelerinden gelen okul çocukları tarafından temsil edildi. Okullar arası olimpiyat eski Devlet Başkanları Miheil Saakaşvili ve Serj Sarkisyanın ortak katılımıyla gerçekleştirildi. Her iki ülkenin liderleri yarışmanın kazananlarına ödülleri takdim ederken, “En özgün çözüm” adaylığında verilen ödül katılımcıları cesaretlendirdi. O zamanlar olimpiyatların temel amacı bilim ve eğitim alanındaki işbirliğini güçlendirmektir, ama aslında Ermenistan'ın amacı değildir. Ermenilerin her alanda kendilerini gürcülerle kıyasladıkları, gürcü topraklarını ele geçirmeye çalıştıkları, eğitim adı altında bir “Büyük Ermenistan” hayalini gerçekleştirmeye çalıştıkları, eski Ermenistan Cumhurbaşkanı Serj Sarkisyan'ın görüşünden anlaşılmaktadır. Sarkisyan ermenilere gürcülerle sürekli rekabetin önemini aşıyor [1]:

“Edebiyat alanında yarıştık. Kimin tiyatrosunun daha eski, daha iyi olduğunu ve kimin futbol ya da satranç oynamakta daha iyi olduğunu tartıştık. Yarışmamızın temeli buydu ve bu çocuklarımıza bırakabileceğimiz çok iyi bir vasiyet”.

Eski Gürcistan Cumhurbaşkanı Miheil Saakaşvili [1] o sırada yaptığı konuşmada, olimpiyatların uygulanmasından ve sonuçlarından duyduğu memnuniyeti dile getirdi. Fikrini şu şekilde ifade etti:

“Bölgedeki bu iki ülkenin her zaman birbirine yakın olacağına ve geleceğimizi el ele düşüneceğimize eminim. Çünkü geleceğimizi iki halkımızın dostluğu belirler”.

Unutulmamalıdır ki Gürcistan'da bir ermeni diasporası vardır. Bu bağlamda, örneğin Ermenistan'ın yardımıyla Gürcistan'daki Ermeni Apostolik Kilisesi'nin Piskoposluğuna bağlı olarak faaliyet gösteren “Ayartun” [2] adlı “Kültür, Eğitim ve Gençlik Merkezi”, örneğin başkentte faaliyetlerini sürdürmüştür. Görünüşe göre bu merkezin asıl amacı, çocuklara ermeni ideolojisini körü körüne tanıtmaktır. Ermeniler iddiaya göre şehrin gelişimine katkılarında bahsediyorlar, şehirde geziler düzenliyorlar, politikacılar ve tanınmış kişilerle buluşuyorlar, bugünü ve geleceği tartışıyorlar. Merkezde ayrıca bir anaokulu bulunmaktadır. İlginç bir nokta, ebeveynlerin çocuklarını ermeni okullarına göndermeleri gerektiğidir. İlginç olan şu ki, ebeveynlerin önünde çocukların Ermeni okuluna transferine ilişkin bir şart konulmaktadır. Bu açıdan bakıldığında, Gürcistan'daki ermenilerin yürüttüğü her şeyin ermenileştirilmesi politikası, merkez müdürü [2] Levon Chidilyan'ın görüşünden de açıktır. Merkez asıl amacının her şeyi ermenileştirmek olduğunu belirtiyor. Levon bunu şöyle ifade ediyor:

“Tiflis'teki ermenilerin en büyük sorunu “ermenî kültürü”nün taşıyıcısı olmamalarıdır. Daha önce kilise, ermeni toplumunda birleştirici bir rol oynadı. Büyük bir ünü vardı”.

Levon Chidilyan'ın açıklamasından açıkça anlaşılıyor ki, ermeniler sadece kiliseyi değil, kültür merkezlerini de sinsi niyetleri için suistimal etmekten çekinmiyorlar. Chidilyan herkesi ermeni etnosunun asimile edildiğine ikna etmeye çalışıyor. Ona göre gürcülerin ermeni soyadlarını aldıkları iddia ediliyor. O röportajdan böyle bir noktaya bakalım. Levon Chidilyan'ı dinleyen gazeteci, bir röportajında yanıldığını söylüyor:



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Gelecek perspektifi nedir? Asimilasyon tehlikesinden bahsediyorsunuz. Anne babaların çocuklarını ermeni okullarına göndermesini şart koşuyorsunuz. Bu yaklaşım ne ölçüde uygundur? Sorun, ermeni nüfuslu kompakt bölgelerde farklı görünüyor.

Röportajdan da anlaşılacağı üzere ermeniler çocukların geleceğiyle pek ilgilenmiyorlar. Çocuklarını sadece ermeni ruhuyla yetiştirerek, işgal amaçları için ellerinde potansiyel silahlara dönüştürmeye çalışıyorlar.

Bir başka nokta da ermenilerin bilerek Gürcistan'da ermenice öğretmeyi tercih ettiklerini kanıtıyor. Nitekim 2011 yılına bakacak olursak, Ermenistan eski Eğitim ve Bilim Bakanı [3] Armen Aşotyan, Gürcistan'daki okullarda ermeni dili konusuna yönelik saat sayısının az olduğunu ve bu konunun öğretiminin haftada 10 saate kadar artırılacağını kaydetti. O dönemde Armen Aşotyan, Gürcistan'daki ermeni cemaatinin isteği üzerine gürcüce ders kitaplarını ermeniceye çevirerek tahrif etmeye çalışmıştı.

Bugün ermeni “bilim adamları”nın sahte eserler yazdığını, ermeni “tarihçileri”n sahte röportajlar verdiğini, ancak çoğu durumda bu röportajlar sırasında gerçeği kendi dillerinde farkında olmadan itiraf ettiklerini belirtmek gerekir. Örneğin, Ermeni Bilimler Akademisi Tarih Enstitüsü araştırmacısı ermeni tarihçi Harutyun Hudanyan'ın [4] gürcü haber ajansı Sputnik'e verdiği röportaj tesadüf olarak kabul edilemez. Görüşme sonucunda Harutyun Hudanyan'ın ermeni-gürcü ilişkileri tarihinin çeşitli yönlerini araştıran Ermenistan'ın Gürcistan'a karşı tarihsel olarak büyük hatalar yaptığını kaçınılmaz olarak kabul ettiği ortaya çıktı. Bu röportajı size sunuyoruz:

Ermenistan ile Gürcistan arasındaki asırlık komşuluk ilişkileri ne ölçüde kardeşlik olarak nitelendirilebilir?

İnsanlık tarihinde komşu milletlerin ve ülkelerin yüzyıllar boyunca bir arada var oldukları dönemlerde, ortak bir düşmana karşı hemen her zaman birlikte hareket edebildiklerini, ayrıca yakın tarihi ve kültürel bağları ve birçok karışık evlilikleri olduğunu bilmiyorum. Bundan bahsetmişken, elbette kabul etmeliyiz ki, ne yazık ki Ermenistan ve Gürcistan ilişkileri tarihinde siyasi elitimizin bazen trajik sonuçlara yol açan hatalar yaptığı anlar olmuştur.

Gürcü alfabesinin kökeni konusunda ermeniler ve gürcüler arasında bitmeyen tartışmayı nasıl değerlendiriyorsunuz? Her iki taraftaki tarihçilerin görüşleri ne kadar bilimsel?

Tarih her zaman şahsiyetler tarafından yazılır ama bu yazılanların gerçeğe uymadığı veya gerçeğe yakın olmadığı anlamına gelmez. Gürcü alfabesine gelince, önce konuyu belirlememiz gerekiyor. Bu durumda hangi alfabeyi kastediyoruz? Gürcülerin üç alfabeti vardı. Bilimsel tartışma bunlardan ilki hakkındadır - Asomtavruli alfabesi. Ermeni alfabesinin yaratıcısı Mesrop Maştos'un öğrencisi olan ermeni tarihçi Koryu'nun bazı gerçekleri ve ana kaynağı elimizde. Bir tarihçi olarak gürcü alfabesinin oluşumuyla ilgili ana kaynaklardan birinin Koryun alfabesi olduğunu düşünüyorum. Ermeni tarihçi, eserinde gürcü çarının Maştos'u davet ettiğini ve ondan gürcüler için bir alfabe yaratmasını istediğini not



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eder. Maştos, Koryu'nun dediği gibi gürcüce bilmiyordu. Böylece Cak adında birini buldu ve birlikte gürcü dilini yarattılar. Etnik kökenleri nedeniyle ikincisinin kim olduğu açık değildir. Fakat onun Kartvel kökenli soyları, yalnızca halkı için alfabe yaratabilecek deneyimli bir Maştos'un yardımıyla hayal edilebilir. Ne yazık ki, diğer ana kaynakları karşılaştırabileceğimiz ve analiz edebileceğimiz başka ana kaynaklara sahip değiliz.

Öğrencilerin ve gençlerin Gürcistan'daki Ermenistan ve Ermenistan'daki Gürcistan tarihi hakkında bilgi düzeylerini nasıl değerlendiriyorsunuz?

Benim gözlemlerime göre ermeniler ve gürcüler, özellikle gençler birbirlerinin tarihini ve kültürünü bilmiyorlar, bu yüzden üzerinde düşünmek ve somut adımlar atmak gerekiyor. Özellikle SSCB'nin dağılmasından sonra Ermenistan'da neredeyse hiç genç gürcü alimi yoktu, bir elin parmaklarıyla sayılabilirler. Erivan'ın merkezinde, halka parkta ermeni-asur, ermeni-yahudi, ermeni yezidi ve ermeni-rus dostluğuna adanmış anıtlar var. Bir gün ermeni-gürcü dostluğunun anıtının olmamasının ne kadar üzücü olduğunu düşündüm.

Harutyun Hudanyan'ın görüşünden de anlaşılacağı üzere, tahrif ederek adından söz ettiren ermeni tarihçi Mesrop Maştos'un, gürcü dilini bilmeden gürcüler için bir alfabe oluşturduğu iddia ediliyor. Görünüşe göre, onların varlığı sırasında, Mesrop, kendisi gibi sahtekarlık yapan öğrencisi Koryunun tarafından ifşa edildi. Böylece Koryun, Mesrop'un aslında gürcüce bilmediğini itiraf etti. Bu açıdan bakıldığında Mesrop'un öğrencisi Koryu'nun gürcü alfabesini oluşturması mümkün değildir.

Ermenistan Cumhuriyeti Kültür Bakanlığı'nın Ermenistan'da kültür politikasının tanımlanmasından ve uygulanmasından sorumlu olduğu belirtilmelidir. Sadece sayısız diaspora değil, aynı zamanda Ermeni Apostolik Kilisesi de Kültür Bakanlığı'nın yurtdışında "kültürel ve sosyal faaliyetler" yapan kuruluşlarına bilinçli olarak yardım etmektedir [5].

Gürcistan'daki ermeni toplumu oraya yerleşerek ülkeyi ele geçirmeye çalışıyor. Ermeniler "kardeşler" gibi davranarak aslında onlardan nefret ediyorlar. "Noravank" İlim-Eğitim Vakfı'nın düzenlediği bir masada, Gürcistan'dan Erivan'a dönen ve ermenilerin devlet hayatına entegrasyonu konusunda araştırmalar yapan tarih bilimler adayı [6] Tamara Vardanyan'ın görüşünde böyle bir nokta açıkça görülmektedir:

"Gürcü ermenileri Tiflis'i seviyor ama gürcüleri sevmiyorlar. Onlar için şehir ve insanlar tamamen ayrıdır".

Tamara Vardanyan'a göre, hem ermenilerin devletin ekonomik, sosyal ve siyasi hayatına entegrasyon derecesinde hem de ermeni toplumunun kendisinde sorunlar var:

"Gürcistan'da ermenilerin kendi ülkelerinde kuaför, taksi şoförü veya kunduracı olarak çalıştığına dair bir klişe var".



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Tamara Vardanyana göre, *Gürcistan'da yaşayan ermenilerin çoğunun ülkeyi terk etmek ve geleceklerini burada görmek istediğini de sözlerine ekledi. Uzmana göre, Gürcistan'daki ermenilerin yabancı olduğunu gösteren tarihi hafıza onların durumunu karmaşıklştırıyor*”.

Tamara Vardanyan [6] şöyle devam ediyor:

“Gürcistan'daki ermeni toplumu çok zayıf. Hiçbir iç gücü, ekonomik veya politik seçkinleri yoktur. Gürcü kamu sektöründe ermeni ulusunun neredeyse hiç temsilcisi yok. Bir ermeninin gürcü kamu sektörüne girebilmesi için önce soyadını değiştirmesi gerekir”.

Görünüşe göre ermeni milliyetçileri Gürcistan'da iktidarı ele geçirmek için gürcü soyadlarını benimsiyor ve soyadlarının sonuna - şvili ve dze eklerini ekliyorlar [7].

Ermenistan'ın denize erişimi olmadığı belirtilmelidir. Gürcistan bir Karadeniz ülkesidir [8]. Ermenistan, Gürcistan'ı dış dünyayla iletişim kurmanın tek yolu olarak görüyor. Bugünkü Ermenistan'ın aslında tek etnikli bir ulus olmasına rağmen, dünyadaki diasporalarının sayısı ülke nüfusundan çok daha fazladır ve bu da ülkedeki ekonomik ve siyasi süreçler üzerinde önemli bir etkiye sahiptir. Gürcistan, Ermenistan'ın aksine çok uluslu bir devlettir. Etnik ermeniler burada yaklaşık yüzde 4,5 ile en büyük azınlık. Gürcistan, Türkiye ve Azerbaycan ile yakın dostane ilişkileri nedeniyle, kısa sürede işletmeye alınan Bakü-Tiflis-Kars demiryolu gibi Ermenistan'ın katılımı olmadan birçok ulaşım projesine katılmaktadır.

Gürcistan ve Ermenistan arasındaki ilişkiler, bir tür asimetri ve önceliklerdeki farklılıklar ile karakterizedir. Yani aslında Ermenistan için Gürcistan her şeyden önce onu dış dünyaya bağlayan en önemli transit ülkedir. Çünkü Ermenistan'ın kargosunun %75'i kendi topraklarından geçiyor. Gürcistan ayrıca ermeniler tarafından en çok ziyaret edilen turistik yerlerden biridir. Ermeniler Karadeniz kıyısında dinlenmek için oraya giderler. Ayrıca Gürcistan, ermeni müdahalesini içermeyen alternatif ulaşım koridorları inşa ediyor. Ermenistan, Gürcistan ve Rusya arasındaki gerilimden korkuyor, çünkü böyle bir durum Ermenistan'ın transit geçişine ve Rusya'dan gelen önemli bir doğalgaz boru hattının kesintisiz çalışmasına ciddi şekilde zarar verebilir. Ermenistan, İkinci Karabağ Savaşı sırasında aldığı ezici yenilgi ve ağır kayıplar ile iki kardeş ülke olan Azerbaycan ve Türkiye arasındaki yakın işbirliğinden de gerçekten endişe duymaktadır [8].

Cavaheti bölgesindeki [8] etnik ermeni sorunu konusunda tarafların farklı görüşlere sahip olduğu biliniyor. Dolayısıyla ermeni açısından temel sorun, etnik ermenilerin kendi dillerinde kaliteli eğitim almada güçlük çekmeleri ve ayrımcılık nedeniyle ekonomik ve siyasi potansiyellerini gerçekleştirememeleridir. Çifte vatandaşlık yasağı nedeniyle birçok ermeni, başka ülkelerde daha iyi fırsatlar bulacaklarını umarak Gürcistan vatandaşlığından çıkmak zorunda kalıyor. Böyle bir durumun Gürcistan'daki ermeni etnik azınlığın sayısını azalttığı iddia ediliyor.

Kültürel mirasla bağlantılı olarak ermenilerin tarihi ve kültürel anıtlarının tahrip edildiği vakaların olduğu unutulmamalıdır. Kural olarak, ermeniler kendilerine ait olmayan gürcü anıtlarına sahip çıkıyor ve onlara kendi adlarını vermeye çalışıyorlar. Böylece, Gürcistan'daki



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Ermeni Apostolik Kilisesi'nin piskoposluğu, utanmadan gürcü kiliseleri hakkında temelsiz iddialarda bulunuyor.

Asimilasyon korkusuyla gürcü toplumuyla bütünleşmemeyi seçen Cavaheti'deki ermeni toplumu, genellikle olası bir endişe kaynağı olarak görülüyor. Cavaheti'de yaşayan ermenilerin çoğunluğu 19. yüzyılda rus imparatorluğu tarafından yerleştirilen ermenilerin torunlarıdır ve bu nedenle gürcü kültür anıtlarının ermenilere ait olması imkansızdır.

Unutulmamalıdır ki Gürcistan'daki ermeni fobisinin [9] asıl suçlusu ermenilerdir. Ermeni fobisinin kaynağı şu nedenlerle açıklanabilir:

- 19. yüzyılda, köylerde ermeni cemaatinin yaşadığı için gürcüler köylerden Tiflis'e (Gürcistan) göç etmeye başladılar. Bu nedenle gürcüler ulusal kimliklerini ve kökenlerini korumaya çalışmışlardır,
- 20. yüzyılda ermeniler Gürcistan'a gelerek gürcüler pahasına konut ve iş bulmaya çalıştılar,
- Gürcüler diofizit mezhebine, ermeniler ise monofizit mezhebine mensuptur,
- Ermeniler gürcü tarihini ve kültürel mirasını tahrif ederek kendilerine bir isim yaptıkları için Gürcistan'da ermenilerin isimleri sıklıkla tahrif ediliyor,
- Ermeniler, tarihsel olarak güvenilir bir halk olmadıkları için kendi çıkarları için Gürcistan'a ihanet edebilirler,
- Cavaheti bölgesindeki ermeni milliyetçileri, ayrılıkçı faaliyetleri ve çeşitli provokasyonları nedeniyle gürcüler için gerçek bir tehdit oluşturmaktadır.

Ermeni milliyetçilerinin bir takım olumsuz özelliklerinin - gürcü tarihini kötüye kullanma ve tahrif etme girişimi olduğu bir sır değil. Gürcüler ise ermenilerden daha çalışkandır.

Ermenistan'ın aksine, Gürcistan'ın turizm sektörü [10] büyüyor. Hükümet tarafından alınan önlemler, ülkeye yapılan ziyaretlerin sayısını artırmayı, turizm altyapısını geliştirmeyi, hizmet kalitesini iyileştirmeyi, Gürcistan hakkında bilgileri artırmayı, iç ve dış pazarlarda pazarlama faaliyetlerini ve ayrıca turizm ürünlerini geliştirmeyi amaçlıyor. Turizm altyapısının geliştirilmesi hükümetin önceliklerinden biridir. Dört şehirde - Mestia, Gurcaani, Çoxatauri ve Tiflis'te turistler için bölgesel haritalar ve bu bölgelerdeki görülecek yerler hakkında bilgi panolarının kurulduğuna dikkat edilmelidir. 2017 yılında Şarap Yolu projesine 67 yeni şarap turizm tesisi eklenmiştir. Toplamda, bu projenin yararlanıcı sayısı 124 nesnedir. Turistlerin unutulmaz fotoğraflar çekmesini sağlayan kış tatil yerlerine ve turistik yerlere (Şaor Rezervuar, Şatili, Tetuldi, Mestiya, Bakuriani) fotoğraf çerçeveleri yerleştirildi. Sxaltubo merkezi parkı ve yakın alanlarda engelliler için uygun koşullar (tekerlekli sandalye, bebek arabası, panjur vb.) oluşturulmuştur. Bir diğer önemli konu da hizmet kalitesinin artırılmasıdır. Bu bağlamda Msheta-Mtianeti, Samtshe-Cavaheti, Sameqrelo-Yukarı Svaneti, İç ve Aşağı Kartli (Borçalı), Kaheti, Raça-Leçhumi, Aşağı Svaneti, Guria ve İmereti'de 1300 sektör temsilcisine yönelik kurslar düzenlendiğini belirtmek gerekir. Kurslar aşağıdaki konularda düzenlenmiştir: otel işletmeciliği ve hizmet becerileri, ingilizce dil kursları, pazarlama ve satış eğitimi, otel sorunları, sorun yönetimi, tarımsal turizm tesislerinin yönetimi ve işletilmesi, eğitim için öğretmenlerin eğitimi, otellerin eğitimi ve yönetim becerileri, şarap rehberleri.



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Gürcistan'da iç turizmi canlandırmak amacıyla “Gürcüstanı tanıyalım” projesi kapsamında yedi bölgede basın gezisi düzenlendi. Çeşitli il ve tatil köylerinde kış ve yaz sezonlarının açılışı düzenlendi, bir dizi etkinlik düzenlendi. Kaheti ve Acara bölgelerinde turizmi canlandırmak için indirim haftası düzenlenmesi önerildi. Ayrıca bölgesel turizm kaynaklarının ve ürünlerinin pazarlanmasına yönelik 21 adet basın gezisi düzenlenmiştir.

2017 yılında, Gürcistan Ulusal Turizm İdaresi [10] 23 uluslararası ve yerel turizm fuarına katıldı, 113 basın ve aile ziyaretine ev sahipliği yaptı (683 gazeteci ve 239 tur operatörü). Ayrıca Gürcistan Ulusal Turizm İdaresi, uluslararası çevrimiçi platform Tripadvisor aracılığıyla 10 ülkede (Polonya, İsrail, İtalya, Almanya, Rusya, Türkiye, Ukrayna, İsveç, Norveç, Danimarka) reklam kampanyaları yürütmüştür. 3 ülkede (ABD, İngiltere, Almanya) Expedia seyahat acentesi aracılığıyla kampanya, 19 ülkede kış onlayn pazarlama kampanyası (Almanya, İngiltere, İtalya, İsrail, Ukrayna, Polonya, Beyaz Rusya, Azerbaycan, Kazakistan, Rusya, Türkiye, Litvanya, Estonya, Kuveyt, Suudi Arabistan, Bahreyn, Birleşik Arap Emirlikleri) ve 14 ülkede (Almanya, İtalya, İsrail, Ukrayna, Polonya, Belarusya, Azerbaycan, Kazakistan, Rusya, Türkiye, Litvanya, Letonya ve Birleşik Arap Emirlikleri) çevrimiçi pazarlama kampanyaları gerçekleştirilmiştir. Ayrıca Discovery Channel, Euronews ve BBC gibi dünyanın önde gelen kanallarında reklam kampanyaları yürütülmüştür. Gürcistan Ulusal Turizm İdaresi'nin çabaları - şarap, eko, tarım, macera vb. turizmin gelişmesine yöneliktir. Gürcistan Ulusal Turizm İdaresi Kongre ve Sergi Bürosu'nun katılımıyla Avusturyalı Enited şirketi Gürcistan için ilk iş eylem planını geliştirdi. Uluslararası Kongre ve Kongre Birliği'nin derecelendirmesine göre, Gürcistan bölgede lider konumunda.

Seyahat ve Turizm Rekabet Edebilirlik Raporuna [10] göre, 2017 yılında Gürcistan 136 ülke arasında 70. sırada yer aldı. 2015 yılına kıyasla şu alanlarda ilerleme kaydedilmiştir: iş ortamı, güvenlik, BİT eğitimi, seyahat ve turizm önceliği, çevresel sürdürülebilirlik, hava taşımacılığı altyapısı, yüzey ve liman altyapısı, doğal kaynaklar, kültürel kaynaklar ve iş seyahati. Gürcistan uluslararası ilişkilerde de başarılı olmuştur. 2017 yılında Moldova, Ürdün ve Brezilya ile turizm alanında işbirliğine ilişkin iki anlaşma ve mutabakat zaptı imzalanmıştır. 2017 yılında, Gürcistan'ın İspanya Krallığı Olağanüstü ve Tam Yetkili Büyükelçisi Sayın Zurab Pololikaşvili, Ocak 2018'den itibaren Birleşmiş Milletler Dünya Turizm Örgütü 2018-2021 Genel Sekreteri olarak atanmıştır.

Popüler National Geographic dergisinde Gürcistan'ın özel bir sayısı yayınlandı. Ayrıca Gürcistan'ı dünyaya tanıtan, yedi milyonuncu yolcuyu alan başbakanın yer aldığı klip de ülke için önemli bir başarıydı. Bu video - Cannes Lions Uluslararası Film Festivalinde iki ödül kazandı - altın ve gümüş aslanlar. Buna ek olarak, ABD Dışişleri Bakanlığı Gürcistan'ı seyahat etmek için güvenli bir ülke olarak tanıdı. Gürcistan Ulusal Turizm İdaresi, en iyi yenilik, uluslararası düzeyde en iyi başarı ve en iyi hizmet kategorilerinde ödüller kazanmış, ayrıca GMTA işverenlerine bireysel ödüller verilmiştir.

2017 yılında Gürcistan, Dünya Turizm Örgütü'nün Üçüncü Avrupa - Asya Dağ Tatil Köyleri Konferansı, Gürcistan'daki Dokunmatik Dijital Konferansı ve 15. Eurovision Çocuk Şarkı Yarışması'nın yanı sıra Gürcistan'daki yabancı müzisyenler Aerosmith ve Gipsy Kings de dahil olmak üzere üst düzey etkinliklere ev sahipliği yaptı. Jamiroquai ve Kathy Melua konuk oldular. 2018 yılında Gürcistan'da Tiflis ve Gürcistan'ın bölgelerinde yapılacak olan kültür ve



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spor etkinliklerini içeren bir kayıt metre projesi kurulmuştur. Ünlü yıldızlar – İngiliz şarkıcı James Blunt, Led Zeppelin'in baş solisti Robert Plant ve diğerleri Georgia'daki etkinliğe davet edildi. Ocak 2019'da [10] Gürcistan, Dünya Turist Rehberleri Dernekleri Federasyonu'nun 18. Kongresine ev sahipliği yaptı. Kongre gündeminde profesyonel bir turist rehberinin günlük yaşamı için önemli olan birçok konu yer alıyor. Kongrede ayrıca bilinçlendirme seminerleri de düzenlendi.

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SOME REMARKS ON POSSIBLE NEW CLASSIFICATION OF CHAGATAY TURKIC (IN THE LIGHT OF 17TH AND POST-17TH CENTURY MANUSCRIPTS)

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Abstract

Researches of Chagatay Turkic go back almost as far as Turkology. After the second half of the 19th century Western and Russian orientalists started to study Chagatay Turkic. This period's foremost scholars are Ármin Vámbéry, Ilya Nikolayevich Berezin, Nikolay Ivanovich Ilminskiy, E. Marc Quatremère, Pavet de Couteille. After the second half of 20th century, Chagatay Turkic became a Turkology's special branch. We can consider Aleksandr Nikolayevich Samoylovich, Mehmet Fuat Köprülü, Aleksandr Mihaylovich Scherback and János Eckmann as this period's important scholars. These scholars did investigate not only Chagatay Turkic's grammar but also they have different thoughts about where and how Chagatay Turkic existed. Many Chagatay Turkic dictionaries were published in the process. But these theories, investigations and dictionaries were generally created under favor of pre-17th century's manuscripts. Undoubtedly this situation results from lack of manuscripts of post-17th century. The other words from the 1850's to the 1990's generally known 14th, 15th or 16th centuries' Chagatay Turkic manuscripts. So all Chagatay Turkic grammars and the other analyses were written within these limited knowledge. After the collapse of The Soviet Union in 1991 new findings about Chagatay Turkic (poets, letters, proses etc.) were started to be researched in the master or doctoral dissertations in different universities. So new grammatical features especially morphological and lexical ones were found in these studies. Some of above stated scholars classified Chagatay Turkic in different times and with different viewpoints: A.N. Samoylovich (1928), M.F. Köprülü (1945), A.M. Scherback (1953), J. Eckmann (1960). In the light of these findings the last classification of Chagatay Turkic was arranged 60 years ago. Based on progressing Turkology we need to consider and mention new findings of Chagatay Turkic. So this historical Turkic language should be revised and updated with new findings. This aim of this study to refers to two important facts. At first inconsistency of late period manuscripts of Chagatay Turkic with the ex-classifications and the second one are new findings and remarks through late period manuscripts of Chagatay Turkic.

Key words: Chagatay Turkic, manuscripts, classification

INTRODUCTION

Chagatay Turkic has become a work area over the last 150 years of the Western and Russian researchers. In this field we can consider foremost researchers are likely Ármin Vámbéry, Ilya Nikolayevich Berezin, Nikolay Ivanovich Ilminskiy, Pavet de Couteille, Aleksandr Nikolayevich Samoylovich, Mehmet Fuat Köprülü, Aleksandr Mihaylovich Scherback, János Eckmann. A. Vámbéry became one of the most important scholar in the Chagatay studies after he went on a journey to Khiva, Bukhara and Samarkhand. His first book about Chagatay Turkic was published in 1862 (*Abuska Csagatajtörök szágyűtemény*) (Eren 1998: 326, 327). After his work "*Čagataische Sprachstudien (1867)*" name of Chagatay gained popularity



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among the Western scholars. Undoubtedly his success came from becoming a polyglot. On the other hand E. Marc Quatremère (*Chrestomathie en turk oriental 1845*) and Pavet de Courteille (*Dictionnaire turk-oriental destiné principalement à faciliter la lecture des ouvrages de Bâber, d'Aboul-Gâzi et de Mir-Ali-Chir-Nevâi 1870*) preferred East-Turkic instead of Chagatay Turkic in their works.

At the present time Chagatay is preferred more than East-Turkic among the scholars. After 20th century Chagatay studies developed and in ongoing process there were mentioned some remarks about its historical classification. It appeared clearly that these historical classifications were generally based on grammatical, but not political and social factors. Among the modern studies of Chagatay Turkic the first classification belongs to A. M. Samoylovich (*K istorii literaturnogo sredneaziatsko-tureckogo yazıka, Mir-Ali-Şir, Sbornik k pyatisotletiyu so dnya rozdeniya, Leningrad 1928*). He views Chagatay just as Central Asian common language between 15th and 19th.

1. Karakhanid (or Hakaniye) Turkic: 11th-12th centuries
2. Kypchak-Oghuz Turkic: 13th-14th centuries
3. Chagatay Turkic: 15th-19th centuries
4. Uzbek: 20th century

According to Turkish scholar Mehmet Fuat Köprülü (*Çağatay Edebiyatı, İslâm Ansiklopedisi , III, İstanbul 1945*) Chagatay Turkic could be distinguished five periods and it must have existed in the 13th century.

1. Early Period of Chagatay Turkic (13th-14th centuries)
2. Before Classical Period of Chagatay (First half of 15th century)
3. Classical Chagatay (Second half of 15th century)
4. Continuation of Classical Chagatay Period (16th century)
5. Collapsed Period (17th-19th centuries)

This classification can be objected if we look from the viewpoints of linguistic, political and social process of Central Asian common language.

Chagatay Turkic was named as “Old Uzbek” by Soviet (Russian) Turkologist A. M. Scherback (*K istorii uzbekskogo literaturnogo yazıka drevnego perioda, AVAG k ego semidesyatipyatiletyu, Sbornik statey, Moskva 1953; Grammatika starouzbekskogo yazıka, Moskva-Leningrad, 1962*). According to him “Old Uzbek” separates three periods:

1. The First Period (10-13th)
2. The Second Period (14-17th)
3. The Third Period (17-18th) (*see also Eckmann 1988: xii*).

According to J. Eckmann who was one of the most important scholars in Turkology where is Chagatay Turkic in the Turkology discipline and its time line is an issue stems from the most



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important manuscripts has not been get yet. And also most of manuscripts that located all over the worlds' libraries can not be get easily. (Eckmann 1988: xiii).

J. Eckmann separates Islamic Central Asian languages three subgroups and in these groups Chagatay Turkic has three ramifications:

1. Karahanid (or Hakaniye) Turkic (11-13th)
2. Khorezmian Turkic (14th)
3. Chagatay Turkic (15th- Beginnig of 20th)

Cagatay Turkic was separated three periods in itself:

1. Pre-Classical Chagatay (Beginning of 15th century to Nevâyî's first Divân arranged in the 1465)
2. Classical Chagatay (1465-1600)
3. Post Classical Chagatay (1600-1921) (Eckmann 1988: xiii, xiv).

Along with these researches and classifications the first remarkable issue is a process in the 17th to 20th centuries that was dealt with entirely one period. Morphological, phonological and lexicological features are important components of classifications of any language. But any nation's history is full of mass migrations, existance of new governments and changing political borders. Thus languages evolve and branch after a while local (dialectological) language in that case. Dialectological grammar structures and the other grammar features reflect written works inherently. As seen, post-17th century textes of Chagatay Turkic two beneficial and special notices are available. The first progression is changing of Standard Chagatay Turkic, the second no-linguistic issues namely ties with political occurence of Central Asian Turkic states (Emirate of Bukhara, Khiva Khanate, Khokand Khanate and Saidiyye / Yarkand Khanate). Because of Pre-Classical, Classical and 17th, Post-17th century textes' basic similarities and differences are available Common Turkic's changeless (Suffix of Past Definite *-DI*, Suffix od Dative *+GA*, etc.) and partly variable changed (having some phonological differences of suffix, but with same function (suffix of denominal noun *-IIG/-IUG*, suffix of causative *-GUz*, etc.) grammatical components were not reviewed in this study.

1. General Phonologic Features of Pre-Classical and Classical Chagatay Turkic

1.1. Vowel Changes

1.1.1. Change of /ä/ to /e/ in the first syllable: The Karakhanid and Khorazmian /ä/ began to alternate /e/ or /i/ after the middle of the 14th century (Eckmann 1966: 36). Karakhanid words such as *är* "man", *äşik* "door", *käs-* "to cut", *käl-* "to come", *män* "I", etc. are written in Chagatay as *er*, *eşik*, *kelmek*, *kesmek*, *men*, and were read in the first syllable either with /i/: *ir*, *işik*, *kis-*, *kil-* *min*, which would correspond to the modern Kazan Turkic pronunciation, or with /e/: *er*, *eşik*, *kes-*, *kel-*, *men* as in the modern Central Asian languages (Eckmann 1966: 37).

1.1.2. Labialization: In some cases the unrounded vowel of the first syllable becomes rounded under the influence of the rounded vowel of the second syllable: *a > o*: *ocun* ~ *acun* "earth", *oruq* ~ *aruğ* "tiny", *osru* ~ *asru* "drunk" etc. ; *ä > ö*: *oçkü* < Kash. *açkü* "goat"



Mahb. 195:11, *öksü-* < Kash. *äksü-* “to grow less, decrease” B 129a: 14, *örük* < Kash. *ärük* “plum” B 129b, *ötük* < Kash. *ätük* “boot” L Div. 110: 7, etc. ; i > ü: *tülkü* < Uig., Kash. *tilkü* “fox” L Div. 26:4 (Eckmann 1966: 37, 38).

1.1.3. Consonant Changes

1.1.3.1. b- > m-: Before /a/ nasal (n, ŋ) initial /b/ is changed to /m/ in a few words: *mamuq* < *banbuq* “cotton” N Div. 18b: 9, *män* < Orkh. *bän* “I”, *miñ* < Orkh. *biñ* “thousand” L Div. 152: 5, etc. (Eckmann 1966: 42).

1.1.3.2. -b > -w > -v: Old T. intervocalic or stem-final /b/, represented by bilabial /w/ in Karakhanid and Khorezmian Turkic, is changed to /v/ in Chagatay: *av* < Khor. *aw* < Old Turk. *ab* “hunting”, *çav* < Khor. *çaw* < Old T. *çab* “reputation”, *ev* < Khor. *ew* < Old T. *äb* “house”, *evür-* < Khor. *ewür-* “to turn back or around”, *ķav-* < Khor. *ķaw-* ~ *ķav-* “to persecute”, *savcı* < Kash. *sawcı* < Old T. *sabçı* “prophet” (Eckmann 1966: 43).

1.1.3.3. -b- > -v- ~ -y-: The sound group alternates with *öy* in the following words: *äv* ~ *öy* “house” N. Div. *ävür-* ~ *öyür-* “to turn aside” (Eckmann 1966: 43, 44).

1.1.3.4. -b->-f-: In the following words: *ofra-*, *ofran-* < Kash. *opra-* “to grow old, become worn out”, *ofraq* < Kash. *opraq* “worn”, *tofrağ/ğ* < Kash., Khor. *topraq* “sand”, *yafraq/ğ* < Khor. *yapraq* “leaf”. This change, which is characteristic of Chagatay, first appears in Navā’ī. Also /p/ alternates with /f/ in *köprüğ/k* ~ *köfrüğ/k* “bridge” Z 22b: 11, 23a: 14, 16, 36b: 11, etc. (Eckmann 1966: 44).

1.1.3.5. t- > d-: Initial /t/ is changed to /d/ in a few words: *dağı* < *tağı* “and, also, too”, *dek/g* “like” (before Navā’ī often *teg*), *dur* ~ *durur* (less frequently *tur* ~ *turur*) “is, are”, *dägrü* < *tägürü* “till, until” (Eckmann 1966: 44, 45).

1.1.3.6. -ğ- > -w- > -v-: Old T., Uig., Karakhanid Turkic /q/ ~ /ğ/, through Khor. /w/, is changed to /v/ in: *qavun* < Kash. *qağun* “melon”, *qavuuq* > Uig. *qağuuq* “bladder”, *savuuq* < Khor. *sawuuq* < Uig. *soğıq* “cold”, *tavuuq* < Khor. *Tawuuq* < Kash. *taqağuu* < Uig., Old T. *taqığuu* “hen”, *yavuuq* < Khor. *yawuuq* < *yağuuq* “near” Kash., Uig., Old T.. Likewise, the second group *-ağuu* ~ *-ägü* becomes *-av* ~ *-äv*: *biläy* < Kash. *biläğü* “sharpening”, *buzav* < *buzagağuu* “calf”, etc. (Eckmann 1966: 48).

1.1.3.7. r > Ø: Liquid r: Before consonants /r/ is often dropped in *bilä* ~ *birlä* “with” and *e-* ~ *er-* “to be”, *emäs* ~ *ermäs* “it is not”, *esä* ~ *ersä* “if it is”, *edi* ~ *erdi* “it was” etc.

1.1.3.8. Metathesis: *örgän-* < Kash. *ögrän-* “to learn”, *yamğur* < *yağmur* “rain” Sak. Div. 20a: 9 (Eckmann 1966: 50).

2. General Morphological Features of Pre-Classical and Classical Chagatay Turkic

2.1. Noun Inflection

2.1.1. Case

2.1.1.1. Genitive: Generally suffixes are *+nIñ* / *+nUñ*, sometimes *+nI* instead of *+nIy*: *sunuñ* “of the water” (TN 278 A), *yüzünüñ* “of your face” L Div.; *Afrābsiyābnı oğlı* “Afrasiyab’s son” N. Quatr 53 (Eckmann 1966: 83).



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2.1.1.2. Dative: Generally +GA, but after possessive suffixes in poetry -A: *ayğa* “to the moon”, *otqa* ~ *otğa* “to the fire”, *kökke* “to the sky”; *kirpikläriñä* “to the your eyelashes”, *sözümüzä* “to our Word(s)” (Eckmann 1966: 88).

2.1.1.3. Accusative: The suffixes are +nI, after the possessive suffix of the third person often: -n: *başnı* “the head”, *itni* “the dog”, *suyını* ~ *suyın* “its water” (Eckmann 1966: 91).

2.1.1.4. Locative: +DA: *suda* “in the water”, *keçädä* “in the night” (Eckmann 1966: 92).

2.1.1.5. Ablative: +DIn : *ottın* “from the fire”, *yärdın* “from the friend” (Eckmann 1966: 95).

2.1.1.6. Equative: +çA: *iççe* “like a dog”, *qılça* “as hair” (Eckmann 1966: 100).

2.2. Verb Inflection

2.2.1. Imperative-Optative

1th Person Singular: -(A)y; -(A)yIn: *bitiy* “let me write”; *qılayın* “let me do”

2th Person Singular: -GI / -GIIn: *alğıl* “take”, *tutqıl* “hold”; *körğın* “see”,

3th Person Singular: -sUn: *barsun* “let him go”, *kirsün* “let him enter”

1th Person Plural: -(A)II(η); -Allm: *içeliñ* “let us drink”; *oturalı* “let us sit down”; *içälim* “let us drink”

2th Person Plural: -(I)η; -IñIz / IñUz: *körün* “see”, *eyläñ* “do”, *turuñuz* “stand”

3th Person Plural: -sUnIAr: *qılsunlar* “let them do” (Eckmann 1966: 153-155).

2.2.2. Future-Optative: -GAy; -GA + *personal pronouns*: *qılmağa(y) men* “i will (shall) not (don’t want to) do. (Eckmann 1966: 166).

2.2.3. Aorist: *Stem* + -(a,u)r + *Personal Pronouns*: Also in poetry Azerbaijani forms occur: *qılman* “don’t do”, *istämän* “i don’t want” (Eckmann 1966: 162, 163).

2.2.4. Indirect Preferit: *Stem* + -mIş + *Personal Pronouns*: *qılmaşam* “(i gather that) i (have)” (Eckmann 1966: 167).

2.2.5. Perfect I: *Stem* + -GAn + *Personal Pronouns*: *qılğanbiz* “i (have) done” (Eckmann 1966: 169, 170).

2.2.6. Categorical Future: *Stem* + -GU + *Possesive Suffix* (+dur /durur / turur): *alğumdur* “i will take” (Eckmann 1966: 172).

2.2.7. Present: *Stem* + -A /-y + (dur) + *Personal Pronouns*: *tapa biz* “we find” (Eckmann 1966: 174).

2.2.8. Perfect II: *Stem* + -p (dur/tur, less frequently durur / turur) + *Personal Pronouns*: *qılıp tur men* “i have done” (Eckmann 1966: 176).

2.3. Word Formation



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2.3.1. Suffixes of Denominal Nouns (Demoninative Noun Suffixes): +Aç/ +AK/ +çA/ +çAK /+çI /+çUK /+dAş/ +GI/ +GInA/ +I/ +IAK /+IIG /+IIG /+(x)m/.

2.3.2. Suffixes of Denominal Verbs (Demoninative Verbs Suffixes): +A-/+Ay-/+dA-/ +GAR-/+KAR-/+(x)l-/+IA-/+(X)K/+(X)r-/+(X)rGA-/.

2.3.3. Suffixes of Deverbal Nouns (Deverbal Noun Suffixes): -A+/-çAK+ /-çI+/- (X)g/- GA+/-GU+/-GUç+/-GUr+/-l+/- (X)m+/-mA+/-mAç+/- (X)n+/- (X)nç+/- (X)k+/-sI+/- (X)ş/-t+/- (X)v (<+AGU)/.

2.3.4. Suffixes of Deverbal Verbs (Deverbal Verb Suffixes Suffixes): -A/-Ur/-DUr/-GAR/-KAR/-GUA/-GUz/- (X)l/- (X)n/- (X)ş/- (Eckmann 1988: 31-48), (Scherback 1962: 181, 182). Deverbal verbs (Causative): -GUz-, -KUr-, -KAz-: *qutqardım* < *qutqar-* “to rescue”, *yetkür-* < *yet-* “arrive”, *yazgır-* < *yaz-* “to write”, *olturguzdılar* < *oltur-* “to sit”, *kirgüzdi* < *kir-* “enter”, *körgüzäyim* < *kör-* “to see” (Eckmann 1966: 52-70).

3. The Dissertations About The Post-Classical Era of Chagatay Turkic And Post Classical Era of Chagatay Turkic’s Phonological And Morphological Features

3.1. Gamze Çelik, Doğu Türkçesiyle Yazılmış Acayibü’l-Mahlukat ve Garabiyü’l-Mevcutat (101a-150b yaprakları) (Dil İncelemesi-Metin-Türkiye Türkçesine Aktarım-Dizin), Yüksek Lisans Tezi, MSGSÜ Sosyal Bilimler Enstitüsü Türk Dili ve Edebiyatı Eski Türk Dili Programı, Ekim 2019, İstanbul.

3.1.1. General information about the text

Acayibü’l-Mahlukat ve Garabiyü’l-Mevcutat (AMGM-GÇ) is kept in the Library of Uppsala University. Catalogue of East Turkic Manuscripts with the number 637. The manuscript is not known where and by whom was written. (Çelik 2019: ix). The manuscript might be written in the 17th or 18th century. According to the author of the dissertation, manuscript does not only have a characteristic Post Classical Chagatay but also has features of New Uighur language. So we can assert that it is shown as a transitional period (Çelik 2019: xi).

3.1.2. Phonology

3.1.2.1. Vocalic Changes

3.1.2.1.1. a > o: *obdān* (< Persian *ābādān* “developed; very”), *toḥı* ~ *toḥu* (< Old T. *taqaḡu* “hen”).

3.1.2.1.2. a > u: *tamur* (< Old T. *tamar* “vessel”).

3.1.2.1.3. ä > ö: *öy* (< Old T. *āb* “house”), *çörüldür-* (< Kash. *çäwür-* “to return, to turn around”) (Çelik 2019: 39).

3.1.2.1.4. ä > ü: *süy-* (< Old T. *seb-* “to love”), *ürük* (< Old T. *ärük* “plumb”)

3.1.2.1.5. ı > u: *quruq* (< Old T. *qurıḡ* “dry”).

3.1.2.1.6. i > ü: *käsük* (< Old T. *käsik* “cut”), *pütüg* ~ *pütig* (< Old T. *bitig* “writing”), *püt-* (< Old T. *bit-* “to finish”).

3.1.2.1.7. o > a: *savuuq* (< Old T. *soḡıq* “cold”), *saquş* (< Old T. *soq-* “to insert”).



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3.1.2.1.8. ü > ä: *döpä* ~ *töpä* (< Old T. *töpü* “peak”), *bölek* (< Old T. *bölük* “share; percent”), *kötär-* (< Old T. *kötür-* “to lift”).

3.1.2.1.9. u > a: *otra* (< Old T. *ortu* “middle”), *tola* (< Old T. *tolu* “full”).

3.1.2.1.10. ü > i: *bäri* (< Old T. *bärü* “till, untill”), *ilgäri* (< Old T. *ilgärü* “forward”), *taşqarı* (< Old T. *taşqaru* “outside”) (Çelik 2019: 40).

3.1.2.1.11. ı > a: *alta* (< Old T. *altı* “six”), *toğra* (< Old T. *toğrı* “correct”).

3.1.2.1.12. i > ä: *yättä* (< Old T. *yätti* “seven”), *tärä* (< Old T. *täri* “skin”).

3.1.2.1.13. a > ı: *qıltaq* (< N. Uyg. *qaltaq* “saddle”).

3.1.2.1.14. i > ı: *ıssıg* (< Old T. *isig* “hot, warm”), *ıssıqlıq* (< Old T. *isig* “hot, warm”).

3.1.2.1.15. ı > i: *it* (< Old T. *ut* “dog”), *miñ* (< Old T. *biñ* “thousand”).

3.1.2.1.16. o > ö: *köp* (< Old T. *qop* “very”), *til* (< Old T. *tul* “tongue; language”) (Çelik 2019: 41).

3.1.2.2. Consonant Changes

3.1.2.2.1. b- > p-: *paq-* (< Old T. *baq-* “to look”), *palçıq* (< Old T. *balçıq* “mud”), *piti-* (< Old T. *biti-* “to write”), *put* (< Old T. *but* “idol”).

3.1.2.2.2. b- > p- > f-: *fış-* (< Old T. *bış-* “to cook”), *fitig* (< Old T. *bitig* “writing”), *fut* (< Old T. *but* “foot”), *käbil* (< Ar. *käfil* “guarantor”).

3.1.2.2.3. -b- > -w > -v > -y: *öy* (< Old T. *äb* “house”), *süy-* (< Old T. *säb-* “to love”).

3.1.2.2.4. -ğ-, -g- > -v-: *savuuq* (< Old T. *soğıq* “cold”), *yavu-* (< Old T. *yağu-* “to approach; to be close”), *yavuuq* (< Old T. *yağıuq* “near”), *biräv* (< Old T. *birägü* “each (off)”) (Çelik 2019: 42).

3.1.2.2.5. -p-, -p > -f-, -f: *çaf-* (< Old T. *çap-* “to run, to move fast”), *ofra-* (< Old T. *opra-*), *taf-* (< Old T. *tap-* “to find”), *tofrağ* (< Old T. *topraq* “sand”), *yafurmağ* (< Old T. *yapırğaq* “leaf”).

3.1.2.2.6. s- > ç-: *çaç-* (< Old T. *saç-* “to throw”).

3.1.2.2.7. t- > d-: *dè-* (< Old T. *te-* “to say”), *dek* (< Old T. *teg* “as”), *dağı* (< Old T. *tağı* “also”), *döpä* (< Old T. *töpü* “peak”). Copula is *turur* or *-dUr* (< Old. Turkic *turur*) (Çelik 2019: 43).

3.1.3. Morphology

3.1.3.1. Noun Inflection

Case endings generally show Classical Period of Chagatay Turkic in the text (Çelik 2019: 48).

3.1.3.1.1. Genitive: *+nlıj:* *ādāmniñ* “of the man (Adam), *meniñ* “my, mine”.



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3.1.3.1.2. Dative: +GA: *elçigä* “to ambassador”, *qaçmaqqa* “to escape” (Çelik 2019: 48).

3.1.3.1.3. Accusative: +nI, +I: *halqni* “the community”, *mäni* “me”.

3.1.3.1.4. Locative: +dA: *çäşmäädä* “at water fountain”, *işdä* “at work”.

3.1.3.1.5. Ablative: +dIn: *äligdin* “from fifty”, *kindin* “from hate”.

3.1.3.1.6. Instrumental: Established with *bilä*, *billä*, *birlä*, *bilän*.

3.1.3.1.7. Directive: +KArI, +rA: *taşqarı* “to outside”, *ilgäri* “to forward”, *içrä* “to inside”.

3.1.3.2. Word Formation

3.1.3.2.1. Suffix of Deverbal Noun (Causative): -KUz: *körgüz-* < *kör-* “to see”, *olturguz-* < *oltur-* “to sit”, *turguz-* “tur-” “to stay” (Çelik 2019: 44).

3.1.3.3. Verb Inflection

3.1.3.3.1. Copula: +dUr (<*turur*): Rarely copula is provided by “*turur*”: *bardur* “there is / are”, *qiblesi turur* “this / that is Kiblah”. (Çelik 2019: 51).

3.1.3.3.2. Past Indefinite: We can separate past indefinite three sub-groups with their suffixes. Indirect Preterit: -mIş: *ërmiş* “(I gather that) s(he) / it arrived”; Perfect I: -GAn: *kalğandur* “have remained”; Perfect II: -p/-y(dur) + *personal pronouns*: *bolmapdur* “have not happen”, *tohtaydur* “have stopped”, (Çelik 2019: 51).

3.1.3.3.3. Future: -GAy: *qalgay* “will remain, will stay”, *körgäy* “will see” (Çelik 2019: 51).

3.1.3.3.4. Imperative-Optative

1st Person Singular: -(A)y: *alay* “let me take”.

2nd Person Singular: -GI: *tapğul* “find”.

3rd Person Singular: -sUn: *bolmasun* “let the not happen”.

1st Person Plural: -AI: *baqalı* “let’s look”.

2nd Person Plural: -ŋlAr: *ätmäñlär* “do not do/make”.

3rd Person Plural: -sUnlAr: *bolsunlar* “let the happen” (Çelik 2019: 52, 53).

3.2. Hilal Yılmaz, Doğu Türkçesiyle Yazılmış ‘Acâyibü’l-Mahlûkât Vel’ Ğarâyibü’l-Mevcûdat (151a-200b Yaprakları) (Dil İncelemesi-Metin-Türkiye Türkçesine Aktarım-Dizin), Yüksek Lisans Tezi, MSGSÜ Türk Dili ve Edebiyatı Anabilim Dalı Eski Türk Dili Programı, Haziran 2019.

3.2.1. General Information About The Text

Studied text Acayibü’l-Mahlukat ve Garabiyü’l-Mevcudat (AMGM-HY) is continuation of above reviewed AMGM-GÇ.

3.2.2. Phonology



3.2.2.1. Vocalic Changes

3.2.1.1.1. **o > a:** *savuç* < Old T. *soğıq* “cold”.

3.2.1.1.2. **ü > e:** *töpesidä* < Old T. *töpü* “peak”, *ü > e:* *böläk* < Old T. *bölük* “share, percent”, *kötär-* < Old T. *kötür-* “to lift”.

3.2.1.1.3. **u > a:** *tola* < Old T. *tolu* “full”.

3.2.1.1.4. **ü > i:** *bäri* < Old T. *bärü* “till, untill”, *ilgäri* < Old T. *ilgärü* “forward”, *taşqarı* < Old T. *taşqaru* “to the outside” (Yılmaz 2019: 34).

3.2.2.2. Consonant Changes

3.2.2.2.1. **b-> p-:** *pütün* < *bütün* “all”, *piti-* < Old T. *biti-* “to write”, *püş-* < Old T. *bış-* ~ *biş-* “to cook”.

3.2.2.2.2. **b-> f-:** *fiti-* < **piti* ? < Old T. *biti-* “to write”, *fitiglig* < Old T. *bitiglig* “typed, written”, *fut* < **put*? < Old T. *but* “foot” (Yılmaz 2019: 35).

3.2.2.2.3. **p-> f-:** *tofrağ* < Old T. *topraq* “sand” (Yılmaz 2019: 36).

3.2.2.2.4. **t-> d-:** *de-* < Old T. *te-* “to say”, *dek* < Old T. *teg* “as”, *bardur* < Old T. *bar turur* “there exist” (Yılmaz 2019: 37).

3.2.2.2.5. **-k- > -h-:** *taḥı* (< *taḳı*), *taḥu* < Old T. *taqaḡu* (< Old T. *taqaḡu* > **taqau* > **taqu*), *toḥu* (< *taqaḡu* “hen”), *yaḥşı* (< *yaqşı* “good”).

3.2.2.2.6. **s- > ç-:** *çaç* < *saç* “hair” (Yılmaz 2019: 39).

3.2.3. Morphology

3.2.3.1. Case

3.2.3.1.1.1. **Genitive:** Suffixes are generally +*nIḡ*, but after the some personal pronoun it has seen as +*Iḡ*: *yerniḡ* “of the earth”, *mèniḡ* “my, mine”.

3.2.3.1.1.2. **Dative:** +*GA*: *taşqa* “to the outside”.

3.2.3.1.1.3. **Accusative:** +*nI*: *ayaqı* “the foot”.

3.2.3.1.1.4 **Locative:** +*dA*: *qaşıda* “on the brow”(Yılmaz 2019: 41).

3.2.3.1.1.5. **Ablative:** +*dIn*: *āsmāndın* “from the sky”.

3.2.3.1.1.6. **Instrumental:** Established with the *bilä*, *birlä*, *bilän* postpositions or with +*lA* ve +*n* suffixes.

3.2.3.1.1.7. **Directive:** +*KArl* ve +*rA*: *üzrä* “above”, *yoqqarı* “to up” (Yılmaz 2019: 42).

3.2.3.2. Demonstrative pronouns: In the text *bul*, *şul*, *ul* demonstrative pronouns that do not see in Classical Period of Chagatay. Demonstrative pronouns as *bul*, *şul*, *ul* are not use In Modern Uzbek but in Tatar and Kazakh (Yılmaz 2019: 42).



3.2.3.3. Verb Inflection

3.2.3.3.1. Copula: In the text copula suffix is +*dur* (< *turur*). Besides with *turur*: *uluğraq turur* “this / that is bigger (higher)”, *andağdur* “as this / that” (Yılmaz 2019: 44).

3.2.3.3.2. Past Indefinite: Indirect Preterit: *mİş*: *ölermiş men* “(i gathered) i would die”; Perfect I. -*GA*n: *qoyğandur* “have / has placed down”; Perfect II: -*p*-/*y*-*dur*: *tururdur* “have / has remained, stayed”.

3.2.3.3.3. Aorist: Forms from the verbal nouns *a*-/*ur*-, -*mAs* (*negative form*): *qılurlar* “they do / make”, *bozdurmas* “s(he) / they let not deform”.

3.2.3.3.4. Future: -*GA*y: *körüngäy* “will seen” (Yılmaz 2019: 44).

3.2.3.3.5. Imperative-Optative

1st Person Singular: -*AyIn*, -*yIn*: *biläyin* “let me know”.

2nd Person Singular: -*GIl*: *yegil* “eat”.

3rd Person Singular: -*sUn*: *bolsun* “let the happen”.

1st Person Plural: -*All*: Not detected .

2nd Person Plural: -*η(lAr)*: *bilinler* “know”.

3rd Person Plural: -*sUnlAr*: *şükr qılsunlar* “let the be grateful (for).”

3.3. Adnan Erbek, Doğu Türkçesi ile Yazılmış ‘Acâyibü’l-Mahlûkât Vel’ Ğarâyibü’l-Mevcûdat (201a-249b Yaprakları) (Dil İncelemesi-Metin-Türkiye Türkçesine Aktarım-Dizin), Yüksek Lisans Tezi, MSGSÜ Türk Dili ve Edebiyatı Anabilim Dalı Eski Türk Dili Programı, Ekim 2019.

3.3.1. General Information About The Text

This study (AMGM-AE) is continuation of AMGM-GÇ and AMGM-HY.

3.3.2. Phonology

3.3.2.1. Vocalic Alternations

3.3.2.1.1. a > o: *tohu* (< *tahu* < Old T. *taqağu* “hen”).

3.3.2.1.2. ä > ö: *söyün-* (< N. Uyg. *sewin-* < *sebin-* < *sev-* “to love”).

3.3.2.1.3. o > a: *savuq* (< Old T. *soğıq* “cold”).

3.3.2.1.4. ü > ä: *böläk* (< Old T. *bölük* “share, percent”), *töpäsigä* (< Old T. *töpü* “peak”).

3.3.2.1.5. u > a: *tola* (< Old T. *tolu* “full”).

3.3.2.1.6. ü > i: *ilgäri* (< Old T. *ilgäri* “forward”), *indä-* (< Old T. *ündä-* “to shout, to call”).



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3.3.2.1.7. a > ı: *boğı* (< Old T. *buğa* “bull”), *yağaç* (< Old T. *yığaç* “tree”), *saçqan* (< Old T. *sıçğan* “mouse”) (Erbek 2019: 26).

3.3.3. Morphology

3.3.3.1. Noun Inflection

3.3.3.1.1. Genitive: *+nInj: olarnıñ* “of the them”.

3.3.3.1.2. Accusative: *+nI: kişini* “the person”.

3.3.3.1.3. Dative: *+GA: yergä* “to the land”.

3.3.3.1.4. Locative: *+dA: yerdä* “on the land”.

3.3.3.1.5. Ablative: *+dIn: yärdin* “from the land”.

3.3.4. Verb Inflection

3.3.4.1. Copula: *-dUr, -turur: bardur* “there is /are ”, *bar turur* “there is / are exist” (Erbek 2019: 20, 21).

3.3.4.2. Past Indefinite: Indirect Preterit: *-mIş: ermiş* “(i gathered) s(he) has arrived”; Perfect I: *GAn*, Perfect II: *-p-/-y- dur: bolğandur* “it has happened”, *bolmaydur* “has not happened”

3.3.4.3. Future: *-GAy: gäzab kılğay* “he / she will get angry”(Erbek 2019: 32).

3.3.5. Word Formation

3.3.5.1. Deverbal verb (Causative): *-GUz-, -KUr-, -KAz-: körgüz- < kör-* “to see”, *yätkür- < yät-* “to arrive”, *ötkez- < öt-* “to pass” (Erbek 2019: 30).

3.4. Özge Özdamar, Doğu Türkçesi İle Yazılmış Bir Kitâb-ı Ta’bîr-nâme: Dil İncelemesi-Metin-Türkiye Türkçesine Aktarım-Dizin, Yüksek Lisans Tezi, MSGSÜ Türk Dili ve Edebiyatı Ana Bilim Dalı Eski Türk Dili Programı, Haziran 2019.

3.4.1. General Information about the text

Studied Kitâb-ı Ta’bîr-nâme (KT-ÖÖ) recorded with the number 1725 in Berlin Staatbibliothek. Manuscript was written by Ibn Şerif in 1320 (1902) (Özdamar 2019: i).

3.4.2. Phonology

3.4.2.1. a > o: *oçuq < açuq* “open” ; *mozoy < mozay* “calf”.

3.4.2.2. ä > ö: *örük < ärük* “plum”, *öy < äw* “house”; *ötük < ätüq* “boot”, *töfä < täpä* “peak”, *böz < bez* “cloth”.

3.4.2.3. ı > u: *quru- < qurı-* “to dry”, *oqu- < oqı-* “to read” .

3.4.2.4. i > ü: *fütü- < *piti ? < bitı-* “to write”, *tülkü < tilkü* “fox”, *yütür- < yitür-* “to lose”.

3.4.2.5. a > u: *yuruq < yaruq* “crack, slot”.



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3.4.2.6. u > a: *tutaş-* < *tutuş-* “to fire”, *qotaz* < *qotuz* “yak”.

3.4.2.7. ı > i: *miñ* < *bıñ* “thousand”, *til* < *tl* “language, tongue”, *ibär-* < *ıdu bär-* “to send”, *it* < *ıt* “dog” (Özdamar 2019: 19).

3.4.2.8. -b-/l-b > -v-/v: *tavuşqan* < *tabısqan* “rabbit”, *tive* < *täbä* “camel”, *suvi* “his/her water”(23b/4), *suvidın* “from his/her water” (20b/9).

3.4.2.9. b > p > f: *fütü-* < *pütü-* < *biti-* “to write”, *fişür-* > *pişür-* > *bışur-* “to cook”, *fişiq* > *pışiq* > *bışığ* “cooked”.

3.4.2.10. b- > f-: *fuçuq* < **puçuq?* < *buçuq* “half”, *fütün* > *bütün* “bütün”, *fiçaq* > *bıçaq* “knife”, *fut* > *but* “foot”.

3.4.2.11. p > f: *çapış-* > *çafış-* “to fight each other”, *poq* > *foq* “poop”, *kirpi* > *kirfi* “hedgehog”, *körpä* > *körfä* “fresh, young”, *pat* > *fat* “hurry”, *sap-* > *saf-* “to prick”, *taf-* < *tap-* “to find”, *täf-* < *täp-* “to kick” (Özdamar 2019: 20-21).

3.4.2.12. t- > d-: *dadığ* “sweet”, *de-* “to say”, *dek* “as”, *rast-dur* (< *turur*) “(it is) correct”.

3.4.2.13. -ğ- > -v-: *sovuq* < *soğuq* “cold”

3.4.2.14. y- > c-: *cılan* < *yılan* “snake”, *cırlamaq* < *yırlamaq* “to sing, to shout”, *cıgdä* < *yıgdä* “elaegnus” (Özdamar 2019: 21).

3.4.3. Morphology

3.4.3.1. Noun Inflection

3.4.3.1.1. Possessive suffixes: Possessive suffixes are similar to Classical Period of Chagatay in the text (Özdamar 2019: 25).

3.4.3.2. Case

3.5. Case endings show similarities to Classical Chagatay.

3.5.2.1.1. Genitive: +*nIñ*: *kişiniñ* “of the person” .

3.5.2.1.2. Accusative: +*nI*, +*I*: *şırni minip* “to ride a lion”.

3.5.2.1.3. Locative: +*dA*: *tännürda* “in the tandoor” .

3.5.2.1.4. Ablative: +*dIn*: *qafäsdin* “in the cage” .

3.5.2.1.5. Dative: +*GA*: *murädğa* “to desire” .

3.5.2.1.6. Instrumental: It was established by *birlä*, *birlän*, *bilä*, *bilän*, *bilä* “with” (Özdamar 2019: 26).

3.5.3. Morphology

3.5.3.1. Coppula: +*dUr* ve *turur*: *ätäşdür* “it is fire”, *bar turur* “there is / are” (Özdamar 2019: 27)”.



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3.5.3.2. Past Indefinite: Perfect II: *-pDUr: aytıpdur* “S(he) has said”.

3.5.3.3. Present: *-AdUr, -mAydUr: qıladurğanlarnı* “what you/they did”; *tünümäyduğan* “did not stay”.

3.5.3.4. Aorist: *-(A/U)r; -mAs: bolur*, “It happens”, *yanmas* “does not fire”.

3.5.3.5. Future: *-GAy: qılğay* “will make / do” (Özdamar 2019: 27).

3.6. Aymira Marat kızı, Çagatayçanın Akırkı Dooruna Taandık Üç Dastan: “Köroğlı”, “Cañar Han Padişa Gazalı”, “Kız Cibek” (Transkriptsiya, Tildik Analiz, İndeks), Ph D Doktorduk Dissertatsiya, Kırgız-Türk Manas Universiteti Koomduk İlimder İnstitutu Turkologiya Bağıtı, Bişkek 2016.

3.5.1. General Information About The Text

Analyzing thus, three epics had to be written in the last period of Chagatay Turkic. They are different from the other of the last period of Chagatay Turkic manuscripts (Marat kızı 2016: 5-6). An author of the text is Ümöt Moldo born in 1883 in Talas (today located in Kyrgyzstan) region (Marat kızı 2016: 17). According to the author’s birth date it can be thought that the text (ÇADT-AM) was written in the last decades of the 19th century or at the beginning of the 20th century.

3.6.2. Phonology

3.6.2.1. y- ~ c- Alternation: *yigit ~ cigit* “young man, hero”, *yurt ~ curt* “country”, *yoldaş ~ coldaş* “friend” etc (Marat kızı 2016: 46).

3.5.2.2. ħ- > ğ-: *daliğandı < daliğandı* “The Dalihan”(Marat kızı 2016: 46).

3.5.2.3. -s- > -z-: *bazıp < basıp* “by conquering”, *äzimdän < äsimdän* “from my mind”.

3.5.2.4. t- > d-: *dädi < Old T. täti* “S(he) said”, *qılıç dek < Old T. teg* “as”, *dağı çölni < Old T. tağ* “the mountain”.

3.5.2.5. k- > ğ-: *ğırat < qırat* “white horse” (Marat kızı 2016: 47).

3.5.2.6. -z- > -s-: *busuldı < buzuldu* “it was broken”, *usatıp < uzatıp* “by stretch out” (Marat kızı 2016: 48).

3.5.2.7. q > ħ: *ħurut < qurut* “rounded sour cheese”, *oħşar < oqşar* “it looks like” etc.

3.5.2.8. b- > f-: *falğa < *palğa? < balğa* “to the fish”, *fiyä < *piyä? < biyä* “brain” (Marat kızı 2016: 49).

3.5.2.9. -p- > -f-: *tofraqqa > topraqqa* “to the sand” *töfä > töbö* “peak”, *öfkändäy > öpkendey* “as your anger” etc.

3.5.2.10. -ş- > -s-: *boşatıp < boşatıp* “by get empty”, *usu < uşu* “that, over there”, *aşqan < aşqan*.

3.5.2.11. -ç- > -ş-: *köşkä < köçkä* “to migration (for the nomads)”, *çaştım < çaçtım* “to throw, to distribute” (Marat kızı 2016: 50).



3.5.3. Morphology

3.5.3.1. Noun Inflection

3.5.3.1.1. Case

3.5.3.1.1.1. Genitive: +nIn, +nI, +dIn: *kāfirniñ* “of the unbeliever”, *kör oğlını* “The Kör oğlı” *cigitdin* “of the young man”.

3.5.3.1.1.2. Accusative: +nI, +DI: *sözlärni* “the words”, *kızıñdı* “the girl”.

3.5.3.1.1.3. Dative: +GA, +KA, +A; +GAN, +KAN: *üstigä* “on (the)”, *solqa* “to the left”, *aldına* “in front of”; *mağan, maqan* “to me” (Marat kızı 2016: 52).

3.5.3.1.1.4. Locative: +dA: *yolında* “on the your road”.

3.5.3.1.1.5. Ablative: +dIn, +dAn, +nAn: *sözdin* “from the word”, *tawdan* “from the mountain” *başınan* “from your head (or from the beginning)” (Marat kızı 2016: 52).

3.5.3.1.1.6. Equative: +çA: *näçä* “how”; +çAyIn: *ançayın* “so”.

3.5.3.1.1.7. Instrumental: *bilän, birlän, birlä, bilä, menän* “with”: *keçä bilän* “with the nighr”, *tılla suvı birlän* “with Tılla water”, *qalqan birlä* “with shield”, *şadaq bilä* “with the quiver”, *nayza menän* “with Nayza” (Marat kızı 2016: 52).

3.5.4. Verb Inflection

3.5.4.1. Past Indefinite: Perfect I-GAn *ekän: törägän ekän* “it has multiplied”, Indirect Preferit: -mIş: *bolmuş* “(i gathered) it has happened”; Perfect II: -(I)pdI, -(I)pdur (there is just detected 3th single pronoun): *tüşüp qalıpdı* “s(he) has fell down”.

3.5.4.2. Present: -a dur (<a turur), -(I)p, -A + yat- ve cat-: *baş koşup caturmız* “we are running”.

3.5.4.3. Future: -(A)r/-(I)r: *atuşarmın* “i will shoot”, *bilürmän* “i will know”; -mAs: *çıdamasman* “i will not endure”; -A: *baramın* “i will come”; -GAy: (the optative mood function): *degäysin* “you want to say”.

3.5.4.4. Imperative-Optative

1st Person Singular: -Ay, -AyIn: *aytayın* “i shall say”.

2nd Person Singular: Zero ending, -GI, -GIIn: *ketmä* “do not go”, *qılğıl* “make”, *aytqın* “say”.

3rd Person Singular: -sUn: *bolsun* “let happen”.

1st Person Plural: -AI, -yII: *ketäli* “let us go”, *qırılmaylıq* “let us do not cut”.

2nd Person Plural: -(I)ñ(LAr): *eşitiñlär* “(you) hear me”, *eşitiñizlär* “(you, please) hear me”.

3rd Person Plural: -sUnlAr: (Marat kızı 2016: 21, 22).



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3.5.4.5. Participles: -Ar: *tolar* “filled”; -mAs: *yaramas toyka* “to the bad entertainment”; -GAn: *açılğan güllär* “bloomed roses”; -A/-y *turğan*: *ayta turğan sözi* “word to say”; -dIk: *kördigim* “that i see” (Marat kızı 2016: 75).

3.5.4.6. Gerunds: -A/-y: *aylana bär* “turn around fast”, *yıgılay yıgılay* “by crying”; -bAn: *debän* “by saying”, -(I)p: *barıp* “by going”, -mAy: *tınmay* “by not find peace”, -bAy: *tolbay* “by not fill”, -GunçA: *barğunça* “as you walk”, -GandA: *açılqanda* “when it was opened”, -GAnI: *açqanı* “person who opened something”, -GAlI: *urğalı* “ever since you punch”, -U: *alu qoysa* “if she/he holds”, -mAsdAn: *aynutmasdan* (Marat kızı 2016: 72, 73).

3.7. Seçkin Uysal, Çağatay Şairi Gunnâm’ın Yayınlanmış Divânı (Çeviriyazı, İnceleme, İndeks), Doktora tezi, KTMÜ Sosyal Bilimler Enstitüsü Türkoloji Anabilim Dalı, Bışkek 2019.

3.6.1. General Information About The Text

Divân-ı Gunnâm has two copies called A and B. This study is about copy A (Uysal 2019: 7). It is not known if Divân-ı Gunnâm has been written and copied yet. But the author (Gunnâm Muhammed Emin Hırkatî) was born in 1634, dead in 1724. So we can assume that the text (ÇGYD-SU) was written in the last period of 17th century or at the beginning of the 18th century (Uysal 2019: v).

3.6.2. Phonology

3.6.2.1. Vocalic Changes

3.6.2.1.1. ü > e: *böläk* < Kash. *bölük* “share, percent”, *unut-* < Kash. *unit-* “to forget”, *kötür-* < Orkh. *kötär-* “to lift” etc.

3.6.2.1.2. o > a: *al* < Kash. *ol* “that; she/he/it”, *savuuq* < *soğuuq* “cold”, etc.

3.6.2.1.3. ü > i: *indä-* < Kash. *ündä-* “to shout” (Uysal 2019: 35).

3.6.2.1.4. -ğ- > -v-: *savuuq* < Khor. *sawuuq* < Kash. *soğuuq* “cold”, *yavuuqluq* < Khor. *yawuuq* < Kash. *yağuuq* “to become near”.

3.6.2.1.5. b- > m-: *miñ* < Orkh. *biñ* ~ *biñ* “thousand”, *muñ* < Orkh. *buñ* “nuisance” (Uysal 2019: 42).

3.6.2.2. Consonant Changes

3.6.2.2.1. -k->-h-: *oñsa-* < KB *oqşa-* “to look like”, *yañsı* < KB *yaqşı* “good”.

3.6.2.2.3. -p- > -f-; p-> f-: *tofrağ* < Kash. *topraq* “sand”, *yafradıñ* < Kash. *yapurğaq* “leaf”, *yaf-* < Kash. *yap-* “to do, to make”; *fiçağ* < *pıçaq/ğ* < KB *bıçaq* “knife” (Uysal 2019: 43).

3.6.2.2.4. -q-> -ğ-; -k-> -g-: *sağınğandur* < Kash. *saqın-* “to miss”; *tilägim* < *tiläk+im* “my desire, wish”, *älgidägi* < *älgi+dä+ki* “at the society”.

3.6.2.2.5. t- > d-: *dağı* < Kash. *tağı* “also, as well”, *dä* < Kash. *tä-* “to say”, *däñizlär* < *täniz* “sea”.

3.6.2.2.6. s- > ç-: *çüçük* < Kash. *süçig* “sweet” (Uysal 2019: 44).



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3.6.2.2.7. Methathesis: *yamğur* < Kash. *yağmur* “rain”, *örgän-* < Kash. *ögrän-* “to learn” (Uysal 2019: 46).

3.7. Morphology

As a one of the most important morphonological feature it is seen that comitative suffix +AGU changes +AV: +äv < (+ägü): *ek+äv* < (< *ek(k)i+ägü* “both of”(Uysal 2019: 48).

3.6.3. Noun Inflection

3.6.3.1. Case

3.6.3.1.1. Genitive: +*nIñ*, +*nI*, +*dIn*: *anıñ suyu* “his / her water”, *otnu derdini* “nuisance of fire (love)”. In the text +*dIn* ablative affix has genitive function as well: *zülfidin büyi* “your hair’s smell.” (Uysal 2019: 61, 62).

3.6.3.1.2. Accusative: +*nI*, +*I*, +*n*: *‘älämni* “the earth”, *tofraqnı* “the sand”, *ayağın* “the foot”.

3.6.3.1.3. Dative: +*GA*, +*A*: *barçağa* “to all”, *başıma* “to my head”.

3.6.3.1.4. Locative: +*dA*: *bāğda* “at the field”.

3.6.3.1.5. Ablative: +*dIn*: *tänimdin* “from my skin”.

3.6.3.1.6. Instrumental: +*n*: *qaşın* “with your brow”. Also *bilä* and *ilä* postpositions have instrumental function: *cunbuşluq ilä* “with entertainment”, *anıñ la’li bilä* “with his / her jewel”.

3.6.3.1.7. Equative: +*çA*: *köñlüçä* “according to his / her desire” .

3.6.3.1.8. Directive: There is only found +*rä* allomorph of directive: *içrä* “to the inside” (Uysal 2019: 61).

3.6.4. Verb Inflection

3.6.4.1. Past Indefinite: Perfect II: *-(I/U)pDUr*: *yatıpmän* “i have laid down”, *salıp sän* “you have released” (Uysal 2019: 82); Perfect I: *-GAN/-KAN (-DUr)* + *Personal pronouns*: *atqan* “s(he) has threw”, *açqandur* “s(he) has opened” (Uysal 2019: 83).

3.6.4.2. Aorist: *-(A)r/-(I/U)r/-(A)r/-(I/U)r* + *Possesive suffix* + *yoq*; *-mAs/-mA* + *personal pronouns*: *dermän* “i say”, *qaçar* “s(he) escapes” (Uysal 2019: 83); *aytarım yoq* “i did not say”, *qaytarım yoq* “i did not come back”, *almas* “do not take”, *bilmäm* “i do not know” (Uysal 2019: 84).

3.6.4.3. Present: *-AdUr* + *Personal Pronouns*: *qazadurmän* “i am digging”, *olmay mu* “isn’t it happen” (Uysal 2019: 85).

3.6.4.4. Future: *-GU* + *Possesive suffix* + *dur(ur)*, *-GA(y)* + *Personal pronoun*: *açılğumdur* “i will be out”, *bärgäy* “he / she will give” (Uysal 2019: 85).

3.6.4.5. Imperative-Optative



1st Person Singular: *-Ay(In)/-Ay: içmäyin* “i shall not drink”.

2nd Person Singular: : *Zero ending, GI: keçürgil* “forgive”.

3rd Person Singular: *-sU(n): qarasun* “let the look”, *çiqsu* “let the go out”.

1st Person Plural: *Couldn't be detect in the text* .

2nd Person Plural: *-η(lAr), -ηIz(lAr): almañlar* “do not take”, *qılıñız* “do, make”.

3rd Person Plural: : *Couldn't be detected in the text* (Uysal 2019: 86).

3.6.5. Word Formation

3.6.5.1. Comitative suffix +äv (< +ägü): *ekäv* “both of” (Uysal 2019: 48).

3.6.5.2. Deverbial Nouns: *+uq-*: *yoluqtum* “to meet” (Uysal 2019: 55).

3.6.5.3. Deverbial verb (Causative): *-gür-/ -kär-: tirgür-* (< *tir-* “to live”-*gür-*), *amırtgur* (< *amırt-* “to be calm”-*gur-*), *azgur-* < *az-* “to deviate” , *kıgür-* < *ki(r)-* “to come in”, *yätkür-* < *yät-* “arrive”, *yazgur-* < *yaz-* “to wirte” (Uysal 2019: 55, 56)

3.6.5.4. -ız-: *aqızdım* < *aq-* “to flow”, *tamızgandır* “to drip, to fall off”, *yätüz* < *yät-* “arrive” (Uysal 2019: 56).

3.6.5.5. -re-: *täprätip* < *täp-* “to kick” (Uysal 2019: 57).

3.7. Erhan Taşbaş, Çağataycanın Son Dönemine Ait Bir Köroğlu Destanı (İnceleme, Transkripsiyon, Aktarma, Dizin), Yüksek Lisans Tezi, KTMÜ Sosyal Bilimler Enstitüsü, Mart 2011.

3.7.1. General Information About The Text

Ümöt Moldo is an author of the above mentioned text (“Köroğlu”, “Cançar han padişa gazalı”, Kız Cibek”). So we can estimate again this text (ÇŞDKD-ET) written at the last period of 19th century or at the beginning of the 20th century. Ümöt Moldo is both author of ÇADT-AM and ÇŞDKD-ET.

3.7.2. Morphology

3.7.2.1. Noun Inflection

3.7.2.1.1. Case

3.7.2.1.1.1. Genitive: *+nIn, +nI, +dIn: kâfirniñ* “of the unbeliever”, *cigitdin yañşısın* “of the young man’s good”, *kör oğlını ğıratı* “kör oğlın’s white horse”.

3.7.2.1.1.2. Accusative: *+nI, +dI, +I: sözlärni* “the words”, *dali ħandı* “the dali han”, *könülläri* “the desires”.

3.7.2.1.1.3. Dative: *+GA/+KA, +A: otğa* “to the fire”, *solqa,* “to the left”, *mäydana* “to the square”

3.7.2.1.1.4. Locative: *+dA: yolında* “his / her /it way”.



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3.7.2.1.1.5. Ablative: +*dIn*, +*dAn*, +*nAn*: *sözün* “from the word”, *arqamın* “from my back”, *arqasınan* “from his / her /it back”, *şehrünän* “from his / her city”.

3.7.2.1.1.6. Instrumental: +*n*; *birlä*, *bilä*, *bilän*: *suvi birlän* “with his / her water”, *qalqan birlä* “with shield”, *şadaq bilä* “with the quiver” (Taşbaş, 2011: 46-51).

3.8. Verb Inflection

3.8.1. Past Indefinite: Perfect Preferit: -*mİş*, -(*I*)*p dur*, -(*I*)*pdl*; Perfect I: -*kän*: *bolmuş* “it has happened”, *qalıp dur* “have / has stayed”, *depdi* “have / has said”; *şāhmı qızı ekän* “she was daughter of shah”.

3.10.2. Aorist: -(*A*)*r*/(*U*)*r*; -*A*: *uçar* “it flies”, *qorqamın* “i fear”; -*mAy*, -*mAs*: *ötkärmäymin* “i do not pass”, *bolmas* “do not happen”.

3.10.3. Present: -*a dur* (< *a turur*): *baradur* “he / she / it is going”.

3.10.4. Future: -*mAkçI* (*Optative funtion*), -*GAy* (*Optative function*): *qaytmaqçı män* “i want to return”.

3.10.5. Imperative-Optative

1st Person Singular: -*Ay*, -*AyIn*: *aytayın* “let me tell”.

2nd Person Singular: -*Gİl*, -*GIn*: *tavba qılğıl* “swear off”, *körgün* “to see”.

3rd Person Singular: -*sUn*: *bersün* “let the give”.

1st Person Plural: -*All*, -(*A*)*yIl*: *aytalı* “let us say”.

2nd Person Plural: -(*I*)*η(lAr)*: *Not detected*.

3rd Person Plural: *not detected* (Taşbaş 2011: 54-59).

3.11. Word Formation

3.11.1. Deverbal verb (Causative): -*GAR-*, -*Kar-*, -*GUr-*, -*KUr-*: *bütkärsä* < *büt-* “to finish”, *yetkärsä* < *yet-* “to arrive”.

3.12. Recep Yürümez, Çağatay Şairi Harâbâtî'nin Fakr-nâmesi (İnceleme, Çeviriyazı, Dizin, Ek Dizin, Tıpkıbasım), Doktora Tezi, KTMÜ Sosyal Bilimler Enstitüsü Türkoloji Anabilim Dalı, Bışkek 2020.

3.12.1. Genel Information About the Text

Author (Muhammed bin Abdullah Harabati) of “Fakrnama” who is thought to have lived in East Turkestan in the 17th-18th centuries. The exact date of the writing “Fakrname” (ÇŞHF-RY) is unknown, but it is assumed that the author lived between 1638 and 1730. Thus, this information indicates that “Fakrname” was written in the 17th or 18th centuries (Yürümez, 2020: xi).

3.12.1. Phonology

3.12.1.1. Vocalic Changes



3.12.1.1.1. **ü > ä:** *böläk* < *bölük* “share, percent”.

3.12.1.1.2. **a > o:** *obdāni* < *abdāni* “water-can”.

3.12.1.1.3. **ı > u:** *tamurıdın* < *tamur* “vein”.

3.12.1.1.4. **ä > ü:** *öyür-* < *ävür-* < *äbir-* “to turn aside” (Yürümez 2020: 27).

3.12.2. Consosnant Changes

3.12.2.1. **b- > m-:** *maña* “to me”, *munıñ* “of this”, *mundağ* “as this”.

3.12.2.2. **-q- > -h-:** *oğşa-* < *oqşa-* “to look like”, *yağşı* < *yaqşı* “good”.

3.12.2.3. **-p- > -f-:** Just one example; *tofrağ* < *topraq* “sand”.

3.12.2.4. **b- > ø:** Verb *bol-* “to happen” alternates with *ol-* “to happen”.

3.12.3. Morphology

3.12.3.1. Noun Inflection

3.12.3.1.1. Case

3.12.3.1.1.1. **Genitive:** +*nIñ*, +*nI*: *ādāmniñ* “of the man”, *anıñ* “him/her”; *bādāni hayālida* “in the dream of body”, *alarnı hālāt* “faces of them”

3.12.3.1.1.2. **Accusative:** +*nI*, +(y)*I*, +*n*: *āhırātıni* “the afterlife”, *atı* “the horse”, *dāhāndäyi* “the giver”, *dōstın* “the friend” (Yürümez 2020: 48).

3.12.3.1.1.3. **Dative:** +*A*, +*GA*: *pārvārdgāra* “to the (God) nurturer”, *ömrünjä* “to your life”; *ādāmğa* “to the man”, *barçağa* “to the all” .

3.12.3.1.1.4. **Locative:** +*DA*: *aldıda* “in front of”, *ğaflätdä* “on inattention”.

3.12.3.1.1.5. **Ablative:** +*dIn*: *alardın* “from them”, *dārdın* “from the house” (Yürümez 2020: 49).

3.12.3.1.1.6. **Instrumental:** *bilän*, *birlän* (Yürümez 2020, 49, 50).

3.12.3.1.1.7. **Directive:** +*GA**rU*: *içgäri* “to the inside”, *taşqarı* “to the outside”; +*rä*: *içrä* “to the inside” (Yürümez 2020: 50).

3.12.4. Verb Inflection

3.12.4.1. **Past Indefinite:** Perfect II: *-(I/U)pDUr(IAr)*: *bolupdur* “it has happened”, *aytıpdurlar* “they have said”; Perfect I-*GAnDUr*: *qılğandır* “maker” (Yürümez 2020: 61).

3.12.4.2. **Aorist:** *-(A)r/-(I/U)r*; *-mAs*: *açar* “s(he) opens”, *bärürmän* “i give”, *bolmas* “do not happen” (Yürümez 2020: 59).

3.12.4.3. **Future:** *-GA(y) + Pronouns*: *qılğay män* “i will make it”, *olğa sän* “(you) will be”; *-GU + Possesive* suffix: *bolğusı* “it is going to be”, *qılğusı* “it is going to make” (Yürümez 2020: 61).



3.12.4.4. Imperative-Optative

1st Person Singular: *-(A)yIn / -Ay: aytayın* “i shall say / tell”; *äyläy* “he / she shall make”.

2nd Person Singular: : *no affix, GI / GIn: äylä* “make”, *digil* “say”; *qoygın* “leave”.

3rd Person Singular: *-sUn / -sUy: bilsün* “let the know”, *qılsuñ* “let the make” .

1st Person Plural: *-All: qılalı* “we shall make”.

2nd Person Plural: *no example (or no detected)*

3rd Person Plural: : *-ünlAr: öldürünlär* “let the kill” (Yürümez 2020: 62, 63).

3.12.5. Word Formation

3.12.5.1. Deverbal verb (Causative): *-GUz- / -kAr- / -kUr- / -set-: kirgüzmäslär, körgüzmägünçä; ötkärip; yätkü; körsättiler* (Yürümez 2020: 43, 44).

3.12.5.2. Denominal Nouns: *+vul:* Originally Mongolian suffix. Generally it makes community names: *qaravul* “ (Yürümez 2020: 38).

4. General Grammar Points of Dissertations

Mentioned dissertations’ phonological and morphological features show us clearly to review and to update Chagatay Turkic’s periods on this viewpoints. Both Pre-Classical, Classical Chagatay Turkic and reviewed dissertations generally have similar phonological features. But whilst Pre-Classical and Classical Chagatay have labialization, dissertations have labialization (rounding) is some words and on the contrary have unrounding. This assymmetric progress were determined AMGM-GÇ, AMGM-HY, AMGM-AE, KT-ÖÖ, ADT-AM?, ÇGYD-SU, ÇŞDKD-ET, ÇŞHF-RY.

Especially */-p-/* changes */-f-/* (there has in the textes of AMGM-GÇ, AMGM-HY, KT-ÖÖ, ÇGYD-SU, ÇŞHF-RY is an interesting fact considering the Modern Central Asian Turkic languages’ *-p- > -f-* in Arabic and Persian loans.

Also we see some of local (or dialectical) phonological features as well. For instance: in the text of AMGM-GÇ, AMGM-HY, ÇDYD-SU (*s- > ç-*); in the text of KT-ÖÖ (*y- > c-*), in the text of ÇADT-AM (*y- ~ c-*) alternations; and also in the text of ÇADT-AM (*-z- > -s-*), (*-ç- > -ş-*), (*-ş- > -s-*). Local (dialectical) differences can be explained with the political situations of post-17th century.

Table 1. Vocalic and Consonant Changes of 17th and Post-17th Century Textes.

b- > m-	ÇGYD-SU, ÇŞHF-RY	a > o	AMGM-GÇ, AMGM-AE, KT-ÖÖ
s- > ç-	AMGM-GÇ, AMGM-HY, ÇGYD-SU	e > ö	AMGM-GÇ, AMGM-AE, KT-ÖÖ
y- > c-	KT-ÖÖ	o > a	AMGM-GÇ, AMGM-AE, AMGM-HY, ÇGYD-SU
y- ~ c-, -z- > -s-, -ç- > -ş-, -ş- > -s-	ÇADT-AM	ü > e	AMGM-GÇ, AMGM-AE, AMGM-HY, ÇGYD-SU, ÇŞHF-RY



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In the dissertations entitled ÇADT-AM and ÇGYD-SU, ÇŞDKD-ET +*dIn* accusative suffix is important characteristic feature of some Modern Central Asian Turkic languages. This suffix can be element to consider for the new classification(s).

Table 2. Case Endings of 17th and Post-17th Century Textes.

	Genitive	Ablative	Instrumental
17th and Post 17th Century Texts	+nIn, +nUn, +nI (rarely)	+DIn	+n, +IA
AMGM-GÇ	+nIn, +In (After the pronouns)	+dIn	bi(r)lä(n), +la, +n
AMGM-HY	+nIn, +In (After the pronouns)	+dIn	bilä, billä, birlä, bilän
AMGM-AE	+nIn	+dIn	
KT-ÖÖ	+nIn	+dIn	bi(r)län
ÇADT-AM	+nIn, +nI, +dIn	+dIn, +dAn, +nAn	bi(r)le(n), mänen
ÇGYD-SU	+nIn, +nI, +dIn	+dIn	+n; (b)ile
ÇŞDKD-ET	+nIn, +nI, +dIn	+dIn, +dAn, +nAn	+n; birlä, bilä, bilän
ÇŞHF-RY	+nIn, +nI	+dIn	bilän, birlän

Indefinite Past (Perfect II): *-p DUr* is seen as a characteristic feature of post-17th or 18th century. This suffix is determined in AMGM-GÇ, AMGM-HY, AMGM-AE, KT-ÖÖ, ÇADT-AM, ÇŞHF-RY).

-GU + Possesive pronouns + tur(ur) structure can be the other unique characteristics for the new classifications. We can assert that this structure start to disappear post-16th century. Except for ÇGYD-SU it is not seen in the other textes.

Table 3. Verb Inflection

17th and Post 17th Century Texts	Indefinite Past	Aorist	Present	Future
AMGM-GÇ 17th or 18th Century	-mİş, -p/-y(dUr)	-(X)r, -mAs	-A/-y(dUr)	-GAy
AMGM-HY 17th or 18th Century	-mİş, -p/-y(dUr) -GAn	-(X)r, -mAs	-A/-y(dUr)	-GAy
AMGM-AE 17th or 18th Century	-mİş, -GAn -p/-y- dur			-GAy
KT-ÖÖ 1902	-pDUr	-(X)r, -mAs	-A dUr	-GAy



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ÇADT-AM19th Century	-GAn <i>äkän</i> -mİş,-(I)pdl(r)	-(X)r -mAs	-A dur -(I)p/-A yat-cat-	-A -GAy
ÇGYD-SU 17th or 18th Century	-(I/U)pDUR, GAn(DUR)	-(A)r, (I/U)r -(A)r + Pos.P.+ yok,- mAs	-AdUr	-GA(y) -GU + Pos. Suf.+ dur(ur)
ÇSDKD-ET 19th Century	-mİş, -(I)p dur -(I)pdl, -ken	-(A)r/-(U)r -A, -mAs	-a dur	-mAçI -GAy
ÇŞHF-RY	-(I/U)pDUR (lAr)	-(A)r/-(I/U)r;-mAs		-GA(y)

RESULTS

-The era of 17th-19th (or 20th) or the 17th and Post-17th Century of Chagatay Turkic must be reviewed in the light of new findings. New manuscripts that have been found and are going to be found must be studied immediately and scholars must encourage their students to work harder on this field. For the best result(s) Post-17th Century texts must be preestimated along with territories they are written in.

-Universities and foundations must arrange projects on making of manuscript facsimiles. These manuscripts must be studied by the scholars that minimum one known Central Asian Turkic language.

-As a result of these works classification of Chagatay Turkic would be updated and also would be added as entries in dictionaries. In the light of this knowledge we could review grammatical relations between Chagatay Turkic and The Modern Central Asian Turkic Languages. My recommendation is about in the new classification of Central Asian Turkic language, researchers must consider sociological and political events in Central Asia as well.

Abbreviations

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Khor. Khorazmian Turkic

Mahb. (Ahmet Vefik Paşa) Maḥbûbü'l-Ḳulûb li-Emîr 'Ali Şîr Nevâ'î, İstanbul, 1289/1872.

Old T. Old Turkic

Orkh. Orkhon Turkic



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TN. Seydî Ahmed Mîrzâ. Ta'aşşuqnâme. Elyazma. British Museum Add. 7914, s.273b-289b, Rieu, s. 289.

Uig. Old Uighur Turkic

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INTRODUCTION OF THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE SCIENTIFIC AND PEDAGOGICAL LITERATURE

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Abstract

At present, various specialists are conducting research on the information problem, and their number is quite large. Mathematicians, physicists, biologists, economists, cyberneticists, computer scientists and others solve scientific and theoretical problems by solving various problems in the information world.

During the modern scientific and technological revolution, the volume of information has increased so much that it has become an ocean without borders.

The world's greatest information revolutions have taken place.

First of all, the greatest revolution is the emergence of writing, research has been conducted to answer the question "When did man use oral speech?", But the solution to this problem remains open. However, the advent of writing was a great revolution in terms of disseminating information. The second revolution was associated with book printing.

Book printing began in about 1450. Books began to be published in Rome in 1467, in Paris in 1470, in London in 1474, and in Russia in 1553. In 1917, the French physician Runodo published a one-page daily newspaper, where he published the necessary daily news. One-page information was published under the name "La Gazette", which means a penny, and the word "newspaper" appeared from that period.

Such a periodical press in Russia was approved by Peter I in 1703.

The third revolution that led to an increase in the speed of information transmission was the discovery of electricity. This discovery led to many discoveries. Thus, in 1932 the telegraph, in 1876 the telephone, in 1877 the recording, in 1884 the television, in 1839 the photography, in 1895 the wireless radio broadcast, in 1911 the cathode electron beam. tube Rosing's television, filming in 1895, and so on. appeared.

Beacons were used by Sostran in 283 BC from the Alexandria Tower. A bonfire was left on the tower at a height of 120 meters and signals were given from there.

The high speed of information transmission was after the advent of electronic technology. An intranet and internet system have already been created, and a spider web system has emerged that covers the world.

Keywords: information, scientific and technical revolution, electricity



**İnformasiya - kommunikasiya texnologiyalardan istifadənin elmi-pedaqoji
ədəbiyyatlarda qoyuluşu**

Hazırda informasiya problemi ilə müxtəlif ixtisasçılar araşdırma aparır və onların sayı kifayət qədər çoxdur. Riyaziyyatçılar, fiziklər, bioloqlar, iqtisadçılar, kibernetiklər, informatiklər və başqaları informasiya aləmində müxtəlif məsələləri həll etməklə həmçinin elmi-nəzəri məsələləri həll edirlər.

Müasir elmi texniki inqilab dövründə isə informasiyaların həcmi o qədər artmışdır ki, artıq sərhədsiz bir okeana çevrilmişdir.

İnformasiyaların yayımı istiqamətində dünyada ən böyük inqilablar baş vermişdir.

İlk növbədə ən böyük inqilab yazının meydana gəlməsidir, “insan nə vaxtdan şifahi nitqdən istifadə etmişdir?”- sualına dəqiq cavab vermək sahəsində araşdırmalar aparılmışdır, lakin bu məsələnin həlli hələ açıq qalmışdır. Lakin yazının meydana çıxması informasiyaları yaymaq nöqtəyi nəzərdən böyük inqilab olmuşdur. İkinci inqilab kitab çapı ilə bağlıdır.

Kitab çapı təxminən 1450-ci ildən başlamışdır. Romada 1467, Parisdə 1470, Londonda 1474, Rusiyada 1553-cü illərdə kitablar çap olunmağa başlamışdır. 1917-ci ildə fransız həkimi Runodo gündəlik bir səhifəlik qəzet buraxmış və burada gündəlik zəruri xəbərləri yaymışdır. Bir səhifəlik məlumat “La Gazette” adı ilə buraxılmışdır, mənası bir qəpiklik deməkdir və həmin dövrdən “qəzet” sözü meydana gəlmişdir.

Rusiyada belə bir dövrü mətbuat 1703-cü ildən I Pyotr tərəfindən təsdiq edilmişdir.

İnformasiyanın yayım sürətinin artmasına səbəb olan üçüncü inqilab elektrik enerjisinin kəşfi olmuşdur. Bu kəşf bir çox kəşflərin yaranmasına səbəb olmuşdur. Belə ki, 1932-ci teleqraf, 1876-cı ildə telefon, 1877-ci ildə səs yazmaq, 1884-cü ildə televiziya, 1839-cu ildə fotoqrafiya, 1895-ci ildə xətsiz radio verilişi meydana gəlmiş, 1911-ci ildə katodlu elektron şüa borulu Rozinqin televizoru, 1895-ci ildə kino çəkilişi və s. meydana çıxmışdır.

İşıq vasitəsi ilə siqnalların verilməsi –mayak eramızdan qabaq 283-cü ildə İsgəndəriyyə qülləsindən Sostran tərəfindən tətbiq olunmuşdur. 120 metr hündürlükdə qüllənin üstündə tonqal qalanmış və oradan siqnallar verilmişdir.

İnformasiyanın yayım sürətinin yüksək həddi elektron texnikasının yaranmasından sonra olmuşdur. Artıq intranet və internet sistemi yaranmış və dünyanı bürüyən hörümçək toru sistemi meydana çıxmışdır.

Açar sözlər: informasiya, elmi texniki inqilab, elektrik enerjisi.



DECISIONS IN REVIVING INTERNATIONAL CULTURAL HERITAGE

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Abstract

Every nation's cultural heritage is its wealth. The cultural heritage has impact on different levels: symbolic, historic, informational, aesthetic and economic and it is very important in defining the people's identity, self-respect, and dignity.

Each country has a field of art in its cultural history that reflects the spiritual dimension, the worldview, aesthetics and philosophy of life. It is vital to stress that cultural heritage involves not only tangible or visible heritage such as sites, colors, materials, and settlement patterns, but also intangible heritage such as societal structures, traditions, values, and religion.

For the people of Azerbaijan, the collective mind is deeply imprinted and materialized through the mastery with which the art of carpet weaving recalls and memorizes secular histories. Due to their high aesthetic value, cheerful rugs, decorated with various patterns and signs, are used to decorate the walls and floors of homes. The weaving of carpets embodies the aesthetics of harmony, rhythm and color since ancient times, forming a kind of synthesis of certain geographical, economic and social conditions, which subsequently acquired aesthetic value. Azerbaijan, through the art of carpets, tells the story of a community that, in a relatively small area, agglomerates traditions and customs from mountains and alpine meadows, endless forests, steppes, valleys and the Caspian Sea. The artistic thinking of the people was formed in a unique environment, which favored the creative activity of the Azerbaijani population.

A careful comparative observation between Romania and Azerbaijan illustrate a symbiotic cultural destiny. The weaving of carpets has also an important role in Romania to facilitate the social communication and the promotion of cultural identity. Therefore, the craft of weaving wall rugs, one of the oldest Romanian artistic crafts, was included in the Representative List of the Intangible Cultural Heritage of Humanity (UNESCO), on December 1, 2016, according to <https://ich.unesco.org>, to preserve the traditional techniques of their realization. The main difference consists in the fact that they are hung on the central walls of the big house or the living room, having an aestheticizing role, besides the functional one, being richly ornamented.

Seen as an expression of creativity and identity marking, the mastery of the wall rug, in Romania, or for wall and floor, in Azerbaijan, is considered a tool to facilitate communication at the societal level, in groups of different ages and social backgrounds.

The aim of this paper is to discuss the status, issues and challenges of an ancient tradition that marked the communities and created a social network in order to preserve the traditions. Being important exchange goods, the carpets create a world that is directly related to the ancient Silk Road. Therefore, the project of the revival of this trades route initiated in the mid-1990s by the then-president of Georgia, Eduard Shevardnadze, is deeply linked with the



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cultural roots that shaped the people and the traders back then in the ancient and the medieval times. Romania has also believed in the revival of the Silk Road (former Romanian President Emil Constantinescu: <https://institutlevant.ro/>) and underlined that it “is like a bridge between the eastern economy, philosophy, mentality, and Central, Western Europe”.

Methodologically, the dyachronic perspective, used in this exegesis, illustrates the description of history of an intangible well-defined cultural heritage in a spatial and temporal context and analyses the decisions that were done in order to revive the Silk Road. There is also debated the impact regarding the crossroads of mentalities that facilitate the revival of cultural outcomes in contemporaneity.

In conclusion, we affirm that such a revived perspective becomes a framework for reflection and dialogue on an economic, cultural, and social level to reestablish cooperation taking into account the development of the process.

Keywords: Cultural heritage, Traditional rugs, Weaving, Silk Road, Community



**PRINTED ORGANS OF THE "NEW OTTOMANS" IN THE STRUGGLE FOR
NATIONAL FREEDOM AND INDEPENDENCE**

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Abstract

The article is devoted to the analysis of periodicals of the secret political organization “New Ottomans” society, founded in 1865 in Istanbul by representatives of the young Turkish intelligentsia (Namyk Kemal, Ziya-bey, Ali Suavi, etc.). While advocating the establishment of a constitutional system and the implementation of other progressive reforms, the «New Ottomans» at the same time denied the right of the non-Turkish peoples of the Ottoman Empire to develop independently and preached the utopian idea of a single «Ottoman nation». Among the periodicals that appeared in the 60s of the nineteenth century, the most famous was the newspaper «Mukhbir» (Correspondent). It was owned by Philip Efendi, a former collaborator of Jerid-i Havadis, but was the head of Ali Suavi's newspaper. Ali Suavi (1838-1878) was born into a family of a modest income paper merchant. He received his primary education in rjushty and continued it in a madrasah, after which he made a hajj to Mecca and was a muderris (teacher of a madrasah) in Plovdiv, and then a rjushty teacher in the same place and in Bursa. He received a secular education on his own. For speeches in mosques with critical speeches addressed to the Port, which were inspired, as one might suppose, by the newspaper «Tasvir-efkar», Ali Suavi was removed from his post as a school teacher, in 1865 he returned to Istanbul and joined the Society of «New Ottomans».

The author conducts research on the basis of factual materials, using the example of the newspaper «Mukhbir», which appeared in January 1867 and immediately took a rather negative stance towards the government. On February 8 and 10, 1867, letters from Mustafa Fazyl Pasha to the Sultan were published in it, which immediately showed the opposition of the newspaper. Following «Tasvir-i efkar», Ali Suavi expressed dissatisfaction with the Porte's inability to deal with the Greeks of Crete, suppress the Serb uprising, and resist the intervention of the great powers. But «Mukhbir» did it in a sharper form. On March 4, 1867, the newspaper published an article by Ali Suavi «Freedom», in which he opposed social inequality and absolutism, although he believed that bourgeois freedoms in Turkey could be achieved as a result of the sultan's renunciation of some of his autocrat rights.

Key words: press, reforms, society, Ottomans



Печатные органы «Новых османов» в борьбе за национальную свободу и независимость

Резюме

Статья посвящена анализу периодических изданий тайной политической организации общество «Новых османов», основанного в 1865 в Стамбуле представителями молодой турецкой интеллигенции (Намык Кемаль, Зия-бей, Али Суави и др.). Выступая за установление конституционного строя и проведение других прогрессивных реформ, «Новые османов» вместе с тем отрицали право нетурецких народов Османской империи на самостоятельное развитие и проповедовали утопическую идею единой «османской нации». Среди периодических изданий, появившихся в 60-х годах XIX в., наибольшую известность приобрела газета «Мухбир» (Корреспондент). Ее владельцем был Филипп-эфенди, в прошлом сотрудничавший в «Джериде-и хавадис», но руководил газетой Али Суави. Али Суави (1838-1878) родился в семье бумаготорговца скромного достатка. Начальное образование получил в рюштии и продолжил его в медресе, после чего совершил хадж в Мекку и был мюдеррисом (учителем медресе) в Пловдиве, а затем учителем рюштии там же и в Бурсе. Светское образование получил самостоятельно. За выступления в мечетях с критическими речами в адрес Порты, которые были навеяны, как можно полагать, газетой «Тасвир-и эфкар», Али Суави был отстранен от должности школьного учителя, в 1865 году он возвратился в Стамбул и вступил в Общество «новых османов».

Автор проводит исследование на основе фактических материалов, на примере газеты «Мухбир», которая появилась в январе 1867 г. и сразу же заняла довольно негативную позицию в отношении правительства. 8 и 10 февраля 1867 г. в ней были опубликованы письма Мустафы Фазыл-паши к султану, что сразу показало оппозиционность газеты. Вслед за «Тасвир-и эфкар» Али Суави выражал недовольство неспособностью Порты справиться с греками Крита, подавить восстание сербов, противостоять вмешательству великих держав. Но «Мухбир» делала это в более резкой форме. 4 марта 1867 г. в газете была помещена статья Али Суави «Свобода», в которой он выступал против социального неравенства и абсолютизма, хотя и считал, что буржуазные свободы в Турции могут быть достигнуты в результате отказа султана от некоторых своих прав самодержца.

Ключевые слова: печать, реформы, общество, османов.

Тайное политическое общество «Новых османов» было создано в 1865 г. Эта организация своей деятельностью проложила путь к провозглашению конституции 1876 г. Либерально-радикальная организация состояла из молодой турецкой интеллигенции, получившее светское образование и воспитание в учебных заведениях Франции и других европейских странах. Своим происхождением эта интеллигенция была связана с турецким феодальным классом, с бюрократией, хотя отдельные ее представители вышли из разночинной среды. Но объективно она выступила как защитница интересов турецкой, преимущественно торговой, буржуазии, а также узкого слоя турецких помещиков, приобщавшихся к капиталистическим формам ведения хозяйства. Именно с деятельностью этой организации более всего связан подъем турецкой печати в 60-70-х годах, хотя на развитие ее оказывало влияние совокупность всех нередко



противоречивых и даже непримиримых факторов общественно-политической и культурной жизни Турции этого периода.

Важнейшим событием, положившим начало новому этапу в истории турецкой печати, было возникновение частных газет и журналов. Первой частной газетой была «Терджюман-и ахваль» (Толковый словарь). Ее основал видный общественный деятель, впоследствии член общества «Новых османов» Агях-эфенди. «Терджюман-и ахваль» начала выходить с 21 октября 1860 г., и эта дата считается изначальной в истории турецкой журналистики. Агях-эфенди привлек к участию в ней ряд образованных и передовых людей Турции того времени. В его газете активно сотрудничали и начинали свою общественную деятельность известный просветитель, писатель, поэт Зия-бей, видный историк литературы и языковед Ахмед Вефик-паша, журналист Мустафа Рефик-бей, который позднее основал собственную литературную газету «Мират» (Зеркало) и другие представители молодой турецкой интеллигенции. Однако наибольшую популярность газете принесло имя выдающегося литератора и публициста Ибрагима Шинаси, который играл едва ли не главную роль в выпуске первых 25 номеров «Терджюман-и ахваль». Отмечая роль И.Шинаси в создании этой газеты, известный историк, писатель и журналист Ахмед Расим писал: «Хотя «Терджюман-и ахваль» публиковалась за подписью Агях-эфенди, создана она была главным образом благодаря писательскому усердию Шинаси» (2,с.70).

И.Шинаси писал, что настоящая газета будет средством распространения известий о внутренних и международных делах, о различных вопросах просвещения и образования. Обращаясь к корреспондентам газеты, И. Шинаси подчеркивал необходимость писать простым языком, «который легко сможет понять весь народ» (237, с. 159-160). Таким образом, главной задачей газеты должно было стать просветительство. Появление «Терджюман-и ахваль» было встречено турецкой общественностью с большим интересом. Ее популярности способствовали и имена членов редакции, и тот факт, что ее выпускали сами турки, и регулярность, и относительно простой язык, и, конечно, содержание. Под специальными рубриками систематически давалась информация, и публиковались статьи о важнейших событиях внутри страны и за рубежом, помещались литературные произведения и научно-популярные статьи. Газета уделяла внимание экономике, промышленности, банковскому делу, торговле, транспорту и почтовой связи. На ее страницах регулярно печатались переведенные на турецкий язык статьи из иностранной прессы. В газете также публиковались письма читателей. Почти в каждом номере помещались заметки энциклопедического характера по науке, технике, истории, биографические справки о выдающихся людях. Отводилось место и материалам официальным, светской хронике, разным справкам (3,с.152-165). «Терджюман-и ахваль» выходила до 11 марта 1866 года. Возникнув как частная газета либерального направления, она сыграла свою роль в просветительском движении, в политическом пробуждении турецкого общества. Газета И. Шинаси непосредственно подготовила возникновение общества «Новых османов». «Хотя движение «Новых османов»,- пишет Ш.Мардин, - было продуктом многих влияний, интеллектуальные основы его были заложены одним человеком. Им был поэт Шинаси-эфенди, чьи произведения знакомили турецкую интеллигенцию с литературными, социальными и политическими концепциями Европы XIX в.» (6, с.252). Ученик и ближайший сподвижник Ибрагима Шинаси в общественной деятельности, литературе и журналистике Намык Кемаль считал его духовным отцом «Новых османов» (5,с.377).



Важнейшим новым явлением в жизни Турции, связанным с именем и деятельностью И.Шинаси, было возникновение общественного мнения. Формирование его самым тесным образом связано с газетой «Тасвир-и эфкяр» (Изображение идей), первый номер которого вышел 28 июня 1862 г., в нем сообщалось, что главной целью новой газеты будет просветительство. Весь свой талант и знания Ибрагим Шинаси направил на то, чтобы сделать «Тасвир-и эфкяр» духовным наставником передовых элементов турецкого общества. Он привлек в редакцию самых образованных и прогрессивных писателей, которые вместе с тем хорошо знали и классическую восточную поэзию, в их числе Намык Кемаль, Зия, Реджаизаде Махмуд Экрем, Али Суави. Редакция «Тасвир-и эфкяр» превратилась в своеобразный общественно-литературный клуб прогрессивной турецкой интеллигенции.

Ведущей темой статей и материалов «Тасвир-и эфкяр» было просветительство. По существу же газета «превратилась в форум для выражения новых литературных и политических идей» (6, с.254). Из номера в номер в ней обсуждались вопросы реформы турецкого языка, демократизации турецкой литературы, реорганизации школ, проблемы, связанные с возможностью заимствования Турцией европейских общественных институтов, применения в турецких условиях достижений науки и культуры Запада. Характеризуя «Тасвир-и эфкяр», В.А.Гордлевский писал: «С точки зрения литературы и политики это одна из самых важных османских газет. Основным принцип Шинаси-эфенди, проводимый им в газете, состоял в том, что, знакомя Восток с западной культурой, он хотел создать язык, пригодный для выражения новых мыслей, так как нельзя было о политических вопросах говорить с народом устаревшим языком, окутанным тысячами искусственных метафор и образов... Через газету общество знакомилось с новыми идеями...лица, до сих пор восхищавшиеся одной поэзией, теперь постигли значение политики в общественной жизни, определили рознь, которая лежит между правительством и народом» (1, с.354). Новый язык и новая литература, основы которых закладывали на страницах «Тасвир-и эфкяр» Ибрагим Шинаси и Намык Кемаль, призваны были помочь прогрессивным силам турецкого общества того времени в борьбе против феодальных порядков. Как писал исследователь истории турецкой поэзии Гибб, выход «Тасвир-и эфкяр» явился «эпохой в истории османской литературы и османского языка. Это было первое выступление современной школы, той школы, которой предназначалось в течение двадцати лет убрать со сцены распавшиеся остатки пяти веков азиатчины. И.Шинаси справедливо считают основателем современной школы османской литературы, так как он один серьезно и систематически пытался превратить литературу из простого развлечения в инструмент морального и интеллектуального воспитания всего народа» (4, с.26-28). В 1865 г. И.Шинаси тайно эмигрировал во Францию, и руководство газетой перешло к Намыку Кемалю. Совместная работа с И.Шинаси в «Тасвир-и эфкяр» способствовала формированию политических и общественных взглядов Намыка Кемалья. Переход «Тасвир-и эфкяр» в руки Намыка Кемалья по времени почти совпал с организацией общества «Новых османов», в создании которого он принимал самое деятельное участие. Это общество до 1867 г. не шло в своих требованиях далее ликвидации деспотизма и произвола чиновников, создания благоприятных условий для развития местных ремесел, торговли и земледелия, упрочения турецких финансов и устранения иностранного вмешательства во внутренние дела Турции. «Новые османы» полагали при этом, что таких целей можно достичь, если на троне окажется просвещенный и либеральный монарх, который передаст часть своей власти совещательным органам (6, с.79)



Наибольшую популярность среди периодических изданий, появившихся в 60-е годы XIX века, приобрела газета «Мухбир» (Корреспондент). Ее владельцем был Филипп-эфенди, в прошлом сотрудничавший в «Джериде-и хавадис», но руководил газетой Али Суави. Газета «Мухбир» начала издаваться с 1867 г. и сразу же заняла негативную позицию в отношении правительства. Газета выражала свое недовольство относительно государственного строя в резкой форме. Али Суави на страницах «Мухбир» выступал против социального неравенства и абсолютизма, считал что буржуазные свободы в Турции могут быть достигнуты в результате отказа султана от «некоторых своих прав самодержца» (6, с.380). За эти резкие выступления газета закрывается на месяц, и повторно возобновила свое издание в Европе. Местом издания был выбран Лондон, ввиду большей строгости французских законов. Намеченный первоначально выпуск газеты в Париже был невозможен еще по той причине, что летом 1867 г. общая политическая обстановка во Франции оказалась неблагоприятной для «Новых османов». Первый номер газеты «Мухбир» в эмиграции вышел 31 августа 1867 г., положив начало вольной турецкой прессе. Первая полоса газеты начиналась следующими словами: ««Мухбир» нашла страну, в которой не запрещено говорить правду, и выходит снова». «Мухбир» с наибольшей полнотой выражала стремление «Новых османов» к переустройству Османской империи на конституционной основе. Материалы, публиковавшиеся в вольных газетах «Новых османов», показывают, что у них не было четкой и последовательной программы действий. Однако уже в первой их газете достаточно определился круг вопросов, которые волновали турецкое либеральное общество 60-х годов XIX в., отразились поиски путей и способов вывода страны из тупика в тот период, когда уже вполне обнаружилась неэффективность танзимата. «Мухбир» отмечала недостаточность танзиматских реформ главным образом в том отношении, что они ни в какой степени не ограничили режима самодержавия в целом и самоуправства в вилайетах в частности. По мнению газеты, происходит это потому, что танзимат не основывается на шариате, а «в осуществлении своем подвержен воздействию тысячи злоупотреблений. И это из-за того, что танзимат не создал силы, которая должна противостоять деспотической власти». Поэтому в государстве нет денег и порядка, народ голодает, а кучка сановников, стоящих у власти, хочет «править миллионами людей как стадом баранов». Основным политическим требованием, которое звучало на страницах «Мухбир», было установление ограниченной конституционной монархии с целью спасения Османской империи от развала. Мысли, высказанные на страницах газеты «Мухбир», сразу же привлекли к газете внимание турецкого общества и обеспечили ей известность не только в столице, но и далеко за ее пределами. Газета пользовалась в Турции большой популярностью, и правительство было встревожено влиянием газеты на умы и чувства населения, особенно молодежи и поэтому запретило ее ввоз и распространение в Турции, ссылаясь на то, что она печатает «вредные и опасные слова». Несмотря на преследования властей газета продолжала успешно распространяться в Турции. Однако из-за конфликта между издателем «Мухбир» и руководством «Новых османов» привел к закрытию газеты. Вскоре Намык Кемаль и Зия-бей приступили к изданию новой газеты под названием «Хюрриет», и газета Али Суави пришла в полный упадок. 6 ноября 1868 г. издание газеты «Мухбир» прекратилось. Так закончила свое существование газета, которая оказала немалое влияние на формирование общественного мнения в Турции и внесла заметный вклад в подготовку борьбы за первую турецкую конституцию 1876 г.



Новая газета общества «Новых османов» получила название «Хюрриет». Издавалась она также в Лондоне с 29 июня 1868 г. Газета имела гриф общества «Новых османов», а в ее подзаголовке говорилось, что она будет освещать вопросы, «связанные с благополучием османской нации и государства». «Хюрриет» была самым значительным и авторитетным органом турецкой политической периодики конца 60-х годов XIX в. В ней сотрудничали наиболее известные и популярные деятели новоосманской эмиграции. Она была связана с эмигрантскими кружками «Новых османов» в Европе, являлась одной из наиболее читаемых в то время газет в Турции. Своим успехом газета, прежде всего, была обязана двум руководителям эмиграции Намык Кемалю и Зия-бею. И хотя Зия-бей поместил в «Хюрриет» в период сотрудничества с Намыком Кемалем ряд важных статей, все же именно последний был подлинным идейным руководителем этой газеты. Идейно-политические концепции Намыка Кемалья получили свое развитие на страницах «Хюрриет» и во многом определили лицо этой газеты, как в выборе тем, так и в характере аргументации. Намык Кемаль был единственным из «Новых османов», кто создал свою «политическую философию». Его общественно-политические взгляды складывались под влиянием двух противоположных факторов: просветительских концепций буржуазной Европы и догматов ислама и шариата. Однако в отличие от своих предшественников, Намык Кемаль первым попытался синтезировать взгляды европейских просветителей и философов (Монтескье, Вольтера, Руссо, Вольтера) и догматы мусульманской религии и создать систему, «которая похожа на европейский либерализм середины XIX в.» (6, с.286). В ряде вопросов позиции газет «Мухбир» и «Хюрриет» были близки друг другу или даже совпадали, между ними имелись и существенные различия. «Хюрриет» выступала с более определенными проектами конституционной реформы Турции, провозгласила ряд новых требований, отвечавших экономическим интересам нарождающейся турецкой буржуазии. Различие между этими двумя газетами состояло и в том, что в «Хюрриет» была сделана попытка теоретически обосновать необходимость тех преобразований и нововведений, которые «Мухбир» провозглашала в форме общего призыва, в виде лозунгов. Стиль изложения в «Хюрриет» был, как правило, строгим, даже академичным.

Известно, что «Новые османы» ни на одном из этапов своей деятельности не искали поддержки широких народных масс. В этом смысле они также были наследниками взглядов И.Шинаси, который, употребляя слово «народ» в несколько более широком, чем его предшественники, смысле, разумел не массу «подданных султана», а лишь тех индивидуумов, которые по его словам, «овладели опытом и знаниями» (6, с.273)

Таким образом, первые частные газеты 60-х годов, особенно «Терджюман-и ахваль», «Тасвир-и эфкар» и «Мухбир», внесли новые веяния в общественно-политическую и культурную жизнь Турции. Они дали толчок просветительству и ускорили процесс оформления идейной и политической оппозиции буржуазно-либерального направления. С появлением этих газет органически связано зарождение современной турецкой публицистики, художественной прозы и драматургии. Именно частные газеты выявили новую группу турецких литераторов, в которую входили Ибрагим Шинаси, Намык Кемаль, Зиябей, Али Суави и другие, менее видные деятели турецкой культуры.



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AZƏRBAYCANIN ƏN BÖYÜK SƏRVƏTİ MÜSTƏQILLIYIDIR

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Özet

Dünyada mövcud olan minlərlə millət və xalqın heç də hamısı müstəqil dövlət yarada bilməyib. Belə bir imkan və xoşbəxtlik hər milli topluma qismət olmur. Bunun üçün onun dövlət yaratmaq ənənəsinin, müəyyən inkişaf səviyyəsinin və fəaliyyət istiqamətinin olması zəruridir. Millətin dövlət yaratması nə qədər çətindir, onu qoruyub saxlaması bundan da ağır və məsuliyyətli bir mübarizədir. Dövlət yaratmaq təkcə ümummilliyet arzusu ilə bağlı deyil, bunun üçün millət və xalqlar sosiomədəni, geosiyasi və iqtisadi müstəvidə müstəsna nailiyyətlər qazanmalı və hər cür mübarizəyə hazır olmalıdır. Bu şərt və tələblər baxımından Azərbaycan xalqı xoşbəxtkdir. Azərbaycan o nadir ölkələrdəndir ki, bir əsrdə iki dəfə dövlət müstəqilliyini qazana bilmişdir.

1918-ci il mayın 28-də Azərbaycan Milli Şurası İstiqlal Bəyannaməsi qəbul edərək tam dövlət hakimiyyəti olan Azərbaycan Xalq Cümhuriyyətinin yarandığını bəyan etdi, yəni itirilmiş dövlət müstəqilliyini elan etdi. Müsəlman Şərqi ilk cümhuriyyətini o zaman bir çox xarici dövlət tanıdı, qısa müddətdə müstəqil dövlətin təsisatları yarandı. Təəssüf ki, bu müstəqillik tariximizin ömrü çox çəkmədi. Bolşeviklərin idarə etdiyi Sovet Rusiyası 1920-ci il aprelın 28-də müstəqilliyə qovuşan Azərbaycanın azadlığına– dövlət müstəqilliyinə son qoydu. Lakin sovet imperiyası Azərbaycan xalqının azadlıq ideallarını, müstəqillik arzularını susdura bilmədi.

Azərbaycan Respublikasının Prezidenti cənab İlham Əliyev ötən əsrin 90-cı illərində Heydər Əliyevin rəhbərliyi altında Naxçıvan Muxtar Respublikasında həyata keçirilən tədbirləri dövlət müstəqilliyi üçün mühüm şərt kimi qiymətləndirərək demişdir: “1990-cı ildə Heydər Əliyevin rəhbərliyi altında Naxçıvan Muxtar Sovet Sosialist Respublikasının Ali Sovetinin sessiyasında qəbul edilmiş tarixi qərarlar Azərbaycanın dövlət müstəqilliyini şərtləndirdi. Məhz o sessiyada Azərbaycanın üçrəngli bayrağı dövlət bayrağı kimi qəbul edildi.

Azərbaycan Respublikası 30 ildir ki, müstəqil dövlət kimi yaşayır və inkişaf edir. Bunun 18 ili ölkə Prezidenti cənab İlham Əliyevin Azərbaycana rəhbərliyi dövrünə düşür. Dövlət müstəqilliyinin 20 illiyi ilə əlaqədar Prezident İlham Əliyev demişdir: “Biz 20 ildir ki, müstəqil ölkə kimi yaşayırıq. Bu illər ərzində özümüzə də, dünya birliyinə də sübut etdik ki, Azərbaycan xalqı müstəqil yaşaya bilər. Müstəqillik o deməkdir ki, ölkə müstəqil siyasət apara, milli maraqlarını müdafiə edə bilsin. Öz milli maraqlarını müdafiə etmək üçün imkan olmalıdır. Həm siyasi güc, həm iqtisadi güc olmalıdır. Bu gün müstəqil ölkə kimi qısa tariximiz onu göstərir ki, biz müstəqil ölkə kimi uğurla inkişaf edirik. Bugünkü Azərbaycan Azərbaycan xalqının zəhmətinin, istedadının nəticəsidir. Bu ölkəni biz qurmuşuq, Azərbaycan xalqı qurubdur. Biz elə etməliyik ki, hər bir vətəndaş gündəlik işində elə etməlidir ki, öz



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fəaliyyəti ilə bu müstəqilliyi gücləndirsin, əbədi, dönməz etsin və bundan sonra əsrlər boyu Azərbaycan xalqı azad, müstəqil yaşasın”.

İstənilən dövlətin beynəlxalq münasibətlər sistemində nüfuzunu yüksəldən səbəblər var. Bunların arasında ən mühümü təbii ki, dövlətin həyata keçirdiyi xarici və daxili siyasətin məzmunu və mahiyyətidir. Müasir dövrdə dövlətin nüfuzu ilə yanaşı, həm də ona göstərilən beynəlxalq etimadı da məhz bu səbəb meydana çıxarır. Bu gün Azərbaycan, sözün əsl mənasında, tam müstəqil siyasət yürüdən ölkədir. Azərbaycanın öz siyasi dəstxəti, dövlətçilik siması, inkişaf yolu var. Son 26 illik tarixə nəzər yetirsək, aydın şəkildə bunu görə bilərik. Son 17 ildə isə Azərbaycanın tamamilə fərqli siyasi və iqtisadi reallıqlar şəraitində inkişaf etdiyinin şahidiyik.

Açar sözlər: Müstəqil, Milli Şura, İstiqlal Bəyannaməsi

AZERBAIJAN'S GREATEST WEALTH IS INDEPENDENCE

Abstract

Not all of the thousands of nations and peoples in the world have been able to create an independent state. Not every national community has such an opportunity and happiness. For this, it is necessary to have a tradition of statehood, a certain level of development and direction of activity. The more difficult it is for a nation to create a state, the more difficult and responsible it is to preserve it. The creation of a state is not only a national dream, for which nations and peoples must achieve exceptional achievements in the socio-cultural, geopolitical and economic spheres and be ready for any struggle. The people of Azerbaijan are happy in terms of these conditions and requirements. Azerbaijan is one of the few countries that has gained state independence twice in a century.

On May 28, 1918, the National Council of Azerbaijan adopted the Declaration of Independence and declared the establishment of the Azerbaijan Democratic Republic, which was a full state power, ie declared the lost state independence. The first republic of the Muslim East was recognized by many foreign states at that time, and in a short time the institutions of an independent state were established. Unfortunately, the history of our independence did not last long. Soviet Russia, ruled by the Bolsheviks, put an end to the freedom of Azerbaijan, which gained independence on April 28, 1920. However, the Soviet empire could not silence the ideals of freedom and independence of the Azerbaijani people.

President of the Republic of Azerbaijan Ilham Aliyev assessed the measures taken in the Nakhchivan Autonomous Republic under the leadership of Heydar Aliyev in the 1990s as an important condition for state independence: “In 1990, under the leadership of Heydar Aliyev, the Supreme The historic decisions adopted at the session of the Soviet conditioned the state independence of Azerbaijan. It was at that session that the tricolor flag of Azerbaijan was adopted as the state flag.

The Republic of Azerbaijan has been living and developing as an independent state for 30 years. 18 years of this fall during the presidency of President Ilham Aliyev in Azerbaijan. On the occasion of the 20th anniversary of state independence, President Ilham Aliyev said: “We have been living as an independent country for 20 years. Over the years, we have proved to ourselves and the world community that the people of Azerbaijan can live independently. Independence means that the country can pursue an independent policy and defend its national interests. There must be an opportunity to defend their national interests. There must be both political and economic power. Today, our short history as an independent country



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shows that we are successfully developing as an independent country. Today's Azerbaijan is the result of the hard work and talent of the Azerbaijani people. We have built this country, the people of Azerbaijan. We must ensure that every citizen in his daily work strengthens this independence through his activities, makes it eternal and irreversible, and then the people of Azerbaijan will live freely and independently for centuries.

There are reasons that increase the prestige of any state in the system of international relations. The most important of these, of course, is the content and essence of the foreign and domestic policy pursued by the state. Along with the authority of the state in modern times, it is also the reason for the international trust placed in it. Today, Azerbaijan is, in the true sense of the word, a country pursuing a completely independent policy. Azerbaijan has its own political support, statehood and development path. If we look at the last 26 years of history, we can clearly see this. Over the past 17 years, we have witnessed the development of Azerbaijan in the context of completely different political and economic realities.

Key Words: Independent, National Council, Declaration of Independence

Hər bir xalqın ən qiymətli sərvəti onun sahib olduğu dövlət müstəqilliyidir. Azərbaycan xalqı XX əsrdə iki dəfə müstəqillik əldə edib. 1918-ci il mayın 28-də Azərbaycan Xalq Cümhuriyyətinin yaranması ilə Şərqdə ilk dəfə demokratik dövlət quruluşunun əsası qoyulub. Cəmi 23 ay yaşayan Azərbaycan Xalq Cümhuriyyəti xalqımızın böyük dövlətçilik ənənələrinə malik olduğunu bütün dünyaya nümayiş etdirib.

1991-ci ildə müstəqilliyini bərpa etmiş Azərbaycan 1918-ci ildəki Azərbaycan Xalq Cümhuriyyətinin varisidir. Ölkəmiz ötən dövrdə müstəqilliyini qoruyub, dünyanın nüfuzlu dövlətləri sırasında öz yerini alıb. Azərbaycan bu gün də sürətlə inkişaf edir, əsasını ümummillə lider Heydər Əliyevin qoyduğu inkişaf strategiyası Prezident İlham Əliyev tərəfindən uğurla reallaşdırılır. 18 oktyabr tarixi Azərbaycan tarixinə müstəqil dövlətinin hüquqi cəhətdən müstəqilliyinin rəsmiləşdirildiyi əlamətdar gün kimi daxil olub. Bu gün dünyada mövcud olan 5 mindən çox xalqın heç də hamısının müstəqil dövlət deyil, Azərbaycan xalqının ən böyük sərvəti, neməti onun müstəqilliyidir.

Hər bir xalqın malik olduğu ən böyük sərvət onun müstəqil dövlətidir. Müstəqil dövlət hər bir xalqın təhlükəsizliyinin təminatıdır. Azərbaycanın zəngin torpaqları və təbii sərvətləri tarix boyu düşmənlərin diqqətini cəlb etmişdir. Ölkəmiz işğalçı yürüşlərə məruz qalmışdır. Bu isə bəzən müstəqilliyimizin itirilməsi ilə nəticələnmişdir. Xalqımız heç vaxt bununla barışmamış, öz müstəqilliyi uğrunda mübarizə aparmışdır.

Azərbaycan Xalq Cümhuriyyəti cəmi 23 ay yaşadı. Onun süqutundan sonra Sovet imperiyasının 70 illik əsarəti dövrü başlandı, lakin xalqımız öz müstəqilliyi uğrunda mübarizəni davam etdirdi. O bu mübarizədə çoxlu şəhidlər verdi. 20 Yanvar şəhidlərinin qəhrəmanlığı xalqımızın müstəqillik istəyini daha da gücləndirdi. Sovet imperiyasının varlığını qorumaq cəhdləri uğursuz oldu.

1991-ci il avqustun 30-da xalqın tələbi ilə “Bəyannamə” qəbul olundu. Bəyannamə Azərbaycan Respublikasının dövlət müstəqilliyinin bərpa olunduğunu elan edirdi. Bəyannamədə bildirilirdi ki, Azərbaycanda yaşayan türklər və onlarla birlikdə bütün başqa xalqların nümayəndələri Azərbaycan Respublikasının vətəndaşlarıdır; bərpa olunan müstəqil Azərbaycan dövləti onların azad yaşamasına çalışacaqdır. Azərbaycan Respublikasının dövlət sərhədlərinin toxunulmazlığını qorumaq bu dövlətin müqəddəs borcudur.

Bəyannamədə, həmçinin bildirilirdi ki, müstəqil Azərbaycan Respublikası dünyanın bütün müstəqil dövlətləri ilə əlaqələr yaratmağa hazırdır. (Azərbaycan tarixi, “İstiqlalimizin bərpası”2020)



Azərbaycanın dövlət müstəqilliyini, əbədi, dönməz və sarsılmaz bir yola çıxaran Ümummilli lider Heydər Əliyev deyirdi: “Tarix dəfələrlə sübut etmişdir ki, xalqın əvəzsiz milli sərvəti olan müstəqilliyin qorunması onun əldə edilməsindən qat-qat ağır və mürəkkəb vəzifədir”.

Bu o deməkdir ki, Azərbaycan xalqı özünün ən böyük sərvəti, tükənməz xəzinəsi olan dövlət müstəqilliyinin qədrini bilməli, onu göz bəbəyi kimi qorumalı, hifz etməlidir. Ulularımızın əmanəti olan Vətənimizin, torpağımızın, dövlətimizin yaşaması üçün yeri gələndə hər birimiz canımızı fəda etməliyik, necə ki, Azərbaycanın dövlət müstəqilliyinin bərpası uğrunda Vətən oğul və qızları imperiya tanklarının qabağına yeriyib, öz sınımaz, sarsılmaz inancları, əqidə və inadları ilə qəsbkarlara meydan oxuyublar.

30 il bundan əvvəl Azərbaycan öz dövlət müstəqilliyini şəhidlərimizin qanı, canı bahasına qazanıb, dövlət müstəqilliyimiz üçün nə qədər fədakarımız canını qurban edib.

XX əsrdə Azərbaycan xalqı ikinci dəfə dövlət müstəqilliyini 18 oktyabr 1991-ci ildə qazandı. Beləliklə, Azərbaycan yenidən öz dövlət müstəqilliyini bərpa etdi və Azərbaycan Xalq Cümhuriyyətinin varisi kimi əbədi bir yola çıxdı. Tarixçi və siyasi ekspertlər qeyd edirlər ki, XX əsrin sonlarında ikinci dəfə əldə etdiyimiz müstəqillik əsrlər boyu xalqımızın nail olmaq istədiyi bir dövlət müstəqilliyidir.

30 ildir ki, Azərbaycan müstəqil dövlətdir və müstəqil siyasət aparır, dünya azərbaycanlılarının, Azərbaycan vətəndaşlarının azad dövləti olaraq nəinki regionda, eləcə də dünyada öz layiqli yerini tutub. Dövlət müstəqilliyimizin bu 30 ildə bizə verdiyi ən böyük üstünlük milli birliyə nail olmaqdır. Azərbaycançılıq ideologiyası bizi birləşdirən ən sarsılmaz bir dəyərdir ki, dünyanın harasında yaşamasından asılı olmayaraq, hər kəs bu işıq ətrafında toplaşa bilib. 30 ildə azərbaycançılıq birləşdirici gücə çevrilib və biz bu günü hər an hiss etmişik, xüsusən də Vətənin, dövlətin dar günündə bütün xalqımızı azərbaycançılıq, dövlətçilik ətrafında birləşən görmüşük. **(İradə,2021)**

Siyasi ekspertlər və tarixçilər qeyd edirlər ki, azərbaycançılıq bu 30 ildə milli birlik anlayışının, şüurunun formalaşmasında, gerçəkləşməsində, özünü ifadə etməsində çox mühüm rol oynayıb. Dövlətçiliyimiz üçün hər hansı bir kiçik təhdid yarandığı zamanlar Azərbaycan xalqı dövlətimizin, dövlətçiliyimizin ətrafında sıx birləşərək, öz birliyini ifadə edə, göstərə bilib. Biz xalqın birliyini hər zaman görə bilmişik. Azərbaycançılığın birləşdirici gücə malik olmasını Vətən müharibəsi dövründə bir daha görə bildik. Vətən savaşında dünyanın harasında yaşamasından asılı olmayaraq, bütün azərbaycanlılar birləşdi, ölkəmizdə yaşayan bütün xalqlar, etnik qruplar həmrəylik göstərdilər. Bütün bunlar azərbaycançılığın sarsılmaz gücünün təsiri ilə yarandı.

Hesab edirəm ki, bu dövlətə Azərbaycan adının verilməsi də olduqca mühüm bir hadisə idi ki, 103 il bundan öncə qurulan cümhuriyyətdə türklər və qeyri-türklər, hər kəs özünü bu dövlətin bir parçası hesab etdilər və azərbaycançılıq ideologiyasına, ideyasına bağlandılar. Məhəmməd Əmin Rəsulzadə olmaqla cümhuriyyəti quran liderlər Nəsim bəy Yusifbəyli, Əlimərdan bəy Topçubaşı, Fətəli xan Xoynlu, Mirzəbala Məmmədzadə, Hüseyn Baykara, Əhməd Cəfəroğlu və başqa milli aydınlarımız bunu əsaslandırmağa, daim bunun üzərində öz fikir və düşüncələrini ifadə etməyə çalışdılar. Hətta Sovet Azərbaycanı dövründə, müəyyən mənada, 30-cu illərin ortalarından türkcülük ideyasının mərkəzin, Moskvanın göstərişindən sonra varlığının sürdürülməsi qadağan edilsə də, ancaq azərbaycançılıq, Azərbaycan ideyası özündə türkcülük ideologiyasını da yaşatdı. Əslində, türkcülüyə qadağa qoyulsa da, hər halda, azərbaycançılığa qadağa qoyula bilmədi. Sovet dövründə Azərbaycan ideyası içində türkcülük də bu və ya digər şəkildə yaşadı. Keçən əsrin 80-ci illərinin sonu, 90-cı illərinin əvvəllərində də türklüyün və azərbaycançılığın ifadəsi yenidən meydana çıxdı və birləşdiricilik missiyasını açıq ortaya qoymağa başladı. **(İradə,2021)**



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Bu gün Azərbaycanın mədəniyyətlərarası dialoq məkanına çevrilməsi, milli-mənəvi dəyərlərimizin qorunması və bütün dünyada təbliği, cəmiyyətdə sivil ənənələrin bərqərar olması, müasir bilik və verdişlərəyiyələnmiş milli ruha bağlı gənc nəslin formalaşması müstəqil Azərbaycanın gələcəyinə ən qiymətli töhfələrdir.Ulu öndər Heydər Əliyevin dövlətçilik fəlsəfəsi öyrədir: “Xalq dövlət üçün yox, dövlət xalq üçündür.Dövlət onun ərazisində yaşayan əhəlinin təminatçısı olmalıdır”.Bu gün müstəqil Azərbaycan dövləti öz vətəndaşlarının təhlükəsizliyinin, maddi-rifahının, mədəni inkişafının qüdrətli təminatçısıdır və ölkəmizin müstəqillik tarixi dövründə əldə edilmiş ən böyük nailiyyət dələ məhz budur.(İmamverdi,2012)

Birmənalı şəkildə vurğulamaq lazımdır ki, Azərbaycan dövlətinin, Prezident İlham Əliyevin yürütdüyü xarici siyasət kursunun milli mənafeyə əsaslanması uzun illər erməni yalanlarının, şər, böhtan dolu təbliğatın qarşısında iradə nümayiş etdirən ölkəmizin haqq səsinin dünyaya daha aydın çatdırılmasında müstəsna rola malikdir.(Bahar,2011)

Və Vətən Müharibəsində Prezident İlham Əliyevin diplomatik siyasəti dünya ictimaiyyətinə Azərbaycanın ədalətini və həqiqətin bərpası uğrunda mübarizə apardığını göstərdi. Şübhəsiz, bütün bu dövr ərzində aparılan məqsədyönlü xarici siyasət Azərbaycanın dünya miqyasında mövqelərinin həddindən artıq möhkəm olduğunu göstərdi. Bunun nəticəsində də Azərbaycan dünyanın aparıcı dövlətlərinin yaxın tərəfdaşdır.

Prezident İlham Əliyevin rəhbərliyi ilə ölkəmizdə bütün sahələrdə aparılan uğurlu islahatlar, əldə olunan nəticələr xalqın sabaha olan inamını qat-qat artırır. Heydər Əliyev yolunun layiqincə davam etdirildiyinə,memarı olduğu müstəqil Azərbaycanın etibarlı əllərdə olduğuna möhkəm əminlik yaratmışdır. Ulu öndər Heydər Əliyev siyasətinin Prezident İlham Əliyev tərəfindən uğurla davam etdirilməsini aydın görən xalqımız bu siyasəti yüksək dəyərləndirir və onun ətrafında daha sıx birləşirlər. Cənab İlham Əliyev ulu öndərin siyasi kursunu layiqincə davam etdirməklə, xalqımızın və dövlətçiliyimizin bu kursun mahiyyətindən doğan millimaraqlarını beynəlxalq miqyasda təmin edir. Heydər Əliyev siyasətinin uğurla həyata keçirilməsimüstəqilliyimizi möhkəmləndirir, dövlətçiliyimizi qüdrətləndirir və nəticədə beynəlxalq aləmdə AzərbaycanRespublikasının rolunu və nüfuzunu artırır.(İsmayıl, 2011)

Dövlətimizin həyata keçirdiyi siyasət Azərbaycan xalqının maraqlarına xidmət göstərir: "Ölkə Prezidenti İlham Əliyevin qeyd etdiyi kimi, müstəqillik yalnız dövlət atributları, müstəqillik rəmzləri ilə ölçülmür. Müstəqillik o deməkdir ki, dövlət və ölkənin rəhbərliyi öz xalqının maraqlarına tam cavab verən müstəqil siyasət aparmaq iqtidarında olsun. Azərbaycanın 103 illik müstəqillik tarixinin ayrı-ayrı dövrlərinə diqqət yetirsək bu mühüm məqamların reallıqda öz əksini tapdığını görürük. 44 günlük İkinci Qarabağ savaşı bir daha Azərbaycanın müstəqil siyasətinin təqdimatı oldu". (Aynur, 2021)

Bu gün Azərbaycan Ordusu dünya ölkələrinin ən güclü 50 ordusu sırasındadır. Kimin sayəsində? Əlbəttə ki, ölkə başçısının ordu quruculuğuna göstərdiyi diqqət və qayğının sayəsində.Azərbaycan ordusu xalqımızın qürur və güvənc ünvanıdır. Milli ordumuzda döyüş rəşadəti, qəsbkarlara qarşı mübarizə ruhu yüksəkdir. Xalqımız taleyini inandığı nizami orduya, cəsur, mübariz sərkərdələrə, vətənpərvər döyüşçülərə etibar edir. Bu gün xalqımıza qələbə sevincini yaşadan, düşmən üzərində qələbəni təmin edən də məhz ordumuz, cəsur zabit və əsgərlərimizdir. Onların qəhrəmanlığı misilsizdir. Qələbənin qazanılmasında üç amil əsas rol oynadı: Azərbaycan dövlətinin iradəsi, ordunun gücü, xalqın ruhu. (Allahverdi,2021) Azərbaycanın İkinci Qarabağ müharibəsində tarixi ədaləti bərpa etməsi Sovetlər Birliyi dövründə süni şəkildə ortaya atılmış “Dağlıq Qarabağ” ifadəsinin siyasi leksikondan çıxarılması, tarixi torpaqlarımızda qurulmuş Ermənistan Respublikası ərazisindəki yaşayış məntəqələrinin Azərbaycanın milli toponimləri ilə təqdim olunması və digər məsələləri



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aktuallaşdırdı: “Reallıq budur ki, 18 oktyabr Müstəqillik Günü adlandırılrsa da, “Azərbaycan Respublikasının dövlət müstəqilliyi haqqında” Konstitusiyaya Aktı mahiyyət etibarilə müstəqilliyin bərpası ideyası üzərində qurulub. Sovetlər Birliyinin dağılması onun tərkibinə daxil olan bütün müttəfiq respublikalara müstəqillik əldə etmək imkanı yaratdı. Azərbaycan Respublikası 1991-ci il oktyabrın 18-də qəbul etdiyi “Azərbaycan Respublikasının Müstəqilliyi haqqında Konstitusiyaya Aktı” ilə Azərbaycan Xalq Cümhuriyyətinin varisi olduğunu bəyan edərək öz dövlət müstəqilliyini və suverenliyini beynəlxalq aləmə bəyan etdi. Həmin gün tariximizə dövlət müstəqilliyinin bərpası günü kimi daxil oldu. Azərbaycan Xalq Cümhuriyyətinin bayrağı, himni və gerbi dövlət atributları kimi qəbul edildi və AXC-nin yarandığı 28 may günü Respublika Günü kimi qeyd olunmağa başladı”.(Aynur, 2021)

"Son düzəlişlər Azərbaycan Xalq Cümhuriyyəti ilə müasir müstəqil Azərbaycan arasında siyasi-hüquqi varisliyin daha dəqiq formada ifadə olunmasını təmin edir. Tədiqlənən qanun layihəsinə əsasən, mayın 28-nin Müstəqillik Günü, oktyabrın 18-nin isə Müstəqilliyin Bərpası Günü elan edilməsi bir daha günümüzün əsas çağırışlarından olan müstəqillik tariximizin ayrı-ayrı mərhələlərinin müqayisəli təhlil əsasında öyrənilməsində, indiki və gələcək nəsillərin müstəqillik yolumuzun heç də hamar olmaması barədə aydın təsəvvürlərin, biliklərin yaranmasında, ən əsası müasir müstəqil Azərbaycan dövlətinin qurucusu, ulu öndər Heydər Əliyevin “Müstəqilliyin əldə olunması nə qədər çətindir, onun saxlanması, daimi, əbədi olması bundan da çətindir” tezisini şərtləndirən amillərin təbliğində əhəmiyyətli rol oynayacaq. Bu gün harada yaşamasından asılı olmayaraq hər bir azərbaycanlı belə güclü, qüdrətli, müstəqil siyasət yürüdən, qalib ölkənin vətəndaşı olmaqdan qürur hissi keçirir. Tarixinə sahib çıxan, bu günü ilə qürur duyan və gələcəyə böyük inamla addımlayan dövlət, xalq məğlubedilməzdir. 30 ilin işğalına 44 gündə son qoyan Vətən müharibəsi məhz Azərbaycan xalqının böyüklüyünü, yenilməzliyini, məğrurluğunu bir daha dünyaya nümayiş etdirdi. Müstəqilliyimiz daimi, əbədi və sarsılmazdır” (Aynur, 2021)

Sonda çox önəmli bir məqamı vurğulamaq istəyirəm. Bütün azərbaycanlıların və hər bir Azərbaycan dostunun qürurlandığı, milli qeyrət naminə, namus uğrunda başladığımız, xalqımızın, vətənimizin tarixinin ən önəmli səhifələrindən birinə çevrilən, haqlı davamız 44 günlük Vətən Müharibəsinin qələbə ilə bitməsinin nəticəsində təşkil olunan Zəfər paradında hər bir cəbhədə qalib Ali Baş Komandanımız Prezident İlham Əliyevin sözlərini yada salaq: “Biz bu qələbəni həm peşəkarlıq, qəhrəmanlıq hesabına, eyni zamanda, milli ruh hesabına qazanmışıq. Biz haqlı idik, haqq-ədalət bizim tərəfimizdə idi”. (Aytəkin,2021)

Beləliklə, 30 illik inkişaf yolumuzun ən parlaq nəticəsi ondan ibarətdir ki, bu gün Azərbaycan, sözün əsl mənasında, artıq tam müstəqil ölkədir. Bu illər ərzində ölkəmizdə həyata keçirilən siyasət daim Azərbaycan xalqının maraqlarına xidmət göstərir. Azərbaycanın dövlət müstəqilliyi respublikamızın hər bir vətəndaşı üçün ən böyük sərvətdir. Bu illər ərzində demokratik, hüquqi və dünyəvi dövlətin qurulması xalqımızın tarixi nailiyyətidir. Xalqımız dövlət müstəqilliyimizlə qürur duyur.



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GƏNCƏ ƏDƏBİ MÜHİTİ: KEÇMİŞDƏN BU GÜNƏ

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Azərbaycan və dünya ədəbiyyatı kafedrasının müəllimi

Xülasə

Keçmişdən bu günədək zəngin yaradıcılıq yolu keçən Gəncə ədəbi mühiti hələ XII əsrdən dahi Nizami Gəncəvi, Məhsəti Gəncəvi ilə şöhrət taparaq, sonrakı əsrlərdə işıq saçmışdır. Şərqdə intibah ideyaları məhz ilk dəfə Gəncə ədəbi mühitində nəşv-nüma tapmışdır. Gəncə ədəbi mühiti sonrakı əsrlərdə də öz inkişafından qalmamış, XIX əsrdə özünün pik nöqtəsinə çatmışdır. İlk dəfə məhz Gəncədə ədəbi məclis təşkil olunmuş, böyük şair-mütəfəkkir Mirzə Şəfi Vazeh «Divani-Hikmət» adlandırdığı bu məclisə Gəncə şairlərini başına toplamış, Azərbaycanda ilk dəfə şeir-sənət ocağı yaratmışdır. Gəncə ədəbi mühitinin tarixində XX əsrin birinci yarısı da mühüm yer tutur. Belə ki, keçən əsrin iyirminci-otuzuncu illərdə Gəncədə ədəbi mühit yenidən canlanmış, sosializm ideologiyasının təsiri olsa da, bura Bakıdan sonra ikinci ədəbi mərkəz kimi formalaşmışdır. Gəncə ədəbi mühitinin bu dövründə istedadlı yazarlar yetişmiş (S. Vurğun, Ə. Cəmil, M. Cəlil, Ə. Ziyatay, C. Cahanbaxş, H. Arashlı, N. Babayev və b.), onlar sonralar Gəncədən ayrılısalar da, ilk ədəbi uğurlarını Gəncədə qazanmışlar. Bu dövrü XX əsr Gəncə ədəbi mühitinin inkişafında birinci mərhələ kimi səciyyələndirmək olar.

Gəncə ədəbi mühitinin ən parlaq dövrü isə (ikinci mərhələ) 1960-2000- ci illəri əhatə edir. Bu dövrdə Altay Məmmədov, Qərib Mehdi, Fəridə Əliyərbəyli, Bahadur Fərman, Rübail Allahverdiyev, Xəzangül Hüseynova, Məmməd Alim, Aydın Murovdəğli, Nizami Aydın, Sahib İbrahimli, Nüşabə Əsəd Məmmədli, Rəfiqə Sadıqova, İnkilab İsaq, Aləmzar Əlizadə, İradə Aytel, Ələsgər Əlioğlu təkcə Gəncə ədəbi mühitində, Sabir Əliyev, Xəlil Yusifli, Sadıq Şükürov, Mürşüd Məmmədov, Sədnik Paşayev, Rüstəm Rüstəmzadə, Fazil Sənan, Maqbet Əhmədov, Nəzmiyə Axundova isə təkcə Gəncə elmi mühitində deyil, həm də Azərbaycan ədəbi və elmi mühitində tanınırlar.

Açar sözlər: Gəncə, ədəbi, mühit, poeziya, tənqid, dramaturgiya, ənənə

GANJA LITERARY ENVIRONMENT: FROM THE PAST TO THE PRESENT

Summary

Ganja literary environment, which has passed a rich creative way from the past to the present, has found fame with great Nizami Ganjavi, Mahsati Ganjavi since XII century and shed light to subsequent centuries. For the first time in the East, renaissance ideas were rose in the literary environment of Ganja. Ganja literary environment did not remain from its development in subsequent centuries and reached its peak in XIX century. For the first time a literary meeting was organized in Ganja, the great poet-thinker Mirza Shafi Vazeh called the



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meeting “Divani-Hikmat”, gathered Ganja poets, and for the first time in Azerbaijan created a centre of poetry and art. The first half of the 20th century also occupies an important place in the history of the literary environment of Ganja. Thus, in the 20-30s of the last century, the literary environment in Ganja was revived, although it was influenced by the ideology of socialism, it was formed as the second literary centre after Baku. Talented writers (S.Vurgun, A.Jamil, M.Jalal, A.Ziyatay, J.Jahanbakhish, H.Arasli, N.Babayev, etc.) grew up in this period in the literary environment of Ganja, and although they later left Ganja, they won their first literary success in Ganja. This period can be characterized as the first stage in the development of the literary environment of Ganja in the twentieth century.

The brightest period of Ganja's literary environment (second stage) covers 1960-2000. During this period, Altay Mammadov, Garib Mehdi, Farida Aliyarbeyli, Bahadur Farman, Rubail Allahverdiyev, Khazangul Huseynova, Mammad Alim, Aydin Murovdagli, Nizami Aydin, Sahib Ibrahimli, Nushaba Asad Mammadli, Rafiga Sadigov, Ingilab Isag, Alamzar Alizade, Irada Aytel, Alasgar Alioglu were known only in the literary environment of Ganja, and Sabir Aliyev, Khalil Yusifli, Sadig Shukurov, Murshud Mammadov, Sadnik Pashayev, Rustam Rustamzade, Fazil Sanan, Magbet Ahmadov, Nazmiya Akhundova were known not only in the scientific environment of Ganja but also in the literary and scientific environment of Azerbaijan.

Keywords: Ganja, literary, environment, poetry, criticism, dramaturgy, tradition



THE PERSONALITY-ORIENTED TEACHING DURING PANDEMIC

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Abstract

The personality-oriented teaching is an important approach to teaching that provides modern education and makes students more interested and motivated to learn. In this teaching approach, the major stress is made not on the teacher but on the student, his or her individual features, interests and needs those are related to education.

Perceva N.O., Gurzhiy E.V., Chub D.I. those are a group of researchers from Ukraine underlines the statement that personality-oriented teaching allows making students more curious, interested in constant learning and improving their skills, rather than learning just a standard program. However, it is not always possible to establish such approach to teaching, especially when a teacher lacks time to communicate with students individually, or in case of online learning.

During the pandemic, many educational institutions were forced to turn to distance education. As a result, the issues in use of personality-oriented teaching approaches occurred. Students study remotely, and they often lack the ability to contract personally with their teachers and professors, as well as with classmates. As a result, about a half of students feel anxious during remote learning, and they feel their learning process worsen comparing to in-class learning.

Dikaya L. A., Avanesian G., Dikiy I. S., Kirik V. A., Egorova V. A. those formed a group of researchers from Russia revealed the fact that, about a half of students shew lower academic results during remote learning. It is hard for them to develop new strategies for education and have motivation for learning in new conditions. Professors also suffered from a need to shift to online education, as not all of them were enough educated and prepared for that. Issues with such education led to psychological discomfort among professors.

The other group of Russian researchers - Denisova, E., Ermakov, P., Skirtach, I. and Korkhova, V. discovered that professors find it difficult to transform their educational programs for online approach, and very often, it was hard for them to motivate students and communicate with them. As a result, the approach of personality-oriented teaching is now endangered.

As we can see personality traits are frequently ignored, as students and teachers do not have personal communication. Therefore, it is necessary for professors to develop new approaches to personality-oriented teaching during online learning. For example, our Chinese colleague, Zhonggen Yu, offers the professors to develop individualized online tasks for students that consider their gender, age and educational interests. This approach may help to provide personality-oriented teaching during the pandemic.

We can add that teaching English or theory of translation allows us to combine group teaching with the personally-oriented one for example we can work as a big group with the majority of students right after giving the minority individual tasks. It is also very effective to give a student a personal task when a student is slightly more or less successful in learning



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than the rest of the group. Sometimes when students work in pairs there are also could be a student without pair so it is logical to give him an individual task.

While group work primarily teaches students through a process of repetition, then individually focused learning teaches through the relevance of information to a particular student. In our opinion, personally-oriented teaching must be present in the online learning process. Even if it will be in the form of individual homework tasks those are checked in the classroom or given in a certain sequence to the students in the classroom. We believe that personally-oriented teaching deepen understanding and helps in skill acquiring, while group teaching reinforces the acquired skill.

Keywords: personality-oriented teaching, pandemic, distance education.



KAZAKH GRAMMATOLOGY: ORTHOGRAPHY IN THE XXth CENTURY

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Abstract

Orthography, the correct spelling of words, is one of the seven most important additional chapters in the science of language, which ranks first in the classification of sciences by a well-known philosopher Al-Farabi. Today, this term is one of the main categories of writing, along with the alphabet, graphics, and punctuation. Each of these categories plays an important role in the science of writing – grammatology. In Kazakh grammatology the role of orthography is significant. Questions on Kazakh orthography dates back to the end of the XIX century. However, the most important century for this branch was the XX century. Because the first Kazakh orthographic rules were officially approved, amended, and reached their peak in this century. Scientists who dealt with the problem of Kazakh orthography are Akhmet Baitursynuly, Eldes Omaruly, Khalel Dosmukhameduly, Koshke Kemengeruly, Mukhtar Myrzauly, Telzhan Shonanuly and others.

We divide the Kazakh orthography of the XXth century into 3 periods. The main reason is that the Kazakh alphabet had changed three times in a century. From 1910 to 1928 Baitursyn's writing or tote jazu (direct writing) was used. In 1929 the Kazakh script was transferred to the Latin graphic alphabet. In 1940, the Kazakh script was changed to the Cyrillic alphabet, and the spelling rules were based on Russian orthography. This, in turn, led to significant changes in Kazakh writing. In this article, we will focus on the state of Kazakh orthography in the twentieth century and study the main issues from the grammatical point of view. We will show the damaged sides of Kazakh writing because of the changes in the Kazakh orthography through examples. We evaluate the works of scientists from the grammatological aspect who are directly or indirectly involved in the problem of Kazakh orthography in the XXth century.

Keywords: Kazakh grammatology, Kazakh orthography, alphabet, XX century.

INTRODUCTION Orthography is one of the significant areas of linguistics. The area handles the correct writing of words. Correct writing is a sign of literacy. Literacy is a valuable attribute of the culture and civilization of society. A society with high culture and civilization will have a high level of education and science and will develop. As a result, both the economy and the social situation will flourish.

The orthographic term in (ancient) Greek means ὀρθογραφία, ὀρθός [1: 585]–“straight, correct, fair”, and γράφω–“writing” [1: 228]. Orthography is an accepted system of rules for the correct spelling of words in a language [2:18]. Orthography deals with the type and order of letters in a word, such as writing thick or thin sounds, capitalisation, writing together or separately, double writing, and transliteration. Punctuation is also a spelling problem.



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Sometimes scholars study it separately. However, it should go hand in hand with orthography as a neighbour field.

One of the first pieces of information about the concept of correct writing found in the work of the world-famous thinker, sociologist, philosopher, mathematician, physicist, and astronomer, linguist Abu Nasir Al-Farabi, born in 870 in the Otyrar city in modern Kazakhstan. In his work "Classification of Sciences," he divided science into five main areas. Al-Farabi pointed out that the science of language of each nation has seven additional chapters and orthography is one of them. We understand from the words of the scientist that correct writing is valuable for proper reading as well. By this work, we can assume that the science of writing rules in Kazakh land had laid in the IX-X centuries. We also notice that the rules of writing include punctuation.

L. R. Zinder, in his work "Study on the General Theory of Writing", wrote that Baudouin de Courtenay categorised orthography along with the categories of writing: graphics and the alphabet [4:53]. Kazakh phonetist scientist Alimkhan Zhunusbek in his work "Native alphabet—problems of native writing" [5] wrote that writing comprises the alphabet, graphics, and spelling rules. Therefore, orthography is the major category of grammatology. Grammatology examines the typology of writing, graphics, and the relationship between writing and speaking. Some scholars include the history of writing as well. Although linguistic scholars have been researching writing for hundreds of years, it was Ignace Jay Gelb, a Polish-American scientist who presented it as a separate science and named this science—grammatology. In his book called «*A study of writing*» which was first published in 1952, then in 1963, wrote: «*The aim of this book is to lay a foundation for a full science of writing, yet to be written. To the new science, we could give the name 'grammatology', following partially the term 'grammatography' which was used some years ago in a title of a book on writing published in England. This term seems to me better suited than either 'graphology', which could lead to a misunderstanding, or 'philography' (a new term coined in contrast to 'philology'), which is not so exact as 'grammatology'*» [Gelb I.J., 1963, p. 23].

Orthography has been considered as a separate branch of linguistics in Western linguistics since the nineteenth century. Scholars have studied it mostly in close connection with the fields of phonology, morphology, lexicology. At the beginning of the twentieth century, scientists studied orthography in connection with the fields of sociology, culturology. Kenneth Pike (1947) [6] considered orthography as a separate field, studied its closeness to phonology and said that orthography is too close to the transcription. Kenneth Pike (1938: 87) also wrote about the development of the alphabet in the unwritten languages of Central America: "The ideal alphabet must comprise one letter, one letter for each phoneme, or it slows down the learning process". He wrote about this opinion in his well-known book "Phonemics: A Methodology for Reducing Languages in Writing" (1947).

Orthography and spelling in Kazakh language have the same meaning. However, they connect with different words to make phrases like orthographic norms, spelling rules. Although there are few scientific works on the orthography of the Kazakh language, there are some scientific works that we can name. In particular, Rabiga Syzdykova "Dictionary of orthography and punctuation of the Kazakh language" (1959, 1996), Oralbayeva N. "Fundamentals of Kazakh graphics and orthography" (1968), Ualiev N., Aldasheva A. "Difficulties in the Kazakh orthography" (1988), Myrzabekov S. "Methodical instructions on a special course of Kazakh orthography" (1991), Ualiyev Nurgeldy "Phonological bases of Kazakh graphics and orthography" (1993), K. Kuderinova "Words written together" (2005), K. Kuderinova "Alphabet and spelling history of Turkic languages" (2016), A. Zhunusbek



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"Native alphabet – native writing" (2017). Besides the mentioned works, articles on Kazakh orthography began to be written in the late XIX century.

We divide the Kazakh orthography of the XXth century into 3 periods. The main reason is that the Kazakh alphabet had changed three times in a century. From 1910 to 1928 Baitursyn's writing or *tote jazu* (direct writing) was used. In 1929 the Kazakh script was transferred to the Latin graphic alphabet. In 1940, the Kazakh script was changed to the Cyrillic alphabet, and the spelling rules were based on Russian orthography. This, in turn, led to significant changes in Kazakh writing. In this article, we will focus on the state of Kazakh orthography in the twentieth century and study the main issues from the grammatical point of view. We will show the damaged sides of Kazakh writing because of the changes in the Kazakh orthography through examples. We evaluate the works of scientists from the grammatological aspect who are directly or indirectly involved in the problem of Kazakh orthography in the XXth century.

MAIN PART. We understand the orthographic rules of the Kazakh language as spelling rules. As mentioned above, the correct orthography is a key indicator of literacy. The correct spelling should follow the natural laws of our language. Only writings based on the rules of language will be valid. Works on the orthography of the Kazakh language did not fully consider the formation and development of spelling in the Kazakh language. Therefore, in this work, we will systematically focus on the process of formation and development of orthography in the Kazakh language. The main important issues of the XXth century will be:

- **"Baitursynuly's writing" / "Kazakh writing" / "The first Kazakh national alphabet";**
- **1924 The first congress of Kazakh scholars, Orynbor;**
- **1929 Spelling conference, Kyzylorda;**
- **New Kazakh alphabet and orthography based on the Russian alphabet, 1940;**
- **1938, 1957, 1983 Basic rules of spelling of the Kazakh language**

Historically, in the 600's, a tribal alliance in the Arabian Peninsula invaded neighbouring lands and reached as far west as Rome. They did not exclude the tribes on the land of present Kazakhstan from those campaigns. In the 9th century, in the works of al-Belazuri's "Kitab futuh al-buldan" (The Book of the Expedition) and al-Tabari's "Tarikh ar-rusul wa-l-muluk" (History of the Prophets and Kings) described The Arab expeditions to Central Asia and some regions of South Kazakhstan. Because of the invasion, the Turkic tribes received Islam and Arabic scripts. Some converted to Islam of their own free will. In the 11th century, the Karakhanid state, and in the 13th century, the Golden Horde khan, the Uzbek Khan adopted the religion, and the Arabic script became the dominant form of writing. Spreading from the people of the White Horde and Golden Horde, which emerged in the Kazakh lands after the invasion of Genghis Khan in the XIII century, the first sultans Kerey and Zhanibek founded the Kazakh Khanate in 1456 (1466-67). The religion of the Kazakh Khanate was Islam and used Arabic graphics.

Since the Kazakh Khanate officially entered the Russian Empire in 1731 in fraternal relations, the Kazakh people have opened a new history page. And they closely associated it with the Russian government. The tsarist government considered it right that the people under his rule should have the same religion and use the same script. In more than a thousand years, they absorbed Islam into traditions, ideas and even the "blood" of the people of Central Asia. The values of these peoples have their roots in Islam. So it was with the Kazakh people. The preaching works by Russians were accompanied by sending missionaries. Changes in the Kazakh script also began occurring at that time.



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According to the data, we can talk about the formation and development of orthography in the Kazakh language from the second half of the XIX century. In 1860, in the city of Kazan N. I. Ilminsky's work "Materials for the study of the Kyrgyz (Kazakh) language" were published. Note that the historical name "Kazakh" was officially restored by the Kazakh people based on an article by Saken Seifullin on 19 April 1925, by the decision of the Fifth All-Kazakhstan Congress of Soviets of the Kyrgyz (Kazakh) SSR [9]. Before that, official documents and works it was called "Kyrgyz-Kaisak", then "Kyrgyz". However, among the Kazakhs and in Kazakh-language works, the word "Kazakh" had used. Therefore, the Kazakh name has been written as Kyrgyz in this work.

In this work, the author notes that the Muslim literacy brought by the Tatars was widespread among the Kazakhs and that the Tatar orientation prevailed, and they wrote not a single letter in the pure Kazakh language, all of which were more or less influenced by the Tatar language. Here, he writes that the Arabic-Tatar alphabet does not fully reflect the Kazakh sounds, especially the vowel sounds. The author explains that the purpose of writing this work is to provide general information about the characteristics of the Kazakh language and to create conditions for Kazakh readers educated in Russian to study their language on their own. This work is one of the first works written about the Kazakh language. Although not studied in-depth about the Kazakh language, as the author himself wrote, it is a valuable work for researchers of the Kazakh language. This work comprises a section of sounds, grammar (noun, adjective, numbers, pronoun, verb, preposition, mood, tense) and a dictionary.

Kazakh educator Ibyrai Altynsarin also commented on this work. Ibyrai Altynsarin (real name—Ibrahim, 1841–1889)—an outstanding Kazakh educator, writer, ethnographer, folklorist, public figure. Ibyrai Altynsarin is a person who left a deep mark on the history of the education of the Kazakh people and the formation of the national school. In a letter to Nikolay Ilminsky in 1862, Ibyrai Altynsarin commented on the work of the educator "Materials for the study of the Kyrgyz (Kazakh) language". "In my and people of Orda opinion, this (material) is very well composed" [11], writes the scientist. He wrote he did not find any significant errors in the words or the translations, and if there are any slight mistakes, he will tell them when he goes to Kazan in August of that year. In fact, in this work, N.I. Ilminsky could provide accurate information about the Kazakhs. In this letter, Y. Altynsarin wrote that N.I. Ilminsky's view that he does not support the destruction of the pure Kazakh language by Tatarism was consistent with his own. However, he said that he did not mind taking some words from the Persian and Arabic languages, which were not found in the Kazakh language and that he used their words in his writing Ilminsky's project was not supported by V.V. Grigoriev objected arguing "On the transmission of Sounds in the Kyrgyz Alphabet with Russian letters" [12] that the characters in the Russian alphabet should not change.

In 1897 V.V. Katarinsky's "Grammar of the Kyrgyz language. Phonetics, etymology and syntax" (Orynbor, 1897) was published. The scientist published the following alphabet of 21 letters, indicating that there are 9 vowels and 15 consonants in the Kazakh language: а (а), е, ы, и, о (о), у, б, г, д, ж, з, к, л, м, н, р, с, т, ш. [13]

Although these works translated Kazakh writing into Russian graphics, we recognise it was the beginning of the study of the Kazakh language, the basis of subsequent works.

Articles in the newspaper "Dala Ualayaty" in 80-90 years of XX century. The beginning of the problem of orthography in the Kazakh language. Articles on spelling problems began to be published in the Dala Ualayaty newspaper (DUN, The newspaper of the steppe region) in 1880-90. DUN is the official newspaper published in Omsk from 1 January 1888, to 12 April 1902, in the Kazakh and Russian languages as a supplement to the newspaper



"Akmolinsk oblastnye vedomostva". The newspaper published reviews of books published and articles on Kazakh writing.

Kurmanbayev Asylkozha in his article "About the Kazakh language," gave information about the Kazakh language and focused on the works of Y. Altynsarin on the Kazakh language. The author wrote, «The Kazakh language is so rich that it is possible to write any book in the Kazakh language»[14].

Otynsny Alzhanov was a supporter of the transition of the Kazakh script to the Russian alphabet in the article "Useful books for the Kazakhs" [15] (DUN 1894. №39). He laments that there are many Arabic, Persian, Nogai and Turkish words in the Kazakh language and that readers speak and write with mixing other words. Saying that Russian science is developing, he supported the fact that Kazakh children's education in Russian.

Dinmukhamed Sultangazin in his article "On writing in the Kazakh language" (1896) [16] wrote about Kazakh writing and orthography. In the article, the author answers whether it is better to use the Russian alphabet in Kazakh writing or the Arabic alphabet

In the 10th issue of DUN in 1897 was published an article by Rakhimzhan Duisenbayev "From the letter - To the question of the Kyrgyz alphabet" [17]. The author says that it is better to use Arabic letters to read the Koran on religion, but to read and write Kazakh stories, poems, fairy tales, science, you need a specially designed an alphabet for Kazakhs. The author writes that there are few vowels in Arabic and uses diacritic-commas to denote other vowels. He wrote "There is a lot of talk here about which alphabet is right for the Kazakh language or how to correct the old Arabic alphabet". He continues by saying that the Kazakh language needs a clear alphabet because, without an alphabet, no nation can have the right science and education. At the end of the XIX century, our ancestors wanted the Kazakh language to be the language of science, and first, they understood our alphabet should be correct that fully reflects the sounds of the Kazakh language.

From the author's article, we learn that intelligent people at that time waited for an educated citizen who was fluent in other languages, a scholar who could solve this problem. However, the author claims that they should not wait for the emergence of such a scientist but writes that everyone should do their best in this area. These citizens worked as hard as they could, clearly stated the problem and wrote valuable articles. And their long-awaited scholar, with God's support, decreed the fate of the Kazakhs. He was Akhymet Baitursynuly. At the time when the policy of baptism of the Kazakh people, the Russification of the language and script was carried out since the 70s of the XIX century, he saved the Kazakh people from the ideology of this policy for almost half a century.

"Baitursynov's writing" / "Kazakh writing" / "The first Kazakh national alphabet". A. Baitursynuly did not support the transition to both the Russian and Latin alphabets, supplemented and corrected the existing Arabic alphabet. He accomplished this work and created the alphabet only for the Kazakh language. Besides the alphabet, the scientist developed orthographic rules and a textbook. This valuable work had improved each year.

In his article "The Order of Writing" [17], the scientist argued that for the Kazakh people the need to read in Kazakh was indisputable, and pointed out that there were two types: Islamic learning, Russian learning. He mentions it takes a long time to study in Russian and emphasizes the need to study in Kazakh. He argues that learning in Kazakh is not the same as Islamic learning that day and that it takes a year or two to learn to read and write correctly in Kazakh. Books written in Nogai, Turkish, Persian, and Arabic were mixed with the Kazakh language, making children confused more by making it difficult to read. «There are no specific letters in our today's writing, we write one or more distinct sounds with the same letter.» (1912) he wrote, «We write five distinct sounds with this letter «o - ۋ», and three



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sounds with this letter «Ы-Ү». Thus, scientist says that it is violent to teach a child the same spelling words differently. In addition, the scientist mentions the following major shortcomings of the writing of that time:

- *Everyone writes differently. There is no writing that follows an order.*
- *There is no orthographic rule that can tell the difference between right and wrong.*
- *There are no letters for the Kazakh sounds.*
- *He listed such shortcomings, realizing that Kazakhs need a new script.*

Dedicating letters to Kazakh sounds means creating a new alphabet. Because the Arabic graphics could not fully convey the Kazakh sounds, he wrote: "We shouldn't lose sounds by making excuses that we don't have letters for them. We need to find letters for the sounds." He continued by saying that others do the same thing as well. As we know that once it identified the shortcomings, the work to address them becomes clear. He also said that the textbook should be easy and understandable. He worked in that direction.

The scientist began his work by identifying the original sounds of the Kazakh language and finding "writing signs" for them, letters. According to him «There are 24 sounds in the Kazakh language. Five of them are vowels, seventeen are consonants, and two are half-vowels.

Vowels: а (a), о (o), у (y), ы (y), е (e). Consonants: б (b), п (p), т (t), ж (zh), ш (sh), д (d), р (r), з (z), с (c), ф (f), к (k), қ (q), г (g), ғ (gh), л (l), м (m), н (n). Half-vowels: ұ (u), й (y).

According to the scientist, among these sounds, some sounds are always thick (к, ф), some are always thin (к, г, е). The rest have thin, thick versions. If we write each of the remaining 19 sounds thick and thin, we will need 38 letters. If we add the remaining 5 sound symbols, we need 43 letters in total. Since the Arabic alphabet doesn't have many letters, the scientist introduced a special sign "ء" - daiekshi, to denote thin sounds. Reduced the number of letters in the alphabet. This is because consonant sounds in the Kazakh language are subordinated to vowel sounds. This means that if the vowel is thick, the consonants in the word will be thick, and if the vowels are thin, the consonants will be thin. Because the Kazakh language is synharmonic. This decision was a novelty for that time. Even today, there is no doubt that this decision was optimal. "The sign that our vowel sounds: а- о, а- у, ы- ұ, ы- е are pronounced for the subtle pronunciation is" ء "(warning sign), this sign is placed in front of the word as a reference," says the scientist. With that sign, the words were read completely thinly.

Besides creating the alphabet, the scientist also created a textbook for children, saying that "the greatest textbook is a book for children" (1912) [19]. There were various exercises to remember what you learned. This is a very important event for both Kazakh writing and Kazakh history.

Kazakh linguist, professor Salkynbay A.B. in her article about A.B. Bairturdynuly writes: "Writing is divided into two types in the work of A. Baitursynuly: based on a sign and a letter. And, spelling is divided into four systems: sign system; habitual system; relative spelling and sound spelling. The Kazakh language is related to sound spelling".

According to the available data, the works of Akhmet Baitursynuly on orthography were written between 1910 and 1929, and all of them are valuable. The scientist worked hard to educate the Kazakh people by creating an alphabet and a textbook for primary school students and adults. There is a possibility that the scientist had more works written before he was killed in 1937. We believe if other works of the scientist are found, it will contribute to the deepening of the Kazakh linguistics field.

"The orthography of the Kazakh writing was first mentioned in the articles of Akhmet Baitursynuly in the early twentieth century" [20] - wrote academician Rabiga Syzdyk in her



article "History of Baitursyn writing and spelling rules." In support of A. Baitursynuly's draft of the alphabet for Kazakh writing, Mirzhakyp Dulatuly (nicknamed Azamat Alashuly) proposed to introduce the letters f and x in the new alphabet. («Aykap», 1912, № 8). This was also one of the first comments. Comments on the Kazakh orthography had published in the magazine "Aikap" and the newspaper "Kazakh". "Aikap" magazine supported the former traditional alphabet and spelling, "Kazakh" newspaper supported A. Baitursynuly's alphabet reform and new orthographic principles.

Eldes Omaruly, a student, friend of Akhmet Baitursynuly and one of the founders of Kazakh linguistics, is one of the scholars who wrote extensive and profound works on the culture of Kazakh writing and orthography. Eldes Omaruly was the one who developed, analyzed and studied the problem of spelling in detail. He paid special attention to the nature of the Kazakh language, the laws of the language and their observance in research. The works of the scientist, who made a significant contribution to the development of Kazakh science in his 44 years of life, cover the period from 1923 to 1929.

In 1923, the Kazakh-Kyrgyz Education Commission approved a spelling rule consisting of 12 chapters. These rules were the first approved spelling rules of the Kazakh language. On March 22, 1923, "New rules for writing in Kazakh" was published.

The contribution of Eldes Omaruly to Kazakh science, especially the valuable writings he left to later Kazakh researchers, was about his teacher and friend Akhmet Baitursynuly. Academician Rabiga Syzdyk, one of the first Akhmetologists, and a heroic scientist who wrote about the works of Akhmet Baitursynuly during the Soviet era wrote she took into base the works of Eldes Omaruly and Telzhan Shonanuly. The peculiarity of the writings of that time was that they did not give exaggerated praise, empty words. Telzhan Shonanuly—a scientist who worked with Akhmet Baitursynuly, Eldes Omaruly, Khalel Dosmukhameduly to solve the problem of orthography. The scientist was a member of the commission at the first Congress of Kazakh Scholars in Orynbor, 12-17 June 1924, which organized the spelling of the Kazakh language and systematized the curriculum [23].

Khalel Dosmukhameduly, a scientist who wrote articles on the problem of spelling in the twentieth century and was not indifferent to Kazakh writing, was actively involved in public life as well, despite being a doctor. The scientist spoke at the Congress of Kazakh Scholars in Orynbor in 1924. In this context, the educator wrote works like "Law of vowel harmony in the Kazakh language" (1924), "New rules of Kazakh writing (orthography)" (1923, Sholpan), "Law of vowel harmony in the Kazakh-Kyrgyz language" (1922, 1923), "Acquisition of the Latin alphabet in the Kazakh language He wrote articles "On foreign words" (1924, Akzhol), "Words accepted by the Kazakh educational institution" [24], spoke at congresses and contributed significantly to the Kazakh linguistics and Kazakh writing. He even presented his project on Latin graphics-based Kazakh alphabet.

Nazir Torekulov's article "On the New Alphabet" (1924) is also valuable. In 1924, Mukhtar Myrzauly presented a project for the transition to Latin script. A. Baidildauly wrote an article "On the New Alphabet" (1928). Together with Musrepov, they compiled the "Alphabet of the Red Army" (1929) [26]. Articles of Zhusupbek Aimaulytuly, B. Baytogaev, B. Maldybayuly in this field were also precious.

As we have seen, scholars have written many works on the Kazakh language since 1923. We believe the main reason for this is the decree on the language adopted on November 22, 1923. The Kazakh language, along with the Russian language, received the status of the state language, in which the paperwork, textbooks were written, and it opened the way for the socio-cultural development of the Kazakh people.



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1924 The first congress of Kazakh scholars, Orynbor. The first congress of Kazakh-Kyrgyz scholars was held on June 12 and 17, 1924, in the house of the organization of educational workers in Orynbor. 19 scientists from all over Kazakhstan attended the Congress. [7].

On behalf of the Kazakhstan Science Council, the following issues were submitted to the congress:

- Writing rules;
- The problem of the alphabet;
- Kazakh terms;
- Arrangements for the collection of oral literature;
- Measures to increase the number of textbooks and science books;
- Primary school program; [7]

In this Congress, Eldes Omaruly had a report on the Kazakh writing rules. He started by indicating that we can base writing rules on sound systems or word systems, and mentions that most of the European countries usually use word systems while Kazakh writing is based on sound systems. He gave some examples that prove that the Russian language is a word system. About Kazakh writing, he wrote: "Writing in Kazakh is easy because of the sound system it is easier. When Kazakh words change, the root doesn't change, suffixes change, so our words in the sound system do not differ from the roots." [7] Indeed, the roots of words in the Kazakh language do not change. Words take on new meanings by changing different endings and suffixes. It is not difficult for anyone to know the meaning of a word through its unchanged root.

This session also addressed the controversial even nowadays issue of u and i. A question of whether they are vowel or consonant was discussed, analyzed, and the majority voted for consonant. If we invent the law of language and begin to sort out the words in the mouth of the masses: it will turn out the language itself is different, the law of language is something that has nothing to do with language. "If the hypothetical law prevails in the end, the language of the country will be wrong. Otherwise, if the language survives: what we call the law of language will become a fairy tale, not a law."—wrote the scientist. At this conference, spelling rules were approved and came into use.

1929 Spelling conference, Kyzylorda. After years of scientific controversy between linguists who support Arabic script and Latin script, in 1929, the Kazakh writing transferred from Arabic script to Latin. The order of use of this alphabet - orthography was especially discussed and adopted in Kyzylorda in the same year. 18 scientists and representatives from all over Kazakhstan attended this scientific conference. [28] At the beginning of the Congress, Kabyluly noted that the agricultural profession of Kazakhstan is developing, the culture, literature, science and language of the Kazakh people are developing well, and obstacles to further development should be removed. He wrote: «The legacy of antiquity is an obstacle to our progress. That is Arabic alphabet» [7]. The problem of spelling change according to the Latin alphabet was still pending. The scientist said that "the owner of the spelling is the ordinary people" and clearly states that their benefit should be considered while creating the spelling rules. The participants made several reports at the conference on the new alphabet project and approved revised spelling rules, and abolished 1924 spelling rules. The reasons for this, according to the decision of the Central Executive Committee of Kazakhstan, were: "The Arabic alphabet was difficult for the mass people to read and write; incompatible with the technique; could not mark the sounds of the Kazakh language correctly; The new Arabic alphabet became synonymous with religion. Therefore, the Arabic alphabet was the alphabet available to the minority". He also said that Arabic graphics were ineffective in orthography.



Cyrillic equivalents: а-а, ә-ә, е-е, ь-ь, і-і, о-о, ө-ө, у-ұ, у-ү – vowels, p-п, в-б, т-т, к-к, г-г, қ-қ, ғ-ғ, s-с, z-з, с-ш, ң-ң, h-һ, m-м, н-н, ң-ң, v-у, l-л, r-р, j-й – consonants. Example, tuvma qazaq – тұма қазақ, suvrettemekpin – сүуреттемекпін, coluvora – шолууға, tysindiruvge – түсіндірууге, irityv – ірітуу, sol sьjaqtь – сол сыйақты, ьqpalьn tijgizip – ықпалын тийгізіп, ьlьqьj – ылғый, etc.[28].

These examples show that double sounds uv, yv, ij, ьj were preserved when switching to Latin graphics. These double sounds completely obeyed the laws of the Kazakh language, preserved the nature of the language.

Kazhym Basymuly is another scientist who left valuable works in Kazakh linguistics in the thirties of the XX century on various topics, especially on the issue of orthography. The works of the scientist in this field: "New letters and new spellings and the splits of our sounds" (1932), "On the correction of our orthography" (as discussion) (1929), "As an explanation of the rules of our new spelling" (1930), (1930), "We need a thorough study of the orthographic dictionary" (1930), "On changing our orthography" (1929), "On some rules of our new spelling", "Capitalization – blocking" (1930), "Let's write correctly" (1938)[29].

Kudaibergen Zhubanov is also one of the scientists who made a great contribution to Kazakh linguistics in the 20-the 30s of the XX century. In addition to the knowledge of the language of the scientist, there are many works in the field of art, analyzed from the Kazakh linguistics aspect. He paid special attention to the problem of spelling and contributed to the rules that have been established so far. The scientist's works: "The alphabet should be for people" (1929), "On changing the orthography of the Kazakh language" (1935), "Are the double sounds? Is it one sound? (on the spelling of uw, yw, yi, ii) "(1935), [30] the project of the Kazakh alphabet, his works on the spelling of the Kazakh language were highly valued and had a special impact on the Kazakh orthography in use today.

New Kazakh alphabet and orthography based on the Russian alphabet, 1940. Kazakh writing did not use a Latin script for a long time. In the fall of 1940, it issued a decree to use the new alphabet. Within a decade, the Latin graphic-the Cyrillic alphabet replaced based Kazakh writing. There was not as much discussion as the previous changes. Because the authorities decided it. The only thing left for the enlighteners was to take part in creating a new alphabet and spelling rules. In the words of Academician Rabiga Syzdyk: "The interests of science and education were not allowed, especially, when scholars who fought for the national interests, who could competently argue with contemporary Russian and other scholars, such scientists as A. Baitursyuly, A. Bokeikhanuly, M. Dulatuly, T. Shonanult, K. Kemengeruly, E. Omaruly. N. Torekulov, B. Suleyev were shot as "enemies of the people" [20].

Opinions on the Cyrillic alphabet and its orthography said linguists like Jienbaev, M. Balakaev, Sh. Sarybaev, S. Amanzholov, I. Kenesbayev. There were many problems with the spelling of the new writing. These difficulties (rules) were related not only to the borrowed words but also to the correct spelling of the original words. Although there was no great controversy in the spelling's discussion, there were two or three propositions and arguments that were quite repetitive (contradictory) with individual rules.

Sarsen Amanzholov, a turkologist-linguist, is one founder of Kazakh linguistics and the author of a project to translate the Kazakh writing into Cyrillic. He wrote works as "New Kazakh alphabet and orthography based on the Russian alphabet" (1940), "On changing some sounds of the new alphabet, orthography and term correction" (1933), "News project on the alphabet and orthography" (1934), "The most important problem in orthography" (1935), "Improved new alphabet", "Russian alphabet - the alphabet of all peoples of the USSR" (1040), "New Kazakh alphabet and spelling based on the Russian alphabet (project)" (1939),



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“Some problems of the Kazakh alphabet and spelling (recently proposed because of changes)”(1957), “Orthographic Dictionary of the Kazakh language”(1941). [31]

№	To 1910 Arabic	1910-1928 Arabic	1929 Latin	1940-present (2025) Cyrillic	2025-future	№	To 1910 Arabic	1910-1928 Arabic	1929 Latin	1940-present (2025) Cyrillic	2025-future
1	ا ا ه آ	ا	a	А а	A a	22	ب	پ	p	П п	P p
2	ا	ا	ə	Ә ә	Ä ä	23	ر	ر	r	Р р	R r
3	ب	ب	в	Б б	B b	24	س	س	S	С с	S s
4	-	و	-	В в	V v	25	ط ت ة	ت	T	Т т	T t
5	گ	گ	g	Г г	G g	26	و	و	v	У у	U u
6	ع غ	ع	q	Ғ ғ	Ğ ğ	27	و	و	u	Ү ү	Ü ü
7	د ض	د	d	Д д	D d	28	و	و	y	Ү ү	Ü ü
8	ي	ه	e	Е е	E e	29	-	ف	-	Ф ф	F f
9	-	-	-	Ё ё	-	30	خ ح	ح	-	Х х	X x
10	ج	ج	ç	Ж ж	J j	31	-	-	-	Ц ц	C c
11	ذ	ز	z	З з	Z z	32	-	-	-	Ч ч	Ch ch
12	-	-	-	И и	I i	33	ش چ	ش چ	c	Ш ш	Ş ş
13	ى ي	ي	j	Й й	I i	34	-	-	-	Щ щ	-
14	ك	ك	k	К к	K k	35	ه	ه	c	Һ һ	H h
15	ق	ق	q	Қ қ	Q q	36	-	-	-	Ъ ъ	-
16	ل	ل	l	Л л	L l	37	ى	ى	ь	Ы ы	Y y
17	م	م	m	М м	M m	38	ى	ى	i	І і	I i
18	ن	ن	n	Н н	N n	39	-	-	-	Б б	-
19	نك	نك	ŋ	Ң ң	Ñ ñ	40	-	-	-	Ә ә	-
20	او و	و	o	О о	O o	41	-	-	-	Ю ю	-
21	و	و	ø	Ө ө	Ö ö	42	-	-	-	Я я	-

Table -1 Alphabets used in the Kazakh language [28].

1938, 1957, 1983 Basic rules of spelling of the Kazakh language. Based on the material we have, we can say that they approved the first spelling rules of the Kazakh language in 1923. We should note that in the future, among the unread manuscripts, there might be found earlier spelling rules. They supplemented the rule at the spelling conference in 1924. They repealed the rule of 1924 in 1929, and they approved new spelling rules. In 1938, by the decree of the authorities, the "Spelling rules of the Kazakh language" [32] were supplemented with new rules. The rule comprised 10 chapters (Spelling of some letters; Writing suffixes and endings; Writing the root of words without change; Spelling of double words; Spelling of compound words; Spelling of auxiliary words; Spelling of abbreviations; Spelling of numbers; Spelling of terms; Spelling of names) and 50 paragraphs.

Approved on June 5, 1957, "Basic rules of spelling of the Kazakh language" [33] comprises 9 chapters (Spelling of letters; Spelling of root words; Separate written words; Words written together; Spelling of double words; Writing suffixes and endings; Spelling of auxiliary words; Usage of capital letters; Word transfer) and 51 paragraphs.

On August 25, 1983, the Presidium of the Supreme Soviet of the Kazakh SSR adopted a resolution "On amendments and additions to the basic rules of spelling of the Kazakh language" [34]. Amendments and additions to the basic rules of spelling of the Kazakh language, approved by the Decree of the Presidium of the Supreme Soviet of the Kazakh SSR of June 5, 1957 "On determining the order of letters in the Kazakh alphabet and approval of the basic rules of spelling of the Kazakh language." The resolution obliges ministries, state committees, departments, newspaper and magazine editorial offices, publishing houses, research institutions, educational institutions to be guided in the practice of writing these basic rules of the Kazakh language spelling from publication. (Kazakh language orthographic



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dictionary, 1988). This rule comprises 9 chapters (spelling of letters; the spelling of root words; words written separately; words written together; the spelling of double words; writing of suffixes; Spelling of auxiliary words; use of capital letters; transfer of words), 53 paragraphs.

They created orthographic dictionaries based on spelling rules. From 1941 to 2013, 12 spelling dictionaries (1941, 1948, 1960, 1963, 1972, 1978, 1988, 2001, 2005, 2007, 2009, 2013) were published in the Kazakh language.

CONCLUSION The history of the formation of the Kazakh orthography dates back to the 1860s, and its development continues to this day. Since independence in 1991, many works have been written on this topic. One of the most important of them is Saparkhan Myrzabekov's "Methodical instructions for a special course of Kazakh orthography" (1991) [35]. In 1993, after the then President of the Kazakh Language Society Abduali Kaidar wrote an open letter to the President about the transition to Latin script, the issue was raised in the country. In this regard, the Kazakh spelling should be amended by the natural laws of the Kazakh language.

Rabiga Satigaliyevna Syzdyk, one of the first scholars to write works about Akhmet Baitursynuly, one of the founders of Kazakh linguistics, made a significant contribution to the problems of language norms, spelling and orthoepy. She participated in the development of the orthographic dictionary of the Kazakh language, published in 1960, and since then had worked hard on the publication of all orthographic dictionaries. The monograph "Language norm and its formation" [36], published in 2001, is one of the most complex works that can provide a theoretical basis for scholars studying the problem of norms.

Nurgeldy Makazhanuly Uali is one of the scientists who has written valuable works on spelling and trained journalists in this field. The scientist wrote works on the difficulties of Kazakh spelling. In his works, the scientist praised Akhmet Baitursynuly for "creating the first phonemographic system of the national script by accurately determining the structure of the sound segment units of the Kazakh language" [37].

Alimkhan Zhunusbek, a unique Kazakh phoneticist who followed the footsteps of Akhmet Baitursynuly, said that writing consists of the alphabet, symbols and orthography. The scientist wrote that the alphabet is the sound structure of the language, the symbol is the shell of the sound, and the orthography is the national link of the alphabet and the symbol. "Writing reform should find a comprehensive solution to these three issues," he said. Only then will the original national alphabet be formed "(2017) [5], which is of great importance in the reform of the Kazakh orthography. We believe that knowledge of the process of formation and development of the Kazakh orthography will be useful for the Kazakh state in the implementation of this great work.

In this article, we have written about a brief history of the formation and development of the current orthography of the Kazakh language, a review of the scientists who worked in this important field and their works in this area in the XXth century. We believe this work is valuable when our country is going to change its alphabet into Latin. The Republic of Kazakhstan gained its independence in 1991. In 1993, the then President of the International Kazakh Language Society, Academician Abduali Kaidar, after discussions with Kazakh journalists and scholars, wrote an open letter to the President with proposals on the transition of the Kazakh script to Latin script. Ever since they received the positive answer, the National Commission for the translation of the Kazakh alphabet into Latin script was established on November 14, 2017, and various alphabet projects were submitted for consideration. The last version of the alphabet was submitted in 2021, January 30, has not yet been approved.



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BRITAIN'S BREXIT PROCESS IN THE EUROPEAN UNION

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Abstract

While the European Union represents the most successful regional integration in the world, it almost sets the standard in the world in terms of human rights, welfare and democracy. The idea of a united Europe has been voiced since Rome and has come this close to being realized for the first time since Rome, an ideal supported by great thinkers such as Immanuel Kant. Although Europe is home to many cultures, it strives to establish a common European culture and civilization for harmony. However, especially after the 2008 crisis, the success of the European Union began to be overshadowed.

The idea of the United States of Europe was put forward by Immanuel Kant in the 17th century, and the first serious steps for unity were taken after the collapse of Europe after the second world war and after the USSR and the USA gained an incredible power over Europe. The European Council was established in 1949, the European Coal and Steel Community in 1951, and the European Economic Community and European Atomic Energy Community in 1957 with the Treaty of Rome. The common market defined in the Rome agreement was completed in 1968 and the customs union process was started. Finally, with the Maastricht Agreement, which entered into force in 1993, the establishment process of the European Union was completed.

The first Brexit Referendum was in 1975, two years after it became a member of the European Economic Community, with 67% as a result of remaining in the community. After this period, sensitivity regarding membership continued, and even with a law enacted in the United Kingdom in 2011, it was decided that if the authority of the European Union expanded, it could only be accepted by the United Kingdom through a referendum. The second referendum process, on the other hand, started during the reign of Prime Minister David Cameron, who was in favor of staying in the European Union, in 2013. The main reason was that the prime minister could not withstand the pressures due to the rapid increase in the opinions of the people and politicians in favor of leaving Europe. Prime Minister David Cameron's referendum decision in 2013 took place on June 23, 2016, while 51.9% voted to "leave", 48.1% voted to "remain".

The "sui generis" structure of the United Kingdom is a factor that limits the movement and potential of the United Kingdom to create policies within the European Union. However, given the uncertainty created by Brexit, the costs of the Brexit process are likely to outweigh the benefits unless the UK is able to restore the old climate of confidence and stability anytime soon.

Keywords: Brexit, UK, European Union, David Cameron



AVRUPA BİRLİĞİ'NDE İNGİLTERE'NİN BREXİT SÜRECİ

Özet

Avrupa Birliği, dünyadaki en başarılı bölgesel entegrasyonu temsil etmekle beraber insan hakları, refah, demokrasi konusunda dünyada adete standardı belirlemektedir. Birleşik Avrupa fikri Roma'dan beri dillendirilerek Immanuel Kant gibi büyük düşünürlerin de desteklediği bir ideal olarak Roma'dan beri ilk kez gerçekleşmeye bu kadar yaklaşmıştır. Avrupa birçok kültüre ev sahipliği etmesine karşın bir harmoni için ortak Avrupa kültürü ve medeniyeti kurma çabasıdır. Ancak özellikle 2008 krizinden sonra Avrupa Birliğinin başarısına gölge düşmeye başlamıştır.

Avrupa Birleşik Devletleri fikri, Immanuel Kant tarafından 17. yüzyılda ortaya atılmış olup birlik adına ilk ciddi adımlar ikinci dünya savaşından sonra Avrupa'nın yıkılması ve SSCB ve ABD'nin Avrupa üzerinde inanılmaz bir güç kazanmasından sonra atılmıştır. İlk 1949'da Avrupa Konseyi, 1951'de Avrupa Kömür ve Çelik Topluluğu, en son 1957'de Roma Antlaşmasıyla Avrupa Ekonomik Topluluğu ve Avrupa Atom Enerjisi Topluluğu kurulmuştur. Roma anlaşmasında tanımlanan ortak pazar 1968 yılında tamamlanarak, gümrük birliği sürecine geçilmiştir. Son olarak 1993 yılında yürürlüğe giren Maastricht anlaşmasıyla Avrupa Birliğinin kurulum süreci tamamlanmıştır.

İlk Brexit Referandumu, Avrupa Ekonomik Topluluğuna üye olmasından iki yıl sonra yani, 1975 olmuş, %67 ile toplulukta kalma sonucu çıkmıştır. Bu dönemden sonra üyelik konusunda hassasiyet devam etmiş, hatta 2011'de Birleşik Krallıkta çıkan bir yasayla Avrupa Birliği'nin yetkisinin genişlemesi halinde Birleşik Krallık tarafından sadece referandumla kabul edilebileceği hükme bağlanmıştır. İkinci referandum süreci ise aslında Avrupa Birliği'nde kalma taraftarı olan Başbakan David Cameron döneminde, yani 2013 yılında başlamıştır ki, esas sebebi halk ve siyasiler arasında Avrupa'dan ayrılma taraftarı fikirlerin hızlı artması üzerine başbakanın baskılara dayanamamasıdır. 2013'deki başbakan David Cameron'un referandum kararı, 23 Haziran 2016 tarihinde gerçekleşmiş, %51,9 oranıyla "ayrılma" yönünde oy kullanırken, %48,1 oranla "kalma" yönünde oy kullanılmıştır.

Birleşik Krallığın "sui generis" yapısı Avrupa Birliği içinde politikalar oluşturmak Birleşik Krallığın hareket alanını ve potansiyelini kısıtlayan bir unsur olmaktadır. Ancak Brexit'in yarattığı belirsizlik dikkate alınırsa, Birleşik Krallık eski güven ve istikrar ortamını yakın bir zamanda oluşturamazsa, Brexit sürecinin maliyetlerinin faydalarına ağır basması yüksek muhtemeldir.

Anahtar Kelimeler: Brexit, Birleşik Krallık, Avrupa Birliği, David Cameron



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BEYNƏLXALQ STRATEJİ TƏRƏFDAŞLIQ VƏ İNFORMASIYA MÜBADİLƏSİ

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Özet

Azərbaycan iqtisadiyyatda yüksək artıma, habelə sabit siyasi sistemə malik, sürətlə inkişaf edən gənc demokratik ölkədir. Azərbaycan öz milli maraqlarının gerçəkləşdirilməsi, habelə regional və qlobal mövqelərinin möhkəmləndirilməsi üçün özünün iqtisadi və siyasi imkanlarından məharətlə istifadə edir. Azərbaycan regionda lider və beynəlxalq aləmdə etibarlı tərəfdaş ölkə kimi tanınmışdır. Ölkəmiz bütün regional məsələlərdə əsas oyunçudur və regiondakı strateji əhəmiyyətli heç bir layihə Azərbaycansız gerçəkləşə bilməz.

Azərbaycan ikinci dəfə öz müstəqilliyini əldə etdikdən sonra bir çox problemlərlə üz-üzə qaldı. Ermənistan tərəfdən elan olunmamış müharibə, bir tərəfdən də daxili problemlər. Çətinliklər çox idi. Nəhayət, xarici şirkətlərin neft maraqları elan olunmasına və “Əsrin müqaviləsi” adlanan neft kontraktının bağlanmasına səbəb oldu. Bununla da bir çox problemlərə, hərc-mərcliyə son qoyuldu. Yalnız bundan sonra ölkədə tarazlıq bərpa edildi. Hakimiyyət ciddi yenidənqurma işlərinə başladı. Bütün sahələrdə sürətli sıçrayışlar baş verdi. Əlbəttə ki, ölkənin xarici siyasəti də buraya aid idi.

Açar söz: “Əsrin müqaviləsi”, siyasi imkanlar, tərəfdaş ölkələr

INTERNATIONAL STRATEGIC PARTNERSHIP AND INFORMATION EXCHANGE

Abstract

Azerbaijan is a rapidly developing young democratic country with high economic growth, as well as a stable political system. Azerbaijan skillfully uses its economic and political opportunities to realize its national interests, as well as to strengthen its regional and global positions. Azerbaijan is recognized as a leader in the region and a reliable partner in the international arena. Our country is a key player in all regional issues, and no project of strategic importance in the region can be realized without Azerbaijan.

After gaining its independence for the second time, Azerbaijan faced many problems. Undeclared war on the part of Armenia, on the one hand, and internal problems on the other. There were many difficulties. Finally, it led to the declaration of oil interests of foreign companies and the conclusion of an oil contract called the "Contract of the Century". This put an end to many problems and chaos. Only then was the balance restored in the country. The government has begun serious reconstruction. There have been rapid leaps in all areas. Of course, the country's foreign policy also belonged to this.



Key words: "Contract of the Century", political opportunities, partner countries

Köklərini müsəlman Şərqiində ilk demokratik respublika olan Azərbaycan Xalq Cümhuriyyətindən alan Azərbaycan dövlətçiliyinin 23 aylıq ömür yaşamamasına baxmayaraq regionda geosiyasi vəziyyətin dəyişməsi ilə süqut etmişdir. Qısa müddət ərzində mövcud olmasına baxmayaraq, Xarici İşlər Nazirliyi də daxil olmaqla əsas dövlət institutları məhz həmin dövrdə yaradılmışdır.

Azərbaycan iqtisadiyyatda yüksək artıma, habelə sabit siyasi sistemə malik, sürətlə inkişaf edən gənc demokratik ölkədir. Azərbaycan öz milli maraqlarının gerçəkləşdirilməsi, habelə regional və qlobal mövqelərinin möhkəmləndirilməsi üçün özünün iqtisadi və siyasi imkanlarından məharətlə istifadə edir. Azərbaycan regionda lider və beynəlxalq aləmdə etibarlı tərəfdaş ölkə kimi tanınmışdır. Ölkəmiz bütün regional məsələlərdə əsas oyunçudur və regiondakı strateji əhəmiyyətli heç bir layihə Azərbaycansız gerçəkləşə bilməz.

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Baş verən bu proseslər mətbuatın gözündən qaçmırdı. Həqiqət birbaşa üzə deyilirdi. Hakimiyyət daxili və xarici siyasətini yürütməkdə KİV-ə, xüsusilə də mətbuata çox arxalanırdı. Mətbuat isə bizi heç də darda qoymadı. Müstəqillik əldə etmiş mətbuatımız mütəmadi olaraq xarici siyasət məsələlərinə diqqət yetirir, xarici siyasətin formalaşmasına öz töhfəsini verməyə çalışır.

1991-ci ildə dövlət istiqlaliyyətini bərpa etdikdən sonra Azərbaycan Respublikası müstəqil xarici siyasət həyata keçirir. Hazırda bu siyasət Azərbaycan dövlətçiliyini müntəzəm şəkildə möhkəmləndirib inkişaf etdirməyə və milli mənafeləri qorumağa yönəldilmişdir. Azərbaycan öz xarici siyasətini beynəlxalq hüquq norma və prinsipləri, o cümlədən dövlətlərin suverenliyi və ərazi bütövlüyünə hörmət, daxili işlərə müdaxilə edilməməsi prinsipləri əsasında qurmuşdur. Bu prinsipləri rəhbər tutaraq və uzunmüddətli milli mənafelərdən çıxış edərək, Azərbaycanın xarici siyasəti respublikanın müstəqilliyinə, suverenliyinə, ərazi bütövlüyünə və milli təhlükəsizliyinə təhdidlərin və risklərin aradan qaldırılması kimi həyati əhəmiyyətli başlıca məqsədi güdməkdədir. Regional səviyyədə bölgədə əmin-amanlıq və sabitliyin bərqərar edilməsi, nəhəng nəqliyyat və əməkdaşlıq layihələrinin gerçəkləşdirilməsi kimi strateji məqsədlərə nail olmaq Azərbaycanın xarici siyasətinin əsas prioritetlərindən birini təşkil etməkdədir. Qloballaşan müasir dünyada Azərbaycan xalqının maraqlarının daha səmərəli müdafiəsi naminə ölkə iqtisadiyyatının inkişafı üçün müxtəlif layihələrə xarici sərmayələrin cəlb edilməsi də Azərbaycanın xarici siyasəti üçün müstəsna əhəmiyyət daşımaqdadır. Beləliklə, demokratik tərəqqi yolunu seçmiş Azərbaycan özünün qonşusu olan və olmayan digər dövlətlərlə müxtəlif sahələrdə həm ikitərəfli, həm də çoxtərəfli əsasda bərabər və qarşılıqlı faydalı münasibətlərin qurulub-inkişaf etdirilməsi üzrə ümumi məqsədi mümkün qədər tam şəkildə həyata keçirmək əzmindədir. Azərbaycan regional və qlobal səviyyədə fəaliyyəti, o cümlədən beynəlxalq arenada əməkdaşlığı genişləndirərək və dərinləşdirərək müstəqil dövlət kimi bir sıra beynəlxalq təşkilatlara, o cümlədən Birləşmiş



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Millətlər Təşkilatı, Avropada Təhlükəsizlik və Əməkdaşlıq Təşkilatı, Avropa Şurası, İslam Konfransı Təşkilatı, Müstəqil Dövlətlər Birliyi, Qoşulmama Hərəkatı və çoxlu sayda digər təşkilatlara üzv olmuşdur. Azərbaycan Respublikası həmçinin GUAM regional qrupunun təsisçilərindən biridir. Azərbaycan hökumətinin xüsusi diqqət yetirdiyi Avropa məkanında atdığı addımlar onun həyata keçirdiyi xarici siyasət sistemi çərçivəsində göstərdiyi səylərin tərkib hissəsi olmaqla yanaşı, bu səylərlə tam səsleşir. Müasir şərait köhnə nüfuz dairələri modeli əsasında deyil, həqiqi mənada tərəfdaşlıq və əməkdaşlığa söykənən Avropa təhlükəsizlik və ümumi rifah strukturunun yaradılmasına unikal bir fürsət verir. Bunun üçün Azərbaycan yaranmış obyektiv vəziyyəti nəzərə alaraq, NATO və Avropa Birliyi kimi qurumlarla əməkdaşlığı, eləcə də antiterror koalisiyası tərkibində fəaliyyəti durmadan inkişaf etdirir. Bu təşkilatlarda və regional təşəbbüslərdə iştirakı ilə Azərbaycan Respublikası öz milli maraqlarını müdafiə edib gerçəkləşdirir.

Azərbaycanın xarici siyasət istiqamətləri və strateji seçimləri mətbuat səhifələrində əksini tapmış aşağıdakı təsiredici amillərlə müəyyənleşir:

- Ermənistan Azərbaycan münasibətləri, etnik təmizləmə, ölkənin böyük bir hissəsində tarixi və mədəni irsimizin ermənilər tərəfindən dağıdılması faktlarını özündə cəmləşdirən Ermənistanın Azərbaycana qarşı təcavüzü ölkəmizin təhlükəsizlik mühitinin əsas təyinedici amili olaraq qalır və mətbuatın bu məsələləri diqqət mərkəzində saxlaması Azərbaycanın təhlükəsizlik və xarici siyasətinin formalaşdırılmasında əsas rol oynayır.

- Qlobal proseslər - Azərbaycan öz müstəqilliyini bərpa etməsi ilə eyni vaxtda beynəlxalq münasibətlər sistemi köklü surətdə dəyişməyə başlamışdır və son iyirmi il ərzində cərəyan edən hadisələr göstərir ki, sistem mahiyyətcə hələ də rəqabətlidir. Dövlətlər müxtəlif və bəzən də mübahisəli xarici siyasət məqsədləri güdürlər. “İkiqütblülük” və “çoxqütblülük” konsepsiyalarının toqquşmasında təzahür edən çağdaş dünya nizamına dair ziddiyyətli təsəvvürlər dünyanın müxtəlif yerlərində siyasi və iqtisadi nüfuz uğrunda rəqabəti canlandırmışdır.

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RADİODA ƏDƏBİ DİL NORMALARI

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Özət

Radio uzun müddət ideoloji təbliğat sisteminin ayrılmaz tərkib hissəsi, qüdrətli təbliğat və təşviqat vasitəsi hesab edilib. O, partiya mətbuatının və sovet jurnalistikasının ən mübariz ənənələrinə əsaslanırdı. Həmin radio süni pafosa arxalanır və daha çox xarici ölkələrdə sovet həyat tərzini haqqında illüziya yaradırdı. Bu gün isə radioya münasibət xeyli dəyişmişdir. O, müstəqil bir dövlətin səsi, onun döyünən ürəyi, dünyaya açılan təbliğat-tanımta pəncərəsidir. Bu radio ilk növbədə Azərbaycan mədəniyyətinin – musiqisinin, həm də xalq mədəniyyətinin təbliğatçısı və qoruyucusudur. Dünənki radiodan ən prinsipial fərq isə burada imperiya düşüncəsinə xidmət edən adamların yox, müstəqil düşüncə daşıyıcısı olan, öz dövlətlərinin mənafeyini hər şeydən üstün tutan və ona xidmət edən istedadlı insanların çalışmasıdır. Bəs radionun konkret ifadə vasitələri və spesifik xüsusiyyətləri hansılardır? Canlı söz, musiqi və səs effektləri radionun üç başlıca ünsürüdür.

Radio verilişlərini başqa informasiya və təbliğat vasitələrindən fərqləndirən əsas cəhət onun yüksək operativliyi və sin-xronluğudur. Radio verilişlərinin spesifik xüsusiyyətləri isə bütün proqramlarda üzə çıxır. Bunu alim də, ziyalı da, adi dinləyici də çox aydın duya bilər. Bu birbaşa qavrama ilə bağlıdır. Məsələn, qəzet oxuyanda, adətən, ən mühüm yazılara baxanda ikinci dərəcəli məsələləri bir kənara qoyursan. Bu iş gözlə görünür. Dinləyəndə isə çox şey hər bir sözün səslənməsindən, onun qulağa necə dəyməsindən asılıdır. Oxuyan zaman görmə qavrayışı rol oynayarsa, qulaq asan zaman eşitmə qavrayışı efiərə verilən materialın səslənməsini təmin edir; iş bundadır ki, eyni fikri həm oxumaq, həm də eşitmək üçün eyni təsirlə ifadə etmək həmişə mümkün olmur. Deməli, radionun spesifikasiyası, hər şeydən əvvəl, miqyas etibarilə nəhəng, misilsiz və tərkib etibarilə müxtəlif olan dinləyici auditoriyasından, ən müxtəlif vasitələrin, proqram növləri və formalarının əlaqələndirilməsindən, həmçinin qəzet, jurnal və kitabdən fərqli olaraq, radio verilişlərinin yalnız qulaqla qavranılmasından ibarətdir.

Açar sözləri: radio, ədəbi dil, norma

LITERARY LANGUAGE NORMS ON RADIO

Abstract

Radio has long been an integral part of the ideological propaganda system part, considered a powerful means of propaganda and agitation. A supporter of the party press and Soviet journalism would be based on their grievances. The same is true of radio pathos the illusion of a Soviet way of life in many foreign countries created. At the same time, attitudes towards radio have changed significantly. The voice of an independent state, its heart, open to the



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world is a window of propaganda. This radio is primarily Azerbaijani culture - music, as well as folk spirituality is a preacher and a protector. Basic from world radio the difference here is that of the people who serve the idea of empire no, it is in the interests of its own states, which are the bearers of an independent mind a talented person who takes care of everything and serves it is a substitute for. But the specific means of expression and specialization of radio

What are the qualitative features? Live speech, music, and sound effects are the three main themes of radio. The main thing that distinguishes radio broadcasts from other information and propaganda media is its high efficiency and timeliness. The specific features of radio broadcasts, on the other hand, are reflected in all programs. Both the scientist and the intellectual, as well as the ordinary listener, can feel this very clearly. This is directly related to gavrana. For example, when you read a newspaper, you usually put aside secondary issues when you look at important articles. This is a work in progress. Religion in the project, a lot of things are heard from the sound of every word to his ears it depends on what you say. The role of reading comprehension. If it plays, the auditory perception of the ear is easier to hear ensures the sound of the material; the point is that the same is true always to express the same effect in order to read and hear it is not possible. So, the specifics of radio, first of all, different in size, unparalleled in composition and variety in composition from a variety of audiences, including a variety of media, software from the mating of species and forms, as well as from the newspaper. Unlike a magazine or a book, just listen to the radio.

Key words: radio, literary language, norm

Radio uzun müddət ideoloji təbliğat sisteminin ayrılmaz tərkib hissəsi, qüdrətli təbliğat və təşviqat vasitəsi hesab edilib. O, partiya mətbuatının və sovet jurnalistikasının ən mübariz ənənələrinə əsaslanırdı. Həmin radio süni pafosa arxalanır və daha çox xarici ölkələrdə sovet həyat tərzini haqqında illüziya yaradırdı. Bu gün isə radioya münasibət xeyli dəyişmişdir. O, müstəqil bir dövlətin səsi, onun döyünən ürəyi, dünyaya açılan təbliğat-tanımta pəncərəsidir. Bu radio ilk növbədə Azərbaycan mədəniyyətinin – musiqisinin, həm də xalq mədəniyyətinin təbliğatçısı və qoruyucusudur. Dünənki radiodan ən prinsiplial fərq isə burada imperiya düşüncəsinə xidmət edən adamların yox, müstəqil düşüncə daşıyıcısı olan, öz dövlətlərinin mənafeyini hər şeydən üstün tutan və ona xidmət edən istedadlı insanların çalışmasıdır. Bəs radionun konkret ifadə vasitələri və spesifik xüsusiyyətləri hansılardır? Canlı söz, musiqi və səs effektləri radionun üç başlıca ünsürüdür.

Dinləyici ilə ünsiyyətdə əsas “silahı” və başlıca ifadə vasitəsi söz olan radio dilini şifahi nitqin bir qolu hesab edirlər. Şifahi informasiya vasitələrinin dilindən bəhs edənlərin hamısı belə bir həqiqəti təsdiq edir ki, radio nitqinin yaranmasında daimi və həlledici amil məhz şifahi nitq qanunlarının nəzərə alınmasıdır. Çünki, həqiqətən, radio dili yalnız şifahi ədəbi dilimizdə reallaşır, bunlar şifahi nitq auditoriyasıdır, şifahi informasiya və ünsiyyət vasitələridir. (Xudiyev, 2000, s. 15)

Radioda səslənən dil ədəbi tələffüz normalarına əməl olunmaqla işlədilən mədəni dildir. Lakin, bu dil nə bir o qədər rəsmi, nə də bir o qədər bədii dildir. Bu dil canlı danışqla, ümumxalq dili ilə zənginləşmiş ədəbi dilin dolğun bir formasıdır. Professor Tofiq Rüstəmov haqlı olaraq yazırdı ki, “...qəzet və jurnallarda publisistik üslub, mətbuat üslubu üstünlük təşkil edirsə, televiziya və radioda bununla bərabər canlı danışığa güclü meyl hiss olunur”. (Rüstəmov, 1981, s.7)

Radio dilinin spesifik xüsusiyyətləri yalnız ona aid olan janrlarda, məsələn, hadisə yerindən verilən reportajda, müsabiqə və s. verilişdə özünü büruzə verir. Həmin verilişlərin



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aparıcılarından ədəbi dilin müxtəlif vasitələrindən sərbəst istifadə etmə bacarığı tələb olunur. Bu aparıcılar improvizasiya sənətinə tamn yiyələnmişdirlər. Ancaq burada da ədəbi normalarından yayınma hallarına, məsələn, sözün qeyri-dəqiq işlənməsinə, şablon ifadələr və s. nöqsanlara rast gəlmək olur.

Radionun bir əsas xüsusiyyəti də vardır. Bu da radio verilişlərinin məhz səsli formada olmasıdır. Səslənən nitqin evfonikliyi, xoş səslənməsini təmin edən şərtlərdən biri də mətndəki sözlərin qafiyələnməsinə yol verməməkdən ibarətdir. Yazılı mətnlərdə bu qafiyələnmələr “görünür”, ancaq tələffüzdə aydın hiss edilir və hər cür dissosansa həssas olan qulaq bunu mütləq eşidir.

Radio verilişlərinin dil və üslub cəhətdən qurulmasına, onların dilinin strukturuna aid bir sıra tələblər var. Bu tələblər əsasən radio nitqinin səsə bağlı (fonik) sintaktik və intonasiya məsələlərinə aiddir. Bu tələblərdən bəzilərinə nəzər yetirək:

1. Efirə gedən mətn evfonik olmalıdır. Yəni o, qulağı oxşamalə, dinləyicini qıcıqlandırmamalıdır. tələffüz edilməsi çətin olan xoşagəlməz səs qovuşmalarına yol vermək olmaz.
2. Efirə gedən mətndə eyni səs birləşmələrindən ibarət olan sözlərin yanaşı işlənməsinə çalışmaq lazımdır. Məsələn: “...və buyndan vətəndaş öz vəzifələrini...” cümləsində “və” lər tələffüz şətinliyi doğurur.
3. Radio və televiziya verilişlərində -sınız, -sınız, -sunuz, -sünüz, -miş, -miş, -muş, -müş şəkildəli sözlərin yanaşı işlənməsinə qətiyyənlə yol vermək olmaz. Belə şəkildəli sözləri yazıda işləyəndə bunu :sərbəst şəraitdə işlənən dil kimi anlamaq lazımdır. Çox adam ədəbi dil normalarını mənimsədikdən sonarə əslində iki dildə: rəsmi şəraitdə bir dildə, yaxın adamlarla ünsiyyətdə isə digər dildə danışıq.

Radio janrları kifayət qədər çox və rəngarəng olsa da hər halda buradakı nitqin insan fəaliyyətinin spesifik sahəsi olan radionun təbiəti ilə bağlı bir sıra xüsusiyyətləri vardır. Bunlar haqnsılardır? M.Zavra kütləvi kommunikasiya növü kimi radio üçün əsas səciyyəvi cəhətləri aşağıdakı kimi müəyyənləşdirir:

1. Akustiklik- əsas ifadə vasitəsi kimi səsdən və əsas təsir vasitəsi kimi səslənən sözdən istifadə.
2. Nitq ünsiyyətinin birtipli olması- dinləyiciyə birbaşa müraciət.
3. Nitq aktının məsafəliliyi- nəzərə almaq lazımdır ki, görüntü olmadığına görə danışan dinləyəndən əhəmiyyətli dərəcədə uzaqdadır.
4. Sinxronluluq-danışığın baş verdiyi anda dinləyici tərəfindən qəbul olunması.
5. Hər yerdə yayıla bilmək imkanı.
6. Dinləmə şəraitinin məhdudluluğu.
7. Məhz bu xüsusiyyətlərin məcmusu dil vasitələrinin seçilməsində ümumi qanunauyğunluqlar yaradır və “radio dili” adlanan özünəməxsus üslubi dil sistemi əmələ gətirir. (Zarva, 1971, s.41,42)

Tamaşaçı qarşısına çıxan hər kəs dil normalarına riayət etməlidir. 2002-ci ildə “Azərbaycan Respublikasında dövlət dili haqqında” Qanun imzalanıb. 2012-ci ildə isə Prezident İlham Əliyev tərəfindən “Azərbaycan dilinin qloballaşma şəraitində zamanın tələblərinə uyğun istifadəsinə və ölkədə dilçiliyin inkişafına dair Dövlət Proqramı” haqqında sərəncam verilib. Bu o deməkdir ki, Azərbaycan dili dövlət dili kimi qorunmalı, rəsmi sənədlər bu dildə tərtib edilməli və rəsmi şəxslər də dövlət dilində səlilə danışmalıdırlar. Bacarmırlarsa, heç olmasa buna çalışmalıdırlar.

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**AZƏRBAYCANDA FƏALİYYƏT GÖSTƏRƏN QADIN JURNALİSTLƏR VƏ
PUBLİSİTLƏR**

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XX əsrin əvvəllərində müsəlman türk qadınlarının cəmiyyətdəki yeri və rolunu davam etdirən, qadınlar arasında təhsil, maarifçiliyin yayılması üçün fədakarlıqla çalışan, onların təşkilatlanmasında böyük rol oynayan qadınlar öz dövrünün taleyüklü problemlərini zərif çiyinlərində daşıyan fədailərimizdir.

Azərbaycan qadını tarix boyu ölkənin cəmiyyət və siyasi həyatında mühüm rol oynayıb. Şəfiqə xanım Əfəndizadədir, Xədicə Əlibəyova, Hənifə Məlikzadə dövrünün tanınmış qadın yazıçı və jurnalisti olublar. Şəfiqə xanım Əfəndizadə Azərbaycan Cümhuriyyəti parlamentinin ilk qadın əməkdaşı, həmçinin Cənubi Qafqazın ilk qadın jurnalistidir. Şəfiqə xanım Cümhuriyyət dövründə ən fəal qadınlardan idi. O, ali təhsil almamasına baxmayaraq, həm publisist, həm də pedaqoq kimi çox dəyərli fəaliyyətlə məşğul olub. Eyni zamanda, Cümhuriyyət parlamentində stenoqrafçı kimi işləyərək, orada bütün Azərbaycan qadınlarını təmsil edib. Xədicə Əlibəyova Azərbaycan qadınlarının həyatında, qadın xeyriyyə cəmiyyətlərinin işində yaxından iştirak edirdi. Qadınların öz haqlarını bilmələri və maariflənmələri məqsədilə Azərbaycanda ilk qadın məcmuəsi olan "İşıq" qəzeti işıq üzü görür. 1911-ci ildə nəşr olunmağa başlayan qəzetin (cəmi 68 nömrəsi buraxılmışdır) redaktoru Xədicə Əlibəyova, naşiri isə Mustafa bəy Əlibəyov olmuşdur. Qadınların maarif və mədəniyyətə, zaman nə qədər çətin olsa da, öz haqlarını müdafiə etməyə çağıran "İşıq" qəzetində çalışanlar da əsasən qadınlar idi.

Şərqdə ilk dəfə qadına seçki hüququ verilməsi Azərbaycan fəlsəfi düşüncəsində XX əsrin ən prioritet mövzusu olan gender bərabərliyindən, cinsi diskriminasiyaya əks-münasibətdən və insan haqlarının nə dərəcədə qorunduğundan xəbər verir.

Açar sözlər: qadın publisistlər, mətbuat, Xədicə Əlibəyova, ilk qadın nasir, ilk qadın jurnalist

At the beginning of the 20th century, women who continued the place and role of Muslim Turkish women in society, worked selflessly to spread education and enlightenment among women, and played a great role in their organization are our martyrs who carry the fateful problems of their time on their shoulders.

Throughout history, Azerbaijani women have played an important role in the social and political life of the country. Mrs. Shafiqə Efendizadeh, Khadija Alibeyova and Hanifa Malikzade were well-known women writers and journalists of their time. Ms. Shafiqə Efendizade is the first female employee of the Parliament of the Republic of Azerbaijan, as well as the first female journalist in the South Caucasus. Ms. Shafiqə was one of the most active women during the Republican period. Although he did not have a university degree, he



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had a valuable career as a publicist and educator. At the same time, working as a stenographer in the Republican Parliament, she represented all Azerbaijani women there. Although he did not have a university degree, he had a valuable career as a publicist and educator. At the same time, working as a stenographer in the Republican Parliament, she represented all Azerbaijani women there. Poems and stories were published in the press. Khadija Alibeyova was closely involved in the life of Azerbaijani women and the work of women's charities. "Ishik" newspaper, the first women's magazine in Azerbaijan, is published in order for women to know and be educated about their rights. Khadija Alibeyova was the editor of the newspaper, which was published in 1911 (only 68 issues were published), and Mustafa bey Alibeyov was the publisher. It was mostly women who worked for the Ishik newspaper, which called for women's education and culture, no matter how difficult the times, to defend their rights. Giving women the right to vote for the first time in the East is in the Azerbaijani philosophical thought It highlights gender equality, the fight against sexual discrimination, and the extent to which human rights are protected, which are the top priorities of the 20th century.

Key words: woman publicists, press, Khadija Alibeyova, the first woman prose writer, the first woman journalist

XX əsrin əvvəlində Azərbaycanda müsəlman qızlarına oxumaq, yazmaq, elm, fəlsəfə, mədəniyyət öyrətmək üçün "Nicat" qadın maarifçilik cəmiyyəti yaradılıb, faktlar göstərir ki, bu proses Azərbaycanda böyük bir mərhələdə davam etmişdir. 1906-cı ildə Gəncədə ilk dəfə olaraq Müsəlman Qadın Komitəsi qadınlar arasında xeyriyyə marafonu keçirir. Azərbaycan maarifçisi Həsənbəy Məlikov və qadını Hənifə Məlikzadə Zərdab kəndində 16 il polis nəzarəti altında yaşamağa məcbur olarsa da qadınlar arasında maariflənmə aparır, pulsuz məktəb açırdılar, bu məktəb də polis tərəfindən eyni qorxu ilə bağlanmışdı. Böyük yazığımız Cəlil Məmmədquluzadənin xanımı Həmidə Cavanşir 1910-cu ildə "Molla Nəsrəddin" jurnalında qadın problemləri ilə bağlı çıxışlar edir. Cəmiyyətin nəzdində bir neçə qız məktəbi yaradılır. Eyni zamanda, qadınlardan ibarət dram dərnəkləri təşkil olunur. Az sonra qadın maarifçilik hərəkatı mətbuata da yol açır. 1911-ci ildə isə Xədicə Əlibəyovanın rəhbərliyi altında "İşıq" adlı ilk qadın qəzeti çap edilir. Həlیمə Axundova "İşıq" qəzetində "Müsəlman qadınların hüquqları" məqaləsində yazırdı: "Əgər biz insanıqsa onda bizimlə insan kimi rəftar etmək lazımdır. Mənim bacılarım, qətiyyət göstərməyin vaxtıdır. Bizə bilik lazımdır. İki il sonra, 1914-cü ildə Bakı Müsəlman Qadınları Xeyriyyə Cəmiyyəti yaradılır. Azərbaycanın ziyalı qadınlardan cəmiyyətin mədəni tədbirlərinin fəal üzvləri olurlar. Cəmiyyətin fəxri sədri neft sənayesinin görkəmli nümayəndəsi Murtuza Muxtarovun həyat yoldaşı Liza xanım Muxtarova idi".

Azərbaycanda qadın mətbuatının yaranması XX əsrin əvvəllərinə təsadüf edir. Elə bir zamana ki, qadın problemi, ona münasibət, insan hüquqlarının qorunması kimi qəliz məsələlər əsrin ilk onilliyində çıxan demokratik ruhlu qəzet və jurnalların əhatə dairəsinə sığmadı, ictimaiyyətin diqqətində olan qadınların maarifləndirilməsi, qadın azadlığı məsələləri qadın mətbuatının yaranması zərurətini doğurdu.

Belə bir vaxtda dövrünün tələb və ehtiyaclarını böyük həssaslıqla yanaşan ziyalılar "İşıq" adlı ilk qadın qəzetini təsis edib. Onun ilk nömrəsi 1911-ci il yanvarın 22-də çapdan çıxıb". Qəzetin 1911-ci ilin yanvarından 1912-ci ilin dekabrına qədər 64 (bəzi mənbələrə görə, 68) sayı işıq üzə görüb. Mətbuat tariximiz öyrənilərkən əsrin əvvəllərinin nəşrləri burjua və demokratik ruhlu mətbuata bölündüyündən bu qəzet necə deyərlər, ortalıqda qalıb və indiyə



qədər tam tədqiq edilməyib. Amma ayrı-ayrı məqalə və materiallar onun haqqında bəzi məlumatları öyrənmək imkanı yaradır. “İşıq” həftədə bir dəfə, şənbə günü nəşr olunan elmi-pedaqoji, ədəbi, təbabət və evdarlığa dair qadın məcmuəsi idi. Burada uşaq tərbiyəsi, ədəbiyyat, təbabət və evdarlıqla yanaşı, hüquqa, mədəniyyətə, şəriət qaydalarına, dünya xəbərlərinə aid müxtəlif guşələr olub.

Mövhumatın, qadın hüquqsuzluğunun hökm sürdüyü bir dövrdə qadının mətbuatda çıxış etməsi, cəsarətli fikirlər söyləməsi əsl qəhrəmanlıq idi. “İşıq” jurnalında biz onlarca qadının imzasına rast gəlirik. Jurnalın redaktoru Xədicə xanım Əlibəyova yazdığı “Hüququmuz” sərəlvhəli baş məqaləsində qadınların hüquqlarından danışır, onları elm və tərbiyə məsələləri ilə məşğul olmağa çağırırdı. Yazırdı ki, ana və bacılarımız oxumuş olsalar, onların övladları da gələcəkdə tərbiyəli olarlar.

Bu qəzet burjua mətbuatı kimi qiymətləndirilərək tədqiqatlardan kənarda qalıb. Amma bu gün cəsarətlə deyə bilərik ki, Azərbaycanda müstəqillik illərində rus dilində nəşrə başlamış “Mir jənşini” qəzetini nəzərə almasaq, “İşıq” son yüz ildə ölkəmizdə ana dilində nəşr olunmuş yeganə qadın qəzetidir. Xədicə Əlibəyova isə Azərbaycanda ilk qadın redaktor olub. Mətbuat tariximizdə “İşıq” qəzetinin yeri və əhəmiyyəti böyükdür. Bu qəzet Azərbaycan xalqının milli-mədəni irslərindən biridir. Geniş imkanlara malik olmamasına, nəşr müddətinin qısalığına, daimi işçi heyətinin məhdudluğuna baxmayaraq, bu qəzet fikir plüralizmi şəraitində Azərbaycan qadınının, bütövlükdə müsəlman qadın aləminin qarşısında duran problemlərin və onların həlli yollarının araşdırılmasında əvəzedilməz işlər görüb. Qəzet maarifçi ideyalarla gündəmə gələrək, öz savadsız həmvətənlərinin - qadınların taleyini düşünüb, onları maarifə, zülmətdən işığa səsləmək üçün ziyalı qadınlarımızı səfərbər edib.

Nəşr müddətinin azlığına baxmayaraq, bu məcmuə fikir plüralizmi şəraitində, nəinki Azərbaycan, bütövlükdə müsəlman qadınlarının qarşısında duran problemlərin həlli yollarının araşdırılmasında əvəzsiz xidmətlər göstərüb, dövrün mənəvi-ictimai ab-havasının sağlamlaşdırılması işinə başqa mətbuat orqanları ilə yanaşı, öz qiymətli töhfəsini verə bilib. Qəzetin cəmiyyətdə milli vətənpərvərlik ruhunun aşılmasındakı müstəsna rolu olub. Qəzet anaları öz övladlarını Qafqaz İslam Ordusuna yazdırmağa çağırırdı. Vətən, müstəqillik uğrunda mübarizəni tələq edirdi ki, bu, son dərəcə vacib məqamdır.

“Sovet dövrünün ilk illəri müsəlman Şərqi qadınını kişinin ayaqları altından götürüb ona ilk dəfə cəmiyyətin tamhüquqlu üzvü olmaq imkanı verdi. Bu, yerli əhaliyə o qədər yad idi ki, Sovet dövrünə məcburi feminizm dövrü adı vermişdilər. Qadın məsələsinin həlli sosializm mütərəqqiliyinin bir hissəsi idi”. (1)

1923-cü ildə Azərbaycan qadınlarının siyasi həyatında mühüm bir hadisə oldu. Həmin il noyabr ayında Azərbaycan Qadınlar Şurasının orqanı “Şərqi qadını” jurnalının ilk sayı çapdan çıxdı. 40 səhifədən ibarət min nüsxə tirajla çap edilmiş bu jurnalın üz qabığında daş ehtimalları fonunda üç qadın şəklində çəkilməmişdi. Onlardan birinin üzünü çadraya ilə örtülmüş, ayaqlarına zəncir vurulmuşdur. İkinci qadın çadrasını açıb, günəşin qızılı şəfəqləri ilə boyanmış Şərqi baxır. Üçüncü qadın isə onun əlindən tutaraq yeni tikilmiş bir imarətin pillələri ilə yuxarı qaldırır və sanki deyirdi: “Əsrlərcə qara çadraya bürünmüş, dünya işığına həsrət qalmış, ey Şərqi qadını, oyan! Yeni həyat səni çağırır!” Birtərəfli inqilabi pafosla ifadə olunmuş belə rəmzi mənə ilə Şərqi aləmində azadlıq sədaları yayan bu jurnal Azərbaycan qadınlarının mübariz tribunasına çevrilmişdi. Elə həmin nömrədə dərc edilmiş “Məqsədimiz” sərəlvhəli redaksiya məqaləsində jurnalın məqsədi və vəzifələri izah olunurdu. Məqalədə deyilir: “Bu gündən başlayaraq Şərqi aləminin qapısı hesab olunan qızıl Azərbaycanın mərkəzində “Şərqi qadını” namində bir məcmuənin nəşrinə başlayırıq.... Əgər tarixi birbəbir vərəqləsək görürük ki, biz Azərbaycanın türk qadınları öz həyatımızda heç olmazsa onlarca hökumətlər görə bilmişik və bu



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hökumətlərin zamanında da qadın ancaq bozbaş bişirib, ev təmizləyib, dörd divarın arasında əsir qalmaqdan başqa heç nəyin sahibi ola bilmə-mişdir”.(2)

İlk sayından qarşısına maariflənməni böyük məqsəd qoyan bu jurnalın ilk redaktoru Ayna Sultanova, redaksiya heyətinin üzvləri Azərbaycanın ilk publisist qadını Şəfiqə xanım Əfəndizadə, görkəmli maarif xadimi Mədinə xanım Qiyasbəyli, qadın hərəkatının mübariz xadimləri Mina xanım Mirzəyeva və Xanımnaz Əzizbəyova olmuşdular. Kifayət qədər mühərrir qadının olmadığı bir dövrdə belə bir jurnal nəşr etmək asan məsələ deyildi, hətta çoxları bu işə inamsızlıqla yanaşır, jurnalın uzun müddət davam edəcəyinə inanmırdılar.

Jurnalın səhifələrindən ucalan azadlıq səsi Türkiyənin, İranın, Əfqanıstanın qadınlarını da hərəkatə gətirirdi. Redaksiyanın ünvanına İstanbuldan, Tehrandan, Təbrizdən, Qəzvindən məktublar gəlirdi. 1926-cı ildə İranın Rəşt şəhərindən alınmış məktubda deyilirdi: “Şərq qadını” jurnalının nəşri İran qadınları arasında da böyük intibah yaratmışdır. Jurnalın ruhlanan İran qadınları öz hüquqları qeydinə qalmağa çalışırlar. Belə ki, Rəşt şəhərində ilk dəfə ziyalı qadınlardan Mərziyə Zərabi xanım təşəbbüs göstərərək “Nameyi-Nisvani-Şərq” adlı məcmuə nəşr etməyə başlamışlar”. 1924-cü ildə çıxan 10-cu nömrəsində jurnal İran qadınlarının məktubunu dərc etmişdi. Məktubda deyilir: “Möhtərəm xanımlar! Bizə də vaxt çatarsa sizlərlə bir yerdə həmavaz olub tamam dünyaya öz sədamızı yetirərik... Bizim xanımlarımız! Çalışın, məsləkiniz sizə yar olsun. Bəlkə bizə də növbə çatsın. Bizim kişilərimiz bir ruznaməni idarə edə bilmir, amma siz aylıq məcmuəni idarə edirsiniz...”(3) Daha bir məktub jurnalın 1926-cı ildə çıxan 6-cı nömrəsində isə İstanbuldan alınan bir məktub dərc olunmuşdu. Məktubun bir yerində deyilirdi: “Şərq qadını” məcmuəsinin nömrələrini oxuyuram. Nə xoşbəxtsiniz! Qadınların maddi, mənəvi xəstəliklərini düşünən və kömək edən çox yaxşı bir məcmuəniz var... Kaş ki, bizim buradakı qadınlar da belə çalışa idilər! Fəqət, “Asari-nisvan” namində bir məcmuəmiz varsa da içində əsrlərcə geridə qalmış Şərq qadınına fayda verəcək bir mə-qələyə rast gəlmədim. Yazanı olmadığı kimi, abunəçi də qayət azmış... Zəhmətkeş qadınları düşünən, onun üçün fikir sərf edən bir kəs belə yoxdur” (4)

“Şərq qadını” jurnalının mövzu dairəsi zaman keçdikcə daha da genişlənirdi. Azərbaycan qadınları arasında yorulmadan iş aparan qadın şöbəsi fəaliyyət göstərirdi. Klara İşkova, Xanımnaz Əzizbəyova, Cənnət Nuşirvanova, Fatma Hacıyeva, Minaxanım Mirzəyeva, Xanımnaz Müftizadə, Məmurə Rəhmiyeva və başqaları “Şərq qadını” jurnalının müəlliflərindən idilər. Onlar qadınların azadlığının həyata keçirilməsi yollarına dair məqalələrlə çıxış edirdilər.

“İşiq”ın ideyalarının davamçısı olan və üzərinə düşən missiyanı uzun illər boyu yerinə yetən “Şərq qadını” qadınlara azadlıq, bərabərlik ideyaları aşılayır, maarif və mədəniyyətdən yazırdı. Amma bütün bunların hamısı kommünizm ideologiyasının süzgülündən keçirilib oxuculara təqdim olunurdu.

Tirajı 7750 nüsxə olan “Şərq qadını” jurnalı bütün müsəlman Şərqində qadınlara ünvanlanmış çox populyar nəşrə çevrilib. Bu da aydındır, Azərbaycan qadınlarının qabaqcıl təcrübəsi haqqında məqalələr, qeydlər, hekayələr, habelə yerlərdən daxil olan tənqidi çıxışlar, fotoşəkillər və karikaturalar sayəsində jurnalın oxucuları XX əsrin əvvəlində baş verən ictimai proseslər haqqında ətraflı məlumat əldə edirdilər.

Jurnal 1924-cü il 1-ci nömrəsində Azərbaycanın tanınmış ədiblərinə müraciətlə yazırdı: “Hüseyn Cavid, Ömər Faiq, Mirzə Cəlil, Əbdürrəhim bəy Haqverdiyev və sair yoldaşlar qədim zamanlardan başlamış daimi qadın hüququ, qadın xilasatı yolunda öz qələmlərini işlədib mücahidə etmişlər. Bunu hər kəs bilir. İndi, türk qadınları Şura hökumətinin ona verdiyi hüquq və ixtiyarlardan istifadə edib də özləri-nə məxsus bir məcmuə nəşrinə qədəm



qoymuşlar. Bu yazıçılarımızdan heç birinin yazısı və məqaləsi gəlib idarəmizə çıxmamışdır”.
(5)

“Şərq qadını” jurnalı savadlanmaq istəyənlərə kömək məqsədi ilə 1929-cu il 4-cü nömrədən etibarən “Az savadlılar üçün” səhifəsini açmışdı.(6). Bu səhifəsində savadsızlıqla mübarizəyə aid xırda yazılar, yazıb-oxumağı öyrənən qadınların məktubları və kiçik hekayələr dərc olunurdu. Görkəmli maarif xadimləri mövhumatla mübarizə apararaq, məktəblər açmaq və açılan məktəblərdə müsəlman qızlarının oxutmağa çalışırdılar.

1923-cü ildə iki dəfə - noyabr və dekabr aylarında oxucuların görüşünə gələn jurnalın redaksiya heyətində Şəfiqə Əfəndizadə, Mirvarid Dilbazi, Nigar Rəfibəyli, Ələviyyə Babayeva, Xalidə Hasilova, Əzizə Cəfərzadə, Xanımana Əlibəyli və başqalarının bir sıra əsərləri ilk dəfə burada dərc edilib.

“Şərq qadını” tərəqqipərvər müəllimlərin və ictimai xadimlərin qüvvəsinə arxalanaraq qadın təhsilinin, məktəbəqədər tərbiyənin mühüm problemlərinin həllində görkəmli rol oynayırdı. Azərbaycanda qadınların, qızların təhsili, qız məktəblərinin, kursların təşkili, burada aparılan təlim-tərbiyə işi məsələlərinə jurnal səhifələrində müntəzəm yer veriliridi”.

Sözsüz ki, jurnalın populyarlığı digər Şərq ölkələrində, eləcə də bir çox sovet respublikalarında oxşar nəşrlərin yaranmasına gətirib çıxarır. Odur ki, “Şərq qadını”nın adı dəyişdirilərək, 1938-ci ilin fevralından etibarən “Azərbaycan qadını” adlandırılır.

Lakin sovet cəmiyyətinin totalitar rejim olduğunu dərk edən Azərbaycanın “şəxsiyyət” kimi inkişaf etmiş ictimai-siyasi, maarifpərvər qadınları yaşadıkları konkret tarixi şəraitdə, maddi, sosial, siyasi həyatda baş verən dəyişiklikləri düzgün qiymətləndirirdilər. “Qəhrəmanlıq” anlayışı altında qul əməyi kimi istismar edilən kolxozçu-pambıqçı, tütünçü qadınların bir neçə günlük körpə uşaqlarına verə bilmədikləri ana diqqəti, ana qayğısı və s. həmin dövrdə əslində qadına verilmiş “azadlığın” görünməyən tərəfi idi. Mövcud totalitar rejimin verdiyi bəzi müsbət cəhətlərdən istifadə etməklə maarifin inkişafına, pedaqoji kadrların artırılmasına, əhalinin siyasi cəhətdən savadlanmasına çalışdılar və bu prosesdə özləri də yetkinləşərək kamil şəxsiyyətlərə çevrildilər.

1937-40-cı illərdə jurnal bir neçə redaktor dəyişir, onun müəllifləri, müxbirləri repressiya qurbanı olur.

1938-ci ildə “Şərq qadını” jurnalının adı dəyişdirilərək “Azərbaycan qadını” adlandırılıb və əsas diqqət respublika miqyaslı problemlərə verilib. 1937-40-cı illərdə jurnal bir neçə redaktor dəyişib, onun müəllifləri, müxbirləri repressiya qurbanı olub. Beləliklə, jurnalın tarixində böhranlı günlər başlayıb. 1941-ci ildə bir çox mətbuat orqanları kimi “Azərbaycan qadını” da fəaliyyətini dondurub. Gülarə Qədirbəyovadan sonra jurnalın redaktorları da 1940-cı ilədək bir neçə dəfə dəyişdi. Həmin dövrdə Zəhra Kərimova, Barat Kərimova, Züleyxa Əliyeva jurnalın nəşrinə məsul redaktorlar olublar. Həmin dövrdə bütün cəmiyyəti bürüyən dalğa nəticəsində bəzi mətbu orqanlar kimi “Azərbaycan qadını” da nəşrini dayandırır və bunun ardınca başlayan İkinci Dünya müharibəsi də bu nəşrin bərpasını ləngidib. “Azərbaycan qadını”nın yenidən bərpası 1952-ci ilin mart ayına təsadüf edir. Jurnalın zahiri görkəmi də yenilənmiş və daha cəlbedici olub. Rəhimə Zeynalova başda olmaqla, redaksiya heyəti üzvlərinin səyi sayəsində Vətənin ən layiqli qadınlarının həyatı ilə bağlı jurnalist materialları və ədəbi-bədii yazılar isə nəşri zənginləşdirmiş, daha da gözəgəlimli edib.

50-ci illərdə jurnal qadınların elm, mədəniyyət, təsərrüfat, ictimai-sosial sahələrdə qazandıqları uğurlardan yazır, onların məişət və həyat şəraitinin yaxşılaşdırılması mövzularına daha çox yer verib. “Azərbaycan qadını” jurnalını Azərbaycan xalqının keşməkeşli taleyinin, onun həyatındakı uğurlu və çətin günlərin salnaməsi adlandırmaq olar. 60-cı illərdə onun səhifələrində partiya həyatı, pambıqçıların, zəhmətkeş qadınların hünərindən bəhs edən oçerklər, xalqlar dostluğu məsələləri xüsusi yer tutur, hüquqşünas



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məsləhəti, gənclərin yaradıcılığı öz əksini tapıb. Jurnalın redaksiya heyətinə 1951-1961-ci illərdə Rəhimə Zeynalova, 1962-1972-ci illərdə isə Şəfiqə Ağayeva rəhbərlik edib. Jurnalın uzun illər baş redaktoru (1972-1996) Xalidə Hasilova olub. Jurnalın zahiri görkəmi yenilənməklə yanaşı, onun səhifələrində iqtisadiyyat və mədəniyyət xəbərləri, tarla əməkçilərinin uğurları və qəhrəman anaların həyatı haqqında məlumat əldə etmək, həkim, müəllim və kulinarların məsləhətlərini oxumaq, hətta məşhur şairlərin sözlərinə bəstələnmiş populyar mahnıların notları ilə də tanış olmaq mümkün olub. 1976-cı ildə isə jurnalın tirajı rekord səviyyəyə –217 min nüsxəyə çatıb. Mirvari Dilbazi, Həbibə Fəxri, Ələviyyə Babayeva, Sabir Gəncəli və başqaları jurnalın işində fəal iştirak ediblər. Uzun illər jurnalın baş redaktoru isə yazıçı Xalidə Hasilova olub.

Azərbaycanda Sovet hakimiyyətinin qələbəsindən sonra yeni həyatı, yeni zəmanəni məhəbbətlə, ilhamla tərənnüm edən qadın yazıçı və publisistlərimizin belə bir silaha böyük ehtiyacı var idi. Əbədi azadlığa çıxmış yeni dünyamızın qadınları öz xalqına odlu qəlblərindən qopub gələn ürək sözlərini hələ 100 il bundan əvvələ qədər “Şərqi qadını” vasitəsilə demək istəyirdilər. Xalqımızın adət-ənənələrini, intellektual potensialını bütün dövrlərdə daşıyan Azərbaycan qadını namusu, isməti və zakası ilə xalqın tale yüklü məsələsinin həll edilməsində öz sanballı töhfələrini vermiş, kişilərlə bərabər eyni missiyanın daşıyıcısı olmuşdur.

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**THE VARIATIONAL ITERATION METHOD FOR SOLVING NONLINEAR
ORDINARY DIFFERENTIAL EQUATION USING MAPLE**

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Abstract

In this paper, the variational iteration method (VIM) has been successfully used to solve various nonlinear problems. The method's key feature is its adaptability and ability to solve nonlinear equations accurately and quickly. Recent trends and developments in the application of the approach are discussed in this study. Nonlinear wave equations and nonlinear fractional differential equations have a lot of applications. The effects of nonlinear equations, nonlinear oscillations, and nonlinear difficulties in many engineering applications are discussed. The development of technology capable of managing heavily correlated data has been hampered by the complexity of contemporary mathematics and symbol processing. Nonlinear equations that are impossible to solve. The core conceptual foundation of the variational iteration technique is outlined in this study, with applications to nonlinear situations.

With direct reference to approximation solutions for nonlinear equations, both achievements and limitations are examined. To address this problem, a new iteration formulation is proposed. A convenient formula for calculating the approximation. The variational iteration method has been successfully used to solve a variety of nonlinear problems. The method's key feature is its adaptability and ability to solve nonlinear equations accurately and quickly. Recent trends and developments in the application of the approach are discussed in this study. Nonlinear ordinary differential equations using Maple have a lot of applications. The variational iteration method(VIM) using Maple is significantly more accessible, more convenient, and efficient for a small quantity of computing. A nonlinear oscillator's period is suggested. To demonstrate the solution technique, examples are provided. He's variational iteration method (VIM) is used to solve many integral equations in this work. Comparison with precise solution shows that the method is very effective and convenient for solving integral equations. The variational iteration method (VIM) is utilized to analyze linear and nonlinear systems of ordinary differential equations in this paper. The method decreases the amount of the calculation and eliminates the complexity of dealing with nonlinear terms. To emphasize the important elements of the VIM technique, numerical examples are explored. The method outperforms the competition.

Keywords: Variational Iteration Method, Nonlinear Ordinary Differential Equation, Maple.



**STABILIZATION FOR A HYBRID SYSTEM OF ELASTICITY WITH UNKNOWN
BOUNDARY EXTERNAL DISTURBANCE**

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Abstract

The circumstanced disturbances and modeling uncertainties are the common phenomenon in industrial control systems, which may cause mechanical failure, and increase the control error and other undesirable effects. Therefore, the study of control for systems with uncertainties is of great importance from both engineering and theoretical points of view.

Axially moving one-dimensional objects has been the object of extensive studies in the course of the last two decades since various engineering disciplines use them as an important part of production. Unfortunately, vibration caused by high-speed high-precision axially moving systems, can only leads to system failure. It is especially true when external disturbances are present. Thus, finding control solutions is a fundamental problem.

In this work, we discuss the stabilization problem of an axially moving system, moving between two sets of rollers, where the right roller is fixed while the left one, with its mass taken into account, is free to move and subject to an external bounded disturbance. To suppress the disturbance, we design an anti-disturbance controller to estimate the disturbance in real time and then cancel its effect. The well-posedness of the closed-loop system is proved using the semigroup theory. Then, the exponential stability is established using the Lyapunov method. Finally, a numerical example is presented.

Keywords: Axially moving system, Exponential stability, Anti-disturbance control



**AN ALGORITHM TO CONSTRUCT REPEATED BURST ERROR CORRECTING
LINEAR CODE**

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Abstract

Reliable communication of digitally encoded information is ensured by error correcting codes. Burst error was introduced by Fire (1959). The nature of burst errors differs from channel to channel depending upon the behavior of channels or the kind of errors which occur during the process of transmission. In 2008, Dass and Verma introduced a variant of burst error viz. repeated burst error. The article deals with the construction of linear codes capable of detecting and correcting repeated burst errors. An easy and new method for the construction of a parity-check matrix of a repeated burst error correcting linear code has been presented.

An upper bound for a linear code capable of detecting/ correcting burst errors or its variants is usually obtained by the technique used to establish Varsharmov-Gilbert-Sacks bound by constructing a parity-check matrix for the requisite code. This technique not only ensures the existence of such a code but also gives a method for constructing such a code.

An upper bound for a linear code capable of correcting repeated burst errors has been obtained by the technique used to establish Varsharmov-Gilbert-Sacks bound by constructing a parity-check matrix for the requisite code. Further, an algorithm has been proposed for constructing a parity-check matrix for any linear code over $GF(q)$ capable of detecting and correcting ' m -repeated burst error of length b or less'.

The synthesis method for the codes using the technique to establish Varsharmov-Gilbert-Sacks bound is cumbersome and to the best of our knowledge, there is no systematic way to construct a parity-check matrix for a burst error correcting linear code. The proposed algorithms for the construction of a parity-check matrix for a repeated burst error detecting/ correcting linear code given by Dass and Verma in 2012 and 2017 for binary codes and non-binary codes respectively replaces the cumbersome synthesis procedure involving unwieldy computations to construct a parity-check matrix for the requisite code saving all the computational task.

The research work has been carried out under the supervision of Prof. B.K. Dass, Department of Mathematics, University of Delhi, Delhi, India.

Keywords: Parity-check matrix, Bounds, Burst error



CERTAIN SUBCLASSES OF STARLIKE FUNCTIONS

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Abstract

The classes of univalent functions play an important role in Geometric Function Theory. Many classes of univalent functions such as convex, starlike, strongly convex, strongly starlike, Janowski starlike, Janowski convex etc. have been introduced and widely studied by the researchers.

The study of starlike functions and their subclasses has become an active area of research nowadays because of its simple geometric characterisation. In this article, we study starlike functions and their certain subclasses. Further, we also investigate the relationship between subclasses of starlike function with other well-known classes.

Let S denote the class of all functions f , where $f: \mathbb{D} \rightarrow \mathbb{C}$ is a holomorphic and univalent function on unit disc $\mathbb{D} = \{z \in \mathbb{C}: |z| < 1\}$, with $f(0) = 0, f'(0) = 1$, $f(z) = z + \sum_{n=2}^{\infty} a_n z^n$. We begin the study by introducing two important subclasses of S viz., starlike functions and convex functions, denoted by S^* and K , respectively. The analytical characterization of starlike and convex functions establishes the bounds of coefficients of Taylor series expansion which is required to prove growth, distortion and covering theorems. Further, the subclasses $S^*(\alpha)$, starlike functions of order α and $K(\alpha)$, convex function of order α , for $0 \leq \alpha < 1$ are discussed. Using the principle of subordination, subclasses of starlike function $S^*[A,B]$ and convex function $K[A,B]$ were introduced by W. Janowski in 1973. The coefficient estimates for the class $S^*[A,B]$ were obtained for the investigation of relationships between various subclasses.

Several classical results viz. growth theorem, distortion theorem and covering theorem for class S have been discussed. These results are satisfied by starlike functions and better estimates hold for convex functions. Further, using Alexander theorem which establishes the relationship between starlike and convex functions, the containment result $K[A,B] \subset S^*[A,B]$ [H. Silverman and E. M. Silvia (1985)] is highlighted. Recently, Ma and Minda gave a unified treatment to introduce various new subclasses of starlike functions (1992).

In this survey article, the growth theorem, distortion theorem and covering theorem for class S and its various subclasses have been studied. It is observed that there are certain subclasses of starlike function that are subordinate to convex functions. There are various interesting subclasses of S^* which have been a major area of research among the geometric function theorists and there is a scope of defining many more such subclasses of S^* .

Keywords: Starlike functions, Convex functions, Subordination, Coefficient estimates.



SHORTEST PATH ALGORITHMS: COMPARISON AND APPLICATIONS

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Abstract

In graph theory, the shortest path problem is one of the most classical problems aiming to find the shortest path between two points in a network. This survey paper aims to present five shortest path algorithms viz., Dijkstra's algorithm [Edsger W. Dijkstra, 1956], Bellman-Ford algorithm [Richard Bellman, Lester Ford, 1958], Floyd-Warshall algorithm [Robert Floyd, Stephen Warshall, 1962], Kruskal's algorithm [Joseph Kruskal, 1956] and Prim's algorithm [Robert C. Prim, 1957] and compare them by analysing their time complexity. The paper discusses their performance and summarises the shortest path algorithm's best application range, followed by their applications.

Most of the shortest path algorithms calculate the shortest path by minimising the sum of weights of the constitute edges of the graph. Both Dijkstra's algorithm and Bellman-Ford algorithm use the method of relaxation calculation, which is to find the shortest path by modifying the values of $D[i]$ during the process of traversing the vertices and edges of the graph. Kruskal's algorithm and Prim's algorithm are greedy algorithms that find Minimum Spanning Tree (MST) to connect each tree in a forest.

The shortest path algorithms have been discussed and compared with due consideration to the type of weight of the graph. The applications of these five algorithms to solve real world problems viz., flight radius problem, maze problem, finding the shortest path to a building and designing University LAN networks have been presented.

Shortest path algorithms are widely used in everyday life. All the algorithms cannot be applied directly; there are certain conditions under which one algorithm might work better than the other algorithm. Kruskal's algorithm and Prim's algorithm cannot be used if the graph is directed. Prim's algorithm works faster in dense graphs when compared to Kruskal's algorithm. Depending upon the conditions, we must apply a suitable algorithm. However in practical applications, the algorithms are always optimised to increase efficiency. The shortest path problem is still one of the most explored topics and there is a wide scope of further research in this field.

Keywords: Shortest path algorithm, single source shortest path, multi-source shortest path, spanning tree



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Özet

Bağımlılık, insanlık tarihinde insanlığı etkisi altına alan, günümüz dünyasında birçok insanı farklı nedenlerle etkisi altına almaya devam eden ve çeşitli başlıklar altında incelenen biyolojik, tıbbi, psikolojik ve sosyal bir rahatsızlıktır. Bu rahatsızlık durumunun ortaya çıkmasında birçok neden mevcuttur. Bu nedenler arasında yer alan haz ve acı arayışı, bağımlı bireylerin ulaşmak istediği duygu halleridir. Bu duygu halleri psikolojik bir incelemeyi gerektirse de haz ve acı kavramı felsefenin bünyesinde incelenen bir kavramdır.

Felsefe tarihi, bir insanlık tarihidir. Antikçağdan günümüze kadar hemen her filozof, insan veya insanlık adına var olan problemleri ele alıp, bu konular üzerinde belli görüşler öne sürmüşlerdir. Felsefenin insan sağlığı üzerinde olumlu etkisinin olduğunu öne süren felsefi danışmanlık, bağımlılık konusunda da bizlere yol göstermektedir. Felsefe alanında bağımlılığı haz, acı, tutku ve irade kavramları üzerinden açıklamaya çalışacağız.

THE PLACE AND IMPORTANCE OF THE CONCEPT OF “ADDICTION” IN PHILOSOPHY

Summary

Addiction is a biological, medical, psychological and social disorder that has affected humanity in human history, continues to affect many people in today's world for different reasons, and is examined under various headings. There are many reasons for the emergence of this condition. The pursuit of pleasure and pain, which is among these reasons, is the emotional state that addicted individuals want to reach. Although these emotional states require a psychological examination, the concept of pleasure and pain is a concept that is examined within the body of philosophy. The history of philosophy is a history of humanity. From antiquity to the present, almost every philosopher has dealt with the problems that exist on behalf of humanity or humanity and put forward certain views on these issues. Philosophical counseling, which claims that philosophy has a positive effect on human health, also guides us on addiction. In the field of philosophy, we will try to explain addiction through the concepts of pleasure, pain, passion and will.

Keywords: addiction, pleasure, pain, passion

1. BAĞIMLILIK NEDİR?

"Bağımlı" kelimesi, bir bireyin borcunu ödemek yerine alacaklısına bağlı olduğu Roma hukukundan gelir (Don Ross, 2010, s. 1). "Bağımlılık" kelimesi ise Latince "adamak veya kendini başkasına adamak" anlamlarına gelen "addicere" kelimesinden türemiştir (Ulubil.2021). Kişinin içinde bulunduğu olumsuz durumdan uzaklaşmasını sağlayan ve daima



bir haz arayışı içinde bulunma haline bağımlılık denir. Bu haz arayışı, kişinin birçok olumsuz sonuçlarına rağmen kontrolün kaybedilmesiyle birlikte sürekli olarak aynı durumu yaşama halidir. Felsefi açıdan bağımlılık, iki şey arasında, birinin diğerine kavramsal yönden veya varlık bakımından tabi olması veya bağlı bulunmasıyla belirlenen ilişki türüdür (Cevizci, Felsefe Sözlüğü, 2011, s. 55). Bağımlılık, zevk veren bir şeye sahip olma veya yapma arzusundan tıbbi bir soruna, kontrol edilemeyen bir zorlamaya kadar her şeyi tanımlamak için kullanılır. Bağımlılığa neden olan maddelerin kullanılmasındaki en büyük etken rahatlamak, daha canlı hissetmek, daha az çekingen hissetmek veya haz duymaya yardımcı olmak için kullanılır. İnsanların çoğu bu maddelerin etkilerinin sorunlarla başa çıkmayı kolaylaştırdığını düşünüyor. Kimileri ise bu maddelerin dini nedenlerle veya kalabalığa uyum sağlamak için kullanıldığını düşünüyor. Buna bağlı olarak insanlar belirli bir ilacın veya maddenin etkilerini merak edebilir. Ancak kimse bağımlı olmayı planlamaz. Kişiler madde kullanımlarını halledebileceklerini ve sadece istedikleri zaman kullanabileceklerini düşünürler. Ancak kullanım şeklini değiştirmek istediklerinde, bunun o kadar basit olmadığını görebilirler (Marilyn Herie, 2010 , s. 1). Bu nedenle bağımlı olma süreci öncelikli olarak kişinin iradeli bir tavır ile maddeyi kendi isteği doğrultusunda kullanacağını dair bir inanç geliştirmesiyle başlamaktadır. Örneğin, sigara veya alkolle yeni tanışan insanların kullandığı sözcükler genellikle aynı cümlelerdir. Veya ilk uyuşturucu madde kullanan insanların verdikleri tepkiler birbirine çok yakındır.

Değişen yaşam koşulları, yalnızlaşma ve kişinin kendi doğasına uygun bir şekilde davranmaması gibi birçok neden insanları haz arayışına itmektir. Bu haz arayışı çoğu zaman olumsuz sonuçlar doğurmaktadır. Kişinin yaşadığı ortam, aile ilişkileri, sosyal çevresi, psikolojik yanlılıkları, hayatın anlam ve amacına yönelik fenomenolojik arayışlar gibi birçok neden bağımlılığın nedenleri olabilmektedir. Bağımlılar genellikle anlaşılmadıklarını ve bunun sonucunda yargılandıklarını veya tehdit edildiklerini hissederler. (Shelby, 2016, s. 101).

Uyuşturucu madde veya bağımlılık yapan maddelerin kullanım şekli farklılaşabilmektedir. Solunum yoluyla veya farklı şekillerde vücuda giren maddelerin çoğu bağımlılık yapmaktadır. Kullanılan farklı yöntemlerle vücuda giren maddeler, saniyeler içinde beyne ulaşır ve zevk duygusu yaratırlar. Ancak bu zevk durumu kısa sürede elde edildiği gibi çok kısa bir sürede yok olabilmektedir. Bu durum daha yüksek dozda madde kullanımını gerektirmektedir. Bu döngü sürekli bu şekilde devam etmektedir. Her haz kaybının sonucunda kişi, daha düşük duygu durumları yaşamaktadır (Ulubil,2021).

Bağımlılık yapan davranışın yıkıcı ve anlamsız olduğu konusunda hemen herkes hemfikirdir (Shelby, 2016, s. 102). Bu nedendir ki kişi, olumsuz sonuçlara rağmen kendini bağımlı olduğu durumdan çoğu zaman kurtaramamaktadır. Bu durum kişinin yaşamının her alanını etkileyebilmektedir. Gerek ülkemizde gerekse diğer ülkelerde bağımlı insan sayısı gittikçe artmaktadır. Özellikle son yıllarda gözlemlenen verilere bakılırsa bağımlılık yaşı çocukluk dönemine kadar indiğini görmek mümkündür.

2. HAZCILIK NEDİR?

Felsefe tarihinde bağımlılık kavramını karşılayan hazcılık, hayatın amacının mutluluk olduğunu, mutluluğun ise haz ile elde edilebileceğini savunan felsefi bir öğretilerdir. (Cevizci, Felsefe Sözlüğü, 2011, s. 206). Hayatın en yüksek değeri olarak hazzı merkeze alan bu öğreti, insan yaşamının asıl amacı, tüm acılardan kaçınıp hazzı elde etmeye yönelik olması gerektiğini öne sürmektedir. Felsefe tarihine baktığımızda Antik Yunan felsefesinden günümüze kadar olan tüm felsefi anlayış sistemleri, insanın biyolojik, psikolojik ve ahlaki



yaşamının anlamlandırılmasında hazcılığın önemli bir işleve sahip olduğunu dile getirmektedir. (Gökalp, 2017, s. 59). Buna bağlı olarak bağımlılığın düşünsel temellerini felsefe tarihinde hazcı anlayışla ortaya koymak bağımlılık çalışmalarına felsefi nitelikte bir katkı sağlayacaktır.

2.1.Tarihsel Süreç Bağlamında Hazcılık

Haz kavramı, felsefe tarihinde, Antikçağdan günümüze kadar, birçok filozof tarafından ele alınmıştır. Bu kavram kimi zaman kötülüğün kaynağı olarak görülürken kimi zaman da hayatın anlam ve amacı olarak görülmüştür. Antikçağda hazcılık kavramı ilk olarak Aristoppos tarafından ele alınmıştır.

2.1.1.Aristoppos

Kirene okulunun kurucusu ve Sokrates'in öğrencisi olan Aristoppos, mutluluğa hocasından farklı bir tanım getirmektedir. Onun görüşlerini oluştururken sadece hocasından değil, sofistlerden de etkilendiğini söyleyebiliriz.

Aristippos kendi felsefi sitemini oluştururken daha çok ahlak konuları üzerinde yoğunlaşmıştır. O, her şeyden önce her andan sevinç duymayı öğreten, iyiyi ve sevincin kökenini bulmayı amaçlayan bir haz öğretisine sahiptir. Ona göre haz hayatın tek amacıdır (Akarsu, 1970, s. 39).

İnsan vücudu bir oluş ve değişme içindedir. İnsan vücudunda meydana gelen bu değişmeler ve hareketler farklı niteliklere sahiptirler. Sert ve yumuşak olan bu hareketler haz ve acının oluşumunu sağlarlar. İnsan bilincinde veya ruhunda bu hareketlere karşılık gelen birtakım duygular veya duyular oluşmaktadır. Yumuşak hareketlerin bizde haz verici duyular veya duygular yarattığını; sert ve şiddetli olanların ise acı verici duyular ve duygulara neden olmaktadır. Bu hareketler olmadığında veya onları algılamadığımızda ise ne haz ne de acı duyuları veya duyguları meydana gelmektedir. (Arslan, İlkçağ Felsefe Tarihi, 2010, s. 166). Aristippos' a göre iradenin asıl amacı hazdır. Haz ise iyinin kendisidir. Aristippos haz deyince, ruhun sürekli olan bir durumunu anlamaz; onun göz önünde bulundurduğu bir anlık haz duygusudur (Akarsu, 1970, s. 41). Haz veren şeyler iyi, acı veren her şey ise kötüdür. Bu iki duygu dışında kalan şeyler dikkate değer değildir (Akarsu, 1970, s. 41). Hazzı, iyi olarak nitelendiren Aristippos, böylelikle hazcılığın (hedonizm) kurucusu sayılır.

2.1.2. Epikuros

Antik çağın önemli isimlerinden biri olan Epikuros, Aristippos'tan sonra hazcılığı ele alan ikinci isimdir. Anacak Epikuros, kendisinden önceki hazcı görüşü daha sistematik bir hale getirip incelemiştir. Onun hazcılığı daha ince ve daha karmaşık bir yapıya sahiptir.

Epikuros, insanın tek hedefi olarak mutluluğu göstermektedir. Bu mutluluk da hazzın kazanılmasına engel olan şeylerden kaçınma veya hazzın kazanılması olarak tanımlanır (Störig, 2013, s. 186). Çünkü insan doğal olarak acıdan kaçır ve hazzın peşinden koşar. Bu nedenle insan için en yüksek iyi "haz"dır. Epikuros'un geliştirmiş olduğu hazcılık öğretisi ahlaki bir nitelik taşımaktadır. Bunu psikolojik bir temellendirme ile: "insanlar fiilen haz peşinde koştukları yönündeki psikolojik gözlemden hareketle, hazzın peşinden koşulması gereken bir iyi" olduğunu dile getirerek temellendirir. (Arslan, 2010, s. 131). Bunu duyguların bu durumu hissettiğini söyleyerek savını güçlendirir.

Epikuros'a göre iki tür haz vardır. Bunlar; statik ve dinamik hazlardır. Statik haz, tam ve en mükemmel olan hazdır. Dinamik haz, ise kısa süreli ve statik hazzın elde edilmesinde araç rolü oynamaktadır. Buradan hareketle hem kısa süreli oluşu hem de statik hazzın aracı olmasından dolayı dinamik haz asıl haz değildir (Arslan, 2010, s. 134).



Bedende yeme içme cinsellik gibi arzuların doyurulma süreci içinde olan dinamik hazın ruhtaki karşılığı, bir arkadaşımızı görmenin veya bir sorunu çözenin meydana getireceği anlık sevinçtir. (Arslan, 2010, s. 135)

Epicuros bağımlılık yaratan hazlarla ilgili öne sürmüş olduğu görüşleri acı ile ilişkilendirilmektedir. Temel ihtiyaçlar arasında olan yeme, içme ve cinsel ilişkiler gibi şeyler haz olarak kabul edilmektedir. Bu hazlar arasında bağımlılığa neden olan cinsel bağımlılık veya alkol bağımlılığı olan hazlar, sorunlu ve karışık hazlardır. Bu hazlarda ölçüyü belirlemek pek mümkün değildir. Bu nedenle bunların vereceği haz daha çok acıya neden olmaktadır. Epikuros hazlarla ilgili görüşlerini şu sözlerle özetlemektedir. “Hiçbir haz kendinde kötü değildir; ama bazı hazları meydana getiren şeyler, bu hazlardan çok daha büyük sıkıntılara yol açmaktadır.” (Arslan, 2010, s. 136).

2.1.3. Aristoteles

Aristoteles, Antikçağ’ın en önde gelen düşünürlerinden biridir. O kurmuş olduğu sistematik felsefi anlayışın içinde etik konusunu diğer filozoflar gibi iyi hayat sürmenin önemini araştırmakla oluşturmuştur. Ancak onun etik anlayışı politik yaşam felsefesinin temelinde oluşturulmuştur. O, etik kuramını özgür yurttaşlar topluluğu için yazmıştır ve öncelikli olarak imtiyazlı bir sınıfın erdemi ve mutluluğuyla ilgili bir etik kuram geliştirdiğini söyleyebiliriz (Cevizci, 2012, s. 132). Aristoteles için erdem, insanın kendisini en mükemmel şekilde geliştirmektir. Kişi karakterini ne kadar akla uygun bir şekilde geliştirirse o kadar erdem sahibi olur. Aristoteles’e göre iki tür erdem vardır. Bunlar; düşünsel ve ahlaki erdemlerdir. Aristoteles’e göre düşünsel erdemler ahlaki erdemlere göre daha yücedir. Çünkü bu erdemlerde aklın yüceltilmesi ve mükemmel hale getirilmesi söz konusudur. Etik erdemler ise, duyusal dürtüler (istek, arzu, haz vb) üzerinden aklın üstünlüğüdür. (Störig, 2013, s. 173) Haz kavramını ahlaki erdemler içinde ele alan Aristoteles, hazzı rasyonel olmayan itkiler içinde zikreder. Kişi sahip olduğu rasyonel doğası kadar rasyonel olmayan doğasını da iyi tanıması gerekmektedir.

Aristoteles haz kavramını hedonistlerin öne sürdüğü kötü tezine karşılık hazın iyi olduğunu savunur. Nikhomakhosa etik adlı eserinin X bölümünde haz ile ilgili görüşlerini şu şekilde ifade etmektedir.

“Eudoksos hem akıllı hem de akıldan yoksun her canlının ona yöneldiğini gördüğünden ötürü, hazın “iyi” olduğuna; her şey içinde doğru olanın tercih edilir şey olduğuna, en çok da en güçlü şeyin tercih edildiğine inanıyordu. O herkesin aynı şeye yönelmesinin, bu şeyin en iyi olması anlamına geldiğini; dolayısıyla herkesin yöneldiği şeyin, herkes için en iyi olan şeyin “iyi” olduğunu düşünüyordu.” (Aristoteles, 2012, s. 195)

Aristoteles’in bu görüşlerinden yola çıkarak onun hazzı savunucu olarak nitelendirmek yanlış olacaktır. Ona göre bazı hazlar iyi bazı hazlar da kötüdür. “Hazlar türce faklıdır” (Aristoteles, 2012, s. 198). “Kimi hazlar saf kimisi de katışık” (Aristoteles, 2012, s. 197). Bu nedenle her haz farklı niteliğe sahiptir. Aristoteles’in insanlara ve insanlığa bırakmış olduğu en önemli miraslardan biri olan “altın orta” kuramı, uç görüşleri bir arada tutabilmeyi öğretmektedir. Aristoteles, hazza düşkün olmayı ölçsüzlük olarak tanımlar. Bu nedenle kötü olan şey, eylemin ya da duygunun kendisi değil hazzdaki aşırılıktır. Bu nedenle Aristoteles, hazlar konusunda okuyucusuna her daim “orta olmayı” öğütlemektedir. (Çankaya, 2017, s. 509)

2.1.4. Spinoza

Erken aydınlanma döneminin önemli isimlerinden bir olan Spinoza, Etica adlı eserinde tüm duygu ve duygu durumlarını derinlemesine analiz eder. Spinoza haz kavramını duyguları



açıklamada 3 ana başlıktan biri olarak ele alır. Buradaki haz kavramı sevinçle aynı anlama gelmektedir. Arzu, haz(sevinç) ve keder insanın üç temel dürtüsünü oluşturur. Spinoza'ya göre arzu, özbilincin ruh ve bedeninin varlığını devam ettirmek için gösterdiği çabadır. Bu çaba yani eyleme gücümüzün artışı haz(sevinç), eyleme gücümüzün azalışı ise keder olarak tanımlanır. Ve tüm duygular bu üç temel yetiden ortaya çıkar. (Kenny, 2006, s. 266). Spinoza hazzın eksiliği veya yokluğunu kederin nedeni olarak görmektedir.

Bir sefer haz duymuş olduğu bir şeyi hatırlayan kimse, kendisinden haz duyduğu ilk seferdeki hal ve şartlarla birlikte ona sahip olmak ister. Eğer bu hal ve şartlardan birisinin eksik olduğunu fark ederse, âşık (seven kimse) kederlenmiş olacaktır. İnsanın haz duyduğu şeyle aynı zamanda bütün gördükleri, iğreti olarak sevinç sebebi olacaktır. Öyle ise o bütün bunlara, haz duyduğu şeyle aynı zamanda sahip olmak isteyecektir, yani o şeye ilk defa haz duyduğu aynı hal ve şartlarla birlikte sahip olmak isteyecektir. (Spinoza, 2011, s. 158)

Kişinin hoşuna giden durumu istemesi ve bunun yokluğunda kederlenmesi haz ve acı ile ilişkilendirilir. Spinoza'ya göre bizi sevince götürdüğünü hayal ettiğimiz her şeyin meydana gelmesini sağlamaya çalışırız. Ona karşıt olduğunu ya da Kedere götürdüğünü hayal ettiğimiz her şeyi uzaklaştırmaya ya da onu yok etmeye çalıştığımızı dile getirir. (Spinoza, 2011, s. 152). Yani acıdan kaçıp hazza yönelme genellemesine Spinoza da katılmaktadır. Ancak onun bu hazza yönelişi kişinin akıl yetileriyle kontrol altında olan bir haz kavramı olarak anlaşılmalıdır. Çünkü aksi halde bu durum ölçsüzlük olarak nitelendirilmektedir. Etika adlı eserinde ölçsüzlüğü şu kavramlarla ilişkilendirerek açıklamaktadır.

Oburluk, Sarhoşluk, Sefihlik (lubricité), hasislik, Şöhret hırsıdır ki, nispet edildikleri objeler aracılığı ile ya bu ya öteki duyguların tabiatını açıklayan Sevgi ya da Arzunun belirtişlerinden (désignation) 15 ibarettirler. Oburluk, Sarhoşluk, Sefihlik, Hasislik ve Şöhret hırsı deyince biz vakaa yemeğin, içkinin, cinselliğin, servetin, ün ve şerefin ölçsüz sevgisi ya da arzusundan başka bir şey anlamıyoruz. (Spinoza, 2011, s. 176)

Buradan spinoza, insanın sahip olduğu beşeri hazların veya tutkuların aklın ışığında kontrol altına alınmasını ve bu şekilde özgürlüğü elde edebileceğini savunur.

2.1.5. John Locke

17. yy felsefesinin temel ayaklarından birini oluşturan ampirizm, tüm bilgiyi tecrübeden türeten ve bu yüzden tüm bilimlere bir tek buna dayandırmak isteyen felsefe akımıdır. (Störig, 2013, s. 327). Ampirizmin kurucuları arasında olan John Locke, İngiliz aydınlanmasının önde gelen isimleri arasındadır. John Locke kendisinden önce gelen rasyonalistlerden tamamen farklı bir yol izleyerek sistemini kurmuştur. O insan zihninin boş bir levha olduğunu ve tüm bilgilerin deneyim yoluyla elde edildiğini savunmaktadır. Tüm bilgilerimizin deneyim yoluyla elde edildiğini dile getiren Locke, deneyimi iç ve dış deneyim olarak iki başlık altında incelemektedir. İç deneyim anlamak (algılamak, hatırlamak, ayırmak ve karşılaştırmak) ve istemek arasında ayırım yapar. Dış deneyim ise dış dünyayı tanımak adına yapılan tüm eylemlerimizdir. Hem iç hem de dış deneyim birlikte hareket ettiğinde asıl konumuz olan haz ve acı hissedilir. (Störig, 2013, s. 331)

John Locke, haz ve acı kavramını “İnsan Anlığı Üzerine Bir Deneme” adlı eserinde incelemektedir. Haz ve acı yalın idelerdir. Duyum ve düşünümde elde ettiğimiz idelerin en önemlilerinden ikisi haz ve acıdır (Locke, 2004, s. 172). Locke diğer düşünürler gibi hazzın varlığı iyi ve mutlulukla, yokluğu ise acı ve üzüntüyle ilişkilendirir.



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Demek şeyler ancak haz ve acıya göre iyi ya da kötü olur. bizde haz doğuran veya hazzın artmasına ya da acının azalmasına neden olan ya da bize başka bir iyilik getirebilen ya da kötülüğün giderilmesini sağlayabilen ya da sürdürebilen şeye iyi deriz. Tersine bizde acıyı üzreten ya da arttıran ya da hazzı azaltan ya da bize kötüyü getiren ya da iyiyi elimizden alan şeye de kötü deriz. (Locke, 2004, s. 173)

Haz ve acı kavramı iyi ve kötüyle ilişkilendirildiği gibi mutluluk ve mutsuzlukla da ilişkilendirilmektedir.

Haz ve acı, belli nesnelere ya zihinlerimizdeki ya da bedenlerimizdeki değişik dereceleri etkileriyle üretilmiş olduğundan, bizde bir haz üretme özelliği olan şeye iyi, bizde bir acı üretme özelliği olan şeye de kötü diyoruz; çünkü bunlarda mutluluğumuzun ve mutsuzluğumuzun kendilerine bağlı olduğu haz ve acı üretme özelliği vardır.

Mutluluk ve mutsuzluk üretme aracı olan haz, her insanda farklı şekilde kendini göstermektedir. Bireyler farklı haz alma özelliklerine sahip oldukları için her bireye göre iyi olan şey değişebilmektedir. Locke, bu soruna cevap niteliğinde olan aşkın kaynak düşüncesine başvurur. Çünkü ona göre, her haz doğal olarak iyidir, ancak Tanrısal yasaya bağlılık ile kazanılan bütün hazlar ahlaksal iyi olarak tanımlanabilir (Cihan, 2004, s. 107).

2.1.6. Jeremy Bentham

Yararcılık ilkesinin kurucusu ve ilk büyük filozofu olan Bentham, etik ile ilgili görüşleriyle reform düzeyinde gelişmeler kaydetmiştir. O kendisinden önceki filozoflardan farklı olarak ahlakı bilimsel olarak açıklamaya çalışmıştır. Onun kurmuş olduğu felsefi sistem faydacılık felsefesidir. Bu faydacılık felsefesi de bireysel bir nitelikten ziyade sosyal bir faydacılık anlayışıdır. Onun hedefi, “mümkün olan en yüksek sayıda insan için mümkün olan en büyük mutluluk” tur. (Störig, 2013, s. 451) Ona göre insan davranışları iki temel güdü ile açıklanabilir. Bunlar haz ve acıdır. Bu iki temel güdü ile kendi çıkarını gözetken rasyonel bir insan modeli, doğasının ve eylemlerinin temelinde kendi çıkarı, iyiliği, refahı ve mutluluğu bulunur (Cevizci, 2012, s. 883). Doğa, insanlığı iki egemen efendinin, acı ve zevkin yönetimi altına yerleştirmiştir. Ne yapmamız gerektiğini belirtmek ve ne yapacağımızı belirlemek yalnızca onlara aittir. Bir yanda doğru ve yanlışın ölçütü, diğer yanda sebepler ve sonuçlar zinciri onların tahtına bağlanmıştır. Yaptığımız her şeyde, söylediğimiz her şeyde, düşündüğümüz her şeyde bizi yönetirler: boyun eğmemizden kurtulmak için yapabileceğimiz her çaba, onu göstermek ve doğrulamaktan başka bir işe yaramaz. Sözde bir adam imparatorluğundan vazgeçiyormuş gibi yapabilir: ama gerçekte o her zaman ona tabi kalacaktır. Ve insanın akli bu amacın bir aracı durumundadır (Mill, 2003, s. 17)

Bentham, haz ve acının ortaya çıktığı dört ayrı alanın olduğunu dile getirir. Bunlar; fiziksel, politik, ahlaki ve dini olarak adlandırılabilir. Dört alana ait olan haz ve acılar, herhangi bir yasa veya davranış kuralına bağlayıcı bir güç verebildikleri için, hepsine yaptırım denilebilir. (Bentham, 2000, s. 27). O halde hazza yönelme ve acılardan kaçınma, yasa koyucunun göz önünde bulundurduğu amaçlardır; bu nedenle onların değerini anlamak yasa koyan kişiye düşer. Bentham'a göre haz ve acı, birlikte çalışması gereken araçlardır. Bu nedenle, haz ve acının gücünü başka bir deyişle değerini anlaması yine ona düşmektedir. Bireysel veya toplumsal olarak haz ve acının değeri belli önkoşullara bağlıdır. Kişinin bireysel olarak zevk veya acının değeri, yoğunluğuna, süresine, kesinliği veya belirsizliğine son olarak da yakınlığı ve uzaklığına göre daha fazla veya daha az olacaktır. (Bentham, 2000, s. 31). Bireysel anlamda bu dört koşul haz ve acının ölçüsünü belirlemektedir. Toplumsal anlamda ise bu koşullar çoğalmaktadır. Bir dizi insana göre haz ve acı, yoğunluğuna, süresine,



kesinliği ve belirsizliğine, yakınlığı ve uzaklığına, doğurganlığına, saflığına ve kapsamına göre daha fazla veya daha az olacaktır. Bu haz ve acının koşulunun yanında Bentham, topluluğun çıkarlarını etkileyen herhangi bir eylemin genel eğilimini ölçmek için şu yöntemle başvurmaları gerektiğini vurgulamaktadır. Toplumda var olan ilk kişiden başlamak kaydıyla; 1. İlk anda onun ürettiği gibi görünen her ayırt edilebilir zevkin değerini. 2. Her acının ilk anda ürettiği gibi görünen değerinden. 3. İlkinden sonra ürettiği görünen her zevkin değeri. Bu, ilk hazzın doğurganlığını ve ilk acının saflığını oluşturur. 4. İlkinden sonra ürettiği görünen her acının değeri. Bu, ilk acının doğurganlığını ve ilk hazzın saflığını oluşturur. 5. Bir yanda tüm zevklerin tüm değerlerini ve diğer yanda tüm acıların değerleri toplanır. Denge, eğer zevkten yanaysa, o bireyin çıkarları açısından bütüne eylemin iyi eğilimini; acı tarafındaysa, genel olarak kötü eğilimi verecektir (Bentham, 2000, s. 32-33). Bentham'a göre birçok çeşit haz vardır. Basit hazlar olarak, duyu hazları, zenginliğin hazları, beceri hazları dostluğun hazları, iyi bir ismin hazzı, gücün hazzı, takva hazzı, iyiliğin hazzı, kötü niyetin hazzı, hafızanın hazzı, hayal gücünün hazzı, beklentinin hazzı, çağrışıma bağlı hazlar ve son olarak rahatlamamanın hazzı'dır. (Bentham, 2000, s. 35).

2.1.7. John Stuart Mill

Faydacılığın bir diğer önemli ismi olan John Stuart Mill, Bentham, Comte ve İngiliz ampirizm düşüncelerini bir araya getiren filozoftur. O, küçük yaşlardan itibaren sıkı bir eğitim almıştır. Mantık, pozitvizm, psikoloji, doğa bilimleri, manevi bilimler ve ahlak üzerinde çalışmalar yapmıştır. Ancak daha çok faydacılık ilkesi üzerinde ünlenmiştir. Mill, Bentham'ın yararcılık ilkesinden harekete ederek, ahlaki konuda birey ve toplum arasında bir uzlaşma arayışına girer. İnsanların tüm çabasının keyif elde etmek olduğu yönündeki çıkarımı psikolojik düşüncelerden de yaralandığını göstermektedir. Ona göre "Bazı haz türlerinin diğerlerinden daha arzulanabilir ve daha değerli olduğu gerçeğini kabul etmek faydacılık ilkesine uygundur." (Kenny, 2006, s. 230). Tüm insanların amacı arzuladığı herhangi bir nesneye veya farklı bir şeye ulaşmaktır. Kişi, hayal ettiği o nesneye ulaştığında mutlu olmadığını gözlemlenebilmektedir. Mill, nesnenin değil, o nesnenin kişiye vereceği keyfin önemini vurgulamaya çalışmaktadır. Ona göre tüm çabamız böyle bir keyfi elde etme yönündedir (Störig, 2013, s. 451-452). Mill, insanın amacı olarak, mutluluğu elde etmede olduğunu söyler. Ona göre mutluluk haz ile mutsuzluk ise acı ile birdir. Mutluluk yani haz, kişinin arzularının ahenkli tatminidir. Bu nedenle haz, kişinin mutluluğu ile ölçülür. Bununla bayağı tenel arzuların tatminini destekleyen bir temel üzerinden gidersek, insanlara haz veren her şeyin eşit değer taşımamasından dolayı mahkûmiyet söz konusudur. Bu durumda insan ile domuzu eşit konumdadır (Cevizci, 2012, s. 896). Kişi kendini bu durumdan kurtarmalıdır. Mill, bununla iki hazdan ikisini de yaşayan herkesin ahlaki olarak tercih etme zorunluluğundan bağımsız bir biçimde birini kesin bir biçimde isterse, işte o daha fazla arzulan bir haz olduğunu dile getirir. Kişi ancak bu şekilde bir hayvandan kendini farklı kılabilir. Mill, "Tatmin olmuş bir domuz olmaktansa, tatmin olmamış bir insan olmak daha iyidir veya tatmin olmamış bir Sokrates olmak, tatmin olmuş bir akılsız olmaktan iyidir." (Kenny, 2006, s. 230) sözleriyle hazzın akılsa ve ahlaksal boyutunun önemini vurgulamaktadır.

2.1. Haz Kavramının Bağımlılıkla İlişkisi

Son zamanlarda, davranışsal ekonomiden ve seçim psikolojisinden kaynaklanan bağımlılık modelleri, bağımlılıkta neyin yanlış gittiğini en iyi şekilde karakterize etmenin yollarını ortaya koymuştur. Tıbbi modeller (beyin hastalığı modeli dâhil) ile onları eleştiren ahlaki modeller arasında tartışmalara sebep olan bağımlılık farklı şekillerde



yorumlanmaktadır. Hastalık modelinde bağımlılık, kişinin davranışlarının büyük ölçüde istem dışı olduğunu iddia eder. Ahlaki modeller ise bunu reddeder ve kişinin amaçlarının ve değerlerinin kötü olduğunu veya eylemlerinin onları kötü yansıtacak şekilde zayıf olduğunu iddia eder (Jeanette Kennett, 2013).

Genel bir kategori olarak kabul edilen haz, arzuları tatmin etmeyi amaçlayan, aynı davranışa ait yeni kalıpları güçlendirerek tekrarlamaktır. Bağımlılık ise, Foddy ve Savulescu tarafından geliştirilen Liberal görüşe göre kişinin güçlü, iştah açıcı zevk arzularına göre hareket etme meselesidir. Bağımlılık, hoş, tatmin edici ve keyifli olma niteliğine sahiptir. Hoş olmayan hisleri gidermek için madde kullananları hedonik bir yaşam sürüyormuş gibi göstermek garip gelse de, bu durum bağımlı olan bireyler için aynı anlamda kullanılmaktadır *“İlk başladığımda bu duyguyu sevmiştim ama sonra bağımlısı olduğumda hoşuma gitmedi. Ve bu yüzden hep bırakmak istedim.”* gibi cümleleri bağımlı bireylerden duyulan sözlerdir. Bağımlı olma yolunda olan bireyler öncelikli olarak haz duyma veya haz ile kendini ödüllendirme yolunda ilerlerler. Kullanılan her madde veya diğer bağımlılık yapan etkenler başlangıç olarak kişide biz haz uyandırmaktadır. Başlangıçta fazlasıyla ödüllendirici ve haz almaya yatkın olan faaliyetler, daha sonraki zaman dilimlerinde daha büyük ödül ve haz verecek olan bir beklenti oluşturur. Bu beklenti normalde beklenebilecek zevkten ve bu zevki tüketen ödüller üzerindeki etkisi daha da şiddetlenecektir (Jeanette Kennett, 2013).

Güçlü bir zevk arzusu, birçok insan için, belki de çoğu insan için bağımlılık oluşturmada çok önemli bir rol oynasa da, bağımlılığı sürdürmede zevk veya zevk beklentisinin bu rolü oynadığı o kadar açık değildir. Zevkli bir hayatın özerk olarak tercih edilebileceği ve bazı kullanıcıların hayatlarının, uyuşturucuyla ilgili zevklerin peşinde koşma etrafında özerk bir şekilde yapılandırılabilir. İlk madde kullanımı beyinde büyük miktarda dopamin salgılayarak yoğun zevk duygularına neden olsa da, tekrarlanan madde kullanımının oldukça farklı bir etkisi vardır. Beynin dopaminle aşırı yüklenmesi nedeniyle, maddenin etkisinin üstesinden gelmek için sinaptik sonrası dopamin reseptörlerinin azalması gibi dengeyi yeniden sağlamak için ödül yollarında nöral değişiklikler meydana gelir. Bu, maddeye tolerans (daha az zevkle) ile sonuçlanır, ancak aynı zamanda yemek, seks ve sosyal işbirliği gibi normal ödüllendirici faaliyetlerden elde edilen ödüllerini deneyimlemek ve haz elde etmek için daha yüksek bir düzey ile sonuçlanır. Buna *“motivasyonel geri çekilme sendromu”* denir (Koob GF, 2010). Bu sendrom bir psikolojik bağımlılıktır. Uyuşturucu kullanımının veya belirli davranışların bırakılması üzerine, olumsuz duygu durumları örneğin kaygı, zevksizlik ve isteksizlik gibi duygusal-motivasyonel geri çekilme septomlarını içeren bir durumdur (wikipedia, 2021). Kaygı ve zevksizlik insanı acı duymaya iter. Bu durumda kişi daha çok haz alacak etmenlerin varlığına ihtiyaç duymaktadır. Zevk azaldıkça kişi kendine haz veren madde veya diğer etkenlere ulaşmada bir engel ile karşılaşırsa haz yerini nefrete ve daha birçok olumsuz duyguya bırakmaktadır. Böylece şöyle bir sonuca varabiliriz. Bağımlılık yaratan davranışların tekrar sıklığı, zorlayıcı istek veya özlemi artırırken buna paralel olarak deneyimlenen hazzı azaltmaktadır. Böylece kişi daha fazla kırgın veya umutsuz hale gelmektedir.

Bağımlılığı Felsefeyle Tedavi Etmek Mümkün Mü?

Günümüzde giderek yaygınlaşan bir alan olan felsefi danışmanlık, insan sağlığı üzerinde olumlu bir etkisinin olup olmayacağı halen bir tartışma konusudur. Felsefi danışmanlık alanı neden böyle bir iddia ortaya koyma gereksinimi duydu veya felsefe, bağımlılık için ne tür bir iyileştirme yöntemi öne sürebilir? Bu sorulardan başlayarak, felsefenin insan sağlığı üzerindeki etkisini göstermeye çalışacağız.



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Felsefe insanlara benliği, öz farkındalığı, bireysel yeteneklerini, ahlaki kazanımlarını, muhakeme gücünü, akılsal yeteneklerini, duygularını, zayıflıklarını ve güçlü yönlerini gösteren bir sanattır. Felsefeden yoksun olan bireyler tüm bu farkındalıklardan mahrumdur. Bu nedenle her birey kendini keşfetmeye mahkûmdur. İnsanın kendini keşfetmesinin önünde veya olumsuz davranışlar sergilemesinde birçok etken vardır. Şahin Filiz, Ahlakın Akli ve İnsani Temeli adlı eserinde davranışların nedenlerini şu şekilde sıralamaktadır.

“Kişiyi eylem ve davranışlara iten bir dizi nedenler bulunmaktadır. Bu nedenler iç ve dış olmak üzere iki türdür. İç nedenler insanın ruhsal yapısı, mizac ve kişiliğinin oluşumu, kalıtım; içgüdü, eğilimler ve tutkulardır. Dış nedenler ise insanın şu veya bu şekilde davranmasını sağlayan dış etkenler içerisinde doğal ve sosyal çevre, taklit ve alışkanlıkları sayabiliriz. (Filiz, 2014, s. 16)”

Bireyin kendini keşfetmesindeki en büyük engel “başkalarıdır”. Başkalarının varlığı, zaafı, gücü veya sahip oldukları imkânlarıdır (Filiz, 2018, s. 58). Başkalarının varlığı ve sahip oldukları imkânlarla olan özenti kişinin kendinden geçip başkası olmasına sebep olmaktadır. Öyle ki onlar tarafından onaylanma, kabul görme ve takdir görme kişinin en büyük amacı haline gelmektedir. Özellikle genç insanlar arasında yaygın olan bu durum gittikçe yaygınlaşmaktadır. Bağımlılığın da başlangıcı olan bu durum her toplumda yaygın olarak kabul görmektedir. Arkadaşı tarafından teşvik edilen alkol, sigara, uyuşturucu veya her türlü bağımlılık yaratan durumlar başkası tarafından kabul görme adına reddedilmemektedir. Bu durum birkaç defa tekrarlandığı takdirde geri dönüşü olmayan sonuçlarla karşı karşıya kalınmaktadır. Bu nedenle bağımlılık bir zayıflık durumudur, iradenin ve özbenliğin devre dışı kaldığı bir noktadır. Bu seviyeye ulaşan bir birey için felsefenin yapabileceği pek bir şey kalmamaktadır. Çünkü bağımlılık artık tıbbın ve psikoterapi'nin alanına girmiştir. Bağımlılık, bir vaka haline geldikten sonra tıbbi ve psikolojik bir müdahale gerektiren bir hastalık adını almaktadır. Tıbbi ve psikolojik olarak bağımlılığın tedavisi ise belli ilaçlar ile belli bir alanda gözetim altında tutulma şeklindedir.

Felsefi danışmanlık, hastalık derecesine ulaşmamış kişi veya kişilerin, yaşadığı kavramsal, düşünsel, varoluşsal ve ahlaki problemleri, felsefenin tüm teknik ve yöntemlerini kullanarak insan sağlığı üzerinde iyileşmeyi amaçlayan yeni bir danışmanlık sürecidir (Oruççiftçi, 2021, s. 2). Kişi sadece içinde bulunduğu durumu anlamlandıramama veya arayış içinde olduğu şeyin farkında olmaması ve kişinin bu durumu kavramsal, düşünsel ve varoluşsal olarak açıklamakta zorlanması, bağımlılığı felsefi alanında değerlendirilmesini mümkün kılmaktadır. Bu alanın odaklandığı nokta, hastalıklara kaynak gösterilen problemleri inceleyip tahlil etmektir (Filiz, 2018, s. 27). Yani hasta olan insan değil, hastalığın kendisidir. Buna bağlı olarak da çözülmesi gereken sorun değil sorunun kendisidir (Filiz, 2018, s. 26). Anlamlar üzerinde yoğunlaşan felsefe, kişinin bağımlılığa yüklenen anlamı hasta olmayan kesime mantık çerçevesinde açıklaması gerekmektedir.

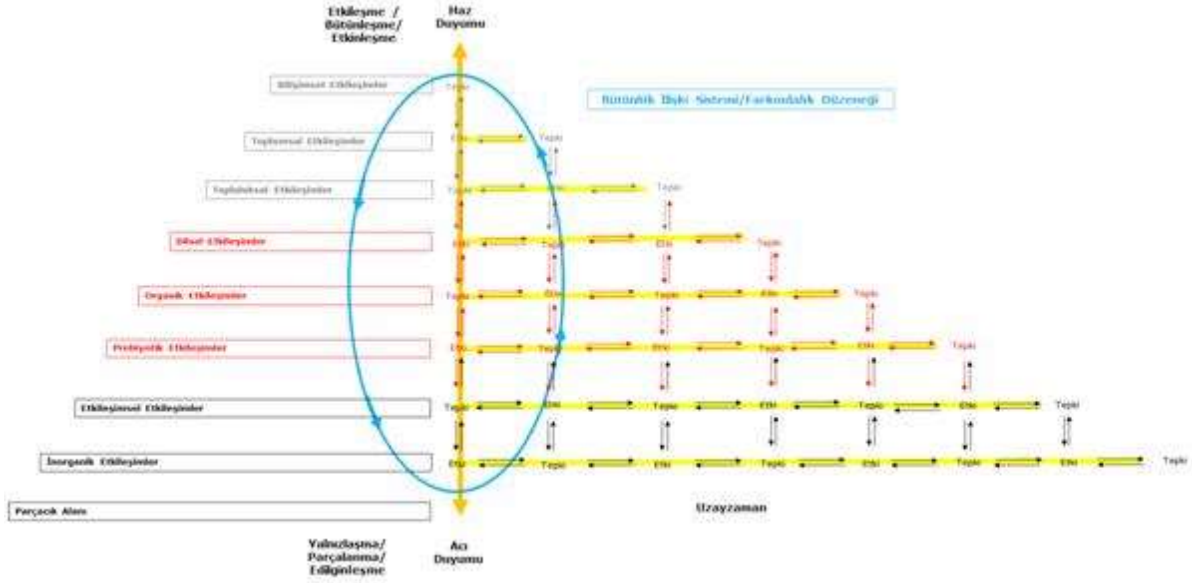
Haz ve acı kavramları, felsefenin bünyesinde yer alan kavramlar olup, bağımlılığa neden olma yolunda rol oynayan iki önemli duygu durumudur. Bağımlı bir birey olmadan önce kişi, arayış içinde olduğu veya ulaşmak istediği yegâne şey acıdan kaçıp hazzı yönelmektir. Acıdan kaçıp kısa yoldan hazzı elde etme yöntemi elbette insan doğasına aykırı bir durumdur. İnsan, çoğu zaman kendi doğasına aykırı olan bu durumdan kendini kurtaramamaktadır. Hazzın peşinden giderek kendini acının pençesine bulabilmektedir. Acıdan kurtulmak içinde belli başlı maddeler veya farklı nitelikteki ürünler ile kısa süreli hazları yaşamak için çabalamaktadır. Oysaki acı bizim doğamızın bir parçasıdır. Kişi kendi doğasını iyice anlamalı ve bunu doğasına uygun bir şekilde çözümlmelidir.



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Acıyla uğraşan, acıyı dindirmeye çalışan insan, acıyı ve acının nedenini anlamaya çalışan insandır ve bu insan anlamak için felsefe yapmak, yani kendi varlığıyla, dünyayla, yaşamla ve ölümlle hesaplaşmak zorundadır. Bu nedenle, bir acı çözümlemesi felsefeden bağımsız yapılamaz (Coşkun, 2020, s. 26).

Hayatımızın farklı zamanlarında hayatımıza eşlik eden zorunlu haz ve acılar hayatımızı farklı şekillerde etkilemektedir. Bu etki olumlu olacağı gibi olumsuz bir boyut halini de alabilmektedir. Son zamanlarda üçboyutlu evren ve etkileşimsel evren anlayışını savunan uzay zaman platformunda (Uzayzaman) eğitim veren Turgay Sehil ve Şahin Filiz, haz ve acıya farklı bir tanım getirdiler.



Yukarıdaki tabloda etkileşimsel evren anlayışında bütüncül ilişki sistemi ve farkındalık düzeneği aktarılmaya çalışılmaktadır. İnsan olarak varlık bulmamız, bu tablodaki tüm etkileşimleri kapsayacak niteliğe sahip olmamızı gerektirmektedir (Sehil, 2019, s. 138). Acı duyumunu parçacık alanın altında, haz duyumunu ise bilişimsel etkileşimin üstünde tutulmaktadır. Haz ve acı duyumundan genel tanımlama altında toplanabilecek farkındalık davranışları ortaya çıkmaktadır. Bu davranışlar, bir canlının bütünlük ilişki sisteminde ardıl davranışlar göstermesine, tüm evrenin parçalanmadan bütünleşmeye, yalnızlaşmadan etkileşmeye, edilgenleşmeden etkinleşmeye doğru yol almasını sağlıyor. (Sehil, 2019, s. 132) Kişi haz duyumunu elde etmek adına etki ve tepkiyle tüm aşamaları kaydederek elde etmelidir. Çünkü insan doğasına uygun olan duygu durum budur. Duyumsadığımız acılar ve hazlar canlı ve cansız doğanın içinde bulunan tüm üyelerin etkileşimlerinden kaynaklanır. Bunun yanında toplumla olan ilişkimiz veya bilişsel doğanın üyeleriyle olan etkileşimlerden de kaynaklanan haz ve acılarımız mevcuttur. Örneğin kişi, bir başarı elde etmek için tüm imkânları değerlendirip, (toplumdaki bireylerden yardım alarak) tüm zorlukları aşarak bunu gerçekleştirmektedir. Tüm bu zorlukların sonunda gerçek haz duyumunu doyasıya yaşamaktadır. Ancak tablodaki mavi döngüye bakılacak olursak kişi etkileşimlerini cansız varlıklara daha sonra inorganik etkileşimlere doğru bir seyir izlerse bu defa gerçek acı duyumsamasını yaşayıp yalnızlaşma, parçalanma ve edilgenleşmeye doğru gidecektir. Bağımlılık, acıdan kaçıp kışsa sürede hazzı elde etme durumudur. bu tabloya bakılacak olursa bağımlılık kavramını acı duyumundan başlayarak hiçbir etkileşimde bulunmadan en üst düzeyde yer alan haz duyumunu elde etme girişimidir. Bu durum kişiyi kısa süreli haz duygusunu yaşamasına katkıda bulunabilir. Ancak haz duyumu bittikten sonra kişi, bu defa



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daha şiddetli acılar yaşamaktadır. Bu acıları dindirmek adına farklı maddeler kullanılarak ve farklı alışkanlıklar edinerek kısa sürede hazzı yaşama arayışına girilmektedir. Bu durum kişinin içinden çıkamayacağı bir bağımlı birey olma durumunu kaçınılmaz kılmaktadır.

Felsefi danışmanlık, insanlara bu duruma ulaşmadan bireyin bu tablodaki doğal seleksiyonunun farkına varmasını sağlayarak, duyguları denetlemeyi, verimli bir hale dönüştürmeyi ve tesadüflere bırakmayacak bir hayat planı yaratmak zorunda olan bir alan sunmaktadır. Çünkü felsefe tarihi, bünyesinde bu duyguları nasıl kontrol altında tutmamız gerektiği ile ilgili veya insan ruhunun içine düştüğü çatışmaları nasıl çözeceği (Hasanoğlu, 2020, s. 7) ile ilgili birçok veri barındırmaktadır. Bu veriler ışığında olumsuz düzeyde olan haz ve acıları zihinsel ve ruhsal olarak kişinin kendi varoluşunun doğasıyla uyumlu hale getirmek gerekmektedir. Aksi taksirde haz ve acıları tesadüfi akışa bırakmak varoluşun savrulmasına neden olur. Bu durum ise insanın nasıl ve hangi koşullar altında ne tür yöntemlerle eğitileceği sorusunu yanıtsız bırakacaktır (Filiz, 2018, s. 37). Danışmanlık sürecinde birey haz ve acılarını tehlikeli boyutlara ulaşmadan bu kavramlara yüklenen anlamları tekrar gözden geçirerek doğru düşünme, doğru kavramsallaştırma ve mantıklı akıl yürütme becerilerini elde edecektir.

Felsefe anlama odaklanan ve anlam çözümlemesi yapan bir alandır. Acı veya haz kavramlarının anlam çözümlemesini yapma becerisine sahip olan kişi bağımlılığa giden yolda en güçlü silahı elinde bulandıran bir kişidir. Çünkü felsefe acının ne olduğunu açıklığa kavuşturduğu veya acının anlamını bulduğu zaman o acıya son verir, en azından onu hafifleterek katlanabilir hale getirir (Coşkun, 2020, s. 27). İnsan, acı karşısında güçlü durmak ve acılara rağmen yaşamak istiyorsa felsefenin acı hakkında düşünmeye yönlendiren, sağduyuya davet ederek “sakin ol” diyen sesine kulak vermesi gerekmektedir (Coşkun, 2020, s. 28). Felsefe, kişiye hayatını gelişigüzel yaşayan biri olmaktan çıkarıp, kendi hayatı hakkında düşünce üreten biri olma imkânı tanımaktadır. Felsefeyi rehber edinen birey, iyi ve örnek teşkil edecek yaşam stilini elinde bulundurur. Kendi yaşamını felsefi ve evrensel etik kurallarına göre sınavı içselleştirmelidir (Sunat, 2020, s. 103-104). Felsefi ve evrensel etik kuralları bireyden başlayarak toplumu, toplumdaki yola çıkarak da tüm insanlığa ahlaki varlıklar olduğunu bir kez daha hatırlatacaktır.

Sonuç

Bağımlılık, insanlık tarihi boyunca olumsuz etkilerini insanlar üzerinde göstermektedir. Bireyi, aile kuramını, toplumu, ülkeleri ve dünyayı olumsuz durumlara sürükleyebilecek potansiyele sahiptir. Bu durumun yaşanmasındaki en büyük etken bireyin kendini tanımaması ve buna bağlı olarak hayvani yönünü ortaya çıkararak acıdan kaçıp haza yönelme isteğidir. Bu isteğin etkisi yıkıcı boyutlara kadar varmaktadır. Acı ve haz kavramları felsefenin bünyesinde yer almaktadır. Felsefi danışmanlık, bireyin kendini keşfetmesini sağlayarak, haz ve acı kavramlarını her yönden incelemesini sağlayarak kişinin düşünsel, zihinsel ve varoluşsal olarak iyileşmesini ve bilinçlenmesini sağlamaktadır. Böylece kişiyi bağımlılığa sürükleyecek etkiler karşısında bireyin dirençli bir tutum sergilemesine katkıda bulunmaktadır.



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HUMAN OR TECHNOLOGY: WHICH IS A TOOL FOR OTHER?

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Abstract

“Welcome to the era of technology” is what we say in today’s world. From artificial intelligence to robots, our life is somehow totally controlled by technology. We are living in such an era that brings lots of discussion on human and technology. We debate about what is happening and what will happen in future when it will come to technology and humans. The biggest question arises that will technology ever replace humans? These so-called technological tools are making us dance to its tune. The race between technology and humans is not freshly formed but it is hotly debated topic since long time. With the advancement in technologies such as IoT, Machine Learning, Artificial Intelligence, Cloud World, Data Science etc. We are relying our self-more on it. From using remote fans to electrical stove and many more things like this, our lives have become little easier in this busy world, and today we are almost totally dependent on them. In this paper, we discuss about how things are going and what do people think on the same. We are also going to discuss about what can be the end of this debate if exist, also we will see how they both relate to each other how important they are.

Keywords: Technology Good/Bad, Human being, Effects of technology usage

INTRODUCTION

In previous decades everything was good going, though the lives of people were harder but still it was good because ‘humans’ jobs were not replaced by machines or robots, because we had a good and fresh environment unlike today. Everything comes with a disadvantage. Technological appliances were developed to make everybody’s lives comfortable but we also know that not everyone can afford it. The more we run towards the technology the more we become nasty (Sanders 2019).

Figure 1 shows the graph that depicts how the usage of technology by humans is increasing rapidly and constantly. But we forget that everything comes with its pros and cons. With the advancement of technological systems and appliances, fear of job loss, addiction, socially isolation, depression, insecurity, procrastinated and much more also increased a lot (Chloe Lovatt 2016).

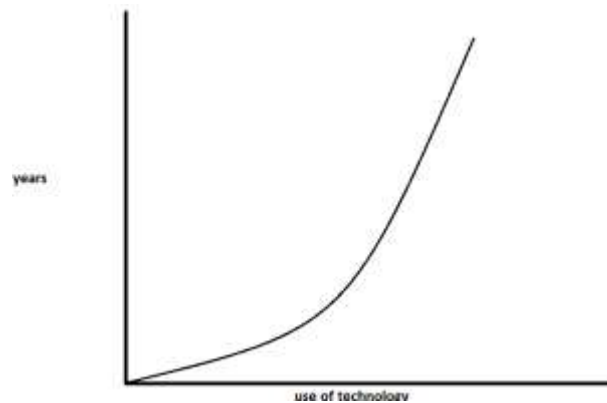


Figure 1: Increase in Technology usage

To overcome this, we need to stop this rapid usage increase of technology, but we also know that technology in today's life is must. So, let's have a look at another graph as shown in Fig 2.

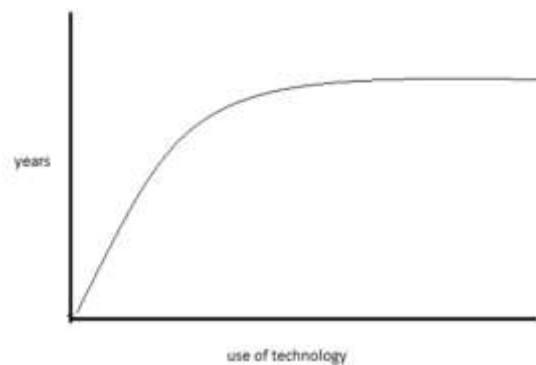


Figure 2: Technology Being Constant After a period of time.

Figure 2 graph shows an area which tells that after a particular time technological advancement are being constant, in short, the use is limited so that we can think collectively i.e., about human comfort and also human security.

Now the point to note is that humans are responsible for the destruction and construction of everything, which means that we are the main root of technology. Technological tools are just playable material which will be replaced after another new and big invention but a human mind cannot be replaced. What we conclude is that in the race of human v/s technology nobody can win, we need to cope up so that we deal with every problem as we use to do in human era and also lead a comfortable and easier life as we do in technological era (Dutta 2021).

ADVANTAGES AND DISADVANTAGES OF TECHNOLOGY

Advantages: Following are some of the major advantages of technology.

- Ease of access to information.
- Saves time as compared to physical means.
- Ease of mobility.
- Better and fast communication.



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- Better and easy learning techniques.

Disadvantages: Following are some of the major disadvantages of technology.

- There no hundred percent guarantee of data security
- There is crime and terrorism possible if unlearned or less informative.
- There is privacy concern.
- Works get overload and can disconnected form the physical environment.
- Insecurity of jobs.

DISCUSSION

4 years ago, an interview with Gerd Leonhard [*Futurist, Author and a raft of other titles*] (Paul Armstrong 2016) tells us that Futurists were so sure that technology will over rule humans and humans will create (actually already created) problems for themselves. Moving deep into the example of the interview let's discuss about the question asked by Paul Armstrong (the interviewer) and how were this question answered by Gerd Leonhard (the interviewee).

The foremost question says *“you say humanity will change more in the next 20 years than it has in the last 300. Why do you think this is true when most technological advances seem to have had little to do with humans themselves and rather the effect they have or problems they have created for themselves?”* this question actually ask about why do you think that it is true that technological advancements have a very little to do with humans, moreover humans have created problems for themselves by creating it.

Gerd explains that technology is created by humans but it's changing humans as it is making humans just a tool. Computer / IA/ robots have same processing power as humans. He also explained that what we need to keep in mind is that we should include technology but we should not become it because it's not what we look for but it is about how we look for.

The second question was *“What is "future shock" and why do you think man and machine will clash? Can't we all just get along?”* the question talks about how will things get changed in future and what will be the impact on man and technology relations or other clashes.

The answer of the question actually explains us about the fact that it will be shocking for us in future looking machines doing humans work which right now is being done by humans themselves for example booking assignments, finding mates, etc. [talking about 2021, we can see these things happening]. He says that a clash may result but not because of technology but because of humans due to their go rogue nature. This will bring conflicts and opens up ethical problems which might be impossible to solve.

The third question by Paul was *“Man and machine will converge” - how far are we from really wet-wiring ourselves together or will this never really happen?* In this Paul questions about the human and machine relation that will the ever come together and he also doubts about the same.

‘The technological appliances are being advanced and humans not only want them, but it will become their need’ replied Gerd. He says they still have to decide, where humans



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end and machine start or vice versa. All in all, the answer says that increasing technology is losing human abilities hence it's difficult to bring a machine and a human together.

After this Paul asked "*Exponentiality*" is a much-debated subject right now - some believe limits of computing are about to be ended.

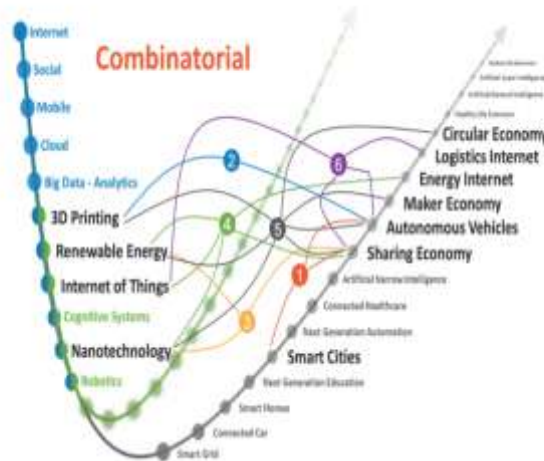


Figure 3: Combinatorial Graph (Paul Armstrong 2016)

Gerd explains this by the help of the above graph in Fig 3 that technologies are kind of competing and none of them stays behind and never ends. It's combinatorial. This example of interview brings us in notice that humans and technology both are equally important at their places. It might be difficult or we can say next to impossible to converge a man and a machine but there is also a truth that both are the needed one (Anderson and Rainie 2018).

CONCLUSION

We discussed about what people think on the same. Now talking about ourselves i.e., what we think about the topic. Let's start from the very first point which discussed earlier too, that technology is just a tool but looking all around we see that these tools have lots of importance in our life or we may say that somehow, we are relying on them. But the very strong point comes that though these tools are needed but we forget that idea of making these tools was of a man which of course a technology sort of thing cannot think. Machines have replaced humans but today also we need a human to start that machine to do all the functions. It is true that technology have somewhere made humans a little back but it hasn't and can never replace humans. The fight between technology and humans is from so long will definitely be continued because the relation between technology and human is now all about "*If you live, I live, If you die, I die*" which means if no humans, no technology and if no technology, no humans because we have made our habit to live our life relying ourselves on technology, for an instance machines in the factory work and human's work get reduced and also easy which shows how technology helps humans and when we see initial step of working of machines there is a brain of a human behind these machines as the idea of making them was of human. All in all, technology and humanity have to go hand in hand because we need both to have a life.



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THE HEAVY TUNGSTEN ALLOY REINFORCED EPOXY MATRIX COMPOSITE

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Abstract

This research investigates the production of epoxy resin composites reinforced by the synthesized heavy tungsten alloys (W-7Zn-3Co-Y₂O₃). The heavy tungsten alloys were synthesized in the previous study by mechanical alloy routine. Y₂O₃ is used for dispersion of the continuities of the compound during the ball milling process. Laminating resin L285 and hardened H285-286-287 were used to produce polymer epoxy matrix. In this study, the tungsten heavy alloys reinforced epoxy composites were examined in terms of Vickers hardness, and Archimedes principle. The results indicate that the 16 hour-milled reinforced epoxy composites have the highest mechanical value.

Keywords: Tungsten alloys, mechanical alloying, polymer epoxy composites

INTRODUCTION

In the last years, researchers have given attention to using light and high-strength materials such as polymers instead of using metals that have high densities. This has led to an increase in demand for polymer materials. Now a day, polymers could be seen in many different applications. Epoxy resins are a type of polymers that have many good mechanical properties, chemical and wear resistance, and high modulus. However, having some low mechanical properties have reduced the use of pure epoxies in many advanced applications which promoted researchers to improve its mechanical and chemical properties for matching the developed applications. The main process for improving epoxy materials is by producing matrix-reinforcement composites. Adding some reinforcement materials in epoxy matrix led to producing a composite material with high mechanical properties which is used in various industries that start with space application until small electrical devices applications. Epoxy matrix composites are used in applications that required materials with good mechanical and chemical properties, high adhesion, and low weight. The mechanical properties of these composites depend on curing time and temperature, particle size, and adhesion (Fu et al., 2008). Conradi et al. dispersed silica nanoparticles into the epoxy matrix to produce a coating with a better hardness of 50% when compared with coatings of pure epoxy (Conradi et al., 2014). Karippal et al. used each of multi-walled carbon nanotubes (MWCNT) and Carbon



black (CB) as reinforcements with different fractions into the epoxy matrix and determine the change in hardness with increase the volume fraction of MWCNT and CB particles into the composite (Karippal et al., 2010). Another research done by Raajeshkrishna et al. analyzed the thermomechanical properties of basalt nanofillers into the epoxy matrix and provide the increase in density of composite with the concentration of basalt nanofillers (Bjorneklett et al., 1992). The produced metal powder reinforced epoxy indicated good electrical, magnetic and mechanical properties (Dang et al., 2008),(Zhou & Yu, 2010). The various metal powder has been used as filler material to improve the polymer's properties and produce composites with better energetic and structural properties under economic conditions. Radwan et al. studied the effect of reinforced epoxy risen by Aluminum particles with variation in weight percentage and evaluated the change in Vickers hardness, density, and the compression stress of the composites (Radhwan et al., 2019). Al fillers with higher percentages tend to increase the hardness of resulting composites when compared with pure epoxy resin. Also, Zhou et al (Zhou, 2011) studied the effect of Al particles reinforcements on epoxy matrix and also showed that electrical and thermal conductivity of Al/epoxy composites increase by increasing the percentage of Al particles into epoxy matrix. Zahrouni et al (Zahrouni et al., 2021) analyzed the effect of size, distribution, and type of reinforcement material into the epoxy matrix on the mechanical properties of the resulted composites. On the other hand, Chen et al. (Chen & Deng, 2019) investigated in detail the effect of Zn-Cu particles on epoxy matrix and noted the improvement of bot electrical and thermal conductivity of Zn-Cu/epoxy composite by increasing the percentage of filler material.

In this paper, W-Zn7-3Co + %0.5 Y₂O₃ reinforcement particles were synthesized with different milling times and techniques before adding them into the epoxy resin matrix. Different samples were produced to investigate the effect of milling time on the hardness and density of epoxy matrix composites.

MATERIALS AND METHODS

To produce W-Zr-Co-Y₂O₃ reinforced epoxy polymer composites, W, Zr, Co, and Y₂O₃ particles and laminating resin L285 and hardened H285-286-287 were purchased from Nanografi, EGE nano A.Ş and Dost Chemistry, respectively. Tungsten (wt. 90%), zinc (wt. 7%), and cobalt (wt. 3%) were weighted by balance. Also, for better distribution of alloying elements during the ball milling process, yttrium oxide (Y₂O₃) nanoparticles were used additionally with a percentage of 0.5. The heavy tungsten alloys were synthesized in planetary ball mills (Retsch PM 100) using 80 ml tungsten carbide containers at room temperature. The ball to powder ratio was selected as 10:1 with 10 mm sized tungsten carbide balls at a rotation speed of 360 rpm. To eliminate excess cold welding and overheating, the instrument was stopped for 2 minutes every 5 minutes. There are two kinds of strategy were used to produce the heavy tungsten alloys, which are called the classic and alternative methods respectively. In the classical method, all raw materials are milled for 24 hours. In the second technique, Initially, the Zn-Co compounds were milled for 24 hours. The W and Y₂O₃ and the milled Zn-Co compounds were then milled for 8, 16, and 24 hours. The heavy tungsten alloy (0.5 g) and the epoxy (10 g) were weighted. To form heavy tungsten reinforced epoxy composites, the powder compounds and resin were placed in a beaker and the mixing was carried out by utilizing a mechanical stirrer for half-hour. The hardener is then poured into the beaker as the weight ratio between the resin and hardener of 1.5. The resulting suspension was mixed for 2 hours by a magnetic stirrer with a speed of 800 rpm. To ensure



homogenous distribution, the compound was again mechanically mixed for 5 minutes and the compound was dried at room temperature.

RESULTS AND DISCUSSION

Figure 1 shows the Vickers hardness of the pure epoxy and the heavy tungsten reinforced epoxy polymer composites with the parameters of 0.3 kgf and the dwell time of 20 sec. Five measurements were applied for each sample to calculate the average value of the measurements. The addition of the tungsten metal powder as reinforcement material to the epoxy matrix leads to a noticeable increase in the microhardness value. Furthermore, the ball milling time of tungsten powder has a significant effect on the microhardness. The composite having 16-hour milled tungsten heavy alloy shows the best hardness value of 22.6 HV.

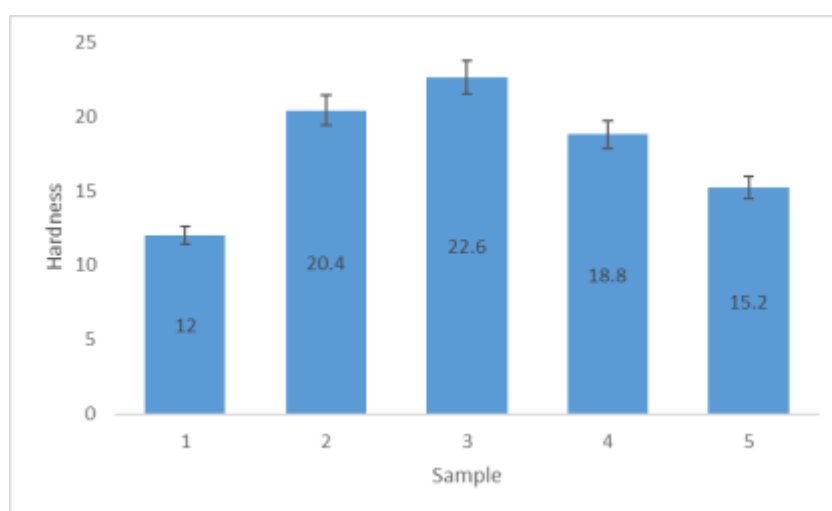


Figure 1 The Vickers hardness values of the given epoxy composites

On the other hand, the effect of the second milling method was determined by comparing the two samples fabricated by using these two different strategies. The composites produced by the second one have approximately 25 % higher microhardness values when compared with the first one.

The density measurements are based on Archimedes principle. The measured density of pure epoxy and the reinforced epoxy composites are shown in Figure 2. As expected, due to the nature of the high density of tungsten alloy, the addition of the synthesized tungsten alloy to the epoxy matrix increases the density of the composites. When regarding the polymer composites produced by the second method, the composite with the 8 hours milled alloy indicates the highest measured density value (see Figure 2). This can be because pure tungstens are higher density values than the synthesized alloys, which means the 8-hour milled alloy may include the highest pure tungsten ratio when comparing the other milled alloys. On the other hand, In the classical method, as expected, the measured density is a slightly higher value than pure, and 16 and 24 hour milled alloyed reinforced epoxy composites.

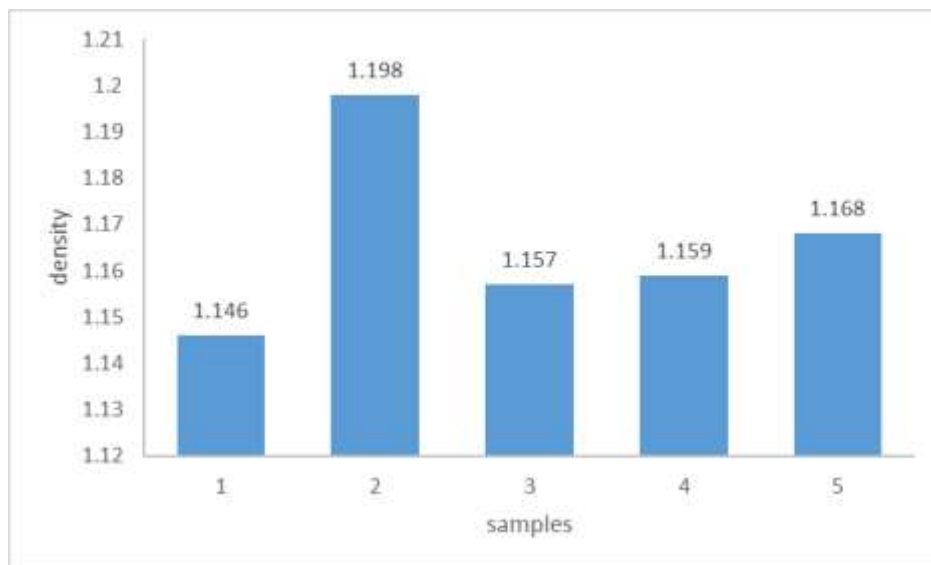


Figure 2 The measured density of the given epoxy composites

CONCLUSIONS

This study examines the W-Zn-Co-Y₂O₃ alloy reinforced epoxy polymer composites in terms of Vicker hardness and density measurements. Two different strategies were applied to produce the heavy tungsten alloys by mechanical routine. Laminating resin L285 and hardened H285-286-287 were chosen as epoxy elements. The study indicates the second method may be chosen due to the highest Vicker hardness value and lower measured density values as compared to the reinforced composites. Furthermore, the 16 hours milled heavy tungsten alloy reinforced epoxy composites have the highest mechanical value.

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STONE ALTERATIONS IN SOME HISTORICAL BUILDINGS IN HATAY PROVINCE

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Abstract

Natural stones have been widely used in buildings from ancient times to the present day, and thus the architectural works built with natural stones throughout history have formed a large part of the immovable cultural heritage today. Stone structures are structures that support the sustainable architectural movement and express the connection between the architecture of the past, present and future. The preservation of these stone structures, which have cultural and historical importance, is important in terms of transferring them to future generations. Most of the historical buildings reflect the social, cultural and religious life of the period they were built. It is seen that historical and cultural artifacts have been damaged and eroded over time in the environments where they are exhibited. Especially the building blocks used in masonry historical buildings are affected by environmental factors over time and therefore deteriorate. At the beginning of the factors that cause these damages; natural factors such as air pollution, ambient temperature, amount of light, humidity, freeze-thaw, flood, earthquake, landslide. In addition to natural factors, it is observed that they cause physical, chemical and biological alterations in buildings due to climate change and human factors, and these structures are rapidly destroyed over time. Basically, climatic factors such as precipitation, temperature and relative humidity, air pollution and biological activity affect stone degradation processes. Alteration of world cultural heritage and historical buildings is the result of both natural and anthropogenic factors, including pollutants as well as flora, fauna and microorganisms. The wear of stone is affected by many environmental factors, which often interact. These negative effects include changes in aesthetic properties, material loss, surface deposits (crusts) and other chemical transformations. In this study, cracks, fragmentation, abrasion, joint discharge, collapse of the walls, flowering, color changes, alterations caused by microorganisms, plants such as lichen, moss and larger unwanted weeds or plant roots in the form of trees have been determined in some historical buildings selected



from churches, castles, old Antakya houses, baths and similar historical stone structures in Hatay province.

Keywords: Stone alteration, Hatay province, cultural structures, climate change

1. INTRODUCTION

Hatay is a border city located in the east of the Mediterranean region. The city is surrounded by the Mediterranean and Adana in the west, Osmaniye in the north, Gaziantep in the northeast, and Syria in the east (Figure 1). Hatay has hosted many civilizations in parallel with the historical and cultural past of Anatolia and is one of the important cities in Turkey in terms of registered architectural works (Oymael et al., 2011). Hatay is a cosmopolitan city that hosts people from different civilizations, cultures, ethnic languages, religious beliefs and origins (Alioğlu, 2000). Civilizations that settled in Hatay built many religious buildings in the city. Some of the structures that have survived until today are still in use.

Since the beginning of humanity, people have used natural stone as a common building material, from statues, castles, Neolithic buildings to gigantic structures such as pyramids or gothic cathedrals, and these structures have survived to the present day with their versatility (Akoğlu, 2012; Becerre et al., 2019). Although stone is a cheap and very durable material, rock surfaces are exposed to various weatherings due to the interaction between rock and building materials, primarily the atmosphere and anthropogenic factors. This situation is also called alteration. While natural building blocks are known as symbols of durability and continuity, ancient documents and cultural heritage such as historical buildings, monuments, manuscripts and paintings are fragile and undergo physical, chemical and biological degradation over time (Price, 1995; Dal, 2010; Panda et al., 2020). All atmospheric events such as precipitation, temperature, wind, air pressure, frost and humidity observed in Turkey in recent years show the negative effects of climate change on monumental structures. Weathering of the surface layers of monumental structures depending on the climate; It is a result of the temperature differences between summer and winter, night and day, water movement caused by capillarity, the corrosive effects of rain water, salt and other chemicals, particles carried by wind and air pollution (Gupta, 2013). Weathering is the breaking up and changing of rocks and usually begins when the rock meets the atmosphere (Schaffer, 1972). Recent studies have revealed the influence of microorganisms (algae, cyanobacteria, lichens, fungi and bacteria) as potentially harmful agents for stone artworks (Rosado et al., 2016).



Crack Formation:

When the tensile or compressive strength of the stone is exceeded as a result of the loss of the qualities of the material together with the reasons such as earthquake, settlement of the structure and thermal expansions, as a result of the change in the behavior of the stone, slips and cracks occur in the building elements due to pressure. These are also called mechanical decompositions (Tintin, 2012). Cracks in the works; It occurs due to atmospheric reasons such as the loss of the bonding material, external factors, the type of stone used in the construction of the work, acidic rains, temperature, humidity, wind and sun (Figure 2) (Dal et al., 2016).



Figure 2. St. Simon's Monastery

Fracture Formation:

Negative external effects are the effect of the applied force and the complete separation of the parts from each other as a result of the stones losing their minerals. As a result of the destruction of people in this region, too many fractures have occurred (Figure 3) (Dal et al., 2016).



Figure 3. St. Simon's Monastery



Honeycomb Glasses:

It is the formation of independent pits connected to each other on the surfaces of historical monuments. In general, the surfaces of the stones have a spongy structure and it is a type of weathering observed especially in granular stones containing fossils. The reason for the formation of honeycomb glasses, which can also be defined as alveolar decomposition or pitting, is caused by different chemical substances coming from the atmosphere, such as acidic rains, humidity and salt content in places close to the sea (Figure 4) (Dal et al., 2016).



Figure 4. Samandağ Beşikli Cave

Parts Loss:

Especially historical works with historical and artistic value such as sculptures; It is the separation of details such as fingers, arms, noses from the works with the effect of different forces (Figure 5) (Dal et al., 2016). The destruction of the water and salts in the material, caused by the freezing or evaporation processes due to the heat changes in the atmosphere, and the expansion of their volume, causes the pieces to break off from the surface over time (Figure 6) (Rodrigues, 2015; GomezHeras, 2015).



Figure 5. Haron the Hell Boatman



Figure 6. Batiayaz Armenian Church

Black Layers:

Such weathering occurs in stone artifacts that are directly exposed to rain. In this region, the black layers formed due to the high humidity are quite high (Dal et al., 2016). Humidity and temperature are the main factors that cause black layer formation. Polluted compounds such as gaseous and particulate nitrogen, sulfur, nitrate (NO_2) formed in the atmosphere accumulate on the surface over time and form crust formations. This accumulation on the stone surfaces reacts with snow and rain water and creates an acidic effect and accelerates wear by converting calcium carbonate (lime), one of the main components of the stone, into gypsum (Figure 7,8) (Eskici et al., 2006; Aslan, 2012).



Figure 7. Erzin Aqueducts



Figure 8. Antakya Koz Castle

Joint Discharge:

Stones are placed to form joints in wall construction and combined with mortar. However, due to various reasons, they may lose their properties over time and show separation from the stones. Thus, gaps of different sizes appear in the joints between the stones. Since it causes rain and snow water to reach the inner structure more easily, it accelerates the decomposition (Figure 9) (Hasbay and Hattap, 2017; Eskici et al., 2006).



Figure 9. Antakya Koz Castle

3.2. Chemical Alterations

The transformation of the minerals that constitute the building stone into other minerals as a result of the change in the chemical composition of the stone is called "chemical dissolution" and develops with the action of carbon dioxide, water, oxygen and microorganisms all together. The main factors in chemical degradation are humidity and temperature (Dal et al., 2016).

Salting:

Salt minerals in the structure of stone works dissolve under the influence of moisture or rain. When the temperature is high, they immediately evaporate and crystallize (Dal et al., 2016).



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Over time, the salts that crystallize in the capillary spaces of the building blocks increase in volume with the increase in pressure, thus causing the material and plaster explosion (Figure 10) (Tintin, 2012).



Figure 10. Antakya St. Pierre Church

Color Change:

Color change may occur due to the accumulation of substances carried by atmospheric means such as rain and wind on the stone surface. It is the type of decomposition that occurs as a result of changing the color of the stone by changing its original color or lightening its color due to effects such as daylight, UV (ultraviolet) rays, water and humidity (MEB, 2013; Öcal and Dal, 2012). This is a physical color change (Figure 11).



Figure 11. Altınözü Gelinler Mountain Roman Necropolis



Pollination:

The surface of the stone is affected by external environmental conditions over time and crumbles into dust. This can also be noticed when touched by hand. The form of degradation that occurs in this way is called pollination. Pollination occurs in granular stones. The granules on the surface of the stone lose their binders and leave the surface in powder form. Pollination occurs on the surfaces of the works due to reasons such as touching the surface and climatic conditions (Figure 12) (Dal et al., 2016).



Figure 12. Samandağ Beşikli Cave

3.3. Biological Alterations

Biological factors are natural conditions that have permanent negative effects on historical structures. Biological colonization is the layer formed by microflora such as algae, fungi, moss, lichen and more advanced plants on the stone surface. The rough surfaces and pores provide suitable nests for various organisms, bacteria, algae, fungi and lichens that colonize stone surfaces forming patinas (Moroni and Pitzurra, 2008). Plant roots or stems can be easily damaged by breaking down building blocks during growth and dissolving them by producing bacteria and acidic solution (Öcal and Dal; 2012).

Rooted and Leafy Plants:

It is a very common cycle that the seeds, which are carried by the winds and settled in the joints and micro-voids on the stone surface, grow into plants over time. The roots and fallen leaves of these plants, which develop here and turn into trees over time, cause a lot of damage



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to the artifacts. Herbaceous plants do the same damage, but they are not as destructive as trees (Dal et al., 2016). As a result of factors such as earthquake, war, fire, climatic factors, anthropogenic effects, cracks and fractures occur over time, pores and spaces increase (Warscheid et al., 1991; Young et al., 2008; Kocaçalışkan, 2006). Developing plant roots cause chemical and physical wear by penetrating deeply into the gaps or cracks between the stones used in the construction of historical buildings (Figure 13) (Caneva et al., 2006).



Figure 13. Altınözü Gelinler Mountain Roman Necropolis

Lichens:

Lichens are symbiotic (symbiotic) creatures that live on a wide variety of layers such as rocks, stones, tile, soil, bark, wood, and in which algae (algae) and fungi take place together in their biological structures. Unlike mosses, lichens are in various colors such as white, black, orange, green, red, yellow and brown, and they are harder and brittle (Öcal and Dal; 2012).

Lichens participate effectively in the decomposition process of stone works and building blocks. Lichens are among the plants that first cover bare rocky areas. They cause erosion of the building blocks with the acids they release, and they also accumulate organic matter from their dead thallus. Lichens, with their rough surface and spongy structure, not only keep water in their body, but also create a constantly moist environment just below the stone surface, and also help the stones to decompose with ion exchange and acid secretions.

The decomposition of rocks by lichens occurs as lichen hyphae penetrate the rock, lichen shrinks and expands, lichen freezes and dissolves, and lichens envelop stone minerals. (Öcal and Dal; 2012). Carbonic acid, which is formed by the increase of carbon dioxide released by the lichens and released as a result of the respiration of the lichen, advances the dissolution processes by lowering the pH ratio in the environment (Chen et al., 2000). Lichens, which are vegetative organisms, can establish colonies on the stone surface in sizes from millimeters to centimeters and completely cover the surface of the stone (Figure 14).



Figure 14. St. Simon's Monastery

Animals:

One of the factors that cause the deterioration of stone structures and artifacts is living things. Different kinds of animals, birds, climbers, large animals such as worms and insects can cause physical decomposition as well as chemical decomposition by mechanical phenomena such as scraping and climbing, or by the acids they extract. In particular, carving animals can create holes and cavities in the stones, as well as organic matter and bacteria that hold nitrogen from the atmosphere, accumulating on the decomposed stone surfaces and cracks, causing the stones to decompose faster (Dal et al., 2016). The nitrate content of animal feces causes surface degradation in stone artifacts (Figure 15) (Öcal and Dal; 2012).



Figure 15. St. Simon's Monastery



4. CONCLUSION AND EVALUATION

The integrity of the building is always in danger, as natural stones are the main building elements in historical and ancient buildings and remain invulnerable to various degradation processes with the interaction of the environment. In this study, the building blocks of Hatay Province were examined in order to understand the degradation mechanisms in historical buildings. When the stone structures that form the basis of historical buildings are examined, it is possible to talk about the existence of physical, chemical and biological alterations. Deterioration such as cracks, material loss and discoloration is noticeable. Chemical decompositions cause irreparable damage to the stone. Although this type of weathering is affected by atmospheric events, it can occur depending on the properties of the stone itself. Depending on the natural structure of the stone, the climatic conditions it is exposed to and the degree of pollution, different organisms are seen on the stone surface (Akoğlu, 2012). The types of organisms commonly detected in stones are lichens and higher plants. In addition, bacteria and animal activities have an effect on the decomposition of the stone. One of the important aspects of biodegradation is that damage not only changes the aesthetic aspect of the stone surface, but in the case of higher plants, their roots penetrate the stones and eventually break them by forming crevices. If suitable solutions are not found for these degradations, structures will be in danger of extinction.

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DÜNYA'DA VE TÜRKİYE'DEKİ TARİHİ YAPILARDA ASİT YAĞMURLARININ ETKİLERİ

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Özet

Antik çağlardan günümüze kadar gelen pek çok tarihi-kültürel varlıklar ve yapıların yok olması halinde kaybedilecek birçok değer yerine konulması mümkün olmayacaktır. Son yıllarda yapılan araştırmalar, iklim değişiklikleri ve artan hava kirliliğinin bu değerlerin yok olmasında büyük bir rol oynadığını göstermektedir. Günümüzde bu yapılara zarar veren en büyük sorunlardan biri, insan faaliyetlerinden kaynaklanan iklim değişikliğidir. Özellikle sanayi devrimi sonrası artan insan faaliyetleri sonucunda atmosferin olağan kompozisyonu önemli ölçüde değişmiş ve bu değişimin ana sebebinin fosil yakıtlar olduğu bilinmektedir. Fosil yakıtların tüketiminin artması ile hava kirliliği sorunu giderek büyümekte ve bu durum başta insan sağlığı olmak üzere canlı ve cansız çevreye zarar vermektedir. Hava kirliliğinin neden olduğu önemli sorunlardan biri de asit yağmurlarıdır. Artan dünya nüfusu, kırsaldan kentlere göç ve sanayi devrimi sonrası küresel çapta oluşan rekabet nedeniyle enerji ihtiyacında büyük artış olmuştur. Artan bu enerji talebi günümüzde hala büyük ölçüde fosil yakıtlardan elde edilmekte bu da atmosferde, asit yağmurlarına neden olan azot oksitler (NO_x) ve kükürt dioksit (SO_2) gazlarının artmasına neden olmaktadır. Asit yağmurlarına neden olan bu gazların yaklaşık %5'lik gibi küçük bir kısmı volkanik faaliyetler, orman yangınları ve çürüyen bitki örtüsündeki bakteriyel faaliyetler sonucu oluşurken %95'lik çok büyük kısmı ise petrol ve kömür gibi yakıtlardan başta enerji üretimi olmak üzere çeşitli insan faaliyetlerinden kaynaklanmaktadır. Ayrıca iklim değişikliğinin diğer etkileri (sıcaklık, hava kirliliği, hızlı ve çok miktarda düşen yağış olayları vb.) asit yağmurlarının tahrip edici etkilerini daha çok artırmaktadır. Asit yağmurları, fosil yakıtların yanması ile oluşan karbondioksit, kükürt dioksit ve azot oksitlerin atmosferde veya yeryüzünde suyla temas etmesiyle oluşur. Asit yağmurları, ekosistemler, ormanlar, bitkiler, topraklar, binalar, anıtlar ve su kütleleri ile insan sağlığı üzerinde birçok alanda ekosistemin çeşitli abiyotik ve biyotik bileşenlerinin bozulmasından sorumludur. Son zamanlarda asit yağmurlarının tarihi yapılarda, yapının unsurlarında (yüzey kaybı, renk değişimleri, parça kopmaları vb.) bozulmalara ve



ciddi hasarlara neden olduğu dikkat çekmiştir. Bu çalışmada asit yağmuru kavramı ve asit yağmurlarının tarihi yapılar üzerindeki etkileri incelenmiştir.

Anahtar Kelimeler: Asit yağmurları, kükürt oksit, azot oksitler, tarihi yapılar, kültürel miras, iklim değişikliği

THE EFFECTS OF ACID RAIN ON HISTORICAL BUILDINGS IN THE WORLD AND IN TURKEY

Abstract

It will not be possible to replace many values that will be lost if many historical-cultural assets and structures that have survived from ancient times to the present day disappear. Recent studies show that climate changes and increasing air pollution play a major role in the disappearance of these values. One of the biggest problems that damages these structures today is Climate change caused by human activities. It is known that the usual composition of the atmosphere has changed significantly as a result of increased human activity, especially after the industrial revolution, and the main reason for this change is fossil fuels. With the increasing consumption of fossil fuels, the problem of air pollution is growing, and this situation harms the living and non-living environment, especially human health. One of the important problems caused by air pollution is acid rain. There has been a great increase in energy needs due to the increasing world population, migration from rural to urban areas and global competition after the industrial revolution. The growing demand for this energy is still largely derived from fossil fuels today, which causes an increase in nitrogen oxides (NO_x) and sulfur dioxide (SO₂) gases that cause acid rain in the atmosphere. While about 5% of these gases that cause acid rains are formed as a result of volcanic activities, forest fires and bacterial activities in decaying vegetation, the vast majority of them are caused by various human activities, especially energy production from fuels such as oil and coal. In addition, other effects of climate change (temperature, air pollution, precipitation events that fall quickly and in large quantities, etc.) it further increases the destructive effects of acid rains. Acid rain is caused by the contact of carbon dioxide, sulfur dioxide and nitrogen oxides formed by the combustion of fossil fuels with water in the atmosphere or on earth. Acid rains are responsible for the degradation of various abiotic and biotic components of the ecosystem in many areas, affecting ecosystems, forests, plants, soil, buildings, monuments and water bodies, as well as human health. Recently, it has been noted that acid rains cause deterioration and serious damage to historical buildings and their elements (surface loss, color changes, fragmentation, etc.). In this study, the concept of acid rain and the effects of acid rain on historical buildings were examined.

Keywords: Acid rain, sulfur oxide, nitrogen oxides, historical buildings, cultural heritage, climate change

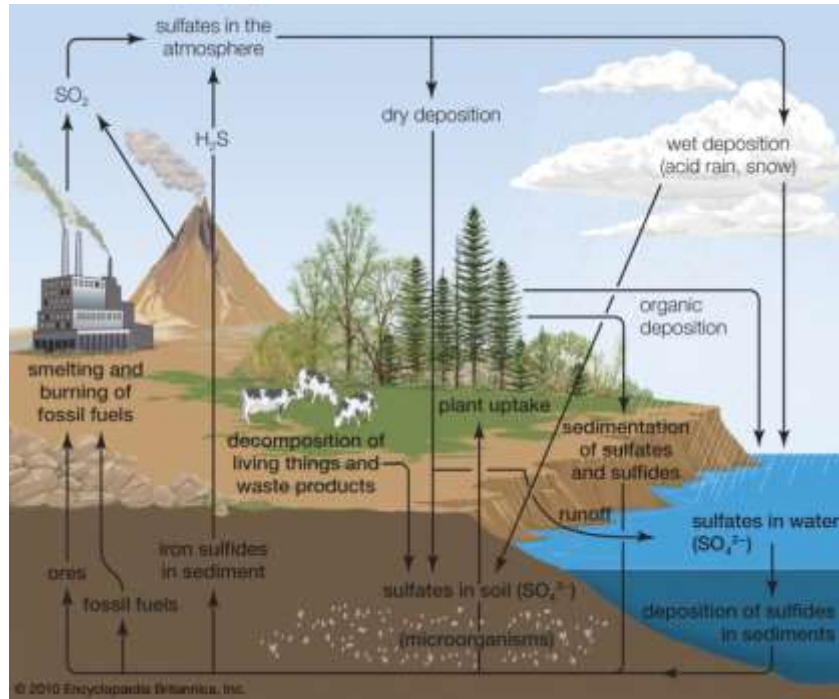
1. GİRİŞ

Asit yağmurları, iklim değişikliği nedenlerinden de biri olan hava kirliliği sonucu ortaya çıkan, doğal ve antropojenik kaynaklardan oluşan çevrenin karşı karşıya kaldığı sorunlardan biridir. Asit yağmurunun birincil nedeni, kükürt dioksit ve azot oksit emisyonudur (Fatima ve ark., 2021). Volkanik hareketler, orman yangınları, organik maddelerin çürümesi gibi doğal süreçler

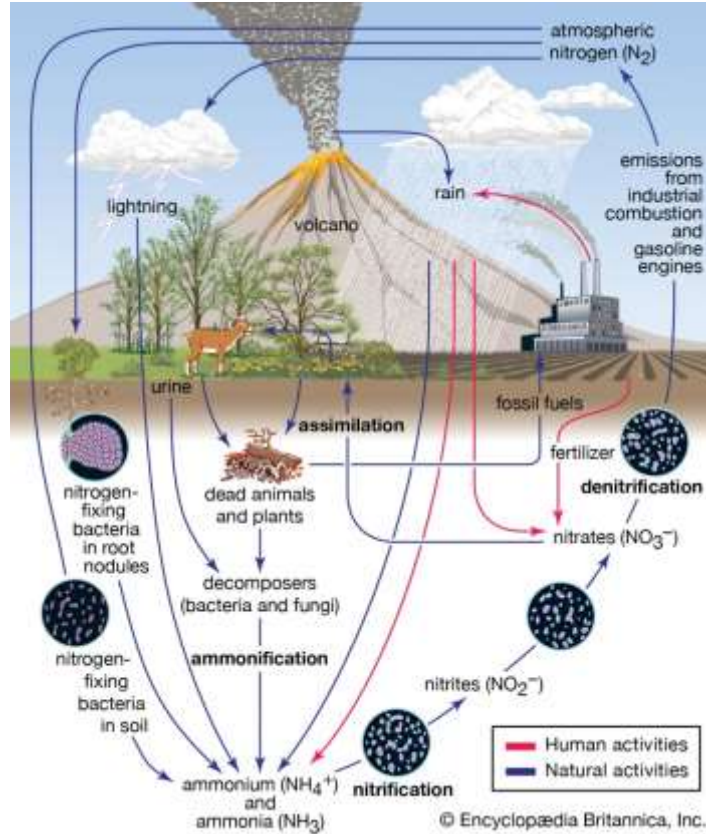
ve endüstriyel faaliyetler, enerji üretimi ve ısınma sırasında fosil yakıt kullanımına dayanan antropojenik süreçler atmosferdeki karbondioksit, kükürt dioksit ve azot oksitler gibi gazların oranının artmasına neden olur (“URL 1,” 2021). Artan bu gazlar su veya nemle temas ettiğinde karbonik asit, sülfürik asit ve nitrik asitlere dönüşerek yağmur suyunun asitliliğini artırmakta ve böylece asit yağmurlarını oluşturmaktadır. Ayrıca yağmur, sis ve kar şeklinde çökerek ekosistemler, ormanlar, bitkiler, toprak, binalar, tarihi yapılar ve su kütleleri ile insan sağlığı üzerinde bozucu etkilere neden olmaktadır.

Asitlik, bir çözeltideki hidrojen iyonlarının (H^+) konsantrasyonunu ifade eder ve pH ölçeği ile gösterilir. pH 7'nin altında bir değer, asidik olarak kabul edilir ve 7'nin altındaki her bir pH birimi, üstündeki birimden 10 kat daha asidik yani 10 kat daha fazla H^+ içerir (“URL 2,” 2021) Asit Yağmuru, pH seviyesi 5.6'dan düşük olan yağışları tanımlamaktadır (Mehta, 2010).

Normal yağmur suyu, atmosferdeki karbon dioksitin karbonik aside dönüşmesi ve biyolojik aktiviteden üretilen organik asitler nedeniyle zayıf asidiktir. Volkanik faaliyetler, orman yangınları, yıldırımlar gibi doğal olaylar sonucunda açığa çıkan emisyonlar da, kükürt dioksit, azot oksitler gibi, asit yağmurlarına neden olurlar. Doğal olaylar sonucu oluşan asit yağmurlarının coğrafi kapsamı küçüktür ve çoğu durumda yağış pH'ını yaklaşık 5,2'den fazla düşürmez (“URL 3,” 2021). Fakat, özellikle fosil yakıtların (kömür, petrol, doğal gaz) yakılması ve metal cevherlerinin eritilmesi, araçların egzoz salınımları gibi antropojenik faaliyetler yağmur suyunun pH'nın çok daha fazla düşmesine neden olmaktadır. Sadece Amerika Birleşik Devletleri'ndeki elektrik üretim tesislerinin SO_2 'nin yaklaşık yüzde 70'inden ve NO_x emisyonlarının yaklaşık yüzde 20'sinden sorumlu olduğu bilinmektedir. Araçlar tarafından yakılan fosil yakıtlar sebebiyle oluşan NO_x bileşikleri Amerika Birleşik Devletleri'ndeki emisyonlarının yaklaşık yüzde 60'ını oluşturduğu rapor edilmiştir (“URL 4,” 2021). Asit yağmuru tanımı, ilk olarak 1852'de İskoç kimyager Robert Angus Smith tarafından İngiltere ve İskoçya'daki endüstriyel şehirlerin yakınındaki yağmur suyu kimyası araştırmaları sırasında kullanıldı (“URL 5,” 2021)



Şekil 1. Başlıca Kükürt Dioksit Kaynakları ve Asit Yağmuru Döngüsü (“URL 4,” 2021)

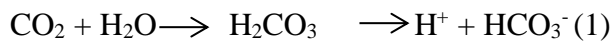


Şekil 2. Nitrojen Döngüsü (“URL 4,” 2021)

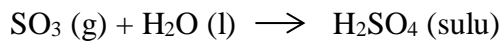
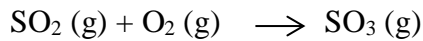
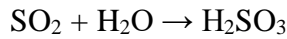
1.1. Asit Yağmurlarının Oluşumu

Asit yağmurlarının asitliği sadece emisyon seviyelerine değil, aynı zamanda atmosferde kükürt dioksit, karbon dioksit ve azot oksitlerin etkileşime girdiği kimyasal karışımlara da bağlıdır (Fatima ve ark., 2021). Hava kirliliğine sebep olan bu maddeler, asit yağmurunda bulunan asitler haline gelmeden önce birkaç kimyasal reaksiyon aşamasından geçerler. Bu reaksiyonlar şu şekilde özetlenebilir.

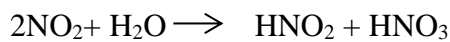
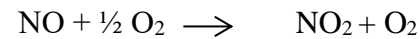
Karbondiyoksitin asidine dönüşme reaksiyonu



Kükürt dioksitin asidine dönüşme reaksiyonları



Azot oksitlerin asitlerine dönüşme reaksiyonları





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1.2. Asit birikim yolları: Asit yağmuru olarak da adlandırılan asit birikimi, kuru veya ıslak olabilir.

1.2.1. Islak birikim: Çoğunlukla asit yağmuru olarak düşündüğümüz şeydir. Atmosferde oluşan sülfürik ve nitrik asitler yağmur, kar, sis veya dolu ile karışarak yeryüzüne düşer ("URL 6," 2021).

1.2.2. Kuru Birikim: Asidik parçacıklar ve kirletici emisyonlar, rüzgar ile taşınarak araçlarda, yapılarda, ağaçlarda, toprakta vb. birçok yerde birikir buna kuru çökme denir. Daha sonra yüzeydeki bu maddeler yağmur veya nem ile karşılaşarak asidik hale gelir (Fatima ve ark., 2021).

2. ASİT YAĞMURUNUN TARİHİ YAPILAR ÜZERİNE ETKİLERİ:

Asidik karakterlerdeki yağışların tarihi eserlere etkisi, yağışın özelliğine, süresine ve sıcaklığına bağlı olduğu gibi, tarihi eserleri oluşturan yapı malzemesinin karakterine de bağlıdır. Özellikle kış aylarında artan hava kirliliği sonucunda oluşan asidik yağmurlar, kültürel mirasın en önemlilerinden olan tarihi eserleri olumsuz yönde etkilemekte ve bozulmalarını hızlandırmaktadır (Büyükakıncı, 2010).

Binalar ve anıtlar için yaygın olarak doğal malzemeler, kumtaşı, kireçtaşı, mermer ve granit kullanılır. Asit yağmuru tüm bu malzemeleri aşındıran ve doğal ayrışmayı hızlandıran bir faktördür ("URL 7," 2021). Kireçtaşı ve mermer asitlerde kolay çözünür, kumtaşı ise kendisini oluşturan kum parçacıkları genellikle asitte çözünen kalsiyum karbonat tarafından bir arada tutulur. Granit, aside karşı çok daha dayanıklı olsa da asit yağmuru ve taşıdığı kirleticiler tarafından aşındırılabilir ve lekelenir. Çimento asitte çözünen kalsiyum karbonattır. Beton binalar, kaldırımlar ve çimento ile yapılan sanat eserlerinde asit yağmurunun etkileri görülmektedir. Ayrıca, granit levhalar ve diğer dekoratif malzemeler genellikle Portland çimentosu kullanılarak yerlerine sabitlenir. Birçok heykel mermer veya kireçtaşından oyulmuştur. Sülfürik asit yağmuru bu heykellere temas ettiğinde, sülfürik asidin kalsiyum karbonat ile reaksiyonundan kalsiyum sülfat ve karbonik asit oluşur. Karbonik asit ayrıca su ve karbondioksit ayrışır. Kalsiyum sülfat suda çözünür olduğundan heykelden uzaklaşır. Eski heykeller, anıtlar ve mezar taşları kireçtaşından yapıldıkları için asit yağmurlarına karşı savunmasızdır. Asit yağmuruna onlarca yıl boyunca maruz kalan bir heykelin detayları kaybolabilir ve yavaş yavaş özelliklerini yitirebilir. Asit yağmuru ayrıca mezar taşlarına yontulmuş kelimeleri okunamaz hale getirir. Metal heykeller asit yağmurundan kaynaklanan fiziksel bozulmaya taştan daha iyi direnç gösterebilir de, renk bozulması ve çizgilenme ile karşı karşıyadırlar. Hassas metaller arasında bronz, bakır, nikel, çinko ve belirli çelik türleri bulunur. Hong Kong Üniversitesi'nin "Su, Hava ve Toprak Kirliliği" dergisinde yayınlanan bir araştırmasında, pH değeri 3.5 olan yapay asit yağmurunun yumuşak çeliği, galvanizli çeliği, paslanmaz çeliği ve kırmızı pirinci aşındırabileceği bildirilmiştir. Bu maddelerden, en savunmasız olanların yumuşak çelik ve paslanmaz çelik olduğu görülmüştür. Ancak araştırmacılar daha güçlü asit yağmuruna maruz kaldıkça dört metalin tümünün giderek daha fazla aşındığını gözlemlemiştir ("URL 8," 2021).

Mermerler, tüm kalkerli kayalar gibi, asidik kimyasallar ve kötü hava şartlarına karşı hassastırlar ve bozunmaya uğrarlar. Mermerin ana bileşeni olan kalsiyum karbonatın (CaCO_3) sudaki çözünürlüğü düşük olmasına rağmen asit yağmurundaki asitler, CaCO_3 'ü kimyasal reaksiyonlarla, yıkanarak çözülebilir tuzlara dönüştürebilir, bu da malzeme kaybı nedeniyle



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yapıların yüzeylerinde deliklerin oluşmasına, aşınmaya ve renk değişimlerine yol açar (Şekil 3,4) (Yeşilay, 2019).



Şekil 3. Asit yağmurları tarafından bozunuma uğrayan bir heykel ve 1832'de inşa edilmiş Philadelphia Tüccarlar Borsası'nın çatısı (Yeşilay, 2019).



Şekil 4. İlk resim 1908'de, ikinci resim ise 1968'de çekildi (Kinghorn ve ark., 2021).

Sülfirik asit (H_2SO_4) kuvvetli bir asittir ve uçucu olmadığı için birikir. Özellikle açık havada sergilenen mermer ve kireç taşlarının sülfirik asit içeren yağmur suları ile yıkanması ayrışmalara neden olur. Zamanla taş yüzeylerinde önemli tahribatlar meydana gelir. H_2SO_4 'ün kireçli sıva ve boyalarla reaksiyon vermesi ile duvar resimlerinde kopmalar ve renk solmaları meydana gelir (Şekil 5). Metallerle karşı kuvvetli bozucu etkisi vardır. H_2SO_4 etkisiyle demir, hatta çelik paslanır, bakır alaşımlar (tunç vb.) korozyona uğrar. Nitrik asit H_2SO_4 ' e göre daha uçucudur, fakat kuvvetli oksitleyici özelliğe sahiptir. Hem inorganik hem de organik malzemeye tepkimeye girerek oksidasyon yoluyla bozulmalara neden olur (Büyükakıncı, 2010).



Şekil 5. Kumtaşından yapılmış bu dini ortaçağ heykeli, havanın ve yağmurların asitlenmesiyle bozulmaya uğramıştır. Heykel, Dresden'de Bautzner Straße ve Eck Glacisstraße'nin köşesinde yer ("[URL 7,](#)" 2021).

Boya ve polimer esaslı yapı malzemeleri üzerinde de asit yağmurları ve hava kirleticilerinin yıpratıcı etkisi vardır. Hava kirliliğinin bu malzemeler üzerindeki etkisi genellikle renk solması, aşınma, polimer yüzeylerden parça kopması, boyanın sürüldüğü yüzeye tutunma özelliğinin kaybolması şeklindedir. Yapılan çeşitli bilimsel araştırmalar sonucu boya yüzeyinden 50 µm parça kopabildiği ve bu ölçünün de yapıya zarar verici etkide olduğu tespit edilmiştir (Rabl ve ark., 2014). Boya içinde yer alan pigment ve katkı maddelerinin direk olarak asidik kirleticilerle reaksiyona girmesi sonucu boyanın yüzeyinden kopmalar meydana gelmektedir.

Asit yağmuru, vitray pencereleri, çelik köprüleri ve demiryolu raylarını tahrip edebilir. Metali aşındırır, boya rengini bozar, deriyi zayıflatır ve modern yapıların cam yüzeylerinde kabuk oluşturur (Okochi, 1995).

İklim değişikliği nedeniyle artan sıcaklıklar tarihi yapıları etkilemektedir. Tarihi anıtlarla ilgili endişe, sıcaklığın kimya üzerindeki etkisine dayanmaktadır. Isı, kimyasal reaksiyonların hızını arttıran bir katalizör görevi görür. Böylelikle tarihi eserlerin kaderi daha belirsiz hale gelmekte ve acilen harekete geçmenin önemini vurgulamaktadır. Küresel ısınma, karbondioksit gibi sera gazlarının dünya yüzeyinde radyan ısıyı hapsedmesiyle oluşur ve bu da sıcaklıkların yükselmesine neden olur ("[URL 8,](#)" 2021).

2.1.Asit Yağmurunun Yapılara etkisinin Dünya'daki Örnekleri

Asit yağmurları, Yunanistan'daki Akropolis'ten Amerika'nın Lincoln Anıtı'na, Hindistan'daki Tac Mahal'le kadar dünyanın dört bir yanındaki tarihi anıtları ve binaları tehdit eden küresel bir sorundur ve bu yeri doldurulamaz yapıları sonsuza kadar kaybetme riskini ortaya çıkarmaktadır.



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Karen G Blaettler; Çin'in Hangzhou gibi çok kirli şehirlerde, asit yağmurunun beton binalarda hasar verdiğini ve bakır, bronz ve diğer metallerin asitlerle reaksiyona girdiğini ifade etmiştir. Verdiği örnekte, Ulysses S. Grant Anıtı üzerindeki bronz kaplamanın korozyonu, kaidenin aşağısında yeşil çizgiler bıraktığını, bronzdan çözülen bakırın tabanı yıkadığını ve oksitlenerek yeşil lekelerle neden olduğunu söylemiştir. Aynı çalışmasında Tac Mahal'in üzerindeki beyaz mermeri sarıya çevirdiği belirtmiştir ([“URL 8,” 2021](#)).

Washington DC'deki Thomas Jefferson Anıtı, asit yağmurdan etkilenen birçok anıttan biridir. Asit yağmurları etkisiyle çözünen kalsit, mermerin içinde bulunan silikat minerallerini serbest bırakır. Yaşanan malzeme kaybı, yapıyı yeterince zayıflatmış ve 2004 restorasyonu sırasında takviye şeritleri eklenmiştir. Ayrıca, kazınmış mermerde kalan kirin bıraktığı siyah kabuğun temizlenmesi gerektiğini belirtmiştir (“URL 8,” 2021).

Atina'da şehir merkezinde oluşan hava kirliliği Akropol'e kadar yükselerek Parthenon tapınağı taş bağlantılarının kullanılmaz duruma geldiği tespit edilmiş ve 1965'de bu bağlantılar değiştirilmiştir. Hindistan'da Taj Mahal, Roma'da Colosseum, Polonya'da Krakow anıtlarında taş yapı malzemeleri üzerinde asit yağmurunun zarar verici etkileri tespit edilirken; İsveç'te Ortaçağ dönemine ait yapılardaki pencere camlarının asit yağmurdan etkilendiği görülmüştür. Su kanallarıyla ünlü Venedik'te ise motorlu su taşıtlarından çıkan SO₂ gazının kanal kenarındaki binaların taş cephelerini bozduğu tespit edilmiştir. İngiltere'nin bazı bölgelerinde de hava kirliliği problemlerinin 13.yüzyıldan bu yana belgelendiği ve bu belgelerde kömür ve odun yakımından kaynaklı hava kirliliğinin taş yapı malzemelerine zarar verdiği ifade edilmektedir (Demirarslan ve Demirarslan, 2008).

Asit yağmuruna en az dayanıklı kayalardan biri olan kalsitik Gotland kumtaşı, İsveç'te cepheler ve heykelsi süslemeler için kullanılmıştır. Stockholm'ün önemli kültürel değere sahip iki binası: Kraliyet Sarayı ve Riddarholm kilisesidir. 18. yüzyıldan kalma Sarayın cepheleri Gotland kumtaşı ve tabanını kuvarsitik Roslagen kumtaşından yapılmıştır. Orta Çağ'dan kalma Riddarholm kilisesi tuğladan inşa edilmiştir. Bununla birlikte, 18. yüzyıla ait Royal Carolean Mezar Şapeli (Karolinska gravkoret), kalsitik Goflan kumtaşı cephelerine ve kuvarsitik kumtaşı tabanına sahiptir. Asit yağmuru karşısında kalsitik kumtaşı ciddi çürüme belirtileri gösterir (alçı oluşumu, pul pul dökülme, renk bozulması, tuz çiçeklenmesi, vb.). Bu durum zaman zaman kapsamlı restorasyon çalışmalarına ihtiyaç duyulmasına sebep olmuştur (Nord ve Tronner, 1995).

Gazimağusa liman kentinde asit yağmurlarına karşı yeterli tedbirlerin alınmadığı ve kaybın önüne geçilemediği görülmektedir. Kaleiçi'ndeki tarihi eserlerde gözlenen tahribatları genel olarak fiziksel bozunmalar (çatlaklar, kırıklar, petek gözlülük ve parça kaybı), kimyasal bozulmalar (siyah tabakalar, tuzlanmalar, tozlaşmalar) ve biyolojik bozulmalar (köklü ve yapraklı bitkiler) olarak sınıflandırmak mümkündür (Dal ve Öcal, 2016).

Peter Brimblecombe ve arkadaşları Fransa Notre-Dame'ın yüzeyinde, hava kirliliği nedeniyle oluşan asit yağmurlarının neden olduğu tahribattan bahsetmişlerdir (Brimblecombe ve Lefèvre, 2021).

Hindistan'daki Tac Mahal, Londra'daki St. Paul Katedrali, İngiltere'deki Westminster Abbey, Yunanistan ve Mısır'daki Sfenks, Yunanistan'daki Parthenon, New York'taki Özgürlük Anıtı ve Almanya'daki Köln Katedrali gibi insan yapımı kültürel cazibe merkezleri asit yağışı nedeniyle aşınıp çözünerek tahribata uğramıştır (Mohajan, 2018).

Kenya'nın Mombasa Kasabasını işgalcilerden korumak için Portekizliler tarafından on altıncı yüzyılda (1593-1596) mercan kayalarının üzerine inşa edilen İsa Kalesi (Fort Jesus) 2011



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yılında UNESCO dünya mirası listesine alınmıştır. Zamanla kalenin bodrum katı, deniz seviyesinin yükselmesi ve sudaki asit seviyelerinin artmasıyla aşınmıştır. Çatısı ve metalik parçaların yüzeylerinde, kıyı rüzgarlarındaki tuz içeriği ve asitli yağışların neden olduğu pas görülmüştür (Şekil 6) (Chemeli ve ark., 2021)



Şekil 6. İsa Kalesi (Chemeli ve ark., 2021)

2.2. Asit Yağmurunun Yapılara Etkisinin Türkiye'deki Örnekleri

Asit yağmurlarının tahrip edici etkisi, tarihi eserler bakımından oldukça zengin olan ülkemizde de birçok tarihi yapının üzerinde görülmektedir.

Büyükakıncı, Hava kirliliğinin tarihi eserlere etkisi ve alınması gereken önlemler adlı çalışmasında, Erzurum'da bulunan Çifte Minareler Medresesi'nin ciddi biçimde doğanın tahribatına uğradığını, kar ve yağmur sularının olumsuz etkilediği tarihi mekanın özellikle minarelerinde meydana gelen hasarların endişe veren boyutta olduğunu belirtmiştir (Şekil 7). Ayrıca minarelerin altında yer alan ve mavi çinilerle tezyin edilmiş bölümlerde bozulma ve sökülme görüldüğünü, minarenin çinili bölümündeki doğal tahribatın, minarenin özelliğini yitirmesine yol açacak boyutta olduğunu ifade etmiştir. Minarelerin üzerindeki sırlı süslemelerde gerekli onarımların yapılmaması nedeniyle kopmaların olduğunu belirtmiştir (Büyükakıncı, 2010).



Şekil 7. Çifte Minareler Medresesi / Erzurum (Büyükakıncı, 2010)



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Kocaeli İlinde Yeni Cuma Camii (1568), İzmit Saat Kulesi(1902), Redif Dairesi (1863), Abdülaziz Av Köşkü (1874), defterdarlık ek binası olarak hizmet veren Üssü Bahri ve Müstahkem Mevki Komutanlığı (1894)Köşkü'nde hava kirliliğinin etkileri nedeniyle tahribatlar tespit edildiği, ayrıca asit yağmuru etkisi altında kalan doğal taşların ıslanma ve kurumması sonucu yüzeylerinde kir ve kurumun oluşturduğu siyah kabuklaşmalar gözlemlendiğini belirtmiştir (Demirarslan ve Demirarslan, 2008).

Çinko korozyona karşı dayanımı olan bir metal olmasına rağmen atmosferdeki kirlenmelerle reaksiyona girdiğinde çinko oksit ve çinko hidroksit oluşumu gerçekleşir. Bu film tabakaları yavaşça metalin yüzeyinden ayrılacağı için korozyona açık hale gelirler. Hava kirliliğinin etkisiyle galvanize çelik ve çinko yüzeyinde meydana gelen parça kopmalarının da çeşitli bilimsel araştırmalar sonucu 50 µm olduğu tespit edilmiştir (Rabl ve ark., 2014). İzmit saat kulesine ait metal aksamaları yakın zamanda restore edilmiş olmasına rağmen korozyon tespit edilmiştir.

Sarıtop'un (2010) yaptığı araştırmada Mardin'inin güneybatısında bulunan Kasımiye Medresesi'nin güneydoğu dış cephe duvarından alınan örnek; pH, temas süresi ve sıcaklık gibi etkenler ışığında incelenmiştir. Elde edilen sonuçlara göre tarihi eser örneği düşük pH'a sahip çözeltilerden, asit ortamı ile uzun süreli muamelelerden önemli oranda etkilendiklerini ayrıca yüksek sıcaklığın da tarihi eserin korozyonunu arttırdığı belirtilmiştir. Bu nedenle hava kirliliğinin bulunduğu yerleşim yerindeki tarihi eserin korozyonunun sıcak bölgelerde daha fazla olabileceği anlaşılmaktadır. Mardin ilinin bulunduğu coğrafik konum nedeniyle iklimi oldukça sıcaktır. Bu nedenle de asit yağmurlarından etkilenme oranı da soğuk yerlere göre daha fazla olacağı sonucuna varılmıştır (Sarıtop, 2010).

Tunceli İli Çemişgezek İlçesindeki taştan yapılmış tarihi yapılar üzerine yapılan çalışmada, şehir merkezinde özellikle kış aylarında fosil yakıtlarının yoğun olarak kullanımı sonucunda oluşan hava kirliliği ile malzemeye taşınan sülfat ve yoğun araç trafiği ile artan nitrat değerlerinin taşlarda öncelikle kararma ve sonra da yüzeyden itibaren dökülmelere neden olduğu belirtilmiştir. Kirliliğe neden olan bu maddelerin asit yağmurlarına neden olarak taşın esas bileşenlerinden kalsiyum karbonatı (kireç) jipse (alçı) dönüştürerek aşınmayı hızlandırmaktadır (Dal ve Öcal, 2017).

Trakya bölgesinde tarihi yapılarda kullanılan karbonatlı taşlar asit yağmurları etkisiyle tahribata uğramıştır. Edirne Eski Cami güney cephesinde asit yağmurlarının ve topraktaki tuzların etkisiyle yapı cephesinde çiçeklenme şeklinde görülen görsel kirlilik oluşmuştur (Şekil 8) (Dal, 2010).



Şekil 8. Edirne Saatli Medrese Güney Cephesi/ kapılarite ile tuzların, asitli yağmur sularının taşa yarattığı yüzeysel erozyon tahribatı (Dal, 2005).

3. SONUÇ VE ÖNERİLER

Yapılan çalışmalar, hava kirliliğinin neden olduğu asit yağmurlarının, insan sağlığından, sulara, ormanlara, toprağa ve bizi geçmişle bağlayan tarihi yapılara verdiği zararlarını açıkça göstermektedir. Dünya kültür mirasını oluşturan birçok yapının ana bileşeni olan doğal taşlar, çeşitli dış etkenlere maruz kaldığında zarar görmektedir. Tarihi yapıları kirliliğin etkisinden kurtarmak için uygulanan restorasyon çalışmaları oldukça maliyetli ve zaman alan çalışmalardır. Ayrıca her restorasyon çalışmasının eseri onarıırken bir miktar da yıprattığı göz önünde bulundurulmalıdır.

Bilindiği gibi önlemek onarmaktan çok daha ucuz ve çok daha etkili bir yöntemdir. Bu yüzden asit yağmurlarının neden olduğu tahribatın önüne geçilebilmesi ve tarihi yapıların ömrünün uzatılabilmesi için öncelikle kirlenici unsurları ortadan kaldırmak etkili ve tasarruflu bir yoldur. Asit yağmurunun iki ana kaynağı olan kükürt dioksit ve azot oksitlerin havadaki konsantrasyonunu ancak, fosil yakıtların kullanımını azaltılması ve bu maddelerin yutak alanları olan ormanları korunup artırması gibi önleyici faaliyetlerle azaltılabilir. Engellenemeyen asit yağmurları içinse, bozucuların etkisinin azaltılması için eserlerin çevre düzenlemelerinin yapılması, yapının yapıldığı malzemenin türünün ve bulunduğu ortamın özellikleri göz önünde bulundurularak koruyucu kaplamalarla işlenmesi gerekmektedir.



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CHANGE OF PHOSPHORUS CONTENT AND PHOSPHORUS CONCENTRATION IN A TEXTILE FACTORY WASTEWATER

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Abstract

All dyeing recipes and processes corresponding to the day of wastewater testing were examined. All SDSs (Safety Data Sheets), TDSs (Technical Product Form) of chemical suppliers were checked.

As stated in the action plan, the necessary examination was made regarding the two products containing phosphorus, and it was determined by me that no other equivalent products that did not contain phosphorus were used. Apart from these products, no product with phosphorus (P) content was found. It was observed that two products with phosphorus or phosphonate content were used in 3 recipes, and calculations were made on the basis of the % P content, which corresponds to the SDS data.

Due to the phosphoric acid and phosphonate chemicals used in production, the calculated amount of phosphorus in the wastewater is 0.268 mg/L and 0.125 mg/L, respectively. 440 people work in this facility. If domestic wastewater is mixed with process water, it will cause an increase in phosphorus concentration of minimum 0.288 mg/L and maximum 0.96 mg/L. Total phosphorus concentrations measured in the wastewater at the exit of the facility were between 0.966 and 1.99 mg/L. The total phosphorus amount calculated at the facility(0.681-1.353 mg/L) and the phosphorus concentrations of the raw wastewater at the effluent of the facility were found to be close.

Key words: Phosphorus, Phosphoric acid, Phosphonate, Textile wastewater

1.INTRODUCTION

Phosphorus concentrations are an important nutrient in the biological treatment of wastewater. The available sources of phosphorus in receiving environments are agricultural activities as well as domestic and industrial wastewater. More than 90% of the available phosphorus in receiving environments originates from domestic wastewater. In domestic wastewater, 50% of phosphorus originates from domestic wastewater, while 50% comes from detergents and cleaning agents. Very high phosphorus concentrations are generally found in the sludge digester head-liquid and boiler waters.



In wastewater, phosphorus exists in two forms, organic and inorganic phosphorus. There are two forms of phosphorus; orthophosphate (Na_3PO_4 , Na_2HPO_4 , NaH_2PO_4) and polyphosphate ($\text{Na}_3(\text{PO}_3)_6$, $\text{Na}_5\text{P}_3\text{O}_{10}$, $\text{Na}_4\text{P}_2\text{O}_7$). With strong oxidants, polyphosphate is converted to orthophosphate by hydrolysis. The form of phosphorus that can be used by microorganisms is orthophosphate. Phosphorus forms in wastewater are organic compounds, orthophosphates and polyphosphates. Between 70 and 90% of the phosphorus in waste streams is orthophosphate or polyphosphate, which can be hydrolyzed to orthophosphate. The remainder of the phosphorus is organic phosphorus (Ruzhitskaya et al., 2017).

There are several ways to remove phosphates from water and wastewater. Phosphates can be removed chemically (chemical and physical-chemical methods), biologically (biological method). Chemical and physical-chemical methods are less preferred because of the high treatment cost and secondary pollution caused by the precipitates formed by the chemicals. Physical-chemical removal methods involve high use of chemicals and process difficulties.

2. MATERIAL AND METHOD

The investigated facility is located in Tekirdağ-Çorlu Ulaş region. It produces yarn dyeing, fabric dyeing, printing dyeing and knitting as contract and sales. The total number of employees is 440 people. Phosphorus concentrations in domestic wastewater range from 6 to 20 mg/L (Samsunlu, 2011). First, the phosphorus content was calculated based on the chemicals used in the process waters of the facility. Phosphorus content and percentage of phosphorus were taken into account in these calculations. Then, the household origin phosphorus concentration was calculated based on the number of people working in the facility. Phosphorus was determined in the samples taken at different time periods in the effluent wastewater of the facility. Phosphorus contents measured at the exit of the facility and resulting from the chemicals used were compared.

Polyphosphates; after acidification of the samples with the addition of concentrated sulfuric acid, they are converted into ortho phosphates by boiling for at least 90 minutes. The orthophosphate formed can be measured with the aid of any orthophosphate determination method. Determination of organophosphorus can be made by decomposing organic matter and releasing it as phosphate ions. In order to determine the total phosphorus, phosphorus is first subjected to the digestion process. This orthophosphate is calculated using one of the colorimetric methods.



3. CONCLUSION AND DISCUSSION

3.1 Phosphoric Acid Content (H_3PO_4) (1-5%)

Total product content used in prescriptions: 12960 g

6 hour approx. wastewater flow: 750 m³

The mixture is based on 5% phosphoric acid percentage with 1-5%-max content.

$(12960 \text{ g} / 750 \text{ m}^3) \times 0.05 \times 0.31 = 0.268 \text{ mg/L}$ phosphorus

3.2 Phosphonate Content ($\text{C}_2\text{H}_8\text{O}_7\text{P}_2$) (1-10%)

Total product content used in prescriptions: 6560 g

6 hour approx. wastewater flow: 750 m³

The mixture is based on 10% phosphonate percentage with 1-10% Max content.

$(6560 \text{ g} / 750 \text{ m}^3) \times 0.1 \times 0.143 = 0.125 \text{ mg/L}$ phosphorus

Although the company has changed the products with phosphorus content (specified in the action plan), it is seen that the raw wastewater can contain a maximum of 0.2-0.3 mg/L phosphorus (P) even in the case of using existing products. In addition, phosphorus (P) in domestic wastewater should also be taken into account.

It is stated in the literature that domestic wastewater contains a minimum of 6 mg/L and a maximum of 20 mg/L phosphorus (P) (WPCF,1983;Samsunlu,2011). The following calculations were made based on the number of employees and water consumption per capita:

3.3 Phosphorus (P) Account in Domestic Wastewater

Number of employees: 440 people

Average per capita water consumption: 80 L/person.day

Domestic wastewater flow: 36 m³

6 hour approx. wastewater flow: 750 m³

Minimum amount of phosphorus (P) to be found in domestic wastewater:

$(36 \text{ m}^3 \times 6 \text{ mg/L}) / 750 \text{ m}^3 = 0.288 \text{ mg/L}$

Maximum amount of phosphorus (P) to be found in domestic wastewater:

$(36 \text{ m}^3 \times 20 \text{ mg/L}) / 750 \text{ m}^3 = 0.96 \text{ mg/L}$

3.4 Domestic and Industrial Wastewater Phosphorus (P) Account



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Minimum: $0.288 \text{ mg/L} + 0.393 \text{ mg/L} = 0.681 \text{ mg/L}$

Maximum: $0.96 \text{ mg/L} + 0.393 \text{ mg/L} = 1.353 \text{ mg/L}$

3.5 Phosphorus concentrations in wastewater samples taken on different days

It was observed that phosphorus concentrations in raw wastewater samples taken between 06.11.2021 and 10.11.2021 at the facility varied between 0.966-1.99 mg/L.

Table 1. Wastewater Analysis Results

Date	Total Phosphorus (mg/L)	
06.11.2021 Wastewater Analysis Report	1,62	
08.11.2021 Wastewater Analysis Report	1,836	
09.11.2021 Wastewater Analysis Report	1,99	
10.11.2021 Wastewater Analysis Report	0,966	

The phosphorus concentrations of wastewater at the effluent of the facility and the phosphorus concentrations calculated from the chemicals used were found to be close to each other.

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LENGTH AND WEIGHT VARIATIONS OF WASTE STONE DUST ADDED MORTARS UNDER THE IMPACT OF MAGNESIUM SULFATE

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Abstract

The usability of waste stone dust materials as raw materials is important in sustainability production. For this reason, the use of different wastes as raw materials in the production of concrete/mortar is becoming widespread in the construction industry. In the study, the length and weight variations of mortars containing waste stone dust under the influence of magnesium sulfate were investigated. For this purpose, cement was replaced with waste stone dust (basalt, limestone, and dolomite) by weight of the cement at 0%, 5%, and 10%. For this, pin mortar samples (12 references, 24 for each waste stone powder, a total of 48 (12+3·12), 40×40×160 mm pinned prisms) were produced. The length and weight variations of the samples were measured by keeping the samples in 150 g/liter magnesium sulfate solution between 0-157 days. In addition, depending on the time and replacement ratio, the variance analysis of the variations in height and weight was performed and the values of the fit statistics were determined. Generally, the length variation of the samples increased with the effect of magnesium sulfate (for basalt dust maximum 0.08% at samples of 10% replacement ratio at 157-day; for limestone dust maximum 0.111% at samples of 10% replacement ratio at 157-day; for dolomite dust maximum 0.105% at samples of 5% replacement ratio at 157-day). Weight variations with the effect of magnesium sulfate decrease until a certain day, while the variations in the following days remain constant (maximum -0.774% for basalt dust; 10%, 59-day sample, maximum -0.566% for limestone dust; 10%, 31-day sample, dolomite dust -0.555% maximum for 10%, 17 days sample). The R^2 values obtained as a result of the ANOVA analysis of the length variations according to the replacement rate and time effect variables of the mortars with basalt, limestone, and dolomite stone dusts were obtained as 0.82, 0.89, and 0.83, respectively. The R^2 values obtained as a result of ANOVA applied to the weight variations values of the waste stone dust added mortars were obtained as 0.70, 0.43, and 0.43 for basalt, limestone, and dolomite, respectively. As can be seen from the R^2 values, the predictability of the weight variations is quite low.

Keywords: Waste stone dust, mortar, magnesium sulfate, length variation, weight variation, ANOVA

1. INTRODUCTION



The use of waste materials as a raw material in different industries is important for the sustainability of production. For this purpose, investigations are carried out to recycle all kinds of waste materials, to bring them back into production as raw materials, and to use them. In the construction industry, waste by-products as silica fume, fly ash, granulated blast furnace slag, rice husk ash, etc. are used as raw materials. In addition, studies are carried out to investigate the usability of waste stone dust in concrete and/or mortar production [1-12]. These studies are generally on the mechanical properties of concrete/mortars with added waste stone dust [2, 5- 6, 11]. For this reason, within the scope of the study, the resistance of the waste stone dust added mortars against environmental effects was determined by considering the effect of magnesium sulfate on the weight and length variations of the specimens.

Magnesium sulfate ($MgSO_4$) has a negative effect on the concrete/mortar. Magnesium sulfate from groundwater or seawater causes a two-stage reaction in the concrete/mortar. In the first stage, it reacts with calcium hydroxide, which is a hydration product in the hardened cement and leads to the formation of "gypsum". In the second stage, the metastable C_4ASH_{12} in the hardened cement reacts with the gypsum formed as a result of the sulfate effect, leading to the formation of $C_6AS_3H_{32}$ (ettringite). It is known that the resulting ettringite causes cracks in the concrete by causing expansion, and as a result, it causes reinforcement corrosion [13].

Yazıcı, 2006, [14] and Güneyisi et al. 2007, [15] were investigated the sulfate resistance of concrete/mortars that have different mineral additives. It has been observed that the use of blast furnace slag has a positive effect on the sulfate resistance of the mortars [14]. In addition, the use of metakaolin in concrete production significantly increases the sulfate resistance of concrete [15]. For this reason, the contribution of the use of waste stone powder to the sulfate resistance of concrete/mortar should be examined instead of mineral additives.

Generally, the effect of using waste stone dust instead of cement and fine materials in concrete/mortar production on mechanical properties was investigated. For this reason, within the scope of the study, under the impact of magnesium sulfate, weight and length variations of mortars containing three different (basalt, limestone, and dolomite) waste stone dust (0%, 5%, and 10% by cement weight) were investigated. For this purpose, a total of 48 specimens with pins (40×40×160 mm) were produced. In addition, for each waste stone dust, the effect levels of replacement ratio and time (retention time in the solution) on the weight and length variations were determined by ANOVA analysis. According to the obtained models, the response surfaces and the compatibility of the predicted and actual (experimental) values were determined.

2. MATERIAL and METOT

In the study, a total of 48 mortar specimens with 40×40×160 mm pins were produced. In the production of mortar specimens, CEM I 42.5 R cement, CEN standard sand in accordance with TS EN 196-1 [16], drinking water and basalt, limestone, and dolomite as waste stone dust were used. Chemical oxide and physical properties of cement and waste stone powders are given in Table 1 and Table 2, respectively. The amount of mixture material used in mortar production is shown in Table 3.

Table 1. Chemical oxide of mortar component materials



Chemical oxide (%)	CEM I 42.5 R	Limestone	Basalt	Dolomite
CaO	62.85	54.65	9.01	11.69
SiO ₂	19.52	1.55	42.82	41.70
Al ₂ O ₃	5.36	0.71	13.68	13.67
Fe ₂ O ₃	3.38	0.26	10.25	9.12
MgO	1.15	0.27	10.33	8.39
SO ₃	3.36	0.024	0.053	0.19
Na ₂ O/K ₂ O	0.22/0.72	0.016/0.088	2.73/1.87	2.64/1.54
Cl ⁻	0.0415	-	-	-
H ₂ O	-	-	-	-
Loss of ignition	3.29	42.37	5.6	7.44
Insoluble residue	0.24	-	-	-

Table 2. Physical properties of cement and waste stone dust

Material	Specific gravity (g/cm ³)	Specific surface (cm ² /g)	Setting time (minute)		Soundness (mm)
			Initial	Final	
CEM I 42.5 R	3.14	3810	115	189	1
Limestone	2.73	3430	-	-	-
Basalt	2.75	2550	-	-	-
Dolomite	2.87	2090	-	-	-

Table 3. Amount of mortar component material

Cement	CEN standard sand	Water	Basalt	Limestone	Dolomite	Replacement ratio (weight of cement)
g	g	g	g	g	g	%
450	1350	225	0	0	0	0
427.5	1350	225	22.5	0	0	5
427.5	1350	225	0	22.5	0	5
427.5	1350	225	0	0	22.5	5
405	1350	225	45	0	0	10
405	1350	225	0	45	0	10
405	1350	225	0	0	45	10

In order to determine the variation in length and weight of waste stone powder substituted mortars under the impact of magnesium sulfate, pinned mortar specimens were produced in the dimensions of 40×40×160 mm according to TS EN 196-1 [16]. For this purpose, a total of 48 prism specimens were produced, including 12 for reference, 36 for mortar containing waste stone dust (basalt, limestone, and dolomite). Mortar specimens were kept in 150 g/lit magnesium sulfate solution for 157 days, and weight and height variations were measured at 0, 17, 31, 45, 59, 73, 87, 101, 115, 129, 143, and 157 days. Experimental design and ANOVA were performed with the computer program "Design-Expert Software Trial Version [17]".

3. EXPERIMENTAL RESULTS

Depending on the replacement ratio and the time, the weight and length variations on the specimens for the reference and mortars containing waste stone dust are shown in Table 4 and Table 5, respectively.



Table 4. Weight and height variation of reference samples

No	Replacement ratio	Time	Weight variation	Length variation
	%	Day	%	%
1	0	0	0	0
2	0	17	-0.293	0.002
3	0	31	-0.393	0.019
4	0	45	-0.414	0.017
5	0	59	-0.462	0.028
6	0	73	-0.432	0.024
7	0	87	-0.427	0.036
8	0	101	-0.404	0.043
9	0	115	-0.391	0.061
10	0	129	-0.224	0.066
11	0	143	-0.337	0.043
12	0	157	-0.424	0.061

Table 5. Weight and length variation of mortar specimens containing waste stone dust

No	Replacement ratio	Time	Weight variation	Length variation	Weight variation	Length variation	Weight variation	Length variation
	%	Day	%	%	%	%	%	%
				Basalt	Limestone	Dolomite		
1	5	0	0.000	0.000	0.000	0.000	0.000	0.000
2	5	17	-0.394	0.000	-0.297	0.006	-0.310	0.000
3	5	31	-0.448	0.024	-0.356	0.037	-0.378	0.031
4	5	45	-0.540	0.017	-0.408	0.030	-0.409	0.019
5	5	59	-0.564	0.026	-0.426	0.041	-0.418	0.018
6	5	73	-0.523	0.035	-0.441	0.044	-0.448	0.041
7	5	87	-0.515	0.052	-0.401	0.066	-0.373	0.062
8	5	101	-0.453	0.004	-0.426	0.055	-0.402	0.052
9	5	115	-0.391	0.053	-0.301	0.046	-0.384	0.041
10	5	129	-0.417	0.076	-0.343	0.050	-0.391	0.046
11	5	143	-0.410	0.045	-0.394	0.058	-0.381	0.089
12	5	157	-0.458	0.072	-0.405	0.093	-0.459	0.105
13	10	0	0.000	0.000	0.000	0.000	0.000	0.000
14	10	17	-0.494	0.000	-0.508	0.005	-0.555	0.007
15	10	31	-0.676	0.016	-0.566	0.026	-0.547	0.061
16	10	45	-0.733	0.014	-0.558	0.036	-0.519	0.034
17	10	59	-0.774	0.026	-0.481	0.033	-0.429	0.035
18	10	73	-0.748	0.023	-0.421	0.056	-0.357	0.046
19	10	87	-0.674	0.034	-0.320	0.083	-0.228	0.070
20	10	101	-0.665	0.032	-0.332	0.065	-0.215	0.058

Table 5. (Continue)

No	Replacement ratio	Time	Weight variation	Length variation	Weight variation	Length variation	Weight variation	Length variation
	%	Day	%	%	%	%	%	%
				Basalt	Limestone	Dolomite		
21	10	115	-0.532	0.047	-0.238	0.058	-0.085	0.060
22	10	129	-0.595	0.056	-0.234	0.075	-0.050	0.059
23	10	143	-0.591	0.057	-0.218	0.080	-0.106	0.071
24	10	157	-0.654	0.080	-0.256	0.111	-0.108	0.078



The experimental design summary of the effect (displacement rate, time) and response (length and weight variation) variables of mortar specimens containing waste stone dust are shown in Table 6.

Table 6. Experimental design summary of effect and response variables

Experimental design summary of effect variables (basalt, limestone and dolomite)										
Factor	Name	Unit	Type	Min.	Mak.	Codded low	Codded high	Mean	SD*	
A	Replacement ratio	%	Numerical	0.00	10.0	-1 ↔ 0.0	+1 ↔ 10.0	5.00	4.14	
B	Time	Day	Numerical	0.00	157.0	-1 ↔ 0.0	+1 ↔ 157.0	79.75	49.42	
Experimental design summary of response variables										
Response	Unit	Observation	Analysis	Min.	Max.	Mean	SD*	Transform	Model	
Basalt										
R1	Weight variation	%	36	Polynomial	-0.77	0	-0.46	0.1896	Square root	Reduced quadratic
R2	Length variation	%	36	Polynomial	0	0.08	0.03	0.0236	Square root	Reduced quadratic
Limestone										
R1	Weight variation	%	36	Polynomial	-0.57	0	-0.35	0.1367	None	Reduced quadratic
R2	Length variation	%	36	Polynomial	0	0.11	0.04	0.0276	Square root	Reduced quadratic
Dolomite										
R1	Weight variation	%	36	Polynomial	-0.56	0	-0.33	0.1580	None	Reduced quadratic
R2	Length variation	%	36	Polynomial	0	0.11	0.04	0.0267	Square root	Reduced quadratic

*SD: Standard deviation

The effect levels of the replacement ratio that produced mortars by using certain proportions of waste stone dust by weight of cement and time variables on the length and weight variation response variables were determined by ANOVA. Response surfaces were created by obtaining models for each waste stone dust. ANOVA analyzes of weight and length variation of mortars containing basalt, limestone, and dolomite waste stone dust are shown in Table 7 and Table 8, respectively.

Table 7. ANOVA for the weight variation

Basalt, Transform: Square root, Constant: 0.851						
Source	Sum of squares	SD*	Mean square	F-value	p-value	Significance
Model	0.5802	4	0.1451	18.51	< 0.0001	Significant
A-Replacement ratio	0.2997	1	0.2997	38.24	< 0.0001	
B-Time	0.0490	1	0.0490	6.25	0.0179	
A ²	0.0228	1	0.0228	2.91	0.0979	
B ²	0.2145	1	0.2145	27.37	< 0.0001	
Residual	0.2430	31	0.0078			
Total	0.8232	35				
Limestone						
Model	0.2837	4	0.0709	5.93	0.0012	Significant
A-Replacement ratio	0.0001	1	0.0001	0.0056	0.9407	
B-Time	0.0144	1	0.0144	1.21	0.2805	
AB	0.0530	1	0.0530	4.43	0.0434	
B ²	0.2192	1	0.2192	18.32	0.0002	
Residual	0.3708	31	0.0120			
Total	0.6545	35				
Dolomite						
Model	0.3736	4	0.0934	5.78	0.0013	Significant
A-Replacement ratio	0.0380	1	0.0380	2.35	0.1352	
B-Time	0.0004	1	0.0004	0.0227	0.8812	
AB	0.1430	1	0.1430	8.86	0.0056	
B ²	0.1886	1	0.1886	11.68	0.0018	
Residual	0.5007	31	0.0162			
Total	0.8743	35				

*SD: Standard deviation



Table 8. ANOVA for the length variation

Basalt, Transform: Square root, Constant: 0.000						
Source	Sum of squares	SD*	Mean square	F-value	p-value	Significance
Model	0.2072	3	0.0691	47.29	< 0.0001	Significant
A-Replacement ratio	0.0005	1	0.0005	0.3151	0.5785	
B-Time	0.1977	1	0.1977	135.33	< 0.0001	
A ²	0.0118	1	0.0118	8.05	0.0078	
Residual	0.0467	32	0.0015			
Total	0.2540	35				
Limestone, Transform: Square root, Constant: 0.000						
Model	0.2267	3	0.0756	86.33	< 0.0001	Significant
A-Replacement ratio	0.0113	1	0.0113	12.93	0.0011	
B-Time	0.1939	1	0.1939	221.60	< 0.0001	
B ²	0.0254	1	0.0254	29.01	< 0.0001	
Residual	0.0280	32	0.0009			
Total	0.2547	35				
Dolomite, Transform: Square root, Constant: 0.000						
Model	0.2215	3	0.0738	52.15	< 0.0001	Significant
A-Replacement ratio	0.0088	1	0.0088	6.20	0.0182	
B-Time	0.1957	1	0.1957	138.24	< 0.0001	
B ²	0.0206	1	0.0206	14.56	0.0006	
Residual	0.0453	32	0.0014			
Total	0.2667	35				

*SD: Standard deviation

In the ANOVA analysis, a p-value less than 0.05 indicates that the term has a significant effect and should be added to the model, while a value between 0.05-0.1 indicates that the term can be added to the model, but if the p-value is greater than 0.1, indicates that the term does not have a significant effect and shouldn't be added to the model. Table 7 is examined, it is seen that the models obtained for weight and length variations of mortars additive with the all waste stone dust are significant (p-value < 0.1). The main terms (A and B) have different effect levels on the weight variation response variable depending on the type of waste stone dust. While the main terms have a significant effect on the weight variation in basalt waste stone dust added mortars, the main terms do not have a significant effect on the weight variation in limestone and dolomite waste stone dust added mortars. When Table 8 is examined, it is seen that the models obtained for the length variation response variable are significant for all waste stone dust. The main terms have a significant effect on the length variation for limestone and dolomite waste stone dust. However, for the basalt waste stone dust, while the B-Time main term has a significant effect, the A-replacement ratio main term has no significant effect on the length variation.

The models obtained as a result of the ANOVA analysis of the weight variation are given in Equation 1, Equation 2, and Equation 3 for basalt, limestone, and dolomite, respectively.

$$\sqrt{\text{Weigth variation} + 0.85} = 0.90037 - 0.00098 \cdot A - 0.00643 \cdot B - 0.00214 \cdot A^2 + 0.00004 \cdot B^2 \quad 1$$

$$\text{Weigth variation} = -0.10302 - 0.01481 \cdot A - 0.00711 \cdot B + 0.00019AB + 0.00004 \cdot B^2 \quad 2$$

$$\text{Weigth variation} = -0.10839 - 0.01691 \cdot A - 0.00697 \cdot B + 0.00032 \cdot AB + 0.00003 \cdot B^2 \quad 3$$

The models obtained as a result of the ANOVA analysis of the length variation are given in Equation 4, Equation 5, and Equation 6 for basalt, limestone, and dolomite, respectively.



$$\sqrt{\text{Length variation}} = 0.01204 - 0.00088 \cdot A + 0.00285 \cdot B - 8.4615 \times 10^{-6} \cdot B^2 \quad 4$$

$$\sqrt{\text{Length variation}} = 0.00099 + 0.00434 \cdot A + 0.00346 \cdot B - 0.00001 \cdot B^2 \quad 5$$

$$\sqrt{\text{Length variation}} = 0.00158 + 0.00382 \cdot A + 0.00327 \cdot B - 0.00001 \cdot B^2 \quad 6$$

The suitability of the obtained models and their ability to predict the actual values are determined by the fit statistics. The fit statistics of the models obtained are shown in Table 9.

Table 9. Fit statistics

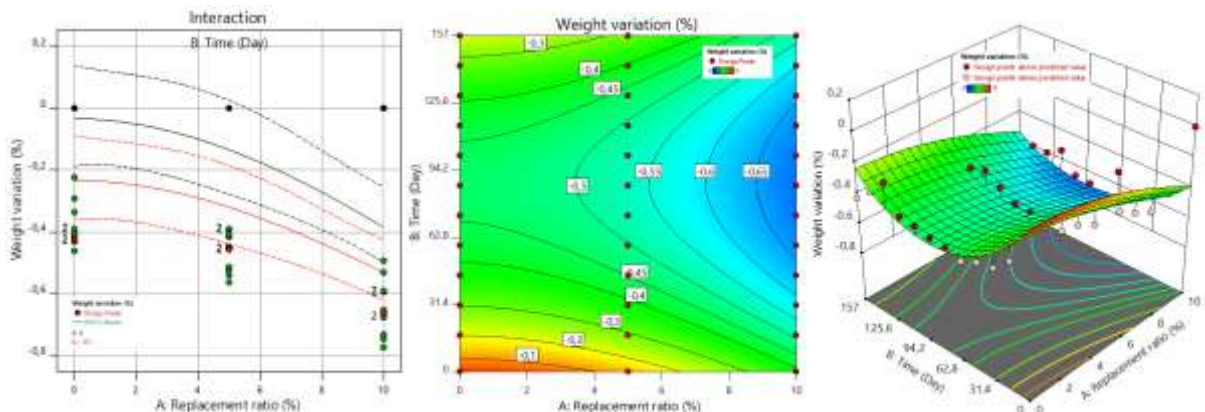
Waste stone dust	Response	Standard deviation	Mean	Coefficient of variation, %	R ²	Adjusted R ²	Predicted R ²	Adequate precision
Basalt	Weight variation	0.0885	0.609	14.53	0.7048	0.6667	0.5634	15.4397
Limestone	Weight variation	0.1094	-0.348	31.42	0.4334	0.3603	0.0852	8.4761
Dolomite	Weight variation	0.1127	-0.326	38.93	0.4273	0.3534	0.0997	9.0277
Basalt	Length variation	0.0382	0.161	23.74	0.8159	0.7987	0.7818	19.4346
Limestone	Length variation	0.0296	0.190	15.58	0.8900	0.8797	0.8575	28.7785
Dolomite	Length variation	0.0376	0.184	20.47	0.8302	0.8143	0.7881	22.0945

The results of the fit statistics are examined, it is seen that the predictability of the weight variation is low. The highest R² value was obtained in basalt waste stone dust added mortars (0.70). The difference between adjusted R² and predicted R² should be greater than 0.2 [17]. The difference between adjusted R² and predicted R² obtained for weight variation in limestone and dolomite added mortars was greater than 0.2. The reason for this is that the main terms of the effect variables (replacement ratio and time) do not have a significant effect on the weight variation response variable and these main terms are added to the model.

The difference between the adjusted R² and predicted R² values of the models obtained for the length variation is less than 0.2. For this reason, the experimental results are compatible and the high R² values (> 0.81) indicate that the model has a high ability to predict the actual values.

In all waste stone dust added mortar samples, the adequate precision value for the weight and length variations was obtained above the desired value. Therefore, the models generate appropriate (sufficient) signals within the selected ranges of variation.

Interaction, contour, and 3D graphs of weight and length variations are shown in Figure 1, Figure 2, and Figure 3 for basalt, limestone, and dolomite, respectively.



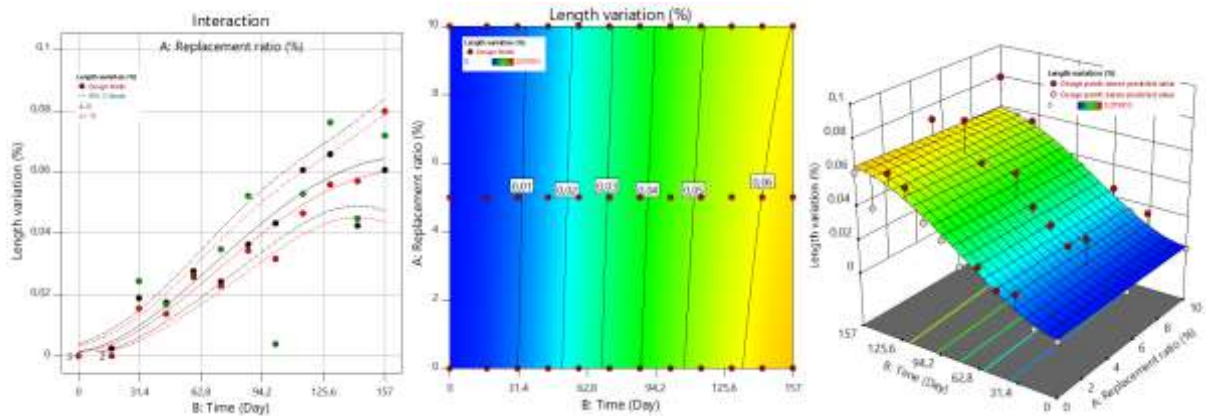


Figure 1. Interaction, contour, and 3D graphics for the length and weight of basalt waste stone dust added samples

As the replacement rate increases, the weight, and length variations are increased (weight decreases, height increases) in basalt waste stone powder added samples. The maximum weight reduction in the specimens is at an 8%-10% replacement ratio and occurs at 60-125 days of time. The maximum length variation in the samples is obtained at the values where the displacement ratio is minimum and time is maximum.

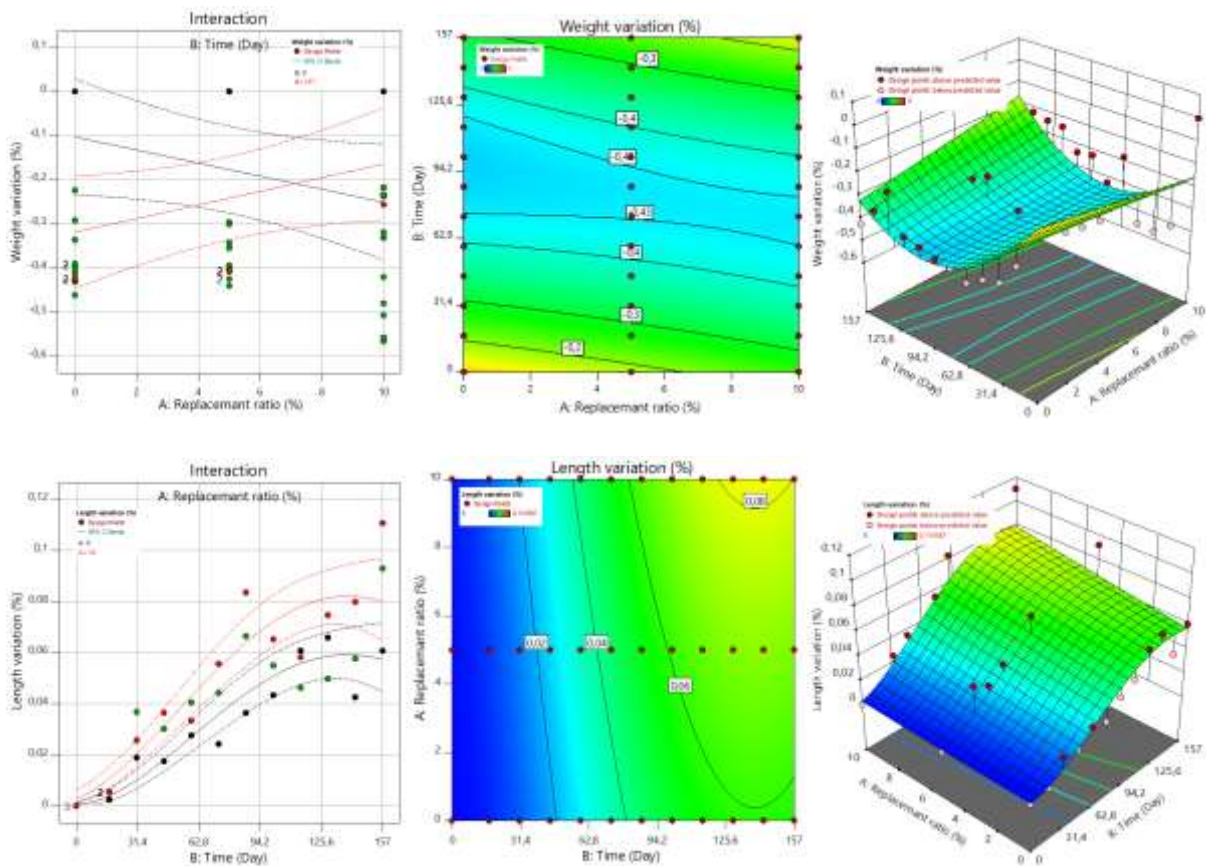


Figure 2. Interaction, contour, and 3D graphics for the length and weight of limestone waste stone dust added samples

The weight and length variation of limestone waste stone dust substituted mortars increase as the replacement ratio increases. Depending on the effect of magnesium sulfate, as the replacement rate increases, the weight variation decreases, and the length variation increases.

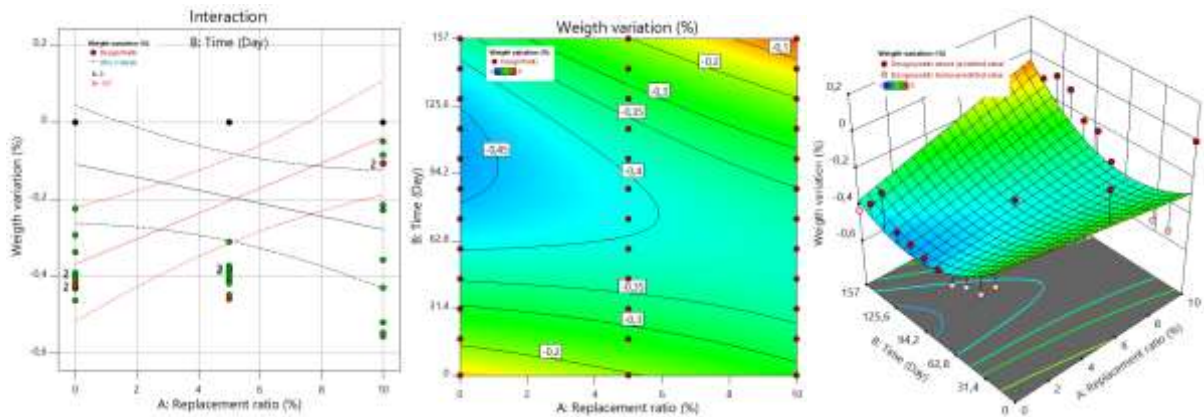


Figure 3. Interaction, contour, and 3D graphics for the length and weight of dolomite waste stone dust added samples

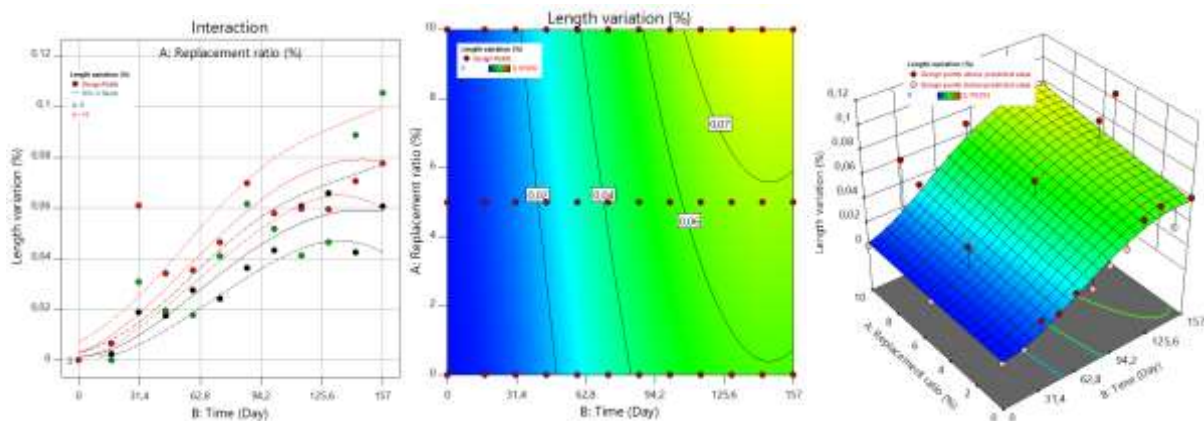


Figure 3. (Continue)

The weight and length variation of dolomite waste stone dust substituted mortars increase as the replacement ratio increases. Depending on the effect of magnesium sulfate, as the replacement rate increases, the weight variation decreases, and the length variation increases.

4. CONCLUSIONS

The results of the study are given below.

- Weight reduction was observed in all waste stone dust added mortars with the effect of magnesium sulfate. In the mortar specimens with high limestone and dolomite waste stone dust replacement ratio, the amount of weight reduction decreased in the following days.
- With the effect of magnesium sulfate, an increase in length was observed in all the waste stone dust added mortars.



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- The R^2 values of the models obtained for weight variation are quite low (0.70, 0.43, and 0.43). This shows that the predictability of the weight variation is quite low.
- The R^2 values of the models obtained for the length variation are quite high (0.82, 0.89, and 0.81). This indicates that the predictability of length variation is quite high.

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**PROPOSING OPTIMAL ORIENTATION AND TILT ANGLE FOR A
PHOTOVOLTAIC-THERMAL PANEL IN ADANA, TURKEY**

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Abstract

This paper determines the optimum orientation and the tilt angle for a 1.59 m² photovoltaic-thermal (PVT) panel with 60 mc-Si cells using the typical meteorological year data of Adana, Turkey. The technical specifications of the PVT were taken from the manufacturer. The typical meteorological year data for the location was taken from Meteornorm software and transient modeling was carried out for the prediction of a full year system performance by System Advisor Model. The optimum voltage-current points for varying irradiance were obtained as a result of the simulation and the optimum orientation and the tilt angle for the specified PVT were respectively found to be 180° azimuth (due south) and 30–32° for maximizing the annual electricity production. The results presented here will provide PVT manufacturers or installers to specify the optimum orientation and tilt angle of PVT for domestic or industrial installations.

Keywords: photovoltaic-thermal, optimum orientation, optimum tilt, typical meteorological year, transient simulation, System Advisor Model.

INTRODUCTION

The electrical efficiency of photovoltaic (PV) cells typically ranges from 15% to 20% while 65–70% of the solar spectrum is converted into heat which increases the temperature of PV modules, in turn, lowers the electrical efficiency. However, PV-thermal (PVT) hybrid collectors combine the production of solar electricity and heat in a single device and thus achieve higher overall efficiency and better harvesting of solar energy than conventional PV modules (Furbo et al., 2021). These collectors are generally installed stationary and their overall efficiency depends on various factors such as the cell technology, orientation of the PV/T, weather characteristics, working fluid thermophysical and flow properties, electric load management (Yılmaz and Yıldızhan, 2021).

The main goal of the PVT is electric production which is more qualified than thermal energy. While a standard PV panel is cooled to prevent degradation in conversion efficiency, a PVT panel aims to use waste heat smartly in a heating or cooling application. This idea increases the energy efficiency of the panel and lowers the negative environmental impact (Yılmaz, 2018a).



This paper proposes an optimal orientation for a PV or PVT panel installation and a case study has been made for the panels to be installed in Adana, Turkey. For this reason, transient long-term modeling was performed using System Advisor Model (SAM) and the orientation parameters were parametrically simulated and the results were discussed.

MATERIALS AND METHODS

PVT Specifications

The PVT collector shown in Fig. 1 was taken into account in the study. Each module has dimensions of $1.67 \times 0.95 \times 0.06$ m and a 1.59 m^2 gross collecting area with 60 mc-Si cells (Solimpeks, 2021). 7 riser tubes with 1.445 m in length and 0.0071 m in inner diameter are attached to the backside of the PV and insulated with 0.05 m glass wool.



Fig. 1. PVT under consideration

Table 1 shows the electrical specifications of the PVT. The working fluid passing through the riser tubes was selected as water since the long-term measurements reveal that the lowest ambient temperature in Adana is over the freezing temperature of water.

Table 1. Technical specifications of Excell PV-T 300W

Property	Value
Maximum power point voltage (V_{mp})	34.30 V
Maximum power point current (I_{mp})	9.62 A
Maximum power (P_{mp})	330 W
Open circuit voltage (V_{oc})	41.67 V
Short circuit current (I_{sc})	10.17 A
Nominal operating cell temperature, NOCT	36.9 °C
Temperature dependence of V_{oc}	-0.104 V/°C
Temperature dependence of I_{sc}	0.005 A/°C
Temperature dependence of P_{mp}	-0.314 %/°C



Typical Meteorological Year Data

For the long-term transient simulations, the typical meteorological year (TMY) data of the location is usually used to normalize the obtained outputs. Fig. 2 represents the TMY data of Adana city (37.0° N latitude 35.3° E longitude, 20 m from sea level) which was delivered from Meteororm to add it to the solar resource library of SAM in the TMY2 weather file format (Yilmaz, 2018b).

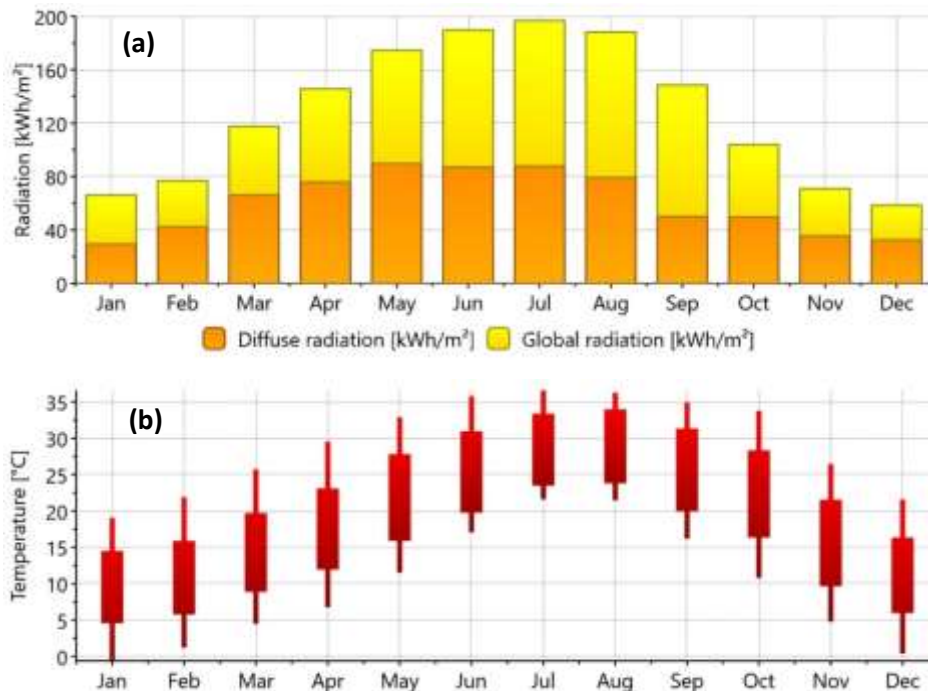


Fig. 2. (a) Monthly average global radiation over the period of 1991–2010; (b) Monthly average ambient temperature over the period of 2000–2009

System Advisor Model

A new open-source software program developed by the NREL, named SAM was used for simulation due to very fast runtimes and good agreement for a time-based analysis (SAM, 2021). Various renewable energy systems including PV can be modeled and simulated parametrically using this software. It is possible to either provide your own module and inverter specifications from a manufacturer's datasheet or choose a module and inverter from libraries.

RESULTS AND DISCUSSION

PV inverters are implemented with maximum power point tracking (MPPT) algorithm to continuously adjust the PV system operating at, or close to, the peak power point of the PV panel under varying conditions of solar irradiance, ambient temperature, and electric load. Fig. 3 shows the voltage-current curves versus solar irradiance at standard test conditions for the PVT properties in Table 1.

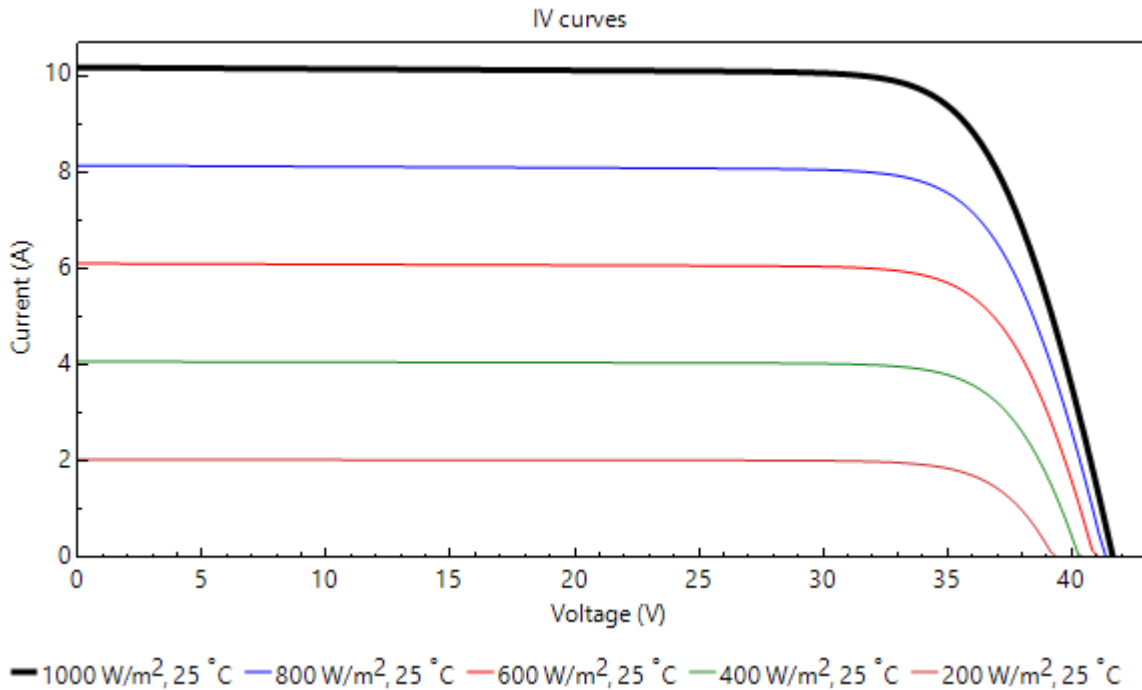


Fig. 3. Current-voltage curves at standard test condition

Fronius inverters are widely used in the Turkish PV market ranging from 1.5 to 100 kW (Fronius, 2021). Fronius USA: Galvo 1.5-1 208-240 [240V] model was chosen from the library of SAM. The inverter's nominal rated DC-to-AC conversion efficiency curves are illustrated in Fig. 4.

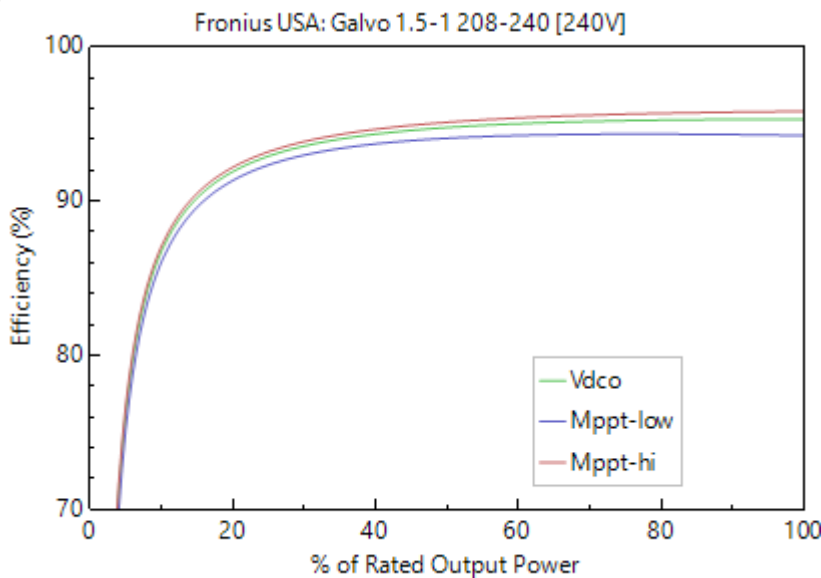


Fig. 4. Efficiency curves of the inverter

SAM has the ability to size and configure the PV subarrays as schematically shown in Fig. 5. It also provides a parametric design which provides assigning more than one value to one or more input variables to explore the dependence of a result on the inputs.



Tracking & Orientation

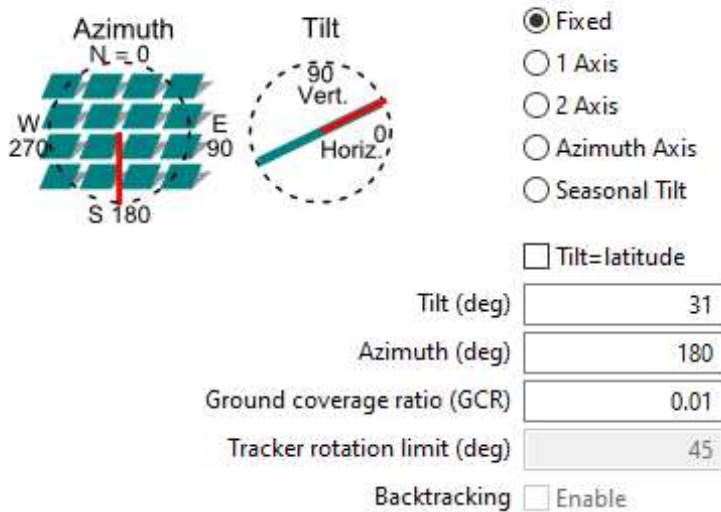


Fig. 5. System design mode of SAM

For a fixed PVT, its orientation i.e., the tilt angle and surface azimuth are significant for maximizing the annual electricity production (Yilmaz, 2018a). A typical azimuth value would be 180° for systems north of the equator and 0° for the ones south of the equator. The performance ratio is a measure of a photovoltaic system's annual electric generation output in AC kWh compared to its nameplate rated capacity in DC kW, taking into account the solar resource at the system's location, and shading and soiling of the array. Fig. 6 demonstrates the variation of the performance ratio of the PVT with azimuth angle where Run number 1 corresponds to 10° angle and increases in 10° increments i.e., Run number 18 corresponds to 180° . As seen, the performance decreases with increasing azimuth thus 180° azimuth will be the most suitable orientation for better electricity production in Adana where locates in the north of the equator.

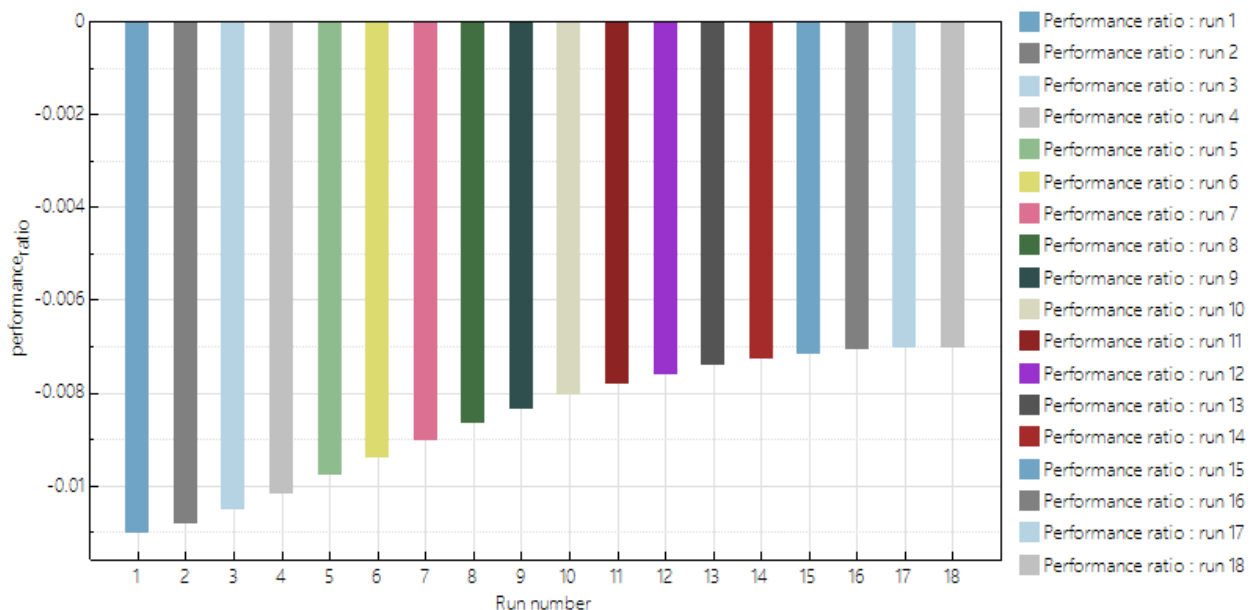


Fig. 6. Variation of the performance ratio with azimuth angle



Fig. 6 demonstrates the variation of the performance ratio of the PVT with tilt angle where Run number 1 corresponds to 10° angle and increases in 2° increments i.e., Run number 18 corresponds to 44° . As a rule of thumb, system designers sometimes use the location's latitude as the optimal array tilt angle. The analysis indicates that for a PVT installation in Adana, decision-makers should select the tilt angle between $30\text{--}32^\circ$ where the performance ratio is the minimum as seen from Fig. 7.

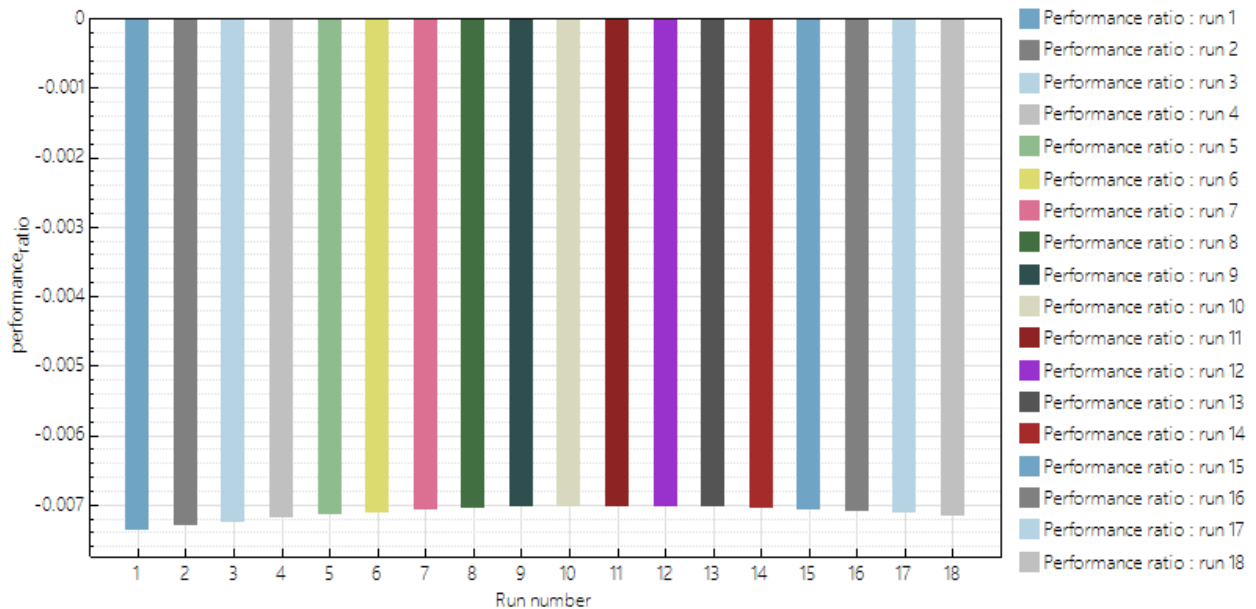


Fig. 7. Variation of the performance ratio with tilt angle

CONCLUSION

The PVT hybrid collector is a promising technology particularly for domestic and industrial applications. Various studies were performed in the literature to show the methods of having better system performance. The proper installation will provide benefits for the long-term performance and electricity generation. This paper proposes an optimal orientation for the specified PV or PVT panel installation in Adana, Turkey. Various free software packages are available in the literature but transient simulation is not performed by all of them. A more detailed design/model would always give more reasonable system outputs. Even though free software provides benefits in the preliminary design stage, commercially licensed software or user modeling for better analysis of these systems.

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INNOVATION IN INTRAPARTUM FETAL MONITORING; FREEDOM OF MOVEMENT: CASE REPORT

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Abstract

Electronic fetal monitoring (EFM) is a widely used application in the intrapartum process to evaluate fetal health. EFM can be performed as wired and wireless, but the wired form is widely applied worldwide. However, wired EFM limits the movements of the pregnant woman. Since the wireless EFM application is not affected by the mother's movement, the pregnant woman can move as she wishes.

In this case, it was aimed to determine the effect of wired and wireless EFM application on pregnant women in the intrapartum period.

In the intrapartum period, a pregnant woman who had a healthy pregnancy process was performed with wireless EFM and one pregnant with wired EFM, and they were asked to evaluate this application. Informed consent was obtained from the pregnant women before the interview, and the interview was held in the first stage of labor when the cervical dilatation was 4-5 cm.

B.C., to whom we applied wired EFM, was 24 years old and this was her second pregnancy. N.Y., to whom we applied wireless EFM, was 27 years old and this was her third pregnancy. Both pregnant women expressed the purpose of EFM application as "evaluating the baby's heartbeat". In addition, pregnant women stated hearing the baby's heart sound as the only positive aspect of this test. However B. C. said "*I would not have had it done if I had not heard my baby's heartbeat, because it hurts my back a lot*". N.Y., on the other hand, said "*I wish monitoring had been done with this device before; my back and waist would hurt a lot with the wired one*". B.C. answered the question "What do you think about being able to move?" as follows: "*I cannot move, if I turn to my right, the device slides, if I turn to my left, the device slides; the midwife said don't move, so I don't move*". N.Y., on the other hand, said "*it is much better than the other device, I can turn to the side I want, I could not do this with the other device; now I can stand up and walk*". While the pregnant woman to whom wireless EFM was applied expressed that she felt better and more comfortable, that her belly was covered with a gown, and that her privacy was protected, the pregnant woman to whom wired EFM was applied said that she did not feel well, that she had a lot of pain, and that her belly remained open.

With this case report, how wired and wireless EFM application affects pregnant women was evaluated, and attention was drawn to freedom of movement in wireless EFM application.

Keywords: Wireless EFM, intrapartum, freedom of movement, comfort.



İNTRAPARTUM FETAL İZLEMDE YENİLİK; HAREKET SERBESTLİĞİ: OLGU SUNUMU

Özet

Elektronik fetal monitorizasyon (EFM), intrapartum süreçte yaygın olarak kullanılan fetal sağlığın değerlendirildiği bir uygulamadır. EFM, kablolu ve kablosuz olarak yapılabilmekte olup dünyada yaygın olarak kablolu şekilde uygulanmaktadır. Ancak kablolu EFM gebenin hareketlerini sınırlamaktadır. Kablosuz EFM uygulaması anne hareketinden etkilenmediğinden gebe istediği gibi hareket edebilmektedir.

Bu olguda intrapartum süreçte kablolu ve kablosuz EFM uygulamasının gebeye etkisini belirlemek amaçlanmıştır.

İnapartum süreçte sağlıklı gebelik süreci yaşayan bir gebeye kablosuz, bir gebeye ise kablolu EFM ile çekim yapılmış ve gebelerin bu uygulamayı değerlendirmeleri istenmiştir. Görüşme öncesi gebelerden bilgilendirilmiş onam alınmış ve görüşme doğum eyleminin birinci evresinde servikal dilatasyon 4-5 cm iken yapılmıştır.

Kablolu EFM uyguladığımız B.C., 24 yaşında ve ikinci gebeliğidir. Kablosuz EFM uyguladığımız N.Y. 27 yaşında ve üçüncü gebeliğidir. Her iki gebe de EFM uygulamasının amacını “bebeğin kalp atımını değerlendirmek” olarak ifade etmiştir. Ayrıca gebeler bebeğin kalp sesini duymayı bu testin tek olumlu yanı olarak belirtmiştir. Ancak B.C. “*Bebeğimin kalp sesini duymasaydım yaptırmazdım, çünkü belimi çok ağrıtıyor*” ifadesinde bulunmuştur. N.Y. ise “*keşke önceden de bu aletle çekim yapılsaydı, kabloluda sırtım ve belim çok ağrıyordu*” demiştir. Hareket edebilme konusunda ne düşünüyorsunuz? sorusuna B.C. “*hareket edemiyorum, sağıma dönsem alet kayıyor, soluma dönsem alet kayıyor, ebe kımıldama dedi bende kımıldamıyorum*” cevabını vermiştir. N.Y. ise “*diğer alete göre çok daha iyi, istediğim tarafıma dönebiliyorum, diğerinde dönemiyordum şimdi ayağa kalkıyorum ve yürüyorum*” demiştir. Kablosuz EFM uygulanan gebe, kendisini daha iyi ve rahat hissettiğini, karnının önlükle kapandığını, mahremiyetinin korunduğunu ifade ederken, kablolu EFM uygulanan gebe ise kendisini iyi hissetmediğini, ağrılarının çok olduğunu, karnının açık kaldığını söylemiştir.

Bu olgu sunumu ile kablolu ve kablosuz EFM uygulamasının gebeleri nasıl etkilediği değerlendirilmiş, kablosuz EFM uygulamasında hareket serbestliğine dikkat çekilmiştir.

Anahtar kelimeler: Kablosuz EFM, intrapartum, hareket serbestliği, konfor.



STREPTOZOTOSİN İLE DİYABET OLUŞTURULMUŞ SIÇANLARDA *BRASSICA NİGRA* POLLEN TAKVİYESİ SERUM PARAOKSONAZ VE ARİLESTERAZ AKTİVİTELERİNİ ARTTIRIR.

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Özet

Diyabetes mellitus; hiperglisemi, hiperlipidemi ve oksidatif stres tablosunun yaygın olarak görüldüğü ve ilerleyen dönemlerde ateroskleroz gibi çeşitli komplikasyonların ortaya çıktığı kronik metabolik bir hastalıktır. Paraoksonaz aktivitesinin, ateroskleroz ve oksidatif stres ile ilişkili çeşitli durumlarda azaldığı bildirilmiştir. Bu çalışmada, metabolik ve antioksidatif özelliklere sahip olduğu gösterilen *Brassica nigra* polenin (BNP); streptozotosin (STZ) ile diyabet oluşturulmuş sıçanlarda oksidatif stres üzerine etkisi, serum paraoksonaz (PON) ve arilesteraz (ARE) aktivitelerinin yanı sıra kan glikoz, serum lipit profili üzerine etkileri araştırıldı.

Tek doz intraperitoneal STZ (65 mg/kg) enjeksiyonu ile diyabet oluşturulan sıçanlar dört gruba ayrıldı. Kontrol grubu sıçanlar; BNP ile tedavi edilen kontrol sıçanlar; diyabetik sıçanlar; BNP ile tedavi edilen diyabetik sıçanlar. BNP; sıçanlara dört hafta boyunca (350 mg/kg/gün) verildi. Serum insülin, kan şekeri, trigliserit, total kolesterol, yüksek yoğunluklu lipoprotein-kolesterol seviyeleri oto-analizör kullanılarak değerlendirildi. Plazma ve doku malondialdehit (MDA) düzeyleri spektrofotometrik yöntemlerle ölçüldü. Serum paraoksonaz (PON), arilesteraz (ARE), süperoksit dismutaz, glutatyon peroksidaz aktiviteleri ticari kitler kullanılarak belirlendi.

BNP ile tedavi, artmış plazma ve kalp, kas, karaciğer, böbrek doku MDA düzeylerini aynı zamanda serum glikoz ve total kolesterol seviyelerini düşürdüğü saptandı. Ayrıca BNP ilavesi yapılan diyabetik sıçanlarda, serum PON ve ARE aktivitelerinde artış saptandı.

Sonuç olarak; *Brassica nigra* polenin, antihiperglisemik, antihiperlipidemik, antioksidan özelliklere sahip olduğu ve diyabetes mellitusta tedavi sonuçlarını iyileştirmek, tedaviye bağlı ve/veya diyabetle ilgili komplikasyonları azaltmak için umut verici, destekleyici terapötik bir ajan olabileceği düşünüldü.

Anahtar Kelimeler: Diyabet, *Brassica nigra* Polen, Paraoksonaz, Oksidatif Stres, Antioksidan

***BRASSICA NIGRA* POLLEN SUPPLEMENTATION INCREASES SERUM PARAOXONASE AND ARYLESTERASE ACTIVITIES IN STREPTOZOTOCIN-INDUCED DIABETIC RATS.**



Abstract

Diabetes mellitus is accompanied by hyperglycemia, hyperlipidemia and oxidative stress and is associated with several complications, such as atherosclerosis. Paraoxonase activity has been reported to decrease in several situations associated with atherosclerosis and oxidative stress. In the present study, the effects of *Brassica nigra* pollen (BNP), shown to have metabolic and antioxidative properties, can reduce oxidative stress on serum paraoxonase and arylesterase activities, as well as on the blood glucose, serum lipid profile were investigated in streptozotocin (STZ)-induced diabetic rats.

Diabetes was induced with an intraperitoneal injection of STZ (65 mg/kg) and the rats were divided into four groups. Control rats; BNP treated control rats; diabetic rats; BNP treated diabetic rats. Rats were treated with BNP for four weeks (350 mg/kg/day). Serum insulin, blood glucose, triglyceride, total cholesterol, high density lipoprotein-cholesterol, levels were evaluated using an auto-analyzer. Plasma and tissue malondialdehyde (MDA) levels were measured with spectrophotometric methods. Serum paraoxonase (PON), arylesterase (ARE), superoxide dismutase, glutathione peroxidase activities were determined using commercial kits.

BNP recovered the increased plasma and heart, muscle, liver, and kidney tissue MDA and serum glucose and total cholesterol levels. BNP increased serum PON, ARE activities STZ-induced diabetic rats.

Conclusion; BNP has properties antihyperglycemic, antihyperlipidemic, antioxidant and can be a promising supportive therapeutic agent in diabetes mellitus for improving treatment outcomes and reducing treatment related and/or diabetes related complications

Keywords: Diabetes, *Brassica nigra* Pollen, Paraoxonase, Oxidative Stress, Antioxidant



ANALYSIS OF THE FLORA OF TURKEY IN TERMS OF PLANT SECONDARY METABOLITES

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Abstract

Flora of Turkey is very rich in terms of plant diversity as well as in terms of medical plants. Due to the different climatic conditions and the presence of three floristic regions, the flora that is enriched is home to about 11.000 plant species. It is estimated that about 500 of this number are medical plants. Plant secondary metabolites are unique sources for pharmaceuticals, food additives, flavors, and industrially important biochemicals. Secondary metabolites play a major role in the adaptation of plants to the environment and in overcoming stress conditions. Because plant secondary metabolites not only affect plant growth, but also cause the plants to adapt to the habitat they live in by being synthesized according to environmental conditions. Medical plants have been used for treatment since prehistoric times due to the therapeutic properties of the secondary metabolites they contain. Also, many drugs used in modern medicine are derived from plant secondary metabolites. In contrast to primary metabolites, secondary metabolites constitute features that can be indicated in terms of taxonomic, ecological and biochemical differentiation and diversity. The biosynthesis and accumulation of secondary metabolites provide a basis for biochemical systematics and chemosystematics. In addition, the wide molecular diversity of secondary metabolites throughout the plant kingdom represents an extremely rich biogenic resource for the discovery of novel drugs and for developing innovative drugs. Secondary metabolites can be classified on the basis of their chemical structure. In this study, some medicinal plants distributed in Turkey are classified according to their secondary metabolites: alkaloids, terpenoids, phenolics, resins and mucilages, and their medical use areas are mentioned in general.

Key words: Flora of Turkey, plant biodiversity, medicinal plant, secondary metabolite.

Özet

Türkiye florası tıbbi bitkiler açısından olduğu kadar bitki çeşitliliği açısından da oldukça zengindir. Farklı iklim koşulları ve üç floristik bölgenin varlığı nedeniyle zenginleşen flora yaklaşık 11.000 bitki türüne ev sahipliği yapmaktadır. Bu sayının yaklaşık 500'ünün tıbbi bitkiler olduğu tahmin edilmektedir. Bitki sekonder metabolitleri, farmasötikler, gıda katkı maddeleri, aromalar ve endüstriyel açıdan önemli biyokimyasallar için benzersiz kaynaklardır. Sekonder metabolitler, bitkilerin çevreye adaptasyonunda ve stres koşullarının üstesinden gelmede büyük rol oynamaktadır. Çünkü bitki sekonder metabolitleri sadece bitkilerin büyümesine etki etmekle kalmazlar, aynı zamanda çevresel koşullara göre sentezlenerek bitkilerin yaşadıkları habitata uyum sağlamalarına da neden olurlar. Tıbbi



bitkiler, içerdikleri sekonder metabolitlerin tedavi edici özelliklerinden dolayı tarih öncesi çağlardan beri tedavi amaçlı kullanılmaktadır. Ayrıca modern tıpta kullanılan birçok ilaç bitki sekonder metabolitlerinden elde edilmektedir. Primer metabolitlerin aksine sekonder metabolitler taksonomik, ekolojik ve biyokimyasal farklılaşma ve çeşitlilik açısından gösterilebilecek özellikler oluşturmaktadır. Sekonder metabolitlerin biyosentezi ve birikimi, biyokimyasal sistematik ve kemosisematik için bir temel sağlamaktadır. Ayrıca, bitkiler aleminde sekonder metabolitlerin geniş moleküler çeşitliliği, yeni ilaçların keşfi ve yenilikçi ilaçların geliştirilmesi için son derece zengin bir biyojenik kaynağı temsil etmektedir. Sekonder metabolitler kimyasal yapılarına göre sınıflandırılmaktadır. Bu çalışmada; Türkiye'de yayılış gösteren bazı tıbbi bitkiler sekonder metabolitlerine göre alkaloid, terpenoid, fenol, reçine ve müsilaj içerenler şeklinde sınıflandırılarak genel olarak tıbbi kullanım alanlarından bahsedilmiştir.

Anahtar kelimeler: Türkiye Florası, bitki biyoçeşitliliği, tıbbi bitki, sekonder metabolit.

INTRODUCTION

Turkey is among the richest countries in the world in terms of plant diversity. The main reasons for this wealth are as follows: variety of climates, topographical diversity with marked changes in ecological factors over short distances, geological variation, range of aquatic environments such as seas, lakes and rivers, altitude variations from sea level to 5000 m and the situation of the country at the junction of three major phytogeographical regions: Irano-Turanian, Mediterranean and Euro-Siberian. There are a number of major mountain ranges in Anatolia which constitute effective barriers and these have further encouraged a greater diversity of species. All these factors combined have provided the present wealth of species now estimated to be over 11.000, about one third of which are endemic [1]. It is estimated that about 500 of this number are medical plants. Medical plants have been used for treatment since prehistoric times due to the therapeutic properties of the secondary metabolites they contain [2].

Plant secondary metabolites are unique sources for pharmaceuticals, food additives, flavors, and industrially important biochemicals. Secondary metabolites play a major role in the adaptation of plants to the environment and in overcoming stress conditions. Because plant secondary metabolites not only affect plant growth, but also cause the plants to adapt to the habitat they live in by being synthesized according to environmental conditions. Also, many drugs used in modern medicine are derived from plant secondary metabolites. In contrast to primary metabolites, secondary metabolites constitute features that can be indicated in terms of taxonomical, ecological and biochemical differentiation and diversity. The biosynthesis and accumulation of secondary metabolites provide a basis for biochemical systematics and chemosystematics. In addition, the wide molecular diversity of secondary metabolites throughout the plant kingdom represents an extremely rich biogenic resource for the discovery of novel drugs and for developing innovative drugs. Secondary metabolites can be classified on the basis of their chemical structure [3].



MATERIALS and METHODS

In this study, some medicinal plants distributed in our country [4-7] are classified according to their secondary metabolites: alkaloids, terpenoids (monoterpenes, sesquiterpenes, diterpenes, triterpenoids), phenolics, resins and mucilages, and their medical use areas are mentioned in general [8, 9]. Turkish names are according to Güner et al., 2012 [7].

RESULTS AND DISCUSSION

Alkaloids

Alkaloids have over the years been recognized as important phytoconstituents with interesting biological properties. In fact, the first successful antimalarial drug was quinine, an alkaloid, which was extracted from *Cinchona* tree. They have a wide range of pharmacological activities including antimalarial (quinine), antiasthma (ephedrine), cholinomimetic (galantamine), vasodilatory (vincamine), antiarrhythmic (quinidine), analgesic (morphine), antibacterial (chelerythrine) and antihyperglycemic (piperine) activities. Many have found use in traditional or modern medicine, or as starting points for drug discovery [9, 10]. Some species containing alkaloids in Turkish Flora [4-8]:

- (1) *Aconitum orientale* Mill., kurtboğan **Ranunculaceae** Dügünçiçegigiller
- (2) *Alhagi maurorum* Medik., aguldikeni **Fabaceae** Baklagiller
- (3) *Berberis vulgaris* L., kızıl karamuk **Berberidaceae** Karamukgiller
- (4) *Convolvulus arvensis* L., tarla sarmaşığı **Convolvulaceae** Tarlasarmaşığıgiller
- (5) *Datura stramonium* L., boru çiçeğı **Solanaecae** Patlıcangiller
- (6) *Hyoscyamus niger* L., banotu **Solanaecae** Patlıcangiller
- (7) *Ipomoea purpurea* (L.) Roth, kahkaha çiçeğı **Convolvulaceae** Tarlasarmaşığıgiller
- (8) *Peganum harmala* L., üzerlik **Nitrariaceae** Üzerlikgiller
- (9) *Papaver somniferum* L., haşhaş **Papaveraceae** Haşhaşgiller
- (10) *Urtica dioica* L., ısırgan **Urticaceae** Isırgan giller

Terpenoids

Terpenoids are important for plant survival and also possess biological properties that are beneficial to humans. Plant based terpenoids have been used by humans in the food, pharmaceutical, and chemical industries, and more recently have been exploited in the development of biofuel products. Genomic resources and emerging tools in synthetic biology facilitate the metabolic engineering of high value terpenoid products in plants. Moreover, the ecological importance of terpenoids has gained increased attention to develop strategies for sustainable pest control and abiotic stress protection [9, 11]. Some species containing terpenoids in Turkish Flora [4-8]:



- (1) *Allium sativum* L., sarımsak **Amaryllidaceae** Nergisgiller
- (2) *Apium graveolens* L., kereviz **Apiaceae** Maydanozgiller
- (3) *Chenopodium album* L., aksirken **Amaranthaceae** Horozibiğigiller
- (4) *Coriandrum sativum* L., kişniş **Apiaceae** Maydanozgiller
- (5) *Gentiana lutea* L., sarı afat **Gentianaceae** Gentiyangiller
- (6) *Lavandula angustifolia* Mill., lavanta **Lamiaceae** Ballıbabagiller
- (7) *Melissa officinalis* L., oğulotu **Lamiaceae** Ballıbabagiller
- (8) *Mentha x piperita* L., nane **Lamiaceae** Ballıbabagiller
- (9) *Tanacetum vulgare* L., yaygın pireotu **Asteraceae** Papatyagiller
- (10) *Thymus longicaulis* C.Presl, dağ kekiği **Lamiaceae** Ballıbabagiller

Phenolics

Plant phenolic compounds such as flavonoids and lignin precursors are potent antioxidants. Ascorbate (Vitamin C) functions as a ubiquitous antioxidant in both plants and animals by scavenging reactive oxygen species via enzymatic and non-enzymatic reactions. Flavonoids commonly accumulate in epidermal cells of plant organs such as flowers, leaves, stems, roots, seeds and fruits, being found in glycosidic forms (glycosides) and non-lycosidic forms (aglycones). Research in the pharmacology of food phytochemicals, a great number of reports have established that plant phenolic compounds including flavonoids are potent antioxidants with reported antimutagenic effects [9, 12]. Some species containing phenolics in Turkish Flora [4-8]:

- (1) *Camellia sinensis* (L.) Kuntze, çay **Theaceae** Çaygiller
- (2) *Capsicum annuum* L., biber **Solanaecae** Patlıcangiller
- (3) *Crataegus orientalis* Pall. ex M.Bieb., alıç **Rosaceae** Gülgiller
- (4) *Dryopteris filix-mas* (L.) Schott, eğrelti otu **Dryopteridaceae** Pilunçgiller
- (5) *Humulus lupulus* L., şerbetçiotu **Cannabaceae** Kenevirgiller
- (6) *Hypericum perforatum* L., kantaron **Hypericaceae** Kantarongiller
- (7) *Linum usitatissimum* L., keten **Linaceae** Ketengiller
- (8) *Myrtus communis* L., mersin **Myrtaceae** Mersingiller
- (9) *Sesamum indicum* L., susam **Pedaliaceae** Susamgiller
- (10) *Vaccinium myrtillus* L., ayıüzümü **Ericaceae** Fundagiller

Resins and Musilages

Resins are nonvolatile products of plants, from which they exude naturally (surface resins) or can be obtained by incision or infection (internal resins). They are insoluble in water but soluble in organic solvents. Stable, inert, and amorphous, they become sticky when heated



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and are fusible with no sharp melting points. They are mixtures of compounds, including flavonoids, terpenoids, and fatty substances. Resins are usually produced in specialized surface glands (glandular hairs) or internal ducts. Such ducts are widespread in certain families and occur in both woody and nonwoody plants. They are more common in gymnosperms and dicotyledons than in monocotyledons [9, 13]. Some species containing resins in Turkish Flora [4-8]:

- (1) *Abies cilicica* (Antoine and Kotschy) Carrière, toros göknarı **Pinaceae** Çamgiller
- (2) *Cedrus libani* A.Rich., sedir **Pinaceae** Çamgiller
- (3) *Juniperus communis* L., ardıç **Cupressaceae** Servigiller
- (4) *Pinus brutia* Ten., kızılçam **Pinaceae** Çamgiller

Mucilages, gums and glucans are abundant in nature and commonly found in many higher plants. These polysaccharides constitute a structurally diverse class of biological macromolecules with a broad range of physicochemical properties which are widely used for various applications in pharmacy and medicine. Mucilages found in rhizomes, roots and seed endosperms may act primarily as energy reserves whereas foliar mucilages appear not to serve as storage carbohydrates [9, 14]. Some species containing mucilages in Turkish Flora [4-8]:

- (1) *Abelmoschus esculentus* (L.) Moench, banya **Malvaceae** Ebegümeçigiller
- (2) *Althaea officinalis* L., hatmi **Malvaceae** Ebegümeçigiller
- (3) *Ceratonia siliqua* L., keçiboynuzu **Fabaceae** Baklagiller
- (4) *Malva sylvestris* L., ebegümeçi **Malvaceae** Ebegümeçigiller
- (5) *Pistacia lentiscus* L., sakız ağacı **Anacardiaceae** Menengiçgiller
- (6) *Plantago major* L., sinirotu **Plantaginaceae** Sinirotugiller

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**DISPLAY OF ZONING DIAMETER ACCORDING TO THE PLANNED TYPE
DISTANCE APPROACH ON OFFICIAL AGENCY ZONING ISLANDS, EXAMPLE
OF TURKEY**

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Abstract

In our country, activities are carried out under the title of zoning studies in order to make an area suitable for holistic living standards. There is a hierarchy in the formation of zoning plans from the upper scale of the country development plans to the lower scale, which are the implementation zoning plans. With this hierarchy, in the 1/1000 zoning plans, official institution zoning islands are designated within the zoning boundaries determined especially for the institutional work of the people living in a region. Official Institution zoning blocks may have different building regulations, precedent or building heights. There are possible building regulations within the zoning boundaries, where there may be different types of sitting areas, such as split, block and adjacent basis. The process of granting construction permits to the existing zoning parcels in the zoning islands, whose identities are determined by these building regulations, is the zoning scale. Zoning diameters, planned areas are given within the framework of type zoning regulations and plan notes. The zoning diameter is given according to the precedent, height and building order of the island. Distance method, on the other hand, is the process of creating the right residential area with the drawing rules of convex shapes, such as square or rectangular, according to the geometric condition of the parcel, in order to be able to give construction permits to the clean zoning parcels in the relevant zoning islands. In our study, it has been tried to show how the settlement areas on the floor can be given, which building order, which precedent and how to apply the process to the convex parcels with the distance approach. Thus, it was tried to show how to give a zoning diameter to the areas with official institution legends in a settlement.

Keywords: Official Institution Reconstruction Island, Distance Method, Zoning Diameter

**RESMİ KURUM İMAR ADALARINDA PLANLI TİP DİSTANCE YAKLAŞIMINA
GÖRE İMAR ÇAPI GÖSTERİMİ, TÜRKİYE ÖRNEĞİ**

Özet

Ülkemizde bir alanı tümsel yaşam standartlarına uygun hale getirmek için imar çalışmaları başlığında faaliyetlerde bulunulur. Ülke kalkınma planları üst ölçekten, uygulama imar planları olan alt ölçeğe doğru imar planlarının oluşturulmasında bir hiyerarşi vardır. Bu hiyerarşi ile birlikte 1/1000'lik imar planlarında, özellikle bir bölgede yaşayan insanların kurumsal işlerini yapmak üzere belirlenen imar sınırları içerisinde resmi kurum imar adaları tayin edilir. Resmi Kurum imar adaları farklı yapı nizamları, emsal ya da bina



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yüksekliklerinde olabilirler. İmar sınırları içerisinde ayırık, blok ve bitişik esas olmak üzere farklı tipte oturum alanlarının olabileceği muhtemel yapı nizamları mevcuttur. Bu yapı nizamları ile kimlikleri belirlenen imar adalarındaki mevcut imar parsellerine inşaat izni verilebilmesi işlemi ise imar çapıdır. İmar çapları, planlı alanlar tip imar yönetmeliği ve plan notları çerçevesince verilir. Adanın emsal, yükseklik, yapı nizamına göre imar çapı verilme işlemi yapılır. Distance yöntemi ise, ilgili imar adalarındaki temiz imar parsellerine inşaat izni verilebilmesi amacıyla parselin geometrik durumuna göre konveks şekillerin gerek kare ya da dikdörtgen gibi, çekme kuralları ile doğru oturum alanının meydana getirilmesi işlemidir. Çalışmamızda, mesafe yaklaşımı ile, tabandaki oturum alanlarının nasıl verilebileceği hangi yapı nizamı hangi emsal ve yükseklikteki konveks parsellere nasıl işlem uygulanacağı gösterilmeye çalışıldı. Böylelikle bir yerleşim birimindeki resmi kurum lejantlı alanlara nasıl imar çapı verileceği gösterilmeye çalışıldı.

Anahtar Kelimeler: Resmi Kurum İmar Adası, Distance Yöntemi, İmar Çapı

1.INTRODUCTION

The word 'Imar' comes from the Arabic umran (regularity). Dictionary meaning; it is promoting, cheering and repairing (Aksay, 2005). The general objective of the development plans produced for our living spaces is the public interest. The most beneficial uses of the lands for the public benefit are determined in the areas regulated by the zoning plans. In the land and land arrangement works carried out in accordance with the current zoning regulation in our country, when the provisions regarding the valuation do not include the evaluation of the parcels according to the objective criteria before the implementation, value differences occur during the distribution stage for the reallocation of the parcels, and it remains insufficient in terms of legislation and implementation. Land and land arrangement studies force the existing cadastral structure in the application area to change with the zoning plan. Therefore, with the implementation, not only the borders of the cadastral parcels in that region, but also the existing economic values of the property are changing (Frizzell 1979). Zoning plans are indispensable for modern and healthy cities. Zoning plans are legal documents that achieve their main purpose as long as they can be associated with the existing property structure and applied to the land. Therefore, by developing various zoning implementation methods in our country, it is aimed to establish a property relationship with the zoning plans, to form modern and healthy cities and to rehabilitate the built-up areas that emerged illegally (Terzioğlu, 2015). The most important condition for a healthy development of a city; zoning pattern, urbanism principles and planning principles are in accordance with the public interest. It is clear that well-developed cities in line with the provisions of the zoning plan facilitate human life. In addition, the implementation of the zoning plan is closely related to the property phenomenon. For these reasons, it is necessary to determine the zoning plans that determine the usage decisions in a residential area by keeping the public interest at the highest level and to make the zoning plan applications considering this issue [Ergen, 2006]. Land and land arrangement (AAD) is a zoning plan implementation tool that enables the transformation of cadastral parcels, which have a useless structure in terms of city planning, into a more economically usable structure. The basic principle in land and land arrangement is to bring the existing cadastral parcels in a regulation area into a single mass, arrange them as new zoning parcels in accordance with the zoning plan data and return them to the owners. As a result of this practice, it is ensured that the public areas are also offered to



the public service [Yomralioğlu, 1992]. The general principles of land and land arrangement are regulated by Articles 18 and 19 of the Zoning Law No. 3194, and the principles regarding the implementation are regulated by the provisions of the Regulation on the Principles of Land and Land Arrangement to be Made pursuant to Article 18 of the Zoning Law No. 3194. Some issues that are the subject of hesitation in practice have also been clarified by the jurisprudence of the Council of State [Karavelioğlu, 2002]. In order to make land and land arrangement, first of all, the area to be applied must be determined. While determining the regulation limit, the development direction of the city and the elements suitable for intensive construction are taken into consideration. Then, the municipal committee within the boundaries of the municipality and the adjacent area, and the provincial administrative board outside it, a decision regarding the determination of the regulation limit is taken. [Steel, 2006]. Changes in planning approaches cause an increase in plan concepts, especially in countries that are in the development process, and as a result, each group produces its own plan (Ayrancı, 2013). In the regulatory planning system, planning and implementation are two processes that follow each other (Ünal, 2008). After the parceling plans are finalized, the necessary documents are submitted to the Land Registry and Cadastre Directorates of the relevant municipalities for registration, and the residual ownership is determined according to these documents (Bıyık and Uzun, 1997). Practitioners; municipalities and the relevant municipalities if they are within the borders of the adjacent area, and the governorships outside these areas. In addition to these, they are other administrations that are authorized by law to implement zoning practices. (Long, 1992). Within the framework of urban plans in our country, it is aimed to implement the zoning and urban planning activities in accordance with the principles of honesty and compliance, in the light of laws and regulations, by transforming the 1/100,000 environmental plan and the 5000 or 2000 master development plans of the areas open to development in the cities into 1000 implementation plans through local governments. (Taskaya,2019). Rapid urbanization has brought about unplanned development. This process has revealed an urban texture where social and technical equipment areas are insufficient, transportation planning cannot be made, and industrial facilities are intertwined with living and resting areas (Taşkaya, 2019).

2. Material and Method

The Distance Method is a series of steps that enable the building residence area to be determined by drawing distances, thanks to the convex geometry shape formulas according to the parcel shape, in order to make the construction calculations suitable for the parcels located on the zoning island where the land and land arrangements are completed.

In order to find more general and new limits in inequality theory studies, limitations can be made on the hypothesis conditions for the function class studied, or the usage areas of the results can be expanded by introducing some additional features. Because functions can provide many features at the same time, or some function classes can be similar to each other in certain features. In the studies, it is seen that the integral inequalities proved for different types of convex functions 19 provide in different convexity classes for certain special conditions (Kaplan, 2016). Therefore, it is reached from here that there is a hierarchy among the convex functions in terms of their properties. However, since it is difficult to consider all convexity classes together in this hierarchy, the relationship between them can be created as follows using their definitions and properties (Kaplan, 2016).



$I \subseteq \mathbb{R}$, Log –convex functions class, convex functions class, quasi –convex functions class, p –functions class and Godunova-Levin functions class $\mathcal{A}(I)$, $C(I)$, $QC(I)$, $P(I)$ (If I) is denoted by $Q(I)$; $\mathcal{A}(I) \subset C(I) \subset QC(I) \subset P(I) \subset Q(I)$ (Kaplan, 2016).

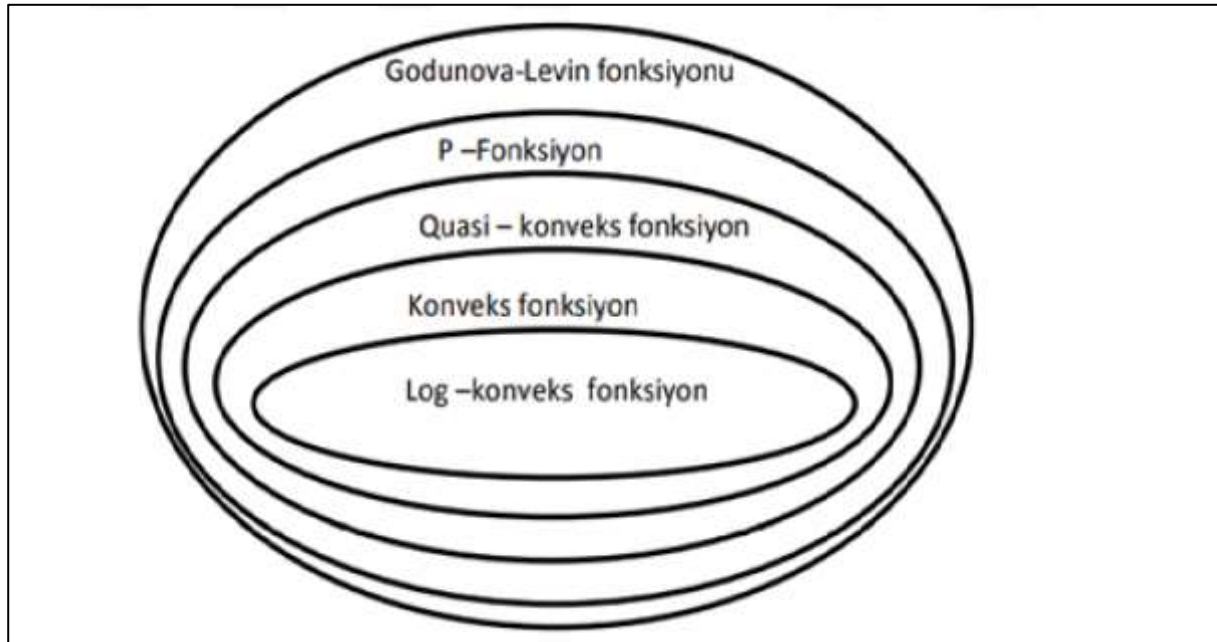


Figure 1. The relationship of Godunova –levin function, P –function, Quasi-convex function, Convex function and Log –convex function classes (Kaplan, 2016).

$f: \Delta \rightarrow \mathbb{R}$ function $\forall(x, y), (z, w) \in \Delta$ and $\lambda \in [0,1]$ if $f(\lambda x + (1 - \lambda)z, \lambda y + (1 - \lambda)w) \leq \lambda f(x, y) + (1 - \lambda)f(z, w)$, then f is said to be convex on Δ (Dragomir 2001). for $\forall x \in [\alpha, b]$ and $\forall y \in [c, d]$ if $f_y: [\alpha, b] \rightarrow \mathbb{R}$, $f_y(u) = f(u, y)$ and $f_x: [c, d] \rightarrow \mathbb{R}$ If the partial transformations of $f_x(v) = f(x, v)$ are convex, then the function $f: \Delta \rightarrow \mathbb{R}$ is convex in coordinates (Kaplan, 2016).

(Convex Function in Coordinates): $f: \Delta \rightarrow \mathbb{R}$. If $f(tx + (1 - t)y, sv + (1 - s)w) \leq tsf(x, u) + s(1 - t)f(y, u) + t(1 - s)f(x, w) + (1 - t)(1 - s)f(y, w)$ inequality $\forall t, s \in [0,1]$ and $(x, u), (x, w), (y, u)$ If (y, w) are provided for $\in \Delta$ (Kaplan, 2016), f is called a convex function in coordinates on Δ (Latif and Alomari 2009).

3. FINDINGS

In order for citizens or official institutions to build on a land, they have to get permission from the municipalities within the boundaries of the municipality zoning and adjacent area, and from the special provincial administrations outside the borders of the municipality zoning and adjacent area (İmar Law, 2019; Taşkaya, 2019). If it is a cadastral parcel, the relevant immovable, that is, if the application of the 18th article and the unification of the land, its abandonment to the road or its creation from the road have not been made, the construction permit cannot be granted in its current form (İmar Law, 2019). If the parcel is in the shape of the land within the normal zoning limits, and if it has a frontage to at least one road outside of the zoning limits, it is allowed for construction if it is unaccompanied or uncreated (Zoning Law, 2019; Taşkaya, 2019).



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Regardless of the type of construction, residential, commercial, industrial, residential+trade or vineyard areas outside the zoning borders, or whatever will be done outside the zoning contiguous borders, the first step of the process is the zoning scale. Zoning diameter is the process of giving the drawing distances in accordance with the building regulation, in the national coordinate or local coordinate system, within the framework of the planned type or unplanned type areas regulation. After the zoning diameter is given to a plot, the project phase is started. It is the basic initial zoning diameter for construction in a place (Taşkaya, 2019).

Zoning diameters are given in 3 main axes as separate, adjacent and in block order. If the front, depth and corner coordinates and the raw data obtained from the existing land correspond to where they correspond on the plan, the drawing distances are given according to the construction order of that plan (Taşkaya, 2019). According to the mechanical results among these, shape changes, knot and vector analyzes can be examined and compared (Taşkaya;Taşkaya, 2019). The same structures with the same geometric shapes, different supports and different geometric shapes, the same structures were compared (Taşkaya; Taşkaya, 2019).

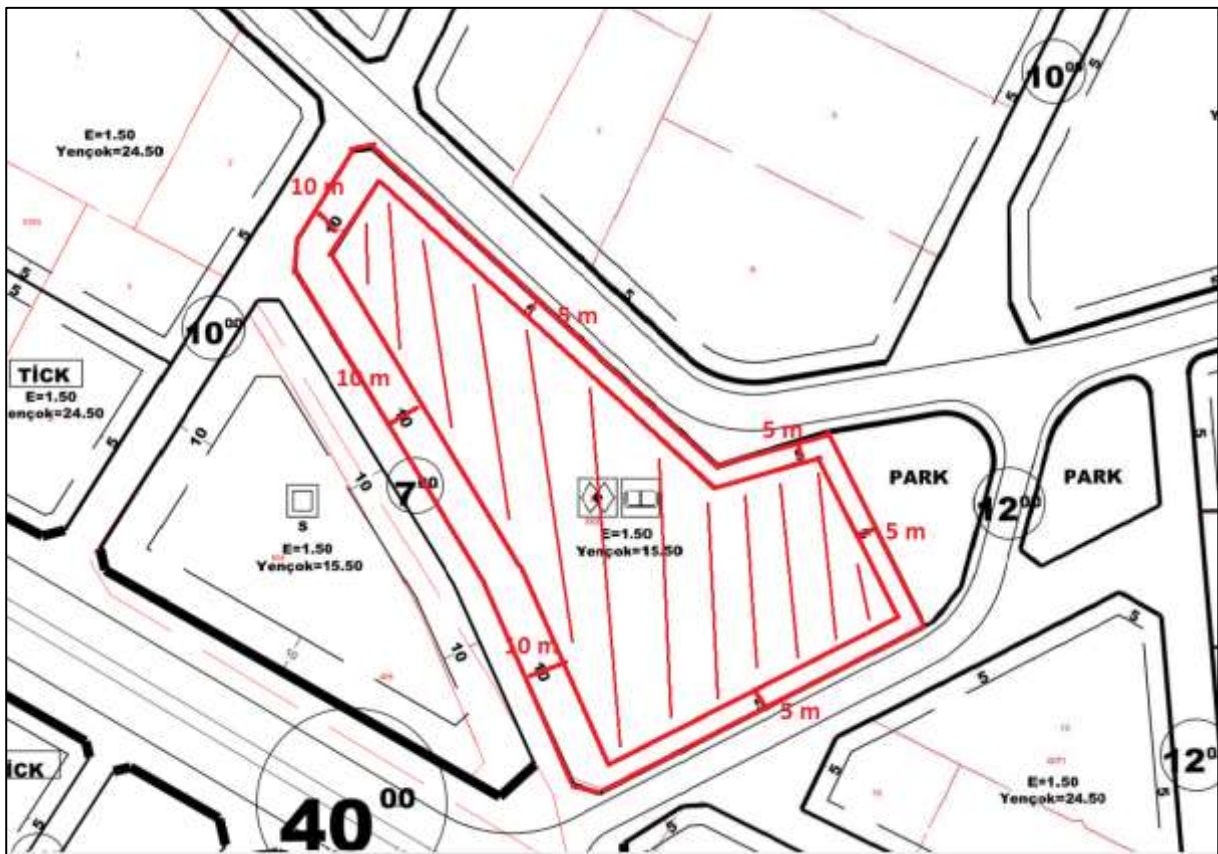


Figure 2. Zoning diameter view

In Figure 2, the relevant immovable is located on a zoning island with a legend, which we call a social cultural area. Since its maximum height is 15.50 meters, it is an official institution with permission up to 5 floors. It means that library, theater and musical buildings can be built on the zoning plot. The zoning diameter was given by drawing the front garden distance of 10 meters from the entrance and exit point of the buildings and 5 meters from the other

facades. Its equivalent is 1.50, which means that the total construction area will be 1.5 times the title deed area.

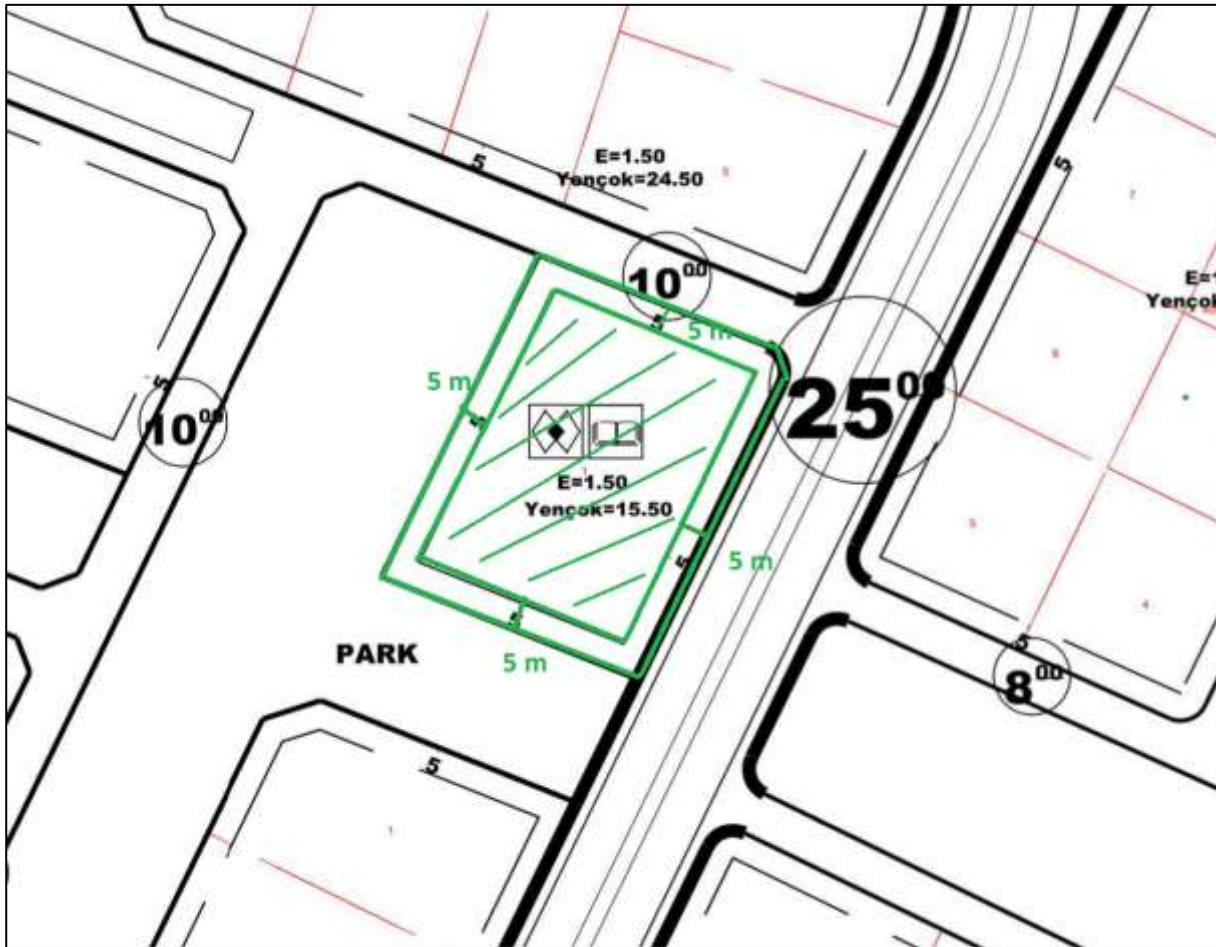


Figure 3. Zoning diameter view

In Figure 3, the immovable property is included in the zoning plan as a social and cultural area. The zoning diameter has been given by processing 5 meters of drawing distance as front and side gardens in the zoning plan. The reason for the withdrawal of 5 meters each is that the parcel is small. Since it has a maximum height of 15.50 meters, it is allowed up to 5 floors. Since the total construction area is 1.50, 1.50 times the surface area will be calculated in the calculation of the total area of the building.

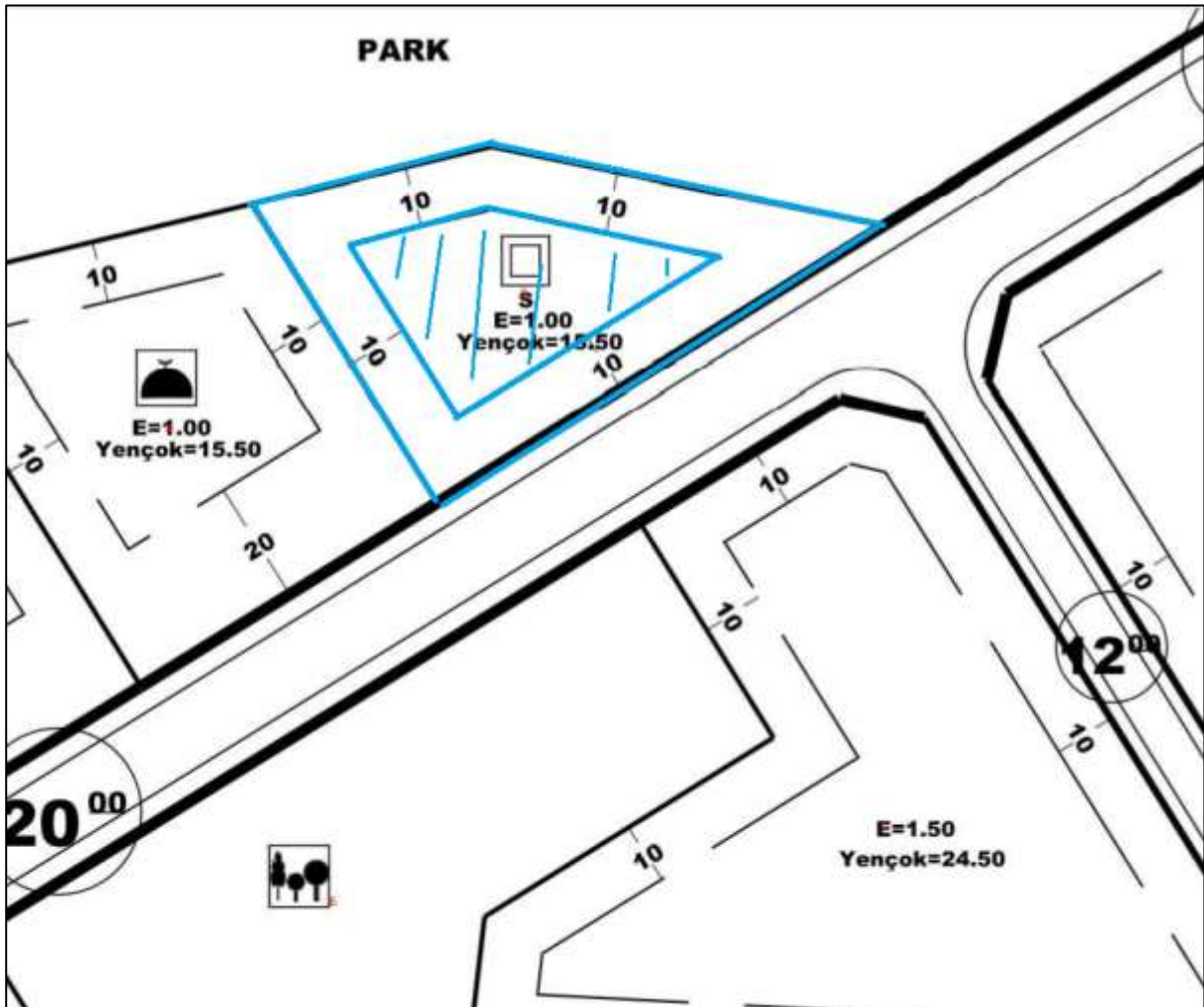


Figure 4. Zoning diameter view

In Figure 4., the relevant real estate is a parcel with 3 facades, and while the zoning diameter is given, its precedent is given at a low rate since its legend is a health facility area. 10 meters were taken from the front and side garden distances. It is a permissible area up to a maximum of 5 floors, and its precedent is processed as 1.00. In other words, health center, polyclinic, etc. in this area. It is understood that small-based health facilities will be built.

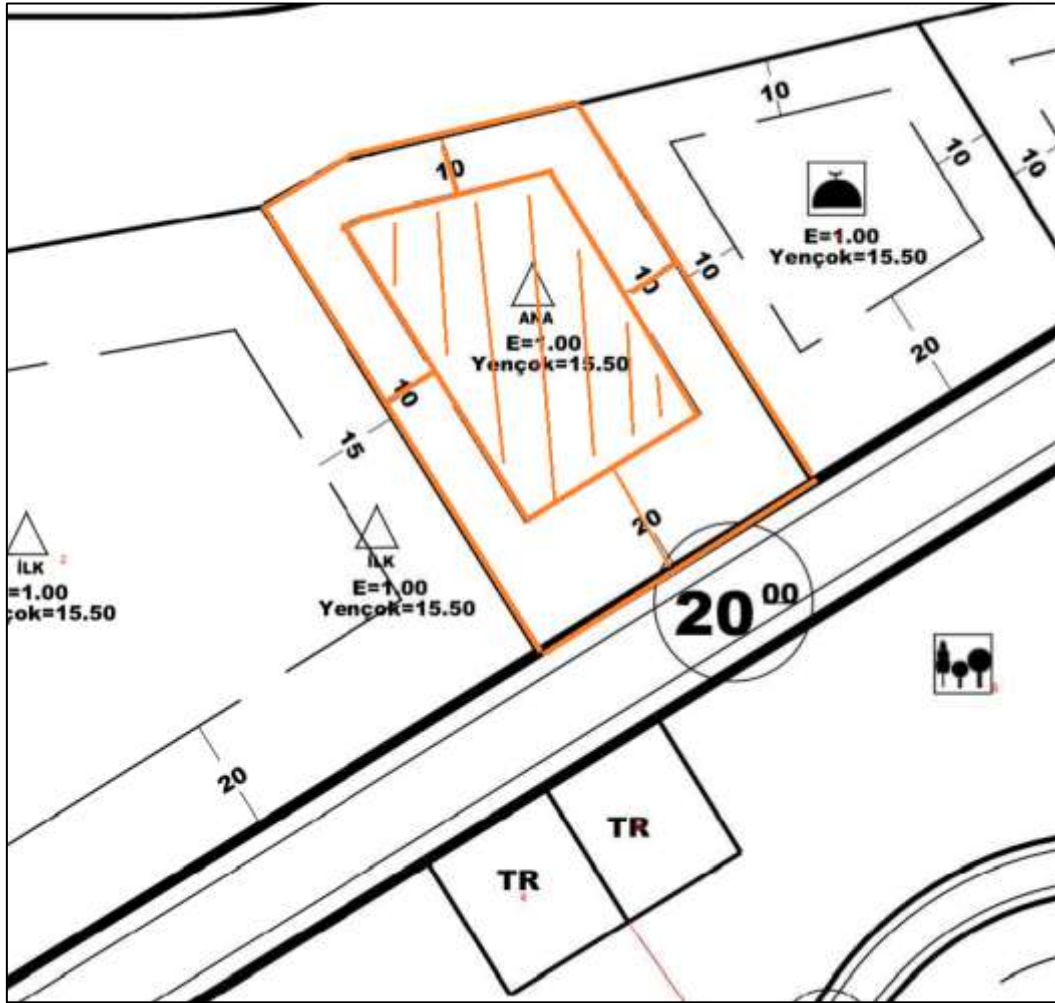


Figure 5. Zoning diameter view

The immovable in Figure 5 means that buildings such as a kindergarten, nursery can be built. It is understood that a zoning diameter will be given by drawing 20 meters from the 20-meter road in the south, 10 meters from the front drawing distance in the north, and 10 meters from the side gardens. It is understood that it will be applied as permissible up to a maximum of 5 times and its equivalent of 1.00.

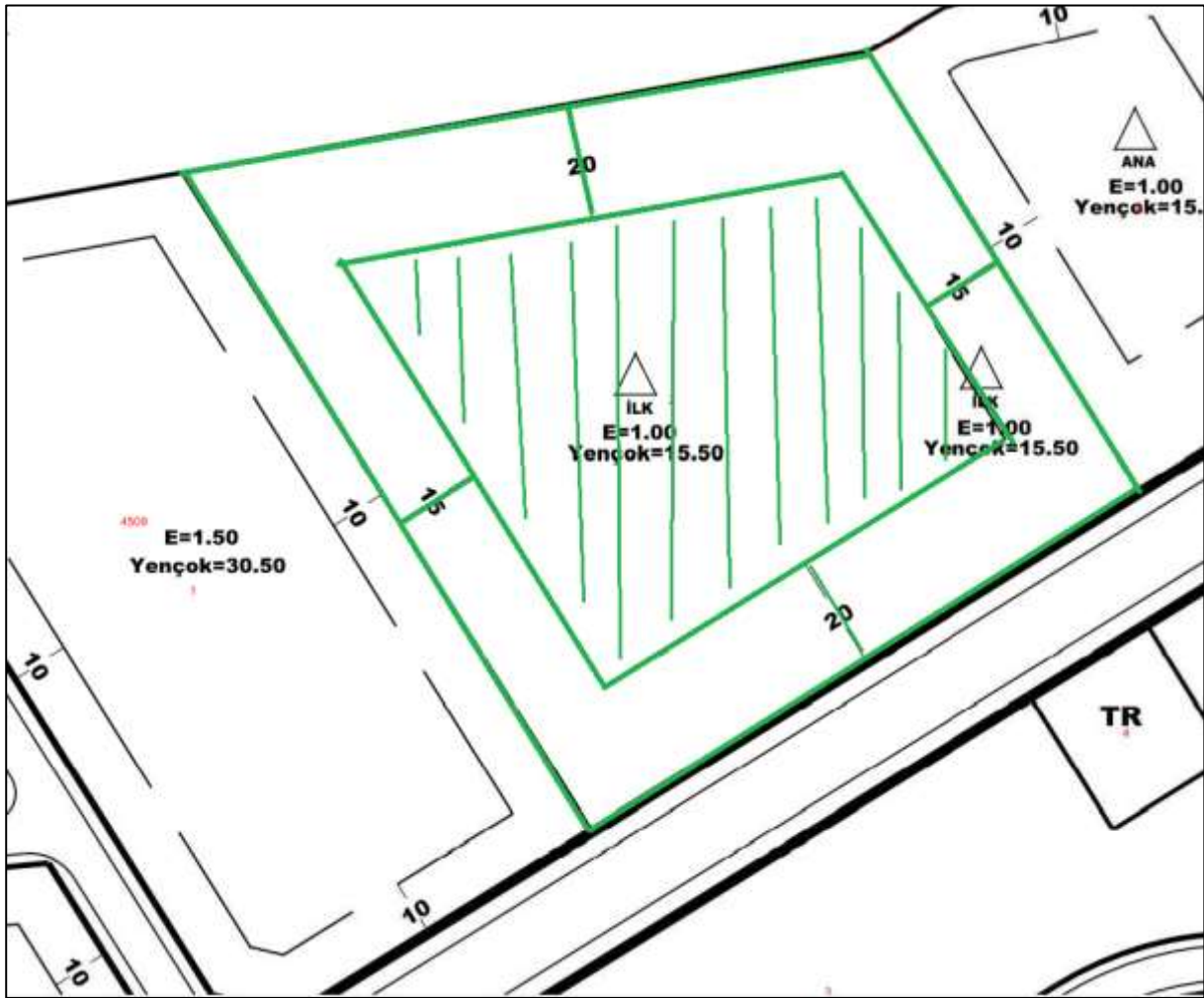


Figure 6. Zoning diameter view

In Figure 6, the relevant parcel is treated as a primary school area. A zoning diameter will be given by taking 20 meters each from the wide road in the north and the afforestation area opposite in the south, and 15 meters from the side gardens. It is allowed up to a maximum of 5 floors, and it is understood that it will be 1.00 times the precedent title deed area.

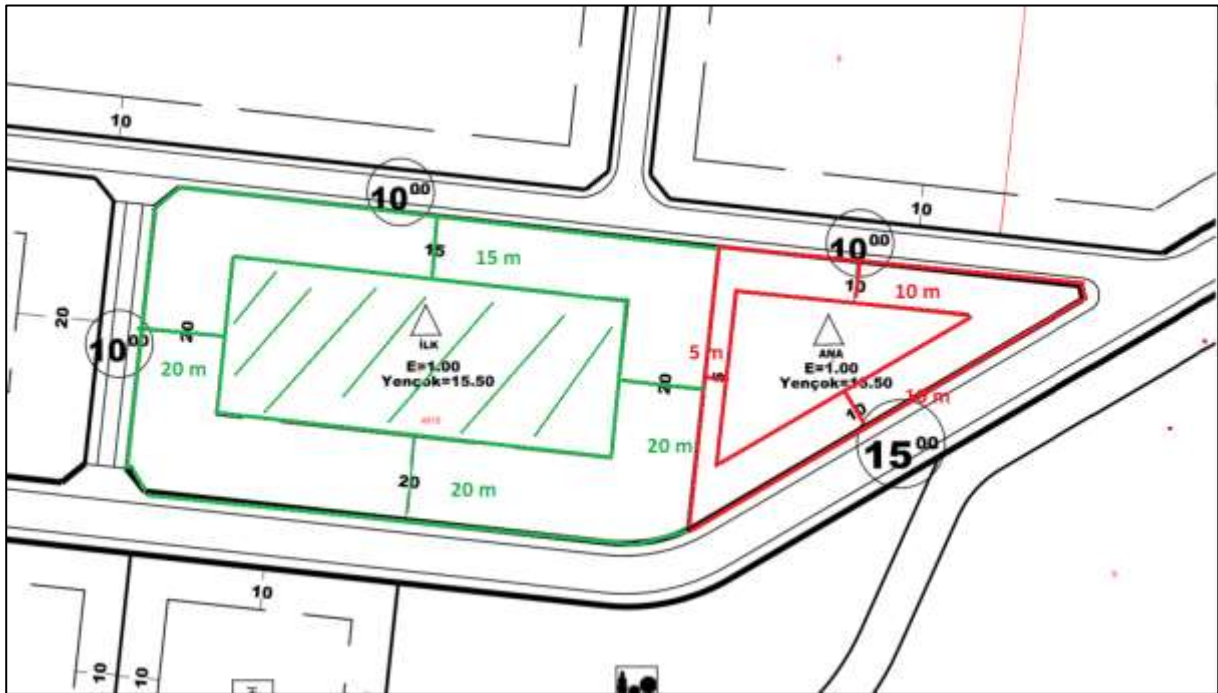


Figure 7. Zoning diameter view

In Figure 7., two parcels where primary and kindergartens will be found together are given side by side. The front and side gardens of the primary school will be withdrawn 20 meters each, and the road to the north of it will be withdrawn 15 meters. In the kindergarten area, 10 meters from the front gardens and 5 meters from the side, since the parcel is small, will give a zoning diameter.

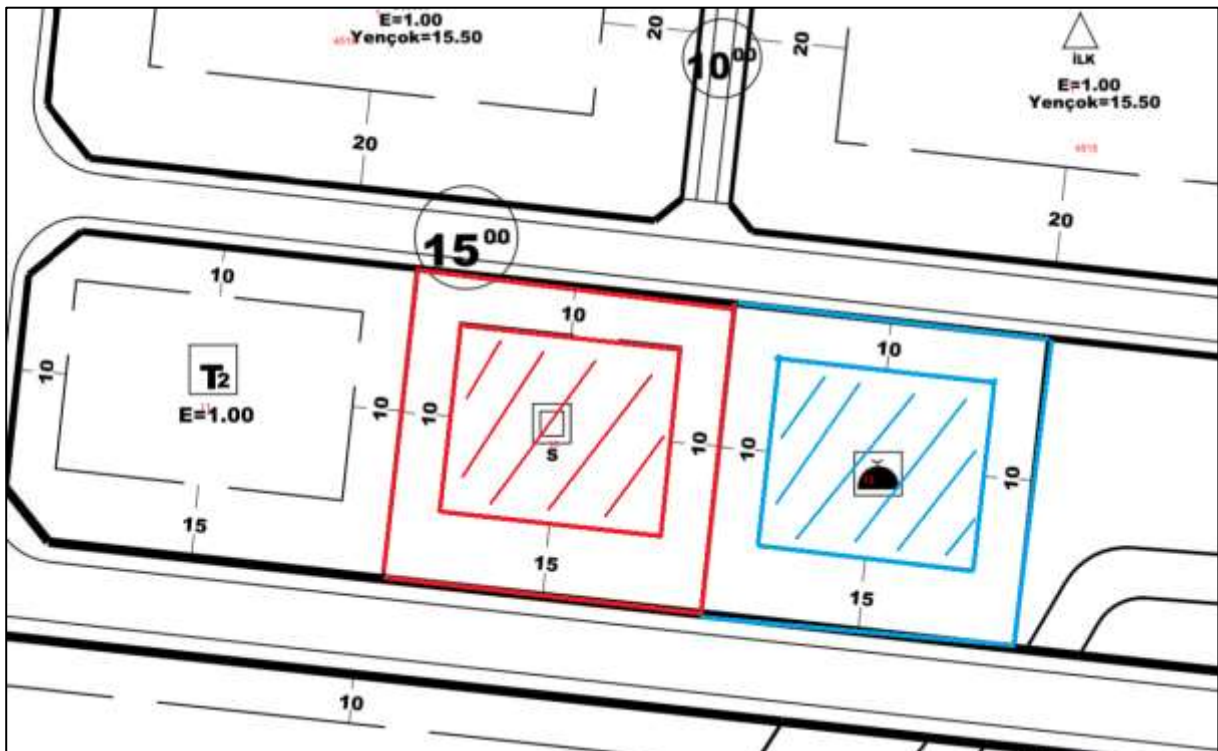




Figure 8. Zoning diameter view

In Figure 8., a health facility area and the parcel to the east of the religious facility area can be seen. The zoning diameter will be given by pulling 15 meters from the front garden drawings in the south of this island and 10 meters from the narrow road front in the north.

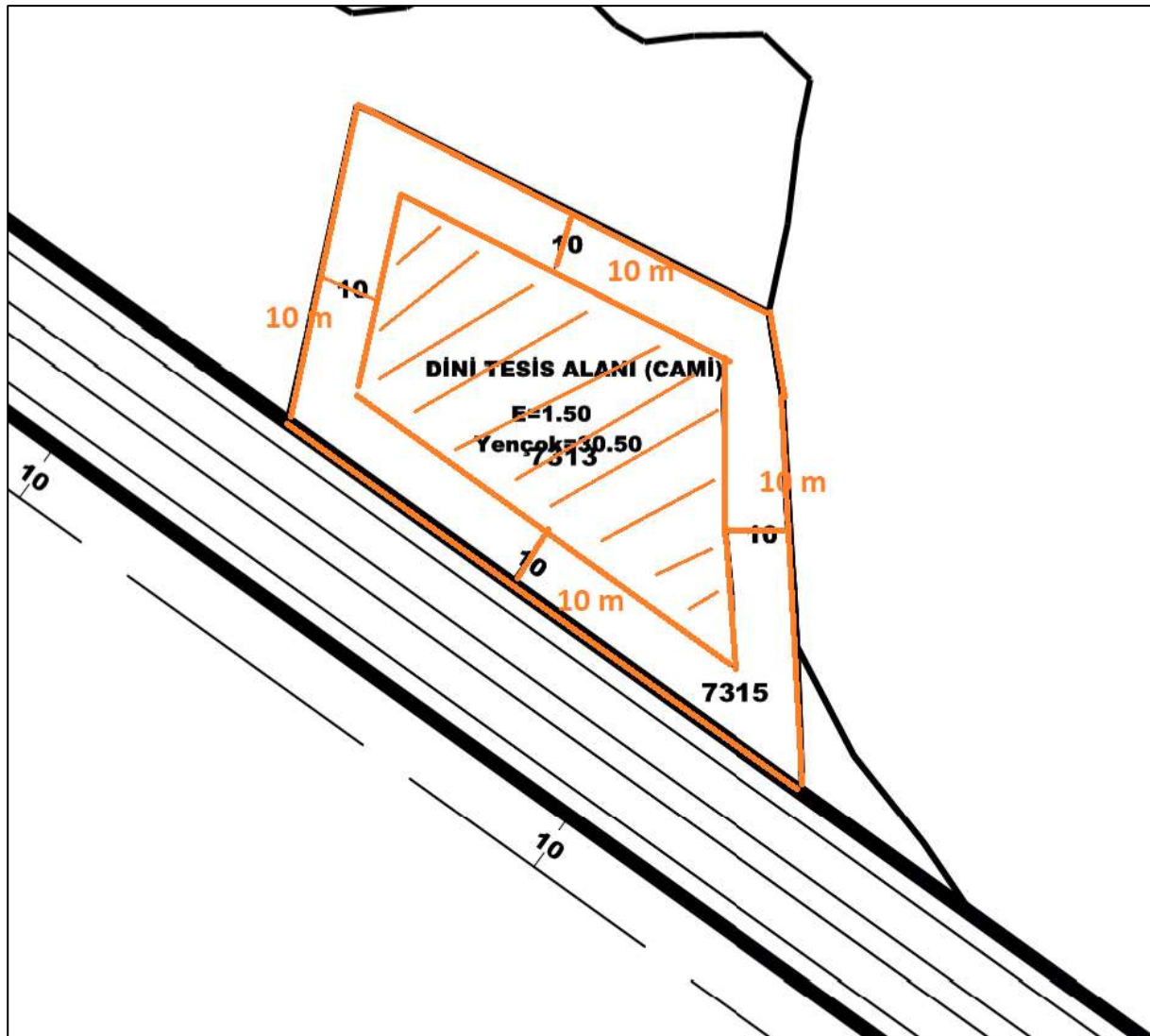


Figure 9. Zoning diameter view

In Figure 9., the relevant area is a religious facility area. It gives information about the height of the building to be built with a maximum height of 30.50 meters. The fact that the precedent is 1.50 means that a 5-storey main building will be built when 0.30 is used on the average floor.

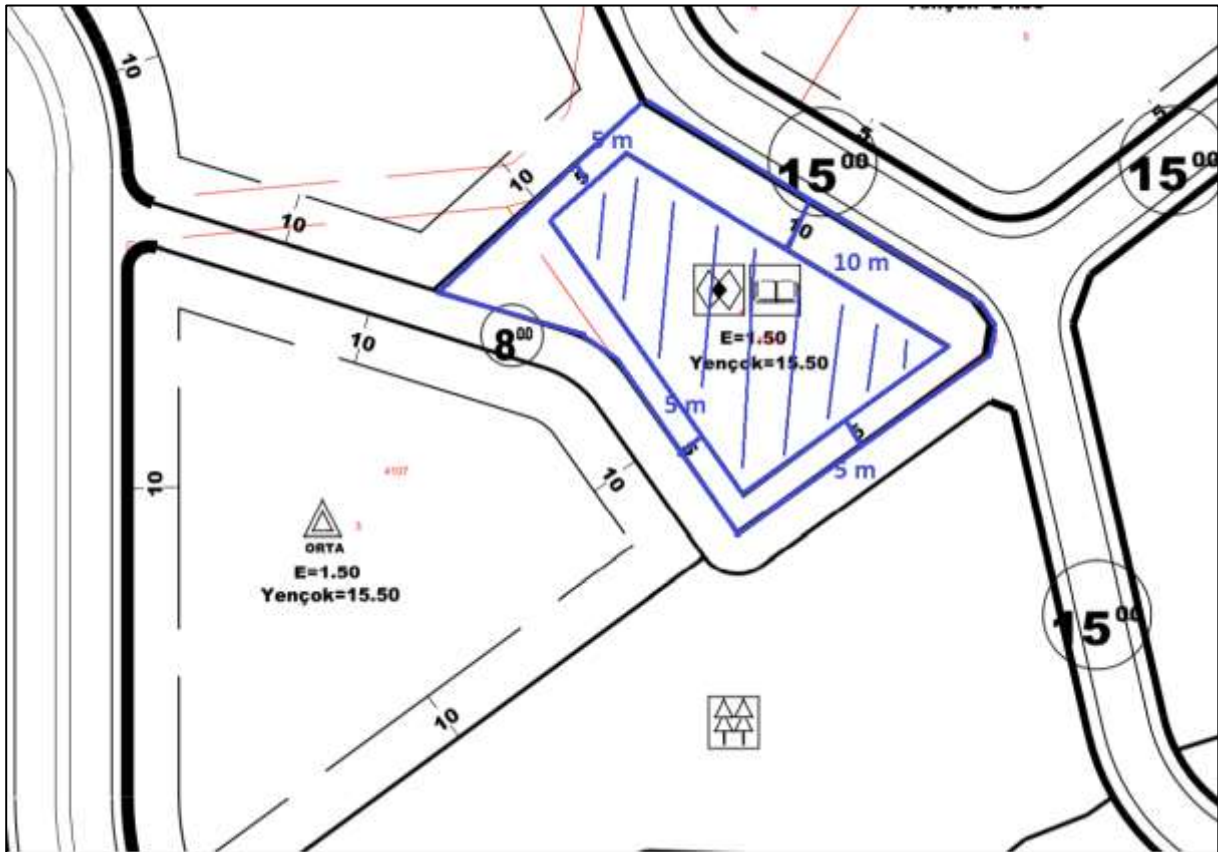


Figure 10. Zoning diameter view

In an immovable in Figure 9., the zoning diameter has been given by taking the parcel that has been processed as a social cultural area, 15 meters from the front part of the wide road, and 5 meters from the other facades. It means that a building will be constructed up to a maximum of 5 floors.

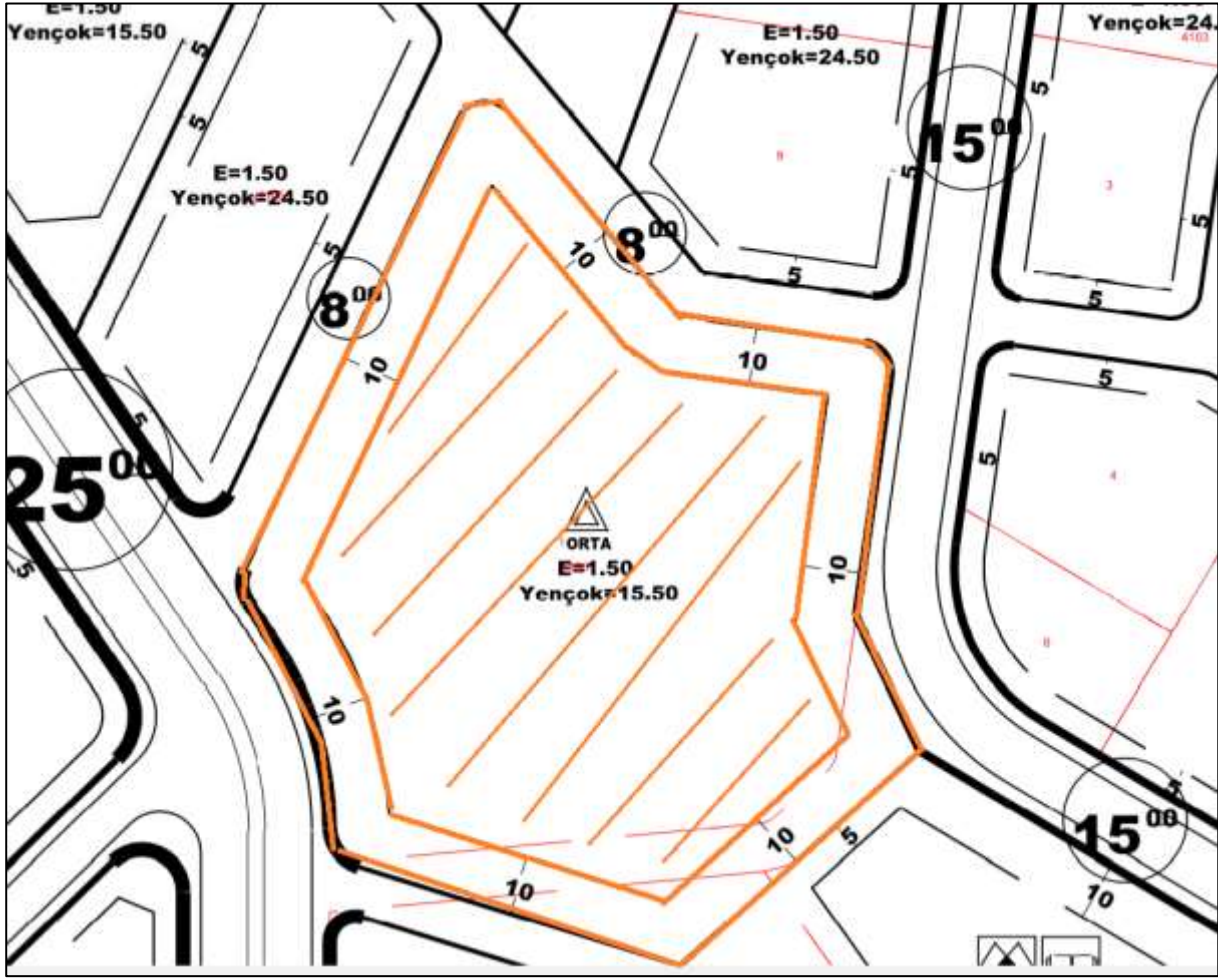


Figure 11. Zoning diameter view

The immovable in Figure 10 is in the form of a single zoning island and zoning parcel. Therefore, the zoning diameter will be given by drawing 10 meters from all fronts. It is a permissible area up to a maximum of 5 floors, and the total construction area will be calculated by taking the precedent of 1.50.

4. CONCLUSION AND RECOMMENDATIONS

The development plans are put into effect in places where there are such as provinces, districts, towns, according to their scales in the form of master and implementation, and the right understanding of urbanism is tried to be revealed. In these zoning plan legends, zoning islands such as housing, residential trade, trade, socio-cultural, sports facility, DOP areas are created so that cadastral parcels can be converted into zoning parcels by properly dumping them into these islands, and they can get a license for construction. On the islands in the Official Institution Areas, the region should be opened from the inside out and the building sessions should be appropriate by giving the distance approximations of these parcels with nested clustering. Therefore, residential zoning islands are created in the regional centers adjacent to them, and in the areas to be opened for new settlements, with distinct building regulations such as blocks and separate layouts. In these islands, it is explained how the zoning diameters should be given according to the planned type zoning regulation and the plan notes approved by the councils of the district. In the examples in the study, the



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appropriate zoning diameter has been shown by showing how the zoning parcels should be given in general in different building regulations. TAKS and KAKS calculations and the total equivalent calculations to be used in architectural projects are also tried to be shown and the correct structure formation is examined. Our suggestion is that the zoning diameters should be given in accordance with the convex geometries of the zoning distances and distance approaches specified in the law and regulation, by considering all the parcels in the zoning island, paying attention to the existing structures on the other parcels , without victimizing the neighboring parcels.

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**THE EFFECT OF BREAST CANCER FEAR ON HEALTHY LIFE BEHAVIORS IN
MIDWIFE AND NURSES**

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Abstract

Breast cancer is the most common type of cancer in women. When diagnosed early, it is successfully treated. Women do not show in early diagnosis behaviors because of fear of screening methods, fear of losing the breast, and/or fear of breast cancer. Health professionals encounter carcinogenic factors caused by their working environments.

This study was conducted to determine the effect of fear of breast cancer on healthy lifestyle behaviors in midwives and nurses.

The research was cross-sectional. The population of study consisted of midwives and nurses working in the State Hospital of a province in the Central Anatolia Region of Turkey between August-December 2018. The sample of the study consisted of 56 midwives and 145 nurses who were not on maternity and sick leave, did not work or work elsewhere, were not on annual leave and agreed to participate in the study. Data were collected using Personal Information Form, Breast Cancer Fear Scale and Healthy Lifestyle Behavior Scale. In the evaluation of the data; Mann Whitney U test and Kruskal-Wallis H test were used.

Midwives and nurses (91.5% female, 8.5% male) had a mean breast cancer fear score of 26.28 ± 7.5 , 8% had low, 22.9% had moderate and 69.1% had high levels of breast cancer respectively. The total mean score of healthy lifestyle behaviors scale was 125.79 ± 21.18 , the highest mean score of the sub-dimensions was spiritual development (25.33 ± 4.62) and the lowest mean score was physical activity (16.12 ± 5.10). In the correlation analysis, a medium level the positive correlation between the mean score of the breast cancer fear scale and the mean score of health responsibility sub-dimension of healthy lifestyle behaviors scale was found to be positive ($p = 0.038$ $r = 0.447$). As the fear level of breast cancer increases in midwives and nurses, the behavior of taking health responsibility from healthy lifestyle behaviors increases.

As the fear level of breast cancer increases in midwives and nurses, the behavior of taking health responsibility from healthy lifestyle behaviors increases. It should be ensured that in-service trainings both in vocational education and post-graduate institutions provide information on breast cancer, risks and fears. It is recommended that this study will be conducted with larger sample groups.

Keywords: Midwife, nurse, breast cancer, breast cancer fear, healthy lifestyle behaviors.



EBE VE HEMŞİRELERDE MEME KANSERİ KORKUSUNUN SAĞLIKLI YAŞAM BİÇİMİ DAVRANIŞLARINA ETKİSİ

Özet

Meme kanseri, kadınlarda en sık görülen kanser türüdür. Erken teşhis edildiğinde başarılı olarak tedavi edilmektedir. Kadınlar tarama yöntemlerine karşı oluşan korku, memeyi kaybetme korkusu ve/veya meme kanseri korkusu nedeniyle erken tanı davranışlarında bulunmamaktadırlar. Sağlık profesyonelleri çalışma ortamlarından kaynaklı kanserojen faktörlere maruz kalmaktadır.

Bu çalışma, ebe ve hemşirelerde meme kanseri korkusunun sağlıklı yaşam biçimi davranışlarına etkisini belirlemek amacıyla yapılmıştır.

Araştırma kesitsel tiptedir. Araştırmanın evrenini Ağustos-Aralık 2018 tarihlerinde Türkiye'nin İç Anadolu Bölgesinde yer alan bir ilin Devlet Hastanesinde görev yapan ebe ve hemşireler oluşturmuştur. Araştırmanın örnekleme, doğum ve hastalık izninde olmayan, görevlendirme ile başka yerde çalışmayan, yıllık izinde olmayan ve araştırmaya katılmayı kabul eden 56 ebe ve 145 hemşire alınmıştır. Veriler Kişisel Bilgi Formu, Meme Kanseri Korku Ölçeği ve Sağlıklı Yaşam Biçimi Davranışları Ölçeği-II kullanılarak toplanmıştır. Verilerin değerlendirilmesinde; tanımlayıcı istatistik ölçütlerinin yanı sıra Mann Whitney U testi ve Kruskal-Wallis H testi kullanılmıştır.

Ebe ve hemşirelerin (%91,5'i kadın, %8,5'i erkek) Meme Kanseri Korku Ölçeği puan ortalaması $26,28 \pm 7,50$ iken, %8'inin düşük, %22,9'unun orta ve %69,1'sinin ise yüksek düzeyde meme kanseri korkusu yaşadığı saptanmıştır. Sağlıklı yaşam biçimi davranışları ölçeğinin toplam puan ortalamasının $125,79 \pm 21,18$, alt boyutlardan en yüksek puan ortalamasının manevi gelişim ($25,33 \pm 4,62$), en düşük puan ortalamasının ise fiziksel aktivite ($16,12 \pm 5,10$) olduğu belirlenmiştir. Yapılan korelasyon analizinde meme kanseri korkusu ölçeği puan ortalaması ile sağlıklı yaşam biçimi davranışları ölçeğinin sadece sağlık sorumluluğu alt boyut puan ortalaması arasında pozitif yönde orta düzeyde ilişki saptanmıştır ($p=0,038$ $r=0,447$). Ebe ve hemşirelerde meme kanseri korku düzeyi arttıkça sağlıklı yaşam biçimi davranışlarından sağlık sorumluluğunu alma davranışı artmaktadır.

Ebe ve hemşirelerde meme kanseri korku düzeyi arttıkça sağlıklı yaşam biçimi davranışlarından sağlık sorumluluğu alma davranışı artmaktadır. Hem mesleki eğitimde hem de mezuniyet sonrası hizmet içi eğitimlerle meme kanseri, riskleri ve korkularına ilişkin bilgilendirmelerin yapılması, sağlık çalışanlarının meme kanseri riski yönünden değerlendirilerek risk faktörlerinin azaltılmasına yönelik çalışma ortamlarında gereken önlemlerin alınması ve bu çalışmanın daha büyük örneklem grupları ile yapılması önerilmektedir.

Anahtar Kelimeler: Ebe, hemşire, meme kanseri, meme kanseri korkusu, sağlıklı yaşam biçimi davranışları.



PSİKOLOJİK DAYANIKLILIĞIN OKULA YABANCILAŞMA VE ÖĞRENCİ MUTLULUĞU ÜZERİNDEKİ ETKİSİ: BİR ALAN ARAŞTIRMASI

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Özet

Bu çalışmanın amacı psikolojik dayanıklılığın okula yabancılaşma ve öğrenci mutluluğu üzerindeki etkisini ortaya çıkarmaktır. Araştırma, Kahramanmaraş Sütçü İmam Üniversitesi'nde eğitim gören Suriyeli öğrenciler üzerinde yapılmıştır. Veri toplama aracı olarak anket formundan yararlanılmıştır. Elde edilen verilerin analizi için SPSS 23.0 istatistik programında frekans, korelasyon ve regresyon analizleri yapılmıştır. Regresyon analizinde ilk olarak psikolojik dayanıklılığın (meydan okuma, kendini adama ve kontrol) okula yabancılaşma (anlamsızlık, güçsüzlük, kuralsızlık ve sosyal uzaklık) üzerindeki sonuçları değerlendirildiğinde; meydan okuma, kendini adamanın anlamsızlık ve sosyal uzaklığı; kendini adama, kontrolün güçsüzlüğü; kendini adamanın kuralsızlığı pozitif yönde etkilediği görülmüştür. Meydan okumanın güçsüzlüğü ve kuralsızlığı; kontrolün anlamsızlık, kuralsızlık ve sosyal uzaklığı negatif yönde etkilediği görülmüştür. Psikolojik dayanıklılığın öğrenci mutluluğu üzerindeki etkisi incelendiğinde ise; meydan okuma ve kendini adamanın öğrenci mutluluğunu meydan okuma ve kontrolün öğrenci mutluluğunu etkilemediği kendini adamanın öğrenci mutluluğu üzerinde pozitif yönde bir etkisi olduğu tespit edilmiştir. Elde edilen bulgular teorik ve uygulama bağlamında tartışılmıştır.

Anahtar Kelimeler: Psikolojik dayanıklılık, Okula Yabancılaşma, Öğrenci Mutluluğu.

THE EFFECT OF PSYCHOLOGICAL RESILIENCE ON ALIENATION TO SCHOOL AND STUDENT HAPPINESS: A FIELD RESEARCH

Abstract

The aim of this study is to reveal the effect of psychological resilience on alienation from school and student happiness. The research was conducted on Syrian students studying at Kahramanmaraş Sütçü İmam University. Questionnaire form was used as data collection tool. For the analysis of the data obtained, frequency, correlation and regression analyzes were performed in the SPSS 23.0 statistical program. In the regression analysis, when the results of psychological resilience (challenge, dedication and control) on alienation from school (meaninglessness, powerlessness, rulelessness and social distance) were evaluated first; defiance, the frivolity and social distance of dedication; dedication, weakness of control; It



has been seen that dedication affects the rulelessness positively. The powerlessness and rulelessness of the challenge; It was seen that control negatively affects meaningfulness, rulelessness and social distance. When the effect of psychological resilience on student happiness is examined; It has been determined that challenge and dedication do not affect student happiness, challenge and control do not affect student happiness, and dedication has a positive effect on student happiness. The obtained findings are discussed in the context of theory and practice.

Keywords: Psychological resilience, Alienation from School, Student Happiness.

1.GİRİŞ

Üniversite dönemleri öğrencilerin kişiliklerini ve benlik duygularını ortaya çıkarmaya çalıştığı bir süreç olmanın yanı sıra üniversite öğrencisi olmanın getirdiği birtakım sorunlar ile mücadele etmenin ve sosyal ilişkilerin de hemen geliştiği bir süreç olmaktadır (Durmuş ve Okanlı, 2018). Üniversite yılları içerisinde kişilerin maddi ve manevi yaşamış olduğu durumlar sonucunda birtakım stresli dönem geçirebilmektedir. Dolayısıyla yaşamış oldukları stresli durumlar karşısında kişilerin bu durum içerisinde oldukça hızlı bir şekilde çıkabilmelerinde etkili olan özelliklerinden biri ve araştırmamız içerisinde yer alan psikolojik dayanıklılık konusu olmaktadır. Hunter (2001)'a göre kişilerin yaşamış oldukları zorluk süreçleri içerisinde kişinin kendini toparlaması ve bu durum içerisinde başarılı veya uyumlu bir şekilde çıkılmasını psikolojik dayanıklılık olarak ifade edilmektedir (Garnezy, 1991).

Psikolojik dayanıklılık konusu insanlar için önemli sonuçlar doğurabilecek potansiyel de bir kavram olduğu düşünülmektedir. Çalışmamızda da psikolojik dayanıklılığın öğrenciler açısından okula yabancılaşma ve mutluluk açısından sonuçları olabileceği düşünülmüştür. Eğitim hayatında genel olarak okula yabancılaşma kişilerin öğrenmek istememesi veya önemsememesi, öğrenme zaman dilimi içerisinde bilgiden soğuması, uzaklaşması gibi durumların ortaya çıkması şeklinde ifade edilmektedir (Sidorkin, 2004). Bu durum öğrencinin okula karşı istekli olmaması, gereken potansiyeli sergilememesi ve derslerde başarı sağlayamamasına neden olabilmektedir (Tucker, 1989). Dolayısıyla yabancılaşma sonucunda öğrenci okuldan uzaklaşabilmekte ve hatta okulu bırakma düşüncesinin ortaya çıkmasına neden olabilmektedir. Çalışmada psikolojik dayanıklılığın öğrencilerin okula yabancılaşması etkilediği üzerinde durulmuştur.

Çalışmada ilgilenilen konulardan birisi de öğrenci mutluluğudur. Mutluluğun toplum içerisinde önemli olduğu gruplardan birisi öğrenciler olmaktadır. Öğrencileri için mutluluk; okul içinde arkadaş ilişkileri (Malmivaara, 2012), istek ve ihtiyaçlarının okul ile uyumlu olması ve karşılanması olarak ifade edilmiştir (Engels vd., 2004). Çalışmada psikolojik dayanıklılığın öğrenci mutluluğunu etkilediği üzerinde durulmuştur.

Genel olarak değerlendirildiğinde ilgili literatürde psikolojik dayanıklılık konusu farklı yönleriyle incelenmiş ve incelenmeye devam etmektedir. Bu çalışmada bu yönde bir nitelik göstermekte olup psikolojik dayanıklılık konusunun öğrencilerin okula yabancılaşma ve mutluluğu üzerindeki etkisi araştırılmıştır. Araştırma Suriyeli üniversite öğrencileri üzerine yapılmış olup örneklem bakımından daha önceki çalışmalardan farklılık göstermiştir.



Çalışmamızda sırayla kavramsal çerçeve kapsamında psikolojik dayanıklılık kavramı, okula yabancılaşma ve öğrenci mutluluğu konularına değinilmiştir. Sonrasında yöntem, analiz sonuçları ile devam etmiş ve sonuç bölümüyle son bulmuştur.

2. Teorik Çerçeve

Bu kısımda çalışmanın temel değişkenlerini oluşturan; psikolojik dayanıklılık, okula yabancılaşma ve öğrenci mutluluğu konuları açıklanmıştır.

2.1. Psikolojik Dayanıklılık

Psikolojik dayanıklılık kavramı Luthans (2002) tarafından pozitif psikolojik sermayenin bir bileşeni olarak tanımlanmıştır. Hunter (2001)'e göre psikolojik dayanıklılık kavramını bir başarı ve uyum sağlama süreci olarak tanımlarken, Luthans vd., (2007), bireyin zorlandığı veya belirsizlik yaşadığı olumsuz durumların üstesinden gelme ve başarı sağlamasıdır. Tanımlarda görüldüğü gibi psikolojik dayanıklılık kavramı araştırmacılar tarafından farklı şekillerde tanımlanmış olsa da tanımların ortak noktası bireye sıkıntı verecek bir olayın olması ve bu olaya olumlu adaptasyon sürecidir. Yapılan araştırmalara (Rodriguez vd., 2015) göre psikolojik yönden dayanıklı olan bireylerin yaşadıkları problemleri çözmede daha fazla strateji geliştirdiğini ortaya koymaktadır. Her yeni yaşanan problem ise kişinin öğrenmesini ve psikolojik dayanıklılık düzeyinin daha da artmasına neden olmaktadır (Sarıkaya, 2019: 15).

Bazı bilim insanları psikolojik dayanıklılığı farklı şekillerde nitelendirebilmektedir. Bazıları kişilik özelliği olarak, bazıları ise gelişimsel bir kazanım şeklinde belirtmektedirler (Jacelon, 1997). Bu durumda psikolojik dayanıklılığı yüksek olan bireylerin zorluklar karşısında daha güçlü oldukları, meydana gelen değişimlere ve yeni yaşantılara açık oldukları, zorlukların üstesinden gelebilme stratejilerini kullanarak stresli yaşam olayları benimsediklerini (Fassig, 2003); psikolojik olarak daha iyi oldukları ve hayatlarından memnun olduklarını (Cohn vd., 2009), iletişim becerilerinin yüksek olduğu (Ceyhan, 2006); sakin bir mizaca ve karaktere sahip oldukları, benlik ve kimlik algılarının güçlü olduğu görülmüştür (Kararımak, 2007; Yılmaz-Irmak, 2004). Başka bir inceleme sonucunda ise psikolojik dayanıklılığı yüksek olan bireylerin ruhsal durumlarının daha iyi olduğu (Cohan vd., 2006; Erarslan, 2014) belirlenirken psikolojik olarak iyi olan bireylerin olumsuz durumlar karşısında ruhsal yönden daha iyi oldukları belirtilebilir.

Psikolojik dayanıklılık konusu ile ilgili farklı birçok tanım ve açıklamaların yer alması bu konu hakkında birbirinden farklı özellikleri içinde barındırmaktadırlar. Örneğin; Masten ve ark., araştırmaları sonucunda psikolojik dayanıklılığın genel olarak temel alan üç özellik şeklinde açıklamışlardır (Masten vd., 1990). Birinci temel psikolojik dayanıklılık özelliği, yaşadıkları olumsuz durumlara karşı bu olumsuz durumları aşabilen ve beklenenden daha iyi gelişim sağlayan aynı zamanda kişisel bir yeteneğe sahip oldukları bilinmektedir. İkinci özellik olarak, stresli bir hayatın aksine kişinin daha çabuk uyum sağlamasıdır. Bu tür psikolojik dayanıklılık olgusu çalışmalarında boşanma, ailede çatışma gibi temel stres faktörü odak noktası olarak alınmıştır. Üçüncü psikolojik dayanıklılık özelliği ise, doğal felâket yaşama, çok sevilen yakınına kaybetme, kazalara maruz kalma gibi travma durumlarını atlatmayı ifade eder. Üçüncü grup ile ilgili araştırmalar, yaşanan travmanın olası etkilerinden kurtulma konusunda önemli rol oynayan bireysel özellikler ve farklılıkları irdeleyen çalışmalardır.



Psikolojik dayanıklılık boyutları ile ilgili literatürde farklı açıklamaların olduğu belirlenmiştir. Bu duruma karşılık olarak psikolojik dayanıklılık boyutlarıyla ilgili genel kabul görmüş üç boyuttan söz edilebilir. Bu boyutların birincisi meydan okuma ikincisi kendini adama ve üçüncüsü kontrol biçimindedir. Belirtilen bu boyutlar birbiri ile ilişkili oldukları bilinse de nitekim hepsi ayrı ayrı özelliklere sahiptir (Maddi ve Khoshaba, 1994). Psikolojik dayanıklılık boyutları ile ilgili bilgiler kısaca aşağıda bahsedilmiştir.

Meydan Okuma: Meydana gelen değişim bireye problem olmaktan ziyade bireyin gelişimini teşvik edici olumlu bir inanç olarak belirtmişlerdir (Holt vd.,1987; Maddi, 2004). Belirtilen değişim bireyin gelişimine uyum sağlamanın yanı sıra değişim sürecinde bireyin gelişmesini sağlamak için bir fırsat olarak değerlendirebilmesidir (Kobasa, 1982). Nitekim meydan okuma yaşanan değişimin ve ortaya çıkan fırsatların doğal bir yönü olarak görmek mümkün olmaktadır. Meydan okuma özelliğine sahip kişilerin bir takım özellikleri bulunmaktadır. Bu özellikler ise (Terzi, 2005);

- Kendine güvenen,
- Yeni şeyler denemeyi keyifli bulan,
- Optimist olma felsefesine sahiptirler.

Ayrıca problemler karşısında güçlü bir konumda olan bireyler karşılaşılan zorluk ve sıkıntıların üstesinden gelebilme yetisini de kendilerine kazandırabilirler. Bu durumda karşılaşılan zorluk karşısında bireyin kendini geliştirici tarafını ön plana çıkaran, donanım özelliklerini artırarak diğerlerinden farklılaştıran değerler sonucunda meydan okuma boyutunu birey kazanmış durumda olabilecektir (Kobasa vd., 1982). Dolayısıyla meydan okumanın sağlanması bireyin yaşanan değişim ve durumları tehdit olarak değerlendirmek yerine bu değişimleri kendi gelişimlerine katkı sağlaması, keyif verici yeni imkanlar tanıması gibi birtakım fırsatlar yaratabilir (Motan ve Gençöz, 2009).

Kendini Adama : Psikolojik dayanıklılığın oluşmasını sağlayan boyutlarından birisi de kendini adamadır (Kobasa, 1979). Kendini adama, kişinin gelişen durum ve olaylar karşısında kişide oluşan anlam ve amaç duygusudur (Maddi vd., 2006). Bu duygu durumuna sahip bireyler, yapmış olduğu işi çok sevdiği ve benimsedikleri için herhangi bir zorlukla karşı karşıya kalındığında zorlukların bir önemi yoktur ve geniş bir sosyal yapıya sahip oldukları söylenebilir. Kendini adama duygusuna sahip bireyler birtakım özellikler barındırmaktadırlar. Bunlar (Maddi ve Khoshaba, 1994);

- Sosyal çevreleri ile ilişkileri oldukça iyidir,
- İlişkileri ayırtmaktan ziyade sıkı tutmayı tercih ederler,
- Aralarında güven duygusu vardır.

Kontrol: Bu boyut içerisinde yer alan bireyler ortaya çıkan problem veya zorluk karşısında kişinin bulunduğu olumsuz durumundan mücadele ederek olumlu bir sonuç yaratmaya odaklanmasındır. Ayrıca bu bireyler açısından, güçsüz davranışlar sergilemek pasiflik ve ziyandır (Maddi vd., 2006).

2.2.Okula Yabancılaşma

Yabancılaşma ile ilgili olarak farklı ifade ve yorumların olması kavramın tanımlanmasını zorlaştırmıştır. Bu noktada yabancılaşma kavramı ne kadar farklı tanımlansa da toplum yapısını oluşturan durumlarda görülmesi mümkündür (Elma, 2003; Kılıçık, 2011). Dolayısıyla yabancılaşma, tüm kurumları ve insan ilişkilerini etkileyen bir kavram durumuna gelmiştir. Özellikle yabancılaşmanın etkili olduğu alanlardan birisi de eğitim olabilmektedir (Tezcan, 1997). Bu durumda okula yabancılaşma; okuldaki fiziksel olanakların, okulun içinde



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bulunduğu fiziksel çevrenin veya öğretmen davranışlarının öğrenciyi etkilemesi neticesinde, öğrencinin sosyal çevreden ayrılarak içe kapanması, kendini çaresiz hissetmesi, uyumsuz davranışlar içine girmesi veya yalnızlaşması halidir (Avcı, 2012).

Yabancılaşma kavramı beklenen işin veya istenilen işin yapılmasından soğuması (Case, 2008) veya kişinin çevresi ile olan ilişkilerinde kopukluk yaşaması yada güvensizlik gibi birtakım sorunların birey üzerinde oluşturduğu, güçsüzlük, anlamsızlık, kuralsızlık, yalıtılmışlık ve kendine yabancılaşma duyguları (Seeman, 1959) olmaktadır. Ayrıca kişilerin ürettiği üründen, yaşadığı doğal, toplumsal, psikolojik ve kültürel çevresinden uzaklaşarak ama onların egemenliği ve belirleyiciliği altında yaşamını sürdürmesi (Yılmaz ve Sarpkaya, 2009) olarak farklı açılardan tanımlanabilir. Bu bilgiler ışığında kurumlarda ve toplumsal hayatta yabancılaşma kavramı ile karşılaşmak mümkündür. Yabancılaşmanın yaşanmasına sebep olan şeyler, ortaya çıkma şekli ve sonucu gibi birçok durum kurumlarda kendini göstermekte ve içinde bulunduğu sistemi etkilemektedir. Yabancılaşmanın olduğu kurumlardan birisi de eğitim hayatı olmaktadır. Eğitim hayatında yabancılaşma genel olarak öğrenim gören öğrencilerin okula karşı soğuması olarak tanımlanmaktadır. Okula karşı soğumasına neden olan birtakım etmenler bulunmaktadır. Bunlar; okulların yönetim yapısının, yoğun sınıf mevcudu, yoğun müfredatın, ders yüklerinin fazla olması, yönetsel yapının demokratik olmayışının, ders dışı bilgilerin anlatılması, öğretim süreçlerinin okul dışından sağlanması gibi durumlar öğrencilerin okuldan uzak kalmasına neden olmaktadır (Erjem, 2005: 397).

Okula yabancılaşma konusu hakkında literatürde farklı sınıflandırmaların yapıldığı görülmüştür. Bunlardan en çok bilinen sınıflandırma şekli Seeman (1959) yapmış olduğu güçsüzlük, anlamsızlık, kuralsızlık, soyutlanmışlık ve kendine yabancılaşma olarak beş boyutlu bir kavram şeklinde belirtmiştir. Nitekim yabancılaşma boyutlarının güçsüzlük, kuralsızlık, soyutlanmışlık ve anlamsızlık olmak üzere dört boyut altında yabancılaşmanın sınıflandırılması okullar için daha uygulanabilir olduğu belirtilmiştir (Mau, 1992, Brown, Higgins ve Paulsen, 2003 ve Sanberk, 2003). Bizim bu çalışmamızda ise Newmann, (1981) okula yabancılaşma kavramını; güçsüzlük, anlamsızlık, kuralsızlık ve sosyal uzaklaşma olmak üzere dört boyutta değerlendirmektedir.

Güçsüzlük: Öğrencinin okul sistemini, ders içeriklerini, sınıf aktivitelerinin ve ders sisteminin yeterli olmadığını düşünmesinden kaynaklandığı belirtilmektedir. Bu durum içerisinde öğrencinin okula karşı uzak kalmasına aynı zamanda güçsüzlük duygunun ortaya çıkmasına neden olacaktır (Oerlemans ve Jenkins, 1998). Bu durum altında yer alan öğrenciler, okuldan şikayet etmekte ve bulunduğu okulda eğitimin gereksiz olduğunu düşünerek okul yönetimi ve öğretmenler tarafından önemsenmediklerini düşünürler (Brow vd., 2003).

Anlamsızlık: İnsanların amaçları ile yaşamış oldukları hayata anlam verememesi şeklinde belirtilmektedir (Şimşek ve Akdemir, 2015). Okul içinde de bu anlamsızlık duygusunu görmek mümkündür. Bu durumda okul içinde öğrenciler, gelecekte yapmayı veya olmak istedikleri konum ile okul içinde yaptıkları çalışmaların birbiri ile örtüşmemesidir. Diğer bir ifade ile alınan dersler ile belirlenen müfredatın uyuşmaması durumunda öğrenci anlamsızlık duygusu yaşamaktadırlar. Bu durumda gelecekte öğrencinin işine yaramayacağı bilgi ve etkinliklerin gelecekle ilişkilendirememekte ve bu nedenle okulda geçirdiği zamanı, boşa harcanmış bir zaman olarak algılamaktadır (Mau, 1992; Oerlemans ve Jenkins, 1998). Başka bir tanıma göre bireylerin kendi içinde buldukları durumu anlamamasından ve hayatındaki amaç, hedef yada bir tasarımın yoksunluğuna göstermektedir (Mackey, 1974).



Sosyal uzaklık: Öğrencinin okul içerisinde arkadaşları ile bir arada yer alamama, aktivitelere katılamam ve yalnız kalmayı tercih etmesi durumunda ortaya çıkmaktadır. Her ne kadar bu tanım olumsuz olarak anlaşılrsa da bu boyut altında sınıflandırılan öğrencilerin genel olarak dersleri ile alakalı oldukları için okul yönetimi öğrencilerin okula karşı yabancılaştığını düşünmezler (Mau, 1992). Nitekim bu durum böyle bilinse de aslında öğrencinin kendisini öğretmenlerinden ve arkadaşlarından ayrı kalması sosyal uzaklık olarak tanımlanmaktadır (Johnson, 2005). Dolayısıyla bu duyguyu yaşayan öğrencilerde birtakım özellikler yer almaktadır. Bu kişiler; yalnız kalmayı tercih ederler, etkinliklere katılmazlar ve sosyal açıdan kendilerini yalıtılmış hissederler (Avcı, 2012; Oerlemans ve Jenkins, 1998).

Kuralsızlık: Kişinin belirlemiş olduğu amaçlara ulaşmak için gereken kuralların yerine kural dışı eylemlerin gerekliliğine inanmasıdır. Ayrıca, sosyal olarak uygun olmayan hareket ve davranışların hedeflere ulaşmak için gerekli olduğuna inanılmasıdır. Bu durumda okul içerisinde yer alan yetkililerin meşruiyetlerini reddetmesidir (Seeman, 1959: 783). Diğer bir ifade ile kuralsızlık, kişinin kendini kuralın gerekliliğine değil de kendi belirlediği kurallar ile okul kurallarının uyuşmamasını ifade eder (Shoho ve Katims, 1998).

2.3.Öğrenci Mutluluğu

İnsanlar beklediği veya beklemediği birçok olay veya durum ile karşılaşmaktadırlar. Bu durumlar karşısında iyi bir şeyin olması mutluluk olarak ifade edilmektedir. Mutluluğun oluşmasında etkili olan bazı durumlar yer almaktadır. Bunlar; kişinin beklediğinin karşılanması, isteklerinin olması, çevresinde iyi ve üstün bir duruma gelme gibi olumlu durumların oluşması şeklinde belirtilmektedir (Çetinkaya, 2006). Diğer bir tanıma göre mutluluk, bireylerin hoşuna giden yaşantıları, hoşuna gitmeyen yaşantılara oranla daha fazla deneyimlemesi olarak tanımlanabilmektedir (Eryılmaz, 2009). Mutluluğun bileşenlerinin olumlu duyguları, yaşam doyumunu ve olumsuz duyguların yokluğunu içerdiğini öne sürülmektedir (Arjil, 2003). Diğer yandan mutluluk, başkalarıyla olan ilişkilerin, yaşamın amacını bilmenin, kişisel gelişimin, başkalarını düşünmenin ve doğanın mutluluğun bileşenleri olduğunu rapor edilmiştir (Tabbodi ve Rahgozarand Abadi, 2015). Eğitim süreçlerinin de amacı insanı kendi yaşamının öznesi kılmaktır (Yıldırım ve Turaç, 2020). Dolayısıyla eğitim sistemi içerisinde yer alan en önemli alanlardan biriside okul olmaktadır (Taymaz, 2009). Okulun bu kadar önem arz etmesinin nedenleri arasında, öğrencilerin zamanın birçoğunu okulda geçirmeleri, sosyal bir paylaşım alanı içerisinde yer almaları ve güçlü bir deneyimin (Demir, 2007) söz konusu olmasıdır. Dolayısıyla öğrencileri için mutluluk; okul içinde arkadaş ilişkileri (Malmivaara, 2012), istek ve ihtiyaçlarının okul ile uyumlu olması ve karşılanmasıdır (Engels vd., 2004). Bu bağlamda öğrencilerin mutluluğu, okul yaşamı ile ilgili olan olumlu beklentileri şeklinde tanımlanabilmektedir (Newcomb vd., 1986).

Literatürdeki çalışmalar incelendiğinde öğrenci mutluluğuna etki eden birtakım değişkenler bulunmaktadır. Bunlar; akademik başarı (Certel vd., 2015), öğrencinin okula karşı ilgisinin azalması (Aypay ve Eryılmaz, 2011), aile içi veya sosyal yaşamdaki bireylerle ilişkiler (Malmivaara, 2012), aile birlikteliği (anne ve baba) (Çivitci ve Fiyakalı, 2009; Çivitci, 2009, akt. Çankaya ve Meydan, 2018), yaşam standartları (Akyüz vd., 2017), ihtiyaçlarının karşılanması (Çivitci, 2012; İlhan ve Özbay, 2010), sorunların üstesinden gelme (Deniz ve Yılmaz, 2004), öğretmen ve verilen bilgilerin yeterli bulunması (Sarı vd., 2007), aktif olduğu etkinliklerin çoğalmasıyla (Ayva, 2010) ilişkili görülmektedir.



3. Psikolojik Dayanıklılığın Sonuçları ve Çalışmanın Hipotezleri

Hayatın içerisinde yaşanan değişimlerde psikolojik dayanıklılık önemli bir kavram olarak tanımlanmaktadır. Bu bağlamda değişen durumlar karşısında kişinin mücadele etmesi ve uyum sağlaması durumunda psikolojik dayanıklılık kavramı önem kazanmaktadır (Koç-Yıldırım vd., 2015). Dolayısıyla psikolojik dayanıklılık insanların yaşamlarında karşılaştığı stresli durumlar sonucunda gösterdiği direnç şeklinde tanımlamak mümkündür. Aşağıda psikolojik dayanıklılık konusu ve sonuçlarına yönelik bir takım değerlendirmelere yer verilmiş, sonrasında ise çalışma hipotezleri açıklanmıştır.

Psikolojik dayanıklılığın birtakım sonuçları olduğu literatürdeki araştırmalardan anlayabiliriz. Robitsckek ve Kashubeck'e (1999) göre ise dayanıklılık, bireyin kendini değiştirme sürecinde aktif olmasını sağlayarak duyuşsal, bilişsel ve davranışsal değişikliklerle kendini gerçekleştirmesine yardımcı olmaktadır. Traş vd., (2013) psikolojik dayanıklılığın kişinin benlik saygısı ve sosyal öz-yeterlik düzeylerinin üniversite öğrencilerini yordayıp yordamadığını incelemişlerdir. Elde edilen sonuçlara göre; öğrencilerin benlik saygısı ve sosyal öz-yeterlik değişkenlerinin psikolojik dayanıklılığı önemli ölçüde yordadığı bulunmuştur. Erarslan (2014) tarafından psikolojik sağlık ile depresif belirtiler ve yaşam memnuniyeti arasındaki ilişkide benlik saygısı, pozitif dünya görüşü ve umudun aracı rolü incelenmiştir. Çalışma sonucunda üniversite öğrencilerinde psikolojik sağlık ile depresif belirtiler arasındaki ilişkide benlik saygısının tam aracı rolü üstlendiği, psikolojik sağlık ile yaşam memnuniyeti arasındaki ilişkide ise benlik saygısının kısmi aracı rolü olduğu görülmüştür. Bununla birlikte yaşam memnuniyeti ve depresif belirtiler ile psikolojik sağlık arasındaki ilişkide umudun ve pozitif dünya görüşünün kısmi aracı rolü desteklediği saptanmıştır.

Bu çalışmada araştırılan konulardan ilki psikolojik dayanıklılığın okula yabancılaşma üzerine etkisidir. Yabancılaşmanın, özellikle günümüz sanayi toplumlarının tüm kurumlarını ve insan ilişkilerini etkileyen bir kavram durumuna gelmiştir. Yabancılaşmanın etkilediği alanlardan birisi de üniversitelerdir (Tezcan, 1997). Literatür incelendiğinde yabancılaşmanın okul içerisinde nereden kaynaklandığına dair birtakım araştırmaların yer aldığı görülmüştür. Bunlar; öğrenciler arasındaki ilişkilerin niteliği (Valverde, 1987), okul ve öğrenci kültürü (Calabrese, 1987), okulu terk (Liu, 2010), öfke duygusu (Trent, 2001), sosyal kabul (Taylor, 1999), sosyal yabancılaşma, akademik başarı ve doyum (Wiseman vd., 1988) gibi psikolojik etkenler ile yabancılaşma arasındaki ilişkileri araştıran çalışmalar da mevcuttur.

Çalışmada ele alınan diğer bir konu ise psikolojik dayanıklılığın öğrenci mutluluğu üzerine etkisidir. Literatür incelendiğinde mutluluk konusu toplumsal bir konu arz ettiğinden dolayı pek çok farklı değişkenle ilişkisi araştırılmıştır. Literatür incelendiğinde mutluluğun; mizah tarzları (Tümkiye, 2011; Özbay vd., 2012), özgürlük, eğlence ve güç ihtiyacı (Türkdoğan ve Duru, 2012), benlik saygısı (Doğan ve Eryılmaz, 2013; Tonga ve Halisdemir, 2017; Cheng ve Furnham, 2003), psikolojik ihtiyaçlar (Sapmaz vd., 2012), kişilik özellikleri (Eryılmaz, 2014), öz-anlayış (Deniz vd., 2012), siber zorbalık ve siber mağduriyet (Padır vd., 2015), bazı demografik değişkenler (Kangal, 2013), algılanan sosyal destek (Türkmen, 2012) gibi değişkenler ile ilişkilendirildiği görülmüştür. Her ne kadar öğrenci mutluluğu konusu farklı değişkenlerle olan ilişkisi literatürde araştırılmış olsa da, psikolojik dayanıklılık ile ilişkisi (bilgimiz dahilinde) araştırılmamıştır. .



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Yukarıda sunulan teorik bilgiler ve alan çalışmalarından elde edilen bulgular ışığında, psikolojik dayanıklılığın okula yabancılaşma ve öğrenci mutluluğunu etkileyeceği varsayılmış ve bu çerçevede aşağıda yer alan hipotezler oluşturulmuştur;

H₁: Psikolojik dayanıklılık boyutlarından olan meydan okuma okula yabancılaşma boyutlarından olan anlamsızlığı negatif yönde etkiler.

H₂: Psikolojik dayanıklılık boyutlarından olan kendini adama okula yabancılaşma boyutlarından olan anlamsızlığı negatif yönde etkiler.

H₃: Psikolojik dayanıklılık boyutlarından olan kontrol okula yabancılaşma boyutlarından olan anlamsızlığı negatif yönde etkiler.

H₄: Psikolojik dayanıklılık boyutlarından olan meydan okuma okula yabancılaşma boyutlarından olan güçsüzlüğü negatif yönde etkiler.

H₅: Psikolojik dayanıklılık boyutlarından olan kendini adama okula yabancılaşma boyutlarından olan güçsüzlüğü negatif yönde etkiler.

H₆: Psikolojik dayanıklılık boyutlarından olan kontrol okula yabancılaşma boyutlarından olan güçsüzlüğü negatif yönde etkiler.

H₇: Psikolojik dayanıklılık boyutlarından olan meydan okuma okula yabancılaşma boyutlarından olan kuralsızlığı negatif yönde etkiler.

H₈: Psikolojik dayanıklılık boyutlarından olan kendini adama okula yabancılaşma boyutlarından olan kuralsızlığı negatif yönde etkiler.

H₉: Psikolojik dayanıklılık boyutlarından olan kontrol okula yabancılaşma boyutlarından olan kuralsızlığı pozitif yönde etkiler.

H₁₀: Psikolojik dayanıklılık boyutlarından olan meydan okuma okula yabancılaşma boyutlarından olan sosyal uzaklığı negatif yönde etkiler.

H₁₁: Psikolojik dayanıklılık boyutlarından olan kendini adama okula yabancılaşma boyutlarından olan sosyal uzaklığı negatif yönde etkiler.

H₁₂: Psikolojik dayanıklılık boyutlarından olan kontrol okula yabancılaşma boyutlarından olan sosyal uzaklığı negatif yönde etkiler.

H₁₃: Psikolojik dayanıklılık boyutlarından olan meydan okuma öğrenci mutluluğunu pozitif yönde etkiler.

H₁₄: Psikolojik dayanıklılık boyutlarından olan kendini adama öğrenci mutluluğunu pozitif yönde etkiler.

H₁₅: Psikolojik dayanıklılık boyutlarından olan kontrol öğrenci mutluluğunu pozitif yönde etkiler.

4. YÖNTEM

Bu bölümde araştırmanın amacı ve önemi, kısıtlılıkları, yöntemi, evreni ve örnekleme, ölçekleri, hipotezleri ve modeli, analizlerine yer verilmiştir. Araştırmada yapılan analizlerin sonuçları detaylı bir şekilde sunulmuştur.



4.1. Araştırmanın Amacı ve Önemi

Bu çalışmada psikolojik dayanıklılık konusunun okula yabancılaşma ve öğrenci mutluluğu üzerindeki etkisini incelemek amaçlanmıştır. Psikolojik dayanıklılık konusu ile ilgili yazında birtakım çalışmaların yapıldığı görülmüştür. Ancak alanyazın incelemesi sonucunda araştırma değişkenlerinin birlikte incelendiği herhangi bir çalışmaya rastlanılmamıştır. Araştırmanın örneklem grubunu Kahramanmaraş Sütçü İmam Üniversitesi'nde eğitim gören Suriyeli öğrenciler oluşturmaktadır. Bütün bunlar araştırmanın taşıyacağı değer ve yaratacağı özgünlük açısından önemlidir.

4.2. Araştırmanın Sınırlılıkları

Bu çalışmada en büyük sınırlılık çalışma yapılacağı dönem içerisinde COVID-19 salgın hastalık ile karşılaşılması olmuştur. Bu nedenle anket formları öğrencilere online üzerinden gönderilmiş ve öğrencilerin ankete katılmak istememişlerdir. Dolayısıyla söz konusu hastalık gereken öğrenci sayısına ulaşmamızı engellemiştir. Belirtilen bu durumlar anket formları geri dönüşlerin az olmasına neden olmuştur.

4.3. Araştırmanın Yöntemi, Evreni ve Örnekleme

Bu çalışmada veri toplama aracı olarak anket formundan yararlanılmıştır. Anket formu dört bölümden oluşmaktadır. Bu formun birinci bölümünde Suriyeli öğrencilerin demografik özelliklerini ölçmeye yönelik 6 soru tek cevaplı olarak hazırlanmıştır. Anket formunun ikinci bölümünde psikolojik dayanıklılık, üçüncü bölümde okula yabancılaşma ve dördüncü bölümde öğrenci mutluluğuna yönelik ifadeler yer almaktadır. Öğrencilerin bu ifadelere katılım derecelerini ölçmek için 5'li Likert ölçeğinden (1=kesinlikle katılmıyorum, 2=katılmıyorum, 3=kararsızım, 4=katılıyorum, 5=kesinlikle katılıyorum) faydalanılmıştır. Araştırmanın evrenini Kahramanmaraş Sütçü İmam Üniversitesi'nde eğitim gören Suriyeli öğrenciler oluşturmaktadır. Araştırmada üniversite okuyan tüm Suriyeli öğrencilere e-mail, telefon ve sosyal medya araçlarıyla ulaşılmaya çalışılmış ve 114 öğrenciden cevap alınabilmektedir.

Araştırmada kullanılan ölçekler ise ;

Psikolojik Dayanıklılık Ölçeği: Işık (2016) tarafından geliştirilen ölçekten yararlanılmıştır.

Okula Yabancılaşma Ölçeği: Şimşek vd., (2015) tarafından geliştirilen ölçekten yararlanılmıştır.

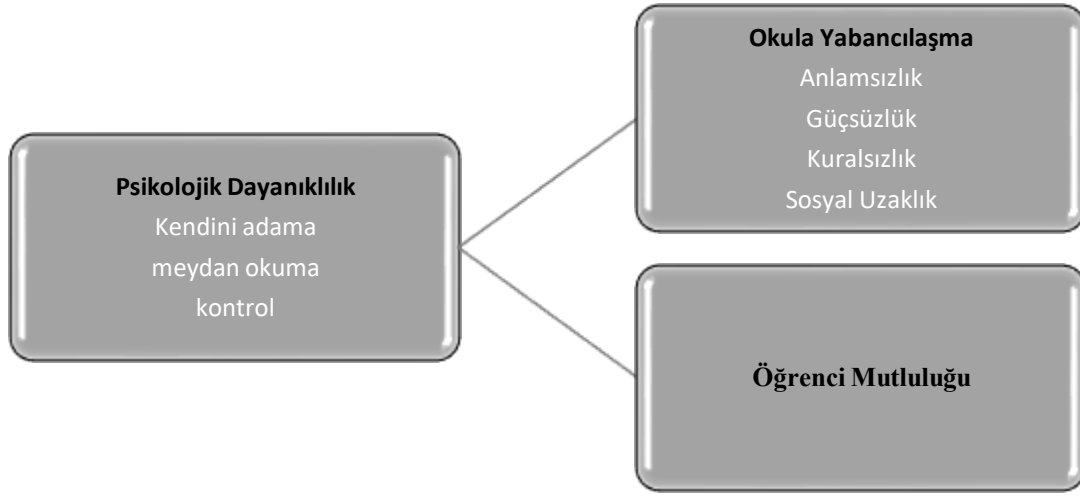
Öğrenci Mutluluğu Ölçeği: Tayfun ve Sapmaz (2012) tarafından geliştirilen ölçekten yararlanılmıştır.

4.4. Araştırmanın Analizleri

Araştırmada toplanan verileri analiz etmek için SPSS 23.0 istatistik programından yararlanılmıştır. Verileri analiz etmek için frekans, güvenilirlik, korelasyon ve regresyon analizleri yapılmıştır.

4.5. Araştırmanın Modeli ve Hipotez Geliştirme

Psikolojik dayanıklılık, öğrenci mutluluğu ve okula yabancılaşma ile ilgili hipotezler bölümünde araştırmanın hipotezlerine yer verilmiştir. Buradan yola çıkarak Psikolojik dayanıklılığın okula yabancılaşma ve öğrenci mutluluğu üzerindeki etkisi model kurgulanarak aşağıda gösterilmiştir.



Şekil 1. Araştırmanın Modeli

5.ARAŞTIRMANIN BULGULARI

Bu bölümde öncelikle araştırmanın demografik bulguları, ölçeklerin güvenilirlik, korelasyon ve regresyon analizi sonuçları yer almaktadır.

5.1. Demografik Bulgular

Çalışmanın bu bölümünde, öğrencilerin demografik özelliklerine göre elde edilen verilerin istatistiksel analiz sonuçlarına yer verilmiştir.

Tablo 1.Öğrencilerin Demografik Değişkenlere İlişkin Tanımlayıcı İstatistikler

<i>Cinsiyetiniz</i>	<i>Frekans</i>	<i>Yüzde</i>	<i>Bölümünüz</i>	<i>Frekans</i>	<i>Yüzde</i>
Erkek	46	40,4	İşletme	54	47,4
Kadın	68	59,6	İktisat	21	18,4
Toplam	114	100,0	Kamu	6	5,3
<i>Medeni Durum</i>	<i>Frekans</i>	<i>Yüzde</i>	Öğretmenlik	18	15,8
Evlü	19	16,7	Diğer	15	13,2
Bekar	95	83,3	Toplam	114	100,0
<i>Yaşınız</i>	<i>Frekans</i>	<i>Yüzde</i>	<i>Sınıfınız</i>	<i>Frekans</i>	<i>Yüzde</i>
18-24 yaş aralığı	22	19,3	1.sınıf	27	23,7
25-28 yaş aralığı	31	27,3	2.sınıf	39	34,2
29-32 yaş aralığı	35	30,7	3.sınıf	26	22,8
33 ve üstü yaş aralığı	26	22,8	4.sınıf	22	19,3
Toplam	114	100,0	Toplam	114	100,0
<i>Fakülteniz</i>	<i>Frekans</i>	<i>Yüzde</i>	<i>Program Türünüz</i>	<i>Frekans</i>	<i>Yüzde</i>
İktisadi ve İdari Bilimler	72	63,2	1.Öğretim	49	43,0
Eğitim Fakültesi	23	20,2	2.Öğretim	65	57,0
mühendislik	19	16,7	Toplam	114	100,0
Toplam	114	100,0	<i>Genel Not Ortalamanız</i>	<i>Frekans</i>	<i>Yüzde</i>
<i>Herhangi Bir Yerde Çalışıyor musunuz</i>	<i>Frekans</i>	<i>Yüzde</i>	1,00-1,80	10	8,8
Evet	49	43,0	1,81-2,60	66	57,9
Hayır	65	57,0	2,61-3,40	20	17,5
Toplam	114	100,0	3,41-4,00	18	15,8
			Toplam	114	100,0



Araştırma Örneklemine Göre;

Suriyeli öğrencilerin 46'sı (%40,4) erkeklerden, 68'i (%59,6) kadınlardan oluşmaktadır. Öğrencileri medeni durumları incelendiğinde 19'unun (% 16,7) evli, 95'i (%83,3) bekarlardan oluşmaktadır. Yine öğrencilerin yaş aralıkları incelendiğinde 35 kişiyle (% 30,7) 29-32 yaş araştırma örnekleminin en büyük yaş aralığını oluştururken, 31'i (%27,3) 25-28 yaş, 22'si (%19,3) 18-24 yaş, 26'sı (%22,8) 33 ve üzeri yaş aralığı içerisinde yer almaktadır. Araştırmaya katılan öğrencilerin 72'si (% 63,2) ile iktisadi ve idari bilimler fakültesinde, 23'ü (%20,2) eğitim fakültesi, 19'u (%16,7) mühendislik fakültesinde eğitim gördüğü belirlenirken 54'ünün(%47,4) işletme bölümü, 21'inin (%18,4) iktisat bölümü, 18'inin (%15,8) öğretmenlik, 6'sının (%5,3) kamu bölümü ve 15'inin (%13,2) diğer bölümlerde okuduğu tespit edilmiştir. Öğrencilerin sınıf durumları incelendiğinde ise 27'sinin (%23,7) 1.sınıf, 39'unun (%34,2) 2.sınıf, 26'sının (%22,8) 3.sınıf ve 22'sinin (%19,3) 4.sınıf olduğu belirlenmiştir. Katılımcıların program türleri incelendiğinde ise 49'unun (%43,0) 1.öğretim ve 65'inin (%57,0) 2.öğretimde okuduğu belirlenmiştir. Öğrencilerin çalışma durumları incelendiğinde ise 49'unun (%43,0) herhangi bir yerde çalıştığı belirlenirken 65'inin (%57,0) çalışmadığı tespit edilmiştir. Genel not ortalamaları incelendiğinde 66'sının (%57,9) 1.81-2.60 arasında not ortalamasının olduğu belirlenmiştir.

5.2. Araştırmada Kullanılan Ölçeklerin Güvenilirlikleri

Tablo 2. Ölçeklere İlişkin Soru Adetleri ve Cronbach's Alpha Katsayıları

Değişkenler	Cronbach's Alpha (α)
Öğrenci Mutluluğu	,659
Okula Yabancılaşma	,948
Anlamsızlık	,817
Güçsüzlük	,764
Kuralsızlık	,849
Sosyal Uzaklık	,850
Psikolojik Dayanıklılık	,805
Meydan Okuma	,747
Kendini Adama	,851
Kontrol	,729

Tablo 2'deki Güvenirlilik Analizi Sonuçlarına Göre:

Güvenirlilik analizi Cronbach Alpha's (α) değerlerinden; psikolojik dayanıklılık ölçeğinin (.805),psikolojik dayanıklılık boyutlarından olan meydan okuma (.747), kendini adama (.851) ve kontrol (.729) olarak saptanmıştır. Okula yabancılaşma ölçeğinin (.948), okula yabancılaşma ölçeğinin boyutlarından olan anlamsızlık (.817), güçsüzlük (.764), kuralsızlık (.849) ve sosyal uzaklık (.850) olarak bulunmuştur. Öğrenci mutluluğu ölçeği ise(.659) olarak belirlenmiştir. Her boyutun iç tutarlılık katsayısının kabul edilebilir en az güvenirlilik katsayısı (Nunnally,1978) 0,60 veya üzerinde bir değere sahip ($0,60 \leq \alpha \leq 1$) ise ölçek güvenilir kabul edilmektedir.

5.3. Korelasyon Analizi ve Sonuçları

Çalışmanın temel hipotezlerini test etmeden önce araştırmanın değişkenleri arasındaki ilişkilere korelasyon analizi ile bakılmıştır. Yapılan korelasyon analizi ve sonuçları Tablo 3'de gösterilmiştir.



Tablo 3. Korelasyon Ve Güvenilirlik Değerleri

Değişkenler	(1)	(1.1)	(1.2)	(1.3)	(2)	(2.1)	(2.2)	(2.3)	(2.4)	(3)
Psikolojik Dayanıklılık(1)	1									
Meydan Okuma (1.1)	,461** ,000	1								
Kendini Adama (1.2)	,803** ,000	-,081 ,391	1							
Kontrol(1.3)	,833** ,000	-,081 ,850	,801** ,000	1						
Okula Yabancılaşma(2)	,802** ,000	-,076 ,424	,987** ,000	,805** ,000	1					
Anlamsızlık(2.1)	,746** ,000	,011 ,904	,907** ,000	,671** ,000	,927** ,000	1				
Güçsüzlük(2.2)	,811** ,000	-,111 ,242	,933** ,000	,920** ,000	,923** ,000	,753** ,000	1			
Kuralsızlık(2.3)	,721** ,000	-,107 ,258	,948** ,000	,704** ,000	,972** ,000	,879** ,000	,858** ,000	1		
Sosyal uzaklık (2.4)	,764** ,000	-,029 ,761	,953** ,000	,707** ,000	,972** ,000	,976** ,000	,826** ,000	,938** ,000	1	
Öğrenci Mutluluğu (3)	,418*** ,000	,065 ,492	,463** ,000	,357** ,000	,483** ,000	,582** ,000	,376** ,000	,425** ,000	,582** ,000	1

*($p < 0.05$; ** $p < 0.01$; *** $p < 0.001$)

Bu sonuçlar şu şekilde sıralanmıştır.

• Psikolojik dayanıklılık boyutları ile okula yabancılaşma arasındaki ilişki incelendiğinde; meydan okuma ($r = ,011$; $p > 0,05$) ile anlamsızlık arasında ilişki bulunmazken kendini adama ($r = ,907$; $p < 0,05$) ve kontrol ($r = ,671$; $p < 0,05$) ile anlamsızlık arasında pozitif bir ilişki olduğu belirlenmiştir. Daha sonra meydan okuma ($r = -,111$; $p > 0,05$) ile güçsüzlük arasında ilişki bulunmazken kendini adama ($r = ,933$; $p < 0,05$) ve kontrol ($r = ,920$; $p < 0,05$) ile güçsüzlük arasında da pozitif bir ilişki olduğu belirlenmiştir. Meydan okuma ($r = -,107$; $p > 0,05$) ile kuralsızlık arasında ilişki bulunmazken kendini adama ($r = ,948$; $p < 0,05$) ve kontrol ($r = ,704$; $p < 0,05$) ile kuralsızlık arasında da pozitif yönde bir ilişki olduğu görülmüştür. Meydan okuma ($r = -,029$; $p > 0,05$) ile güçsüzlük arasında ilişki bulunmazken kendini adama ($r = ,953$; $p < 0,05$) ve kontrol ($r = ,707$; $p < 0,05$) ile güçsüzlük arasında pozitif bir ilişki olduğu saptanmıştır.

• Psikolojik dayanıklılık boyutları ile öğrenci mutluluğu arasındaki ilişki incelendiğinde; Meydan okuma ($r = ,065$; $p > 0,05$) ile öğrenci mutluluğu arasında ilişki bulunmazken kendini adama ($r = ,463$; $p < 0,05$) ve kontrol ($r = ,357$; $p < 0,05$) ile öğrenci mutluluğu arasında pozitif bir ilişki olduğu belirlenmiştir.

5.4. Regresyon Analizi ve Sonuçları

Çalışma psikolojik dayanıklılığın, okula yabancılaşma ve öğrenci mutluluğu üzerindeki etkisini belirlemeye çalışmaktadır. Bu bağlamda aşağıda regresyon analizi ve sonuçlarına yer verilmiştir.

Araştırmada H1(Meydan okuma anlamsızlığı negatif yönde etkiler), H2 (Kendini adama anlamsızlığı negatif yönde etkiler), H3 (Kontrol anlamsızlığı negatif yönde etkiler) hipotezlerini test etmek için regresyon analizi yapılmış ve sonuçları Tablo 4’de sunulmuştur.



Tablo 4. Psikolojik Dayanıklılık Boyutlarının Okula Yabancılaşma Boyutlarından Olan Anlamsızlığı Etkilemesine İlişkin Regresyon Analizi Sonuçları

Bağımlı Değişken: Anlamsızlık

Bağımsız değ.	Standardize Edilmemiş		Standardize edilmiş	T	P	F	R ²	ΔR ²
	B	S. Hata	Beta (β)					
Sabit	-,056	,255		-,221	,826			
Meydan Okuma	,094	,039	,093	2,428	,017			
Kendini Adama	1,130	,069	1,049	16,307	,000			
Kontrol	-,186	,071	-,168	-2,615	,010	191,538	,839	,835

Psikolojik dayanıklılık boyutlarından olan meydan okuma H₁ (β=,093;p<0,05) ve kendini adamanın H₂ (β=1,049;p<0,05) anlamsızlığı pozitif yönde etkilediği ancak kontrolün H₃ (β=,168;p<0,05) anlamsızlığı negatif yönde etkilediği belirlenmiştir. Elde edilen sonuçlara göre “H₁” ve “H₂” hipotezleri ret edilirken “H₃” kabul edilmiştir.

Yine araştırmada H₄ (Meydan okuma güçsüzlüğü negatif yönde etkiler), H₅ (Kendini adama güçsüzlüğü negatif yönde etkiler), H₆ (Kontrol güçsüzlüğü negatif yönde etkiler) hipotezlerini test etmek için regresyon analizi yapılmış ve sonuçları Tablo 5’de sunulmuştur.

Tablo 5. Psikolojik Dayanıklılık Boyutlarının Okula Yabancılaşma Boyutlarından Olan Güçsüzlüğü Etkilemesine İlişkin Regresyon Analizi Sonuçları

Bağımlı Değişken: Güçsüzlük

Bağımsız değ.	Standardize Edilmemiş		Standardize edilmiş	T	P	F	R ²	ΔR ²
	B	S. Hata	Beta (β)					
Sabit	,090	,122		,741	,460			
Meydan Okuma	-,054	,019	-,058	-2,925	,004			
Kendini Adama	,530	,033	,535	16,011	,000			
Kontrol	,502	,034	,490	14,722	,000	808,645	,957	,955

Psikolojik dayanıklılık boyutlarından olan meydan okuma H₄ (β=,093;p<0,05) güçsüzlüğü negatif yönde etkilediği ancak kendini adamanın H₅ (β=,535;p<0,05) ve kontrolün H₆ (β=,490;p<0,05) güçsüzlüğü pozitif yönde etkilediği belirlenmiştir. Elde edilen sonuçlara göre “H₄” kabul edilirken “H₅” ve “H₆” reddedilmiştir.

Araştırmada ayrıca H₇ (Meydan okuma kuralsızlığı negatif yönde etkiler), H₈. (Kendini adama kuralsızlığı negatif yönde etkiler), H₉ (Kontrol kuralsızlığı negatif yönde etkiler) hipotezlerini test etmek için regresyon analizi yapılmış ve sonuçları Tablo 6’de sunulmuştur.



Tablo 6. Psikolojik Dayanıklılık Boyutlarının Okula Yabancılaşma Boyutlarından Olan Kuralsızlığı Etkilemesine İlişkin Regresyon Analizi Sonuçları

Bağımlı Değişken: Kuralsızlık

Bağımsız değ.	Standardize Edilmemiş		Standardize edilmiş	T	P	F	R ²	ΔR ²
	B	S. Hata	Beta (β)					
Sabit	,343	,184		1,869	,064			
Meydan Okuma	-,022	,028	-,023	-,787	,433			
Kendini Adama	1,103	,050	1,070	22,091	,000			
Kontrol	-,164	,051	-,154	-3,192	,002	365,500	,909	,906

Psikolojik dayanıklılık boyutlarından olan meydan okumanın H₇ (β=,093;p>0,05) kuralsızlığı etkilemediği ancak kendini adamanın H₈ (β=1,070;p<0,05) kuralsızlığı pozitif yönde etkilediği saptanırken kontrolün H₉ (β=,154;p<0,05) kuralsızlığı negatif yönde etkilediği belirlenmiştir. Elde edilen sonuçlara göre “H₇” ve “H₈” hipotezleri ret edilirken “H₉” kabul edilmiştir.

Araştırmada H₁₀. (Meydan okuma sosyal uzaklığı negatif yönde etkiler), H₁₁ (Kendini adama sosyal uzaklığı negatif yönde etkiler), H₁₂ (Kontrol sosyal uzaklığı negatif yönde etkiler) hipotezlerini test etmek için regresyon analizi yapılmış ve sonuçları Tablo 7’de sunulmuştur.

Tablo 7. Psikolojik Dayanıklılık Boyutlarının Okula Yabancılaşma Boyutlarından Olan Sosyal Uzaklığı Etkilemesine İlişkin Regresyon Analizi Sonuçları

Bağımlı Değişken: Sosyal Uzaklık

Bağımsız değ.	Standardize Edilmemiş		Standardize edilmiş	T	P	F	R ²	ΔR ²
	B	S. Hata	Beta (β)					
Sabit	-,056	,255		-,221	,826			
Meydan Okuma	,094	,039	,093	2,428	,017			
Kendini Adama	1,130	,069	1,049	16,307	,000			
Kontrol	-,186	,071	-,168	-2,615	,010	191,538	,839	,835

Psikolojik dayanıklılık boyutlarından olan meydan okumanın H₁₀ (β=,093;p<0,05) ve kendini adamanın H₁₁ (β=1,049;p<0,05) sosyal uzaklığı pozitif yönde etkilediği saptanırken kontrolün H₁₂ (β=-,168;p<0,05) sosyal uzaklığı negatif yönde etkilediği belirlenmiştir. Elde edilen sonuçlara göre “H₁₀” ve “H₁₁” hipotezleri ret edilirken “H₁₂” kabul edilmiştir.

Araştırmada son olarak H₁₃ (Meydan okuma öğrenci mutluluğunu pozitif yönde etkiler), H₁₄. (Kendini adama öğrenci mutluluğunu pozitif yönde etkiler), H₁₅ (Kontrol öğrenci mutluluğunu pozitif yönde etkiler) hipotezlerini test etmek için regresyon analizi yapılmış ve sonuçları Tablo 8’de sunulmuştur.



Tablo 8. Psikolojik Dayanıklılık Boyutlarının Öğrenci Mutluluğunu Etkilemesine İlişkin Regresyon Analizi Sonuçları

Bağımlı Değişken: Öğrenci Mutluluğu

Bağımsız deę.	Standardize Edilmemiş		Standardize edilmiş	T	P	F	R ²	ΔR ²
	B	S. Hata	Beta (β)					
Sabit	3,025	,289		10,477	,000			
Meydan Okuma	,055	,044	,106	1,253	,213			
Kendini Adama	,286	,079	,514	3,645	,000			
Kontrol	-,031	,081	-,053	-,378	,706	10,717	,226	,205

Psikolojik dayanıklılık boyutlarından olan meydan okumanın H₁₃ (β=,106;p>0,05) ve kontrolün H₁₅ (β=1,049;p>0,05) öğrenci mutluluğunu etkilemediği ancak kendini adamanın H₁₅ (β=,514;p<0,05) öğrenci mutluluğunu pozitif yönde etkilediği belirlenmiştir. Elde edilen sonuçlara göre “H₁₄” kabul edilirken, “H₁₃” ve “H₁₅” reddedilmiştir.

6. SONUÇ VE TARTIŞMA

Üniversite yaşamı, öğrencilerin kendi kişiliklerini bulma ve kendilerini gerçekleştirme için büyük bir fırsat olarak değerlendirilebilmektedir (Kaba ve Keklik, 2016). Bu zaman içerisinde genel olarak öğrenciler aileden ayrı kalma, ekonomik sıkıntılar, sosyal ortamlara alışmama gibi (Erol ve Yıldırım, 2016) birtakım sorunlar ile karşılaşabilmektedir. Bu dönemde gençler psikolojik dayanıklılık yönünden güçlülere, fizyolojik gelişim dönemlerine uyumlu olarak, ruhsal gelişimlerini devam ettirecek, yaşam içerisinde üstlenmiş oldukları rolü pozitif olarak eğitim hayatına yansıtacaktır (Earvolino-Ramirez, 2007). Aksi durumda eğitim hayatını olumsuz yönden etkilediği ve öğrencilerin okuldan uzaklaşabiliyor olması aynı zamanda istek ve beklentilerinin birbirini karşılamaması öğrenci mutluluğunu etkilediği düşünülmektedir.

Bu çalışmada psikolojik dayanıklılık konusu ele alınmıştır ve psikolojik dayanıklılığın okula yabancılaşma ve öğrenci mutluluğu üzerindeki etkileri araştırılmıştır. Çalışma neticesinde elde edilen bulgular ilgili literatürün gelişimine katkı sağlaması beklenmektedir.

Araştırmada psikolojik dayanıklılığın (meydan okuma, kendini adama ve kontrol) okula yabancılaşma(anlamsızlık, güçsüzlük, kuralsızlık ve sosyal uzaklık) üzerindeki etkisini incelemek için regresyon analizi yapılmış ve elde edilen sonuçlara göre; meydan okuma ve kendini adamanın anlamsızlığı pozitif yönde etkilediği ancak kontrolün anlamsızlığı negatif yönde etkilediği belirlenmiştir. Yine psikolojik dayanıklılık boyutlarından olan meydan okumanın güçsüzlük üzerinde negatif yönde etkisi olduğu ancak kendini adamanın ve kontrolün güçsüzlük üzerinde pozitif yönde etkisi olduğu görülmüştür. Meydan okumanın kuralsızlık üzerindeki etkisi incelendiğinde ise negatif yönde bir etkisi olduğu görülürken kendini adamanın kuralsızlık üzerinde pozitif yönde etkisi olduğu, kontrolün ise kuralsızlık üzerinde negatif yönde etkisi olduğu belirlenmiştir. Yine psikolojik dayanıklılık boyutlarından olan meydan okumanın ve kendini adamanın sosyal uzaklığı pozitif yönde etkilediği ancak kontrolün sosyal uzaklığı negatif yönde etkilediği görülmüştür. Araştırmanın diğer bir inceleme konusu ise psikolojik dayanıklılığın öğrenci mutluluğu üzerindeki etkisi olmuştur. Elde edilen sonuçlar incelendiğinde; psikolojik dayanıklılık boyutlarından olan meydan okumanın ve kontrolün öğrenci mutluluğunu etkilemediği ancak kendini adamanın öğrenci mutluluğu üzerinde pozitif yönde etkisi olduğu sonucuna ulaşılmıştır. Yukarıdaki



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bilgiler ışığında belirlenen (H3), (H4), (H7), (H9), (H12) ve (H14) hipotezleri kabul edilirken (H1), (H2), (H5), (H6), (H8), (H10), (H11), (H13) ve (H15) hipotezleri reddedilmiştir. Elde edilen bu sonuçlar değerlendirildiğinde; psikolojik dayanıklılığın okula yabancılaşma ve öğrenci mutluluğu üzerinde kısmen etkisi olduğu söylenilebilir.

Bu çalışmada elde edilen sonuçlar ışığında; öğrencilerin okula yabancılarını azaltma ve mutluluklarını artırmak için psikolojik dayanıklılığın önemli bir değişken olduğu söylenebilir. Bu bağlamda üniversitelerde öğrencilerin psikolojik dayanıklılığını artırıcı eğitimler ve geliştirme programları konusunda destek verilebilir. Ayrıca bu eğitimlerin sadece belirli bir zaman dilimi içerisinde değil de belirli periyotlarla uygulamalı nitelikte yürütülmesi gerektiği belirtilebilir. Bunun yanı sıra psikolojik olarak öğrenci ilişkilerin artırılması ve öğrencilerin okula karşı olumlu bakış açısını geliştirmesi için birtakım sosyal aktiviteler yapılmasının yanı sıra öğrencilerin destek almaları için danışmanlıklar kurularak öğrencilere yön gösterilebilir.

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GİRİŞİMCİLİK EĞİTİMİNİN GİRİŞİMCİLİK EĞİLİMİ VE AKADEMİK PERFORMANS ÜZERİNE ETKİSİ: BİR ALAN ARAŞTIRMASI

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Özet

Bu araştırmada, girişimcilik eğitimi ve girişimcilik eğilimi konuları ele alınmıştır. Araştırmanın amacı, girişimcilik eğitiminin girişimcilik eğilimi (heveslilik, yenilikçilik, kararlılık ve işgören olmama) ve akademik performans üzerine etkisini incelemektir. Çalışma, lisans öğrencilerine uygulanan bir alan araştırmasıyla desteklenmiştir. Çalışmada, nicel araştırma yönteminden faydalanılmıştır. Araştırmada, veri toplama tekniği olarak anketten yararlanılmıştır. Araştırmanın örneklemini Kahramanmaraş Sütçü İmam Üniversitesi'nin işletme bölümündeki 380 lisans öğrencisi oluşturmuştur. Araştırmanın verilerini analiz etmek amacıyla SPSS 25.0 yazılım programı kullanılmıştır. Araştırmanın verileri faktör analizi, güvenilirlik analizi, frekans analizi, korelasyon analizi ve regresyon analiziyle test edilmiştir. Araştırmanın regresyon analizi sonuçları incelendiğinde, girişimcilik eğitiminin girişimcilik eğilimi alt boyutlarından hevesliliği ve kararlılığı pozitif yönde etkilediği tespit edilmiştir. Girişimcilik eğitiminin akademik performansı ise etkilemediği belirlenmiştir. Araştırma sonuçlarının, literatürün gelişimine ışık tutması yönünden önem taşıdığı düşünülmüştür.

Anahtar Kelimeler: Girişimcilik Eğitimi, Girişimcilik Eğilimi, Akademik Performans.

EFFECT OF ENTREPRENEURSHIP EDUCATION ON ENTREPRENEURSHIP TENDENCIES AND ACADEMIC PERFORMANCE: A FIELD RESEARCH

Abstract

In this study, entrepreneurship education and entrepreneurship tendency are discussed. The aim of the research is to determine the entrepreneurship tendency of entrepreneurship education (enthusiasm, innovativeness, determination and non-employee tendency) and to examine its effect on academic performance. The study was supported by a field study applied to undergraduate students. In the study, quantitative research method was used. Questionnaire was used as a data collection technique in the research. The sample of the study consisted of 380 undergraduate students in the management department of Kahramanmaraş Sütçü İmam University. SPSS 25.0 software program was used to analyze the data of the study. The data of the study were tested with factor analysis, reliability analysis, frequency analysis, correlation analysis and regression analysis. When the regression analysis results of



the study are examined, it has been determined that entrepreneurship education has a positive effect on enthusiasm and determination, which are sub-dimensions of entrepreneurial tendency. It was determined that entrepreneurship education did not affect academic performance. It is thought that the results of the research are important in terms of shedding light on the development of the literature.

Keywords: Entrepreneurship Education, Entrepreneurship Tendencies, Academic Performance.

1. GİRİŞ

Son yıllarda özellikle girişimcilik faaliyetlerine yönelik ilginin artışı, girişimciliğe duyulan önemin gittikçe artmasında etkili olmuştur (Öztürk, 2019). Ülkelerin gerek ekonomik gerek sosyal gelişiminde girişimciler oldukça büyük rol üstlenmektedirler. Bununla birlikte girişimcilik güncel bir konu olma özelliğini artırarak devam ettirmektedir. Uzmanların ise bir taraftan girişimciliğin sosyal hayata ve ekonomiye etkilerini araştırırken, diğer taraftan bu etkiye hız kazandırma bakımından girişimcilik eğitiminin önemini tartıştıklarını söylemek gerekir (Uygun ve Güner, 2016: 38). Nitekim bireylerin doğuştan sahip oldukları girişimcilik potansiyelinin, girişimcilik kariyerine dönüştürülebilmesinde girişimcilik eğitimi önemli bir araç şeklinde ortaya çıkar (Müftüoğlu ve Haliloğlu, 2013: 2). Bu noktada son yıllarda önemi gittikçe artan girişimcilik eğitimi, 1940'larda uygulanmaya başlansa da dünya genelinde 1980'lerden sonra yayılmaya ve bilhassa üniversitelerde gösterilmeye başlanmıştır. Girişimcilik alanındaki önemli konulardan girişimcilik eğitiminin esasında yıllardır gündemde yer alan ve uygulanan bir yaklaşım olmasına karşın, ülkemizde bilhassa 2000'lerden itibaren yaygınlaştığını belirtmek gerekir (Özdemir, 2017: 3). Bu doğrultuda dünyadaki birçok ülkede girişimcilik eğitiminin ilk, orta ve yükseköğrenim seviyesinde eğitim sisteminin içine eklendiği görülmektedir (Müftüoğlu ve Haliloğlu, 2013: 2). Bilhassa üniversitelerde gerek lisans gerek önlisans seviyesinde verilen girişimcilik dersleriyle öğrencilere iş kurma, yönetim ve işletmecilik mevzuatı gibi konularda bilgiler sunularak, öğrencilerin mezun olduktan sonra kendi işlerini kurmaları hususunda bilinçlendirilmesi ve teşviki sağlanmaya çalışılmaktadır (Dağlar, 2020: 817).

Ülkemizdeki sivil toplum örgütlerinin ve kamu kuruluşlarının girişimciliği geliştirmeye dönük faaliyetleri bilhassa 2000'lerden sonra artmış, küreselleşmenin de etkisiyle ulusal ve uluslararası ölçüde önem kazanan girişimcilik son yıllarda genç nüfusun ve bilhassa da üniversite öğrencilerinin kariyer noktasında yakından ilgilendikleri bir kavrama dönüşmüştür (Akyol vd., 2019). Buradan hareketle tanımını yapmak gerekirse; girişimcilik eğitimi, bireylerin girişimcilik bilgilerini ve anlayışlarını, girişimde bulunabilecekleri bir konuma taşımayı ifade etmektedir (Moses vd., 2016: 648). Başka bir deyişle girişimcilik eğitimi, gençlerin yeteneklerini ve tutkularını çok yönlü şekilde geliştirerek, bir girişimin kuruluş aşamasından olgunluk aşamasına kadar risk oranını düşürmek için yapılan rehberlik faaliyetidir (Izedonmi ve Okafor, 2010). Girişimcilik eğitimi, kişilere girişimsel farkındalığın yanında eğitim yaşamları sonrasında başarılı bir girişim sürecini nasıl başlatabileceklerine ve bunu nasıl sürdürebileceklerine ilişkin gerekli değer, bilgi ve becerileri kazandırmayı da amaçlamaktadır (Tarhan, 2019: 667). Ayrıca girişimcilik eğitimleri aracılığıyla öğrencilerin



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girişimcilik becerilerini geliştirip, pekiştirmekte mümkün hale gelmektedir (Güney, 2015: 82).

Girişimcilik eğitimi gençlerin girişimciliğe yönlendirilmesine, girişimcilik kültürünün yaygın hale getirilmesine ve girişimcilik ruhunun ortaya çıkarılmasına katkıda bulunur. Yine girişimcilik eğitimi insanların içlerindeki girişimcilik potansiyelini farketmelerine ve girişimciliğe yönelmelerine yardımcı olmaktadır (Korkmaz, 2012: 224). Bireysel ve toplumsal anlamda sorumluluk duyan, üreten, kendine güveni olan, gelecek endişesi taşımayan insanların yetiştirilmesine katkı sağlamaktadır (Tarhan, 2019: 667). Ayrıca girişimcilik eğitiminin ve söz konusu eğitim vasıtasıyla yaratılan girişimci kültürün öğrencilerin girişimci becerilerinin gelişimine olumlu etkisinin bulunduğunu söylemek gerekir (Tarhan, 2019: 668). Girişimcilik eğitimi, öğrencilerin kendi işlerini geliştirmeyi tercih edip etmediklerine bakmaksızın dünyayı değişik perspektifle görmelerini de sağlamaktadır (Çetin, 2021: 171). Dolayısıyla ülkelerin gelişmesinde ve kalkınmasında, hızla değişen koşullara adapte olabilme becerisine sahip girişimcilerin bulunması oldukça önemli bir etkidir. Bu bakımdan devletlerin; vatandaşlarının ve bilhassa üniversitelerdeki öğrencilerinin girişimcilik potansiyellerini ortaya çıkarmaları noktasında çaba sarfetmeleri gereklidir (Seçgin, 2020: 819-820).

Literatürde girişimcilik eğitiminin girişimcilik eğilimi üzerine etkisini inceleyen birtakım araştırmalar bulunmaktadır. Bu konuyla ilgili olarak literatürde bazı araştırmacıların; Volkman (2004), Souratis vd. (2007), Uluköy vd. (2013), Bayram (2014), Nasr ve Boujelbence (2014), Pazarçık ve Aydın (2015), Tanrıverdi vd. (2016), Özdemir vd. (2018), Özcan vd. (2018) ve Kılıç (2020) çalışmalarıyla karşılaşılmaktadır. Bu araştırmada, girişimcilik eğitiminin girişimcilik eğilimi (heveslilik, yenilikçilik, kararlılık ve işgören olmama) üzerine etkisini incelemek amaçlanmıştır. Ayrıca araştırmada girişimcilik eğitiminin akademik performans üzerine etkisi de incelenmiştir.

Araştırmada, öncelikle kavramsal çerçeve ayrıntılarıyla sunulmuştur. Devamında araştırmanın metodolojisine yer verilmiştir. Son olarak araştırma, sonuç bölümüyle bitirilmiştir.

2. KAVRAMSAL ÇERÇEVE

Araştırmanın bu bölümünde, girişimcilik eğitimi ve girişimcilik eğilimi konuları kavramsal çerçeve kapsamında sunulmuştur.

2.1. Girişimcilik Eğitimi

Küresel düzeyde ticari engellerin azalması, teknoloji, telekomünikasyon, kolay ulaşım gibi faktörlerin daha fazla fırsat imkânı sunması, girişimciliğe yeni bir boyut kazandırmıştır (Tarhan, 2019: 668). Küresel dünya ekonomisinde, özellikle gelişmekte olan ülkeler yönünden girişimcilik, sosyal ve ekonomik gelişimin başlıca dinamiklerinden birine



dönüşmüş durumdadır (Özdemir vd., 2018: 431). Bilhassa bugünün dünyasında iktisadi hayatta karşılaşılan krizler, yöneticilik problemleri ve işletme sorunları gibi faktörlerin başarılı girişimcilerin ön plana çıkmasını hızlandıran etkenler olduğunu söylemek gerekir (Akyol vd., 2019: 1989). Nitekim bir ülkenin gelişmesi, kalkınması, dünyanın değişim gösteren koşullarına hızla adapte olabilmesi de yetenekli girişimciler yetiştirebilmesine bağlıdır (Özdemir vd., 2018: 431). Dolayısıyla her alanda hızla gelişen dünyaya adapte olabilen, kendine güven duyan, yaşamın birçok alanında başarılı olan, karşılaştığı problemleri etkinlikle çözen, çalışkan, karşısına gelen fırsatları değerlendirebilen nitelikli insanların yetiştirilebilmesi noktasında girişimcilik becerisine ilişkin çalışmaların gerçekleştirilmesi, girişimcilik eğitimlerinin yaygınlaştırılması, girişimciliğin geliştirilmesi bakımından önemli bir konuma sahiptir (Marangoz, 2013). İnsanın kişisel özelliklerinin yanında aldığı girişimcilik eğitiminin de faydası düşünüldüğünde girişimciliğe dair eğitim sunan kurum ve kuruluşların insanın girişimci duygularının harekete geçmesinde rol oynadığını belirtmek gerekir (Akyol vd., 2019: 1989).

Girişimcilik eğitimi, bir toplumda girişimci becerilerin ve tutumların oluşabilmesi ve toplumun hem ekonomik hem sosyal anlamda ilerleyebilmesi için gerçekleştirilmesi gereken önemli bir iştir Yılmaz (2014: 304), şeklinde nitelendirilir. Başka bir tanımda girişimcilik eğitimi, özellikle bireylerin ekonomik kalkınmaya ve sürdürülebilir bir çevreye katkıda bulunmaları için sorumluluk bilinci ve girişimci düşünce edinmelerini sağlayan bir eğitim sürecidir (Raposo ve Do Paço, 2011: 454). Girişimcilik eğitimi gerek çevresel gerek bireysel faktörlerin bir bileşimi şeklindedir. İnsanların kendi işlerinin sahibi olma arzularını ve bu yöndeki kararlılıkları ortaya koymaktadır (Büyükyılmaz vd., 2015: 110). Bununla birlikte girişimcilik eğitimlerinin birçoğu bilgi aktarımına ve öğrenme yöntemlerine yer vermektedir (Hidroğlu, 2020: 3212). Girişimcilik eğitiminin kısmi bir tekdüzeliğin yanında önemli derecede amaçlar konusunda çeşitlilik, pedagojik formasyon, felsefi bakış, içerik ve çıktıları kapsadığını söylemek gerekir (Çetinkaya Bozkurt, 2011). Girişimcilik eğitimi aynı zamanda girişimcilerin başarı göstermeleri noktasında, gerekli bilgilerin onlara sunulmasını da kapsamaktadır (Seçgin, 2020: 819-820).

Geçtiğimiz son yıllarda gerek Türkiye gerekse başka ülkelerde girişimcilerin yetiştirilmesine ilişkin uygulamaların gittikçe arttığını belirtmek gerekir. Girişimcilik eğitimleri üniversitelerin yanında, lise seviyesinde eğitim sunan kurumlara kadar indirgenmiş durumdadır (Akyol vd., 2019). Girişimcilere bilhassa devlet tarafından manevi, maddi, kurumsal birtakım destek mekanizmaları her düzeyde sağlanmaktadır. Genç yaşlarda insanları girişimciliğe yönlendirmek ve toplum kültürünün bir parçası haline getirmek için girişimcilik eğitimleri yaygınlaştırılmakta ve girişimcilik dersleri eğitim programlarına eklenmektedir (Döm, 2012: 33). Girişimcilik eğitimi öğrencilerin girişimci olma ve olmama kararlarına yön vermekte ve onların girişimciliği kariyer fırsatı şeklinde görmelerini sağlamaktadır. Ayrıca eğitim kurumlarında ya da okullarda öğrencilere verilen girişimcilik eğitimi sayesinde “yenilikçilik, risk alma eğilimi, başarı ihtiyacı, kendine güven, kontrol odağı, belirsizliğe karşı tolerans” gibi kişilik özelliklerinin de kazandırılması söz konusudur. İşte bu yönde bir eğitim, öğrencilerde mevcut olan girişimcilik potansiyelinin ortaya çıkmasına katkıda bulunur (Korkmaz, 2012). Böyle bir durumda girişimcilik eğitiminin fazlasıyla gerekli olduğu gösterir (Güney, 2015).

2.2. Girişimcilik Eğilimi



Kökene eskiye dayanan girişimcilik, sanayi toplumundan bilgi toplumuna geçişle birlikte daha önemli hale gelmiştir (Boz vd., 2020: 11). Bununla beraber son yıllarda küresel ölçekte görülen krizler ve ekonomik belirsizlikler girişimcilik konusunu giderek önemli kılmıştır (Sönmez ve Toksoy, 2014: 42). Küreselleşmenin de ekonomik yapı ile işleyiş üzerindeki etkileri düşünüldüğünde, ülkelerin gelişen ve değişen dünyaya adapte olabilmeleri ve gelişmiş ülke kategorisinde bulunabilmeleri girişimcilik eğiliminin açtığı fırsatlar sayesinde mümkünleşebilir. Bu noktada disiplinlerarası bir konu haline gelen girişimcilik, bugünün dünyasında girişimcilik eğilimi konusunu da önemli yapmıştır (Boz vd., 2020: 11). Günümüzde iş kurmak ve bu işin devamlılığını sağlamak aslında hiç kolay değildir (Bozkurt ve Erdurur, 2013: 59). Birey bir iş fikri üzerinde düşündüğü taktirde, girişimle ilgili özel bilgilere ve becerilere ihtiyaç duyacaktır. Bireyin bununla ilgili beceri ve bilgilere sahip olup olmadığına yönelik öz-değerlendirmesi de girişimcilik eğilimi açısından önemlidir (Uygun ve Güner, 2016: 42). Nitekim girişimcilik eğilimi, bireyin girişimci olmayla ilgili inancını belirtmektedir. Ayrıca bireyin ileriye dönük vizyonu ve fırsatları tanımlayıp değerlendirebileceğine ilişkin inancı, girişimcilik eğiliminde önemli role sahiptir (Akkuş vd., 2018: 172).

Girişimcilik eğilimi, girişimcilik yapabilme becerisiyle ilgili bir kavram niteliğindedir (Güreşçi, 2014). Tanımını yapmak gerekirse; girişimcilik eğilimi, kişinin herhangi bir girişimde bulunmadan önce içinde bulunduğu davranışsal, eylemsel ve düşünsel eğilimleri ifade etmektedir (Durukan, 2005). Yine girişimcilik eğilimi, bireyin girişimcilik yapmaya yönelmesi ve bunun için kendine güvenmesidir (Güreşçi, 2014). Girişimcilik tanımlarındaki ortak noktayı girişimcinin sergileyebileceği davranış biçimleri olarak belirtmek gerekir. Söz konusu davranış biçimleri ise inisiyatif alma, başarısızlığı kabul etme, sosyal ve ekonomik alanlarda düzenleme yapma olarak kabul edilir (Hisrich ve Peters, 2002: 10). Bununla birlikte ilgili davranış kalıpları girişimcilik eğiliminin yönünü de tayin etmektedir (Lumpkin ve Dess, 2001: 429-430). Kişinin girişimcilik eğilimine bakarak ileride onun, girişimci olup olmayacağına yönelik ipucuna ulaşabiliriz. Daha açık olarak söylemek gerekirse; girişimci davranışı anlamak için girişimci eğilimini anlamak gereklidir (Uygun, 2015). Diğer yandan girişimcilik eğiliminde önplana çıkan birçok faktör bulunmakla beraber bazılarını; iş deneyimi, ekonomik kaynaklar, yaşanılan yer, kültür, eğitim, kişilik, rol modelleri, aile desteği ve inanç olarak ifade etmek mümkündür (Bozkurt ve Erdurur, 2013: 59).

Girişimcilik eğilimleri ve girişimcilik, yaşanılan çevrenin beklentilerine ve ihtiyaçlarına göre biçimlenebilir (Marangoz vd., 2016: 27). Sürdürülebilir ekonomik büyüme ile kalkınma amaçlarını gerçekleştirme noktasında ülkeler, bilhassa gençlerin girişimcilik potansiyelleri ile eğilimlerini artırmayı amaçlamaktadır (Zorkun ve Dilek, 2020: 68). Her ne kadar girişimcilik eğilimi, doğuştan gelen davranış şeklinde görülse de bunun ortaya çıkarılması ve geliştirilmesi gereklidir (Yavuz ve Yavuz, 2017: 90). Ayrıca girişimci sayısının artması için kişilerin girişimcilik eğilimlerinin artırılması ve onların girişimciliğe yönlendirilmesi de gereklidir (Salik ve Kaygın, 2016: 146). Bilhassa üniversiteler, öğrencilerin girişimcilik eğilimlerinin artırılması, girişimci kişilerin nicelik ve nitelik açısından güçlendirilmesinde önemli katkılarda bulunurlar (İpçioğlu ve Taşer, 2009: 14).



3. GİRİŞİMCİLİK EĞİTİMİ İLE GİRİŞİMCİLİK EĞİLİMİ İLİŞKİSİ VE İLGİLİ HİPOTEZLER

Girişimcilik eğitiminin girişimciliğe dair farkındalığı artıran ve yeni girişimlerin ortaya çıkmasına yol açan önemli bir faktör olduğunu söylemek gerekir (Durrant, 2014: 4). Bu bakımdan girişimcilik eğitimlerinin gerek nicelik gerek nitelik yönünden artmasında, yükseköğretim kurumlarına önemli görevler düşmektedir (Bulut ve Aslan, 2014: 4). Nitekim alanyazında girişimcilik eğitimi ile girişimcilik eğilimi arasındaki ilişkinin planlı/planlanmamış davranış kuramıyla açıklandığı görülmüştür (Ajzen, 1985). Alanyazında girişimcilik eğitiminin girişimcilik eğilimi üzerine etkisini ele alan birtakım araştırmalarla karşılaşılacaktır. Bununla ilgili olarak bazı araştırmacıların Volkman (2004), Souratis vd. (2007), Uluköy vd. (2013), Bayram (2014), Nasr ve Boujelbence (2014), Pazarcık ve Aydın (2015), Tanrıverdi vd. (2016), Özdemir vd. (2018), Özcan vd. (2018) ve Kılıç (2020) çalışmaları mevcuttur. Konuyla ilgili olarak birtakım araştırmaların sonuçlarına yer vermek gerekirse; Bal vd. (2016), girişimcilik eğitimi uygulamalarının öğrencilerin girişimcilik eğilimlerine pozitif yönde etkisi olduğunu tespit etmişlerdir. Özdemir vd. (2018), girişimcilik eğitiminin girişimcilikte etkili kişilik özelliklerini ortaya çıkararak, girişimcilik eğilimini pozitif yönde etkilediği bulgusuna ulaşmışlardır. Uluköy vd. (2013) ve Pazarcık ve Aydın (2015), girişimcilik eğitiminin girişimcilik eğilimini pozitif yönde etkilediğini saptamışlardır. Ayrıca bazı araştırmacılar Bayram (2014: 44-46), girişimcilik eğitime yönelik tutumun heveslilik üzerine etkisini istatistiksel yönden anlamlı olarak belirlemiştir. Fakat girişimcilik eğitime yönelik tutumunun yenilikçilik, kararlılık ve işgören olmama üzerine etkisini istatistiksel yönden anlamlı olarak bulamamıştır. Kılıç (2020: 126-129), girişimcilik eğitime yönelik tutumun girişimciliğe yönelik hevesliliği, kararlılığı, yenilikçiliği ve işgören olmamayı pozitif yönde etkilediğini tespit etmiştir.

Yukarıdaki bilgilerden yola çıkarak alan araştırmasında, girişimcilik eğitiminin girişimcilik eğilimi (heveslilik, yenilikçilik, kararlılık ve işgören olmama) ve akademik performansı etkileyeceği varsayımında bulunulmuştur. Bu doğrultuda araştırmanın ilgili hipotezleri aşağıda gibi kurulmuştur.

- H₁**. Girişimcilik eğitimi girişimcilik eğilimi alt boyutlarından hevesliliği pozitif yönde etkiler.
- H₂**. Girişimcilik eğitimi girişimcilik eğilimi alt boyutlarından yenilikçiliği pozitif yönde etkiler.
- H₃**. Girişimcilik eğitimi girişimcilik eğilimi alt boyutlarından kararlılığı pozitif yönde etkiler.
- H₄**. Girişimcilik eğitimi girişimcilik eğilimi alt boyutlarından işgören olmamayı pozitif yönde etkiler.
- H₅**. Girişimcilik eğitimi akademik performansı pozitif yönde etkiler.

4. METODOLOJİ

Bu bölümde araştırmanın amacı ve kapsamı, sınırlılıkları, yöntemi, evreni ve örnekleme, hipotezleri ve modeli, analizlerine yer verilmiştir.



4.1. Araştırmanın Amacı ve Kapsamı

Literatürde girişimcilik eğitimi ve girişimcilik eğilimi konularıyla ilgili birtakım teorik ve ampirik araştırmaların yapıldığı görülmüştür. Alan araştırmasında da girişimcilik eğitimi ve girişimcilik eğilimi konuları birlikte ele alınmıştır. Araştırmanın amacı, girişimcilik eğitiminin girişimcilik eğilimi (heveslilik, yenilikçilik, kararlılık ve işgören olmama) ve akademik performans üzerine etkisini incelemektir. Araştırmanın kapsamını da Kahramanmaraş Sütçü İmam Üniversitesi işletme bölümü lisans öğrencileri oluşturmuştur.

4.2. Araştırmanın Sınırlılıkları

Alanyazındaki her araştırmanın olduğu üzere bu araştırmanında bazı sınırlılıkları mevcuttur. Araştırmanın sınırlılıklarına ilişkin açıklama yapmanın faydalı olacağı düşünülmektedir. Bu sınırlılıkları ise; araştırmanın sadece işletme bölümü lisans öğrencilerine uygulanması, bazı öğrencilerin anket formunu eksik ve hatalı doldurması, bazı öğrencilerin araştırmaya katılmaması ve araştırmanın belirli bir süre içinde başlayıp-bitmesi olarak belirtmek gerekir.

4.3. Araştırmanın Yöntemi, Evreni ve Örneklemi

Bu çalışmada, nicel araştırma yönteminden faydalanılmıştır. Nicel araştırmanın, değişkenler arasındaki ilişkileri ele alarak kuramları test etmeyi sağladığını söylemek gerekir (Creswell, 2013). Araştırmada veri toplama tekniği olarak ise anketten yararlanılmıştır. Bu noktada hazırlanan anket formu üç bölümden meydana gelmektedir. Anket formunun birinci bölümünde, öğrencilerin sosyo-demografik özelliklerini ölçmeye yönelik 5 soru bulunmaktadır. Anket formunun ikinci bölümdeki girişimcilik eğitimi ve üçüncü bölümündeki girişimcilik eğilimi ifadelerini ölçmede 5'li Likert Ölçeği'nden faydalanılmıştır. Araştırmada, Bayram (2014)'ün çalışmasında kullandığı ve (Balaban ve Özdemir, 2008; Girginer ve Uçkun, 2004)'ün daha önce çalışmalarında kullandığı ölçekten yararlanılmıştır. Araştırmanın evreni ve örneklemeyle ilgili açıklama yapılırsa da; evren, tespit edilen amaçlar doğrultusunda belirlenen birimler grubunun tümünü ifade etmektedir (Nakip, 2006: 196). Araştırmanın evrenini 784 lisans öğrencisi oluşturmuştur. Örneklem ise, evreni en iyi temsil eden ve belli bir yonteme göre evrenden seçilen alt grup olarak belirtilir (Nakip, 2006: 196). Araştırmanın örneklemini 380 lisans öğrencisi meydana getirmiştir. Nitekim Sekaran (1992), farklı evren büyüklükleri için kabul edilebilir en az örneklem sayısını belirlemek amacıyla (0,95) güvenirlilik ve (0,05) örneklem hatası ile temsil edilebilecek örneklem büyüklüklerini hesaplamıştır. Bu hesaplama sonucunda belirlenen değerler Tablo 1.'de gösterilmiştir.

Tablo 1. Farklı Evrenler İçin Kabul Edilebilir Asgari Örneklem Büyüklükleri Sekaran (1992)

Evren Büyüklüğü	100	500	750	1000	2 bin	5 bin	10 bin	20 bin	50 bin	100 bin	1milyon
Örneklem Sayısı	79	217	254	278	322	357	370	377	381	383	384

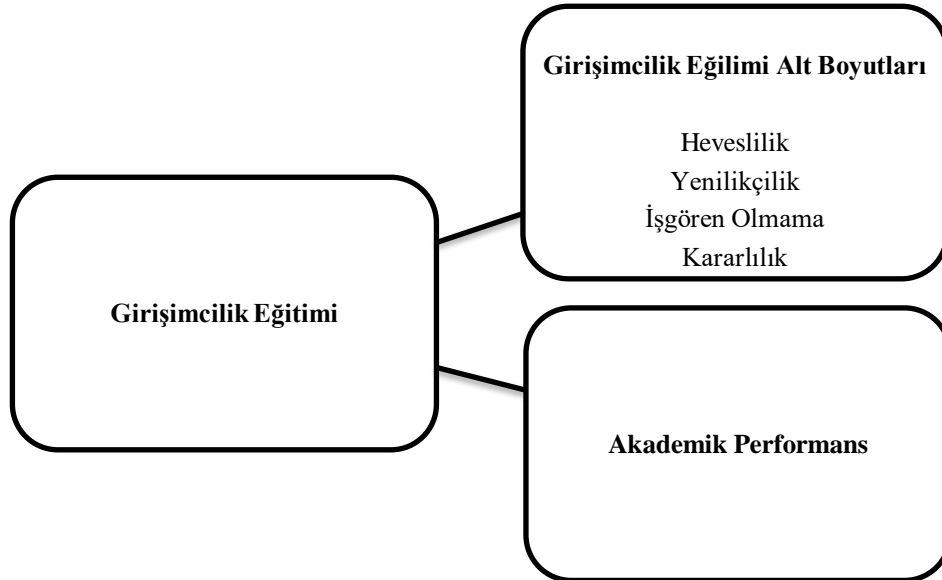


4.4. Araştırmanın Hipotezleri ve Modeli

Bu araştırmada, girişimcilik eğitiminin girişimcilik eğilimi (heveslilik, yenilikçilik, kararlılık ve işgören olmama) ve akademik performans üzerine etkisi Şekil 1.'de gösterilmiştir. Araştırmada ilgili değişkenler arasındaki ilişkileri test etmek için kurulan hipotezlere aşağıda yer verilmiştir.

- H₁**. Girişimcilik eğitimi girişimcilik eğilimi alt boyutlarından hevesliliği pozitif yönde etkiler.
H₂. Girişimcilik eğitimi girişimcilik eğilimi alt boyutlarından yenilikçiliği pozitif yönde etkiler.
H₃. Girişimcilik eğitimi girişimcilik eğilimi alt boyutlarından kararlılığı pozitif yönde etkiler.
H₄. Girişimcilik eğitimi girişimcilik eğilimi alt boyutlarından işgören olmamayı pozitif yönde etkiler.
H₅. Girişimcilik eğitimi akademik performansı pozitif yönde etkiler.

Şekil 1. Araştırma Modeli: Girişimcilik Eğitimi, Girişimcilik Eğilimi (Heveslilik, Yenilikçilik, Kararlılık ve İşgören Olmama) ve Akademik Performans İlişkisi



4.5. Araştırmanın Analizleri

Alan araştırmasının verileri analiz etmek için SPSS 25.0 “Statistical Package for the Social Sciences” yazılım programı kullanılmıştır. Bu doğrultuda araştırmada faktör analizi, güvenilirlik analizi, frekans analizi, korelasyon analizi ve regresyon analizi yapılmıştır.



5. ARAŞTIRMANIN BULGULARI

Bu bölümde, alan araştırmasının sosyo-demografik ve temel bulgularına sırasıyla yer verilmiştir.

5.1. Frekans Analizi ve Sonuçları

Bu araştırmada, öğrencilerin sosyo-demografik özellikleri ölçmek amacıyla frekans analizi yapılmıştır. Frekans analizinden elde edilen sonuçlar Tablo 2.'de gösterilmiştir.

Tablo 2. Frekans Analizi Sonuçları

Sosyo-Demografik Özellikler	Kategoriler	N	%
Cinsiyetiniz	Bay	184	48,4
	Bayan	196	51,6
Medeni Durumunuz	Evli	20	76,0
	Bekâr	360	24,0
Yaş Aralığınız	18-20	94	24,7
	21-23	227	59,7
	24 ve üzeri	59	15,5
Sınıfınız	1. Sınıf	44	11,6
	2. Sınıf	86	22,6
	3. Sınıf	79	20,8
	4. Sınıf	171	45,0
Öğrenim Türünüz	Örgün Öğrenim	246	64,7
	İkinci Öğrenim	134	35,3

Tablo 2.'deki Frekans Analizi Sonuçlarına Göre;

Araştırmada, öğrencilerin cinsiyete göre dağılımları incelendiğinde 184 (%48,4)'ünü bayların oluşturduğu tespit edilmiştir. Araştırma örneklemindeki bayanların sayısı 196 (%51,6)'dır. Bu durum öğrencilerin çoğunluğunun bayanlardan meydana geldiğini göstermektedir.

Araştırmada, öğrencilerin medeni duruma göre dağılımları incelendiğinde 20 (%76,0)'sının evli ve 360 (%24,0)'ünün bekâr olduğu saptanmıştır. Bu sonuç, öğrencilerin büyük çoğunluğunu bekârların oluşturduğunu ortaya koymaktadır.

Araştırmada, öğrencilerin yaş aralığına göre dağılımları incelendiğinde 94 (%24,7)'sini 18-20 yaş aralığında, 227 (%59,7)'sini 21-23 yaş aralığında ve 59 (%15,5)'ini 24 ve üzeri yaş aralığındakilerin oluşturduğu belirlenmiştir.

Araştırmada, öğrencilerin sınıfa göre dağılımları incelendiğinde 171 (%45,0)'inin 4. sınıfta öğrenim gördüğü saptanmıştır. Bu sonuç 4. sınıfta öğrenim gören öğrencilerin en kalabalık grubu meydana getirdiğini göstermektedir.

Araştırmada, öğrencilerin öğrenim türüne göre dağılımları incelendiğinde 134 (%35,3)'ünü ikinci öğrenimdekilerin oluşturduğu tespit edilmiştir. Elde edilen sonuç araştırmaya ikinci öğrenimdekilerin daha az katıldığını ortaya koymaktadır.



5.2. Faktör Analizi ve Sonuçları

Birbiriyle ilişkili birçok değişkeni oldukça az sayıda, anlamlı, birbirinden bağımsız faktörlere dönüştüren ve çoğunlukla faydalanılan çok değişkenli bir istatistik uygulaması “faktör analizi” olarak nitelendirilir Kleinbaum vd. (1988: 601). Bu çalışmada kullanılan ölçeklere ilişkin faktör analizi sonuçları Tablo 3.’te gösterilmiştir.

Tablo 3. Faktör Analizi Sonuçları

Faktör Adı	İfade	Faktör Yüğü	Cronbach's Alpha (α)	Açıklanan Toplam Varyans	KMO	Barlett	P
F.1. Heveslilik	H1	,789	,825	32,270	0,828	1162,529	,000
	H2	,872					
	H3	,827					
	H4	,635					
F.2. Kararlılık	K9	,560	,710	25,124	0,828	1162,529	,000
	K10	,731					
	K11	,754					
	K12	,747					

Tablo 3.’teki Faktör Analizi Sonuçlarına Göre;

Bu çalışmanın analizinde, varimax rotasyonlu temel bileşenler yönteminden yararlanılmıştır. Çalışmada, Kaiser-Meyer-Olkin (KMO) değeri (0,828) olarak tespit edilmiştir. Barlett Küresellik Testi= $p<0,000$ (Chisquare=1162,529;df=36) olarak bulunmuştur. Bu sonuçlar girişimcilik eğilimi ölçeğinin heveslilik ve kararlılık alt boyutlarının faktör analizi açısından uygun olduğunu göstermektedir. Fakat girişimcilik eğilimi ölçeğinin yenilikçilik ve işgören olmama alt boyutlarının faktör yükleri binişik olduğu için analiz kapsamından çıkarılmıştır.

5.3. Güvenirlilik Analizi ve Sonuçları

Bir ankette veya testte bulunan ifadelerin birbirleriyle tutarlılık gösterip göstermediğini, faydalanılan ölçeğin konuyu ne kadar yansıttığını ortaya koyma “güvenirlilik” olarak belirtilir (Kalaycı, 2010: 403). Bu çalışmada kullanılan ölçeklere ilişkin güvenirlilik analizi sonuçları Tablo 4.’te gösterilmiştir.

Tablo 4. Güvenirlilik Analizi Sonuçları

Değişkenler	Cronbach's Alpha (α) Katsayısı	İfade Sayısı	Çıkarılan İfade Sayısı
Girişimcilik Eğitimi	,771	10	-
Heveslilik	,825	5	-
Kararlılık	,710	4	-

Tablo 4.’teki Güvenirlilik Analizi Sonuçlarına Göre;



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Cronbach's Alpha (α) katsayılarından; girişimcilik eğitimi (.771), heveslilik (.825) ve kararlılık (.710) olarak bulunmuştur. Bir ölçeğin güvenilirlik düzeyinin 0,70 ve üzerinde olması, ölçeğin güvenilirliğinin uygun düzeyde olduğunu gösterir (Hair vd., 2006). Bu sonuçlar araştırmada kullanılan ölçeklerin güvenilir olduğunu ortaya koymaktadır.

6. ARAŞTIRMANIN TEMEL BULGULARI

Araştırmanın bu bölümünde, korelasyon analizi ve regresyon analizine sırasıyla yer verilmiştir.

6.1. Korelasyon Analizi ve Sonuçları

Korelasyon analizi, “iki değişken arasındaki doğrusal ilişkiyi veya bir değişkenin iki veya daha fazla değişkenle olan ilişkisini test etmek, bulunuyorsa bu ilişkinin derecesini ölçmek için kullanılan istatistiksel bir yöntemdir” Sungur (2010: 115), olarak belirtilir. Bu araştırmada, girişimcilik eğitimi ile girişimcilik eğilimi (heveslilik ve kararlılık) arasındaki ilişki korelasyon analiziyle incelenmiştir. Araştırmanın korelasyon analizi sonuçları Tablo 5.'te gösterilmiştir.

Tablo 5. Korelasyon Analizi Sonuçları

Değişkenler	Ortalama	Standart Sapma	Heveslilik	Kararlılık	Girişimcilik Eğitimi
Heveslilik	3,4053	,83699	1		
			265,509		
			,701		
			380		
Kararlılık	3,2974	,81505	,487**	1	
			,000		
			125,805	251,772	
			,332	,664	
Girişimcilik Eğitimi	3,4800	,60686	380	380	
			,378**	,426**	1
			,000	,000	
			31,316	40,185	69,604
			,166	,213	,368
			190	190	190

** $p < 0,01$. Korelasyon 0,01 düzeyi için anlamlıdır (2 tailed).

Tablo 5.'teki Korelasyon Analizi Sonuçlarına Göre;

Girişimcilik eğitiminin girişimcilik eğilimi alt boyutlarından heveslilik ($r = ,378; p < 0,01$) ile pozitif anlamlı bir ilişkiye sahip olduğu saptanmıştır.

Girişimcilik eğitiminin girişimcilik eğilimi alt boyutlarından kararlılık ($r = ,426; p < 0,01$) ile pozitif anlamlı bir ilişkiye sahip olduğu belirlenmiştir.



6.2. Regresyon Analizi ve Sonuçları

Bir veya daha çok sayıdaki bağımsız değişkenin, bağımlı değişken üzerinde oluşturduğu etkiyi inceleme “regresyon analizi” Saruhan ve Özdemirci (2005: 144), olarak nitelendirilir. Bu çalışmada, girişimcilik eğitiminin girişimcilik eğilimi (heveslilik ve kararlılık) ve akademik performans üzerine etkisi regresyon analiziyle test edilmiştir. Araştırmanın regresyon analizi sonuçları aşağıdaki tablolarda gösterilmiştir.

Araştırmada **H₁**. (Girişimcilik eğitimi girişimcilik eğilimi alt boyutlarından hevesliliği pozitif yönde etkiler), test etmek için regresyon analizi yapılmış ve sonucu Tablo 6.’da gösterilmiştir.

Tablo 6. Girişimcilik Eğitiminin Girişimcilik Eğilimi Alt Boyutlarından Hevesliliği Etkilemesine İlişkin Regresyon Analizi Sonucu

Bağımlı Değişken: Heveslilik

Model	Standartlaşmamış Katsayılar		Standartlaşmış Katsayılar	T	P	F	R ²	ΔR ²
	B	Standart Hata	Beta					
Sabit	1,991	,284		7,006	,000	31,267	,143	,138
Girişimcilik Eğitimi	,450	,080	,378	5,592	,000			

Tablo 6.’daki Regresyon Analizi Sonucuna Göre;

Girişimcilik eğitiminin girişimcilik eğilimi alt boyutlarından hevesliliği pozitif yönde etkilediği görülmüştür ($\beta=,378$; $p<,000$). Girişimcilik eğilimi alt boyutlarından hevesliliğe ait varyansın (%13,8)’i girişimcilik eğitimi tarafından açıklanmıştır. Elde edilen sonuca göre (H₁.) Kabul Edilmiştir.

Araştırmada **H₃**. (Girişimcilik eğitimi girişimcilik eğilimi alt boyutlarından kararlılığı pozitif yönde etkiler), test etmek için regresyon analizi yapılmış ve sonucu Tablo 7.’de gösterilmiştir.

Tablo 7. Girişimcilik Eğitiminin Girişimcilik Eğilimi Alt Boyutlarından Kararlılığı Etkilemesine İlişkin Regresyon Analizi Sonucu

Bağımlı Değişken: Kararlılık

Model	Standartlaşmamış Katsayılar		Standartlaşmış Katsayılar	T	P	F	R ²	ΔR ²
	B	Standart Hata	Beta					
Sabit	1,401	,316		4,436	,000	41,677	,181	,177
Girişimcilik Eğitimi	,577	,089	,426	6,456	,000			

Tablo 7.’deki Regresyon Analizi Sonucuna Göre;



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Girişimcilik eğitiminin girişimcilik eğiliminin alt boyutlarından kararlılığı pozitif yönde etkilediği görülmüştür ($\beta=,426;p<,000$). Girişimcilik eğilimi alt boyutlarından kararlılığa ait varyansın (%18,1)'i girişimcilik eğitimi tarafından açıklanmıştır. Elde edilen sonuca göre (H_3 .) Kabul Edilmiştir.

Araştırmada H_5 . (Girişimcilik eğitimi akademik performansını pozitif yönde etkiler), test etmek için regresyon analizi yapılmış ve sonucu Tablo 8.'de gösterilmiştir.

Tablo 8. Girişimcilik Eğitiminin Akademik Performansı Etkilemesine İlişkin Regresyon Analizi Sonucu

Bağımlı Değişken: Akademik Performans

Model	Standartlaşmamış Katsayılar		Standartlaşmış Katsayılar	T	P	F	R ²	ΔR ²
	B	Standart Hata	Beta					
Sabit	2,320	,212		10,962	,000			
Girişimcilik Eğitimi	,000	,060	,000	-,002	,998			

Tablo 8.'deki Regresyon Analizi Sonucuna Göre;

Girişimcilik eğitiminin akademik performansı etkilemediği görülmüştür ($\beta=,000;p>,000$). Elde edilen sonuca göre (H_5 .) Reddedilmiştir.

7. SONUÇ

Literatür tarandığında girişimcilik eğitimi ve girişimcilik eğilimi konularıyla ilgili birtakım araştırmaların yapıldığı görülmüştür. Alan araştırmasında da girişimcilik eğitimi ve girişimcilik eğilimi konuları üzerinde önemle durulmuştur. Araştırmada, girişimcilik eğitiminin girişimcilik eğilimi üzerine etkisi incelenmiştir. Ayrıca araştırmada, girişimcilik eğitiminin akademik performans üzerine etkisi de ele alınmıştır. Bu çalışmada, nicel araştırma yönteminden yararlanılmıştır. Araştırmada veri toplama tekniği olarak anketten faydalanılmıştır. Araştırma verileri, Kahramanmaraş Sütçü İmam Üniversitesi işletme bölümü lisans öğrencilerinden anket formları aracılığıyla toplanmıştır. Böyle bir araştırmanın Kahramanmaraş Sütçü İmam Üniversitesi işletme bölümü lisans öğrencileri üzerine daha önce uygulanmadığı belirlenmiştir. Bu durumun araştırmayı değerli kılacağı ve literatüre katkı sağlayacağı düşünülmüştür.

Bu araştırmada, girişimcilik eğitimi ve girişimcilik eğilimi konuları kavramsal çerçeve kapsamında ayrıntılı olarak sunulmuştur. Devamında araştırmada, girişimcilik eğitimi ile girişimcilik eğilimi ilişkisi ve ilgili hipotezlere yer verilmiştir. Araştırmanın metodolojisinde; amaç ve kapsam, sınırlılıklar, yöntem, evren ve örneklem, hipotezler ve model, analizlere ilişkin bilgiler açıklanmıştır. Bu doğrultuda araştırmada frekans analizi, faktör analizi, güvenilirlik analizi, korelasyon analizi ve regresyon analizi yapılmıştır. Araştırmanın ana



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hipotezlerini test etmek için yapılan regresyon analizinin yorumlarına ise aşağıda ayrıntılı olarak yer verilmiştir.

Araştırmada, girişimcilik eğitiminin girişimcilik eğilimi alt boyutlarından hevesliliği pozitif yönde etkilediğini test etmek üzere kurulan ($H_{1.}$) regresyon analizi sonucunda Kabul Edilmiştir. Araştırmadan beklenen sonuç, girişimcilik eğitiminin girişimcilik eğilimi alt boyutu olan hevesliliği pozitif yönde etkileyeceği yönündeydi. Elde edilen sonucun araştırmada teyit edildiği görülmüştür. Literatürde bu araştırmanın sonucuyla paralellik gösteren başka araştırma sonuçlarına rastlamakta mümkündür. Kılıç (2020: 126-127)'nin araştırmasında, girişimcilik eğitime yönelik tutumun girişimcilik eğilimine yönelik hevesliliği pozitif yönde etkilediği tespit edilmiştir. Bayram (2014: 44), yaptığı araştırmada girişimcilik eğitime yönelik tutumun heveslilik üzerindeki etkisini istatistiksel yönden anlamlı olarak bulmuştur. Ayrıca Uluköy vd. (2013), girişimcilik eğitimi alanların girişimcilik eğilimlerinin arttığını belirtmişlerdir.

Araştırmada, girişimcilik eğitiminin girişimcilik eğilimi alt boyutlarından kararlılığı pozitif yönde etkilediğini test etmek üzere kurulan ($H_{3.}$) regresyon analizi sonucunda Kabul Edilmiştir. Araştırmadan beklenen sonuç, girişimcilik eğitiminin girişimcilik eğilimi alt boyutu olan kararlılığı pozitif yönde etkileyeceği yönündeydi. Elde edilen sonucun araştırmada teyit edildiği görülmüştür. Bu konuyla ilgili olarak literatür incelendiğinde araştırmanın sonucuyla benzerlik gösteren ve çelişen sonuçlarla karşılaşılmaktadır. Kılıç (2020: 128)'in araştırmasında, girişimcilik eğitime yönelik tutumun kararlılığı pozitif yönde etkilediği saptanmıştır. Ekici ve Turan (2017), girişimcilik eğitiminin girişimcilik eğilimini belirlemede anlamlı bir katkı sağladığını belirtmişlerdir. Bayram (2014: 45), ise araştırmasında girişimcilik eğitime yönelik tutumun kararlılık üzerine etkisini istatistiksel yönden anlamlı olarak bulamamıştır.

Araştırmada girişimcilik eğitiminin akademik performansı pozitif yönde etkilediğini test etmek üzere kurulan ($H_{5.}$) regresyon analizi sonucunda Reddedilmiştir. Araştırmadan beklenen sonuç, girişimcilik eğitiminin akademik performansı pozitif yönde etkileyeceği yönündeydi. Elde edilen sonucun araştırmada teyit edilemediği görülmüştür.

Bütün bunlardan hareketle konuyla ilgili gelecekte çalışma yapacak araştırmacılara; araştırmaların daha fazla öğrenci üzerinde uygulanması, farklı üniversitelerde gerçekleştirilmesi, devlet ve vakıf üniversitelerinde yapılarak sonuçların karşılaştırmalı olarak incelenmesi, nitel araştırma yönteminden faydalanılması ve araştırmada farklı değişkenlerin kullanılması önerilebilir.



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EĞİTİCİ OYUN UYGULAMALARININ ETKİLİLİĞİ

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Özet

Bu araştırmanın amacı ilköğretim kademesinde eğitici oyun uygulamalarının etkililiğini meta-tematik analiz çerçevesinde belirlemektir. Bu amaç doğrultusunda, veri tabanlarından (Google Scholar ve Yükseköğretim Kurulu) ilköğretim kademesinde eğitici oyun uygulamalarıyla ilgili 2010-2020 yılları arasında yürütülmüş nitel yönlü ham veriye sahip çalışmalara ulaşılması hedeflenmiştir. Bu noktada çalışmaların eğitici oyunların etkililiğini içermesi, belirlenen yıl aralığında, ilköğretim kademesinde, nitel türde yürütülmüş olması ve ham verileri kapsamaması şeklindeki dâhil edilme kriterleri dikkate alınarak 17 çalışmaya ulaşılmıştır. Doküman incelemesine dayalı olarak toplanan nitel veriler içerik analiziyle çözümlenerek tema ve kodlar şeklinde yeniden ifade edilmiştir. İlgili kodlar arasındaki uyum değerleri iki veri kodlayıcısı tarafından yapılarak kodlama güvenilirliği sağlanmıştır. Araştırma bulgularında, ilköğretim kademesinde eğitici oyun uygulamalarının kullanımı ile ilgili bilişsel, duyuşsal ve sosyal alanlara etkisi ile olumsuz yönlerine ait temalar oluşturulmuştur. Bilişsel boyutta eğitici oyun uygulamalarının öğrenmenin kalıcı olmasını sağladığı, problem çözme ve düşünme becerisi kazandırdığı, ders başarısını artırdığı, öğrencinin konuyu tekrar etmesini sağladığı ve konuları pekiştirmekte etkili olduğu anlaşılmıştır. Duyuşsal boyutta motivasyonu sağladığı, başarı inancını geliştirdiği, derse karşı tutumu değiştirmede etkili olduğu, olumlu sınıf atmosferi sağladığı ve öğrencinin özgüvenini geliştirmesine etki ettiği; sosyal boyutta ise öğrencilerin dayanışma ve işbirliği içinde çalışmasını sağladığı, birey olarak veya grup içinde sorumluluk alma duygusunu geliştirdiği, sosyalleşmeyi sağladığı şeklindeki ifadeler elde edilmiştir. Diğer yandan eğitsel oyun uygulamalarının kullanımının olumsuz yönlerine ilişkin gürültü, disiplin problemleri, sınıfların kalabalık olması nedeniyle kısıtlı zaman, altyapı sorunlarının olduğu belirtilmiştir. Meta-tematik analiz bağlamında ulaşılan sonuç; ilköğretim kademesinde eğitsel oyun uygulamalarının kullanımının öğrenme sürecine sağladığı katkıların dikkate alınması yönündedir. Eğitsel oyunların derslerde nitelikli bir şekilde kullanımının sağlanması, sınıf seviyeleri ve bireysel farklılıklar dikkate alınarak tüm sınırlılıkların kontrol altında tutulmaya çalışılması, bu tür uygulamaların etkililiğini arttırabilir. Bu uygulamalardan farklı kademelerde de daha etkin bir şekilde yararlanılması önerilmektedir.



Anahtar Kelimeler: Eğitsel oyun uygulamaları, etkililik, meta-tematik analiz.

THE EFFECTIVENESS OF EDUCATIONAL GAME APPLICATIONS

Abstract

The aim of this research is to determine the effectiveness of educational games in primary education within the framework of meta-thematic analysis. In the context of this purpose, it is aimed to reach studies with qualitative raw data conducted between the years of 2010-2020 on educational game applications in primary education from certain databases (Google Scholar and Higher Education Council). At this point, 17 studies were reached, taking into account the inclusion criteria such as the effectiveness of educational games, the fact that they were carried out in the specified year range, at the primary education level in a qualitative manner including raw data. Qualitative data collected based on document review were analyzed via content analysis and re-expressed as themes and codes. Coherence values between the codes were calculated by two data encoders and coding reliability was ensured. In the research results, themes related to the negative aspects and effects of the use of educational game applications in the primary education level on cognitive, affective and social areas were created. In the cognitive dimension, it has been understood that educational game applications provide permanent learning, gain problem solving and thinking skills, increase course success, enable students to repeat the subject and have great effects on reinforcing the subjects. In terms of affective dimension, educational games can provide motivation, develop the belief in success, be effective in changing the attitude towards the lesson, provide a positive classroom atmosphere and affect the development of the student's self-confidence. In the social dimension, statements were obtained that these applications enable students to work in solidarity and cooperation, develop the sense of taking responsibility individually or in a group, and provide socialization. On the other hand, it has been stated that the negative aspects of the use of educational game applications are noise, discipline problems, limited time due to crowded classes, and infrastructure problems. Thus, it has been concluded from the meta-thematic analysis results that the contribution of the use of educational game applications to the learning process in primary education is at a negligible level. Ensuring the effective use of educational games in lessons, trying to keep the limitations of educational games under control by considering the class levels and individual differences are thought to increase the effectiveness of such applications. It is recommended that these applications be used more effectively at different levels of education.

Keywords: Educational game applications, effectiveness, meta-thematic analysis.

1.GİRİŞ

Oyunun geçmişinin insanlık tarihi kadar eski olduğu ifade edilmektedir. Bu gün oynanan bazı oyunların eski çağlarda da oynandığı bilinmektedir. Eski uygarlıklara ev sahipliği yapmış olan birçok ülkede gerçekleştirilen kazılar ve araştırmalarda oyunculara ait kalıntılar, oyunlara ait duvar resimleri gibi çeşitli bulgulara rastlanmıştır (Akandere, 2013, s.4). Oyun, çok çeşitli özelliklere sahip ve hayatın her aşamasında yer alan sadece insana değil, aynı



zamanda hayvanlara da özgü olan bir kavramdır. Amaçlı veya amaçsız oyun eylemi, hayatın içinde yer almaktadır. Tüm bu özellikler oyunu evrensel kılmaktadır. Oyun, çocukların dünyayı keşfetmek için yaptıkları tüm eylemleri içinde barındırabilmekte ve dünyaya uyum sağlama sürecinde farkında olmadan kullanabilecekleri bir yol olmaktadır. Çocukların yaşlarına ve gelişimine göre oyun gelişimi de değişiklik göstermektedir. Çocuğun sağlıklı gelişimi için ona oyun ortamlarının sağlanması gerektiği önemle belirtilmektedir. Tanımlara bakıldığında, oyun eğlenceli, dikkat gerektiren, eğitici ve öğretici olan ve tamamen isteğe bağlı olan bir eylemdir. Oyun hayatın içindedir (Çalışkandemir, 2016, s.14). Oyun kavramı, belli bir amacı olan veya olmayan, birçok becerinin öğrenilmesinde etken rol oynayan, kurallı veya kuralsız olarak da oynanabilen, gerçek öğrenme ortamını deneyimleyerek kalıcı öğrenme sağlayan ve motivasyonlarını artırarak, çocukların biriken fazla enerjilerini attıkları önemli bir kavramı ifade eder (Poyraz, 2003).

Oyun, çocuklar için yaratıcılığı destekleyen, kendiliğinden gelişen, öngörülemeyen ve kesinlikle eğlenceli olan bir aktivitedir. Özellikle yetişkinler açısından oyun anlamsız bir aktivite gibi görünse de çocukların öğrenmesi için çok önemli bir ortam sağlamaktadır. Oyunlar sayesinde, birey farkında olmadan ve en doğal şekilde öğrenmektedir. Bu nedenle, öğrenme hem kalıcı hem de eğlencelidir. Oyun oynamak keyifli, yaratıcı ve kolay aktivitelerdir. Oyun çocuğun öğrenmesinde çok önemli bir araçtır (Batdı, 2013, s.25). Oyun, çocuklarda çevresinde olup biteni anlama, dünya hakkında bilgi sahibi olabilme, eğlenerek öğrenebilme ve deneyimlemesine olanak sağlama, problem çözme becerisini geliştirme ve fiziksel, bilişsel, duyuşsal ve sosyal gelişimlere olumlu etkisi olan önemli bir faaliyettir (Sel, 1985). Öğrenmenin en doğal ve iyi yolu olduğu ifade edilebilir. Çünkü çocuklar oyunda bireyleri gözlemler, çalışır ve kendi kendine araştırma yapar. Dünyayı gerçek deneyim ve doğal çevre yoluyla keşfetme arzusu ve ihtiyacı içinde oldukları düşünülmektedir (Hurwitz, 2002, s. 101: Akt., Çalışkandemir, 2016, s.28). Bir çocuğun oyun oynamasının engellenmesi demek çocuğun sağlıklı bir gelişim göstermesini engellemek olarak ifade edilebilir. Savaşlar, yoksulluk, afetler, salgınlar, yetersiz koşullara sahip okullar gibi olumsuz şartlar çocuğun oyun oynamasını kısıtlayan veya engelleyen ortamların ortaya çıkmasına sebep olabilmektedir. Bu bağlamda çocuğun kişilik gelişiminin, beden ve ruh sağlığının olumsuz olarak etkilendiği belirtilmektedir (Çalışkandemir, 2016, s.28). Üstündağ (2017, s.11) her şeyin ötesinde oyun denilen olgunun her çocuk için vazgeçilmez bir hak olduğunu söyler. Çocuklar için oluşturulan çocuk hakları evrensel sözleşmesinde “*çocuklar; dinlenme, boş zaman değerlendirme, oyun oynama, kültürel ve sanatsal etkinliklere katılma hakkına sahiptir*” maddesi yer almaktadır.

Antik Yunan filozofu Platon “*çocuk oyunla büyümeli*”, İslam filozofu Gazali ise “*öğrencinin eski dinginliğini kazanması, çalışmalarından bıkmaması için belleğini tazelemek, enerjisini yenilemek açısından oyun gereklidir*” şeklinde görüşlerini belirtmişlerdir. Montessori, çocuğun başlıca işinin oyun olduğuna ve oyunun önemine dikkat çekmiştir (Kandere, 2013, s.9). Piaget, oyun ile çocuğun yeni beceriler öğrenmediğini, zaten sahip olduğu beceriler için oyunun uygulama alanı olduğunu böylece becerilerini pekiştirdiklerini savunmuştur (Uluğ, 2016, s.56). Vygotsky ise oyunun çocuğun bütünsel olarak gelişimi için önemli olduğunu, çocuğun özellikle sosyal ve duyuşsal becerileri geliştirdiğine dikkat çekmiştir (Uluğ, 2016, s.59). Artan ve sürekli değişen bilgiye erişebilme yolları, öğrenenlerin dikkat sürelerinin kısalması gibi değişkenlerin etkisi ile oyunla öğrenme daha fazla tercih edilmeye başladığı söylenebilir. Oyunlar öğrenciler üzerinde olumlu etki yaratmakta, motivasyonlarının artmasında etken rol oynamaktadır. Aynı zamanda bu oyunlar sınıf içerisine oynandığında öğrencilerde birçok gelişimi de olumlu etkilemektedir (Al-Issa, 2008, s.36). Öğretimde



kullanılacak oyunlarla öğrenciler aktif olarak etkinliğe katılacak ve dikkatini oyuna, öğrenmeye yoğunlaştırabileceklerdir. Özellikle ilköğretim öğrencilerinin düşünerek değil deneyimlerine dayanarak öğrenim gerçekleştirdikleri düşünülürse oyun önemli bir eğitim aracı olarak görülebilmektedir (Akandere, 2013, s.19). Eğitsel oyunlar geri kalan oyunlardan önemli bir farkla ayrılmaktadır. Eğitsel oyunların amacı konuyu öğretme özelliğinin var olmasıdır. Konuyu kalıcı bir şekilde pekiştirme, nitelikle öğrenmenin gerçekleşmesinde, var olan bilgi eksikliğinin giderilmesinde yardımcı olmaktadır (Aslan, 2014; Yeşilkaya, 2013). Eğitsel oyunlar kurallı oyun, yarışma oyunları şeklinde sınıflandırmalara eklenmiştir fakat Biter (2019, s.13) eğitsel oyunları oyun sınıflandırmasında bir alt başlık olarak değil ayrı bir başlık olarak ele alınmasının daha doğru olduğunu belirtmiştir. Akandere (2013, s.21) ise yaptığı oyun sınıflamasında, oyunları çocuk oyunları ve eğitsel oyunlar olarak ikiye ayırmıştır. Eğitsel oyunları da karakterine göre ve uygulanış özelliklerine göre sınıflandırmıştır.

Eğitsel oyunlar, eğitim-öğretim programlarında yer alan hedeflerin amaca ulaşabilmesi için kullanılan oyunları içerisinde barındırır. Eğitsel oyunlar, öğrencilerde motivasyonu sağlayarak etkileşim yaratır ve nitelikli öğrenme süreçlerinin amaca ulaşmasına yardımcı olur (MacKenzie, 2014). Öğretim programlarında yer alan amaçların derin bir şekilde öğretilmesi ve öğrenilen bilgilerin pekiştirilerek kolay bir şekilde gerçek ortamda tekrar edilmesine yardımcı olur (Demirel, 2010).

Dersleri etkili ve eğlenceli hale getirerek hem öğretmenlerin hem de öğrencilerin ders sürecinde eğlenmesine olanak tanımaktadır. Eğitici oyunlar, öğrencilerin yaşam deneyimlerinde bağımsız düşünme, problem çözüme farklı düşünme becerilerini geliştirme, yaratıcılık ve hayal gücünün gelişmesinde ve duygularını ifade etme konusunda köprü kuran önemli bir araçtır. Ayrıca oyunlar, sosyal gelişimi ve birlikte çalışma yeteneğini mümkün kılar ve çocukların etik değerleri keşfetmesine, özgüven, dil ve iletişim becerilerini geliştirmesine olanak sağlamaktadır. Bu nedenle, derslerin kazanımlarının öğretiminde eğitici oyunların kullanımı daha etkili sonuçlara ulaşılmasını sağlamaktadır. Eğitici oyunlar sayesinde öğrenciler etkili bir şekilde öğrenebilmekte, mutlu ve özgür birey olma hissini yaşayabilmektedir (Aytaç ve Köğce, 2020,s.4).

Eğitsel oyunlar, yapısındaki karmaşıklık ve oyunun sonucundaki belirsizlik gibi özellikleri nedeniyle farklı yaş grupları için her zaman caziptir ve sürekli oynanabilir. Eğitim sürecine sağladığı bir katkısı da öğretmenlere çocuğun iç dünyasına girme fırsatı sunar. Eğitici oyunlar, çocukların iç dünyasını görmek, duygularını tanımak ve onları daha iyi hale getirmek için önemli bir gözlem aracıdır (Varışoğlu, Şeref, Gedik, Yılmaz, 2013; s. 1061). Bilginin kalıcı hale gelmesi için sözel tekrarlar yerine eğitsel oyunların kullanımı öğrenciler için daha anlam ifade eden bir süreç olarak görülmektedir. Öğrencilerin becerilerini ortaya koymada, kalıcı öğrenmeyi sağlamada, yaratıcılıklarını geliştirmede daha etkili olduğu söylenebilir (Cady, 2005). Eğitsel oyunların hedefe ulaşabilmesi için öğretim programında yer alan kazanımlar ile ilişkilendirilmesi gerekmektedir. Bu durumda ilk yapılması gerekenin hızlı bir şekilde beyin fırtınası yapılarak planlanması gerekmektedir. Plan yapılmadan yapılacak çalışmaların başarı oluşturması olanaklı görülmemektedir. Bu özellikler bize eğitsel oyunlarda bazı özelliklerin zorunlu olduğunu göstermektedir. Bunlara bakılacak olursa; öncelikle hedef kitlenin yaşına ve cinsiyetine ne derece uygun olduğuna, amaçları elde ettirecek niteliğe sahip olma, sınıf koşullarında uygulanabilme derecesi, çocukların oyun oynarken bundan eğlenecek olması, zamandan tasarruf etme, açık ve sade olma, çocukların dersin amaçları zevk alarak deneyimlemesi, herhangi bir olumsuz durumun ortaya çıkmadan istedik davranışları kazandırma gibi özellikleri içermelidir (Tan, 2005,s.109).



Bir öğrenme ortamında eğitsel oyunları kullanmanın avantajları olmasının yanı sıra bazı sınırlamalar olduğu dikkate alınmalıdır. Eğitsel oyun hazırlamak, uygulamak, emek ve zaman gerektiren bir yöntemdir. Sınıfta istenen ilgiyi çekmemesi öğrencilerin motivasyonlarını düşürdüğü gibi çekingen öğrencilerin oyuna katılımını zorlaştırabilir. Yetersiz altyapıya sahip kalabalık sınıflarda uygulamak zor ve sınıf yönetiminde çeşitli sorunların ortaya çıkmasına sebep olabilmektedir (Sarioğlu, 2020, s.112). Yarışma ortamının oluşmasıyla oyunu kaybeden çocukların motivasyonları azalarak grup olgusundan uzaklaşabilirler. Bu durumların önüne geçmek için eğitsel oyunlarda kazanan veya kaybeden olmayacağını, sonucunu ne olursa olsun herkesin kazanacağı konusunda öğrenci bilgilendirilmelidir (Gülsoy, 2013: 66). Geleneksel şekilde işlenen bir konu için gereken zamandan daha fazla zaman almasının yanında her konuya uygun bir oyunun bulunmaması da eğitsel oyunların sınırlılığıdır (Türkmen, 2017,s.14).

1.2. Araştırmanın Amacı ve Önemi

Öğretim programları 2018 yılında güncellenmiş ve bu güncellenme Türkiye Yeterlilikler Çerçevesi (TYÇ) bağlamında belirlenen sekiz yetkinlik temelinde gerçekleşmiştir. Bu değişimle birlikte yeni programlarda bu sekiz yetkinliği bireye kazandırmaya yönelik öğretim yolları, kazanımlar ve öğretme süreçleri tasarlanmıştır. Bu yetkinlikler içinde “dijital yetkinlik, öğrenmeyi öğrenme, yabancı dillerde yetkinlik, inisiyatif alma ve girişimcilik, bilimsel yetkinlik” gibi bireyin hayatında ihtiyaç duyacağı yetkinlikler önemli hale gelmiştir (Milli Eğitim Bakanlığı [MEB], 2018). Eğitim amaçlı oyunlar, etkinlik odaklı bir yaklaşım olma eğilimindedir ve birçok öneme sahiptir. Özellikle öğretimdeki kazanımların hedefe ulaşabilmesi için oynanan oyunların başarı sağlaması, öğrencilerin eğlenerek öğrenmesine katkı göstermesi, derse ve etrafında olup bitene karşı güdülenmeyi artırması bakımından değerli bir kavram olduğunu bize göstermektedir (Uğurel ve Morali, 2008: 82). Öğrencinin öğretim programlarında yer alan yetkinlikleri pekiştireceği ve geliştireceği gibi eğlenerek öğrenmesinin sağlanacağı, motivasyonunun artacağı düşünülmektedir. Bu amaçla ulusal ve uluslararası alanlardaki ilköğretim kademesinde eğitsel oyunlar ile ilgili nitel çalışmaların öğrenci üzerindeki etkililiğinin araştırılması amaçlanmıştır. Bu amaçla, tümevarımsal analiz konseptiyle birlikte doküman incelemesine dayalı tarama aşamasında elde edilen çalışmaların yeterli ham veri içermesine dikkat edilerek taramalar yapılmıştır. Bu bağlamda, meta-tematik analiz kapsamında araştırmaya dâhil edilen nitel verilerin yeterli miktarda olması gerekmektedir. Öğrencinin aktif olduğu öğretim yöntemlerinden biri olarak kullanılan eğitsel oyunlarla ilgili çalışmalar, uygun kriterlere bağlı kalınarak ulaşılmıştır. Ulaşılan verilerin bütünsel bir değerlendirmeyi içermesi nedeniyle literatürde bu alanda eğitim kalitesini ve sürekliliğini artıracak bir kılavuz olacağı düşünülmektedir. Diğer yandan alanyazında oyunusal uygulamalarla ilgili ilköğretimde yürütülmüş meta-tematik analiz çalışmalarına pek ulaşılmadığı görülerek bu alana katkı sağlamak amacıyla mevcut araştırmanın yapılmasına karar verilmiştir. Bu amaç doğrultusunda eğitsel oyunların;

- Bilişsel boyuttaki etkililiği,
- Duyuşsal-sosyal boyutlardaki etkililiği ve
- Olumsuz yönlerinin belirlenmesi hedeflenmiştir.

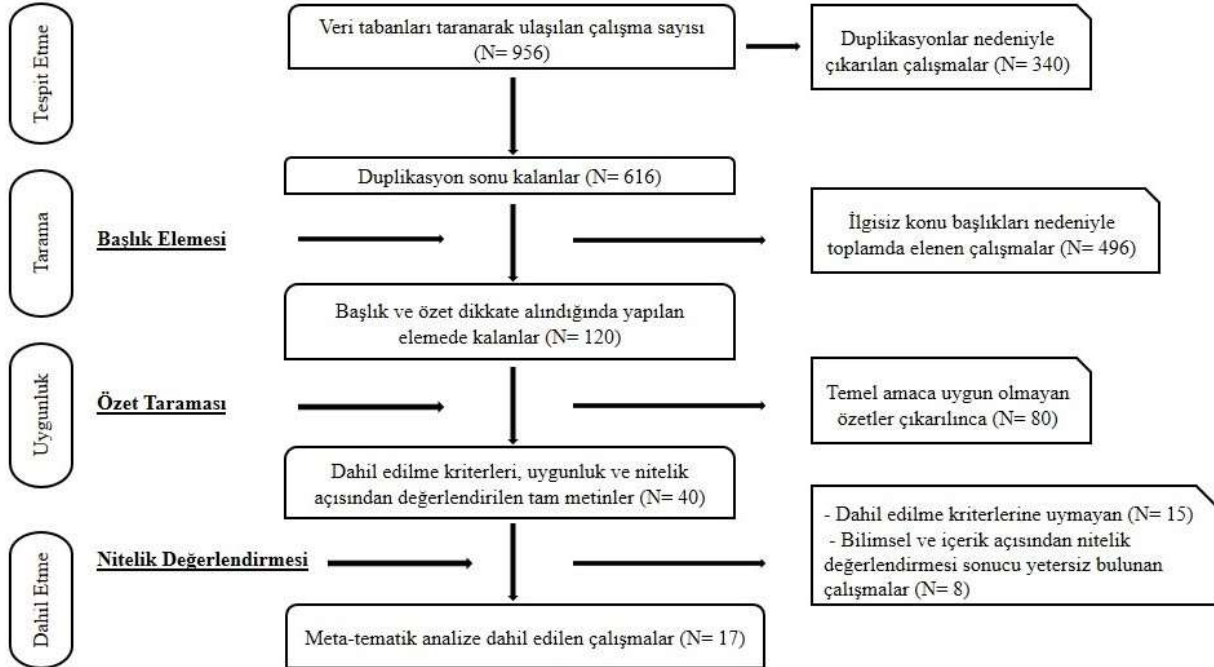
2.YÖNTEM

2.1.Araştırmanın Türü ve Deseni

Bu araştırmada, ilköğretim kademesinde eğitsel oyunların etkililiğinin belirlenmesi için katılımcı görüşü içeren çalışmalar incelenmiş ve bu çalışmaların meta-tematik analizine yer verilmiştir. Meta-tematik analiz, herhangi bir konuda yapılmış nitel çalışmalardaki sözel verilerin tekrardan incelenmesini, daha geniş ve genel nitelikli bulgulara ulaşılmasını içerir. Aynı zamanda, ilgili konuyla yapılmış olan analizlerin bir sonucu olarak elde edilen temaların ve kodların yeniden değerlendirilmesi, anlamlandırılması olarak ifade edilmektedir (Batdı, 2019). Bu çalışmada, meta-tematik analiz yoluyla eğitsel oyunların ilköğretim kademesindeki etkililiğini belirlemek amaçlanmıştır.

2.2. Analize Dâhil Edilen Çalışmalar

Araştırmanın amacı doğrultusunda, dahil edilme kriterleri bağlamında Google Scholar ve Yükseköğretim Kurumu (YÖK) veri tabanlarından ilköğretim kademesinde eğitsel oyun ile ilgili nitel araştırmalara ulaşılmıştır. Taramalar esnasında "İlköğretimde eğitsel oyun, oyun temelli öğrenme, oyun ve öğrenme," gibi anahtar kelimelerle aramalar yapılmıştır. Yapılan taramalarda, belirtilen veri tabanlarında ve 2010-2020 yıl aralığı dikkate alınarak araştırmalar belirlenmiş ve çalışmaya dâhil edilmiştir. Bu aşamada, analiz için belli dâhil edilme kriterleri göz önüne alınmıştır. Moher ve arkadaşlarının (2009) geliştirmiş oldukları akış diyagramı (PRISMA) çalışmada meta-tematik analiz için uyarlanmış ve sunulmuştur. Şekil 1'de akış diyagramı dâhil edilme kriterleri ve gerekçeler belirtilmektedir.



Şekil 1. Meta-Tematik Analize Dâhil Edilen Çalışmaların Akış Diyagramı

PRISMA diyagramı incelendiğinde, belirtilen veri tabanlarından 956 çalışmaya ulaşıldığı görülmüştür. Bu çalışmaların 2010-2020 yılları arasında yürütülmüş olmasına dikkate edilmiştir. Bu yıllar aralığında ilgili konuya ilişkin ulaşılan 956 çalışmanın 340'i duplikasyon gerekçesiyle analiz dışı tutulmuştur. Bu çıkarımlar yapıldıktan sonra kalan 616 çalışma çalışmanın 496'sı başlık incelenmesinde elenmiştir. Geriye kalan 120 çalışma içerisinde ise



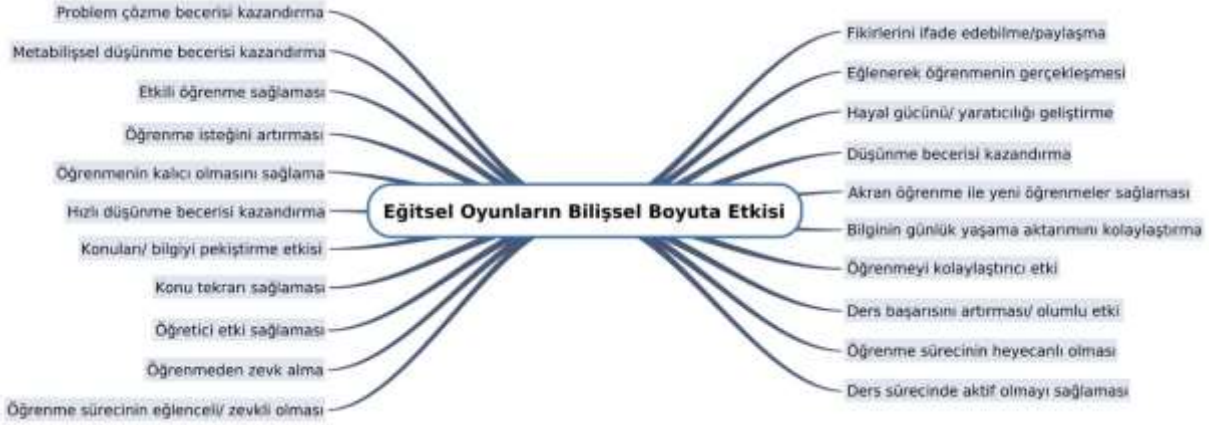
özeti içeriğine göre yapılan inceleme sonucunda 80 çalışma daha elenmiştir. Bu çalışmaların eğitsel oyunların ilköğretim kademesindeki etkililiği ve eğitsel oyunların sınırlılıklarını içermeyen çalışmalar olduğu görülmüştür. Elde kalan 40 çalışmadan 23 çalışmanın yeterli içeriğe sahip olmadığı görülerek elenmiştir. Elde kalan 17 çalışmanın, meta-tematik analiz için belirlenen dâhil edilme kriterleri doğrultusunda değerlendirilmesiyle, katılımcıların görüşlerine yer verilmiş olan bilimsel niteliği yüksek kabul edilen çalışmalar araştırmaya dâhil edilmiştir.

2.3. Verilerin Toplanması ve Analizi

Çalışmaya dâhil edilen 17 çalışma içerik analizine uygun olarak çözümlenmiştir. Yıldırım ve Şimşek (2018, s.242) göre içerik analizi, nitel araştırmalarda sıklıkla kullanılan verilerin sistematik ve objektif bir şekilde incelenmesini ve verileri açıklayabilecek kavram ve ilişkilere ulaşmayı sağlayan akademik bir yoldur. İçerik analizi, bir veri kümesi içindeki belirli kelimelerin veya kavramların varlığını belirlemek ve bunları analiz ederek metinlerdeki mesaja ilişkin çıkarımlarda bulunmak için yapılmaktadır (Büyüköztürk vd. 2020, s.259). Meta-tematik analiz yoluyla nitel boyutlu çalışmalardan elde edilen veriler temalar ve kodlar şeklinde ifade edilmiştir. Çalışmalarda yer alan veriler içinde birbirine benzer olanlar kodlanmış, temalar bulunmuş, kodların ve temaların düzenlenmesi yapılmıştır. Çalışmalar ilgili veri tabanları üzerinden taranırken, tezler, “T”, makaleler ise “M”, numara ve kodun alındığı sayfa numaraları verilerek (örn: T1-s.45) kodlanmıştır. Bu araştırmada kodlar araştırmacılar tarafından farklı zamanlarda bilgisayarda Microsoft Word programında oluşturulmuştur. Araştırmacılar tarafından oluşturulmuş olan kodların görsel sunumu bilgisayarda yapılmıştır. Bu noktada eğitsel oyun tekniği ile ilgili ulaşılan kodlar üç tema (Bilişsel/Duyuşsal-Sosyal/Olumsuz Yönleri) altında toplanmış ve sunulmuştur. Araştırmacıların oluşturduğu kodlar arasında görüş birliğine vardıkları ve görüş ayrılığına düştükleri kodlar belirlenmiş ve Miles ve Huberman’ ın (1994, s.13) geliştirdiği formül (güvenirlilik = görüş birliği / görüş birliği + görüş ayrılığı) kullanılarak güvenirlilik oranı 0.78 olarak tespit edilmiştir. Araştırmalardan alınan verilerin analizi sonucunda oluşturulan tema ve kodları daha anlaşılır hale getirmek için modeller oluşturmuş ve analize dâhil edilen araştırmalardaki görüşmelerden alıntılara yer verilmiştir.

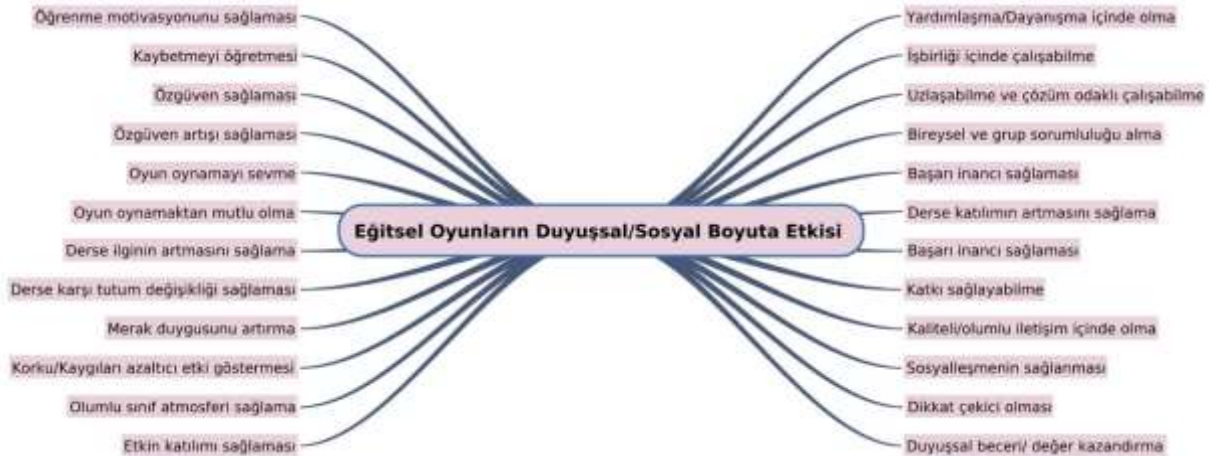
4. BULGULAR

Bu araştırmada ilköğretim kademesinde eğitsel oyunların etkisini ortaya koymak amaçlı doküman incelemesine dayalı meta-tematik analiz yapılmıştır. Meta-tematik analiz kapsamında elde edilen veriler bu bölümde modeller halinde sunularak yorumlanmıştır. Analiz sonucunda elde edilen temalar ve kodlar model olarak sunulmuştur. Analiz sonucunda, eğitsel oyunların bilişsel boyuta katkıları (Şekil 2), eğitsel oyunların duyuşsal-sosyal boyuta katkıları (Şekil 3) ve eğitsel oyunların olumsuz yönleri (Şekil 4) şeklindeki temalara ulaşılmıştır. Bu kapsamda, eğitsel oyunların bilişsel boyuttaki etkililiğine dayalı oluşturulmuş model ve ulaşılan kodlar Şekil 2’de görülmektedir.



Şekil 2. Eğitsel Oyunun Bilişsel Boyuta Etkisi

Şekil 2’de eğitsel oyunların bilişsel boyuttaki katkılarının açıklanması amacıyla oluşturulmuş model incelendiğinde kodlardan bazılarının “öğrenmenin kalıcı olmasını sağlama, öğrenme sürecinin eğlenceli/zevki olması, öğrenmeyi kolaylaştırıcı etki, konu tekrarı sağlama, problem çözme becerisi kazandırması, öğrenme isteğini artırması” şeklinde olduğu görülmektedir. Bu tema ile alakalı olarak M1-s.82 kodlu çalışmadan alıntılanan “*Bu oyun da çok zevkliydi, çok eğlendim, çok güzel bir oyundu. Bu oyun bana elektroskopun yapraklarının nasıl açılıp kapanacağını öğretti. Yaprakların birbirlerini itip çektiğini öğrendim.*”; M3-s.178 kodlu çalışmadaki “*Derslerimizde oyunlar oynadık. Oyunlarla daha iyi öğrendik. Öğrendiklerimizi de unutmadık. Soru sorulduğunda oynadığımız oyunlar geliyor aklıma. Hemen soruları cevaplıyorum. Böyle daha iyi öğrendik.*” ve T3-s.60 kodlu çalışmada ise “*Bence destekliyor. Çünkü ses olaylarını anlamayan bir kişi bile rahatlıkla ses olayları konusu çok kolaylıkla anlaşılabilir*” şeklindeki ifadeler referans olarak alınıp bu cümlelere dayalı olarak kod ve temalar oluşturulmuştur. Bu cümleler göz önüne alındığında, eğitsel oyunların ilköğretim kademesinde kalıcı öğrenme ve konuyu tekrarlayarak bilgilerin pekiştirilmesini sağladığı, öğrenmeyi kolaylaştırdığı ve öğrenme sürecinin eğlenceli olmasını sağlayarak bilişsel boyuta önemli derecede katkıda bulunduğu ifade edilebilir. Eğitsel oyunların duyuşsal/sosyal boyuttaki etkililiğine ilişkin ulaşılan kodlar Şekil 3’de model olarak sunulmuştur.



Şekil 3. Eğitsel Oyunun Duyuşsal/Sosyal Boyuta Etkisi

Şekil 3'de eğitsel oyunların duyuşsal-sosyal boyuta etkisi bağlamında elde edilen kodlar görülmektedir. Bu kodlardan bazıları “derse karşı tutum değişikliği sağlama, yardımlaşma ve dayanışma olanağı sunması, dikkat çekici olması, bireysel veya grup sorumluluk alma becerisi geliştirmesi, işbirliği içinde çözüm odaklı çalışmayı sağlama, derse ilginin artmasını sağlama ve sosyalleşme” şeklinde belirtilebilir. Bu temanın oluşturulmasında alıntılanan ifadelerden biri T8-s.47 kodlu çalışmadaki “*Derse daha çok katıldım, parmak kaldırdım. Düz anlatımda sıkılıyordum, derse katılmıyordum. Arkadaşlarım da çalıştılar oyun olduğu için.*”; T10-s.142 kodlu çalışmadaki “*Bence oyun çok zevkliydi. Hayal gücüm gelişti.*”; M3-s.178 kodlu çalışmada “*Oynayacağımız oyunlarla ilgili herkes düşüncesini anlatıyordu. Oyunu nasıl oynayacağımızı, kazanmak için ne yapmamız gerektiğini konuşuyorduk.*” ve bir diğeri de T4-s.48 kodlu çalışmadaki “*Ders esnasında oyun oynamak kendimi daha zeki, akıllı bilgili biri olarak hissetmemi sağladı. Kendime özgüven geldi. Kendimi daha aktif biri olarak gördüm. Yaratıcılığım ortaya çıktı. Kendi becerilerimi, yapamayacağım dediğim şeyleri yapabileceğimi anladım.*” şeklindedir. Bu ifadelerden yola çıkarak eğitsel oyunların derse karşı tutum değişikliği geliştirilmesinde ve derse olan ilginin artmasında önemli etkileri vardır. Öğrencilerin bireysel veya grup sorumluluğu alma, sosyalleşmelerini sağlama, uzlaşabilme ve duyuşsal becerilerini etkili bir şekilde geliştirmektedir. Diğer yandan eğitsel oyunların olumsuz yönlerine ilişkin ulaşılan kodlara da ulaşılmıştır. Bu kodlar, Şekil 4’de model olarak sunulmuştur.



Şekil 4. Eğitsel Oyunların Olumsuz Yönleri

Şekil 4 incelendiğinde, eğitsel oyunların olumsuz yönlerinin ifade edildiği görülmektedir. İfade edilmiş olan kodlardan bazıları “gürültü olması, disiplin problemlerinin yaşanması, tüm derslerde kullanılmaması, oyun sırasının geç gelmesi, sınıfların kalabalık olması, grupların kurallara uymaması” şeklinde ifade edilebilir. Temayı oluşturan bu kodlardan bazı alıntılar yapılmıştır. T1-s.58 kodlu çalışmada “*Oyun oynarken bizim bilişim sınıfımızdaki bilgisayarlar biraz işlemcisi eski olduğu için yani oyun arada sırada donuyordu. Kasiyordu*”; T5-s.83 kodlu çalışmada “*Bilgisayarın karşısında öğrenmek için durmamız; yani ondan bazen zarar görüyoruz. Bilgisayar karşısında çok durmamız.*” ; T8- s.54 kodlu çalışmada “*Keşke biraz daha zaman olsaydı da daha çok oynasak dediğim zamanlar oldu. Ayrıca oyunu kimin kazandığı belli olmadan ya da biz oyunu anlayana kadar ders bitiyordu. Bunun dışında bir takım hep kuralları çiğnedi. Bizim öğretmenimiz de bir şey dememişti. Biz de birkaç kez kuralları çiğnedik ancak diğer grup kendini kazandı saydı.*” Ayrıca M4-s.20 kodlu çalışmada ise “*Çalışkan arkadaşların sürekli soruları bilmesi yüzünden çok bekledim. Sıra bana çok geç geldiği için keyif almadım.*” şeklinde ifadelerle eğitsel oyunların olumsuz yönleri belirtilmiştir. Araştırmaların analizi doğrultusunda eğitsel oyunların olumsuz yönlerine bakıldığında bazı sınırlılıklarının olduğu görülmektedir. Gürültü ve disiplin problemlerine



neden olmak, zaman yetersizliği, bazı öğrencilerin oyunu zor bazılarının da kolay bulması, altyapı yetersizlikleri gibi sorunlar olduğu görülmektedir. Öğrencilerin bilgi eksiklikleri dolayısıyla oyunu zor buldukları aşikârdır. Sınıfların seviyeleri, bireysel farklılıklar ve sınıf mevcudu göz önüne alınarak hazırlanmış eğitsel oyunlar ile daha etkili bir öğretim planlaması yapılabileceği belirtilebilir.

5. TARTIŞMA VE SONUÇ

Meta-tematik analiz yoluyla yürütülmüş bu araştırma kapsamında ilköğretim kademesinde eğitsel oyunların etkililiğinin değerlendirilmesi sonucunda ulaşılan sonuçlar bu bölümde ifade edilmiştir. İlköğretim kademesinde eğitsel oyun kullanımının bilişsel, sosyal ve duyuşsal boyuttaki etkinliği ile olumsuz yönlerinin belirlenmesi üzerinde çalışılmış ve çeşitli sonuçlara ulaşılmıştır. Araştırmanın amacı kapsamında ulaşılan 17 çalışma, meta-tematik analize dayalı olarak içerik analizi yöntemiyle analiz edilmiştir. Yapılan meta-tematik analiz sonucunda ise eğitsel oyunların bilişsel, duyuşsal-sosyal boyutları ve olumsuz yönleri üzerindeki etkilerini gösteren çok sayıda koda ulaşılmıştır. Yapılan çalışma ilköğretim kademesinde eğitsel oyun kullanımının eğitim-öğretim sürecinde birçok açıdan olumlu etkilerinin olduğunu ve ayrıca bazı sınırlılıklarının da olduğunu ortaya koymaktadır.

Eğitsel oyunların derslerdeki kullanımının öğretmen ve öğrenciler açısından olumlu birçok etkisinin olduğu görülmektedir. Nitelikli öğrenme sürecini sağlaması konusunda ve öğrencilerin deneyimleyerek eğlenceli bir şekilde öğrenmesine olanak sağlayan eğitsel oyunların bu amaca hizmet ettiği görülmektedir. Meta-tematik analiz ile yapılan çalışmada eğitsel oyunların ilköğretim kademesindeki kullanımı ile ulaşılan temalardan biri bilişsel boyuttaki etkinliğidir. Bilişsel boyut açısından değerlendirme yapılacak olursa eğitsel oyunların önemli derecede pozitif etkisinin olduğu söylenebilir. Bu bağlamda öğrencinin öğrenme sürecinde aktif rol aldığı ve sürecin eğlenceli/zevкли olduğu, öğrenmeyi kolaylaştırıcı etkisinin olduğu, konu tekrarı sağlaması ile kalıcı öğrenme sağladığı, metabilşsel düşünme becerisi kazandırdığı, öğrencide öğrenme isteğini arttırdığı gibi birçok olumlu yönün araştırma sonucunda ulaşıldığı görülmektedir. Alanyazın incelendiğinde, eğitsel oyunların düşünme becerisine, akademik başarıya, kalıcı öğrenmeye, aktif katılım sağlamaya olumlu etkilerini ortaya koyan birçok araştırma olduğu görülmektedir (Tükle, 2020; Soydan, 2019; Koç, 2019; Yıldız, 2019; Atay, 2018; Can, 2017; Korkmaz, 2018; Karamustafaoğlu, Pazar ve Karamustafaoğlu, 2018; Kayabaşı ve Akbaş, 2017; Yücel Yumuşak, 2014; Çavuş, Kulak, Berk ve Öztuna, 2011; Aksoy 2010). İlgili araştırmalar, eğitsel oyunların, eğitsel oyun kullanılan ders ve sınıf kademelerinde ders başarısını önemli ölçüde artıran etkili bir teknik olduğunu ortaya çıkarmaktadır. Eğitsel oyunların ilköğretim kademesinde kullanımının öğrencinin nitelikli öğrenme sürecindeki başarısı üzerinde geleneksel eğitime göre birçok açıdan olumlu özellikler kazandırdığı, oyun oynayarak eğlendirdiği ve bunun sonucunda kalıcı öğrendikleri görülmektedir. Buna yönelik çalışmalar da bunu desteklemektedir. Baki'nin (2016) "Ortaokul Öğrencilerinin Türkçe Dersinde Eğitsel Oyunların Kullanımına ve İşlevlerine İlişkin Görüşleri" adlı çalışmada ilköğretim kademesinde eğitsel oyunların eğlenerek öğrenme, motive olma, derslerin verimli geçmesi ve öğrenmede kalıcılığı sağladığı sonuçlarına ulaşmıştır. Ayrıca eğitsel oyunların kalıcı öğrenmeyi sağladığı, konu tekrarının eğlenceli bir şekilde yapılmasına olanak sağladığı, bilgilerin pekiştirilmesini sağladığı ve bu durumun öğrenmeyi kolaylaştırdığı da bilişsel boyutta önemli derecede katkı sunduğu gerçeğini göstermektedir.



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Alanyazında eğitsel oyunlarla ilgili olumlu yönde sonuçlara ulaşmamış çalışmalar da bulunmaktadır. Türkmen'in (2017), araştırma sonucu incelendiğinde, oyun temelli öğrenme ortamlarında öğrenim gören öğrencilerin başarı puanlarında anlamlı bir fark oluşmadığı görülmüştür. Gürer ve Arslan (2017) ve Şahin ve Namlı (2016) araştırmalarında benzer sonuçlara ulaşmışlardır. Olumlu sonuçlara ulaşmamış olan bu araştırmalar alanyazında bulunmakla beraber eğitsel oyunların öğrenme sürecine ve akademik başarıya sağladığı faydalar göz ardı edilmemelidir.

Eğitsel oyunların ilköğretimdeki kullanıma yönelik etkililiğini belirlemede diğer bir tema ise duyuşsal-sosyal boyuttaki yönüdür. Bu bağlamda, eğitsel oyunların derse karşı tutum değişikliğini sağlaması, öğrenciler üzerinde yardımlaşma ve dayanışma olanağını sunması, grup sorumluluğunu alması, iş birliği içinde çözüm odaklı çalışmada etkili olması ve sosyalleşmeyi sağlaması gibi sonuçlara ulaşılmıştır. Ayrıca eğitsel oyunların merak duygusunu artırdığı, derse karşı tutum değişikliği sağladığı da görülmektedir. Öğrenciler üzerinde bu boyutta birçok önemli kazanımlar elde etmesini sağlayan eğitsel oyunlar ile ilgili alanyazında da benzer bulgulara rastlanmıştır. Eğitsel oyunların duyuşsal boyuttaki etkileri incelendiğinde merak duygusunu artırması, öğrenme motivasyonunu ve kaygıdan uzak öğrenme ortamını sağlaması önemli katkıları olduğuna rastlanmıştır. Kaya ve Elgün (2015), yaptıkları çalışmada eğitsel oyun kullanılmış olan derslere öğrencilerin ilgi ile katıldıkları ve motivasyonlarının yüksek olduğu sonucuna ulaşmışlardır. Gençler (2016) araştırmasının sonucunda ilgisiz öğrencilerin dahi derse katılımını sağladığını ve dersin işlenişini daha zevkli hale getirdiğini belirtmiştir. Akın ve Atıcı (2015), eğitsel oyunların öğrenme ve derslere olan ilgiyi artırdığını, Türkmen (2017) ise öğrencilerin aktif oldukları, eğlendikleri ve derslerin tadını çıkardıkları oyun tabanlı öğrenme ortamlarından zevk aldıklarını ifade etmiştir. Eltem'in (2018) "Fen Bilimlerinde Maddenin Yapısı ve Özellikleri Ünitesinin Öğretiminde Eğitsel Oyunların Kullanılması" adlı çalışmasında tutumlarının ve derse yönelik görüşlerini, sınıf ikliminin olumlu etkilendiği sonucuna ulaşmıştır.

Eğitsel oyunların sosyal boyutta sunduğu katkılar ise öğrencilerin çözüm odaklı çalışmaları, sorumluluk alma becerisi kazanmaları, işbirliği yapma ve sosyalleşme becerisini geliştirmeleri, iletişim kurmaları ve olumlu bir sınıf atmosferine sahip olmalarıdır. Eğitsel oyunlar öğrencilerde grup iş birliğini ve sosyalleşmeyi artırdığı yapılan çalışmalarda görülmektedir. Gençler ve Karamustafaoğlu'nun (2014) "Durgun Elektrik" Konusunun Eğitsel Oyunlarla Öğretiminde Öğrenci Görüşleri" adlı çalışmasında oyun süresince aynı gruptaki öğrencilerin iş birliği yaparak birbirini desteklediğini, bununla beraber sosyal iletişimin arttığı sonuçlarına ulaşmıştır. Benzer sonuçlara da Şahin'in (2019) çalışmasında da görmek mümkündür. Bu sonuçlar doğrultusunda, derslerde eğitsel oyunların kullanımının öğrencilerin olumlu tutum geliştirmesini sağladığı anlaşılmıştır. Baş ve Karamustafaoğlu (2020), öğrencilerin grup arkadaşları ile etkileşim içerisine girmiş olduklarını ve sınıfta disiplin yönünden bir sorun yaşanmadığını, tüm öğrencilerin derse katıldığını ve motivasyonlarının arttığını belirtmiştir.

Bu çalışma eğitsel oyunların bilişsel ve sosyal-duyuşsal boyutta önemli kazanımlar içerdiği ve öğrenciler ile derse karşı olumlu etkilerinin bulunduğu gerçeğini gözler önüne sermektedir. Tüm sağladığı olumlu etkilerin yanında eğitsel oyunların bazı olumsuz yönlerine de rastlanmıştır. Oyun esnasında yaşanan gürültülerin olması, altyapı sorunlarının olması, disiplin problemlerinin yaşanması, tüm derslerde kullanılmaması, sınıfların kalabalık olduğu zaman öğrencilere sıranın geç gelmesi gibi birtakım olumsuz durumlara da rastlanılmıştır. Alanyazında da eğitsel oyunların sınırlılıklarına değinilmiştir. Şahin'in (2016) "Eğitsel Bilgisayar Oyunlarıyla Destekli Matematik Öğretiminin Öğrencilerin Akademik Başarılarına



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ve Duyuşsal Özelliklerine Etkisi” adlı çalışmasında zaman zaman internetin yetersiz kalması ile altyapı sorunlarının olması, bazı oyunların öğrencilere zor gelmesi ve uzun süre bilgisayar karşısında zaman geçirmenin gözlere zarar vereceği gibi olumsuz sonuçlara ulaşmıştır. Zaman yetersizliği eğitsel oyunların sınırlılıkları arasındadır. Bunu Eltem’in (2018)’in “Fen Bilimlerinde Maddenin Yapısı ve Özellikleri Ünitesinin Öğretiminde Eğitsel Oyunların Kullanılması” adlı çalışmasında öğrencilerin sıklıkla zamanın yetmediğini belirttiği sonuçtan da anlaşılmaktadır. Genççer’in (2016) araştırması doğrultusunda öğretmenlerle yaptığı anketler sonucunda öğretmenlerin, eğitsel oyunların öğrenme sürecinde etkili olacağına inanmalarına rağmen, gürültü, ön hazırlık gerektirmesi, eğitici etkisinin az olduğunu düşünmelerinden derslerinde fazla yer vermemektedirler. Eğitsel oyunların sınırlılıklarının belirlenmesi ve bu doğrultuda ders planlamalarının yapılması gerekmektedir. Sınıfların seviyeleri, bireysel farklılıklar ve sınıf mevcudu göz önüne alınarak hazırlanmış eğitsel oyunlar ile daha etkili bir öğretim planlaması yapılabileceği belirtilebilir.

Bütünsel bir değerlendirme yapılacak olursa; derslerde eğitsel oyun kullanımının öğrencinin derse karşı ilgisini, motivasyonunu artırdığı ve kalıcı öğrenme gerçekleştirdiği, öğrenmeyi zevkli hale getirdiği, öğrenmeyi kolaylaştırdığı, öğrencinin aktif olmasına fırsat tanıdığı, sosyal becerilerini geliştirdiği sonucuna ulaşılmıştır. Bütün bu bilgiler ışığında derslerde eğitsel oyunları kullanmanın yaygınlığı ve sıklığı artırılmalıdır. Öğrencilerin eğlenerek öğrenmesi ve derslere karşı olumlu tutum geliştirmeleri açısından da büyük önem taşıdığından eğitim-öğretim sürecinde eğitsel oyunların kullanılması önerilmektedir. 21.yüzyıl becerilerini ve yetkinliklerini kazandırma amaçları doğrultusunda eğitsel oyunların eğitim-öğretim sürecinde aktif olarak kullanılmasının öğrencilerin bilişsel, duyuşsal ve sosyal alanlarda gelişimini sağlayacağı düşünülmektedir. Meta-tematik analiz yöntemiyle ise nitel yönde oyunlarla ilgili yürütülmüş çalışma sonuçlarının bütüncül perspektifle değerlendirilmesi ve sunulmasının alanyazına özgün katkılar sunduğu düşünülmektedir.

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COVID – 19 SÜRECİNDE ÖZ YETERLİĞİN İNCELENMESİ

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Özet

2020'nin başlarından itibaren tüm dünyada önemli değişimleri beraberinde getiren COVID – 19 pandemisinden ülkelerin kitle eğitim faaliyetleri de nasibini almıştır. Birçok ülke, hastalığın pandemi ilan edilmesi akabinde yüz yüze eğitim faaliyetlerine belirsiz süreli ara vermiş ve uzaktan eğitime geçmiştir. Türkiye'de de yaklaşık 49 hafta boyunca yürütülen uzaktan eğitim faaliyetlerinin eğitimin tüm paydaşları (yöneticiler, öğretmenler, idareciler, veliler) üzerinde ciddi etkileri olmuştur. Öğrenciler açısından; değerlendirme kriterlerinin farklılaşması, motivasyon ve teknoloji kullanımında problemler yaşanmıştır. Öğretmenler açısından ise yaşanan sorunlar çevrim içi öğretme, bilgisayar ve teknolojiyi etkin kullanmaya ihtiyaç duyulmasıdır. Farklı paydaşlar tarafından rapor edilen bu sorunların çözümünde öz yeterlik kavramı ön plana çıkmaktadır. Daha önceden tecrübe edilmemiş ve hızlı bir değişim gerektiren salgın sürecinde öz yeterlik algısına sahip olmak salgının getirdiği problemlerle başa çıkmada elzemdir. Bu bağlamda araştırmanın amacı COVID – 19 sürecinde öz yeterlikle ilgili çalışmaların sistematik olarak incelenmesidir. İlgili amaç doğrultusunda "efficacy", "self-efficacy", "pandemic", "COVID – 19" kavramları Sage Journals, Scopus, Science Direct, Taylor and Francis veri tabanlarında ve bu kavramların Türkçe karşılıkları Google Scholar ile Dergi Park veri tabanlarında araştırılmıştır. Yapılan taramalarda 7'si yurt dışı 5'i yurt içi olmak üzere 12 çalışma 3 başlık altında (akademik öz yeterlik, teknoloji / internet kullanım öz yeterliği ve çevrim içi öğretme öz yeterliği) toplanmıştır. Çalışmaların analiz edilmesi sonucunda tekrar eden / ortak şu bulgular tespit edilmiştir: Öğrencilerin COVID – 19 sürecinde akademik öz yeterlik seviyeleri azalmıştır. İnternet / teknoloji kullanım öz yeterliğine sahip öğretmenlerin eğitim faaliyetlerini daha etkin şekilde yürütmüşlerdir. Pandemi sürecinde öz yeterlik algısının yüksek seviyelerde olmasının salgının getirdiği sorunlarla başa çıkmada etkili olduğu sonuçlarına ulaşılmıştır.

Anahtar Kelimeler: Covid – 19, salgın, öz yeterlik, eğitim

Abstract

Since the beginning of 2020, the mass education activities of the countries have also had their share from the COVID – 19 pandemic, which has brought important changes all over the world. After the disease was declared a pandemic, many countries suspended face-to-face education activities for an indefinite period and switched to distance education. In Turkey, distance education activities carried out for approximately 49 weeks and these have had serious effects on all stakeholders of education (administrators, teachers, administrators, parents). In terms of students; the problems are differentiation of evaluation criteria,



motivation and use of technology. In terms of teachers; the problems are effective use of computer and technology, online teaching. The concept of self-efficacy stand out solving these problems reported by various stakeholders. Having a sense of self-efficacy in the pandemic, which has not been experienced before and requires rapid change, is essential in coping with the problems brought by pandemic. In this context, main purpose this study to systematically review studies on self-efficacy in COVID – 19 process.

In line with the relevant purpose, the concepts of "efficacy", "self-efficacy", "pandemic", "COVID – 19" are in Sage Journals, Scopus, Science Direct, Taylor and Francis databases and their Turkish equivalents are on Google Scholar and Dergi Park databases. In the scans, 12 studies, 7 of which were abroad and 5 were domestic, were collected under 3 headings (academic self-efficacy, technology / internet use self-efficacy and online teaching self-efficacy). As a result of the analysis of the studies, the following repetitive / common findings were determined. Students' academic self-efficacy levels decreased during the COVID-19 process. Teachers who have internet / technology use self-efficacy carried out their educational activities more effectively. It has been concluded that the high level of self-efficacy perception during the pandemic process is effective in coping with the problems brought by the epidemic.

Key Words: Covid – 19, pandemic, self – efficacy, education

GİRİŞ

Maske, mesafe, el hijyeni, sokağa çıkma kısıtlaması, temizlik... Kısa süre öncesine dek bir arada görülmesi pek mümkün görünmeyen bu kavramlar yaklaşık üç yıldır tüm dünyanın bir numaralı gündem maddesi olarak dikkat çekmekte; Aralık 2019 tarihi tüm dünya için yeni bir milada karşılık gelmektedir. Çin'in Vuhan şehrinde ateş, öksürük ve nefes darlığı şikayetleriyle hastanelere akın edilmesi ve kısa süre içerisinde neredeyse tüm ülkelerde benzer şikayetlerde önemli artışların yaşanması sonucunda üç yıldır gündelik hayatı en çok meşgul eden kavram ortaya çıkmıştır: Covid – 19.

İlk olarak Aralık 2019'da görülen ve Ocak 2020'de tanımlanan; Çin'de Vuhan başta olmak üzere birçok noktada etkisini hissettiren, nefes darlığı, ateş ve öksürük gibi belirtileri bulunan; ağırlıklı olarak ileri yaşta insanlar için tehdit unsuru oluşturan Covid – 19 (Sağlık Bakanlığı, 2021), 30 Ocak 2020'de Dünya Sağlık Örgütü (WHO) tarafından halk sağlığını tehdit eden uluslararası çapta acil bir durum olarak tanımlanmış ve 11 Mart 2020'de pandemi (küresel çapta salgın) olarak ilan edilmiştir (Halk Sağlığı Genel Müdürlüğü, 2020). Dünya Sağlık Örgütü (WHO) güncel verilerine göre dünya genelinde 250 milyonu aşkın vakanın ve 5 milyon üzerinde ölümün rapor edildiği Covid – 19 ülkemizi de önemli ölçüde etkilemiştir. ABD, Hindistan, Brezilya, Birleşik Krallık ve Rusya'nın ardından en çok vakanın görüldüğü ülke olan Türkiye'de (WHO, 2021) 8 milyonun üzerinde vaka ve 70.000'i aşkın ölüm kayda geçmiştir (Sağlık Bakanlığı, 2021).

Tüm bu veriler Türkiye'nin halk sağlığı alanında Covid – 19'dan en çok etkilenen ülkelerin başında geldiğine işaret etmektedir. Bunun yanında ölümler, pozitif vakalar ve salgının yayılmasını yavaşlatmak adına alınan önlemlerin yalnızca halk sağlığı alanına değil toplumun ruh sağlığı ve eğitim alanlarına da olumsuz yansımaları olmuştur (OECD, 2020). Toplum bilim kurulu üyesi bir akademisyen tarafından, 2020 ve 2021 yıllarında salgının ruh sağlığı üzerindeki etkilerine yönelik aynı örnekleme gerçekleştirilen boylamsal bir araştırmada ölüm, öfke, yalnızlık ve kaybetme korkusunda artışın ve yaşam memnuniyet düzeyinde



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belirgin bir düşüşün yaşandığı tespit edilmiştir (Bozkurt, 2021). Bu veriyi destekleyecek nitelikte çalışmalar literatürde mevcuttur (Bekaroğlu ve Yılmaz, 2020; Hotar ve diğerleri, 2020; Aşkın ve diğerleri, 2020). Salgınla birlikte baş gösteren bu olumsuz belirtilerin yanında eğitim faaliyetlerinde de keskin değişimler yaşanmıştır. COVID – 19'un hızlıca yayılması sonrasında dünya genelinde 1,5 milyardan fazla öğrenci süreçten etkilenmiş, birçok ülkede okullar uzun süre kapalı kalmıştır. Ülkemizde de yaklaşık 49 hafta boyunca okullar kapatılmış, eğitim öğretim faaliyetleri uzaktan yürütülmüştür (UNESCO, 2021). 49 haftalık bu periyodun başında ülkemizde ilk vakaların görülmesi ve hastalığın bir pandemi olarak ilan edilmesiyle birlikte Millî Eğitim Bakanlığı 18 milyon öğrenci ve 1 milyon öğretmeni doğrudan etkileyecek bir kararla eğitim faaliyetlerinin TRT ve Eğitim Bilişim Ağı (EBA) aracılığıyla uzaktan yürütüleceğini duyurmuştur (Özer, 2020). Millî Eğitim Bakanlığı tarafından alınan bu kararın yanında dönemin Yükseköğretim Kurulu (YÖK) Başkanı Prof. Dr. M. A. Yekta SARAÇ, 18 Mart 2020'de gerçekleştirdiği bir basın toplantısıyla 23 Mart 2020 tarihinde üniversite öğrencileri için uzaktan eğitim faaliyetlerinin başlayacağını açıklamıştır (YÖK, 2020a). Üniversitelerde uzaktan eğitim faaliyetleri başladıktan 3 gün sonra (26 Mart 2020) salgının mevcut gidişatı sebebiyle bahar döneminin tamamında üniversiteler için eğitim öğretim faaliyetlerinin uzaktan yürütülmesi kararı alınmıştır (YÖK, 2020b). Dünya genelinde ve ülkemizde eğitim faaliyetlerine ilişkin alınan bu kararların arka planında hastalığı önleyecek ilaç ve aşının bulunamaması; salgınla mücadelenin virüsün yayılma hızının azaltılarak yürütülmesi kararı yer almaktadır (Reimers ve Schleicher, 2020).

Eğitim öğretim faaliyetlerinin tüm kademelerde uzaktan yürütülme kararı alınmasının ardından uzaktan eğitimin etkililiği, karşılaşılan sorunlar ve muhtemel çözümlere ilişkin araştırmalar gerçekleştirilmiştir. Bu araştırmalarda öğrenci, öğretmen, okul idarecileri, veliler, akademisyenler ve il millî eğitim müdürlüğü yöneticileri gibi farklı paydaşların görüşleri alınarak çoklu bir perspektifle analizler yapılmış; analizler sonucunda eğitim öğretim faaliyetlerinin uzaktan yürütülmesinin motivasyon eksikliği, geri bildirim alamama, etkileşim kuramama ve ölçme değerlendirme problemleri gibi yansımaları olduğu sonucuna ulaşılmıştır (Özdoğan ve Berkant, 2020). Bununla birlikte sosyalleşme eksiklikleri ve ekran başında uzun süreler geçirme (Taş, 2021) ve eğitimde teknoloji kullanımında dair bilgi eksiklikleri (Başaran, Doğan, Karaoğlu ve Şahin, 2020) uzaktan eğitime dair yaşanan diğer problemler olarak ifade edilmektedir. Farklı kesimler tarafından ifade edilen bu olumsuzlukların yanında daha önceden tecrübe edilmeyen, büyük belirsizlikler içeren bir durumla karşı karşıya kalınması da eğitimin tüm paydaşları için problem teşkil etmektedir. Bu veriler ışığında motivasyon eksikliklerinin yaşanması, daha önceden tecrübe edilmeyen bir durumla karşı karşıya olunması, uzaktan eğitim sebebiyle düzenli geri bildirim alamama ve davranışları yeniden organize edememe durumları eğitim hayatı için olmazsa olmaz kavramlar arasında bulunan öz yeterlik algısını ön plana çıkartmaktadır.

Öz yeterlik algısı bir işi, görevi başarılı biçimde yerine gerçekleştirmeye yönelik inanç olarak ifade edilmektedir (Bandura, 1977). Bireyin herhangi bir faaliyette ne kadar çaba harcayacağı, bu çabayı ne kadar devam ettireceği ve zorlayıcı bir durumla karşılaştığında nasıl bir strateji geliştireceği sorularının yanıtını öz yeterlik algısı şekillendirmektedir (Bandura, 1982). Eğitim ortamlarının önemli kavramlarından öz yeterlik; başarılı performans, dolaylı tecrübe, sözel ikna ve psikolojik durum kaynaklarından beslenmektedir (Bandura, 1977). Bunlar arasında bireyin öz yeterlik algısına en büyük etkisi olan kaynak başarılı performans yaşantılarıdır (Bandura, 1997a). Bununla birlikte dolaylı tecrübe kaynağı model alınan, gözlemlenen kişilerin performansları üzerinden çıkarım yapmayı gerektiriyorken sözel ikna faaliyete ilişkin doğru zamanla geri bildirimlerle şekillenmekte; psikolojik durum kaynağı ise



uçlarda yaşanan duyguların bireyin yeterli algısını ve performansını etkileyeceğine işaret etmektedir (Bandura, 1997b).

Yapılan kuramsal açıklamalar ve araştırmalardan hareketle uzaktan eğitim sürecinde öğrenciden veliye, okul idaresinden il yöneticilerine uzanan geniş grubun sıklıkla zorlayıcı durumlarla karşılaştıkları çeşitli araştırmacılar tarafından rapor edilmiştir. Salgın süresince farklı kademelerdeki tüm paydaşlar daha önce tecrübe edilmeyen, belirsiz süreli bir problemle karşı karşıya kalmıştır. Zor bir durumla ne kadar süre ve ne şekilde mücadele edileceğine dair strateji geliştirmede öz yeterlik algısı belirleyicidir (Bandura, 1982). Bu bağlamda araştırmanın gerekçelerinden birisi karşılaşılan sorunlarla mücadelenin temel belirleyicisi öz yeterlik algısının salgın sürecindeki durumunun farklı çalışmalarla ortaya konmasıdır. Bununla birlikte öz yeterlik kaynakları salgın özelinde değerlendirildiğinde başarılı performans yaşantıları; karşılaşılan problemlerin ilk kez tecrübe edilmesi sebebiyle işlevini tam anlamıyla yerine getirememektedir. Bununla birlikte eğitim öğretimin 49 hafta boyunca uzaktan yürütülmesi sonucunda da akranlarından ve öğretmenlerinden uzak kalan öğrencilerin dolaylı performans kaynağıyla; yine tüm süreçlerin uzaktan yürütülmesi sebebiyle geri bildirim alamama, etkileşime girememe ve soru sormama durumlarının oluşmasının sözel ikna kaynağıyla ilgili sorunları beraberinde getirdiği yorumu yapılabilir. Son olarak COVID – 19’un gerek toplumsal gerekse bireysel anlamda bireylerin ruh sağlıkları için zorlayıcı yapıda olmasının da salgının öz yeterliğin psikolojik durum kaynağı üzerinde olumsuz etkisi olduğunu düşündürmektedir. Bu bağlamda bu araştırmanın nihai amacı ulusal ve uluslararası alan yazında COVID – 19 sürecinde öz yeterlikle ilgili gerçekleştirilmiş çalışmaların sistematik olarak incelenmesidir. Yapılacak bu inceleme ile salgın süresince öz yeterlik algısının hangi değişkenlerle birlikte çalışıldığı ve katılımcıların öz yeterlik algılarının ne seviyede olduğu gibi sorulara yanıt aranacaktır.

2. ARAŞTIRMA DESENİ

Araştırma kapsamında nitel araştırma yöntemleri arasında olan sistematik incelemeyle COVID – 19 sürecinde öz yeterlik algısıyla ilgili gerçekleştirilmiş çalışmalar analiz edilmiştir. Sistematik inceleme belirli dahil etme hariç tutma ilkeleri doğrultusunda ve araştırma sorusu kapsamında seçilen çalışmaların analiz edilip sentezlenerek bir bütün şeklinde rapor edildiği yöntemdir (Denyer ve Tranfield, 2009). Bu doğrultuda COVID – 19 sürecinde öz yeterlik algısı problemi doğrultusunda belirli araştırmalar seçilip analiz edilerek aşağıdaki satırlarda bir bütün halinde sunulmuştur.

3. VERİ TOPLAMA SÜRECİ

COVID – 19 sürecinde öz yeterlik algısını ele alan araştırmaları tespit etmek için Sage Journals, Science Direct, Scopus, Taylor and Francis Group veri tabanlarından; ‘‘efficacy’’, ‘‘pandemic’’, ‘‘self-efficacy’’, ‘‘COVID – 19’’ ile Dergi Park ve Google Scholar veri tabanlarından ‘‘yeterlik’’, ‘‘öz yeterlik’’, ‘‘pandemi’’, ‘‘COVID – 19’’ kavramları aratılarak 12 çalışmaya ulaşılmıştır. Elde edilen 12 çalışmanın akademik öz yeterlik, öğretme öz yeterliği ve internet / bilgisayar kullanımı öz yeterliği başlıklarında kümelendiği tespit edilmiş; ilgili analiz sonuçları aşağıda sunulmuştur.



4. BULGULAR

Tablo 1. COVID – 19 sürecinde akademik öz yeterlikle ilgili yürütülen çalışmalar

Araştırma Kodu / İsmi	Yazar (lar) ve Yıl	Çalışma Grubu	Ülke	Değişkenler	Veri Toplama Araçları	Araştırma ve Veri Analiz Yöntemi
A1 / Compliance with Recommendations Limiting COVID-19 Contagion Among University Students in Sweden: Associations with Self-Reported Symptoms, Mental Health and Academic Self-Efficacy	Berman vd. (2021)	4495 lisans öğrencisi	İsveç	Akademik öz yeterlik, ruh sağlığı, COVID - 19 önlemleri ve belirtileri	23 soruluk demografik bilgiler, salgın belirtileri, alınan kişisel önlemler, ruh sağlığı ve akademik öz yeterlikle ilgili maddeleri içeren çevrim içi bir anket	Nicel - Çoklu regresyon analizi
A2 / Personality traits predict the effects of Internet and academic self-efficacy on practical performance anxiety in online learning under the COVID-19 lockdown	Hong, Cao, Liu ve Zhao (2021)	273 lisans öğrencisi	Çin	Akademik öz yeterlik, kişilik özellikleri (dışa dönüklük ve nevroz), internet öz yeterliği ve uygulama performans kaygısı	Self Efficacy Scale Anxiety Scale International Personality Item PoOL	Nicel - Yapısal eşitlik modellemesi
A3 / Meaning in life, connectedness, academic self-efficacy, and personal self-efficacy: A winning combination	Yuen ve Datu (2021)	4336 orta okul öğrencisi	Ho ng	Yaşamın anlamlı, bağlantılılık, akademik ve kişisel öz yeterlik	Hemingway Measure of Adolescent Connectedness - Short Form, Life Skills Development Inventories, Meaning in Life Scales	Nicel - Yapısal eşitlik modellemesi
A4 / Üniversite Öğrencilerinde Uzaktan Eğitime Yönelik Tutumlar ile Akademik Öz-yeterlik Arasındaki İlişkiler	Özdirek ve Cicerali (2021)	331 lisans öğrencisi	Türkiye	Uzaktan eğitime yönelik tutum, akademik öz yeterlik, uzaktan eğitimden memnuniyet	Akademik Öz Yeterlik Ölçeği, Uzaktan Eğitimden Memnuniyet Ölçeği	Nicel - Korelasyon analizi, basit doğrusal regresyon ve T testi



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Tablo 1'de COVID – 19 sürecinde akademik öz yeterlikle ilgili yürütülen 4 araştırma makalesi sunulmuştur. Nicel araştırma ve ilişkisel tarama yöntemleri kullanılan bu araştırmaların 3'ü üniversite öğrencisi katılımcılarla, 1'i orta okul öğrencileriyle gerçekleştirilmiştir. 3 tanesi yurt dışı ve 1 tanesi yurt içi literatürde gerçekleştirilmiş bu çalışmalarda akademik öz yeterlikle birlikte hayatın anlamlı, kişilik özellikleri, uzaktan eğitimden duyulan memnuniyet, performans kaygısı ve ruh sağlığının mevcut durumu değişkenleri çalışılmıştır.

4.1 COVID – 19 Sürecinde Akademik Öz Yeterlikle Birlikte Çalışılan Değişkenlere İlişkin Bulgular

A1 kodlu çalışmada pandemi ile gelen sınırlamaların katılımcıların %78.2'sinin akademik öz yeterlik seviyelerini olumsuz şekilde etkilediği; pandemi ile birlikte kaygı, stres, depresyon ve yalnızlık gibi psikolojik belirtiler olduğu tespit edilmiştir. A2 kodlu çalışmada da benzer şekilde COVID – 19 sürecinde nevroitik eğilimlere sahip olanların akademik öz yeterlik, internet öz yeterliklerinin olumsuz etkilendiği ve uygulama performans kaygısı yaşadıkları tespit edilmiştir. A1 ve A2 kodlu araştırmalar pandeminin kişilerin ruh sağlıkları ve akademik öz yeterlikleri üzerinde olumsuz etkilere sahip olduğu sonucunda birleşmektedir.

A3 ve A4 kodlu araştırmalarda ise kişinin sahip olduğu olumlu kavramlara odaklanılmaktadır. A3 kodlu araştırmada hayatın anlamlılığı ve diğerleriyle bağlantıda olma ile akademik öz yeterlik arasında anlamlı olumlu ilişkilerin varlığı tespit edilmiştir. A4 kodlu araştırmada ise akademik öz yeterlik ile uzaktan eğitimden memnun olma arasında anlamlı ilişki tespit edilmiştir. Bu araştırmalar COVID – 19 sürecinde memnuniyet, bağlantıda olma ve hayatın anlamlılığı gibi olumlu kavramların akademik öz yeterlikle anlamlı ilişkilere sahip olduğunu göstermektedir.



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Tablo 2. COVID – 19 Sürecinde İnternet / Teknoloji Kullanım Öz Yeterliğiyle İlgili Yürütülen Çalışmalar

Araştırma İsmi	Yazar (lar) Yıl	Çalışma ve Grubu	Ülke	Değişkenler	Veri Toplama Araçları	Araştırma ve Veri Analiz Yöntemi
İ1- Eczacılık Öğrencilerinin İnternet Öz Yeterlikleri	Tarhan (2020)	106 lisans öğrencisi	Türkiye	İnternet öz yeterliği	İnternet Öz Yeterlik Ölçeği ve Demografik Bilgiler (cinsiyet, internette geçirilen zaman, internet kullanımına ilişkin eğitim alıp almama)	Nicel - Açıklayıcı faktör analizi
İ2- Sınıf Öğretmenlerinin Bilgisayar ve İnternet Kullanımı Öz Yeterlik Algılarının İncelenmesi	Akyıl ve Akçay (2021)	207 sınıf öğretmeni	Türkiye	Bilgisayar ve internet kullanım öz yeterliği	Sınıf Öğretmenleri İçin Bilgisayar ve İnternet Kullanımı Öz Yeterlik Ölçeği	Nicel - Bağımsız gruplar T testi
İ3- Enhancing Learning Engagement During COVID-19 Pandemic: Self-Efficacy in Time Management, Technology Use and Online Learning Enviroments	Heo, Bonk ve Doo (2021)	1205 lisans öğrencisi	Güney Kore	Teknoloji kullanım, zaman yönetimi öz yeterliği ile öğrenmeye bağlılık ve çevrim içi öğrenme ortamı	Online Learning Self-Efficacy Scale	Nicel Korelasyon analizi
İ4- Sınıf Öğretmeni Adaylarının Bilgisayar ve İnternet Kullanımı Öz Yeterlik Algıları ile Çevrim içi Öğrenme Hazır bulunuşluk Düzeyleri Arasındaki İlişkinin İncelenmesi	Bircan ve Zabun (2021)	209 lisans öğrencisi	Türkiye	Bilgisayar ve internet kullanım öz yeterliği, çevrim içi öğrenme hazırbulunuşluğu	Sınıf Öğretmenleri İçin Bilgisayar ve İnternet Kullanımı Öz Yeterlik Ölçeği / Çevrim içi Öğrenme Hazırbulunuşluk Ölçeği	Nicel – T Testi, ANOVA ve Korelasyon analizi



Tablo 2'de COVID – 19 sürecinde bilgisayar / internet kullanım öz yeterliğine ilişkin 3'ü yurt içi ve 1'i yurt dışı literatüre ait 4 çalışma sunulmuştur. Bu çalışmaların 3'ü lisans öğrencileri, 1'i sınıf öğretmenleriyle gerçekleştirilmiştir. Nicel araştırma yönteminin benimsendiği bu araştırmalarda açıklayıcı faktör analizi, korelasyon analizi ve bağımsız örneklem T testi yöntemleri kullanılmıştır. Bununla birlikte internet / bilgisayar kullanım öz yeterliğiyle birlikte İ1 kodlu araştırmada demografik, İ3 kodlu araştırmada öğrenme bağlılığı ve çevrim içi öğrenme ortamı, İ4 kodlu araştırmada çevrim içi öğrenme hazır bulunuşluğu değişkenleri çalışılmıştır.

4.2 COVID – 19 Sürecinde İnternet / Teknoloji Kullanım Öz Yeterliğiyle Çalışılan Değişkenlere İlişkin Bulgular

İ1 kodlu araştırmada günde 3 – 5 saat arasında internet kullanan üniversite öğrencilerinin interneti 3 saatten az kullanan üniversite öğrencilerine göre daha yüksek seviyede internet öz yeterliğine sahip olduğu tespit edilmiştir.

İ2 kodlu araştırmada katılımcı öğretmenlerin ortalamasının üzerinde bilgisayar ve internet kullanımını öz yeterliğine sahip oldukları; cinsiyete göre bu düzeyin farklılaşmadığı ancak yaş ve kıdem arttıkça öz yeterlik seviyesinin düştüğü sonucuna ulaşılmıştır. Bununla birlikte lisansüstü öğrenim gören öğretmenlerin öz yeterlik düzeyleri göremeyenlere göre anlamlı şekilde daha yüksektir. İ2 kodlu araştırmayla aynı ölçeğin kullanıldığı İ4 kodlu araştırmada sınıf öğretmeni adayı lisans öğrencilerinin ortalama altı bilgisayar ve internet kullanım öz yeterliğine sahip oldukları; evinde bilgisayar ve internet bulunan öğrencilerin öz yeterlik seviyelerinin daha yüksek olduğu saptanmıştır. Bununla birlikte aynı araştırmada bilgisayar ve internet kullanım öz yeterliği ile çevrim içi öğrenme hazır bulunuşluğu arasında ,651 ile güçlü ilişkinin varlığı tespit edilmiştir.

İ3 kodlu araştırmada ise teknoloji kullanım öz yeterliğinin öğrenme bağlılığı ve çevrim içi öğrenme ortamıyla olumlu ilişkiler içerisinde olduğu ancak internet kullanım amacına göre öğrenme bağlılığının şekilleneceğini ifade edilmiştir.

Ele alınan bu çalışmalarda internet ve bilgisayarla uygun amaçlar doğrultusunda daha fazla vakit geçiren katılımcıların internet / teknoloji kullanım öz yeterlik seviyelerinin daha yüksek seviyede olduğu sonucu ortaktır. Bu araştırmalara ait bulgular Yıldız ve Seferoğlu (2020) tarafından uzaktan eğitim öğrencilerinin çevrim içi teknolojilere yönelik öz yeterlik algılarının yüksek olduğu bulgusuyla örtüşmektedir



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Tablo 3. COVID – 19 Sürecinde Öğretme Öz Yeterliliğiyle İlgili Yürütülen Çalışmalar

Araştırma İsmi	Yazar (lar) ve Yıl	Çalışma Grubu	Ülke	Değişkenler	Veri Toplama Araçları	Araştırma ve Veri Analiz Yöntemi
Ö1- Online Teaching Self-Efficacy, Social Emotional Learning (SEL) Competencies and Compassion Fatigue Among Educators During the COVID-19 Pandemic	Yang (2021)	321 öğretmen	A B D	Çevrim içi öğretme öz yeterliliği, sosyal duygusal öğrenme yetkinliği, merhamet tükenmişliği	Online Teaching Self-Efficacy Scale, Professional Quality of Life Scale, Educator Social Emotional Learning Comptencies Scale	Nicel- Doğrulayıcı faktör analizi
Ö2- Perception of Online Teacher Self-Efficacy: A Multi-State Study of Nursing Faculty Pivoting Courses During COVID-19	Culp-Roche vd. (2021)	84 akademisyen	A B D	Çevrim içi öğretme öz yeterliliği	Michigan Nurse Educators Sense of Efficacy for Online Teaching (MNESEOT)	Nicel- Çoklu regresyon analizi
Ö3- Canadian Teachers' Attitudes Toward Change, Efficacy and Burnout During COVID-19 Pandemic	Sokal, Trudel ve Babb (2020)	1626 öğretmen	ad men a	Tükenmişlik, öz yeterlik, değişime yönelik tutum	Maslach Burnout Inventory for Educators, Teacher Sense of Self-Efficacy Scale, The Teacher Attitudes Towards Change Scale (TATC Scale)	Nicel- Boylamsal araştırma
Ö4- Uzaktan Eğitimde Eğitimcilerin Eğitimi: Uzaktan Eğitime Yönelik Öz Yeterlik ve Yarar Algısına Etkisi	Ak, Gökdaş, Öksüz ve Torun (2021)	139 akademisyen	Tü rki ye	Uzaktan eğitime yönelik öz yeterlik ve yarar algısı	Uzaktan Eğitime Yönelik Öz Yeterlik Algısı Ölçeği, Uzaktan Eğitime Yönelik Yarar Algısı Ölçeği	Yarı Deneysel (Kontrol grupsuz ön test son test)



Tablo 3’de COVID – 19 sürecinde öğretme öz yeterliğine dair 1’i yurt içi ve 3’ü yurt dışı literatüre ait olmak üzere 4 çalışmaya ait detaylar sunulmuştur. Çalışmaların 2’si üniversitelerde görev yapan akademisyenlerle yürütülürken kalan 2’si de öğretmen örneklemleri ile gerçekleştirilmiştir. Tablo 1 ve Tablo 2’deki çalışmalardan farklı olarak öğretme öz yeterliğiyle ilgili gerçekleştirilen çalışmalarda regresyon ve korelasyon analizlerinin dışında boylamsal ve yarı deneysel yöntemlerin kullanıldığı dikkat çekmektedir. Bunun dışında Tablo 3’de öğretme öz yeterliğiyle birlikte sosyal duygusal öğrenme yetkinliği, merhamet tükenmişliği, değişime karşı tutum ve yarar algısı değişkenleri çalışılmıştır.

4.3 COVID – 19 Sürecinde Öğretme Öz Yeterliğiyle Çalışılan Değişkenlere İlişkin Bulgular

Ö1 kodlu araştırmada çevrim içi öğretme öz yeterliği, sosyal duygusal öğrenme yetkinliği ve merhamet tükenmişliği değişkenleri arasındaki ilişkiler 321 öğretmeden elde edilen veriler doğrultusunda incelenmiştir. Yapılan analizler sonucunda çevrim içi öğretme öz yeterliği ile sosyal duygusal öğrenme becerileri arasında .45; merhamet tükenmişliği arasında ise -.30 seviyesinde anlamlı ilişkilerin varlığına rastlanmıştır. Bu sonuç COVID – 19 sürecinde öğretme öz yeterliği yüksek düzeyde olan öğretmenlerin daha düşük seviyede tükenmişlik yaşadıklarına işaret etmektedir.

Ö2 kodlu araştırmada ise 84 akademisyenin çevrim içi öğretme öz yeterlik düzeyleri incelenmiş; akademisyenlerin en fazla 180 puan alınan ölçekten 126.2 puan ile ortalamasının üzerinde öz yeterlik algısına sahip oldukları bulgusuna ulaşılmıştır. Aynı araştırmada akademisyenlerin en yüksek seviyede sahip oldukları öz yeterlik boyutu bilgisayar kullanımı olurken en düşük seviyedeki öz yeterlik alanı ise öğrencilerin katılımını sağlama olmuştur.

Ö3, 3 ay aralıkla gerçekleştirilmiş 2 aşamalı boylamsal bir araştırmadır. Bu araştırmada toplamda 1626 öğretmenin değişime karşı tutum, tükenmişlik ve öğretme öz yeterlik değişkenleri arasındaki ilişkiler ele alınmıştır. Analiz sonuçları öğretmenlerin iki ölçüm arasında tükenmişlik seviyelerinin arttığını; değişime pozitif yaklaşanların tükenmişlik seviyeleri azalırken öz yeterlik düzeylerinin arttığını ortaya koymuştur. Bu araştırmada son olarak iki ölçüm arasında çevrim içi öğretme öz yeterliğinin artış gösterdiği saptanmıştır.

Son olarak Ö4 kodlu araştırmada ise 139 akademisyene uzaktan eğitime yönelik verilen eğitimin öz yeterlik ve yarar algısına etkisi incelenmiştir. Yapılan analizler sonucunda programın akademisyenlerin uzaktan eğitim – öğretme faaliyetlerine yönelik öz yeterlik ve yarar algısını artırıcı nitelikte olduğu tespit edilmiştir.

Ö1 ve Ö3 kodlu araştırmada çevrim içi öğretme öz yeterliğine yüksek düzeyde olan eğitimcilerin tükenmişlik seviyelerinin anlamlı şekilde düşük seviyede olduğu sonucu ortaktır. Ö2 ve Ö4 kodlu araştırmalarda ise eğitimcilerin çevrim içi öğretme öz yeterlik düzeyleri ortalamasının üzerindedir.

5. SONUÇ

Bu çalışma; tüm dünyayı derinden etkileyen COVID – 19 pandemisi sürecinde öz yeterlikle ilgili gerçekleştirilen çalışmaların hangi alanlarda yoğunlaştığı ve ne gibi sonuçlar ortaya koyduğunu tespit etmek amacıyla farklı 3 kümeden (akademik öz yeterlik, internet / bilgisayar kullanım öz yeterliği ve çevrim içi öğretme öz yeterliği) 12 araştırmaya ait bulgular sistematik olarak incelenmiştir. Ele alınan 12 araştırmanın 7’si yurt dışı, 5’i yurt içi literatüre aittir. Bu çalışmaların 6’sı üniversite öğrencisi, 3’ü öğretmen, 2’si akademisyen ve 1’i orta okul öğrencisi örneklemleriyle gerçekleştirilmiştir.



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Akademik öz yeterlikle ilgili 4 çalışma incelendiğinde pandemi sebebiyle kaygı, korku ve strese artış; akademik öz yeterlikte ise azalma olduğu ifade edilmiştir. Bununla birlikte salgın döneminde hayatın anlamı, çevreyle bağlantıda olma gibi olumlu özelliklere sahip olan katılımcıların akademik öz yeterlik seviyeleri daha yüksektir. Bu sonuçlar Rabaglietti ve diğerleri (2021) tarafından elde edilen kriz durumlarının üstesinden gelmede öz yeterliğe sahip olmanın belirleyici ve etkili olduğu bulgusuyla tutarlıdır. Buna göre bireyin öz yeterlik gibi olumlu bir özelliğini geliştirdiğinde problem durumlarla daha etkin biçimde başa çıkacağı yorumu yapılabilir.

İnternet / bilgisayar kullanım öz yeterliğine dair çalışmalara bakıldığında internet / bilgisayar kullanım öz yeterliği yüksek seviyede olan katılımcıların çevrim içi öğrenme hazır bulunuşluklarının da yüksek olduğu tespit edilmiştir. Bu sonuç Yıldız (2015) tarafından ulaşılan çevrim içi teknolojilere bilgi sahibi olanların öz yeterlik ve yarar algılarının yüksek seviyede olduğu bulgusuyla tutarlıdır. Buna göre teknoloji kullanımına dair öz yeterlik seviyesi yüksek olan katılımcıların öğrenme ve öğretme faaliyetlerinin etkin şekilde yürüttüğü yorumu yapılabilir.

Öğretme öz yeterliğine ilişkin gerçekleştirilmiş çalışmalarda çevrim içi öğretme öz yeterlik seviyesi ile tükenmişlik arasında anlamlı negatif korelasyon varlığına rastlanmıştır. Bunun yanında eğitimcilerin çevrim içi öğretmeye yönelik öz yeterlik algılarının ortalama üzerinde olduğu bulgusuna rastlanmıştır. Bu sonuçlar Pressley ve Ha (2021) ile Rabaglietti ve diğerleri (2021) tarafından uzaktan eğitim sürecinde pandeminin eğitimcilere stres, zorluk getirdiği ve bunlar sonucunda öz yeterliğin düştüğü bulgusu ile mücadele etmede öğretme öz yeterliğinin artırılmasının gerekliliğini ortaya koymaktadır.

Bu sonuçlar araştırmaların büyük çoğunluğunun üniversite öğrencisi ve eğitimciler üzerinde gerçekleştirildiğini göstermektedir. Bundan dolayı ilk okul, orta okul ve lise seviyesindeki öğrencilerin de pandemi sürecindeki öz yeterlik algılarına ilişkin çalışmalar artırılabilir. Bununla birlikte aşılama belirli bir seviyeye ulaşmış ve eğitim öğretim faaliyetleri yüz yüze olsa da pandemi devam etmektedir. İlerleyen süreçte ne ile karşılaşılacağı belirsiz olması sebebiyle Ak, Gökdaş, Öksüz ve Torun (2021)'un akademisyenlere yönelik çevrim içi eğitim programının etkili olduğu bulgusundan hareketle farklı kademelerdeki öğretmenler ve öğretim üyelerine ilgili programın uygulanması önerilebilir.



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OYUN BAĞIMLILIĞINA YÖNELİK GERÇEKLEŞTİRİLEN ÇALIŞMALARIN İNCELENMESİ

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Özet

İnternet ve teknolojik aygıtlara erişimin geniş kitlelere ulaşması, sokakta oynamanın yerini teknolojik cihazların almasıyla gençlerin dijital oyunlara ilgileri artmış; bilgisayar, mobil cihazlar ve konsollar üzerinden oyun oynamak favori serbest zaman aktivitesi haline gelmiştir. Yapılan bir araştırmada 2019’da 7.5 milyon kişinin oyun amacıyla internet kafelerde zaman geçirdiği sonucuna ulaşılmıştır. Dijital oyunlara olan bu ilgi, oynamanın aşırı boyutlara ulaşması sebebiyle oyun bağımlılığına evrilmiştir. Çeşitli aygıtlar aracılığıyla kontrol edilemeyen bir şekilde oynama davranışının gerçekleştirilmesi oyun bağımlılığı olarak ifade edilmektedir. Yapılan araştırmalar oyun bağımlılığının tüm yaş gruplarının ve özellikle gençlerin psikolojik işlevini, gündelik hayattaki ilişkileri vbe ruh sağlıklarını olumsuz etkilediğini ortaya koymaktadır. Bu bağlamda bu araştırmanın amacı işlevselliği önemli bir şekilde etkileyen oyun bağımlılığı ile ilgili gerçekleştirilen çalışmaların sistematik olarak incelenmesidir. İlgili amaç gereğince ‘‘digital game addiction’’, ‘‘game addiction’’ kavramları Elsevier, Sage Journals, Springer Link ve Taylor and Francis veri tabanlarında aratılarak 22 yurt dışı çalışmaya ulaşılmıştır. Bunula birlikte ilgili kavramların Türkçe karşılıkları olan ‘‘dijital oyun bağımlılığı’’ ve ‘‘oyun bağımlılığı’’ kavramları da YÖK Ulusal Tez Merkezi, Dergi Park, Google Scholar veri tabanlarında aratılarak 28 yurt içi çalışmaya ulaşılmıştır. İncelenen 50 çalışmadan hareketle erkeklerin oyun bağımlılıklarının kızlara göre daha yüksek seviyede olduğu, yaş ve sınıf seviyesi azaldıkça oyun bağımlılığı riskinin arttığı, demokratik ebeveyn tutumundan ihmalkâr ebeveyn tutumuna doğru gidildikçe oyun bağımlılık düzeyinin artış gösterdiği sonuçları en sık tekrar eden bulgulardır. Bununla birlikte akademik başarı, mutluluk, yaşamın anlamı, fiziksel aktivite ve spora katılım değişkenlerinin oyun bağımlılığı ile negatif korelasyona sahip olduğu tespit edilirken saldırganlık, öfke, depresyon, kaygı, stres, yalnızlık ve diğer bağımlılıkların oyun bağımlılığı ile pozitif korelasyona sahip olduğu saptanmıştır. Araştırma kapsamında ele alınan 50 çalışma biçim açısından incelendiğinde oyun bağımlılığına yönelik tarama ve ilişki araştırmalarının yoğunlukta olduğu, lise öğrencisi örnekleminin en çok tercih edildiği, son yıllarda oyun bağımlılığı konusuna ilginin arttığı, nicel araştırmaların literatürde çoğunluğu oluştururken nitel ve deneysel çalışmaların sayısının son derece kısıtlı olduğu tespitleri gerçekleştirilmiştir. İlgili saptamalar doğrultusunda çeşitli önerilerde bulunulmuştur.

Anahtar kelimeler: Oyun, bağımlılık, oyun bağımlılığı, sistematik inceleme



Abstract

With the access to the Internet and technological devices reaching large masses and the replacement of playing on the street with technological devices, the interest of young people in digital games has increased; Gaming on computers, mobile devices and consoles has become a favorite free time activity. Turkey Game Industry Raport indicated that 7.5 million people spent time in internet cafes for gaming in 2019. This interest in digital games has evolved into game addiction due to the fact that playing has reached extreme dimensions. Uncontrolled playing behavior through various devices is expressed as game addiction. Studies show that game addiction negatively affects the psychological function, relationships in daily life and mental health of all age groups and especially young people. In this context, the aim of this study is to systematically examine the studies on game addiction, which significantly affects functionality. In accordance with the related purpose, the concepts of "digital game addiction" and "game addiction" were searched in Elsevier, Sage Journals, Springer Link and Taylor and Francis databases and 22 international studies were reached. In addition, the concepts of "digital game addiction" and "game addiction", which are the Turkish equivalents of the related concepts, were also searched in the databases of YÖK National Thesis Center, Dergi Park, and Google Scholar, and 28 domestic studies were reached. Based on the 50 studies examined, the most frequently repeated findings are that the game addiction of boys is higher than that of girls, the risk of game addiction increases as age and class level decreases, and the level of game addiction increases as one moves from democratic parenting attitude to negligent / permissive parenting. When the 50 studies discussed within the scope of the research are examined in terms of form, it is seen that the survey and relationship researches on game addiction are intense, the high school student sample is the most preferred, the interest in the subject of game addiction has increased in recent years, while the quantitative studies constitute the majority in the literature, the number of qualitative and experimental studies is extremely limited. Various suggestions were made in line with the relevant determinations

Key words: Game, addiction, game addiction, systematic review

GİRİŞ

Türk Dil Kurumu (TDK) tarafından belli kuralları olan, iyi vakit geçirmeye yarayan eğlence olarak tanımlanan oyunun farklı türleri bulunmaktadır. Bu türler arasında son dönemlerde en çok ön plana çıkan; bilgisayar, mobil aygıtlar ve konsollar aracılığıyla ulaşılabilen dijital oyunlardır. Bu oyunlar özellikle gençlerin favori serbest zaman aktiviteleri arasında üst sıralardadır (Graffiths ve Davies, 2005). Dünya genelinde yaklaşık 2.7 milyar katılımcının dijital oyunlarla vakit geçirdikleri bilinmektedir (Dijital Oyunlar Raporu, 2020). Ülkemizde ise lise öğrencileriyle gerçekleştirilen bir çalışmada katılımcıların %55'inin çevrim içi; %40'nın çevrim dışı oyunlar oynadığı ve günlük 90 dakikayı oyunlara ayırdığı tespit edilmiştir (Taylan, Topal ve Ayas, 2018). Dijital oyunlara dair kullanıcı sayılarının bu düzeylere ulaşmasında evden internete erişim oranının %92'ye çıkması, bireysel internet



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erişim seviyesinin %82'ye yükselmesi ve 16 – 74 yaş arasındaki grubun internetin çok aktif kullanıcılarına dönüşmesinin (Hanehalkı Bilişim Teknolojileri Kullanım Araştırması, 2021) önemli payı bulunmaktadır. Bununla birlikte COVID – 19 salgını süresince eve kapanmanın oyun sektörüne yatırımların artması ile ülkemizde mobilde 35 milyon ve bilgisayarda 22 milyon oyun oynayan birey sayılarına ulaşılmasına etkisi olmuştur (Türkiye Oyun Sektörü Raporu, 2020). İlgili veriler doğrultusunda dijital oyunların özellikle gençlerin hayatlarının önemli bir parçası olduğu ifade edilebilir. Bununla birlikte oyuncuların oyunla hoş vakit geçirmenin ötesinde yeni bir problem alanı oluşmuştur: Oyun bağımlılığı.

Bağımlılık TDK tarafından bir kimseye ya da bir şeye aşırı bağlı olma, iradeyi yitirme, başka bir şeyin gücüne ve yardımına muhtaç hale gelme olarak tanımlanırken oyun bağımlılığı ise Yeşilay tarafından teknolojik bağımlılıklar kategorisinde değerlendirilmektedir (Yeşilay, 2021). Zihnin sadece oyunla meşgul olması, oyun süresiyle ilgili çevredekileri kandırma, diğer aktivitelerden bütünüyle soyutlanma ve iş – eğitim hayatında problemler yaşamayı gerektirecek seviyede abartılı oyun davranışı oyun bağımlılığına işaret etmektedir (Young, 2009). İnternet ve cihazlar alanında önemli gelişmelerin yaşanması sonrasında abartılı seviyede oyun davranışı oyun bağımlılığı olarak atfedilmeye başlanmıştır. Öyle ki 2013'te American Psychological Association (APA) tarafından hazırlanan The Diagnostic and Statistical Manual of Mental Disorders (DSM) 5'e ve 2017'de, World Health Organisation (WHO) tarafından hazırlanan International Classification of Diseases (ICD) 11'e oyun oynama bozukluğunu eklemiştir (APA, 2018). Bu kılavuzlardan DSM-5'e göre kafası sürekli oyunla meşgul olma, oyun oynamadığında yoksunluk belirtileri gösterme, oyunu bırakma girişimlerinde başarısız olma, oyun dışındaki faaliyetlere zaman bulamama, ilişki kaybetme gibi belirtilerin oyun bağımlılığına işaret ettiği vurgulanmaktadır.

Sonuç olarak ruh sağlığı bozuklukları kılavuzlarına giren oyun bağımlılığı tüm yaş grupları ve özellikle gençler için tehdit edici bir problemdir. Gentile (2009) oyun bağımlılığının gençlerin aile ve eğitim hayatı, sosyal ilişkiler ile psikolojik işlevselliklerini olumsuz olarak etkilediğini ifade etmektedir. Novrialdy ve diğerleri (2019) lise örnekleme üzerinde gerçekleştirdikleri çalışmada katılımcı grubun %60'nın oyun bağımlılığı konusunda risk altında olduğunu ortaya koymaktadır. Yukarıda paylaşılan veriler ışığında oyun bağımlılığına ilişkin gerçekleştirilen araştırmaların yakından incelenmesi, sonuçlarının sentezlenmesinin önemli olduğu düşünülmektedir. Bu bağlamda oyun bağımlılığına dair gerçekleştirilen çalışmaların sistematik olarak incelenmesi bu araştırmanın temel amacıdır.

2. ARAŞTIRMA DESENİ

Araştırma kapsamında nitel araştırma yöntemleri arasında olan sistematik incelemeyle oyun bağımlılığına yönelik gerçekleştirilmiş çalışmalar analiz edilmiştir. Sistematik inceleme önceden net bir şekilde oluşturulmuş araştırma sorusu ve belirli dahil etme / hariç tutma kriterleri doğrultusunda ulaşılan araştırmaların analiz ve senteziyle bir bütün olarak sunulduğu yöntemdir. (Denyer ve Tranfield, 2009). Bu doğrultuda oyun bağımlılığına yönelik gerçekleştirilen araştırmaların incelenmesi problemi doğrultusunda belirli araştırmalar seçilip analiz edilerek raporlaştırılmıştır.

3. VERİ TOPLAMA SÜRECİ

Oyun bağımlılığını konu edinen araştırmaları tespit etmek için Elsevier, Sage Journals, Springer Link, Taylor and Francis Group veri tabanlarından; "game addiction" ve "digital game addiction" ile Dergi Park, YÖK Ulusal Tez Merkezi ve Google Scholar veri tabanlarından "oyun bağımlılığı" ve "dijital oyun bağımlılığı" kelimeleri aratılarak 50



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alıřmaya ulařılmıřtır. Elde edilen 50 alıřmanın sistematik incelenmesi sonucu elde edilen veriler ařađıda sunulmuřtur.



4. BULGULAR

Tablo 1. Oyun bağımlılığı ile ilgili yürütülen araştırmalar

Araştırma İsmi	Yazar (lar) ve Yıl	Katılımcılar	Değişkenler	Veri Toplama Araçları	Araştırma Türü	Veri Analiz Yöntemi
A1- Lise Öğrencilerinde Dijital Oyun Bağımlılığı Üzerine Bir Alan Araştırması: Uşak Örneği	Soyöz-Semerci ve Balcı (2020)	479 lise öğrencisi	Demografik, dijital oyun bağımlılığı	Kişisel bilgi formu, Dijital oyun bağımlılığı ölçeği	Nicel - Makale	ANOVA, bağımsız örneklem t testi
A2- Lise Öğrencilerinin Oyun Bağımlılığının Çeşitli Değişkenler Açısından İncelenmesi	Coşanay-Güley ve diğerleri (2020)	175 lise öğrencisi	Demografik, oyun bağımlılığı	Kişisel bilgi formu-Ergenler için oyun bağımlılığı ölçeği	Nicel-Bildiri	ANOVA, bağımsız örneklem t testi
A3-Niğde İli Ortaokul ve Lise Öğrencilerinin Oyun Bağımlılık Düzeylerinin Demografik Değişkenler Açısından İncelenmesi	Koç,Boduroğlu, Ekinay ve Gezici (2021)	939 ortaokul-lise öğrencisi	Demografik, oyun bağımlılığı	Kişisel bilgi formu-Ergenler için oyun bağımlılığı ölçeği	Nicel-Makale	ANOVA, bağımsız örneklem t testi
A4- Lise ve Üniversite Öğrencilerinde İnternet Oyun Bağımlılığı Sıklığı ve Etkili Faktörler	Koç (2020)	711 üniversite öğrencisi + 639 lise öğrencisi	Demografik, internet oyun bağımlılığı	Kişisel bilgi formu-İnternet oyun bağımlılığı kısa formu	Nicel – Yüksek lisans tezi	ANOVA, bağımsız örneklem t testi
A5-Lise Öğrencilerinin Dijital Oyun Bağımlılık Düzeylerinin Demografik Özelliklere Göre İncelenmesi	Göldağ (2018)	517 lise öğrencisi	Demografik, dijital oyun bağımlılığı	Kişisel bilgi formu-Dijital oyun bağımlılığı ölçeği	Nicel-Makale	ANOVA, bağımsız örneklem t testi
A6-Ortaöğretim Öğrencilerinin Dijital Bağımlılık Düzeylerinin Çeşitli Değişkenler Açısından İncelenmesi: Sivas İli Örneği	Arslan (2019)	464 lise öğrencisi	Demografik, dijital bağımlılık	Kişisel bilgi formu, Dijital bağımlılık ölçeği	Nicel-Makale	ANOVA, bağımsız örneklem t testi
A7-İnternet, Online Oyun ve Bağımlılık	Ayhan ve Köseliören (2019)	840 lise öğrencisi	Demografik, internet bağımlılığı	Kişisel bilgi formu-İnternet bağımlılığı ölçeği	Nicel-Makale	ANOVA, bağımsız örneklem t testi
A8-Ortaöğretim öğrencilerinin internet ve oyun bağımlılığı düzeylerinin incelenmesi	Taş, Eker ve Anlı (2014)	268 lise öğrencisi	Demografik, internet ve oyun bağımlılığı	Kişisel bilgi formu-Ergebler için bilgisayar bağımlılığı ölçeği	Nicel-Makale	ANOVA, bağımsız örneklem t testi



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A9-Predictors of Online Game Addiction Among Korean Adolescents	Lee ve Kim (2017)	1556 ortaokul-lise öğrencisi	Demografik, çevrim içi oyun bağımlılığı	Kişisel bilgi formu-Game addiction scale	Nicel-Makale	ANOVA, bağımsız örneklem t testi
A10-An Investigation of the Relationship Between Digital Game Addiction, Gender and Regular Sport Participation	Ekinci, Ustun ve Ozer (2016)	398 lise öğrencisi	Demografik, dijital oyun bağımlılığı ve spora katılım	Kişisel bilgi formu-Dijital oyun bağımlılığı ölçeği	Nicel-Makale	ANOVA, bağımsız örneklem t testi, korelasyon
A11-Adolesanlarda Dijital Oyun Bağımlılığı ile Fiziksel Aktivite Tutum ve Davranışlarını Etkileyen Faktörler	Gülbetekin, Güven ve Tuncel (2021)	583 ergen	Dijital oyun bağımlılığı ve fiziksel aktivite tutum	Kişisel bilgi formu-Çocuklar için dijital oyun bağımlılığı ölçeği-Bilişsel davranışçı fiziksel aktivite ölçeği	Nicel-Makale	ANOVA, bağımsız örneklem t testi, korelasyon
A12-Lise Öğrencilerinin Sportif Serbest Zaman İlgilenim, Dijital Oyun Bağımlılığı ve Yaşam Kalitesi Düzeylerinin Araştırılması	Yönet (2018)	1068 lise öğrencisi	Dijital oyun bağımlılığı, serbest zaman ve yaşam kalitesi	Boş zaman katılım ölçeği-Dijital oyun bağımlılığı ölçeği, Dünya Sağlık Örgütü yaşam kalitesi ölçeği	Nicel-Makale	ANOVA, bağımsız örneklem t testi, korelasyon
A13-Ankara İl Merkezinde Bulunan Ortaokul ve Lise Öğrencilerinin Dijital Oyun Bağımlılığı ve Anne Baba Tutumlarının İncelenmesi	Deniz (2021)	866 ortaokul-lise öğrencisi	Dijital oyun bağımlılığı, anne baba tutumu	Ergenler için oyun bağımlılığı ölçeği-Anne baba tutum ölçeği	Nicel-Yüksek lisans tezi	ANOVA, bağımsız örneklem t testi, korelasyon
A14- Lise Öğrencilerinin Dijital Oyun Bağımlılığı ve Algıladıkları Ebeveyn Tutumlarının Değerlendirilmesi	Eni (2017)	200 lise öğrencisi	Dijital oyun bağımlılığı, anne baba tutumu	Dijital oyun bağımlılığı ölçeği, anne baba tutum ölçeği	Nicel-Yüksek lisans tezi	ANOVA, bağımsız örneklem t testi, korelasyon
A15-Parenting Styles and Their Relation to Videogame Addiction	Kvêton ve Jelinek (2016)	333 ortaokul-lise öğrencisi	Oyun bağımlılığı, ebeveynlik tarzı	Game addiction scale for adolescents-The parent child interaction scale	Nicel-Makale	Regresyon
A16- Internet Game Addiction, Parental Attachment and Parenting of Adolescent in South Korea	Kim ve Kim (2015)	624 ortaokul-lise öğrencisi	İnternet oyun bağımlılığı, ebeveynlik tarzı	Game addiction scale-Inventory of parent and peer attachment	Nicel-Makale	Korelasyon
A17-Online Game Addiction Among Turkish Adolescents: The Effects of Internet Parenting Style	Ozgun (2019)	1336 ortaokul-lise öğrencisi	Çevrim içi oyun bağımlılığı, internet ebeveynlik tarzı	Online game addiction scale-The internet parental style scale	Nicel-Makale	Korelasyon
A18-Relationship Between Social Media Addiction, Game Addiction and Family Functions	Yayman ve Bilgin	762 lise öğrencisi	Oyun bağımlılığı, sosyal medya	Social media addiction scale for adolescents- Game addiction scale short form- Family assesstment	Nicel-Makale	Korelasyon



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(2020)			bağımlılığı ve aile işlevi	device			
A19- Lise Öğrencilerinin İnternet Bağımlılığı, Dijital Oyun Bağımlılığı ve Sosyal Medyaya Yönelik Tutumlarının İncelenmesi	Uslu (2019)	1268 lise öğrencisi	İnternet ve dijital oyun bağımlılığı ile sosyal medyaya yönelik tutum	Young internet bağımlılığı testi kısa form-Dijital oyun bağımlılığı ölçeği-Sosyal medya tutum ölçeği	Nicel-Yüksek lisans tezi	Korelasyon	
A20- Akıllı Telefon Bağımlılığı ve Oyun Bağımlılığı Arasındaki İlişkinin İncelenmesi	Göymen ve Ayas (2019)	271 lise öğrencisi	Oyun bağımlılığı, akıllı telefon bağımlılığı	Akıllı telefon kullanım düzeyi ölçeği-Çocuklar için bilgisayar oyun bağımlılığı ölçeği	Nicel-Makale	Korelasyon	
A21- Meslek Lisesi Öğrencilerinin Dijital Oyun Bağımlılıklarının Akıllı Telefon ve Bilgisayar Bağımlılıkları Çerçevesinde İncelenmesi	Temiz, Korkmaz ve Çakır (2020)	303 lise öğrencisi	Bilgisayar, akıllı telefon ve dijital oyun bağımlılığı	Bilgisayar bağımlılığı ölçeği-Dijital oyun bağımlılığı ölçeği-Akıllı telefon bağımlılığı ölçeği	Nicel-Makale	Korelasyon	
A22- Peer Influence in Internet and Digital Game Addicted Adolescents: Is Internet / Digital Game Addiction Contagious	Güntüç (2017)	184 lise öğrencisi	Dijital oyun ve internet bağımlılığı ile ekran etkisi	İnternet bağımlılığı ölçeği-Dijital oyun bağımlılığı ölçeği	Nicel-Makale	Korelasyon	
A23- Lise Öğrencilerinin Çevrim içi Oyun Bağımlılıkları ile Akran İlişkileri Arasındaki İlişkilerin İncelenmesi	Barışık (2021)	394 lise öğrencisi	Çevrim içi oyun bağımlılığı, akran ilişkileri	Çevrim içi oyun bağımlılığı ölçeği-Akran ilişkileri ölçeği	Nicel-Yüksek lisans tezi	Korelasyon	
A24- Ortaokul ve Lise Öğrencilerinin Oyun Bağımlılığı ile Anksiyete ve Empatik Eğilimleri Arasındaki İlişkinin İncelenmesi	Gezer (2019)	549 ortaokul-lise öğrencisi	Oyun bağımlılığı, anksiyete ve empati eğilimi	Çocuklar için anksiyete ve depresyon ölçeği-Ergenler için oyun bağımlılığı ölçeği-Empatik eğilim ölçeği	Nicel-Yüksek lisans tezi	Korelasyon	
A25- Çocuklarda ve Ergenlerde Çevrim içi Oyun Bağımlılığı ve Agresif Davranışlar Arasındaki İlişkinin İncelenmesi	Balıkçı (2018)	625 ortaokul-lise öğrencisi	Çevrim içi oyun bağımlılığı, agresif davranışlar	Çevrim içi oyun bağımlılığı ölçeği-Buss-Perry saldırganlık ölçeği	Nicel-Yüksek lisans tezi	Korelasyon	
A26- Lise Öğrencilerinin İnternet ve Bilgisayar Oyun Bağımlılığı ile Asilik Davranışları Arasındaki İlişkinin İncelenmesi	Eyyupoğlu (2017)	615 lise öğrencisi	İnternet ve bilgisayar bağımlılığı, ergen asiliği	Ergen asiliği ölçeği-İnternet ve bilgisayar bağımlılığı ölçeği	Nicel-Yüksek lisans tezi	Korelasyon	
A27- Prevalance of Addiction to the Internet, Computer Games, DVD and Video and its Relationship to Anxiety and Depression in a Sample of Iranian High School Students	Ahmedi vd. (2014)	1020 lise öğrencisi	Oyun, internet bağımlılığı; depresyon ve kaygı	Kaygı, depresyon ve oyun bağımlılığı ölçekleri	Nicel-Makale	Korelasyon	
A28- Is Video Gaming or Video Game Addiction Associated with Depressio, Academic Achievement, Heavy Episodic Drinking or Conduct Problems	Brunborg, Mentzoni ve Froyland (2014)	1928 ortaokul-lise öğrencisi	Oyun bağımlılığı, depresyon ve akademik başarı	Game addiction scale for adolescents-Hopkins Symptom Checklist	Nicel-Makale	Korelasyon	



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A29-The Association Between Mobile Game Addiction and Depression, Social Anxiety and Loneliness	Wang, Sheng ve Wang (2019)	578 ortaokul-lise öğrencisi	Oyun bağımlılığı, depresyon, sosyal kaygı ve yalnızlık	Mobile game addiction scale-Depression scale-Child loneliness scale-Child social anxiety scale	Nicel-Makale	Korelasyon
A30-Lise Öğrencilerinin Riskli Davranış ve Oyun Bağımlılıklarının İncelenmesi	Kaya, Bedir ve Kaval (2019)	450 lise öğrencisi	Oyun bağımlılığı, riskli davranışlar	Riskli davranışlar ölçeği ergen formu-Oyun bağımlılığı ölçeği	Nicel-Bildiri	Korelasyon
A31-Video Game Addiction and Psychological Distress Among Expatriate Adolescents in Saudi Arabia	Saquist vd. (2017)	276 lise öğrencisi	Oyun bağımlılığı, psikolojik stres	General health assesment-Video game addiction scale	Nicel-Makale	Korelasyon
A32-Versatility and Addiction in Gaming: The Number of Video Game Genres Played is Associated with Patological Gaming in Male Adolescents	Donati vd. (2015)	701 lise öğrencisi	Oyun bağımlılığı, patolojik oynama, oyun çeşitliliği	Game addiction scale for adolescents	Nicel-Makale	Regresyon
A33-The Relationship Between Internet and Computer Game Addiction Level and Shyness Among High School Students	Ayas (2012)	365 lise öğrencisi	Oyun bağımlılığı ve çekingenlik	Scale for adolescents computer addiction-Shyness scale	Nicel-Makale	Korelasyon
A34-Impulsiveness and Video Game Addiction	Irles ve Gomis (2015)	411 ortaokul-lise öğrencisi	Oyun bağımlılığı ve dürtüsellik	Gaming addiction scale for adolescents-Plutchik impulsiveness scale	Nicel-Makale	Korelasyon
A35-Gaming Duration and Preferences: Relationship with Psychiatric Health, Gaming Addiction Scores and Academic Success in High School Students	Yesilyurt (2020)	499 lise öğrencisi	Oyun bağımlılığı, akademik başarı ve psikiyatrik sağlık	DASS-21/IGDS-9	Nicel-Makale	ANOVA, bağımsız örneklem t testi, korelasyon
A36-Game Addiction and Academic Achievement	Sahin, Gumus ve Dincel (2016)	370 lise öğrencisi	Oyun bağımlılığı ve akademik başarı	Oyun bağımlılığı ölçeği ile genel not ortalaması	Nicel-Makale	Korelasyon
A37-Computer Game Addiction in Adolescents and its Relationship to Chronotype and Personality	Vollmer vd. (2014)	741 ortaokul öğrencisi	Kişilik, oyun bağımlılığı ve biyolojik saat	Composite scale for morningness-BIG-5 inventory-Computer game addiction scale	Nicel-Makale	Korelasyon
A38-The Relationship Between Game Addiction and Personal Traits	Baska (2021)	239 lise öğrencisi	Kişilik ve oyun bağımlılığı	Personality traits scale-Game addiction scale	Nicel-Makale	Korelasyon
A39-Relationship Between Internet Addiction, Gaming Addiction and School Engagement among Adolescents	Tas (2017)	365 lise öğrencisi	İnternet ve oyun bağımlılığı ile okul bağlılığı	Scale for internet usage addiction-Gaming addiction scale for adolescents-School engagement scale for high school form	Nicel-Makale	Korelasyon
A40-Social Activities, Self-Efficacy, Game Attitudes and Game Addiction	Jeong ve Kim (2011)	600 ortaokul-lise öğrencisi	Oyun bağımlılığı, öz yeterlik, sosyal aktivite ve oyun tutumu	Self efficacy scale-Game addiction scale-Kişisel bilgi formu	Nicel-Makale	Korelasyon
A41-A Case Study for Internet Game Addiction	Lee (2011)	1 lise öğrencisi	Oyun bağımlılığı	-	Nitel-Vaka	5 oturumluk terapi



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A42- Motivasyonel Görüşme Tekniğine Dayalı Psikoeğitim Programının Lise Öğrencilerinin Çevrim içi Oyun Bağımlılığı Düzeyine Etkisi	Özcan ve Balcı-Çelik (2021)	16 lise öğrencisi	Çevrim içi oyun bağımlılığı	Çevrim içi oyun bağımlılığı ölçeği	Deneysel (ön test son test)	6 oturumluk grup terapisi
A43- Teknolojik Bağımlılıklar ve Sosyal Bağlılık: İnternet Bağımlılığı, Sosyal Medya Bağımlılığı, Dijital Oyun Bağımlılığı ve Akıllı Telefon Bağımlılığının Sosyal Bağlılığı Yordayıcı Etkisi	Savcı ve Aysan (2017)	201 lise öğrencisi	Sosyal bağlılık; dijital oyun, internet, akıllı telefon ve sosyal medya bağımlılığı	Young internet bağımlılığı testi kısa form-Akıllı telefon bağımlılığı ölçeği kısa form-Dijital oyun bağımlılığı ölçeği-Sosyal medya bağımlılığı ölçeği-Sosyal bağlılık ölçeği	Nicel-Makale	Regresyon
A44- 14-24 Yaş Arası Öğrencilerde Sosyal ve Duygusal Yalnızlığın Oyun Bağımlılığı ile İlişkinin İncelenmesi	Gürgân, Karaman ve Minaz (2018)	400 lise öğrencisi	Oyun bağımlılığı, sosyal ve duygusal yalnızlık	Dijital oyun bağımlılığı ölçeği-Sosyal duygusal yalnızlık ölçeği kısa form	Nicel-Bildiri	Korelasyon
A45- Video Game Addiction in Turkey: Does It Correlate Between Basic Psychological Needs and Perceived Social Support	Yıldırım ve Zeren (2021)	553 lise öğrencisi	Oyun bağımlılığı, psikolojik ihtiyaçlar ve sosyal destek	Temel psikolojik ihtiyaçlar ölçeği-Algılanan sosyal destek ölçeği-Oyun bağımlılığı ölçeği	Nicel-Makale	Korelasyon
A46- Ergenlerde Dijital Oyun Bağımlılığı ve Psikolojik İhtiyaçlar	Dursun ve Eraslan-Çapan (2018)	322 lise öğrencisi	Dijital oyun bağımlılığı ve psikolojik ihtiyaçlar	Dijital oyun bağımlılığı ölçeği-Psikolojik ihtiyaçlar ölçeği	Nicel-Makale	Regresyon ve korelasyon
A47- Lise Öğrencilerinin Zorbalıkla Baş Etme Düzeyleri ve Zorbalık Eğilimi Düzeyleri ile Bilgisayar Oyun Bağımlılığı Arasındaki İlişkinin İncelenmesi	Kıldırım (2019)	444 lise öğrencisi	Oyun bağımlılığı ve zorbalık	Zorbalık eğilimi ölçeği-Zorbalık baş etme ölçeği-Çocuklar için bilgisayar oyun bağımlılığı ölçeği	Nicel-Yüksek lisans tezi	Korelasyon
A48- Lise Öğrencilerinin Dijital Oyun Bağımlılığı ile Psikolojik Sağlık Düzeyi Arasındaki İlişkinin İncelenmesi	Çiçek (2021)	582 lise öğrencisi	Dijital oyun bağımlılığı ve psikolojik sağlık	Çocuk ve gençler için psikolojik sağlık ölçeği-Dijital Oyun Bağımlılığı Ölçeği	Nicel-Makale	Korelasyon
A49- Dijital Oyun Bağımlılığının Yordayıcısı Olarak Mutluluk	Cengiz, Peker ve Demiralp (2020)	446 lise öğrencisi	Dijital oyun bağımlılığı ve mutluluk	Dijital oyun bağımlılığı ölçeği-Mutluluk ölçeği	Nicel-Makale	Regresyon ve korelasyon
A50- Adolesanlarda Dijital Oyun Bağımlılığının Mutluluk ve Yaşam Anlamına Etkisi	Kaya (2021)	162 lise öğrencisi	Dijital oyun bağımlılığı, mutluluk ve yaşam anlamı	Çocuklar için dijital oyun bağımlılığı ölçeği-Oxford mutluluk ölçeği-Yaşamda anlam ölçeği lise form	Nicel-Makale	Regresyon ve korelasyon



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Tablo 2. Araştırmaların yurt içi / yurt dışı literatüre göre dağılımı **n***

Yurt içi literatür	28
Yurt dışı literatür	22
Toplam	50

* araştırma sayısı

Tablo 2'ye göre oyun bağımlılığına yönelik incelenen araştırmaların 28'i yurt içi, 22'si yurt dışı literatüre aittir.

Tablo 3. Araştırmaların yıllara göre dağılımı

Araştırma yılı	n*
2011	2
2012	1
2014	4
2015	3
2016	3
2017	7
2018	5
2019	9
2020	7
2021	9

* araştırma sayısı

Tablo 3'te oyun bağımlılığını konu alan 50 araştırmanın hangi yıllarda gerçekleştiği ifade edilmektedir. Buna göre 2016 yılından itibaren oyun bağımlılığı konusunun sıklıkla araştırıldığı, araştırmacılar için popüler bir konu olduğu yorumu yapılabilir.

Tablo 4. Araştırmalarda çalışma gruplarına göre dağılım

Çalışma grubu	Sayı
Lise öğrencisi	48
Orta okul öğrencisi	14
Üniversite öğrencisi	1

Tablo 4'e göre oyun bağımlılığıyla ilgili gerçekleştirilen araştırmalarda en çok lise öğrencisi örnelemi; en az da üniversite öğrencisi örnelemi ile çalışılmıştır. Orta okul öğrencileri örnelemi ise bu iki grubun arasında yer almaktadır. Bu anlamda üniversite grubu üzerinde gerçekleştirilen çalışmaların sınırlı sayıda olduğu dikkat çekmektedir.

Tablo 5. Araştırmaların katılımcı sayılarına göre dağılımı

Katılımcı sayısı (kişi)	n*
0 - 250	8
250 - 500	19

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500 - 1000	16
1000 ve üzeri	7

* araştırma sayısı

Tablo 5'te oyun bağımlılığıyla ilgili incelenen araştırmaların katılımcı sayısına göre dağılımları vurgulanmaktadır. Buna göre 250 – 500 katılımcı en sık tercih edilen örneklem sayısı olmuştur. 250 – 500 katılımcıyı 500 – 1000 kişilik örneklem büyüklüğü takip ederken 0 – 250 ile 1000 ve üzeri sayıda katılımcıyı içeren örneklem büyükleri en az tercih edilmiştir.

Tablo 6. Araştırma türlerine göre dağılım

Araştırma türü	n*
Nicel araştırma makalesi	36
Yüksek lisans tezi	9
Bildiri	3
DeneySEL çalışma	1
Nitel vaka çalışması	1

* araştırma sayısı

Tablo 6'da oyun bağımlılığını konu edinen araştırmaların türlere göre dağılımı belirtilmiştir. Buna göre 50 araştırmanın 36'sı nicel, araştırma makalesidir. Bunu 9 araştırma ile yüksek lisans tezi ve 3 araştırma ile bildiri takip etmektedir. Bununla birlikte nitel vaka çalışması ve deneysel desende 1'er çalışma yürütülmüştür. İlgili sayılar oyun bağımlılığına ilişkin nitel ve deneysel çalışmaların sınırlı olduğu sonucunu doğurmaktadır.

Tablo 7. Oyun bağımlılığı ile çalışılan değişkenlerin dağılımı

Oyun bağımlılığı ile çalışılan değişken	n*
Demografik (cinsiyet, yaş, sınıf, ebeveyn eğitim durumu)	10
İnternet bağımlılığı	5
Anne baba tutumu	5
Sosyal medya bağımlılığı	3
Akıllı telefon bağımlılığı	3
Kaygı	3
Depresyon	3
Akademik başarı	3
Akran ilişkileri	2
Agresiflik / asilik	2
Kişilik	2
Yalnızlık	2
Mutluluk	2
Yaşam anlamı, psikolojik sağlamlık, zorbalık, öz yeterlik, okul bağlılığı, biyolojik sağlık, psikolojik sağlık, riskli davranışlar, psikolojik stres, oyun çeşitliliği, patolojik oynama, çekingenlik, dürtüsellik, empati, psikolojik ihtiyaç,	1



spora katılım, fiziksel aktivite, serbest zaman, yaşam kalitesi

* *araştırma sayısı*

Tablo 7’de araştırma kapsamında incelenen 50 çalışmada oyun bağımlılığıyla birlikte hangi değişkenlerin çalışıldığı sunulmuştur. Buna göre yaş, cinsiyet, sınıf düzeyi, anne baba eğitim seviyesi gibi demografik değişkenleri konu alan 10 çalışma zirvede yer almaktadır. Demografik değişkenleri 5 çalışma ile internet bağımlılığı ve anne baba tutumu; 3 çalışmayla sosyal medya bağımlılığı, akıllı telefon bağımlılığı, kaygı, depresyon ve akademik başarı; 2 çalışmayla akran ilişkileri, agresiflik, kişilik, yalnızlık ve mutluluk değişkenleri takip etmektedir. Bunların dışında tablo 7’de vurgulanan 20 kavram da oyun bağımlılığı ile araştırılmıştır. Bu veriler oyun bağımlılığıyla hem kişisel hem de ortama değişkenlerin sıklıkla çalışıldığı; tarama ve ilişki araştırmalarının ağırlıkta olduğunu ortaya koymaktadır.

4.1 Oyun Bağımlılığı ile Çalışılan Demografik Değişkenler Açısından Bulgular

Oyun bağımlılığının demografik değişkenlere göre farklılaşp farklılaşmadığını inceleyen 10 araştırmanın bulguları incelendiğinde erkek katılımcıların oyun bağımlılık düzeylerinin anlamlı şekilde yüksek olduğu 1 araştırma dışındaki 9 araştırmada tekrar etmektedir. Bununla birlikte yaş ve sınıf düzeyi düşük olan katılımcıların oyun bağımlılık puanlarının anlamlı şekilde yüksek olduğu da tekrar eden bulgu niteliğindedir. Ailenin gelir durumu ve anne-baba eğitim düzeyine göre oyun bağımlılığının fark oluşturup oluşturmadığına dair değişken sonuçlar elde edilmiştir. Ancak gelir durumuna göre fark olmadığı ve anne baba eğitim düzeyi yükseldikçe oyun bağımlılığının yüksek olduğu sonuçları daha sık tekrar etmektedir. Özetle erkeklerin, sınıf ve yaş seviyesi daha küçük olan katılımcıların oyun bağımlılığı düzeyleri anlamlı şekilde daha yüksektir. Bununla birlikte anne baba eğitim ve gelir düzeyine göre farklı sonuçlar elde edilmiştir.

4.2 Oyun Bağımlılığı ile Çalışılan Anne Baba Tutumu Değişkeni Açısından Bulgular

Anne baba tutumu ve aileyi değişken olarak kabul eden 5 araştırmada demokratik ebeveyn tutumunun oyun bağımlılığıyla olumsuz bir ilişki içinde olduğu; ihmalkâr tutum arttıkça oyun bağımlılığının da artacağı bulguları saptanmıştır. Eni (2017) gerçekleştirdiği araştırmada demokratik ebeveyn tutumu ile dijital oyun bağımlılığı arasında $-0,071$ düzeyinde anlamlı ilişki bulmuştur. Buradan hareketle oyun bağımlılığı demokratik tutumdan ihmalkâr tutuma doğru gittikçe artmaktadır. Bunun yanında aile ile olan ilişkilerin düşük kalitede olması, anne babanın tutarsız davranış örüntüleri de oyun bağımlılığının artmasına işaret etmektedir.

4.3 Oyun Bağımlılığı ve Diğer Bağımlılıklar Açısından Bulgular

Oyun bağımlılığıyla birlikte internet, sosyal medya ve akıllı telefon bağımlılıklarını ele alan araştırmalarda internet bağımlılığı ile oyun bağımlılığı arasında orta ve yüksek düzeyde anlamlı ilişkilerin varlığı farklı araştırmacılar tarafından tespit edilmiştir (Uslu, 2019; Eyyupoğlu, 2017; Taş, 2017). Bununla birlikte akıllı telefon bağımlılığının ve sosyal medya bağımlılığının da oyun bağımlılığı ile anlamlı ve pozitif ilişki içerisinde olduğuna dair araştırma bulguları mevcuttur (Göymen ve Ayas, 2019; Yayman ve Bilgin, 2020). Bu sonuçlar internet bağımlılığı, sosyal medya bağımlılığı ve akıllı telefon bağımlılığının oyun bağımlılığı ile anlamlı pozitif ilişkilere sahip olduğuna işaret etmektedir.

4.4. Oyun Bağımlılığı ile Depresyon, Kaygı ve Stres Değişkenleri Açısından Bulgular

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Oyun bağımlılığı ile kaygı, depresyon ve stres değişkenlerini ele alan araştırmaların tamamında oyun bağımlılığının depresyon, kaygı ve stresle anlamlı pozitif ilişkisinin bulunduğu sonucuna ulaşılmıştır. Wang, Sheng ve Wang (2019) tarafından gerçekleştirilen araştırmada oyun bağımlılığının depresyon ile ,31 ve kaygı ile ,25 seviyesinde ilişkisinin bulunduğu ifade edilmektedir. Bu sonuçtan hareketle oyun bağımlılık düzeyi yüksek olan katılımcıların kaygı, stres ve depresyon düzeylerini de anlamlı şekilde yüksektir.



4.5 Diğer Değişkenler Açısından Bulgular

Oyun bağımlılığı yukarıda ifade edilen değişkenler haricinde 20 farklı değişkenle çalışılmıştır. Bu değişkenlerden akademik başarı ile oyun bağımlılığı arasında negatif ilişki bulunduğu sıklıkla tekrar etmektedir. Şahin, Gümüş ve Dinçel (2016) gerçekleştirdikleri araştırmada not ortalaması ile oyun bağımlılığı arasında $-0,202$ seviyesinde anlamlı ilişki tespit etmişlerdir. Buna göre oyun bağımlılık düzeyinin yüksek olması akademik not ortalamasının düşüklüğüyle ilişkilidir.

Akran ilişkileri ile oyun bağımlılığı arasındaki ilişkileri inceleyen araştırmalarda özellikle yakın arkadaşların oyuna başlama, oyun bağımlılığının oluşmasında önemli rol oynadıkları tekrar etmektedir. Barışık (2021) bu anlamda akran ilişkileri ile oyun bağımlılığı arasında $.26$ seviyesinde anlamlı ilişkinin varlığını tespit etmiştir.

Saldırganlıkla oyun bağımlılığı arasındaki ilişkiyi inceleyen çalışmalar iki değişken arasında anlamlı ilişkilerin bulunduğu işaret etmektedir. Balıkçı (2018) çalışmasında saldırganlık ile oyun bağımlılığı arasında $.336$ seviyesinde anlamlı ilişki tespit etmiştir. Buna göre oyun bağımlılığı düzeyinin artması saldırgan davranışların artmasıyla ilişkilidir.

Kişilik özellikleri ile oyun bağımlılığı arasındaki ilişkileri inceleyen çalışmalar nevroitiklik özelliğine sahip olma ile oyun bağımlılığı arasında pozitif anlamlı ilişkilerin varlığını ortaya koymaktadır (Vollmer vd., 2014; Basha, 2021). Bununla birlikte dışadönük olma, uyumluluk ve açık fikirlilik özelliklerine sahip olma ile oyun bağımlılığı negatif korelasyona sahiptir.

Oyun bağımlılığı ile ilişkisi incelenen bir diğer kavram mutluluktur. Araştırma kapsamında incelenen çalışmalarda oyun bağımlılığı ile mutluluk arasında orta düzeyde negatif korelasyonun bulunduğu sonucuna ulaşılmıştır (Cengiz, Peker ve Demiralp, 2020; Kaya, 2021). Buna göre oyun bağımlılığı düzeyinin artması mutluluk seviyesinin azalmasıyla ilişkilidir.

Yalnızlıkla oyun bağımlılığı arasındaki ilişkileri inceleyen araştırmalarda ise orta düzeyde anlamlı korelasyon bulgularına rastlanmıştır. Buna göre oyun bağımlılığı düzeyinin artması yalnızlığın artmasıyla paralellik göstermektedir (Wang, Sheng ve Wang, 2019; Gürgân vd., 2018).

Serbest zaman faaliyetleri ve fiziksel aktivitelere katılımı ile oyun bağımlılığı arasındaki ilişkileri inceleyen çalışmalar fiziksel aktivitelerin içerisinde yer almanın oyun bağımlılığı ile negatif ilişkili olduğunu göstermektedir. Buna göre serbest zaman faaliyetlerini değerlendiren ve fiziksel aktivite yapan bireylerin oyun bağımlılık seviyeleri daha düşük düzeydedir.

İncelenen değişkenler bağlamında en sık tekrar eden sonuçlar özetlenecek olursa oyun bağımlılığı; akademik başarı, mutluluk, dışa dönüklük, uyumluluk, fiziksel aktivitelere katılım ve açık fikirlilik ile negatif korelasyona sahiptir. Yalnızlık, saldırganlık, nevroitiklik ve akran ilişkileriyle oyun bağımlılığı arasında ise pozitif korelasyon bulgularına rastlanmıştır.

5. SONUÇ

Mevcut çalışmalarda oyun bağımlılığı ile ilgili yurt içi ve yurt dışı literatürde gerçekleştirilmiş 50 araştırma incelenmiştir. Buna göre oyun bağımlılığını konu alan çalışmaların sayısında son yıllarda artış gözlenmiştir. Başka bir ifadeyle oyun bağımlılığı araştırmacılar için popüler bir değişken niteliğindedir. Bunun yanında araştırmaların büyük bir çoğunluğunda lise ve orta



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okul örnekleriyle çalışıldığı görülmektedir. Türkiye Oyun Sektörü Raporu'na göre dijital ve mobil oyunlar sadece gençler tarafından değil yetişkinler tarafından da oynanmakta, yetişkinlerin %79'u mobil oyunlarla vakit geçirmektedir (Türkiye Oyun Sektörü Raporu, 2020, 2020). Buna göre ilerleyen süreçte gerçekleştirilecek çalışmalarda lise ve orta okul örneği dışında kalan gruplarında da çalışmaları dahil edilmesinin faydalı olacağı düşünülmektedir. Oyun bağımlılığına dair incelenen 50 çalışmanın 36'sı (%72) nicel araştırma makalesidir. Buna göre oyun bağımlılığıyla ilgili nitel ve deneysel desenlerde gerçekleştirilecek çalışmaların son derece sınırlı olduğu söylenebilir. Oyun bağımlılığıyla ilgili terapötik müdahale olarak Young (2009) kısa süreli çözüm odaklı yaklaşımın; Griffiths ve Meredith (2009) davranışçı ve bilişsel davranışçı yaklaşımların; Griffiths ve Davies (2005) motivasyonel görüşmenin etkili sonuçlar ortaya koyacağını bildirmektedir. Bunun yanında Graffiths ve diğerleri (2005) erkeklerin oyun bağımlılıklarının kızlardan daha yüksek seviyede olduğunu ifade etmektedir. Buna göre özellikle erkek katılımcılara yönelik yukarıda ifade edilen yaklaşımları baz alan deneysel ve nitel vaka analiz çalışmaları gerçekleştirilebilir. Oyun bağımlılığıyla çalışılan diğer değişkenlere dair ortak sonuçlar incelendiğinde ise oyun bağımlılığının kaygı, stres ve depresyonu tetiklediği, erkeklerin ve yaşı küçük olanlarda daha sık görüldüğü, demokratik anne baba tutumundan ihmalkâr anne baba tutumuna doğru gidildikçe sıklığının arttığı, akademik başarı ile negatif korelasyon içerdiği bulguları sıklıkla tekrar etmektedir. Bu doğrultuda oyun bağımlılığına dair özellikle gençleri uyarıcı bilgilendirmelerin yapılması ve Young (2009) tarafından da belirtildiği üzere ebeveynlerin oyun bağımlılığını fark etme ve başa çıkmaya yönelik bilgilendirici içeriklere ulaşmalarının gerekli olduğu düşünülmektedir.

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Özet

Bu çalışmanın amacı, farklı antrenman dirilleri ile hazırlanmış uygulama parkurunda aerobik antrenman yaptırılan sedanterlerin Spo2 düzeylerine olan etkisini incelemektir. Bu amaçla daha önce düzenli egzersiz yapmamış bireyler ile son iki yıldır aktif spor yapmış ve devam eden 18-20 yaşları arasında, toplamda 26 sağlıklı erkek çalışmaya dâhil edilmiştir. Daha önce spor geçmişi olmayan bireyler kontrol grubu (n: 13), düzenli spor geçmişine sahip olan bireylerde deney grubu (n:13) olarak belirlendi. Her iki gruba da 6 hafta boyunca seçilmiş aerobik antrenman dirillerinden oluşan parkurda, hafta da üç gün 90 dk aerobik antrenman uygulanmıştır. Her iki gruba da 6 haftalık periyotun öncesinde ve sonrasında SpO2 testi uygulanmıştır. Elde edilen veriler SPSS 22.0 programında analiz edilmiştir. Normallik sınavası için Shapiro-Wilk testi yapıldı. Değerler ortalama, standart sapma şeklinde sunuldu ve 0.05 anlamlılık düzeyinde incelendi. Altı hafta sonunda istatistiksel analiz verilerine göre deney grubunun SpO2değerinde son test lehine anlamlı bir farklılık bulunmuştur ($p<0.05$). Sonuç olarak, düzenli spor yapan bireylerde, uygulanan aerobik egzersizler, kandaki oksijen doygunluk oranlarını olumlu yönde etkileyebilmektedir.

Anahtar Kelimeler: Aerobik antrenman, Saturasyon, Oksijen

THE EFFECT OF THE AEROBIC TRAINING PROGRAM APPLIED TO SEDENTARY MEN ON SPO2 LEVELS

Abstract

The aim of this study is to examine the effect of aerobic training on the Spo2 levels of sedentary people on the track prepared with different training methods. For this purpose, individuals who have not exercised regularly before and 26 healthy men aged between 18-20 years who have been doing active sports for the last two years were included in the study. Individuals with no previous sports history were determined as the control group (n: 13), and individuals with a regular sports history were determined as the experimental group (n: 13). Both groups were given 90 minutes of aerobic training three days a week in the track consisting of selected aerobic training sessions for 6 weeks. SpO2 test was applied to both groups before and after the 6-week period. The obtained data were analyzed in SPSS 22.0 program. Shapiro-Wilk test was used to test for normality. Values were presented as mean,

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standard deviation, and were analyzed at a significance level of $p < 0,05$. At the end of six weeks, according to the statistical analysis data, a significant difference was found in the SpO₂ value of the experimental group in favor of the posttest ($p < 0,05$). As a result, aerobic exercises can positively affect blood oxygen saturation rates in individuals who regularly do sports.

Keywords: Aerobic training, Saturation, Oxygen

GİRİŞ

Bireyin veya sporcuların performansını ortaya koymada kapasitesinin derecesi ya da çeşitli olarak yaptığı fiziksel antrenmanlardaki performansı o bireyin maksimum performansı olarak tanımlanmaktadır. Maksimum performans değerlendirmesinde ana amaç, fiziksel aktivite sırasında iskelet kaslarında aerobik ve anaerobik metabolizmayla açığa çıkan enerji miktarının değerlendirilmesidir (Nagle, 1973; Joyner, Coyle, 2008). Uzu süreli yoğun tempolu egzersizler sırasında sportif performansı zirveye doğru çıkaran etmenler arasında maksimal oksijen (MaxVO₂) alınımının olduğu söylenebilir.

Aerobik kapasitenin belirleyicisi olan MaxVO₂'nin yüksek olması sporcuların homeostatik koşullarda daha uzun süre egzersiz yapabilmelerine imkân sağlamaktadır (McArdle ve ark. 2007). Yapılan fiziksel aktiviteler sırasında, atmosfer havasındaki oksijenin, alveollerden kullanıldığı iskelet kası mitokondrilerine taşınıp ne kadarının kullanılabileceğinin belirlenmesinde, oksijenin akciğerlere alınması, difüzyon ile geçmesi, hemoglobine bağlanması, arter kanı ile doku düzeyindeki kapillere ulaşması, mitokondrilere geçerek sonunda ATP üretimi gibi önemli basamakları bulunmaktadır (Taylor, Groeller, 2008).

Özellikle sporcularda arter kanında, performansı için istenilen oksijen seviyelerinin ağır fiziksel aktiviteler sırasında sürdürülememesi bu kişilerin kapasitelerinin kısıtlanmasına sebep olmaktadır. Arter kanı oksijen içeriğinin aerobik sportif performans kapasitesi üzerinde doğrudan belirleyici olmasından dolayı vücudun oksijenlenmesine etki eden unsurlar egzersiz fizyologları ve antrenman bilimciler tarafından ilginç bir araştırma konusu haline gelmiştir (Joyner, Coyle, 2008).

Bu bilgilerden yola çıkarak bu çalışmanın amacı, sedanter erkeklere uygulanan aerobik antrenman programlarının SpO₂ düzeylerine olan etkisini incelemektir.

MATERYAL VE METOT

Çalışma Dizayını

Araştırmamıza daha önce düzenli egzersiz yapmamış bireyler ile son iki yıldır aktif spor yapmış ve spor yapmaya devam eden 18-20 yaşları arasında, toplamda 26 sağlıklı erkek çalışmaya dâhil edilmiştir. Çalışmaya katılan bireylerin gönüllü olması, sağlıklı olmaları ve kronik bir hastalığa sahip olmaması gibi faktörler çalışmaya dahil edilme kriterleri olarak belirlenmiştir. Daha önce spor geçmişi olmayan bireyler kontrol grubu (n: 13), düzenli spor geçmişine sahip olan bireylerde deney grubu (n:13) olarak belirlendi. Her iki gruba da 6 haftalık periyotun öncesinde ve sonrasında SpO₂ testi uygulanmıştır. Çalışmaya katılan bireyler uygulamanın amacı ve içeriği hakkında bilgilendirilmiş ve motivasyon düzeyleri artırılmıştır.

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Antrenman Programı

Her iki gruba da 6 hafta boyunca seçilmiş aerobik antrenman dirillerinden oluşan parkurda, hafta da üç gün 90 dk aerobik antrenman programı uygulanmıştır. Antrenmanlar öncesi gruplara 10 dk ısınma, devamında gerdirme hareketleri yaptırılmıştır. Antrenman periyodunda doruk noktası kalp atım sayısına göre %30-2 dk ve %70 -3 dk lık dört tekrarlı aerobik interval antrenman yönteminden yararlanılmıştır (Helgerud ve ark. 2001; Sevimli, 1999). Antrenman şiddetini belirlemek için antrenmandan 10 sn sonra deneklerin kalp atım sayıları alındı. Kalp atım sayılarının alınması için karotis arterine işaret ve orta parmaklar ile dokunularak 15 sn sayıldı. Elde edilen değeri 4 ile çarparak bir dk'lık kalp atım sayısı bulundu ve antrenman şiddetini belirlemede esas alındı (Günay, Tamer, Cicioğlu, 2010; Yüksel 2003).

Oksijen Satürasyonu Ölçümü (SpO₂)

Pulse oksimetre, arteriyel kanda oksijenlenmiş hemoglobin yüzdesini belirler ve bu yolla elde edilen bulgu oksijen satürasyonu olarak bilinir. Pulse oksimetreler dokudaki nabzın arteriyel kan tarafından oluşturulduğunu göz önüne alarak, infrared ışığın pusatil frekansının absorpsiyonu ile infrared ışığın sadece iki dalga boyu ile ölçülebileceği prensibi ile çalışmaktadır (Pole, 2002; Tosun, Tutluoğlu, 2000). Oksijen satürasyonu ölçümleri pulse oksimetre cihazıyla (Spirolab III, Medical International Research) antrenman haftası öncesi ve antrenmanların sonlandırılmasından sonra alınmıştır. Ölçümlerden önce deneklere noninvaziv bir yöntem olan pulse oksimetre SpO₂ testi ile ilgili bilgi verildi. Her denek ölçüm öncesinde dinlendirildi ve rahat oturabileceği bir pozisyonda oksimetre probu işaret parmaklarına yerleştirildi (Hakverdioğlu, 2007; Anderson ve ark. 2002). Her deneğin ölçümü 10 dakika süre ile alındı (Çalışkan ve ark. 2008).

İstatistiksel Analiz

Bu çalışmanın istatistiksel analizleri, SPSS istatistik 22.0 programı (SPSS Inc., Chicago, Illinois, ABD) kullanılarak yapıldı. İstatistiksel sonuçlar p<0.05 anlamlılık düzeylerinde değerlendirildi. Tanımlayıcı istatistik olarak frekans, ortalama ve standart sapma kullanılmıştır. Normallik sınaması için Shapiro-Wilk testi yapıldı. Grupların ön test ve son testleri arasındaki farkın analizi için Paired Sample t testi, ön test ve son test arasındaki farkın analizi için ise Independent Sample t testi kullanılmıştır.



BULGULAR

Tablo 1. Kontrol ve deney gruplarının ön-son test arasındaki farkın analizi

			Ort.	Std. S.	Std. H.	t	p
Kontrol Grubu (n:13)	SpO ₂	Ön test	97,45	1,29	0,39	1,469	0,173
		Son test	95,82	3,28	0,99		
Deney Grubu (n:13)	SpO ₂	Ön test	95,53	3,00	0,43	2,296	0,038
		Son test	97,47	1,68	0,77		

KG: spor geçmişi olmayan bireyler; DG: spor geçmişine sahip aktif bireyler

Kontrol grubunun SpO₂ ön test 97,45±1,29 iken son test değerleri 95,82±3,28 olarak tespit edilmiştir. Deney grubunun değerlerine bakıldığında ön test 97,47±1,68 iken son test değerleri 95,53±3,00 bulunmuştur. Deney grubunun SpO₂ değerlerinde son test lehine istatistiksel açıdan p<0,05 düzeyinde anlamlılık tespit edilmiştir.

Tablo 2. Çalışmaya katılan deneklerin ön-son test arasındaki farkın gruplar arasındaki karşılaştırılması

		Ort.	Std. S.	Std. H.	t	p
SpO ₂	Kontrol Grubu	-1,64	3,70	1,11	0,217	0,830
	Deney Grubu	-1,93	3,26	,84		

TARTIŞMA VE SONUÇ

Egzersiz insan sağlığı üzerine olumlu etkileri bilinmekte ve önemi giderek artmaktadır. Bu doğrultuda, çalışmada sedanter erkeklere uygulanan aerobik antrenman programının SpO₂ düzeylerine olan etkisinin araştırılması amaçlanmıştır. Bu amaçla ele edilen verilerin istatistiksel analizine göre altı hafta boyunca uygulanan aerobik egzersizlerin spor geçmişi olan ve aktif spor yapan bireylerin saturasyon düzeylerinde son test lehine anlamlılık tespit edilmiştir (p<0.05).

Düzenli yapılan egzersizler birçok sistemi olumlu etkilediği gibi solunum kaslarının da gelişimini olumlu yönde artırmaktadır. Egzersize yoğun olarak katılan kaslarda fizyolojik olarak oksijen dağılımı yeterli hale gelir; bu sayede egzersizin ihtiyacını karşılayacak düzeyde uygun ventilasyon perfüzyon oranı sağlanır ve anaerobik solunumdan aerobik solunuma geçiş gerçekleştirilebilir (Nici, 2000; Sarpkaya ve ark. 2004). Egzersize devam etme oluşabilecek ölüm risklerini en aza indirebilirken, kronik solunum yolu hastalıkları, şeker hastalıkları,



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obezite, kanser, osteoporoz gibi hastalıkların gelişim riskinin azalmasına ve bu hastalıkların semptomlarının kontrol altına alınmasına da destek olur (Çakır, 2009).

Oksijen satürasyonu klinik bir veri olarak değerlendirilmektedir. Hastalıklara bağlı olarak solunum etkinliğinin azalması, akciğerlere alınan hava miktarının yetersizliği, hava yolu direncinin azalmasına bağlı olarak meydana gelen solunum sorunları, difüzyon kapasitesinin azalması, kansızlık, dolaşım yetersizlikleri, zehirlenmeler gibi hayati sorunların kaynağı olan doku oksijenasyonunun yetersizliği anlamına gelen hipoksinin erken tanı verisi oksijen satürasyonudur. Arteriyel kan hemoglobininin oksijene duygunluğu hasta, sedanter ya da sporcu bireyler için hayati değer arz eder (Özdal ve ark. 2014).

Çalışmamızda, kontrol ve deney grubunun ön test ve son test değerlerinde istatistiksel analizinde deney grubunun son test lehine anlamlılık tespit edilmiştir. Bu anlamlılığın aerobik egzersize bağlı olarak solunum kaslarının gelişmesi, solunum hacminin artması, uygun ventilasyon perfüzyon oranının sağlanması, myokard hipertrofisi ve kalp debisinin artması sonucu kan oksijen içeriğinin (CaO_2) yoğunlaşması ve egzersizin kan hemoglobin sayısını da olumlu etkilemesiyle oluştuğu söylenebilir. Yapılan çalışmalar incelendiğinde egzersizde artan metabolizma hızı için gerekli olan oksijeni sağlamak için solunum hacminde artış meydana geldiği, yapılan egzersizin devamlı hale geldikçe solunum kaslarını geliştireceği ve solunum hacmindeki bu artışın devamlı hale geleceği söylenmektedir (Mahoney, 1992; Fox ve ark. 1988). Sonuç olarak, düzenli spor yapan bireylerde, uygulanan aerobik egzersizler, kandaki oksijen doygunluk oranlarını olumlu yönde etkileyebilmektedir.

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SİGARA BAĞIMLILARINDA PLİOMETRİK EGZERSİZLERİN BAZI MOTOR BECERİLER ÜZERİNE ETKİSİ

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Özet

Bu çalışmanın amacı, pliometrik antrenman dirilleri ile hazırlanmış antrenman programı uygulanan sigara bağımlısı bireylerde, sıçrama, durarak uzun atlama ve esneklik gibi bazı motor beceriler üzerine olan etkisini incelemektir. Bu amaçla çalışmaya, üniversitede öğrenim gören, sigara içen (n:16), sigara hiç içmeyen (n:16) toplamda 32 erkek öğrenci katılmıştır. Her iki gruba 4 hafta boyunca haftada üç gün, 90 dk, pliometrik (atmalar ve atlamaları içeren) antrenman yöntemi uygulandı. Her iki grubun çalışmaya başlamadan önce ve çalışma sonlandırıldıktan sonra sıçrama, durarak uzun atlama ve esneklik ölçümleri yapıldı. Elde edilen veriler SPSS 22.0 programında analiz edilmiştir. Normallik sınaması için Shapiro-Wilk testi yapıldı. Değerler ortalama, standart sapma şeklinde sunuldu ve anlamlılık düzeyi $p<0.05$ olarak incelendi. Dört hafta süren antrenmanlar sonunda sigara içen grubun sıçrama değerlerinde son test lehine anlamlılık tespit edilirken, sigara içmeyen grubun değerlerinde ön testlere göre iyileşme görülmüş fakat anlamlılık bulunmamıştır ($p>0,05$). Sonuç olarak, uygulanan antrenman, sigara bağımlısı bireylerde olumlu etkiler oluşturarak motor becerileri olumlu yönde etkileyebilmektedir.

Anahtar Kelimeler: Pliometrik, sıçrama, motor beceri

EFFECT OF PLYOMETRIC EXERCISES ON SOME MOTOR SKILLS IN SMOKING ADDICTIVES

Abstract

The aim of this study is to examine the effect on some motor skills such as jumping, standing long jump and flexibility in cigarette addicted individuals who are applied a training program prepared with plyometric training sessions. For this purpose, a total of 32 university students, smokers (n: 16), and never smoked (n: 16) students participated in the study. The plyometric (including throws and jumps) training method was applied to both groups for 4 weeks, three days a week, for 90 minutes. Jumping, standing long jump and flexibility measurements were made before and after the training of both groups. The obtained data were analyzed in SPSS 22.0 program. Shapiro-Wilk test was used to test for normality. Values were presented as mean and standard deviation, and the level of significance was evaluated as $p<0.05$. At the end

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of the training lasting four weeks, a significance was found in favor of the post-test in the jump values of the smoking group, while an improvement was observed in the values of the non-smoker group compared to the pre-tests, but no significance was found ($p>0.05$). As a result, the applied training can affect motor skills positively by creating positive effects in cigarette addicted individuals.

Keywords: Plyometric, jump, motor skill

GİRİŞ

Pliometrik antrenman; İnsan kaslarının doğal elastikiyetini ve sinirsel gerilme kapasitesini ya da miyotatik refleksini kullanarak, daha hızlı ve daha kuvvetli kas gelişimini sağlayan bir egzersiz tipi olarak tarif edilmektedir (Duda, 1998). Bir diğer tanımda ise; Pliometrik antrenman, kasın kısa bir şekilde kasılıp gerilmesinden faydalanarak çok kısa bir süre içinde daha güçlü bir hareket üretilmesini içeren bir tür dayanıklılık antrenmanıdır (Chu, 1998).

Pliometrik antrenmanlarda amaç, daha çok elastik kuvvetle ilgili olup kasın ekzantrik kasılmasından sonra, konsantrik kasılma ile kısa bir zaman içerisinde yüksek oranda kuvvetin hızlı bir şekilde uygulanmasını sağlamaktır. Bu antrenman pozitif- negatif bir kuvvet çalışması şekli olup, kinetik enerjiyi ve kuvveti oldukça hızlı ve verimli bir şekilde kullanmayı amaçlar ve patlayıcı sıçrama kuvvetini geliştirir (Brown, Yhew, Boleach, 1986).

Pliometrik antrenmanların patlayıcı kuvvet, sıçrama kuvveti, anaerobik güç, yatay ve dikey sıçrama ile yüzmede çıkış zamanının geliştirilmesi gibi özellikler üzerinde etkili olduğu birçok kaynakta rapor edilmiştir (Brittenham, 1994). Pliometrik antrenman, doruk kuvvet ile patlayıcı güç arasındaki ilişkiyi geliştirmektedir. Pliometrik antrenmanlar bugün süratli bir şekilde kuvvetin yerine getirilmesinde ve güç üretiminde çok etkili antrenman metodu olarak yaygın bir kullanıma sahiptir. Koşmaya, sıçramaya, sekmeye, atlamaya, yükselmeye ve fırlatmaya dayalı sporlarda pliometrik zorunlu bir antrenman olarak kullanılır hale gelmiştir (Yüksel, 2001).

Güç üretiminde çok etkili antrenman metodu olarak yaygın bir kullanıma sahiptir (Bayraktar, 2011). Sigara kullanımı solunum kapasitesini ve oksijen alımında sıkıntılara sebep olduğu gibi birçok sistemi de olumsuz etkilemektedir. Bu bilgilerden hareketle çalışmanın amacını, sigara bağımlılarında pliometrik egzersizlerin bazı motor beceriler üzerine etkisinin incelenmesi oluşturur.

MATERYAL VE METOT

Çalışma Dizayını

Bu çalışmaya üniversitede spor yöneticiliği bölümünde öğrenim gören öğrencilerinden, yaşları 19-25 yaş aralığında, sigara içen (n:16) ve sigara hiç içmemiş olan (n:16) toplamda 32 erkek öğrenci katılmıştır. Çalışmaya katılan bireylerin gönüllü olması, sağlıklı olmaları ve kronik bir hastalığa sahip olmaması gibi faktörler çalışmaya dahil edilme kriterleri olarak belirlenmiştir. Her iki gruba 4 hafta boyunca haftada üç gün, 90 dk, pliometrik (atmalar ve atlamaları içeren) antrenman yöntemi uygulanmıştır. Her iki grubun çalışmaya başlamadan önce ve çalışma sonlandırıldıktan sonra sıçrama, durarak uzun atlama ve esneklik ölçümleri

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yapılmıştır. Çalışmaya katılan bireylerden gönüllü onam belgesi alınarak, uygulamanın amacı ve içeriği hakkında bilgilendirilmiş ve motivasyon düzeyleri artırılmıştır.

Antrenman Programı

Pliometrik antrenman, alt ekstremiteler için atlama antrenmanlarını ve üst ekstremiteler için sağlık topu egzersizlerini içeren birçok formda kullanılabilir. Pliometrik kullanıcısı sadece egzersizlerin nasıl yapılacağını değil, aynı zamanda bir programı nasıl uygulayacağını, nasıl değiştireceğini ve en avantajlı şekilde nasıl kullanılacağını anlamak zorundadır. Bir antrenmanda çok fazla tekrar yapmak doğru değildir. Önemli olan yapılan hareketlerin kalitesidir. Dayanıklılıktan ziyade hız ve kuvvet önemlidir. Çalışmalar aralarında uzun dinlenme süreçleri olan setlere bölünmelidir (Bayraktar, 2006).

Çalışmaya katılan gruplara 4 hafta boyunca seçilmiş pliometrik antrenman dirillerinden oluşan parkurda, hafta da üç gün 90 dk pliometrik (atmalar ve atlamaları içeren) antrenman programı uygulanmıştır. Antrenmanlar öncesi gruplara 10 dk ısınma, devamında gerdirme hareketleri yaptırılmıştır. Çalışmanın devamında ip atlama, ağırlık fırlatma, sıçrama, çift ayak dizleri karına çekme, yön değiştirmeli sürat koşuları, aktif dinlenme aralıkları ile uygulanmıştır.

İstatistiksel Analiz

Bu çalışmanın istatistiksel analizleri, SPSS istatistik 22.0 programı (SPSS Inc., Chicago, Illinois, ABD) kullanılarak yapıldı. İstatistiksel sonuçlar $p < 0.05$ anlamlılık düzeylerinde değerlendirildi. Tanımlayıcı istatistik olarak frekans, ortalama ve standart sapma kullanılmıştır. Normallik sınaması için Shapiro-Wilk testi yapıldı. Grupların ön test ve son testleri arasındaki farkın analizi için Paired Sample t testi, ön test ve son test arasındaki farkın analizi için ise Independent Sample t testi kullanılmıştır.



BULGULAR

Tablo 1. Sigara içen ve içmeyen grupların motor becerilerinin ön-son test karşılaştırılması

		Ort.	Std. S.	t	p	
Sigara içen (n:16)	Sıçrama	Ön-test	33,86	8,25	-3,461	,006
		Son-test	38,38	9,11		
	Durarak Uzun Atlama	Ön-test	186,5	38,24	-,635	,540
		Son-test	182,3	35,04		
	Esneklik	Ön-test	33,36	8,00	-1,901	,087
		Son-test	36,45	6,17		
Sigara içmeyen (n:16)	Sıçrama	Ön-test	32,17	10,30	-,917	,375
		Son-test	34,02	8,96		
	Durarak Uzun Atlama	Ön-test	165,8	22,53	-1,725	,106
		Son-test	178,2	27,21		
	Esneklik	Ön-test	36,40	6,30	-1,594	,133
		Son-test	38,33	4,88		

Tablo 1 de elde edilen bulgulara göre, sigar içen grubun sıçrama ön test değerleri $33,86 \pm 8,25$ son test değerleri $38,38 \pm 9,11$ olarak bulunmuş ve son test lehine anlamlılık bulunmuştur ($p < 0,05$). Sigara içmeyen grubun sıçrama, durarak uzun atlama ve esneklik değerlerinde istatistiksel açıdan anlamlılık bulunmamıştır ($p > 0,05$).

Tablo 2. Motor becerilere yönelik ön-son test arası farkın gruplar arası karşılaştırılması

		Ort.	Std. S.	t	p
Sıçrama	Sigara içen	4,52	4,33	1,020	,318
	Sigara içmeyen	1,85	7,81		
Durarak Atlama	Sigara içen	-4,18	21,86	-1,637	,115
	Sigara içmeyen	12,40	27,83		
Esneklik	Sigara içen	3,09	5,39	,583	,565
	Sigara içmeyen	1,93	4,70		



TARTIŞMA VE SONUÇ

Pliometrik antrenman; İnsan kaslarının doğal elastikiyetini ve sinirsel gerilme kapasitesini ya da miyotatik refleksini kullanarak, daha hızlı ve daha kuvvetli kas gelişimini sağlayan bir egzersiz tipi olarak tarif edilmektedir. Bu amaçla çalışmada, sigara bağımlısı olan bireyler ile hiç sigara içmemiş öğrencilere uygulanan pliometrik egzersizlerinin etkilerini incelemek amaçlanmıştır. Bu amaçla uygulanan antrenmanlar sonrası elde edilen bulgulara göre dört haftalık, haftada üç gün uygulanan pliometrik antrenman programının sigara içen bireylerde sıçrama performansını son test lehine artırdığı tespit edilmiştir.

Pliometrik, bireyin maksimal kuvvet, sürat ve patlayıcı gücünü geliştiren bir antrenman metodudur. Diğer bir deyişle pliometrik antrenmanlar kısa bir zaman içinde, kuvvetli bir hareket üretmek için eksantrik kasılmadan konsantrik kasılmaya geçerken kasın hızlı gerilmesini içeren direnç antrenmanlarıdır (Şimşek, 2002).

Yapılan çalışmalar incelendiğinde, Ağılönü ve arkadaşları, 8 haftalık pliometrik antrenmanın 12-16 yaş kadın hentbolcuların fiziksel uygunluk parametrelerine etkisinin incelenmesi isimli çalışmalarında; dikey sıçrama değerlerini deney grubunda 40.80 son test değerlerini 44.65 olarak bulmuş ve bu değer $p < 0.05$ düzeyinde istatistiksel açıdan anlamlı bulunmuştur. Deney ve kontrol grupları arasında $p > 0.05$ düzeyinde anlamlılığa rastlanmamıştır (Ağılönü ve Kıratlı, 2015).

Kutlu ve arkadaşları, iki farklı spor branşı ve farklı yaş grubuna yaptırılan pliometrik antrenmanların anaerobik güç performansına etkisini belirlemek üzere, 15-17 yaş arası genç sporcular üzerinde yaptıkları çalışmada antrenman grubu bacak kuvvetleri ve anaerobik güç ve performanslarının göstergesi olan testler sonucunda deneklerin anaerobik güçleri ve bacak kuvvetleri üzerine $p < 0.01$ düzeyinde anlamlı farklılıklar bulmuşlardır. Akkoyunlu ve arkadaşları, yaptıkları çalışmada 14-16 yaş grubu yıldız erkek futbolcuların anaerobik güç ortalamasını 71.8 ± 1.3 kg/m/sn olarak tespit etmişlerdir (Kurt, 2011).

Polat ve arkadaşları, 8 haftalık çabuk kuvvet antrenmanının bazı fiziksel parametrelere ve 30 metre sprint değerlerine etkisi isimli çalışmada yaşları 18-24 arasında 12 erkek denek üzerinde 8 haftalık çabuk kuvvet antrenman programı sonucunda; anaerobik güç değerlerinde $p < 0.05$ düzeyinde anlamlılık bulmuşlardır (Polat, 2002).

Sevim ve arkadaşları, çabuk kuvvete yönelik istasyon çalışmasının 18-19 yaş grubu erkek öğrencilerin bazı kondüsyonel özellikleri üzerine etkisi isimli çalışmada, 8 haftalık çabuk kuvvete yönelik istasyon çalışmalarının 30 metre sprint ön test ve son test değerleri arasında $p < 0.05$ düzeyinde anlamlı azalmalar bulmuşlardır (Sevim, Önder, Gökdemir, 1996). Yapılmış olan çalışmalar incelendiğinde, pliometrik antrenmanların motorik özellikleri geliştirmede etkili olduğu gösterilmiştir. Yapılan çalışmalar genellikle farklı branşlar üzerinde yoğunlaşmış ve farklı test yöntemleri kullanılmıştır. Bu konuda yapılacak araştırmaların sayısının artması ile bu alandaki bilgilere zenginlik katacağı düşünülmektedir. Sonuç olarak, uygulanan antrenman, sigara bağımlısı bireylerde olumlu etkiler oluşturarak motor becerileri olumlu yönde etkileyebilmektedir.



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TÜRK VE GÖÇMEN ORTAOKUL ÖĞRENCİLERİNİN BEDEN EĞİTİMİ VE SPOR DERSİNE İLİŞKİN MUTLULUK DÜZEYLERİNİN İNCELENMESİ

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Özet

Bu araştırmanın amacı, ortaokulda okuyan öğrencilerin beden eğitimi ve spor dersine ilişkin mutluluk düzeylerini bazı demografik bilgiler açısından incelemektir. Çalışmada betimsel nitelik taşıyan tarama modeli kullanılmıştır. Araştırmanın evreni, ortaokulda öğrenim gören öğrenciler kapsamındadır. Araştırmanın örneklemini ise Gaziantep ilinde öğrenim gören ortaokul öğrencileri arasından tesadüfi örneklem yöntemi ile seçilmiş 122 öğrenci oluşturmaktadır. Veri toplama aracı olarak, geçerlilik ve güvenilirlik çalışması Uğraş ve Serbes (2019) tarafından yapılmış “Beden Eğitimi Dersi Mutluluk Düzeyi Ölçeği” kullanılmıştır. Çalışmada, ölçek toplam puanlarının cinsiyet, öğrenci türü, okul dışı sportif faaliyetlere katılma durumuna göre farklılık gösterip göstermediği Mann Whitney U test, gelir düzeyi, okuduğu sınıf, spor yapma şekli vb. değişkenlere göre farklılık gösterip göstermediği ise Kruskal Wallis H testi ve Dunn testi ile belirlenmiştir. Yapılan çalışmada ortaokul öğrencilerinin cinsiyeti, spor yapma durumu ve okul dışı sportif faaliyetlere katılım durumu açısından Beden Eğitimi Dersi Mutluluk Düzeyi toplam puanları arasında anlamlı bir farklılık tespit edilirken, öğrenci türü, okuduğu sınıf ve aile gelir düzeyi açısından Beden Eğitimi Dersi Mutluluk Düzeyi toplam puanları arasında anlamlı bir farklılık belirlenmemiştir. Bunlara ilaveten, çalışmada erkek öğrencilerin kız öğrencilere göre, takım sporu ile ilgilenenlerin sedanter öğrencilere göre, okul dışı sportif faaliyetlere katılan öğrencilerin katılmayanlara göre Beden Eğitimi Dersi Mutluluk Düzeyi toplam puanlarının daha yüksek olduğu sonucuna ulaşılmıştır. Beden eğitimi ve spor dersleri öğrencilerin kendilerini en özgür hissettiği derslerin başında yer almaktadır. Dolayısıyla öğrencilerin, beden eğitimi ve spor derslerine aktif katılımı ve aynı zamanda dersten keyif almaları gerekmektedir. Bu bağlamda özellikle okul kurumlarında beden eğitimi ve spor derslerinin sağlıklı bir şekilde yürütülmesi için branşlara ilişkin materyallerin çeşitliliğinin sağlanması, okulda öğrencilerin dersleri daha kaliteli işleyebileceği salon, saha vb. spor alanların yapılması, öğretmenlerin etkinlikleri



öğrencilerin seviyelerine uygun planlaması ve motive edici söylemlerde bulunarak, farklı yöntem ve teknikler kullanarak öğrencilerin derse olan ilgilerinin artırılması önerilmektedir.

Anahtar Kelimeler: Beden eğitimi, Mutluluk düzeyi, Spor

ANALYSIS OF PHYSICAL EDUCATION AND SPORTS COURSE HAPPINESS LEVELS IN TURKISH AND IMMIGRANT SECONDARY SCHOOL STUDENTS

Abstract

The aim of this study is to examine the happiness levels of secondary school students regarding physical education and sport course in terms of some demographic information. Descriptive survey model was used in the study. Population of the study consists of secondary school students. Sample of the study consists of 122 students chosen through random sampling method among secondary students studying in the province of Gaziantep. "Physical Education and Sports Course Happiness Scale" the validity and reliability study of which was conducted by Uğraş and Serbes (2019) was used as data collection tool. In the study, it was found with Mann Whitney U test whether scale total scores differed in terms of gender, school type, participation in extracurricular sport activities, while it was found with Kruskal Wallis H test and Dunn test whether they differed in terms of level of income, grade, and type of sport. While significant difference was found in Physical Education and Sports Course Happiness level total scores in terms of gender, state of doing sport and state of participating in extracurricular sports activities, no significant difference was found Physical Education and Sports Course Happiness level total scores in terms of student type, grade and family level of income. In addition to these, it was concluded that Physical Education and Sports Course Happiness level total scores were higher in male students when compared with female students, in students doing team sports when compared with sedentary students and in students who participated in extracurricular sports activities when compared with those who did not. Physical Education and Sports Course is among the courses in which students feel most free. Therefore, students should participate actively in these courses and at the same time enjoy these courses. In this context, in order to teach physical education and sports courses healthily in schools, it is recommended to provide various materials for branches, to build gyms, fields and sports areas where students can have more efficient courses, to plan activities in line with the levels of students and to motivate students, and to increase the interest of students in the course by using different methods and techniques.

Key Words: Physical education, Happiness level, Sport

Giriş

Eğitim; kişinin bilgi, beceri, tutum ve davranışlarında olumlu yönde çeşitli kazanımlar sağladığı bir süreç olarak ifade edilmektedir (Varış, 1994). Beden eğitimi ve spor; kişilerin bedensel, ruhsal ve zihinsel gelişimlerine katkı sağlayan, bireyi rahatlatan, kaliteli zaman geçirmesinde etkili olan faaliyetlerdir. Özellikle gelişim sürecindeki çocuklarda beden eğitimi

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ve spor faaliyetleri oldukça etkilidir. Nitekim çoğunlukla beden eğitimi ve spor derslerinde çocuklar sporla buluşturulmaktadır. Bu bağlamda beden eğitimi ve spor dersleri bu süreçte oldukça önem taşımaktadır. Diğer yandan beden eğitimi ve spor dersleri öğrencilerin iletişiminin güçlenmesi, sosyalleşme, öz güven kazanımı, yeteneklerin ortaya çıkarılması vb. hususlarda katkı sağlamaktadır.

Çağdaş eğitimde geliştirilmek istenen en önemli hususlardan biri kişinin spora yönelik beceri ve yetenekleridir. Bu bağlamda eğitim-öğretim ve spor arasında güçlü bir bağlantı söz konusudur (Berkan ve Hekimoğlu, 2021). Bu süreçte beden eğitimi ve spor dersleri tasarlanırken öğrencilerin katılımdan zevk alması durumunun göz önünde bulundurulması ve bunun için özel programların planlanması gerekmektedir (Taşğın ve Tekin, 2009). Bu bağlamda beden eğitimi ve spor derslerine öğrencilerin isteyerek katılım sağlaması ve söz konusu faaliyetlere katılımda öğrencilerin zevk alması önem arz etmektedir. Dolayısıyla bu çalışmada ortaokulda öğrenim gören öğrencilerin beden eğitimi ve spor dersine ilişkin mutluluk düzeylerinin incelenmesi amaçlanmıştır.

Materyal ve Yöntem

Araştırmanın yürütülmesi hususunda Ondokuz Mayıs Üniversitesi Sosyal ve Beşeri Bilimler Etik Kurul Kararı (karar no: 2021/742) ile onay alınmıştır. Araştırma betimsel araştırma deseninin bir çeşidi olan tarama araştırma modelindedir. Çalışmanın evrenini Ortaokulda öğrenim gören Türk ve Göçmen öğrenciler oluşturmakta olup, örneklem grubu 122 öğrenci kapsamındadır.

Veri toplama aracı olarak, geçerlilik ve güvenilirlik çalışması Uğraş ve Serbes (2019) tarafından yapılmış “Beden Eğitimi Dersi Mutluluk Düzeyi Ölçeği” kullanılmıştır. Ölçek 9 maddeden oluşmakta olup 5'li likert tipindedir. Kişisel bilgi formunda, araştırmaya katılan öğrencilerin cinsiyet, öğrenci türü, okul dışı sportif faaliyetlere katılma durumu, gelir düzeyi, okuduğu sınıf, spor yapma şekli içeren sorular yer almaktadır.

Araştırmada Gaziantep ilinde okuyan ortaokul öğrencilerinin Beden Eğitimi Dersi Mutluluk Düzeyi ölçek maddelerine verdiği cevapların iç tutarlılığını kontrol etmek amacı ile hesaplanan güvenilirlik katsayısı (cronbach alpha) 0,949 olarak bulunmuştur. Dolayısı ile ölçek maddelerine verilen cevapların yüksek düzeyde güvenilir olduğu söylenebilir.

Verilerin istatistiksel değerlendirilmesinde ilk olarak normallik varsayımı Kolmogorov-Smirnov ve Shapiro-Wilk testi ile incelenmiştir ($P < 0,05$). Çalışmada, ölçek toplam puanlarının cinsiyet, öğrenci türü, okul dışı sportif faaliyetlere katılma durumuna göre farklılık gösterip göstermediği Mann Whitney U test, gelir düzeyi, okuduğu sınıf, spor yapma şekli vb. değişkenlere göre farklılık gösterip göstermediği ise Kruskal Wallis H testi ve Dunn testi ile belirlenmiştir. Tüm istatistiksel hesaplamalarda SPSS 22.0 V. istatistik paket programı kullanılmıştır. Araştırma bulguları, n (%), ortalama ve standart sapma, median ve IQR değerleri olarak verilmiş olup, bulgular $p < 0,05$ düzeyinde anlamlı kabul edilmiştir.

Bulgular

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Gaziantep ilinde 2021-2022 yılında eğitim-öğretim gören ve araştırmaya gönüllü olarak katılan ortaokul öğrencilerinin demografik özelliklerine göre dağılımları Tablo 1’de verilmiştir.

Tablo 1. Katılımcıların demografik özelliklerine ilişkin frekans ve yüzde dağılımları

Cinsiyet	n	%	Öğrenci türü	n	%
Kız	70	57,4	Türk	101	82,8
Erkek	52	42,6	Göçmen	21	17,2
Toplam	122	100,0	Toplam	122	100,0

Spor yapma şekli	n	%	Sınıf	n	%
Sedanter	26	21,3	6	29	23,8
Bireysel	50	41,0	7	41	33,6
Takım	46	37,7	8	52	42,6
Total	122	100,0	Total	122	100,0

Okul dışı sportif faaliyetlere katılım	n	%	Aile Gelir Düzeyi (TL)	n	%
Evet	43	35,2	Düşük	49	40,2
Hayır	79	64,8	Orta	73	59,8
Toplam	122	100,0	Toplam	122	100,0

Çalışma 70 kız, 52 erkek olmak üzere toplam 122 öğrenci kapsamındadır. Araştırmada katılımcıların 101’ini Türk, 21’ini ise Göçmen öğrenci grubu oluşturmaktadır. Çalışmada öğrenci grubu 6-7-8 sınıflarda öğrenim görmekte olup, çoğunlukla bireysel spor branşıyla ilgilenmektedir. Ayrıca öğrenci grubunun çoğunluğunun orta düzeyde gelir durumuna sahip olduğu ve okul dışı sportif faaliyetlere katılmadıkları tespit edilmiştir (Tablo 1).

Araştırmada ortaokul öğrencilerinin yaşı ile Beden Eğitimi Dersi Mutluluk Düzeyi Ölçek toplam puanları arasında ilişkinin istatistiki olarak anlamsız olduğu tespit edilmiştir ($r=-0,111$; $p= 0,225$).

Tablo 2. Demografik Özelliklere Göre Öğrencilerin Beden Eğitimi Dersi Mutluluk Düzeyi

Değişkenler	n	Ortalama	SS	Median	IQR	P-değeri	
Cinsiyet	Kız	70	37,83	7,92	41,00	9,00	0,019
	Erkek	52	40,23	7,34	43,00	7,75	
Öğrenci Türü	Türk	101	38,66	7,85	41,00	9,00	0,652
	Göçmen	21	39,76	7,31	43,00	7,50	
Spor Yapma Durumu	Sedanter	26	37,31	6,02	36,50 b	9,25	0,012
	Bireysel	50	37,88	9,23	41,00 ab	9,00	
	Takım	46	40,78	6,48	44,00 a	7,00	
Okuduğu sınıf	6. sınıf	29	40,83	4,46	43,00	8,00	0,598
	7. sınıf	41	38,41	8,82	41,00	9,00	



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	8. Sınıf	52	38,10	8,20	41,00	11,75	
Okul dışı sportif faaliyetlere katılım	Evet	43	40,07	7,96	44,00	7,00	0,030
	Hayır	79	38,19	7,59	41,00	10,00	
Aile Gelir Düzeyi	Düşük	49	39,10	7,00	41,00	9,00	0,683
	Orta	73	38,68	8,24	42,00	9,00	

Yapılan araştırmada Gaziantep ilinde 2021-2022 yılında eğitim-öğretim gören ve araştırmaya gönüllü olarak katılan ortaokul öğrencilerinin cinsiyeti, spor yapma durumu ve okul dışı sportif faaliyetlere katılım durumu açısından Beden Eğitimi Dersi Mutluluk Düzeyi toplam puanları arasında anlamlı bir farklılık tespit edilirken ($P < 0,05$; Tablo 2); öğrenci türü, okuduğu sınıf ve aile gelir düzeyi açısından Beden Eğitimi Dersi Mutluluk Düzeyi toplam puanları arasında anlamlı bir farklılık belirlenmemiştir ($P > 0,05$; Tablo 2). Araştırmada erkek öğrencilerin kadın öğrencilere göre, takım sporu ile ilgilenenlerin sedander öğrencilere göre, okul dışı sportif faaliyetlere katılan öğrencilerin katılmayanlara göre Beden Eğitimi Dersi Mutluluk Düzeyi toplam puanlarının daha yüksek olduğu tespit edilmiştir.

Tartışma ve Sonuç

Yapılan araştırmada ortaokul öğrencilerinin cinsiyeti, spor yapma şekli ve okul dışı sportif faaliyetlere katılım durumu açısından Beden Eğitimi Dersi Mutluluk Düzeyi toplam puanları arasında anlamlı bir farklılık tespit edilmiştir. Bunun yanı sıra öğrenci türü, okuduğu sınıf ve aile gelir düzeyi açısından Beden Eğitimi Dersi Mutluluk Düzeyi toplam puanları arasında anlamlı bir farklılık belirlenmemiştir. Tüm bunlara ilaveten araştırmada erkek öğrencilerin kız öğrencilere göre, takım sporu ile ilgilenenlerin sedander öğrencilere göre, okul dışı sportif faaliyetlere katılan öğrencilerin katılmayanlara göre Beden Eğitimi Dersi Mutluluk Düzeyi toplam puanlarının daha yüksek olduğu sonucuna ulaşılmıştır.

İlgili literatürde çalışma bulgularıyla örtüşen veya farklılık gösteren diğer araştırmalar incelendiğinde; beden eğitimi ve spor derslerine yönelik öğrenci algılarının olumlu olduğu (Namlı ve ark., 2017); öğrencilerin çoğunluğunun beden eğitimi ve spor derslerini; derste belli branşların öğretildiği, çoğunlukla ikinci saatinin boş ve yüksek notla geçilen bir ders olarak algıladıkları (Özcan ve Mirzeoğlu, 2014), öğrenciler tarafından beden eğitimi ve spor derslerinin oldukça sevildiği (MacPhail, 2011), erkek öğrencilerin kız öğrencilere göre beden eğitimi ve spor derslerine ilişkin görüşlerinin daha olumlu olduğu (Taşgın ve Tekin, 2009), öğrencilerin beden eğitimi ve spor derslerinde yapılan etkinliklerden hoşlanmadığı (Dagkas ve Stathi, 2007), beden eğitimi ve spor derslerinde oyunla öğretim ve öğrencilerin seviyesine uygun faaliyetler yapılması durumunun öğrencilerin derse olan tutumlarını olumlu yönde etkilediği (Rikard ve Banville, 2006) şeklinde sonuçlara ulaşılmaktadır.

Beden eğitimi ve spor dersleri öğrencilerin kendilerini en özgür hissettiği derslerin başında yer almaktadır. Dolayısıyla öğrencilerin beden eğitimi ve spor derslerine aktif katılımı ve aynı zamanda dersten zevk almaları sağlanmalıdır. Bu bağlamda süreç içerisinde okulun fiziki yapısının ve derse yönelik materyallerin öğrenci seviyesine uygun olması gerekmektedir. İlaveten derse ilişkin materyallerin çeşitliliği de önemli bir husustur. Öğrencilere ders



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süresince farklı spor branşlarına yönelik etkinlikler yaptırılmalı ve farklı öğretim yöntemleri kullanılarak seviyelerine uygun spor faaliyetlerine katılımları sağlanmalıdır. Nitekim kendi seviyesine uygun faaliyetlere katılan öğrenciler, etkinlikleri yapabildiklerinden ötürü faaliyetlere daha istekli katılacak ve motivasyonları sağlanacaktır. Dolayısıyla özellikle okul kurumlarında beden eğitimi ve spor derslerinin sağlıklı bir şekilde yürütülmesi için branşlara ilişkin materyallerin çeşitliliğinin sağlanması, okulda öğrencilerin dersleri daha kaliteli işleyebileceği salon, saha vb. spor alanların yapılması, öğretmenlerin etkinlikleri öğrencilerin seviyelerine uygun planlaması ve motive edici söylemlerde bulunarak, farklı yöntem ve teknikler kullanarak öğrencilerin derse olan ilgilerinin artırılması önerilmektedir.

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**CORRELATIONAL ANALYSIS FOCUSED ON SCHOOL ADMINISTRATORS'
AUTHORITARIAN HIERARCHICAL MANAGERIAL APPROACH**

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Abstract

Examining the role of school administrators' authoritarian approach in relationship with the various managerial aspects of the school can contribute to the knowledge accumulation of Authoritative School Climate Theory. This study is a descriptive correlational study. Population consists of school administrators working in compulsory formal education schools located across the Turkey in March-May, 2021. We draws a study group from the population by using multi-stage sampling method including purposeful, stratified and random sampling techniques. We obtained the data belong to total 548 school administrators. To analyse the data, we perform the descriptive analyses, correlational analysis and Exploratory Factor Analysis.

The study finds out that school administrators own an approach characterizing as a high-level managerial dominance but a moderate level of managerial authoritarian hierarchical control. Within this approach, the highest score belongs to the item that people in this school first take administrators' approval before doing anything. The study also indicates the functional usage of punishment in making people do things rightly. In addition, humanistic applications have a low frequency. School administrators' intra-authoritative hierarchic approach has the highest correlation with the self-efficacy perception.

Keywords: School Administrators, Professional Well-Being, Personal, Institutional

Özet

Yönetici anlayışı, davranışı, yönetim tarzının belirlenmesinde etkili olmaktadır. Yönetim tarzları ise eğitim kurumların başarısında önemli bir etkidir. Bu nedenle çalışmada yöneticilerinin otoriter anlayışlarının okuldaki yönetsel unsurlarla nasıl bir ilişkiye sahip olduğu belirlenmeye çalışılmıştır. Araştırma ilişkisel desende betimsel bir çalışmadır. Türkiye'nin farklı illerinde örgün zorunlu öğretim kapsamındaki devlet okullarında 2021 Mart-Mayıs dönemindeki okul yöneticileri evreni oluşturmuştur. Çok aşamalı örnekleme yapılarak şehir merkezlerinde yer alan devlete ait ilkokul, ortaokul ve ortaöğretim okullarından 360 yöneticiye ulaşılmıştır. Veriler anket kullanılarak tarama yöntemiyle toplanmıştır. Analizlerde tanımlayıcı istatistikler (yüzde, frekans, aritmetik ortalama ve standart sapma), açıklayıcı faktör analizi ve Pearson Momentler Çarpımı Korelasyon

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katsayısı (r) kullanılmıştır. Yapı geçerliği için Varimax döndürme ile temel eksen faktör analizi kullanılarak açımlayıcı faktör analizi yapılmıştır. Araştırma sonunda: okul yöneticilerinin, kendine güvenlerinin yüksek ve etkili oldukları; mesleğin gerektirdiği teknik bilgi ve beceriye sahip olmayı en yüksek düzeyde algıladıkları; otokratik hiyerarşik yönetim yaklaşımını orta düzeyde; yönetsel hâkimiyeti yüksek düzeyde benimsedikleri ve cezaların işlerin doğru yapılmasını sağladığını algıladıkları sonuçlarına ulaşılmıştır. Okul ve eğitim yöneticiliğine atamada: öğretmenlik deneyimi yanında kurumsal yönetici eğitiminden geçme koşulunu sağlayanların avantajlı olmaları; okul yöneticilerine planlı profesyonel gelişme programlarının uygulanması ve öğretmen otonomisinin geliştirilmesi gibi önerilerde bulunulmuştur.

Anahtar Kelimeler: Okul yönetimi, yönetici, bürokratik, ilişkisel analiz

INTRODUCTION

The influence of positive school climate on various dimensions such as teachers' commitment, students' attendance and attainments is a fact that scholars have a consensus (Fenwick, 2006; Hoy and Miskel, 2012; Lunenburg and Ornstein, 2021). Contrasting, authoritative school climate has positive relationships with teachers' stress and students' absenteeism (Berg and Cornell, 2016). While literature review points out a number of studies on authoritative school climate (Berg and Cornell, 2016; Gill, Ashton and Algina, 2014; Kapa, Luke, Moulthrop, and Gimbert, 2018), investigating the role of school administrators' managerial understanding in forming the authoritative school climate awaits to be studied. Whereas, in building school climate the most influential aspect is school administrators and their managerial understanding. School administrators understanding and activities impact nearly all dimensions of the school (Bush, 2018; Lunenburg and Ornstein, 2021). When we consider the reflection of school administrators' authoritative understanding of managerial applications in the school, the concept of managerial dominance would emerge. Authoritative understanding reflects first on making the decision and applying it. Within this scope, authoritative administrators concentrate on whether decisions are carried out and accordingly control subordinates. So, staff' personal and autonomous movements are restricted; they behave under the control and authority of the school administrator. In such an atmosphere, administrators are likely to improve their professional competencies to keep their authority (Buchanan and Huczynski, 2017; Eren, 2001; Robbins and Judge, 2015).

The word, authoritative is literally defined as things that are obeyed, respected and accepted as correct (Oxford Dictionary, 2021). The literature review by using the "authoritative school", "authoritative management", "authoritative administrator" indicated the studies mainly within the scope of Authoritative Discipline Theory and Authoritative School Climate Theory. For instance, Berg and Cornell (2016) studied on teachers working in public secondary schools in Virginia, USA, found that more structured and supportive schools relate to greater safety for teachers and, in turn, less distress. Similar results were obtained by Kapa et al. (2018) who found out that "an authoritative school environment helped reduce rates of teacher victimization. Enforcing school rules, by both teachers and administrators, is the most effective way to diminish episodes of teacher victimization". Common points of the studies, within the Authoritative Discipline and Authoritative School Climate Theory, are to

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implement the school rules on everybody objectively and in a disciplined manner (Berg and Cornell, 2016; Gill, Ashton and Algina, 2014; Kapa et al., 2018).

The studies within this scope should consider the position of schools in educational organizational structure and school administrators' approaches and behaviours in such a hierarchical structure. Since the schools are not fully autonomous organizations, they work as a unit of a broader and greater hierarchical educational organization. In a hierarchical organizational structure, school administrators are authorized mainly in carrying out students' educational improvements and business affairs of school building and its infrastructure. School administrators use the legal authority defined in a hierarchical organizational structure to conduct their responsibilities in both dimensions. School administrators' hierarchical authoritative approach and behaviours can be expected to impact various managerial aspects of the school. However, literature seemed to neglect to examine how school administrators' authoritative understanding/approach relates to the managerial aspects of school management including professional development, teachers' autonomy, self-efficacy etc. Examining the relational web of school administrators' authoritative approach can enlighten on relationships that can be used for improving the school environment and effectiveness. Such a study can make a contribution to both alleviate the research gap and evidence-based initiatives in the application field. This study aimed at scrutinizing the relationships of school administrators' authoritative hierarchical approach in Turkish context.

Research Problems

This study focused on finding out answers for what relationships school administrators' authoritarian styles have with which aspects of the school. Along with this problem, the following operational questions posited:

- 1- What kind of relationships it has with the perception of administrative dominance?
- 2- What kind of relationships it has with the perception of self-efficacy?
- 3- What kind of relationships it has with the perception of autonomous behaviours?
- 4- What kind of relationships it has with the perception of professional development?
- 5- What kind of relationships it has with the perception of interaction with the outer environment?

METHOD

This study is a descriptive study carried out by correlational design by which the current situation of the problem is described and analysing correlations between variables (Fraenkel, Wallen and Hyun, 2012).

Study Group

The population consists of school principals working in public formal schools located in different provinces in Turkey in March-May, 2021. We drawn a study group from the population by considering economic and accessibility reasons. By performing multi-stage sampling method including purposeful, stratified and random techniques we accessed school principals. We first randomly selected two provinces from each geographical regions defined

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by First Level Statistical Classification of Regional Units. Three schools from each educational level were randomly selected from the school list of each province. In order to Access totally 360 school administrators we utilized the web service of communication information provided (<https://mebbis.meb.gov.tr/KurumListesi.aspx>) by Ministry of National Education (MoNE). Data gathering tool was transformed into Google Form and its link was sent via email addresses of school provided by abovementioned web page. Table 1 shows the demographic characteristics of participants.

School administrators (SA) consisted of 353 principals and 195 vice-principals. 152 of them were women and 396 were men. 221 of them had less than 6 year seniority. 46 of them had more than 20 year seniority. More than half of them had experience between 5 and 15 years. 38 % of SA were working at primary level. Nearly 34 % of them were in lower secondary and 28 % were in upper secondary level. Most of them had post graduate degree; 22 % of them had master degree. SA had more than 35 hours work load in a week. 157 SA had work load between 25 and 34 hours. School sizes of participant SA were almost even distributed (34.9, 30.8, 35.1).

Table 1.
Demographic characteristics of participants

Characteristics	f/%1	2	3	4	5	Total
Gender	f 152	396				548
1: Female 2: Male	% 27.7	72.3				100
Position	f 195	353				548
1: School principal 2: Vice-principal	% 35.6	64.4				100
Seniority (year)	f 221	146	84	51	46	548
1: 0-5 2: 6-10 3: 11-15 4: 16-20 5: 20+	% 40.3	26.6	15.3	9.3	8.4	100
School level	f 208	185	155			548
1: Primary 2: Lower secondary 3: Upper secondary	% 38.0	33.8	28.3			100
Education level	f 3	421	122	2		548
1: Associate 2: Under graduate 3: Master 4: Doctorate	% 0.5	76.8	22.3	0.4		100
Workload (hours/week)	f 9	30	157	352		548
1: Less than 15, 2: 15-24 3: 25-34 4: 35+	% 1.6	5.5	28.6	64.2		100
School size (Number of teachers in the school)	f 191	164	193			548
1: Small (less than 25) 2: Medium (26-40) 3: Big (41+)	% 34.9	30.8	35.1			100
	% 50,8	35.5	13,4			100

Collecting Data

The data collection process in the study was in the time period between March and May 2021. We collected data using a questionnaire that consisted of three parts. The first part involved the information about the research, ethical reminder and approval. In the second part, there were seven questions requesting demographic information. The third part consists of 24 Likert type questions developed by researchers based on the literature (Buchanan and Huczynski, 2017; Bush, 2018; Eren, 2001; Hoy and Miskel, 2012; Lunenburg and Ornstein, 2021; Robbins and Judge, 2015). Within the process of developing the instrument, we first posited a totally of 37 candidate items representing relevant six themes (managerial dominance, self-efficacy, professional development, human-oriented, autonomy of employee, interaction with

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near environment) besides the authoritarian management approach. These items were examined by three independent experts who had PhD on educational sciences. Based on the experts' suggestions we eliminated 11 items. Then we piloted the instrument including 26 items. The pilot instrument was applied to 32 administrators selected by random sampling among the school administrators working in the public primary, lower-secondary and upper-secondary education institutions in the city centre of Aksaray province. Data from the pilot study were analysed and we eliminated two items because of incongruence with the factor structure. In both the pilot application and the main application, the questionnaire was first transformed into "Google forms" and sent to the participants by e-mail. After sending reminder emails with two weeks intervals, the responses were combined and the analysis phase was started.

Analysing data

We first transformed the Google forms into Microsoft Excel Data Sheet then the data were transferred to IBM SPSS 22 statistical program. Before starting the analysis, we eliminated totally three out-normed forms that have blanks more than half of them and the same choices for all items. We checked the data in terms of missings, duplications and outliers. We finally had clear data belonged to 548 participants. We performed descriptive statistics ($\%$, f , \bar{x} , S), exploratory factor analysis (EFA), Pearson r in the phase of analysing data. We checked skewness and kurtosis that showed the normal distribution. EFA was carried out by employing the principal component and Varimax rotation. Items loaded under $|.30|$ were shaded and loading differences that are smaller than $|.10|$ were excluded. EFA preconditions were satisfied by $KMO = .805$ and Bartlett ($p < .01$). Totally 24 items went under the seven factorial structure that explains 58 % total variance. Items' factorial loads change between $|.49|$ and $|.76|$. Continuous scores were interpreted as following: 1.00-1.80 not at all; 1.81-2.60 low; 2.61-3.40 medium; 3.41-4.20 high, and 4.21-5.00 complete.

Validity and Reliability

This study was carried out by researchers having educational experiences on various educational positions as teachers, administrators and inspectors so it supports the validity of the study. Variety of participants, experts' views and generating items based on the literature (content-related validity) also supports the study's validity. Construct-related validity was satisfied by performing EFA. Clear explanations about the actions of gathering data and accessibility of instrument supports the reliability of the study. For checking reliability, split-half (odd-even) technique was used because some structures consisted of two items (Creswell & Plano Clark, 2018; Fraenkel et al., 2012).

RESULTS

EFA (Principal component, Varimax rotation) generated a seven factorial structured consisting 24 items. Kaiser-Meyer-Olkin Measure of Sampling Adequacy was $.805$ ($p = 0.000$). All these seven factors together explained 58.3% of total variance. Based on their contents, factorial structures were named as in the Table 2. By transforming factorial structures into indices scores, we had new variables which were used in the further analysis.



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By using descriptive statistics we described the perceptions of school administrators (SA) thus the first research objective was met. Table 2 presents the school administrators' perceptions about the items of the instrument. Along with the table, we observe that school administrators have a high level of self-efficacy ($\bar{x}=3.99$, $S_s=.62$). Within this dimension, the item involving technical knowledge and skills for performing the job is perceived at the highest level ($\bar{x}=4.22$, $S_s=.74$). The relatively low level perception is about the reading professional publications regularly ($\bar{x}=3.59$, $S_s=.98$).

SA espouse the authoritative hierarchic management approach at medium level ($\bar{x}=2.61$, $S_s=.74$). Relatively the highest perceived item in this dimension is the item "imposed penalties ensure that things are done correctly" ($\bar{x}=2.86$, $S_s=1.17$). Higher standard deviation score refers the big differences among SA perceptions about this item.

It was observed that SA have a high level of managerial dominance ($\bar{x}=3.78$, $S_s=.77$). The highest perceived item in this dimension was that "employee look for administrators' consent before initiative something" ($\bar{x}=3.86$, $S_s=.93$). It refers that teachers' autonomous behaviours in the school is very restricted.



Table 2.
Factorial dimensions, their contents and descriptive statistics

Factors	Items	Load	(\bar{x})	Ss	Skewness (SE=.104)	Kurtosis (SE=.208)
Self-efficacy	m28 I feel myself good professionally.	.802	4.15	0.86	-.917	.808
	m27 I have technical knowledge and skills to perform job.	.763	4.22	0.74	-.756	.864
	m30 I can do my profession's requirements successfully even in the adverse conditions.	.728	4.07	0.90	-.704	-.093
	m29 I am appreciated because of my professional success.	.615	3.71	1.11	-.629	-.318
	m34 I can reflect theoretical knowledge into practice field.	.562	4.08	0.80	-.451	-.449
	m32 I read professional publications (book, journal, article...) regularly.	.531	3.59	0.98	-.198	-.729
	m31 I consider referrals from others about my profession, but I make the final decision.	.517	4.08	0.96	-.862	.174
Self-efficacy Gutman Split Half=.72			3.99	0.62	-.468	.351
Authoritarian Hierarchic Management	m17 Success is fully fulfilling the task given by the superior.	.736	2.51	1.19	.422	-.705
	m26 The punishments I apply depending on the check result ensure that things are done more accurately.	.602	2.86	1.17	.227	-.787
	m12 Authority should be placed at the top of the chain of command in educational institutions.	.601	2.31	1.25	.688	-.557
	m4 Educational institutions can solve their own problems by means of their own internal forces, regardless of the external factors.	.546	2.28	1.10	.461	-.786
	m16 Success is achieving personal goals.	.544	3.10	1.15	-.139	-.709
Authoritarian Hierarchic Management Gutman Split Half=.51			2.61	0.74	.332	-.249
Administrator Dominance	m19 I have full confidence in the staff of the institution in every respect.	.806	3.73	1.04	-.518	-.452
	m20 Staff of the institution comply with the program and regulations in a disciplined manner.	.784	3.74	0.94	-.491	-.062
	m22 Staff of the institution get the permission of the administrator before doing anything.	.534	3.86	0.93	-.455	-.446
Administrator Dominance Gutman Split Half=.53			3.78	0.77	-.350	-.359
Humanistic Management	m14 The informal human side of educational institutions is more important than the formal side.	.781	3.17	1.12	-.035	-.707
	m13 The individual dimension of educational institutions is more important than the institutional dimension.	.752	2.44	1.19	.424	-.700
	m11 People's beliefs, values, etc. in educational institutions are more important than the organizational goals.	.652	2.23	1.18	.628	-.643
Humanistic Management Gutman Split Half=.53			2.61	0.88	.218	-.627
Professional Development	m35 I would like help from my colleagues to improve myself in professional matters.	.841	3.96	0.94	-.668	-.024
	m36 I share the approaches, techniques and materials that I think are effective with my colleagues.	.761	4.38	0.77	-1.043	.424
Professional Development Gutman Split Half=.72			4.17	0.76	-.745	.120
Interaction with outer environment	m3 The success of the educational institution always depends on its interaction with the external environment.	.836	3.04	1.15	-.020	-.827
	m8 Educational institutions can always improve themselves by interacting with the external environment.	.815	3.52	1.13	-.315	-.813
Interaction with outer environment Gutman Split Half=.70			3.28	1.00	-.098	-.791
Staff Autonomy	m23 Staff can take their own decisions and implement them on professional matters.	.742	3.23	1.15	-.135	-.777
	m10 In educational institutions, in some cases, subordinates should be able to check their superiors.	.689	2.99	1.17	.094	-.715
Employer Autonomy Gutman Split Half=.42			3.11	0.92	-.042	-.520

Unexpected situation is the relatively lower level of humanistic behaviours in the school (\bar{x} =2.61, Ss=.88). Because schools are generally defined as its predominant humanistic aspect



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(Lunenburg and Ornstein, 2022). Within this dimension, relatively the highest level perceived aspect is that “informal humanistic feature of the school is much more important than its formal aspect” ($\bar{x}=3.17$, $Ss=1.12$). However, the lower level perception about “believes, values and emotions of employee are much more important than the goals of organization” ($\bar{x}=2.23$, $Ss=1.18$) indicate that SA give much more importance on the organizational effectiveness. In the dilemma of whether it is an organization or a person, school administrators tend to favour the first. The highest perceptual score ($\bar{x}=4.17$, $Ss=.76$) across the dimensions was belonged to professional development. The highest score within this dimension was owned by item that “they share effective approach, technique or material with colleagues” ($\bar{x}=4.38$, $Ss=.77$). SA espoused the interaction with near environment ($\bar{x}=3.28$, $Ss=1.00$) and teachers’ autonomous ($\bar{x}=3.11$, $Ss=.92$) at the medium level.

In sum, descriptive scores provided by Table 2 shows that SA have relatively higher perceptions about *professional development*, *self-efficacy* and *managerial dominance*. However they perceived the democratic style such as humanistic approach, teachers’ autonomy was at the medium level. Their perception about authoritative hierarchic approach and interaction with the near environment was at the medium level.

We computed Pearson r to examine the relationships between factorial dimensions. Table 3 shows the bivariate Pearson r scores. Correlations across the table indicate significant positive relationships between factorial dimensions. Relatively higher correlations are owned by self-efficacy. The highest correlation score is seen between self-efficacy and managerial dominance ($r=0.52$, $p<0.01$). Increasing SA self-efficacy perceptions means the increasing of their managerial dominance perceptions. Professionally goodness feeds also managerial dominance. Self-efficacy perception has also significant, positive and medium level ($r=0.34$, $p<0.01$) correlation with professional development perception. Based on the correlations among self-efficacy, professional development and managerial dominance, it can be said that managers who have the high self-efficacy perception give importance to professional development, and in turn it leads an increase in their managerial dominance. Therefore, professional development functions as a mediating variable between self-efficacy and managerial dominance. Across Table 3, the negative correlation is observed only between authoritative hierarchical understanding and professional development ($r=-0.13$, $p<0.01$). In other words, as the authoritarian hierarchical understanding increases, professional development decreases and vice-versa. The result refers that school administrators whose knowledge and skills improve would have a less authoritarian hierarchical management approach. Another remarkable finding in the table is the significant positive and relatively considerable relationship ($r=0.26$, $p<0.01$) between the humanitarian approach and staff autonomy.



Table 3.
Correlations

Variables	1	2	3	4	5	6	7
1-Self-Efficacy	1						
2-Authoritative Hierarchy	.218**	1					
3-Administrator Dominance	.524**	.210**	1				
4-Humanistic Approach	.092*	.160**	.218**	1			
5-Professional Development	.341**	-.126**	.248**	.037	1		
6-Interaction with Outer Environment	.142**	.106*	.203**	.203**	.146**	1	
7-Employer Autonomy	.073	-.011	.194**	.261**	.193**	.162**	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

DISCUSSION, CONCLUSION AND SUGGESTION

This study aimed at finding out how is school principals' authoritarian hierarchical management approach related to school's administrative aspects at formal compulsory education level including primary, lower-secondary and upper-secondary.

We identified that school administrators have high-level self-efficacy and they consider themselves as very effective. A similar result was obtained by [Okutan and Kahveci \(2012\)](#). [Yenipinar \(1998\)](#) also confirmed that school administrators perceived themselves much more adequate than teachers in terms of having competency on technical, humanist and conceptual knowledge. However, a contradiction appears when we consider their professional development performance. Contrary to their self-efficacy perception, their performance of reading professional publications is at a low level. [Polat, Uğurlu and Bilgin Aksu \(2018\)](#) reported that school administrators consider professional publications as the prominent tool for their professional development. School administrators should follow professional publications to update their knowledge furthermore, they should report their experiences in a scientific manner. Having a high level of technical knowledge and skills needs explanation. To be able to claim high-level self-efficacy they should have a relevant effort. According to [Kasalak \(2020\)](#), there are problems in the professional development activities of school administrators. They frequently attend to the less effective activities instead of highly effective professional development programs ended with diplomas or certificates. Well-organized and planned professional development activities can improve their professional competency.

This study found out that school administrators espouse the authoritative hierarchic management approach at the medium level ($\bar{x}=2.61$, $Ss=.74$). This result is quite similar to the result ($\bar{x}=2.88$, $Ss=.99$) by [Alanoğlu and Demirtaş \(2020\)](#). [Kahraman \(2019\)](#) resulted that school administrators perform authoritative behaviours at a low level. The attention point in this dimension is to perceive that using punishment ensures things to be done correctly. In fact, this perception supports the result indicating school administrators' authoritative behaviours. Considering modern educational understanding that promotes intrinsic motivation and self-regulated activities for educational success ([Onur, 1979; Hughes, 2002](#)), can also indicate out-dated approaches of school administrators. In addition, administrators' advocacy



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of using extrinsic motivation to have teachers do tasks lead us to think of their low-level intrinsic motivation. This interpretation also coincides with the low performance of reading professional publications regularly whereas they have a high-level self-efficacy. If we consider them together with their medium level perception of authoritative manner, it can drive us to worry about the education system. We do not expect them to lead school community. This result also refers to the problem in the system of training, assigning and improving school administrators. High-rank educational bodies and political decision-makers should seriously consider this issue. Without taking an institutional training programme, performing school administration as an extension of teaching would harm not only administration but also teaching (Okutan, 1995). Within this framework, the urgent need of giving considerable updated training for the current school administrators should not be neglected.

School administrators adopt a high level of administrative dominance. It has been adopted at the highest level in this dimension that employees get administrator permission before doing anything. However, it is stated that the understanding of high level of administrative dominance in the field of education is incompatible with today's education understanding (Yenipinar, 2021). Students have different interests and needs. The teacher's standard behavior towards each student may not enable some students to learn and develop. The teacher should be able to get to know each student in depth and apply the methods and techniques appropriate to their interests, wishes and needs. This situation requires differentiation rather than standardization in teaching processes. For this reason, administrators should not expect standard behaviours from teachers in terms of teaching. It should provide them with the necessary autonomy in education and administration. Teachers are in compliance with the basic principles and methods of educational science; they should be able to determine and apply methods and techniques that will meet students' interests and needs. By taking this situation into account, administrators should avoid moulding teachers.

It has been concluded that school administrators' democratic management approaches such as humane management and employee autonomy and authoritarian hierarchical management approach are at a moderate level. This result: It can be said that the school principals' management styles reached by Argon and Dilekçi (2014) are in the same direction as the democratic management, participatory-democratic management, sharing-authoritarian management and authoritarian management styles at the "agree" level. However, as the current results show that the humanitarian aspect in educational institutions is more important than formal side. Managers' perspectives on people are optimistic; having high level perspective on human skills and being optimistic and democratic management understanding are important factors in the commitment of teachers, students and parents to the school (Eren, 2003). Gill, Ashton, and Algina (2004) found that there is no clear evidence that authoritarian school is effective in student achievement. Therefore, school administrators should have a democratic understanding. Using the democratic processes in school management is an important factor in the effectiveness of educational outcomes in terms of quantity and quality.

Other medium level perceived dimension is interaction with the near environment. This is the result is harmonious with the result by Çınar (2010) that school principals' communication skills are not at a high level. The perspective of the organizational ecology theory suggests that some of the opportunities and threats related to the continuity of the school originate from

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the external environment (Özan, Polat, Gündüzalp, & Yaraş, 2015). Change and development in the school as a social system largely stem from external or environmental. Schools that best adapt to the environment can be more functional and effective. So, the school administrator is expected to consider environmental factors in the decision-making process (Demir Yıldız ve Dönmez, 2017).

Relatively the strongest relationship is between the perception of self-efficacy and managerial dominance. It can be said that as self-efficacy perception increases, managerial dominance increases, or vice-versa. This result is consistent with the result obtained by Okur (2012): School principals' self-efficacy is affected by the success or failure of their managerial activities. To develop self-efficacy perception, the individual should have successful experiences by undertaking initiatives. Previous experiences should give individuals hope for future initiatives to become successful. In this regard, attention should be paid to the content of the concept of administrative dominance. School administrators should be authoritative, not authoritarian, by increasing their self-efficacy especially in cognitive and intellectual areas. Instead of controlling all the actions of school staff by getting rid of unnecessary fears, school administrators should leave them freedom and initiative field. In this way, they provide opportunities for new ventures. Various ideas can be discussed and those at school put more effort into achieving goals. Otherwise, school culture becomes toxic (Onur, 1979).

The main limitation of this study is to take school administrators' views about school's administrative matters. Teachers or other school stakeholders might have very different views about what's going on in the school. Therefore, further studies can collect data from teachers, education inspectors and other education stakeholders on the same subject. Furthermore, carrying out mixed-method studies can provide more depth insight into this matter.

CONCLUSION

School administrators' approaches to management reflect on their school management practices. Based on the current study, it can be said that the management approach of school administrators should be updated to enhance schools to fulfil their functions comprehensively. The fact that the selection and assigning system of school administrators, without requiring professional management training, might have had an impact on the current results. Based on this inference, school administrators should receive professional management training. Administrator candidates who can prove that they were trained by showing a diploma/certificate should be able to enter the selection process. In addition, providing continuous professional training and development opportunities in order to develop the potential of the assigned school administrators and encouraging ways to share their knowledge and experience with their colleagues can contribute to the fulfilment of the expected roles of the school administrators.



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COVID-19 KORKUSUNUN MENTAL İYİ OLUŞA ETKİSİNİN İNCELENMESİ

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Özet

Covid-19 Pandemisi, başladığı günden bugüne insanları hem maddi hem de manevi açıdan olumsuz şekilde etkilemeye devam etmektedir. Özellikle hastalığın seyri ve sonuçları, virüsün yayılma hızı ve düzeyi, yeni ortaya çıkan varyantların yol açtığı vaka ve ölüm sayıları ile ilgili bilgiler; internet, yazılı ve görsel basından erişim sağlayan ve haberdar olan insanlarda kaygı, korku veya mental meşguliyete yol açabilmektedir. Bu bağlamda ortaya çıkabilecek tedirginlik, kaygı ve korku durumlarının varlığı ve düzeyinin tespiti ile insanların zihinsel sağlığına etkisinin incelenmesi ve değerlendirilmesi önem arz etmektedir. Bu çalışmada, insanların Koronavirüs pandemisi korkusu ve mental iyi oluş düzeyinin tespiti ve aralarındaki ilişkinin incelenmesi amaçlanmaktadır.

Bu çalışma, 18 yaş üstü bireyleri kapsamaktadır. Google Formlar üzerinde hazırlanan anket formu, Temmuz-Eylül 2021 tarihleri arasında sosyal ağlar, e-posta ve iletişim araçları üzerinden paylaşılarak veriler elde edilmiştir. Araştırmaya katılanlardan elde edilen 337 adet ankete ait veriler istatistiksel analizlerde kullanılmıştır. Anket formunda, Koronavirüs Korkusu ve Mental İyi Oluş Ölçekleri ve sosyo-demografik özelliklere dair ifadeler yer almaktadır.

Analiz sonuçlarına göre; katılımcıların 2,58'lik ortalama ile orta seviyenin altında bir koronavirüs korkusu yaşadıkları ve 3,49 ile de orta seviyenin biraz üzerinde mental iyi oluş seviyesine sahip oldukları belirlenmiştir. İki değişken arasında anlamlı ve negatif yönlü (-,145) bir ilişki olduğu tespit edilmiştir. Ayrıca, insanların sahip olduğu koronavirüs korkusundaki bir birimlik değişimin mental iyi oluş düzeyinde % 14,4'lük bir negatif etkiye yol açtığı belirlenmiştir.

Sonuç olarak, Koronavirüs pandemisinin katılımcılarda çok yüksek bir korku hissine yol açmadığı söylenebilse de, mental iyi oluş düzeyine yapmış olduğu negatif etkinin göz ardı edilmemesi gerekmektedir.

Anahtar kelimeler: Covid-19 Pandemisi, Koronavirüs Pandemisi Korkusu, Mental İyi Oluş



INVESTIGATION OF THE EFFECT OF COVID-19 FEAR ON MENTAL WELLNESS

Abstract

The Covid-19 Pandemic continues to negatively affect people both financially and morally since the day it started. In particular, information on the course and consequences of the disease, the rate, and level of spread of the virus, the number of cases and deaths caused by newly emerged variants; It may cause anxiety, fear or mental preoccupation in people who access and are aware of the internet, written and visual media. In this context, it is important to determine the existence and level of uneasiness, anxiety, and fear that may arise and to examine and evaluate the effects on people's mental health. In this study, it is aimed to determine the level of people's fear of the coronavirus pandemic and mental well-being and to examine the relationship between them.

This study includes individuals over the age of 18. The survey form prepared on Google Forms was shared between July and September 2021 via social networks, e-mail, and communication tools, and data were obtained. The data of 337 questionnaires obtained from the participants of the research were used in statistical analysis. In the questionnaire, there are statements about Fear of Coronavirus and Mental Well-Being Scales, and socio-demographic characteristics.

According to the analysis results; It was determined that the participants had a fear of coronavirus below the medium level with an average of 2.58, and a mental well-being level of 3.49 was slightly above the medium level. It was determined that there was a significant and negative (-,145) relationship between the two variables. In addition, it has been determined that one unit change in people's fear of coronavirus causes a negative effect of 14.4% on the level of mental well-being.

In conclusion, although it can be said that the coronavirus pandemic did not cause a very high sense of fear in the participants, its negative effect on mental well-being should not be ignored.

Keywords: Covid-19 Pandemic, Fear of Coronavirus Pandemic, Mental Well-Being

GİRİŞ

Çin'in Wuhan kentinde, 2019 yılının Aralık ayında tespit edilen Koronavirüs (Covid-19), kısa zamanda bütün Dünyaya yayılırken, Ülkemizde ise Mart ayında ilk vaka tespit edilmiştir. Dünya Sağlık Örgütü (DSÖ) tarafından Ocak 2020 'de acil durum, sonrasında 11 Mart 2020'de ise pandemi ilan edilmiştir. Covid-19 salgını hızlı bir şekilde dünyaya yayılım göstermiş, sosyal medya, görsel ve yazılı iletişim araçlarıyla yapılan haberlerde bulaşma şekli, ölümler, insanların karantinada yaşadıkları problemler ve Covid-19'un bulaşma korkusu insanlarda kaygı ve stres yaşanması ile psikolojilerini olumsuz etkilemiştir (Roy vd., 2020). Pandeminin başlamasıyla alınan tedbirler kapsamında karantina ilan edilmesi, bireylerin normal yaşamını ve faaliyetlerini sekteye uğratmıştır. Ayrıca geleceğe dair belirsizlikler, Covid-19 bulaşma tereddüdü ile insanların yaşam alanlarının nasıl güvenli hale getirileceğine ilişkin yoğun düşünceler kişilerde fizyolojik olduğu kadar psikolojik olumsuz etkilere yol açmıştır (Kaya, 2020). Covid-19 virüsü kişilerin sağlığını iki türlü etkilemektedir (Zeybek vd.,

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2020). Bunlardan ilki; ateş, öksürük vb. bulgular ile ortaya çıkan fizyolojik yapıyı doğrudan etkileyen boyut diğeri ise insanlarda panik, anksiyete ve endişe oluşturarak ruh sağlığını olumsuz yönde etkileyen psikolojik boyuttur. Covid-19 sadece bir tıbbi durum olmaktan çıkmış aynı zamanda psikolojik olarak toplumun ve kişinin mental durumunu etkiler hale gelmiştir.

Mental olarak iyi oluş, “Kişilerin kendi becerisinin farkında olması, günlük yaşanan stresi yenebilmesi, iş hayatında bir şeyler yapabilen ve kendi becerilerine yönelik topluma fayda ve katkıda bulunması” olarak DSÖ tarafından 2004 yılında tanımlanmıştır. Burada belirtildiği gibi bireyde psikolojik rahatsızlığın bulunmaması, ruhsal olarak iyi durumda olması ve psikolojik ile ruhsal olarak sağlıklı bir şekilde işlevlerini yerine getirmesinin önemi vurgulanmaktadır (WHO, 2004).

Qiu vd. (2020) tarafından yapılan çalışmada Covid-19 pandemisinin bireylerin fizyolojik sağlığını ve yaşam kalitesini olumsuz yönde etkilediği ve dünya genelinde yalnızca insan sağlığını fizyolojik olarak olumsuz etkilemekle kalmayıp, bireylerde ciddi panik, depresyon ve anksiyete bozukluğu gibi psikolojik problemlerin de meydana gelmesinde etkili olduğu belirtilmiştir. Yapılan başka bir çalışmada, Covid-19 yayılım hızının çok hızlı olması nedeniyle, kişilerin bu bulaşma hızından korkup kendilerine ve temasta oldukları kişilere bulaşma ve bulaştırma endişesi yaşamaları psikolojilerini olumsuz yönde etkilediği belirtilmiştir (Lin, 2020). Ülkemizde yapılan bir çalışmada, pandeminin aniden ortaya çıkması ile bireylerin paniğe kapılması sonucu nelerin yapılacağını bilememesi, bulaşma korkusu, yaşanan kayıpların oluşturduğu kaygı ve belirsizlikten dolayı bir korku kültürü oluştuğu belirlenmiştir (Yıldırım, 2020). Diğer bir çalışmada ise insanların sağlık alt yapısının etkilenerek olması düşüncesi ve hastalanınca sağlık kuruluşlarında hizmet almada problem yaşayabileceği kanısı bireylerin depresyona girip psikolojilerinin olumsuz yönde etkilenmesine yol açtığı belirtilmektedir (Aykut & Soner, 2020). Biçer vd. (2020) de yaptığı çalışmada insanların başkasına bulaştırma korkusu, yakınlarını kaybetmeleri ve ölüm korkusu ile iş kaybı ve gıdaya ulaşmada sıkıntı yaşama korkusu insanların mental olarak etkilenmelerine neden olmaktadır.

Dünyada ve ülkemizde yapılan çalışmalar, pandeminin insanları sadece fizyolojik olarak değil ruhsal ve psikolojik olarak da etkilediğini gösterirken, bu çalışmada da insanların yaşadığı Koronavirüs pandemisi korkusu ve mental iyi oluş düzeyinin tespiti ve aralarındaki ilişkinin incelenmesi amaçlanmaktadır.

GEREÇ VE YÖNTEM

Bu çalışma, kesitsel ve tanımlayıcı tipte bir araştırma olup, insanların Koronavirüs korkusu ve mental iyi oluş düzeyi ile değişkenler arasındaki ilişki ve etkileşim düzeyini incelemektedir. Çalışmada, “Koronavirüs pandemisi insanlarda hangi düzeyde korkuya yol açmaktadır?”, “Koronavirüs pandemisi yaşanırken insanlar mental açıdan ne kadar iyi bir düzeye sahiptir?” ve “Koronavirüs korkusu mental iyi oluşu ne kadar ve nasıl etkilemektedir?” gibi sorulara cevap aranmaktadır. Araştırmanın evrenini 18 yaş üstü bireyler oluşturmaktadır. Araştırmanın örneklem hesabı, eleman sayısı bilinmeyen evren için kullanılan formül (Karataş, 2004) ile hesaplanarak, 384 olarak bulunmuştur. Ancak çalışmaya 337 kişinin katılımı sağlanabilmiştir.

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Veri toplama araçları

Kişisel bilgi toplama formu: Cinsiyet, yaş, medeni durum, gelir durumu ve eğitim durumunu sorgulayan sosyo-demografik özelliklere dair ifadelerden oluşmaktadır.

Koronavirüs Korkusu Ölçeği: Ölçek, Ahorsu ve arkadaşları tarafından 2020 yılında geliştirilmiş ve Ladikli ve arkadaşları tarafından 2020 yılında Türkçe geçerlilik ve güvenilirliği yapılmıştır. Ölçek 5'li likert tipinde olup 7 maddeden oluşmaktadır. Ölçekten en az 7 en fazla 35 puan alınabilmektedir. Ölçekte alınan puanın yüksekliği koronavirüs korkusuyla doğru orantılıdır. Ölçeğin puanlanması 1= kesinlikle katılmıyorum ve 5 = kesinlikle katılıyorum şeklinde yapılmaktadır (Ladikli vd., 2020). Ölçeği oluşturan 7 maddeye ait Cronbach's Alpha değeri ,915 olarak bulunmuştur.

Mental İyi Oluş Ölçeği: Ölçek, Tennant ve arkadaşları tarafından 2007 yılında geliştirilmiş ve Kendal tarafından 2015 yılında Türkçe geçerlilik ve güvenilirliği yapılmıştır. Ölçek 14 maddeden oluşmaktadır. 5'li likert tipindeki ölçekten en az 14 en fazla 70 puan alınabilmektedir. Ölçekte puanın yüksek olması mental iyi oluşun pozitif yönde iyi olması anlamına gelmektedir. Ölçeğin puanlama sistemi; 1=hiç katılmıyorum ile 5= tamamen katılıyorum şeklinde yapılmaktadır (Keldal, 2015). Ölçeği oluşturan 14 maddeye ait Cronbach's Alpha değeri ,969 olarak bulunmuştur.

Verilerin toplanması

Bu çalışma, 18 yaş üstü, Türkçe ve okuma yazmayı bilen, sosyal medya veya akıllı telefon kullanmayı bilen ve çalışmaya katılmayı kabul eden bireyleri kapsamaktadır. Google Formlar üzerinde hazırlanan anket formu, Temmuz-Eylül 2021 tarihleri arasında sosyal ağlar, e-posta ve iletişim araçları üzerinden paylaşılarak veriler elde edilmiştir. Araştırmaya katılanlardan elde edilen 337 adet ankete ait veriler istatistiksel analizlerde kullanılmıştır. Anket formunda, Koronavirüs Korkusu ve Mental İyi Oluş Ölçekleri ve sosyo-demografik özelliklere dair ifadeler yer almaktadır. Çalışmaya katılımı kabul eden kişiler sosyal medya veya akıllı telefon üzerinden gönderilen linke tıklayarak, veri toplama formunu doldurup katılım sağlamıştır. Katılımcılardan toplanan veriler SPSS 25.0 istatistik programı kullanılarak analiz edilmiştir.

BULGULAR

Tablo 1. Sosyo-Demografik Özellikler

		F	%			F	%
Cinsiyet	Kadın	106	31,5	Eğitim Durumu	Okuryazar	21	6,2
	Erkek	231	68,5		Lise	132	39,2
Yaş	18-28	238	70,6		Önlisans	56	16,6
	29-39	54	16,0		Lisans ve üstü	128	38,0
	40-50	38	11,3	Gelir Durumu	Gelir giderden fazla	46	13,6
	51 yaş üstü	7	2,1		Gelir gidere eşit	166	49,3
Medeni Durumu	Evli	239	70,9		Gelir giderden az	125	37,1
	Bekar	98	29,1				
	Toplam	337	100	Toplam	337	100	



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Sosyo-demografik özelliklere göre katılımcıların büyük çoğunluğunun; erkek (% 68,5), 18-28 yaş aralığında (% 70,6), evli (% 70,9), lise mezunu (% 39,2) ve gelirinin giderine eşit (% 49,3) olduğu anlaşılmaktadır.

Tablo 2. Tanımlayıcı İstatistikler

	Ortalama	Std. Sapma	Skewness	Kurtosis
Koronavirüs Korkusu	2,58	1,04	,449	-,507
Mental İyi Oluş	3,49	1,04	-,627	-,446

Yapılan inceleme sonucu, katılımcıların orta seviyenin altında (2,58) koronavirüs korkusu yaşadıkları ve orta seviyenin üzerinde mental iyi oluş seviyesine (3,49) sahip oldukları belirlenmiştir. Ayrıca diğer tanımlayıcı istatistik sonuçlarına bakıldığında, verilerin normal dağılım gösterdiği ve parametrik testler yapılabileceği anlaşılmıştır. Dolayısıyla değişkenler arasındaki ilişki ve etkileşimi incelemek amacıyla çalışmanın sonraki kısmında korelasyon ve regresyon analizi sonuçlarına yer verilmektedir.

Tablo 3. Regresyon analizi katsayıları

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	Mental İyi Oluş	3,117	,149		20,862	,000
	Koronavirüs Korkusu	-,144	,054	-,145	-2,690	,007

Regresyon analizi sonucu iki değişken arasında zayıf bir ilişki olduğu ($R=,145$), mental iyi oluş düzeyindeki değişimin % 2,1'nin Koronavirüs korkusu tarafından açıklandığı ve modelin bir bütün olarak anlamlı ($Sig.=,007$) olduğu tespit edilmiştir. Ayrıca, insanların sahip olduğu Koronavirüs korkusundaki bir birimlik değişimin mental iyi oluş düzeyinde % 14,4'lük negatif bir etkiye yol açtığı belirlenmiştir.

SONUÇ ve ÖNERİLER

Çalışmanın sonuçları; katılımcıların orta düzeyin altında Koronavirüs korkusu yaşadığını ve mental olarak orta düzeyin üzerinde bir iyilik haline sahip olduğunu ve Koronavirüs korkusunun mental iyi oluş düzeyini olumsuz yönde etkilediğini ve değişime yol açtığını göstermektedir.

İnsanların Koronavirüs korkusu yaşadığına dair araştırma sonuçları, literatürde yer alan bazı çalışmaları (Ahorsu vd., 2020; Saticı vd., 2020) desteklemektedir. Ayrıca, Koronavirüs pandemisinin belirsizlik ve bulaşma şüphesi (Kaya, 2020), bulaşma ve bulaştırma endişesi (Lin, 2020), hastalanınca hizmet alamama endişesi (Aykut & Soner, 2020), yaşanan kayıpların oluşturduğu kaygı ve belirsizlik (Yıldırım, 2020), yakınlarını kaybetme ve ölüm korkusu (Biçer vd., 2020), kaygı ve stres (Roy vd., 2020), panik, anksiyete ve endişe (Zeybek vd., 2020), depresyon (Qiu vd., 2020) yoluyla insanların psikolojisini ve mental yapısını etkilediğini ortaya koyan çalışmalarla benzerlik göstermektedir.

İnsanların günlük yaşamını olağan şekilde sürdürebilmesi, iş hayatında verimli olabilmesi, becerileri doğrultusunda topluma fayda ve katkıda bulunabilmesi için, her ne şekilde ve türde olursa olsun Koronavirüs pandemisinin ortaya çıkardığı psikolojik olumsuzluklar ve zihinsel meşguliyetin ortadan kaldırılması önem arz etmektedir. Özellikle pandemiye yol açan virüs farklı varyantlar şeklinde halen etkisini sürdürmekte iken, fizyolojik olumsuz etkilerini azaltmaya yönelik yeni tedavi yöntemleri ve toplumların büyük kesimlerini kapsayacak şekilde aşı uygulamalarının psikolojilerine de olumlu katkı sağladığı gözlemlenebilmektedir.



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Ancak, yeterli bir rahatlama sağladığını söylemek doğru bir yaklaşım olmaktan uzaktır. Bu bağlamda konunun uzmanları ve yetkililer tarafından insanların psikolojik yapısını ve zihnini doğrudan etkileyecek ve onları rahatlatacak yol ve yöntemlerin araştırılması ve hayata geçirilmesi gerekmektedir.

Sonraki çalışmaların, yaşanan pandemide insanların psikolojik olarak rahatlmasını sağlayacak girişimlerin neler olabileceği ve uygulama yöntemlerini belirleyici tarzda ve toplumun tamamını kapsıyor olması önemli katkılar sağlayabilecektir.

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**PERFORMANCE MANAGEMENT IN THE HEALTH SECTOR AND EVALUATION
OF THE PERFORMANCE OF FAMILY PHYSICIANS**

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Abstract

It is possible to define the concept of performance as the efficiency obtained from the work done and the satisfaction at the end of the work. It is possible to list the dimensions of performance as the innovation brought to the work done, the efficiency achieved, the quality of the work done, how much profit is made, the satisfaction of the customers with the work done, how much it costs.

It is possible to learn the productivity of the personnel working in any institution, by evaluating the performance of the employees. By evaluating the performance of the personnel, it is possible to increase their efficiency and reach the planned targets in a short time.

In the world, new business areas and new technologies have emerged in parallel with industrialization. This has led to an increase in competition. Performance and quality have become one of the most important parameters of the increasing competitive environment. Maintaining quality along with increasing performance is necessary to increase productivity. As in all business areas, the desire for a quality life in the field of health has led to an increase in people's demands. Responding to the increasing demands of people had brought some challenges to healthcare professionals.

In this research; The performance problems experienced by family physicians and the family medicine system in Turkey were examined.

The aim of our research; To identify the difficulties experienced by family physicians due to performance and performance management concepts adapted to the health sector and to make a comparative analysis of family medicine systems in Turkey and in the world.



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As a result, states have obligations to deal with the health problems faced by society and to provide individuals with better living conditions. Providing a quality health service can only be possible by providing health services to everyone, including individuals living in the farthest corner of the country. In order to achieve this, it is necessary to show the necessary attention to the family medicine system. However, it is extremely important to eliminate the situations that cause the performance of family physicians to decrease.

It is foreseen that the efficiency of family physicians will increase with the elimination of the problems (leave, tax, working conditions, dependent population) that cause the performance of family physicians to decrease. In this way, it is thought that the quality of preventive health services offered by family physicians will increase.

Keywords: Family Medicine, Performance, Health Sector.

Özet

Performans kavramını, yapılan işten elde edilen verim ve iş sonunda elde edilen memnuniyet olarak tanımlamak mümkündür. Performansın boyutlarını yapılan işe getirilen yenilik, elde edilen verimlilik, yapılan işin kalitesi, ne kadar kar elde edildiği, yapılan işten müşterilerin memnuniyeti, maliyeti ne kadar olarak sıralamak mümkündür.

Herhangi bir kurumda çalışan personelin verimliliğini, çalışanların performanslarını değerlendirerek öğrenmek mümkündür. Personellerin performanslarının değerlendirilmesi ile verimlerinin artırılması ve planlanan hedeflere kısa sürede ulaşılması sağlanabilir.

Dünyada sanayileşme ile paralel olarak yeni iş alanları ve yeni teknolojiler ortaya çıkmıştır. Bu durum rekabetin artmasına neden olmuştur. Performans ve kalite artan rekabet ortamının en önemli parametrelerinden biri haline gelmiştir. Performansın artırılması ile birlikte kalitenin korunması verimliliği arttırmak için gereklidir. Tüm iş alanlarında olduğu gibi sağlık alanında da kaliteli yaşam arzusu insanların taleplerinin artmasına neden olmuştur. İnsanların artan taleplerine cevap vermek sağlık çalışanlarına bazı zorluklar getirmiştir.

Bu araştırmamızda; aile hekimlerinin yaşamakta oldukları performans sıkıntıları ile Türkiye'deki aile hekimliği sistemi incelenmiştir.

Araştırmamızın amacı; sağlık sektörüne uyarlanmış performans ve performans yönetimi kavramları nedeniyle aile hekimlerinin yaşadığı zorlukları tespit etmek ve Türkiye'de ve dünyada aile hekimliği sistemlerinin karşılaştırmalı analizini yapmaktır.

Sonuç olarak, devletlerin toplumun karşılaştığı sağlık sorunlarıyla ilgilenmek ve bireylere daha iyi yaşam koşulları sağlamak gibi yükümlülükleri vardır. Kaliteli bir sağlık hizmeti sunmak ülkenin en ücra köşesinde yaşayan bireyler dahil herkese sağlık hizmeti ulaştırmakla mümkün olabilir. Bunu sağlamak için aile hekimliği sistemine gerekli ilginin gösterilmesi gerekmektedir. Bununla birlikte aile hekimlerinin performanslarının düşmesine neden olan durumların ortadan kaldırılması son derece önemlidir.

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Aile hekimlerinin performanslarının düşmesine neden olan sorunların (izin, vergi, çalışma koşulları, bakmakla yükümlü oldukları nüfus) ortadan kaldırılması ile birlikte verimlerinin artacağı ön görülmüştür. Bu sayede aile hekimleri tarafından sunulan koruyucu sağlık hizmetlerinin kalitesinin artacağı düşünülmektedir.

Anahtar Kelimeler: Aile Hekimliği, Performans, Sağlık Sektörü

INTRODUCTION

Performance of the individuals working in institutions has to be evaluated in order to display how well they are doing their work. Supporting the individuals who undergo performance evaluation will ensure that their efficiency is improved and make sure that the workplace reaches its targets in a very short time. Considerable resources have been allocated for performance evaluation system which began to be implemented in health institutions in the last quarter of the 20th century, and institutions used a portion of their expenditures for the purpose of increasing their performance. In a similar vein, countries spared a portion of their health spending for performance improvement so as to carry their health systems to the next level. Reports and evaluations have been prepared by the World Health Organization in order to maximize the performance in the health system.

The fact that the roles and functions of the people in the enterprises have been determined has increased competition and made it a necessity for the employees in the institution to work with maximum efficiency. This obliges employees to maximize their professional skills. The fact that corporate managers take initiatives such as promotions, rewards and wage increases to improve the performance of employees provides them extra motivation.

In this research, it is aimed to adapt the concepts of performance and performance management to the health sector, to identify the difficulties experienced by family physicians in this regard, and to perform a comparative analysis of the family medicine system in Turkey and in the world and offer solutions related to the difficulties experienced.

PERFORMANCE AND PERFORMANCE MANAGEMENT

The concept of performance is of western origin. In the dictionary of the Turkish Language Institution, it is defined as “the efficiency obtained from the work done, the satisfaction obtained from the result and the feeling of success” (TDK, 2017). Elsewhere, performance is defined as “the amount of goods or services produced by any organization within the hours specified”. In addition, concepts such as efficiency, potential, quality, and ability are closely related to the concept of performance (Helvacı 2002, 106).

The realization of the goals desired to be achieved within the time frame set by an organization reveals that the organization is extremely successful and makes a profit; therefore, it is seen as very satisfactory by the managers (Uzoğlu 2011, 3). Organizations aim to motivate their employees by way of appreciation, gratulation, promotion and raise in order

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to reach their targets within the time period deemed appropriate; thus, they aim to increase the performance of employees (Bakan and Kelleroğlu 2003, 103).

Performance dimensions can be listed as innovation, productivity, quality, profitability, customer satisfaction, cost and employee satisfaction.

PERFORMANCE MANAGEMENT, OBJECTIVES, FEATURES AND BENEFITS

Performance management has begun to be used frequently in recent years and it basically includes changing of applications and management patterns by institutions in order to address wider audiences (Akal 1992, 34). Performance management can be described shortly as “objectives and efforts paid to reach these objectives” (Çolak 2010, 11).

Performance management system, which is a constantly changing and dynamic structure, also helps to make plans that are necessary to achieve a common goal for all employees and to increase performance.

Performance management has purposes such as “administrative or managerial purposes”, “research-oriented objectives”, and “progress and development objectives” so that institutions can work more effectively. The scopes of these purposes are different from each other (Çolak 2010, 17):

Performance management system can be extremely beneficial for the institution and its managers, as well as for the employees of the institution. Organizations that implement a performance management system can dominate market conditions and better evaluate profit-making environments; therefore, they can make very significant gains in a much shorter period of time. In addition, it may be easier for them to adapt to the changing commercial environment by setting high targets for the coming years.

MEASUREMENT AND EVALUATION OF PERFORMANCE

Measurement can be defined as “the process of finding symbols that are a way of providing information and represent the visible features of objects, events and results” (Ediz 2004, 16). Measuring performance as a result of correct decisions and behaviors is considered one of the main points of the performance management process. Measuring performance is not possible with a single behavior or decision. It is possible to define performance measurement as a process that occurs as a result of events that are sequentially ordered. Performance measurement is a process that involves monitoring whether the goals determined by the institution have been achieved, identifying the performance targets in line with the objectives of the institution, calculating how the expected target has been achieved by comparing the objectives of the institution with the performance achieved by the institution, determining what the difference is, and if there is a difference, finding out what kind of a road map should be drawn so as to close this difference (Coşkun 2006, 1).

The use of various criteria for the determined purpose makes it possible to measure performance. The first purpose in performance measurement should be related to the goals of

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the institution, not the individual. Employees should be aware of their responsibilities and roles and be result-oriented in harmony with each other. The organization's data should include information about what is expected of employees and what the goals are, while also being available for feedback. Besides, it should include all stages of performance (Bourdeaux 2008, 39).

Measuring performance of institutions or organizations allows seeing where and how the resources are employed. In addition, it makes sure that budget plans are prepared, activity plans are developed, and the quality of provided services are improved (Ateş and Engin 2007, 93; Bittitçi et al. 2011, 19).

Terminologically, performance evaluation can be described as “appreciating merit”, “assessing achievement” or “grading employee” (Şimşek and Öge 2007, 283). Performance evaluation can also be defined as “a system that ensures that the training and abilities of the employees of the organization are known, used and evaluated in accordance with the purpose, and that includes the objectives of the employees in order to achieve the determined goals of the organization and the financial use of the obtained information” (Budak 2008, 76).

The success of the employees of the institution, the success of the institution and the achievement of the set goals can be considered within the scope of performance evaluation (Çelik 2013, 46).

Performance evaluation is not dependent on a single stage or process. The entire process, from the commitment of the employees to the work they do, the presentation of the product, what the result of the product is and how it can be improved, forms the basis of performance evaluation. Performance evaluation affects the success level of employees by assessing the functional dimension of management. With the evaluation of performance, products and services are put forward in accordance with the purpose of the institution. In addition, it allows to see how the tasks in the institution are carried out and to measure them impartially. To summarize briefly, performance evaluation is the sum of the processes of enterprises or institutions where decisions are taken, put into effect and activities are carried out in line with the decisions taken (Kaynak 2008, 270).

Objectives such as strategic planning, salary increases, promotions, job enlargement and enrichment, trainings, and selection of qualified personnel are realized with the data obtained through performance evaluation (Erdil et al., 2004, 114).

FAMILY PHYSICIAN

Family medicine, which emerged with the specialization in and narrowing of the field of medicine and the need for a discipline to deal with the complaints of the patients in general, was first introduced by Francis Peabody in 1923. The World Health Organization defines family medicine as follows: “A *family physician is a medical doctor who provides primary health care services to the community, regardless of age, gender and disease, and who has received at least two years of training in his/her field after basic medical education*” (Akdağ 2004, 65).

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To sum up, family medicine is a field of expertise which provides continuous and versatile health services to individuals and their families, is intertwined with many disciplines such as biological, physiological, clinical and behavioral sciences, serves all age groups, treats all individuals equally without gender discrimination, and includes all diseases. Family physicians deal with the general health status of all members of the family, from the fetus in the womb to the elderly, and are responsible for all health problems. In addition, family physicians provide health consultancy services to people who receive services from them and provide them both preventive and curative health services (Kantarıcı 2015, 6).

DEVELOPMENT OF FAMILY MEDICINE IN TURKEY

The concept of family medicine began to be discussed in Turkey with other world countries in 1970s. Family medicine specialty education was first introduced in 1984 by founding family medicine department at Gazi University.

In Turkey, the family medicine system was piloted in Düzce in 2005. In 2006, this practice was expanded and family medicine practice was introduced in 10 provinces, starting with Bolu. Finally, with the family medicine practice regulation issued in 2013, family medicine practice was introduced nationwide (Turhan 2014, 35).

The health system in force in Turkey prior to the introduction of family medicine practice had become unable to meet the needs due to population growth, developing technology and other reasons. In addition, causes such as institutional structure, functioning, number of personnel and physical infrastructure have made a transformation in health compulsory. Due to these reasons, a radical change was made in the system and family medicine practice was introduced. The primary purpose of introducing family medicine practice is to increase the awareness of individuals in the society and to increase the number of people who receive services from the first tier, to gradually reduce the number of applications to second and third tier health services, and in this way to alleviate the burden on the system (Ağdemir 2012, 34).

PROBLEMS RELATED TO FAMILY MEDICINE AND SUGGESTIONS FOR SOLUTIONS

One of the biggest problems in family medicine practice is that households living in the same house may receive service from different physicians. This is an obstacle for the physician to follow the family as a whole. It is possible to overcome this problem by requiring individuals living at the same address legally to be affiliated with the same family doctor (Uğurlu et al 2012, 2).

The lack of a standard among Family Health Centers and the differences in services such as laboratory practices in different centers are an important problem. It is possible to overcome this problem by bringing standardization to these centers with the arrangements to be made. Although family medicine practice has been implemented since 2005, there is a serious lack of knowledge among both personnel and citizens regarding the system. Therefore, it is

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necessary to inform citizens about the services provided within the scope of the family medicine system. In addition, detailed training should be given to the personnel both about the functioning of the system and the treatment and preventive health services they will apply (Üstü et al. 2011, 52).

It is extremely essential that these centers are regularly visited, monitored and evaluated, and remedial measures are taken by the officials of the Ministry. It is necessary to reduce the number of people that physicians are responsible for, to allow them to allocate more time to preventive health services, and also to alleviate their workload. Thus, dissatisfaction, fatigue and unhappiness arising from excessive workload will be eliminated (Uğurlu et al 2012, 2).

It is also necessary not to deduct wages from physicians and other health workers in cases of leave and illness, to separate the concepts of mobile and on-site health services, to cancel performance cuts, and to make required arrangements for these results (Üstü et al., 2011, 52).

CONCLUSION

With modernity, the desire to live a quality and healthy life has reached its peak. Regardless of their economic situation, all people have begun to desire to lead a better and higher quality life, and they demand the government to take steps to increase their quality of life. States are tasked with meeting the health-related needs of society and providing individuals with a better quality of life. One of the first things that states should do in this direction is to provide health services to every corner within their borders, regardless of how remote it is. This can only be achieved by giving sufficient importance to the family medicine system.

Family medicine service starts when the person is in the womb and continues until the end of his/her life. Even after the death of the person, the family physician follows the necessary health-related procedures. Therefore, it is extremely important for the comfort of the citizens that the state ensures the proper functioning of the family medicine system.

Family physicians should provide preventive health services for their dependent citizens as properly as possible, and ensure that these individuals receive diagnosis, treatment and rehabilitative services by providing coordination between their subordinates and second and third tier health institutions in case of need. In addition, the necessary follow-ups of these individuals after receiving the relevant services should be made and recorded. Since the proper functioning of the family medicine system will reduce the applications at second and third tier services, it will also prevent the congestions that may occur.

Along with patient satisfaction, states should also consider the satisfaction of physicians and other personnel involved in family medicine practice. Providing a comfortable environment for family physicians, health personnel and support personnel serving in family medicine and eliminating existing obstacles (performance, leave, tax to be paid) can be considered among the factors that will ensure the success of the family medicine system. In addition, performance evaluation systems that are compatible with the family medicine system need to be developed and implemented throughout the country.

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CHILDREN AND ADOLESCENTS IN LOCKDOWN: COVID- 19 PANDEMIC

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Abstract

The coronavirus infection disease (COVID-19), which has been struggling since December 2019, has affected our lives in many ways. It has affected and continues to affect the lives of people forced to work from home due to lockdown in many countries. However, it changed the lifestyles of children who were under lockdown with their parents and could not continue their education.

The purpose of this review is to evaluate the lifestyle changes experienced by children and adolescents during the COVID-19 pandemic.

PubMed / Medline, Scopus and ScienceDirect have identified recent studies in 2020 and 2021 focusing on lifestyle changes in children and adolescents during the COVID-19 pandemic.

The closure of schools due to pandemic has reduced the physical activity and social life opportunities of children and adolescents. Changes in physical activity and social life of children were affected by socio-demographic characteristics (structure of the house, having a pet in the house, having a sibling, etc.). During the pandemic, children and adolescents performed less walking, cycling, outdoor exercise and play. In contrast, greater use of social media has been reported. The problem of obesity has emerged due to decreased physical activity, prolonged screen time and higher consumption of calorie foods. Sleep problems have increased in children and adolescents, depending on the working conditions and lifestyle of the parents. In addition, the increase in the use of digital screen time has also affected sleep quality in children. The fact that the child could not meet with his friends regularly caused him to become more stressed, angry and upset. Some argue that quarantine can have a negative impact on children's skills and self-confidence.

The lifestyles of children and adolescents have been adversely affected due to the quarantine. In future crises, policies to be implemented by taking appropriate physical distance security measures can be effective in reducing physical inactivity. For the vulnerable child population, healthy lifestyle strategies can be developed by teachers and governments, as well as by nurses and other health professionals, to protect children's health.

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Key Words: Adolescents, Children, COVID-19, Lockdown

Introduction

The new type of coronavirus SARS-CoV-2, Beta-coronavirus that causes COVID-19 disease, was first detected in Wuhan, China in 2019 (Guarner, 2020). COVID-19 spread rapidly around the world, and on March 11, 2020, and World Health Organization declared it a pandemic (WHO, 2020). The ongoing COVID-19 pandemic continues to cause more infections and more deaths every day. People of all ages have experienced radical changes in their daily lives. It has affected and continues to affect the lives of people forced to work from home due to quarantines in many countries. However, it has changed the lifestyles of children who are under lockdown with their parents and cannot continue their education (Kumar et al., 2021).

We conducted this literature analysis using articles from PubMed / Medline, Scopus and ScienceDirect, using keywords such as "COVID-19", "SARS-CoV-2", "children", "adolescent" and "lockdown". The chapters consist of recent studies focusing on lifestyle changes in children and adolescents during the COVID-19 pandemic in 2020 and 2021 since the first case was reported.

Sleep

Because middle and primary school children sleep more independently of their mothers' sleep, preschool children sleep for a similar amount of time to their mothers. During the COVID-19 pandemic, there have been changes in the sleep patterns of children affected by parents' work schedules and work arrangements (Aishworiya et.al., 2021). In another study reflecting the pandemic period, nearly half of the parents who participated in the study reported negative changes in their children's sleep patterns. Most of the participants reported that they had difficulties in putting their children to sleep, and some of them reported that their children did not sleep until late. Parents associated this condition with a decrease in their child's physical activity. Parents expressed their belief that the quarantine period will have a negative impact on their children's skills and self-esteem. (Clarke et al., 2021).

In a study conducted in the USA, 845 children and adolescents were evaluated and the sleep process was questioned during the pandemic process. According to these results; During the pandemic, bedtime was significantly later than before. During the pandemic, the increase in sleep time was most common in the 14-17 age group on weekdays, while the decrease in sleep time was most pronounced in children aged 3-5, both on weekdays and on weekends. Similarly, wake-up time during the pandemic was later than before the pandemic in all age groups. Changes in bedtime and wake-up time significantly altered weekday sleep duration compared to pre-pandemic. Compared to the pre-pandemic period, there was no change in the sleep process of the children at the weekend. (Kaditis et al., 2021).

In the meta-analysis examining the effect of the pandemic on sleep in children and adolescents, 16 studies were evaluated. The collective prevalence of any sleep disorder in



children during the pandemic was found to be 54%. 245 mothers with preschool children (2-5 years) reported delays in their children's bedtime and wake time during the COVID-19 pandemic (Di Giorgio et al., 2020). In a cross-sectional study, 72.2% of parents of children aged 3 to 15 reported a change in their child's routine during the pandemic. 42.7% of parents reported worsening sleep quality and 3.2% improvement (Baptista et al., 2021).

Physical Activity

Dunton et al. (2020) evaluated the physical activity status of children during the COVID-19 pandemic. In the early period of COVID-19 (April-May 2020), the most common physical activities included free play such as jogging and walking. It has been stated that the frequency of physical activity of children differs according to gender and age. It was found that boys were more likely to participate in sports activities than girls. Young children performed activities such as cycling and scootering more than older children. Boys spent more time with computer or video games than girls. Girls, on the other hand, made video calls with their friends or family using the internet, e-mail and electronic media in their spare time. In general, parents noted that children's physical activity decreased and their inactivity increased in the early stages of COVID-19. Where children do physical activity has also changed drastically. In the early stages of COVID-19, many children continued their physical activities at home or in the garage, on neighborhood sidewalks and on the roads.

Most parents report that their child is less active during lockdown. Parents cited several factors that help kids stay active. One was to have a sibling and the other was to have a friend to play with. Likewise, access to play equipment has helped increase activity. It has been reported that their children are more engaged in sedentary activities during lockdown (Clarke et al., 2021).

Living in a detached house, being a younger parent, and owning a dog creates a suitable environment for the healthy physical activity of the child or adolescent. Living in a house with a front or backyard where you can have the chance to play outdoors increases physical activity. Owning a dog causes families to engage in more physical activity and spend more time outdoors. In a Canadian study, children and adolescents in lockdown experienced a significant decrease in all physical activity, except housework. Overall, girls were less active than boys, and youth (12-17 years) were less active than children (5-11 years). On average, younger children experienced fewer changes in pre-COVID-19 movement behaviors compared to older children. These findings confirm that the restrictions associated with the pandemic negatively affect the movement behaviors of children and youth (Moore et al., 2020).

In a qualitative study, parents reported a decrease in physical activity in their children. In addition to this information, there were also those who reported that the environment close to home was used more for physical activity during lockdown (Clarke et al., 2021).

It was stated that children with a single parent behaved more emotionally than those without a single parent. Similarly, it was concluded that children who do not have siblings show more emotional symptoms than those who have siblings. In addition, children without siblings



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showed signs of hyperactivity and inattention. Children living in the same household showed less hyperactivity and inattention. (Christner et. al., 2021).

Regarding changes in healthy movement behaviors of children and youth during the COVID-19 pandemic, the majority identified less walking or cycling. Less physical activity outdoors and a reduction in outdoor activities, including sports, have been reported (Mitra et al., 2020).

Nutrition

The COVID-19 pandemic has resulted in changes in dietary habits, increased consumption of food, as well as increased consumption of unhealthy food products such as potatoes, meat and sugary drinks. During the pandemic period, physical activity has decreased considerably due to restrictions. This condition is a risk factor for weight gain. COVID-19 restrictions have disrupted the daily routines of children and adolescents. It caused changes in eating behaviors and physical activities (Stavridou et al., 2021).

Most of the parents reported that their children's unhealthy food consumption increased due to staying for a long time. Some parents have reported an increase in problematic food consumption behaviors, such as children not wanting to eat or taking a long time to eat. Children may dine with their parents who work from home more often. Similarly, parents find great pleasure in cooking and involving their children in the action. This helped keep the children busy and they had the opportunity to teach them new skills. The curfew also had other effects on families' eating behavior. The closure of restaurants also prevented people from eating out. People have now reduced eating out. Some participants also reported consuming fewer packets (Clarke et al., 2021).

Screen Time

Children and teenagers showed higher sedentary behavior during the coronavirus outbreak, including lower levels of physical activity, less outdoor time, leisure time, and more sleep (Bahkir and Grandee, 2020). Parents reported that their children did a number of sedentary activities during the quarantine. All parents informed about the increased screen time. For many families, screen time has filled the void of not being able to go out or socialize. Concerns about screen time were rarely linked to lack of movement or activity (Clarke et al., 2021).

Children living in the apartment were determined as the ones who use technological devices and television the most. Those who show the lowest level of use are those who live in houses with gardens (Zagalaz-Sánchez et al. 2021). Indoor gaming and screen time increased for the majority of children and youth. (Mitra et al., 2020). Children spent less time in front of blank screens than teenagers (Moore et al., 2020). Two major negative effects of screen time on the physical health of children and adolescents are sleep problems and an increased risk of myopia (Singh & Balhara, 2021). Numerous studies show that excessive screen time has long-term physical health symptoms such as eyestrain, sleep disturbance, neck pain, as well as adverse health effects such as difficulty concentrating and mental health problems (Kiraly et al., 2020; Meyer et al., 2020; Oberle et al., 2020; Stavridou et al., 2021).

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Conclusion

The lifestyles of children and adolescents have been adversely affected by the quarantine. Parents should place restrictions on the extension of screen time. Parents should encourage their children to engage in activities that can be done at home, such as dancing or home exercises. Making arrangements at home should be followed in order to prevent negative attitudes towards nutrition. In maintaining a healthy lifestyle, health care providers need to develop protocols.

In future crises, policies to be implemented by taking appropriate physical distance security measures can be effective in reducing physical inactivity. For the vulnerable child population, healthy lifestyle strategies can be developed by health professionals, teachers and governments to protect children's health.

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THE CHARACTERISTICS OF ADOLESCENTS REGARDING MENSTRUATION STATUS AND MENSTRUATION KNOWLEDGE LEVELS

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Abstract

Misinformation and negative attitudes about menstruation can negatively affect menstruation experiences and health. Adolescents' problems should be emphasized, as the wrong habits that female adolescents will adopt may affect their whole life and future generations.

In this study, it was aimed to determine the characteristics of adolescents regarding their menstrual status and their menstrual knowledge levels.

The research was carried out between 29.03.2017 and 30.05.2017. 5th and 6th grade female students (n=153) of two secondary schools in a town in the Central Anatolian Region participated in the research. The data obtained were evaluated using the SPSS 17.0 package program. In addition to evaluating the data with percentages and numbers, Mann Whitney U Test, Kruskal Wallis Test and Chi-Square Test were used.

The ages of the adolescents participating in the study ranged from 10 to 12, and the arithmetic mean was $11.11 \pm .77$. 55.6% of them were 5th grade students. The mothers of 43.1% were primary school graduates, and the fathers of 34.6% were high school graduates. 13.7% of adolescents had menstruation. While most of them (90.5%) stated that they received information before menstruation, almost all (94.7%) received information from their mothers. 27.5% of the adolescents received information about menstruation from their school. 21.6% thought that their knowledge about menstruation were sufficient. Menstrual Knowledge Scores of the adolescents ranged from 1 to 10, with a median of 2.00. Menstrual Knowledge Scores median of 5th grade adolescents were 2.00, 6th grade adolescents' median were 3.00. Menstrual Knowledge Scores of adolescents varied according to class ($p=.045$). In addition, the status of getting information about menstruation ($< .001$) and finding enough information about menstruation changed according to school ($< .001$). According to the class, the situation of adolescents finding their knowledge about menstruation sufficient changed and 66.7% of the 6th grade adolescents found their knowledge about menstruation sufficient ($p=.003$).

At the end of the research, it was determined that the knowledge level of adolescents about menstruation was very insufficient. Giving information about menstruation at an early age will be effective in gaining positive behaviors and attitudes. In addition, according to the results of the research, it is considered as an important necessity to increase the number of trainings about menstruation in schools. In the organization of these trainings, besides the

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school administration, primary health personnel and school health nurses have important responsibilities.

Key Words: Adolescent period, menstruation-related features, menstruation knowledge level, school health

Introduction

Adolescence begins with physical, sexual and psychosocial maturation caused by physical and emotional processes. It is a chronological period in which the individual gains independence and social productivity and has an uncertain end time (Çuhadaroğlu, 2000). Adolescence is a period in which health habits and sexual behaviors begin to take shape, and sexual/reproductive health issues should be addressed primarily (Aslan, 2001). A woman menstruates about 2100 days. This is almost six years of his life (Fernandes et al., 2008). Misinformation and negative attitudes about menstruation can negatively affect menstruation experiences and health. It can be transferred to the younger generations, where adolescent girls will raise wrong habits that they will continue throughout their lives. Therefore, their problems should be emphasized (Öncel et al., 2003; Cooper & Barthelow, 2008). As a matter of fact, studies reveal that female adolescents do not have enough information about menstruation, they have wrong information and they may have a negative attitude towards menstruation (Private et al., 2018; Davis et al., 2018; Choudhary & Gupta, 2019; Michael et al., 2020).

It can be said that there is a generally negative approach towards menstruation in Turkish society. Menstruation is commonly referred to as "being dirty" or "being sick". As with other sexual issues, menarche and menstruation are not discussed openly and comfortably in the family. Adolescent girls mostly talk about menarche and menstruation with their mothers, older sisters and friends, but this information is not always sufficient and accurate (Gölbaşı et al., 2012). According to the results of a study conducted in Turkey, although 74.3% of female students think that they have sufficient knowledge about menstruation, 80.8% of them want to receive training on this subject. Those who experience negative emotions such as fear, embarrassment, denial, anger, disgust, and feeling dirty during menarche (70.2%) are considerably higher than those who see menarche as a natural event (29.8%) (Erbil & Türkcan, 2008).

As it can be understood from the studies examined, adolescent girls mostly do not have preparations for menstruation, there is a lack of information about menstruation status and menstrual hygiene, negative attitudes towards menstruation can be exhibited, and studies on the subject are needed.

Material and Method

In this study, it was aimed to determine the characteristics of adolescent girls regarding their menstrual status and their menstrual knowledge levels.



Participants

The 5th and 6th grade female students of two secondary schools in a district in the middle Anatolian region participated in the research carried out between 29.03.2017 and 30.05.2017, and the study was carried out with students who voluntarily agreed to participate in the research without making a sample selection. There are a total of 168 students attending the 5th and 6th grades in both schools. In the study, 153 (91.1%) of adolescent girls were reached. Before starting the study, attention was paid to obtain the verbal consent of the students, as well as the written permissions obtained from the school administrations, and permission was obtained from the Selçuk University Ethics Committee (28/03/2017-E.34040). During the research process, 20 students were pre-application on 29.03.2017 and after the application, necessary corrections were made and the form was made ready for the actual application. During the application, the course hours of the students were taken into account and the questionnaires were distributed to each class separately. The questionnaires were collected again, giving information about the study and the questionnaire used, and giving them 15-20 minutes to answer.

Data Collection

The questionnaire form, which was created by scanning the literature, consists of 3 parts (Aydın, 2010; Cooper & Barthelow, 2008; Çuhadaroğlu, 2000; Demirel & Terzioğlu, 2003; Erbil & Türkcan, 2008). In the first part of the survey; There were 10 questions to question the students' age, class, place of residence, family type, education and occupation of their parents, and the income status of their families. In the second part of the survey; There are 10 questions to question the characteristics of the students about menstruation, such as menstruation age, menstruation pattern, menstruation duration, and information status. In the third part of the survey; There were a total of 20 information questions, 9 on menstrual physiology and 11 on menstrual hygiene.

Data Analysis

The obtained data were evaluated using the SPSS 17.0 (Static Package for Social Sciences for Windows) package program. In addition to evaluating the data with percentages and numbers, Mann Whitney U Test, Kruskal Wallis Test and Chi-Square Test were used.

RESULTS

Table 1. Descriptive characteristics of adolescent girls (n=153)

Class	n(%)
5th grade	85(55.6)
6th grade	68(44.4)
Mother's educational status	
Primary school and ↓	66(43.1)
Middle School	45(29.4)
High School	35(22.9)
University graduate and ↑	7(4.6)
Father's educational status	
Primary school and ↓	29(19.0)
Middle School	47(30.7)



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High School	53(34.6)
University graduate and ↑	24(15.7)
Mother's occupation	
Housewife	138(90.2)
Officer	7(4.6)
Employee	6(3.9)
Other	2(1.3)
Father's occupation	
Not working	13(8.5)
Farmer	37(24.2)
Officer	17(11.1)
Employee	36(23.5)
Self-employment	44(28.8)
Other	6(3.9)
Living Place	
Town Center	88(57.5)
Village/town	65(42.5)
Family Type	
Nuclear family	103(67.3)
Extended family	46(30.1)
Broken family	4(2.6)
Monthly Income	
Have a regular income	114(74.5)
No regular income	39(25.5)
Family income status	
Good	74(48.4)
Middle	77(50.3)
Bad	2(1.3)

Ages of the adolescent girls participating in the study ranged from 10 to 12, and their arithmetic mean was $11.11 \pm .77$. 55.6% of them were 5th grade students. The mothers of 43.1% were primary school graduates, and the fathers of 34.6% were high school graduates. The mothers of the vast majority (90.2%) were housewives. 57.5% of them lived in the district center. The family structure of more than half (67.3%) was nuclear family. 74.5% of them had a regular monthly income and half of them expressed their family's income as "medium" (Table 1).

Table 2. Characteristics of Adolescent Girls Regarding Menstruation Status

Menstruation status (n=153)	n(%)
Yeah	21(13.7)
No	132(86.3)
Menstruation age (n=21)	$\bar{x} \pm SD = 11.52 \pm .68$
10	2(9.5)
11	6(28.6)
12	13(61.9)
Menstruation pattern (n=21)	
Regular	13(61.9)
Irregular	4(19.0)

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Sometimes regular sometimes irregular	4(19.0)
Period of Menstruation (n=20)	
2 days	3(15.0)
3 days	7(35.0)
5 days	3(15.0)
6 days	3(15.0)
7 days	3(15.0)
10 days	1(5.0)
Getting information about menstruation (n=21)	
Yeah	19(90.5)
No	2(9.5)
Source of information about menstruation (n=19)	
Mom	18(94.7)
Teacher	1(5.3)
Getting information about menstruation from your school (n=153)	
Yeah	42(27.5)
No	111(72.5)
Having sufficient knowledge about menstruation (n=153)	
Yeah	33(21.6)
No	120(78.4)
Opinions of those who have not experienced menarche yet on how to meet menarche (n=153)	
I accept normal	9(6.8)
I'm sorry	4(3.0)
I feel dirty	6(4.5)
I'm afraid	19(14.4)
I love	2(1.6)
I'm surprised	14(10.6)
I do not know	78(59.1)
Emotion felt by those experiencing menarche (n=21)	
I'm surprised	6(28.6)
I'm upset	5(23.8)
I afraid	3(14.3)
I'm glad	1(4.7)
I am shocked	6(28.6)

13.7% of adolescent girls experienced their first menstruation (menarche). 61.9% of 21 adolescents with menarche are at the age of 12 at menarche. Again, 61.9% had regular menstruation, and 35% had 3 days of menstruation. Most of them, 90.5% stated that they received information about menstruation, almost all (94.7%) received the information from their mother. 27.5% of adolescent girls had received information about menstruation at school. 21.6% thought that they had enough information about menstruation. When adolescents experiencing menarche were asked how they felt, 28.6% of adolescent girls stated that they were surprised, 23.8% were upset, and 14.3% were afraid (Table 2).



Table 3. Distribution of Correct Answers Given by Adolescent Girls to Questions About Menstruation Physiology and Hygiene (n=153)

MENSTRUATION PHYSIOLOGY	Correct Answer n (%)
Menstruation definition	4(2.6)
Contents of menstrual flow	1(0.7)
Uterine tissue expelled by vaginal bleeding at the end of menstruation	2(1.3)
Where menstrual bleeding occurs	8(5.2)
Menstruation age range	46(30.1)
Menstruation frequency	10(6.5)
Period of menstruation	22(14.4)
The place/region where the menstrual blood is thrown out of the body	4(2.6)
Finding it normal to have bleeding outside of the menstrual period	13(8.5)
MENSTRUAL HYGIENE	
Frequency of changing underwear	40(26.1)
Situations where hands should be washed	83(54.2)
Hand cleaning method at pad change	1(0.7)
How to take a bath during menstruation	29(19.0)
The type of pad that should be used during the menstrual period	26(17.0)
Frequency of changing pads during menstruation	18(11.8)
Type of underwear used	15(9.8)
Frequency of cleaning the perineum	59(38.6)
Material/material to be used for cleaning the perineum	58(37.9)
Perineal cleansing (bidet)	11(7.2)
Ways to use to relieve complaints during menstruation	5(3.3)

Table 3 shows the distribution of correct answers given by adolescent girls to questions about menstrual physiology and hygiene. The questions with the least correct answers; The definition of menstruation, the content of the menstrual flow, the uterine tissue excreted with vaginal bleeding at the end of menstruation, the place/region where the menstrual blood is thrown out of the body, the way of cleaning the hand during pad change and the ways that can be used to relieve complaints during menstruation. The questions with the most correct answers are; The questions about the situations where hands should be washed, the frequency of cleaning the perineum (bidet), the material/material to be used for cleaning the perineum, and the menstruation age range.

Table 4. Comparison of Adolescent Girls' Sociodemographic Characteristics and Menstruation Information (n=153)

	Q ₂ (Q ₁ -Q ₃)	
Menstrual Knowledge Score	2.00(1.00-5.00)	
Class	Q ₂ (Q ₁ -Q ₃)	p
5th grade	2.00(1.00-4.00)	.045*
6th grade	3.00(1.00-6.00)	
Mother's educational status		
Primary school and ↓	2.00(1.00-5.00)	.430**
Middle School	2.00(1.00-4.00)	
High school	3.00(1.00-6.00)	
University graduate and	1.00(1.00-4.00)	
Father's educational status		



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Primary school and ↓	2.00(1.00-4.50)	.583**
Middle School	3.00(1.00-5.00)	
High school	2.00(1.00-4.50)	
University graduate and	2.50(1.00-5.00)	
Mother's occupation		
Housewife	2.00(1.00-5.00)	.792**
Officer	1.00(1.00-7.00)	
Employee	2.00(1.00-5.50)	
Other	4.50(4.00-)	
Father's occupation		
Not working	2.00(1.00-4.00)	.031**
Farmer	2.00(1.00-3.50)	
Officer	4.00(3.00-6.50)	
Employee	2.00(1.00-4.75)	
Self-employment	2.00(1.00-5.00)	
Other	1.00(1.00-6.00)	
Living Place		
Town center	2.00(1.00-5.00)	.919*
Village/Town	2.00(1.00-5.00)	
Family type		
Nuclear family	2.00(1.00-5.00)	.934**
Extended family	2.50(1.00-5.25)	
Broken family	2.50(1.25-5.25)	
Monthly Income		
Have a regular income	2.00(1.00-4.00)	.223**
No regular income	3.00(1.00-6.00)	
Family Income Status		
Good	2.00(1.00-4.25)	.270**
Middle	2.00(1.00-5.00)	
Bad	5.50(5.00-)	

*Mann Whitney U Test, **Kruskal Wallis Test

Within the scope of the research, 1 point was given to the correct answers of 9 questions about menstrual physiology and 11 questions about menstrual hygiene, and "Menstrual Knowledge Score" was obtained. Menstrual Knowledge Scores of adolescent girls ranged from 1 to 10, with a median of 2.00. The median Menstrual Knowledge Score of 5th grade adolescent girls is 2.00, the median of 6th grade adolescent girls is 3.00, and the Menstrual Knowledge Scores of adolescent girls have changed according to the class ($p=.045$). The median Menstrual Knowledge Score of adolescent girls whose fathers were civil servants was 4.00. The median Menstrual Knowledge Score of those whose fathers are farmer, worker or whose father is not working decreased to 2.00, and the Menstrual Knowledge Score of adolescent girls changed according to their father's occupation ($p=.031$) (Table 4).



Table 5. Comparison of Adolescent Girls' Menstruation Status and Menstruation Information

Getting information before menstruation (n=21)	Q ₂ (Q ₁ -Q ₃)	p*
Yes	6.00(4.00-7.00)	.057
No	9.00(8.00-)	
Source of information before menstruation (n=19)		
Mom	5.50(3.75-7.00)	
Teacher	-	
Getting information about menstruation from your school (n=153)		
Yes	3.00(1.00-5.00)	.404
No	2.00(1.00-4.00)	
Having sufficient knowledge about menstruation (n=153)		
Yes	3.00(2.00-5.50)	.060
No	2.00(1.00-4.00)	

*Mann Whitney U Test

It was a striking result that adolescent girls who stated that they received information about menstruation had a lower median Menstrual Knowledge Scores compared to the others (Median:6.00). In addition, the median of Menstrual Knowledge Scores of adolescent girls who received information about menstruation from their school and thought that they had sufficient knowledge about menstruation were higher than the others (Median:3.00). However, no statistically significant difference was found (Table 5).

Table 6. Comparison of Adolescent Girls' Classes and Schools and their Menstruation Status (n=153)

Getting information about menstruation from your school	School A	School B	p*
Yes	8(19.0)	34(81.0)	<.001
No	96(87.3)	14(12.7)	
Having sufficient knowledge about menstruation			
Yes	11(33.3)	22(66.7)	<.001
No	93(78.2)	26(21.8)	
Getting information about menstruation at school	5th grade	6th grade	
Yes	20(47.6)	22(52.4)	.151
No	65(58.6)	46(41.4)	
Having sufficient knowledge about menstruation			
Yes	11(33.3)	22(66.7)	.003
No	74(61.7)	46(38.3)	

*Chi-Square Test

Table 6 shows the comparison of the characteristics of adolescent girls regarding their classes and schools and their menstrual status. 19% of adolescent girls in school A stated that they received information about menstruation. 81% of adolescent girls in school B had received information about menstruation, and their status of getting information about menstruation changed according to the school ($p < .001$). Similarly, 33.3% of adolescent girls in school A thought that they had sufficient knowledge about menstruation. On the other hand, 66.7% of the adolescent girls in school B found their knowledge about menstruation sufficient and their status of finding their knowledge about menstruation as sufficient according to the school changed ($p < .001$). According to the class, the situation of adolescent girls finding their



knowledge about menstruation sufficient has changed, and 66.7% of the 6th grade adolescents found their knowledge about menstruation sufficient ($p=.003$).

DISCUSSION

Menstruation is considered the turning point in the life of girls and the beginning of reproductive life (Mathiyalagen et al., 2017). In this study, 13.7% ($n=21$) of adolescent girls experienced their first menstruation (menarche). The age of menarche in 61.9% of these adolescent girls was 12, and the mean age at menarche was $11.52\pm.68$ (Table 2). Age at menarche was found to be slightly lower compared to other studies conducted with adolescents (Belayneh & Mekuriaw, 2019; Choudhary & Gupta, 2019; Mathiyalagen et al., 2017; Senapathi & Kumar, 2018; Kapoor & Kumar, 2017). This difference can be attributed to the fact that the ages of the adolescent girls participating in the study varied between 10 and 12 and the number of those who experienced menarche was very low.

Menstruation is a completely normal biological process. Still, women and girls in many parts of the world face numerous challenges and taboos that often portray them as inferior to men and are rarely discussed openly (Senapathi & Kumar, 2018; Ssewanyana & Bitanihirwe, 2019). In this study, adolescents experiencing menarche were asked how they felt when they experienced menarche, 28.6% of adolescent girls stated that they were surprised, 23.8% were upset, and 14.3% were afraid. When the adolescents who did not experience menarche were asked how they would respond to menarche, more than half (59%) answered "I don't know" and 14.4% said "I'm afraid" (Table 2). Private et al. In a study conducted with adolescents who applied to a youth center, it was found that nearly half of adolescent girls experienced negative emotions during menarche, and in a study conducted in Indonesia, only one-fifth of girls stated that the idea of being dirty during menstruation is wrong (Davis et al., 2018). Another study conducted in India reported that approximately two-thirds of adolescent girls had an abnormal response to menarche, and this was significantly higher in rural girls (Choudhary & Gupta, 2019). Our study and the other studies examined reveal that even in recent years, menstruation continues to be perceived as a situation to be ashamed of, feared, and mostly experienced negatively.

The onset of menstruation marks an important event in the pubertal development of girls. The lack of adequate knowledge and management of menstrual hygiene can affect a girl's well-being and dignity, with far-reaching consequences for her reproductive health (Nnennaya et al., 2021). In this study, most of the adolescent girls, 90.5%, stated that they received information about menstruation, almost all (94.7%) received the information from their mothers (Table 2). It was a striking result that adolescent girls who stated that they received information about menstruation had a lower median Menstrual Knowledge Scores compared to the others (Median:6.00). In addition, it was remarkable that they did not receive the information in their schools or that they mostly received information from their mothers instead of health professionals.

In this study, the rate of obtaining information about menstruation was found to be quite high compared to other studies examined (Kapoor & Kumar, 2017; Deshpande et al., 2018; Choudhary & Gupta, 2019; Belayneh & Mekuriaw, 2019). Similar to the study, the primary source of information about menstruation in most studies was mothers (Nnennaya et al., 2021; Kapoor & Kumar, 2017; Choudhary & Gupta, 2019; Deshpande et al., 2018; Belayneh & Mekuriaw, 2019). Other sources of information; friends, relatives, older sister, teachers,



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books, and the media (Belayneh & Mekuriaw, 2019; Gölbaşı et al., 2012; Bhusal et al., 2020). In addition, the menstrual awareness of urban girls was higher than those living in rural areas (Senapathi & Kumar, 2018). Although the rate of obtaining information was high in our study, the fact that these adolescent girls had lower menstrual knowledge scores indicates that the information they received was incorrect. Activities such as training, courses or seminars to be given by health personnel, especially nurses, are important. Considering that this study was conducted with adolescent girls living in rural areas, the importance of providing accurate information and disseminating training is understood once again.

Perceptions and behaviors of women towards menstruation are shaped in adolescence. In this context, reproductive health trainings given to adolescents in schools, which are the source of accurate and controlled information, will be effective in developing positive attitudes and behaviors towards menstruation in fertile women (Private et al., 2018). In this study, 27.5% of adolescent girls received information about menstruation at school. 21.6% thought that they had sufficient information about menstruation (Table 2). The median of Menstrual Knowledge Scores of adolescent girls who received information about menstruation from their school and thought that they had sufficient knowledge about menstruation were higher than the others (Median: 3.00). However, no statistically significant difference was found. In addition, the status of getting information about menstruation and finding it sufficient according to the schools ($p < .001$), and the status of finding the information about menstruation sufficient according to their classes ($p = .003$) (Table 6). Private et al. In their study, more adolescents received information about menstruation from schools (50%), and in a study conducted in Pakistan, similar to our study, the majority of adolescent girls (77.7%) did not take any courses about menstruation at school (Michael et al., 2020). Schools are environments where positive attitudes and behaviors can be gained. Menstruation trainings, especially by school health nurses and primary health care personnel, can be effective in the formation of positive and permanent attitudes and behaviors towards menstruation.

Lack of knowledge about menstruation and poor hygiene practices are associated with problems such as genital tract infections, genito-urinary tract infections, cervical cancer, dropping out of school, poor academic performance and generally poor quality of life urinary tract infections (Belayneh & Mekuriaw, 2019; Mathiyalagen et al., 2017). In this study, the questions that were answered least correctly by adolescent girls; The definition of menstruation, the content of the menstrual discharge, the uterine tissue excreted with vaginal bleeding at the end of menstruation, the place/region where the menstrual blood is thrown out of the body, the way of cleaning the hands during pad change and the ways that can be used to relieve complaints during menstruation. The questions with the most correct answers are; It is a question about the situations where hands should be washed, the frequency of cleaning the perineum (push), the material / material that should be used for cleaning the perineum, and the menstruation age range. In the study conducted in Pakistan, more than half of the adolescent girls had menstrual blood coming from the vagina (Michael et al., 2020), in the study conducted in Nepal, more than four-fifths of the adolescent girls knew that menstruation is a cyclical process, again the majority of them knew the age range of menarche (Bhusal et al., 2020). However, unlike this study, in a study conducted in India, more than half of adolescent girls were not aware of the cause and source of menstrual bleeding, and very few knew that the source of menstrual blood was the uterus (Mathiyalagen et al., 2017). In another study conducted in Bengal, more than half of adolescent girls had a false information that the source



of menstrual blood is the urinary tract (Sarkar et al., 2017). Similarly, in another study, the majority of adolescent girls did not know from which organ the bleeding originated, and very few knew that the cause of menstruation was physiological (Deshpande et al., 2018). In the Indonesian study, the most common questions that were answered incorrectly were: is it dangerous for a girl to engage in physical activity while she is menstruating; menstrual blood contains harmful substances; and some foods should be avoided during menstruation (Davis et al., 2018). Accurate information about menstruation will affect attitudes and behaviors, as well as menstrual hygiene management. For this reason, the information that school health nurses and primary health care personnel will gain before menarche is important.

Adolescent girls in developing countries often do not have appropriate knowledge and appropriate knowledge is covered by sociocultural boundaries (Bhusal et al., 2020). In this study, the Menstrual Knowledge Scores of adolescent girls ranged from 1 to 10, with a median of 2.00. Adolescent girls are between the ages of 10 and 12. The median Menstrual Knowledge Scores of 5th grade adolescent girls were 2.00, and the median of 6th grade adolescent girls was 3.00, and the Menstrual Knowledge Scores of adolescent girls changed according to grade ($p=.045$) (Table 4). The result obtained is considerably lower than the menstrual knowledge scores in another study conducted in Turkey (Gölbaşı et al., 2012). The reason for this can be attributed to the younger age of the adolescent girls in our study. In another study conducted in Nepal, it was reported that adolescent girls had moderate knowledge about menstrual hygiene management (Yadav et al., 2017). When the results are examined, it is considered as a necessity to increase the level of knowledge of adolescent girls and to start education at younger ages by health professionals.

Conclusion and Recommendations

At the end of this study, it was determined that the menstrual information of adolescent girls was not sufficient and the sources of information were insufficient to provide accurate and complete information. It is insufficient to provide information about menstruation in schools, and there are great deficiencies in the health education that should be done by health professionals. In addition, the fact that the adolescent girls in this study were secondary school students and their menstrual knowledge levels were found to be quite low compared to other studies is another striking result. Integrating reproductive health courses into schools and starting them from an early age will make significant contributions to the protection and development of women's health in the future. At this point, health professionals, especially school health nurses and primary care workers, have important duties. Activities such as health trainings, courses or seminars can be organized to increase menstrual knowledge and attitude. In addition, the number of studies to determine menstrual knowledge and attitude in the first years of adolescence can be increased.



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A COGNIZANCE INTO ETIOLOGY OF ATTENTION DEFICIT HYPERACTIVE DISORDER (ADHD) IN THE POPULATION OF CURRENT TRENDS

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Abstract

Attention deficit hyperactivity disorder (ADHD) is one of the most frequent neurocognitive diseases in children and teenagers. ADHD is frequently persistent, with signs and disability persisting into adulthood. ADHD is frequently accompanied with coexisting problems such as disruptive mood, anxiety, and addictive behaviours. The routine screening of ADHD is made after consideration of a set of characteristics and dysfunctions. The disorder's biological basis is validated by genetic, neuroimaging, neurochemistry, and neuropsychological studies. The diagnosis and management of ADHD must take into account all areas of an individual's life. Educational, familial, and individual support are all part of multimodal therapy. Psychotherapy both, alone and in combination with other drugs, can assist with ADHD and associated issues. Pharmacotherapy, which includes stimulants, noradrenergic drugs, alpha agonists, and antidepressants, is critical in the long-term treatment of ADHD throughout the lifespan.

Keywords: Attention deficit hyperactivity disorder (ADHD), Psychotherapy, Pharmacotherapy, neurological disorder.



THE CLINICAL CHARACTERISTIC OF PRIMARY MYELOFIBROSIS IN PATIENTS UNDER 40 YEARS.

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Abstract

Primary myelofibrosis (PM) is a chronic myeloproliferative disorder that belongs to the group of so-called Ph-negative pathologies. The incidence of PM is 0.5-1.5 to 100 000. The etiology is still unknown. The clinical manifestations are determined by chronic inflammation that defines constitutional symptoms such as weakness, dizziness, weight loss, nocturnal transpiration, fever, and those symptoms which are determined by organomegaly. The most often organs that are affected by extramedullary hematopoiesis in the spleen, liver. Sometimes the extramedullary hematopoiesis can be found in the lung, skin, central nervous system. The WHO criteria for confirmation include genetic mutations, histological changes, anemia, high level of white blood cells, leukoerythroblastosis, elevated level of LDH, and splenomegaly. Genetic mutations such as Janus kinase 2, MPL, and CARL. These mutations can be found in 90%. Approximately 10 % are triple-negative with bad prognostic in comparison with Jak2, MPL, CARL positive.

The PM in young patients is rare, but PM in children is very rare and associated with other malformations.

Objective. Identification of clinical characteristic of PM in patients under 40 years.

Design. This study is retrospective.

Results. In this study was included 44 patients. The 10 patients are men and 34 women. The patients were divided into three groups according to age. In the first group, clinical manifestations are a massive splenomegaly which was observed in all cases. The complete blood count was normal. In the third group, thrombocytosis was more common in 53.3% and an increased level of hemoglobin. The size of the liver in most cases was within the normal range. In group 1st- 4.5%, in group 2nd- 18.2%, and in group 3rd -29.5%.

For patients aged 20-30 years, thrombocytosis is characteristic and splenomegaly was found in the entire group of varying severity.

Conclusion: The clinical characteristics are different for any age. This analysis did not reveal any dependence of organomegaly on age or peripheral blood counts. The organomegaly was characteristic for patients under 20 years and older 30 years. The changes in complete blood count are more characteristic for patients older 30 years.

Key words: primary myelofibrosis, splenomegaly, thrombocytosis

INTRODUCTION

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Hematology is a branch of medicine that deals with the treatment of various types of blood cancer. Acute leukemia, myeloma, malignant lymphomas and chronic leukemias are classified as hematological malignancies. A separate group is made up of chronic myeloproliferative diseases, including chronic myeloid leukemia and pathologies such as polycythemia vera, essential thrombocythemia and primary myelofibrosis (PM).

According to the 2016 WHO WHO Classification of tumours of haematopoietic and lymphoid tissues, published in 2017, the group of BCR-ABL-negative myeloproliferative processes includes [1,2]:

- Polycythemia vera or erythremia
- Essential thrombocythemia
- Primary myelofibrosis
- Chronic neutrophilic leukemia
- Chronic eosinophilic leukemia
- Unclassifiable myeloproliferative neoplasms.

It should be noted that according to the revision of this classification, mastocytosis is no longer part of the category of chronic myeloproliferative processes [2]. For idiopathic myelofibrosis, the review resulted in the division of the process into two stages: the prefibrotic PM and the overt fibrotic PM.

For myeloproliferative neoplasms, some common aspects are characteristic:

- Etiology is unknown.
Some of the possible factors may be chemicals, radiation or viruses. At present there are no definite data for these theories.
- The presence of proliferation of one or more myeloid lines in the bone marrow and / hematopoietic extramedullary foci. Most often it affects the spleen, less often the liver, lungs, adrenal glands with the development of myeloid metaplasia.
- The clinical and hematological manifestations depend on the presence of the hyperproliferated myeloid line and the involvement of the organs in the pathological process.
- The possibility of reciprocal transformation of myeloproliferative processes [3,4].

Primary myelofibrosis or idiopathic myelofibrosis was mentioned for the first time in the literature in 1879 when was describing a patient with a giant spleen and generalized fibrosis of the bone marrow in article 'Two Cases of Leukemia and Peculiar Blood and Bone Marrow Findings' [5,6].

For confirmation, 3 major criteria are required:

1. Proliferation and atypia of megakaryocytes accompanied by either reticulin and/or collagen fibrosis grades 2 or 3 on a scale of 0 to 3
2. Not meeting WHO criteria for ET, PV, BCR-ABL1+ CML, myelodysplastic syndrome, or other myeloid neoplasm
3. Presence of JAK2, CALR, or MPL mutation or in the absence of these mutations, presence of another clonal marker or absence of reactive myelofibrosis

and one of the minor:

1. Anemia not attributed to a comorbid condition
2. Leukocytosis $\geq 11 \times 10^9/L$
3. Palpable splenomegaly



4. LDH increased to above upper normal limit of institutional reference range
5. Leukoerythroblastosis [7]

According to the literature, the mean age at diagnosis is 65 years.

Recently, more and more often the diagnosis is confirmed in persons under 60 years. PM in children is very rare and is most often associated with multiple malformations.

The absence of the common clinical picture is difficult for therapists, which leads to the fact that patients are diagnosed at a later stage. Progressive weakness, decreased performance, and weight loss is most commonly noticed. Weakness can be attributed to two mechanisms. The first is anemia and the second cause of this

complaint may be chronic inflammation, which causes interleukin imbalances and causes constitutional symptoms. Fever also constitutes constitutional symptom. Myeloid metaplasia can occur the spleen, liver, pleura and with involvement of the kidneys, skin, central nervous system, causing a clinically atypical for PM.

Splenomegaly is very common in PM. The slowly growing spleen for years may not bother patients, which is why the diagnosis of the disease often occurs in the later stages. A small number of patients develop acute pains in the left hypochondrium, a temperature that is caused by a spleen infarction.

An enlarged liver is also characteristic of PM. The main complaints are discomfort in the right hypochondrium and pain. Hepatomegaly is more likely to bother patients than an enlarged spleen. Recently, there has been a tendency towards an increase in the number of young patients with PM diagnosed at an early stage. This is due to the fact that the medical service has improved and at the slightest change, patients are sent to specialist consultations to determine the problem. However, other difficulties arise. For example, if it is easier to work with people over 65 thanks to the developed scores. Therefore, questions about myeloproliferative pathologies in young patients are of interest to specialized specialists.

Objective

Identification of clinical characteristic of primary myelofibrosis in patients under 40 years.

Design. In this retrospective study, the data of 44 patients with PM, registered with the Department of Hematology of the Oncological Institute of the Republic of Moldova, were analyzed. These patients were divided into three groups according to age: 18-20 years old, 21-30 years old, and 31-40 years old. This is the newest data which include all new-diagnosed young people with PM.

Results

We started our data analysis with manifestations of proliferative syndrome. The myeloid metaplasia occurs usually the spleen. Spleen size was normal according to the ultrasound data in 4 cases, 2 from 2-nd group and 2 from 3-rd. All patients in the group under 20 years had severe splenomegaly. The same large size of the spleen was found in the third group - 20.5%.



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Tab.1. The spleen sizes

The size of the liver in most cases was within the normal range. In group 1st- 4.5%, in group 2nd- 18.2%, and in group 3rd -29.5%.

Tab.2. The liver sizes

	I group	II group	III group
Normal size N,%	2 4.54%	8 18.18%	13 29.54%
Moderate hepatomegaly +2+3 cm below costal margin,n,%	-	1 2.27%	10 11.72%
Severe hepatomegaly >3 cm below costal margin,n,%	3 6.81%	1 2.27%	6 13.63%

Of greater interest are data from a complete blood test.

Hemolytic anemia was observed in all three groups: 4.54%, 2.27% and 4.54%, respectively. A

	I group	II group	III group
Normal size	-	2 4.54%	2 4.54%
Mild splenomegaly < 5 cm below costal margin	-	1 2.27%	9 20.45%
Moderate splenomegaly 5-7 cm below costal margin	-	3 6.81%	7 15.9%
Severe splenomegaly > 7 cm below costal margin	5 11.36%	3 6.81%	9 20.45%
Splenectomy	-	1 2.27%	2 4.54%

normal hemoglobin level was observed in a total of 23 patients from all three groups, which is more than half of the total. But attention is drawn to the fact that in the group over 31 years old there were cases with an increased hemoglobin content at 11.36%. The highest elevated hemoglobin level was 231 g/L.



Tab. 3. The hemoglobin levels.

	I group	II group	III group
High level >160g/l for man, >140 g/l for woman, N, %	0	0	5 11.36%
Normal range 120-140 g/l, n, %	2 4.54%	6 13.63%	15 34.0%
Anemia <110 g/l, n, %	1 2.27%	3 6.81%	7 15.9%
Hemolytic anemia N; %	2 4.54%	1 2.27%	2 4.54%

The second indicator of the complete blood counts that we analyzed was the level of leukocytes. The highest leukocyte count was observed in group 3 in 38.63% of patients. The same group had the largest number of patients with leukopenia - 6.81%. In the same group, 20.45% of cases had a normal leukocyte count. In the second group, in 13.63%, the number of leukocytes was found to be within the normal range. In the first group, the overwhelming majority of patients had a normal level of leukocytes - 13.63%.

Tab.4. The leukocyte levels.

	I group	II group	III group
Leukopenia <4,0 x 10 ⁹ /l, n, %	1 2.27%	-	3 6.81%
4,1-11,0 x 10 ⁹ /l, n, %	4 9.09%	6 13.63%	9 20.45%
>11,1 x 10 ⁹ /l, n, %	-	4 9.09%	17 38.63%

Analyzing the data on the level of platelets, it was found that in 47.72% of patients from the third group over 31 years old, thrombocytosis was noted. In the second group, an increased level of platelets was found in 13.63% of cases, and only 1 patient - 2.27% of the first group had characteristic thrombocytosis.

Tab. 5. The platelets count.

	I group	II group	III group
Trombocytopenia <150 x 10 ⁹ /l, n, %	-	1 2.27%	2 4.54%
151,0-400,0 x 10 ⁹ /l, n, %	4 9.09%	3 6.81%	4 9.1%
>401,0 x 10 ⁹ /l, n, %	1 2.27%	6 13.6%	23 52.3%



Conclusions

The clinical aspects are different for different age. In the group of patients up to 20 years old, the main sign was splenomegaly, and over 20 years, the main feature was CBC changes with moderate proliferative syndrome or without organomegaly. This analysis did not reveal any dependence of organomegaly on age or peripheral blood counts. Hemolytic anemia can occur at any age.

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DIAGNOSIS AND MANAGEMENT OF HYPERPLASTIC GINGIVITIS IN ACUTE LEUKEMIAS

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Abstract

The purposes of the study were to evaluate the diagnostic features and management of hyperplastic gingivitis (HG) in the acute leukemias (AL).

The study may be considered as analytical and descriptive. The following research modalities were used: epidemiological, analytical, data transfer, descriptive statistics. The AL patients have been followed up and treated at the Institute of Oncology between 2012-2020. The diagnosis was proved by the bone marrow aspiration (BMA) with cytochemical reactions, tissue biopsy or fine needle aspiration cytology. The immunotyping was performed in the selected cases. The type of myeloproliferative disorder was identified according to the Revised WHO classification of the myeloid neoplasms, approved in 2018. The review of the literature is based on a study of 17 references.

Gingival tissues are considered more susceptible to leukemic cell infiltration because of their microanatomy and expression of endothelial adhesion molecules which boost infiltration by leukocytes. The HG may be observed in the non-lymphoblastic AL with a frequency of 3% to 5% of patients receiving anti-leukemia chemotherapy at the referral centers [Fatahzadeh M., Krakow A. M., *Spec. Care Dentist*, 2008]. We report a study of 5 cases with HG due to the myelo-monoblastic (M4) and monoblastic (M5) AL. The leukemia patients were admitted to the Institute of Oncology with a history of fatigue, anorexia, headache, gingival bleeding and enlargement initially identified by a family doctor from the consulting centers of the municipal hospitals. Clinical examination showed marked anemic syndrome, mild to moderate splenomegaly and slight hepatomegaly. ECOG-WHO performance status score was 2-3. The intra-oral examination revealed the generalized gingival hyperplasia. There was a fair amount of plaque and calculus, but did not justify the degree of enlargement. On palpation, the gingiva was spongy and painless, with solitary sectors of necrosis. Blood count: Hb 66-101 g/l, er. $2.3-3,7 \times 10^{12}/l$, leuk. $12,1-35.2 \times 10^9/l$, plt. $54.0-115.0 \times 10^9/l$, ESR 23-50 mm/h, blast cells 17-42%. The BMA detected hypercellularity, red cell line hypoplasia, the elevated rates of myeloid blast cells (31.0-48.0%) and monocytes (9.0-12.0%). HG regressed only in 3 of 5 patients after obtaining the complete hematologic response under the combined chemotherapy.

In AL the gingival hyperplasia is secondary to infiltration of the gingival tissue with blast cells, but may be mixed up with the benign conditions during the intra-oral examination. The HG may regress completely or at least partially under an efficient chemotherapy.

Keywords: hyperplastic gingivitis, acute leukemias, diagnosis, combined chemotherapy.



Background

Periodontal pathologies include a variety of conditions commonly affecting the health of the periodontium and may be considered as an actual issue of Public Health and Dentistry. Although the classification scheme defined at the 1989 World Workshop in Clinical Periodontics divided these pathologic conditions into a number of clinically defined subentities [1,14], the subsequent attempts to categorize patients according to the defined criteria have indicated the considerable overlap problem in the disease definitions [2]. In spite of the essential progress in defining both etiologic agents and pathways of pathogenesis in various forms of gingivitis, the lack of information exists to definitively recategorize these diseases. Acute leukemias (AL) are the hematologic malignancies resulting from a clonal proliferation and accumulation of the blast cells. AL affect persons of all ages and develop more frequently in males. The morbidity by AL correlates with the age. The incidence ranges worldwide between 1.6-3.6 cases per 100 000 population. The leukemic cell population may invade extramedullary tissues and its presence as leukemic infiltrates has been reported in the spleen, kidneys, lungs, bowels, breasts, testes, eyes, meninges, lymph nodes, liver, prostate, skin, and oral cavity [6]. Gingival hyperplasia is secondary to the infiltration of the gingival tissue with leukemia cells and is well described in the literature [4, 15, 16, 17]. Gingival enlargement is reported to be the most consistent symptom leading to a diagnosis of AL and directs the patient to seek early dental consultation [9, 15, 17].

Objectives:

The aims of the study were to evaluate the diagnostic features and management of hyperplastic gingivitis (HG) in AL.

Materials and methods:

The analytical, descriptive and prospective study was performed. The following research modalities have been used: epidemiological, analytic, data transfer, descriptive statistics [13]. The AL patients have been followed up and treated at the Institute of Oncology between 2012-2020. The diagnosis was proved by the bone marrow aspiration with cytochemical reactions, tissue biopsy or fine needle aspiration cytology. The immunotyping was performed in selected cases. The type of myeloproliferative disorder was identified according to the Revised WHO classification of the Tumours of Haematopoietic and Lymphoid Tissues, approved in 2017 [12]. The review of the literature is based on a study of 17 references.

Results and discussion:

There are different types of periodontal diseases, one of which is “gingival overgrowth” or “gingival enlargement”. Gingival enlargement may be caused by a wide variety of etiologies and is classified according to the corresponding etiologic factors [10, 11]: 1. Inflammatory enlargement; 2. Drug-induced enlargement; 3. Enlargement associated with systemic diseases or conditions; 4. Neoplastic enlargement.

Gingival tissues are considered more susceptible to leukemic cell infiltration because of their microanatomy and expression of endothelial adhesion molecules which enhance infiltration of leukocytes [9]. In the most extensive review of the neoplastic enlargement, gingival hyperplasia was observed in myeloid AL with a frequency of 3% to 5% among 1,076 patients receiving anti-leukemia chemotherapy at a referral centre [5]. Gingival hyperplasia is commonly seen in myeloid AL subtypes, such as monoblastic AL (66.7%), myelomonoblastic AL (18.5%), and myeloblastic AL (3.7%) [4]. Gingival hyperplasia is characterized by progressive enlargement of the interdental papillae as well as the marginal



and attached gingiva. In the condition's severe forms, the crowns of the teeth may be covered. Gingiva appears swollen, devoid of stippling and pale red to deep purple in colour. Mucosal hemorrhages, ulcerative gingivitis, infectious gingivitis and odontalgia may be observed [3, 16]. Pallor, spontaneous hemorrhage, petechiae and ulceration have been described to occur more commonly in acute than chronic leukemia. Histologic characteristics are similar for each subtype of leukemia aside from the morphologic form of the invading cells. These cells are characterized by abundant mitotic figures. Typically, the lamina propria is densely packed with leukemia cells extending from the basal cell layer of the epithelium into the gingiva, thereby altering the normal anatomy. Regional blood vessels are compressed by the infiltrate. The development of gingival infiltration is unpredictable in anyone patient. Gender has not been described as a risk factor for developing this manifestation. Leukemia cell gingival infiltrate is not observed in edentulous individuals, suggesting that local irritation and trauma associated with the presence of teeth may play a role in the pathogenesis of this abnormality. Dental caries and poor oral hygiene have not been described as risk factors for gingival hyperplasia. Additionally, an increased rate of dental caries as a complication of this abnormality has not been reported. However, poor oral hygiene and cavities predispose to super-infection, necrosis, pain and bleeding. The presence of caries in some patients may be likely incidental. In general, surgery should be avoided in leukemia-afflicted patients with gingival hyperplasia. Generally, gingival hyperplasia resolves completely or at least partly with effective leukemia chemotherapy. Of note, patients initially presenting with acute promyelocytic leukemia without gingival hyperplasia can develop this abnormality after all-trans-retinoic acid therapy. This manifestation is not considered to be predictive of poor outcome. New cutaneous lesions, oral or otherwise, are often the initial physical finding that leads to a diagnosis of leukemia [8].

In this manuscript, we report a study of 5 cases with HG due to myelo-monoblastic (M4) and monoblastic (M5) AL. The leukemia patients were admitted to the Institute of Oncology with a history of fatigue, anorexia, headache, gingival bleeding and enlargement initially identified by a family doctor from the consulting centers of the municipal hospitals. Clinical examination showed marked anemic syndrome, mild to moderate splenomegaly and slight hepatomegaly. The cardiovascular, respiratory and nephrouinary systems proved to be intact. ECOG-WHO performance status score was 2-3. The intra-oral examination and the subsequent evaluation of the medical and dental history were performed. The intra-oral examination revealed the generalized gingival hyperplasia. There were the fair amounts of plaque and calculus, but did not justify the degree of enlargement. On palpation, the gingiva was spongy and painless, with solitary sectors of necrosis. The tongue, palate, and temporo-mandibular joints were normal on examination. The following differential diagnoses were considered: inflammatory enlargement, drug-induced enlargement, conditioned enlargement, systemic enlargement, and neoplastic enlargement. Blood count: Hb 66-101 g/l, er. $2.3-3.7 \times 10^{12}/l$, leuk. $12.1-35.2 \times 10^9/l$, plt. $54.0-115.0 \times 10^9/l$, ESR 23-50 mm/h, blast cells 17-42%. Taken into consideration our concern about possible AL, which were suggested by the complete and differential blood counts, the bone marrow aspiration with cytochemical reactions and the gingival imprints were done. The bone marrow aspiration detected hypercellularity, red cell line hypoplasia, the elevated rates of myeloid blast cells (31.0-48.0%) and monocytes (9.0-12.0%). Both the bone marrow and the gingival morphology, thus, demonstrated leukemia cell infiltration, confirming the diagnosis of AL. The combined



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induction therapy with cytarabine and doxorubicin were performed. HG regressed only in 3 of 5 patients after obtaining the complete hematologic response under the combined chemotherapy. Oral hygiene instruction was given to the patient and 0.2% chlorhexidine was administered.

Conclusions

- In AL the gingival hyperplasia is secondary to infiltration of the gingival tissue with blast cells, but may be mixed up with the benign conditions during the intra-oral examination.
- The gingival enlargement is more common in myelo-monoblastic and monoblastic AL.
- The HG may regress completely or at least partially under the efficient chemotherapy.
- Stomatologists should be aware of the periodontal manifestations and different complications of AL in order to enable the early diagnosis and timely referral to the comprehensive cancer centers or departments for subsequent proper management.

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CONFLICT OF INTERESTS:

The author has no conflict of interests to declare.

ETHICAL APPROVAL:

The research was approved the Research Ethic Board of State University of Medicine and Pharmacy “Nicolae Testemitanu”.



**INVESTIGATION OF QUALITY OF LIFE AND WORK MOTIVATIONS OF
HEALTHCARE PROFESSIONALS IN THE PERIOD OF COVID-19**

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Büşra KÖŞGER**

Abstract

Covid-19, which emerged in December 2019 and continues, affects health workers, who are at the forefront in the fight against the epidemic, physiologically and psychologically. As a result of this effect, the working and living conditions of health workers also undergo some changes. The fact that the living conditions are different from the desired level not only negatively affects the quality of life of the individuals, but also the negative effect of the quality of life affects the satisfaction levels in this context. It is also important for the health workers who are exposed to all these stimuli to provide services in a motivated way for the system to function effectively. This is because organizational success is closely related to employee motivation. Especially during the epidemic, the reasons such as being under adverse conditions, being at high risk of being in contact with a deadly disease, and disruptions occurring within the institution have a great impact on the work motivation and quality of life of healthcare professionals. This study, it is aimed to examine the quality of life and work motivation of healthcare workers during the current Covid-19 epidemic period. The research was carried out with 282 people, including doctors with various specialties, assistant health workers, administrative personnel and personnel in support services in two public hospitals in Konya. The research data were collected by using the descriptive questions, the scale of the impact of covid-19 on the quality of life and the work motivation scale, using the online survey technique. Statistical analysis of the data was evaluated by T-Test, Anova and Correlation Test in Independent Groups.

As a result of the research, 53.5% of the participants were men, 43.6% had a bachelor's degree, 61.0% were married, 49.3% were assistant health workers, 35.1% were between the ages of 27 and 33 and 36.5% of them are employees between 0-5 years. As a result of the research, there was no significant difference between age, gender, marital status, the institution of employment, chronic illness, quality of life and motivation levels. On the other hand, a significant difference was found between the education levels of the participants, their fear of having Covid 19, and their quality of life. When the relationship between the motivation scale and the quality of life scale was examined, a weak negative ($r=-0.271$) significant ($p<0.01$) relationship was found.

Keywords: Health, Quality of life, Motivation, Covid-19, Pandemic

INTRODUCTION

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The coronavirus epidemic, which emerged in China, has affected the whole world with some features such as its rapid spread and its effectiveness in death rates. In addition, this process has caused serious problems for health workers who are struggling in the front stages (Que ve ark 2020, Pappa ve ark 2020, Pala ve Metintaş 2020, Yüncü ve Yılan 2020). The number of healthcare employees quarantined because they are infected or in contact with a patient individual is increasing day by day. The increases experienced in terms of the health workforce lead to more workloads, stress and a serious weakening of health service (Sim 2020).

Especially in terms of physicians and nurses working at high risk, it is predicted that there will be a shortage of healthcare professionals due to reasons such as burnout and mental fatigue after the pandemic (Fiorillo ve Gorwood 2020). For example, it is known that health workers working in emergency services are exposed to many stress factors almost every day. This stressful work environment is thought to be a risk factor for work motivation by causing burnout as well as reducing the quality of life. It is thought that the quality of life and work motivation of health personnel who have a heavy workload and stress can be positively affected with the help of practices such as stress management training (Caponnetto ve ark 2019). Similarly, it is estimated that creating work environments designed for nurses' work as specialists to increase their work motivation is effective on work motivation (Kudo ve ark 2017). A special focus is needed on front-line workers centered on but not limited to medical personnel (Cullen ve ark 2020).

LIFE QUALITY

It is stated that the covid-19 epidemic, which affects the whole world and has negative effects in all areas of life, negatively affects the quality of life of individuals (Zhang ve Ma 2020). According to Repišti et al (2020), it has been determined that the most affected factor from the covid-19 epidemic is the quality of life. It is stated that even doubting the symptoms of Covid-19 affects the health and quality of life of individuals (Nguyen ve ark 2020). According to the study conducted by Logue et al (2021), a decrease in the quality of life after the disease was observed in individuals with covid who received outpatient or inpatient treatment. In addition, it is known that permanent symptoms are seen after the disease.

In the literature, the concept of quality of life is defined as the dimension of the relationship between objective living conditions and perceptions of well-being (George 2006). People evaluate the quality of life they have by focusing on the gap between what they desire and what they achieve. It is stated that individuals whose living conditions are close to their desires will evaluate their quality of life at a higher level compared to individuals who have a higher level of the gap between what they achieve and what they desire (Abbey ve Andrews 1985). Although people differ in their level of perception of quality of life as a result of their complex structure, it has been revealed that quality of life, in general, is closely related to concepts such as conditions, relationships, life purpose, decisions and satisfaction (Marcketti 2006). When the concept of quality of life is considered from this perspective, it is stated that while regulating and supporting the working conditions of individuals increases the perceived quality of life, the unbalanced and excessive working conditions will decrease the perceived quality of life (Moen 2000).



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In short, the quality of life of individuals is dependent on many factors such as family, education, social life, health status and working conditions. In particular, individuals who have problems in business life are at a disadvantage in terms of work performance and work motivation. It is stated that especially the troubled working life affects individuals in every aspect, and most importantly, it has negative effects on work performance and works motivation. Therefore, it is thought that the work motivation of individuals can be increased by improving the quality of life (Erat ve ark 2011).

WORK MOTIVATION

In general terms, the concept of motivation is defined as the effect it creates on the behavior of the individual and the power that drives the individual to act to achieve certain goals. For this reason, it is aimed to create working environments that will motivate individuals to be effective and productive (Rosak-Szyrocka 2014). The definition of work motivation is expressed as the energetic power that a person obtains from internal and external sources to determine the behavior of individuals at work, work duration and work intensity. In addition, it is stated that work motivation consists of interactions originating from cultural, social and organizational differences (Nal ve Sevim 2019, Shkoler ve Kimura 2020).

Work motivation interacts with concepts such as age, years of service, working conditions, human relations, salary and supervision. For this reason, it is necessary to ensure the work motivation of the employees to ensure the success of the organization (Suprapti ve ark 2020). When considered in terms of individuals working in health institutions, the concept of work motivation is of vital importance. The high risk of healthcare professionals affects the quality of the service they provide and creates disruptions in service delivery. For this reason, the work motivation of health workers is undeniable (Kılıç ve Keklik 2012). For this reason, it is stated that managers should undertake to improve the work motivation and satisfaction level of their employees (Şantaş ve ark 2018). Based on the concepts discussed, the research was carried out to examine the quality of life and work motivations of healthcare workers during the covid 19 process.

METHOD

Population and Sample of the Research

The population of the research consists of employees in two medical faculties hospitals in Konya. These employees include doctors with various specialties, assistant health professionals (nurse, midwife, emergency medical technician, health officer, anesthesia, laboratory), administrative personnel (human resources, purchasing, invoicing, salary, data processing, warehouse, archive, training). consists of support services (cleaning, dining hall, counseling, security). There are a total of 7250 personnel in these two hospitals. The table created by Yazıcıoğlu and Erdoğan (2004) was used to determine the sample of the study. Accordingly, it is considered sufficient for the sample to consist of 240 people. Therefore, the study was completed with 282 people.

Table 1. Socio-Demographical Characteristics of the Employees

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Gender	Number (N)	Percentage (%)
Female	131	46.5
Male	151	53.5
Education Level	Number (n)	Percentage (%)
Primary School-High School	58	20,6
Associate degree	59	20,9
Undergraduate	123	43,6
Postgraduate	42	14,9
Marital Status	Number (n)	Percentage (%)
Married	172	61.0
Single	110	39.0
Job	Number (n)	Percentage (%)
Doctor	36	14.2
Assistant Health Personnel	149	49.3
Administrative Staff	72	25.5
Support Personnel	31	11.0
Age		
Between 20 and 26 years old	65	23.0
Between 27 and 33 years old	99	35.1
Between 34 and 40 years old	68	24.1
41 years and older	50	17.7
Working Year in the Institution	Number (n)	Percentage (%)
0-5 years	103	36.5
6-10 years	83	29.4
11 years and above	96	34.0
Institution	Number (n)	Percentage (%)
Medicine 1	159	56,4
Medicine 2	123	43,6
Total	185	100

Table 1 includes the socio-demographic characteristics of the participants. Accordingly, 53.5% (151 people) of the participants were men, 43.6% (123 people) had a bachelor's degree, 61.0% were married (172 people), 49.3% (149 people) were assistant health workers, 35.1% (99 people) were between the ages of 27-33, 36.5% (138 people) were employees between 0-5 years, 56.4% (159 people) seem to be working in Medicine 1.



Table 2. Health Status of Employees and Their Responses Regarding Covid 19

Do you have any chronic disease?	Number (N)	Percentage (%)
Yes	39	13.8
No	243	86.2
Have you had covid-19 before?		
Yes	109	38.7
No	173	61.3
Are you afraid of catching Covid 19?		
Yes	157	55.7
No	125	44.3
Which one describes you better?		
Happy/Cheerful	87	30.9
Angry/Nervous	49	17.4
Calm/Moderate	101	35.8
Unhappy/Exhausted	45	16.0
Total	282	100

Table 2 contains information about the health status of the employees and Covid 19. Accordingly, 86.2% (243 people) did not have a chronic disease, 61.3% (173 people) did not have Covid 19, 55.7% (157 people) were afraid of having Covid 19, and 35.8% (101 people) described it as calm/moderate.

Research Ethics

Ethics committee approval dated 28.06.2021 and numbered 845 was obtained from Selcuk University Faculty of Health Sciences Non-Interventional Clinical Research Ethics Committee before the research. In addition, a COVID 19 work permit was obtained from the Ministry of Health. Ethical rules have been taken into account in citing references.

Data Collection and Application

The data of the study were collected by the online survey technique prepared by the researcher using the Google forms application.

Scales Used in the Research

The Impact of COVID-19 on Quality of Life Scale

The scale was developed by Repišti et al. (2020) and its Turkish validity and reliability were done by Sümen and Adibelli (2021). The scale consists of 6 items. All items are given in a five-point Likert type (1-strongly disagree – 5-strongly agree). The Cronbach's alpha coefficient for the data obtained from the general total of the scale is stated as 0.910 (Sümen ve Adibelli, 2021).



Motivation at work scale

It was developed by Gagné et al. (2010) to determine the level of motivation at work and translated into Turkish by Akbolat and Işık (2012) and validated and validated. The scale consists of 12 statements and four dimensions (Identified regulation, intrinsic motivation, introjected regulation, and external regulation/control). All items are given in a five-point Likert type (1-not at all - 5-completely agree). The Cronbach Alpha value of the motivation scale was found to be 0.904.

Analysis of Data

SPSS, a statistical program, was used to analyze the data. In the study, first of all, the normal distribution of the data was examined and the skewness and kurtosis coefficients were examined. Accordingly, if the skewness and kurtosis coefficient take values between +1 and -1, it is stated that the data are normally distributed (Büyüköztürk 2015). In the study, the skewness – kurtosis coefficient for the scale of the impact of COVID-19 on the quality of life (-.089; -.707) and the skewness – kurtosis coefficient for the scale for the motivation at work scale (-.057; -.104) were determined. Since the data were normally distributed, the t-test was used to compare paired groups and the Anova test was used to compare more than two groups. Correlation and regression analyzes are also given. As a result of the reliability analysis, the Cronbach Alpha value of the scale of the impact of COVID-19 on the quality of life was found to be 0,862. In the validity and reliability study conducted by Sümen and Adibelli (2021), the Cronbach's Alpha coefficient was found to be 0.910, 0.905 for the undiagnosed sample, and 0.856 for the diagnosed sample (Sümen ve Adibelli, 2021). In the study, the Cronbach Alpha value of the motivation at work scale was determined as ,895. This value was determined as 0.904 by Akbolat and Işık (2012) in the Turkish validity and reliability study.

FINDINGS

Within the scope of the research conducted with healthcare professionals, no significant difference was observed between the quality of life and motivation levels of the participants, and their age, gender, marital status, the institution of work, and chronic discomfort status. On the other hand, a significant difference was found between the education levels of the participants, their fear of having Covid 19, and their quality of life.

Table 3. T-Test Analysis of Independent Groups Between Fear of Being Covid 19 and Quality of Life of Employees Participating in the Research

	Fear of Being Covid	n	avg.	ss	t	p
Life Quality	Yes	157	3,36	,902	3,164	,002
	No	125	3,02	,925		



As can be seen in Table 3, a significant difference was found between the t-test analysis findings in the independent groups, which were made by taking the average of the covid 19 fears and the quality of life of the healthcare professionals included in the study ($t=3,164$; $p < 0.02$).

Table 4. One-Way Analysis of Variance (ANOVA) Between the Educational Status and Quality of Life Averages of the Employees Participating in the Study in Independent Groups

Life Quality	Education Status	N	avg.	ss	F	p	Post-hoc (Scheffer)
	1. primary school-high school	58	2,89	,890	3,136	,026	3>1
	2. associate degree	59	3,23	1,035			
	3. undergraduate	123	3,33	,865			
	4. postgraduate	42	3,25	,923			
	TOTAL	282	3,21	,927			

Table 4 shows the findings of the one-way analysis of the independent groups made between the education level and the average quality of life of the employees participating in the research. According to the results of this analysis, a significant difference was obtained between the education level and the average quality of life ($p < 0.05$). Post hoc (Scheffer) analysis was performed to detect the difference. Accordingly, it has been determined that employees with a bachelor's degree have a higher quality of life level compared to those with primary and high school degrees.

Table 5. Analysis Results for Examining the Relationship Between Quality of Life and Motivation and its Sub-Dimensions

	1	2	3	4	5	6
1 Identification	1					
2 Intrinsic Motivation	,761**	1				
3 Introjection	,671**	,625**	1			
4 Extrinsic Control	,383**	,409**	,411**	1		
5 Motivation Total	,891**	,888**	,835**	,617**	1	
6 Quality of Life Total	-,269**	-,230**	-,208**	-,169**	-,271**	1

** The correlation is significant at the 0.01 level.

Pearson correlation analysis was conducted to determine the relationship between quality of life and work motivation and its sub-dimensions in the study conducted on hospital employees. The obtained results are given in Table 5. Accordingly, a weak negative ($r = -0.271$) significant ($p < 0.01$) relationship was found between the motivation scale and the quality of life scale.

Motivation scale with identification sub-dimension ($r = -.269$), intrinsic motivation sub-dimension ($r = .230$), introjection sub-dimension ($r = -.208$) and extrinsic control sub-dimension ($r = -.169$).) a weakly significant ($p < 0.01$) relationship was found in the negative direction.



DISCUSSION / CONCLUSION AND RECOMMENDATIONS

As a result of the research, no significant difference was observed between the quality of life and motivation levels of the participants and their age, gender, marital status, the institution they work in, and chronic discomfort. On the other hand, a significant difference was found between the education levels of the participants, their fear of having Covid 19, and their quality of life. In addition, a weak and negative correlation was found between quality of life and motivation and its sub-dimensions (identification, intrinsic motivation, introjection, extrinsic control). When the relevant literature was examined in the context of the study results, it was concluded in the study conducted by Vu et al. (2020) that the health-related quality of life of people under the age of 44 who do not have a chronic disease is higher than the others. However, no significant difference was observed between the concepts of age and quality of life in this study.

In many studies in the literature, it is stated that fear of covid-19 causes various negative situations such as stress, anxiety disorder, sleep disorder and substance use in healthcare workers (Yakut ve ark 2020, Bekaroğlu ve Yılmaz 2020, Mutaf ve ark 2021). As a result of the research conducted by Yakut et al. (2020), it was determined that the fear of Covid-19 increases the burnout perception of health personnel and decreases the perceived social support level. In the study, it was concluded that there is a significant difference between the fear of catching covid and the quality of life of healthcare workers. It is thought that this difference may be because individuals feel fear and turn to healthier foods, show positive changes in their lives and exhibit more careful behaviors in order not to be infected.

As a result of a study conducted by Şantaş et al (2018) on nurses, it was determined that the quality of work-life is positively related to work motivation. In addition, it was found that the quality of work-life affected work motivation statistically, significantly and positively. The factors affecting the work motivation of nurse assistants were investigated by Kudo et al(2011). As a result of the study, it has been determined that nursing assistants are not only motivated by the material element, but also they attach great importance to the inner nature and experience of their jobs. In our study, it was concluded that quality of life was negatively and weakly correlated with work motivation. It is thought that the work of healthcare professionals under difficult conditions is effective in achieving this result.

In the study conducted by Memis et al (2015), the factors affecting the quality of work-life and motivation levels of health professionals were examined. As a result of the research, it was found that the quality of work-life should be kept at a high level for health professionals to do their jobs with a high level of motivation. In another study by de Oliveira Vasconcelos Filho et al. (2016), the relationship between the work motivation of doctors working in a large public hospital and the working environment was examined. As a result of the research, it was concluded that organizational structures, policies and procedures affect the quality of life of doctors.

During the pandemic process, different ways should be found by the managers to increase the quality of life of health workers. Improvements should be made in the working environment by hospital managers, and the factors that cause stress on health personnel should be reduced



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as much as possible. Healthcare workers spend most of their time in hospitals. They have often been known to compromise even their time. In this regard, comfortable environments that will increase their quality of life should be provided in the institution and importance should be given to improvements in their interpersonal relationships. Finally, it is recommended to repeat the study and compare the results after the pandemic ends in the future.

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KANSER HASTALARINDA DERİN VEN TROMBOZU TEDAVİSİ

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Giriş

Kanserli hastalar, derin ven trombozuna yatkındırlar. Bu hastalarda derin ven trombozunun esas nedeni prokoagülan aktivitenin hızlanmasıdır (1). Bu sunumdaki amacımız; kanserli hastalardaki derin ven trombozu eğiliminin patogenezi incelemek, tromboembolik olaylarda tanı ve tedavi yöntemlerine ışık tutmaktır.

Etyopatogenez: Agarwal ve ark, kan pıhtılarında tümör hücrelerinin görülmesi nedeniyle kanserli hastalardaki tromboza eğilimi tümör metastazına bağlamıştır (2). Jasu ve ark, kanser hastalarının otopsilerinde tromboz insidansında artış tespit etmiştir (3). 1950'lerden sonra trombo embolizmin tespit edilememiş kanserlerde ilk belirtilerden biri olabileceği ortaya konulmuştur. Son yıllarda Moleküler biyolojideki gelişmeler, kanserin nasıl hemostatik mekanizmalarla etkileşerek tromboza neden olduğunu açıklamıştır.

Kanserli hastalarda tromboza olan eğilimin farklılık göstermesi, hemostatik mekanizmanın ne ölçüde aktive olduğu ile yakından ilgilidir. Kanserli hastalarda tromboza neden olan durumlar;

-*Cerrahi girişimler*, Venöz tromboemboli (VTE) riskini kanser olmayan hastalardaki cerrahi girişimlere oranla 3-5 kat arttırmaktadır (4).

-*Kemoterapi ve Radyoterapi*, endotele karşı toksik etki göstererek ve sitokin salınımını artırarak tromboz riskini fazlalaştırır.

-*Santral venöz kateterler*, kanser hastalarının tedavisinde sık kullanılan cihazlardır ancak derin ven trombozu bu kateterlerin en önemli komplikasyonudur (5).

Klinik ve Tanı: İlgili ekstremitelerde şişlik, ağrı hassasiyet, kızarıklık DVT'nin en önemli klinik bulgularıdır. Göğüs ağrısı, nefes darlığı ve takipne var ise pulmoner emboli düşünülmelidir. Tanı yöntemleri arasında; D-Dimer testi, renkli Doppler ultrason, ventilasyon/perfüzyon sintigrafisi ve kontrastlı tomografi bulunur. D-Dimer testi tanıda oldukça önemlidir. Son derece sensitif bir test olup, negatif prediktif değeri vardır. Normal olması tromboz olasılığını %98 oranında ekarte ettirir.

Tedavi: Kanser hastalarının DVT sonrasında hastane yatış süresince yakın zamanlarda birden çok girişimsel invazif tetkik ve tedaviyi alacağı düşünüldüğünden ilk olarak hastanın kilosuna göre hesaplanan günlük çift doz düşük molekül ağırlıklı heparin (LMWH) ile başlamaktayız. Sonraki süreçte kanama riski oluşturmayan bir tümör varlığında Warfarin tedavisine geçebilmekteyiz. Bu hastalarda hedef INR (International Normalized Ratio) değeri 2-2.5 aralığında olmaktadır. Hedef INR seviyesine ulaşıldıktan sonra LMWH tedavisi sonlandırılıp sadece warfarin ile devam edilmektedir. Son yıllarda INR takibi gerektirmeyen ve VTE

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üzerine etkinliğinin warfarin ile eşdeğer olduğu bilimsel çalışmalar ile ispatlanmış yeni jenerasyon ilaçlar (NOACs) da warfarinin yerine bir tercih olarak güvenle kullanılabilir (6).

Anahtar Kelimeler: Kanser, tromboz, tedavi

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TREATMENT OF DEEP VEIN THROMBOSIS IN CANCER PATIENTS

Introduction

Cancer patients are prone to deep vein thrombosis. The main cause of deep vein thrombosis in these patients is the acceleration of procoagulant activity (1). Our aim in this presentation to examine the pathogenesis of deep vein thrombosis tendency in cancer patients and to shed light on diagnosis and treatment methods in thromboembolic events.

Etiopathogenesis: Agarwal et al, attributed the tendency to thrombosis in cancer patients to tumor metastasis due to the presence of tumor cells in blood clots (2). Jasu et al found an increase in the incidence of thrombosis in autopsies of cancer patients (3). After the 1950s, it was revealed that thromboembolism may be one of the first symptoms in undetected cancers. In recent years, developments in molecular biology have explained how cancer causes thrombosis by interacting with hemostatic mechanisms.

The difference in the tendency to thrombosis in cancer patients is closely related to the extent to which the hemostatic mechanism is activated. Conditions causing thrombosis in cancer patients;

-*Surgical interventions* increase the risk of venous thromboembolism (VTE) 3-5 times compared to surgical interventions in patients without cancer (4).



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-*Chemotherapy and Radiotherapy* increase the risk of thrombosis by showing toxic effects against the endothelium and increasing the release of cytokines.

-*Central venous catheters* are frequently used devices in the treatment of cancer patients, but deep vein thrombosis is the most important complication of these catheters (5).

Clinical and Diagnosis: Swelling, pain, tenderness, and redness in the relevant extremity are the most important clinical findings of DVT. Pulmonary embolism should be considered if chest pain, shortness of breath, and tachypnea are present. Among the diagnostic methods; D-Dimer test, color Doppler ultrasound, ventilation/perfusion scintigraphy, and contrast-enhanced tomography are available. D-Dimer test is very important in diagnosis. It is an extremely sensitive test and has a negative predictive value. Being normal rules out the possibility of thrombosis by 98%.

Treatment: Since it is thought that cancer patients will receive multiple interventional invasive tests and treatments during hospitalization after DVT, we first start with a daily double dose of low molecular weight heparin (LMWH), calculated according to the patient's weight. In the presence of a tumor that does not pose a risk of bleeding in the next period, we can switch to Warfarin treatment. In these patients, the target INR (International Normalized Ratio) value is in the range of 2-2.5. After reaching the target INR level, LMWH treatment is terminated and only continued with warfarin. New generation drugs (NOACs), which do not require INR monitoring in recent years and whose effectiveness on VTE has been proven by scientific studies to be equivalent to warfarin, can also be used safely as a choice instead of warfarin (6).

Keywords: Cancer, thrombosis, treatment

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DEMONSTRATION OF THE ANTI-SEIZURE EFFECT OF LIRAGLUTIDE ON PTZ-INDUCED CONVULSIONS THROUGH ITS ANTI-OXIDANT AND ANTI-INFLAMMATORY PROPERTIES

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Abstract

Epilepsy, which has a variety of etiologies, is defined by spontaneous recurring seizures (SRS) caused by the hyperexcitability and hypersynchrony of brain neurons. Clearly, an urgent need exists to investigate innovative treatment techniques for preventing the formation of SRS. Both oxidative and nitrosative stress are thought to have a role in the etiology of epilepsy. Liraglutide is a glucagon-like peptide-1 (GLP-1) analogue that is used to treat type-2 diabetes mellitus. Liraglutide also shows neuroprotective properties, improving memory retention and total hippocampus pyramidal neuronal population in mice, according to recent studies. The purpose of this investigation was to determine the anti-epileptic and anti-oxidative effects of liraglutide in a pentylenetetrazole (PTZ)-induced rat model of epilepsy. 48 rats were randomly assigned to two groups: those who had electroencephalography (EEG) recordings and those who underwent behavioral assessment. Rats received either intraperitoneal (IP) liraglutide at two different dosages (3-6 mg/kg) or a placebo, followed by pentylenetetrazole (IP), a strong seizure-inducing drug. To determine if liraglutide has antiepileptic characteristics, we examined seizure activity in rats using EEG, the Racine convulsion scala (RCS), the time of first myoclonic jerk (FMJ), and MDA, TNF- α and SOD levels. The mean EEG spike wave percentage score reduced from 75.8% (placebo) to 59.4% (lower-dose) and 41.5% (higher-dose). FMJ had increased from a mean of 70.6 s (placebo), to 181.2 (lower-dose), 205.2 (higher-dose). RCS reduced from a mean of 5.5 (placebo) to 2.7 (lower-dose), 2.4 (higher-dose). MDA levels reduced from 152.4 nmol/gr to 112.1 nmol/gr (lower-dose), 91.5 nmol/gr (higher-dose). Likely, TNF- α levels decreased from 325.6 pg/mg to 247.2 pg/mg (lower-dose), 210.5 pg/mg (higher-dose). However, SOD levels increased from 10.7 U/mg to 16.2 U/mg (lower-dose), 18.8 U/mg (higher-dose). Liraglutide (3 and 6 mg/kg i.p.) successfully decreased the spike percentages and RCS associated with PTZ kindling epilepsy, as well as considerably decreased MDA, TNF- α , and elevated SOD levels in rat brain. Liraglutide significantly decreased seizure activity at both dosages when compared to placebo, most likely due to its anti-oxidant and anti-inflammatory properties. All of these findings were statistically significant, with p-values of <0.01. As a result, the therapeutic use of liraglutide as a possible anti-seizure medication should be explored further.



Özet

Epilepsi, çok çeşitli etiyolojiye sahip olmakla birlikte nöronlardaki hipereksitabilite ve hipersenkronizasyonun neden olduğu spontan tekrarlayan nöbetler (STN) ile tanımlanmaktadır. Günümüzde halen bu STN'lerin oluşumunu engellemede inovatif teknikler yada tedavilerin geliştirilmesi konusu kritik önem taşımaktadır. Oksidatif ve nitrosatif stresin her ikisi de epilepsi etiyolojisinde rol oynamaktadır. Glukagon-benzeri peptid-1 (GLP-1) analogu olan liraglutid tip-2 diyabet tedavisinde kullanılmaktadır. Son çalışmalara göre liraglutid, farelerde total hipokampus piramidal nöron popülasyonunu ve bellek düzeylerini iyileştirmekte ayrıca nöroprotektif özellikler göstermektedir. Bu çalışmanın amacı pentilentetrazol (PTZ) ile indüklenen sıçan epilepsi modelinde liraglutidin anti-epileptik ve anti-oksidatif etkilerini belirlemektir. 48 adet sıçan randomize bir şekilde 2 gruba ayrılmıştır: EEG kayıtları alınanlar ve davranışsal analize tabi tutulanlar olarak. Sıçanlar güçlü bir nöbet indükleyici ajan olan pentilentetrazolün (ip.) ardından 2 farklı dozda liraglutid (3-6 mg/kg) yada plaseboyu intraperitoneal olarak aldılar. Liraglutidin anti-epileptik karakteristiklerinin belirlemede sıçanlardaki nöbet aktivitesi değerlendirmek için EEG kaydı, Racine konvülsiyon skalası, ilk myoklonik jerk zamanı ve ayrıca MDA, TNF- α ve SOD düzeyleri değerlendirildi. EEG'deki ortalama spike dalga yüzde skoru plasebodaki %75,8'den düşük dozda %59,4'e ve yüksek dozda %41,5'e azaldı. İlk myoklonik jerk zamanı plasebodaki ortalama 70,6 sn'den düşük dozda 181,2 ve yüksek dozda 205,2 saniyeye arttı. Racine konvülsiyon skoru plasebodaki ortalama 5,5'ten düşük dozda 2,7'ye ve yüksek dozda 2,4'e azaldı. MDA düzeyleri 152,4 nmol/gr'dan düşük dozda 112,1'e ve yüksek dozda 91,5 nmol/gr'a düştü. Benzer şekilde, TNF- α düzeyleri 325,6 pg/mg'dan düşük dozda 247,2'ye ve yüksek dozda 210,5 pg/mg'a azaldı. Ancak SOD düzeyleri 10,7 U/mg'dan düşük dozda 16,2'ye ve yüksek dozda 18,8 U/mg'a artış gösterdi. Liraglutid (3 and 6 mg/kg i.p.) PTZ ile indüklenen epilepsiyle ilişkili olarak şekillenen spike yüzdelerini ve racine skorlarını başarılı bir şekilde azalttı, bununla birlikte MDA ve TNF- α düzeylerini de önemli ölçüde düşürürken, SOD düzeylerini artırdı. Liraglutid, büyük olasılıkla anti-oksidan ve anti-inflamatuar özelliklerinden dolayı, plaseboya kıyasla her iki dozda da nöbet aktivitesini önemli ölçüde azalttı. Bu bulguların tümü, <0.01 p değerleri ile istatistiksel olarak anlamlı bulundu. Sonuç olarak, olası bir nöbet önleyici ilaç olarak liraglutidin terapötik şekilde kullanımı daha ileri düzeylerde araştırılmalıdır.

INTRODUCTION

Epilepsy is one of the most prevalent neurological illnesses in the world, affecting up to 1% of the global population (1). Epilepsy, which has a variety of etiologies, is defined by spontaneous recurring seizures (SRS) caused by the hyperexcitability and hypersynchrony of brain neurons. However, epidemiological studies have demonstrated that antiepileptic medications (AEDs) are ineffective or have undesirable side effects (2,3). At the moment, the majority of research on AEDs focuses on neurons, ion channels, and transporters, as well as excitatory and inhibitory neurotransmission, which appears to alter only the acute process of ictogenesis (i.e., the generation of an acute seizure), but not the underlying SRS (4). Additionally, they make no mention of the neurodegenerative processes triggered by epilepsy. Clearly, an urgent need exists to investigate innovative treatment techniques for preventing the formation of SRS.



Both oxidative and nitrosative stress are thought to have a role in the etiology of epilepsy. Numerous studies have established that status epilepticus alters the redox potential and lowers the amount of ATP in the brain, resulting in a collapse of brain energy generation and supply. It has been proven that prolonged seizures produce oxidative damage to sensitive targets (proteins, lipids, and DNA) (status epilepticus). Numerous research (animal models and genetic studies) have established that repeated seizures result in an increase in mitochondrial oxidative and nitrosative stress and consequent cell damage (5).

Glucagon-like peptide-1 (GLP-1) is a hormone released by enteroendocrine L cells that has a role in glucose homeostasis control (6). GLP-1 receptors (GLP-1R) are found in neurons, and GLP-1 is also synthesized in modest amounts inside brain nuclei, namely the hippocampus and caudate nuclei (7). Additionally, GLP-1R deficient mice had a reduced seizure threshold, increased seizure severity and neuronal damage following kainite treatment. Liraglutide is a glucagon-like peptide-1 (GLP-1) analogue that is used to treat type-2 diabetes mellitus. Liraglutide shows neuroprotective properties, improving memory retention and total hippocampus pyramidal neuronal population in mice, according to a recent study (8). GLP-1 and GIP agonists can cross the blood-brain barrier (BBB) and activate GLP-1R and GIPR, which are highly expressed in the brain, respectively, promoting nerve cell growth, proliferation, differentiation, and repair while inhibiting glial cell activation, neuroinflammation, oxidative stress, and apoptosis (9-12).

Given that these medications have demonstrated obvious neuroprotective benefits in animal models of Alzheimer's and Parkinson's disease, the purpose of this investigation was to determine the anti-epileptic and anti-oxidative effects of liraglutide (GLP-1 agonist) in a PTZ-induced rat model of epilepsy.

MATERIALS AND METHODS

Animal and laboratory

The experimental procedures employed in present study were approved by Animal Ethics Committee (Science University, Number: 13210223). All experiments were carried out according to the Guide for the Care and Use of Laboratory Animals, as confirmed by National Institutes of Health (U.S.). 48 male (24 of them for EEG recording and 24 of them are for behavioral studies) Sprague–Dawley rats, weighing 200–250 g each were utilized for this study.

Experimental procedures

48 rats were randomly divided in two groups: Group A for EEG recordings and Group B or behavioral assesment. 35 mg/kg is ideal for observing changes in EEG spikes but does not consistently produce observable behavioral changes while 70 mg/kg consistently produced observable behavioral changes, but EEG readings have small signal to noise ratio to see differences in drug concentrations. 24 rats were divided randomly into 4 groups (n=6): Group A1, A2, A3, A4

Group A1 was defined as *control* and given no medication. Group A2 was administered *saline i.p.*, Group A3 was administered 3 mg/kg *Liraglutide i.p.* (*Victoza 6 mg/mL, novo nordisk*) and Group A4 was administered 6 mg/kg *Liraglutide i.p.* The drugs were administered 30 minutes prior to pentylentetrazol (PTZ) (35 mg/kg, *i.p.*) injection. All groups, except Group A1, were received 35 mg/kg PTZ and EEG was recorded. EEG recordings were taken in awake rats in a



special container after 5 minutes from PTZ administration. All EEG recordings and behavioral assessment protocols were performed as previously described (13). In summary, the EEG recordings were taken for 60 minutes, the signals were amplified 10 thousand times and filtered within a range of 1-60 Hz. The EEG records were obtained by the BIOPAC MP150 Data Acquisition System (Biopac System Inc., Santa Barbara, CA, USA) and the spike percentage was evaluated. Two clinical neurophysiologists scored the EEG data for the spike percentage (which is a reproducible way of quantifying epileptiform activity to quantify the percentage of 1-second bins with at least one spike-wave, called “spike-wave percentage” (13).

Then the groups were rearranged with different 24 rats (Group B) and these rats were then divided into 4 groups (n = 6): Group B1, B2, B3 and B4. The first group (Group B1) was defined as *control* and given no medication. Group B2 was administered *saline i.p.*, Group B3 *3 mg/kg Liraglutide i.p.*, Group B4 *6 mg/kg Liraglutide i.p.* The drugs were administered 30 minutes prior to PTZ (70 mg/kg, *i.p.*) injection. Racine’s Convulsion Scale (RCS) and onset times of ‘first myoclonic jerk’ (FMJ) was used to evaluate the seizures (for only PTZ 70 mg/kg). Rats were observed for onset times of FMJ as previously described (19). The onset times were recorded as seconds. Almost all animals showing tonic generalized extension were died. The observation period for PTZ-induced seizures were limited with 30 minutes duration (13). After this duration, the animals were euthanized.

Measurement of brain lipid peroxidation (MDA)

Lipid peroxidation was determined in tissue samples by measuring malondialdehyde (MDA) levels as thiobarbituric acid reactive substances (TBARS). MDA levels were calculated from the standard calibration curve using tetraethoxypropane and expressed as nmol/gr protein.

Measurement of brain protein levels

Total protein concentration in brain samples was determined according to Bradford’s method using bovine serum albumin as standard.

Determination of brain SOD activity

The principle of the method is the inhibition of nitrobluetetrazolium (NBT) reduction by the xanthine-xanthine oxidase system as a superoxide generator. One unit of SOD was defined as the enzyme amount causing 50% inhibition in the NBT reduction rate. SOD activity was given as units per milligram protein (U/mg protein).

Brain TNF- α analysis

The levels of TNF- α (MyBioSource Co. Ltd.) in the brain tissue supernatants were measured using commercially available rat enzyme-linked immunosorbent assay (ELISA) kits. All samples from each animal were measured in duplicate according to the manufacturer’s guidelines. A microplate reader was used for the measurement of the Absorbances (MultiscanGo, Thermo Fisher Scientific Laboratory Equipment, NH, US).

Statistical analysis

Results were expressed as a mean \pm standard error of mean (SEM). Data analyses were performed by utilizing SPSS version 15,0 for Windows. Shapiro-Wilk test is used to



determine if a population of values has a normal distribution. The Racine convulsion scores were evaluated by Kruskal Wallis test and, first myoclonic jerk (FMJ) time (TFMJ) were evaluated by one-way analysis of variance (ANOVA). Post-hoc Bonferonni test and Mann Whithney U test was utilized to identify differences between the experimental groups. The value of $p < 0.05$ was accepted as statistically significant.

RESULTS

Evaluation of EEG experiment

When liraglutide-treated groups are compared to saline-treated groups, there is a significant reduction in seizure activity as determined by spike wave %. The saline-treated group scored 75.8% of spike waves ($p < 0.01$). With the addition of liraglutide at a dose of 3 mg/kg, the spike wave percentage score decreased to 59.4% ($p < 0.01$), a significant drop of 16.4% compared to the saline group. With 6 mg/kg liraglutide, the spike wave percentage score was 41.5% ($p < 0.01$), a significant decrease of 34.3% compared to the saline group. However, there was no statistically significant difference between low and high dosages of liraglutide ($p > 0.05$) (Table 1).

Table 1

Drugs Group	Spike Percentage
A1-Control	% 0
A2-PTZ (35 mg/kg) and saline	% 75.8 ± 12.4
A3-PTZ (35 mg/kg) and 3 mg/kg Liraglutide	% 59.4 ± 9.3 *
A4-PTZ (35 mg/kg) and 6 mg/kg Liraglutide	% 41.5 ± 13.2 *

Data were expressed as mean ± SEM. Statistical analyses were performed by one-way ANOVA test. * $p < 0.01$, (different from PTZ and saline group)

Evaluation of behavioral experiment

70 mg/kg of PTZ given group resulted in high RCS as expected (mean score of 5.5). The addition of liraglutide at 3 mg/kg IP resulted lower RCS ($2.7 ± 0.4$). Similarly the addition of liraglutide at 6 mg/kg IP also resulted lower RCS ($2.4 ± 0.5$). According to Kruskal–Wallis and Mann–Whitney U tests that; differences between B1 versus B2, as well as B2 versus B3 and B2 versus B4 statistically significant with a p-value of < 0.01 . In the statistical analysis between groups B3 and B4, a significant value with a p-value of > 0.05 (Table 2). The addition of liraglutide substantially increased the FMJ. In the control group had no discernible myoclonic jerks, hence the FMJ was recorded as not reached. The addition of liraglutide 3 mg/kg IP to PTZ-treated rats significantly increased mean FMJ to 181.2 s. Rats treated with liraglutide 6 mg/kg IP had a mean FMJ of 205.2 s (Table 2).

Table 2

Drugs Group	Convulsion Stage (Racine)	FMJ onset time (sec)
B1-Control	0	0
B2-PTZ (70 mg/kg) and saline	5.5 ± 0.3	70.6 ± 8.3



B3-PTZ (70 mg/kg) and 3mg/kg Liraglutide	2.7 ± 0.4 *	181.2 ± 32.4 **
B4-PTZ (70 mg/kg) and 6mg/kg Liraglutide	2.4 ± 0.5 *	205.2 ± 21.7 **

Data were expressed as mean ± SEM. Statistical analyses were performed by one-way ANOVA test. *p<0.01, ** p<0.001 (different from PTZ and saline group)

Evaluation of MDA, SOD and TNF-α levels

When we evaluated the oxidant and inflamatuar parameters MDA (malondialdehyde) and TNF-α levels, we found that both of them were significantly decreased in the liraglutide-treated groups. However, SOD levels were significantly increased by the liraglutide administrations (Table 3).

Table 3

	B1-Control	B2-PTZ (70 mg/kg) and saline	B3-PTZ (70 mg/kg) and 3 mg/kg Liraglutide	B4-PTZ (70 mg/kg) and 6 mg/kg Liraglutide
Brain MDA level (nmol/gr)	67.8 ± 5.5	152.4 ± 2.4 **	112.1 ± 8.8 #	91.5 ± 6.9 ##
Brain SOD activities (U/mg protein)	24.1 ± 1.6	10.7 ± 1.5 *	16.2 ± 3.3 #	18.8 ± 0.9 #
TNF-α (pg/mg protein)	110.8 ± 9.4	325.6 ± 15.1 **	247.2 ± 14.5 ##	210.5 ± 11.7 ##

Data were expressed as mean ± SEM. Statistical analyses were performed by one-way ANOVA test. *p<0.01, ** p<0.001 (different from control group), # p<0.05, ## p<0.0001 (different from PTZ and saline group)

DISCUSSION

The current work established the therapeutic potential of liraglutide against seizure associated with PTZ kindling epilepsy in rat. Kindling is characterized by long-lasting changes in the brain, including free radical production as a result of oxidative stress and diminished antioxidant enzymes (14,15). Despite the GABA and glutamate hypotheses, increasing oxidative stress may also be a component in neuronal hyperactivity and seizure development (16).

Inflammatory alterations caused by activated glia, as well as excessive production of proinflammatory cytokines such as IL-1 and TNF-α, can enhance epileptogenesis (4,17,18). More precisely, these proinflammatory cytokines can decrease seizure thresholds and alter neuronal excitability, hence promoting the development of a chronic neural network hyperexcitability that results in SRS (19,20).

GLP-1, an incretin hormone, is critical for neuroprotection. The lateral septum, subfornical organ, thalamus, hypothalamus, brain stem and area postrema all contain the GLP-1 receptor. On the other hand, GLP-1 binding sites have been identified in neurons of the caudate and putamen, cerebral cortex, hippocampus (pyramidal layer of CA region and granular cell of dentate gyrus), cerebellum, and purkinje cell dendrites. This widespread distribution of GLP-1 suggests that GLP-1R-mediated neuroprotection may be related to regulation of neuronal excitation (21,22). GLP-1R knockout mice exhibited a reduced seizure threshold, poor



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synaptic plasticity, and decreased cognitive function (23,24). Additionally, GLP-1-treated hippocampus neurons had lower calcium responses to glutamate and membrane depolarization, which was related with decreased whole-cell glutamate-induced currents and voltage-dependent calcium currents.

Peroxidation of lipids occurs as a result of oxidative damage to membrane lipids. Previous research has indicated that animals subjected to PTZ-kindling have an increase in lipid peroxidation (25,26). Our data complement these findings, since the PTZ-kindling group had elevated MDA and TNF- α levels. These rises in MDA and TNF- α levels were averted with a liraglutide administration. Liraglutide alone (5) have been shown to be effective in preventing brain MDA development caused by PTZ-kindling. Thus, our findings corroborate the above-mentioned findings and demonstrate the advantage of liraglutide in re-establishing brain oxidative equilibrium. Liraglutide and exendine, both GLP-1R agonists, have been shown to be neuroprotective in animal models of Alzheimer's, Parkinson's, and Huntington disease (27). Pretreatment with liraglutide enhanced cell survival, proliferation, reduced apoptotic cell death, restored membrane potentiation, normalized calcium levels, and elevated expression of Akt and other downstream kinases in SH-SY5Y human neuroblastoma cells (28).

CONCLUSION

In conclusion, our findings indicate that liraglutide has the potential to exhibit antiepileptogenic effects by alleviating SE-induced acute oxidative stress and neuroinflammation in a rat PTZ-induced epilepsy model. Liraglutide (3 and 6 mg/kg i.p.) successfully decreased the spike percentages and RCS associated with PTZ kindling epilepsy, as well as considerably decreased MDA, TNF- α , and elevated SOD levels in rat brain. Given that liraglutide is currently used to treat type-2 diabetes mellitus and is also being studied in clinical trials for the treatment of Alzheimer's disease, it is reasonable to expect that liraglutide (GLP-1 analogue) will be used as an adjuvant therapy in combination with other antiepileptic drugs in the future.



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DATA MINING MODELS AND APPLICATIONS

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Abstract

Data mining is one of the most up-to-date technologies in today's information age. The fact that computer systems are getting cheaper day by day and their power is increasing enables larger amounts of data to be stored in computers. Therefore, it is of great importance to be able to use techniques that can process large amounts of data. Data mining is the process of discovering patterns and trends hidden in large data sets. In this study, data mining models are examined according to their functions under the headings of Classification, Regression, Clustering and Association Rules and their application areas are explained.

Keywords: Data Mining, Classification, Clustering

1. INTRODUCTION

With the beginning of storing data in digital media, the number of databases is increasing at a similar or even higher rate in today's world where the amount of information in the world is increasing exponentially day by day. As a result of the cheapening of high-capacity processing power, data storage has become easier and the data itself has become cheaper. If the data stored in databases is compared to a mountain, this data mountain is worthless on its own and does not mean much to the user. However, if this data is systematically processed and analyzed for a specific purpose, very valuable information that can answer purpose-oriented questions can be reached in the data pile that is seen as worthless (Özekes, 2003).

Data mining is a multidisciplinary field that acts as a bridge between many technical fields such as database technology, statistics, artificial intelligence, machine learning, pattern recognition and data visualization. Data mining is applied in many branches such as astronomy, biology, finance, marketing, insurance and medicine. The aim of this study is to increase its importance in the world of information technologies day by day (Özekes, 2003).

The aim of this study is to examine the data mining issue and data mining models.

2. MODELS AND APPLICATIONS

Models used in data mining are examined under two main headings as predictive and descriptive.

In predictive models, it is aimed to develop a model based on the data whose results are known, and to estimate the result values for data sets whose results are unknown by using this established model (Zhong and Zhou, 1999). For example, a bank may have all the necessary data regarding the loans it has given in previous periods. In these data, the independent variables are the characteristics of the customer receiving the loan, and the dependent variable is whether the loan is repaid or not. The model established in accordance with these data is

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used to predict whether the loan will be repaid according to the customer characteristics in subsequent loan requests (Özekes, 2003).

In descriptive models, on the other hand, it is provided to identify the patterns in the existing data that can be used to guide decision making (Zhong and Zhou, 1999). It is an example of descriptive models to determine that the purchasing patterns of families with children who have income in the X/Y range and have two or more cars and those with no children and whose income is lower than the X/Y range are similar to each other (Akpınar, 2000).

According to the functions they see data mining models:

- 1- Classification and Regression
- 2- Clustering
- 3- Association Rules

Classification and regression models are predictive models, clustering and association rules models are descriptive models (Akpınar, 2000).

2.1. Classification and Regression

Classification and regression are two data analysis methods that can establish models that reveal important data classes or predict future data trends (Han and Kamber, 2008). While classification predicts categorical values, regression is used to predict continuous values (Han and Kamber, 2008). For example, a classification model might be set up to categorize bank loan applications as being safe or risky, while a regression model might be set up to estimate the expenses incurred by potential customers, given their income and occupation, when purchasing computer products.

The main techniques used in classification and regression models are (Akpınar, 2000):

- 1 - Decision Trees
- 2- Artificial Neural Networks (Artificial Neural Networks)
- 3- Genetic Algorithms (Genetic Algorithms)
- 4- K-Nearest Neighbor (K-Nearest Neighbor)
- 5- Memory Based Reasoning
- 6- Naive-Bayes

Decision trees are the most widely used technique among classification models because they are inexpensive to set up, easy to interpret, easily integrated with database systems, and have good reliability in data mining. Decision tree, as the name suggests, is a predictive technique in a tree view (Berry and Linoff, 1999). With its tree structure, it is the most popular classification technique that can create easily understandable rules and integrates easily with information technology processes.

2.2. Clustering

Clustering is the process of separating data into classes or clusters (Karypis et al., 1999). While the elements in the same set are similar to each other, they are different from the elements of other sets. Clustering is used in many fields such as data mining, statistics, biology and machine learning. In the clustering model, there are no data classes that are in the



classification model (Ramkumar and Swami, 1998). There is no class of data. In the classification model, the classes of the data are known and when a new data arrives, it is estimated from which class this data may be. Whereas, in the clustering model, data that has no classes are clustered in groups. In some applications, the clustering model can act as a preprocessor of the classification model (Ramkumar and Swami, 1998).

There are many clustering algorithms in the literature. The choice of clustering algorithm to be used depends on the data type and purpose. In general, the main clustering methods can be classified as follows (Han and Kamber, 2008):

- 1 - Partitioning methods
- 2- Hierarchical methods
- 3- Density-based methods
- 4- Grid-based methods
- 5- Model-based methods

The best known and most used division methods are k-means method, k-medoids method and their variations (Fayyad, 1998).

The k-means method first selects k objects randomly from n objects, and each of these objects represents the center or midpoint of a cluster. The remaining objects are distributed into clusters according to the cluster center closest to each of them. In other words, an object is placed in the cluster that is closer to the center of the cluster. Then the mean is calculated for each cluster and this calculated value becomes the new center of that cluster. This process continues until all objects are placed in clusters (Han and Kamber, 2008).

2.3. Association Rules

Association rules find association relationships among large datasets (Han and Fu, 1999). As the data collected and stored grows day by day, companies want to reveal the association rules in their databases. Discovering interesting association relationships from large volumes of business transaction records makes the decision-making processes of companies more efficient. The most typical example where association rules are used is the market basket application. This process determines the associations between the products in the purchases made by the customers.

It analyzes the purchasing habits of customers by finding Discovering such associations reveals the knowledge of which products customers buy together, and market managers can develop more effective sales strategies in the light of this information. For example, if a customer buys milk, what is the probability of buying bread alongside the milk in the same purchase? In the light of this type of information, market managers who arrange the shelves can increase the sales rate of their products. For example, if the rate of customers of a market buying bread with milk is high, market managers can increase their bread sales by placing milk and bread racks side by side.

3. CONCLUSION

In this study, data mining models are examined under the headings of Classification and Regression, Clustering and Association Rules, and their usage areas are explained by giving examples. When a data mining application is to be carried out, it is necessary to analyze and



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understand the data and the professional problem that needs to be solved very well. These two factors will significantly affect the success of the data mining application. After understanding the data and problem at hand, the most suitable data mining models and techniques should be selected. It is unthinkable that a data mining application made by choosing an inappropriate technique will be successful.

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SEX DURING PREGNANCY

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Abstract

Statement of the Problem: Sexuality begins before birth and continues throughout life. Sexuality is a concept that encompasses the whole body in addition to the sexual organs. Sexuality is considered as a whole with physical, social and mental aspects and reinforcing love. Psychological, social, economic, historical, religious and spiritual factors are effective in sexuality. Sexuality is the most curious but the most forbidden, the most talked about and not talked about, the most well-known but actually very little known, on the one hand proud and on the other hand the most shameful situation. There are many myths about sexuality. It is women who are most affected by the existing myths. Sexual myths prevent women from learning about their sexual needs and needed information. Disease states affect sexuality during period transitions such as pregnancy, menopause, and puberty. In order for sexuality to continue as healthy and happy, the individual must be functionally healthy. This review was written to determine the effects of pregnancy on sexuality and to indicate the interventions that can be made for this.

Recent findings: Pregnancy is a period of physical and psychological change, and the need for information about sexuality increases during this period. Cultural norms negatively affect women's sexuality. Women avoid sexuality during pregnancy under the influence of cultural norms and religious beliefs inherited from their mothers. Sex during pregnancy changes depending on the week of pregnancy and physical changes during pregnancy. For example, while women feel better due to the change in estrogen and progesterone hormones, sensitivity in the breasts, enlargement of the abdomen, changes in the genitals can cause a decrease in sexual desire, a decrease in sexual frequency, and a decrease in orgasm. It was determined that this decrease increased as the gestational week progressed. Although experiencing orgasm during pregnancy varies in pregnant women, it has been determined that there is a decrease in sexual satisfaction. The physical and mental changes experienced by the pregnant directly affect their sexuality. In the first 3 months of pregnancy, sexual desire varies in women. The increase in pregnancy-related disorders (nausea, fatigue, drowsiness) in the first trimester may cause a decrease in sexual desire. Pregnancy has been accepted in the second trimester and sexual life is normalized as the complaints decrease. In the third trimester, sexual functions regress due to the progression of pregnancy. In women, there is withdrawal from sexual intercourse for reasons such as fear of harming the fetus, lack of libido, seeing oneself as weak sexually, fatigue, weakness, painful coitus. It is reported that in the third trimester, men prefer to stay away from sexual intercourse with the fear of harming the mother and fetus.

Conclusion & Significance: Although sexual activity shows individual differences, it is seen that sexual functions are affected by many factors during pregnancy, the frequency of sexual

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intercourse decreases and the frequency of sexual dysfunction increases. It is seen that sexual dysfunction, which has quite destructive effects on women, but is suppressed by the influence of social, cultural, religious and social factors, cannot be expressed as private, and is not examined much and is not handled in care. It should not be forgotten that untreated sexual problems during pregnancy will increase even more after delivery, and psychiatric support should be sought in necessary cases.

Keywords: Sexual Functions, Pregnancy



KLASİK TÜRK EDEBİYATI VE URDU EDEBİYATINDA MÜŞAİRE GELENEĞİ

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Özet

Klasik Türk edebiyatında çeşitli dönemlerde önemli şirler tarafından farklı nazım şekilleriyle şiirler yazılmıştır. Nazım şekli olarak yazılan şiirlerde gazel başta olmak üzere kasideler ve kıtalar yazılırdı. Gazel nazım şekliyle yazılan şiirler bazen seyirciler karşısında bir yarışma şeklinde olurdu. Gazellerin okunduğu bu yarışmalarda en iyi gazel söyleyen şairler seçilir ve bu şairler birbirleriyle yarışlardı. Gazel söyleyen şairlerin birbirleriyle yarıştıkları şiir şölenine “Müşaire” ismi verilmektedir. Müşaire organizasyonları genelde Nevruz bayramlarında yapılmaktaydı. Müşaire isimli şiir organizasyonları özellikle Türk Cumhuriyetlerinde aşıkların karşılıklı olarak saz söylemesi şeklinde de olmaktadır.

Müşaire isimli şiir yarışmaları, Klasik Türk edebiyatında özellikle Lale devri’nde içeriği biraz daha farklı bir şekilde görülmektedir. Lala devrinde yaşanan eğlenceli ortamda şairler şiirlerini açık alanlarda söylemişlerdir ve bu dönemde özellikle dönemin şairleri müşairelerde kendi şiirlerini seyircilerin önünde okumuşlardır. Bu kültür ve sanat ortamında okunan şiirler günümüzde divan edebiyatı kitaplarında yer almaktadır.

Türk edebiyatında yer alan Müşaire isimli şiir organizasyonları, Pakistan’da günümüzde de görülmektedir. Pakistan’ın resmi dili olan Urduca olarak yazılmış olan şiirler, Urdu edebiyatının en önemli yazılı kaynaklarıdır. Urdu dili, Pakistan’ın 1947 yılında bağımsız bir ülke olmadan önce Hindistan’da yer almaktaydı ve Urduca, Gazneliler Devrinde Gazneli Mahmut zamanında doğmuştur.

Urdu edebiyatı şairleri özellikle Delhi ve Lakhnow döneminde çok sayıda düzenlenen müşairelerde yer almışlardır. Urdu edebiyatının önemli ve meşhur şairleri Mir Taki Mir, Mirza Rafi Sauda ve Mirza Dard müşairelerde şiirler okumuşlardır. Mir Taki Mir özellikle müşairelerde çok sayıda ünlü şiirini okumuştur.

Günümüzde Pakistan’da meşhur şair ve edebiyatçı, müşaire geleneğini sürdürmektedirler. Pakistan’da her ay müşaire günleri yapılmaktadır. Yapılan etkinliklerde bazen meşhur şairler Mir Taki Mir, Mir Dard, Mirza Rafi Sauda, Mirza Galib, Muhammed İkbâl günü düzenlenir ve adı geçen şairlerin meşhur şiirleri çeşitli şairler tarafından okunurken, bazen de şairler kendi şiirlerini okumaktadırlar.

Anahtar: Türk, Urdu, Müşaire



THE TRADITION OF MUSHAIRA IN CLASSICAL TURKISH LITERATURE AND URDU LITERATURE

Abstract

Poems in different verse forms were written by important poets in various periods in classical Turkish literature. In the poems written as verse, especially the ghazal, odes and stanzas were written. Poems written in ghazal verse were sometimes in the form of a competition in front of the audience. In these competitions where ghazals were recited, the best poets who sang ghazals were selected and these poets competed with each other. The poetry feast in which the poets who sing the ghazals compete with each other is called the "Mushaira". Consultant organizations were generally held during the Nevroz festivals. Poetry organizations called Mushaira are also held in the form of mutual singing of the saz, especially in the Turkic Republics.

Poetry competitions named Mushaira are seen in a slightly different way in Classical Turkish literature, especially in the Lale Era. The poets sang their poems in open spaces in the entertaining atmosphere of the Lale period, and in this period, especially the poets of the period recited their poems in front of the audience. The poems read in this culture and art environment are included in the divan literature books today.

Poetry organizations called Mushaira in Turkish literature are still seen in Pakistan today. Poems written in Urdu, the official language of Pakistan, are the most important written sources of Urdu literature. Urdu language was located in India before Pakistan became an independent country in 1947, and Urdu was born in the time of Mahmud of Ghazni in the Ghaznavid Era.

The poets of Urdu literature took part in a large number of mushaira, especially during the Delhi and Lakhnow periods. The important and famous poets of Urdu literature, Mir Taki Mir, Mirza Rafi Sauda and Mirza Dard, read poems at mushaira. Mir Taki Mir has read many of his famous poems, especially in the advisors.

Today, famous poets and writers in Pakistan continue the tradition of mushaira. Consultant days are held every month in Pakistan. During the events, sometimes the famous poets Mir Taki Mir, Mir Dard, Mirza Rafi Sauda, Mirza Galib, Muhammed Iqbal are organized and the famous poems of the mentioned poets are read by various poets, and sometimes the poets recite their own poems.

Keywords: Turkish, Urdu, Mushaira



**THE RELATIONSHIP OF WOMEN'S BIRTH BELIEF WITH DEPRESSION,
ANXIETY, STRESS AND AVOIDING PREGNANCY**

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Abstract

In our study, it was aimed to determine the relationship between women's birth beliefs, depression, anxiety, stress and pregnancy avoidance.

The research is descriptive and was conducted in Turkey between 22 September 2021 and 2 October 2021. Data were collected using a web-based online survey through women's groups on social media. Sexually active women between the ages of 15 and 49 who could read Turkish were included in the study. Our sample consisted of 619 women who agreed to participate in the study. Personal Information Form, Birth Beliefs Scale (BBS), Depression Anxiety Stress Inventory Short Form (DASS-21) and Pregnancy Avoidance Scale (DAP) were used to collect data. Before starting the study, necessary permission was obtained from the Inonu University Health Sciences Non-Interventional Clinical Research Ethics Committee.

In the study, Birth Beliefs Natural Process, Medical Process Sub-dimension, and EAP mean scores were found to be 4.31 ± 0.68 , 3.65 ± 0.69 , DASS-Depression 5.82 ± 3.89 , DASS-Anxiety 5.58 ± 3.50 , DASS-Stress 8.07 ± 3.96 , and DAP 2.16 ± 1.04 , respectively. Birth Beliefs Natural Process, Medical Process Sub-dimension, and GCS mean scores were 4.31 ± 0.68 , 3.65 ± 0.69 , DASS-Depression 5.82 ± 3.89 , DASS-Anxiety 5.58 ± 3.50 , DASS-Stress 8.07 ± 3.96 , and GCS 2.16 ± 1.04 , respectively. When the correlation between EIS sub-dimensions and DASS and DAS is examined, there is a negative correlation between the natural process sub-dimension and DASS-Anxiety, DASS-Stress, and DAS; It was determined that there was a positive relationship with DASS-depression, but this relationship was not statistically significant ($p>0.05$). It was found that there is a positive relationship between the medical process and DASS -Depression, DASS -Anxiety and DASS -Stress and this relationship is statistically significant ($p<0.05$); however, it was determined that there was a positive relationship with GCS, but this relationship was not statistically significant ($p>0.05$).



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It can be said that women with low education level and unemployed see birth as medical, those who see birth naturally have lower anxiety and stress even though it is not statistically significant, and those who perceive birth as a medical process have higher depression, anxiety and stress levels. Although the difference was not significant, it was determined that those who saw birth medically avoided pregnancy more.

Key words: Birth beliefs, Desire to Avoid Pregnancy, Depression, Stress, Anxiety



SİYASET FELSEFESİ ÜZERİNE TARTIŞMALAR: MUHALİF BİR DİL OLARAK SİYASET FELSEFESİNİN GELECEĞİ

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Özet

Akademik çevrelerde son zamanlarda siyaset felsefesinin geçmişi ve geleceği sıklıkla tartışılmaktadır. Bu tartışmalara taraf olan bir kesim, siyaset felsefesinin sonunun geldiğini ilan etmektedir. Yine tartışmaya taraf olan bir kesim ise siyaset felsefesinin gelecekte de kendine akıp gideceği bir mecra, bir yaşam alanı bulacağına inanmakta ve bu görüşü savunmaktadır. Siyaset felsefesinin geleceğine ilişkin bu tartışmalar aslında yeni değildir. Siyaset felsefesinin miadını doldurduğuna ilişkin tartışma 1950'li yıllarda başlamıştır. Bu yıllarda doğa bilimlerinin metotlarının siyasal bilimlerde de kullanılabilceğini savunan Davranışçı ekolün yükselişe geçmesiyle birlikte bu ekolün temsilcileri ve Pozitivist bilime inanan Viyana çevresi “siyaset felsefesinin öldüğünü” ilan etmişlerdir.

Bu ilanın ardından siyaset felsefesi çalışmaları gerilemiş, siyasette etik ve politik konuların araştırılmasından uzaklaşmıştır. Fakat bu durum uzun sürmemiştir. Pozitivizm sonrası ya da Davranışçılık sonrası dönemi haber veren meydan okumalar, siyaset felsefecileri ve çeşitli siyasal ekoller tarafından gündeme getirilmiş ve bu meydan okumalar hızlıca siyaset ve akademik çevrelerde karşılığını bulmuştur.

Bugün siyaset felsefesi üzerine bu tartışmalar yeniden gündeme getirilmektedir. Bir ayrıma gitmek mümkün olmakla birlikte çoğu kaynakta siyaset teorisi olarak da kullanılan siyaset felsefesi siyasetin, siyaset bilimi ve siyaset teorisiyle birlikte üç alt bölümünden birini oluşturmaktadır. Siyaset felsefesinin yöntemi normatiftir. Yani “olan”dan daha çok “olması gereken” üzerinde durur. Siyaset felsefesinin konularını çoğunlukla özgürlük, eşitlik, adalet, hak gibi etik ve politik konular oluşturur.

Günümüzde siyasi ve akademik çevrelerde yoğun bir biçimde tartışılan başlıklardan bir diğeri de dünya genelinde otoriter rejimlerin neden yükselişe geçtiği konusudur. Covid-19 virüsü kaynaklı pandemi sonrası bu rejimlerin ne olacağına ilişkin tartışma da halihazırda yürütülmekle birlikte, bu rejimlerin antidemokratik, popülist, otoriter yönleri çokça vurgulanmaktadır. Hatta bu yönetimlerin bu nitelikleriyle birlikte bu yönetimler dolayısıyla beliren asıl sorun, bu yönetimler altında doğmuş ve başka bir rejimi deneyimleyememiş yeni nesillerin siyaseti bu biçimiyle yani antidemokratik, popülist ve otoriter-totaliter olarak öğrenecekleri endişesidir. İşte bu noktada, ben bu bildiriye, olandan daha çok olması gerekeni inceleyen siyaset felsefesinin yöntemi ve incelediği konularla yeni nesillere siyasetin nasıl olması gerektiğini göstermekle birlikte, otoriter ve totaliter yönetimler altında siyaset felsefesinin bir muhalif dil ve muhalefet aracı olup olmayacağını tartışmaya çalışacağım. Böyle bir tartışma aynı zamanda siyaset felsefesinin geleceğine ilişkin bir araştırmayı da içermektedir.

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Anahtar kelimeler: Siyaset Felsefesi, Popülist, Otoriter

DISCUSSIONS ON POLITICAL PHILOSOPHY: THE FUTURE OF POLITICAL PHILOSOPHY AS AN OPPONENT LANGUAGE

Abstract

The past and future of political philosophy have been frequently discussed in academic circles. A part of these debates declares that the end of political philosophy has come. A part of the debate, on the other hand, believes that political philosophy will find a medium, a living space in which it will flow in the future, and defends this view. These debates about the future of political philosophy are not really new. The debate about the obsolescence of political philosophy began in the 1950s. In these years, with the rise of the Behaviorist school, which argued that the methods of natural sciences could be used in political sciences, the representatives of this school and the Vienna circle, which believed in Positivist science, declared that "political philosophy is dead".

After this announcement, political philosophy studies regressed, and the research of ethics and political issues in politics was avoided. But this situation did not last long. The challenges that heralded the post-positivist or post-behavioral era were brought up by political philosophers and various political schools, and these challenges quickly found their way into politics and academia.

Today, these debates on political philosophy are brought to the agenda again. Although it is possible to make a distinction, political philosophy, which is also used as political theory in most sources, constitutes one of the three sub-sections of politics, together with political science and political theory. The method of political philosophy is normative. In other words, it focuses on "what should be" rather than "what is". The subjects of political philosophy mostly consist of ethical and political issues such as freedom, equality, justice, and rights.

One of the topics that is discussed intensely in political and academic circles today is why authoritarian regimes are on the rise around the world. Although the discussion about what these regimes will be after the pandemic originating from the Covid-19 virus is still being carried out, the antidemocratic, populist and totalitarian aspects of these regimes are emphasized a lot. In fact, with these qualities of these governments, the main problem that arises because of these governments is the concern that the new generations, who were born under these governments and could not experience another regime, will learn politics in this form, that is, as anti-democratic, populist and totalitarian. At this point, in this paper, I will try to discuss whether political philosophy will be a tool of opposition and opposition under authoritarian and totalitarian governments, while showing the new generations how politics should be, with the method of political philosophy, which examines what should be more than what is, and the issues it examines. Such a discussion also includes a study of the future of political philosophy.



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Key words: Political Philosophy, Populist, Authoritarian

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**FLUSHING DIGNITY ALONG FECAL SLUDGE: A CRITIQUE ON INDIAN
LEGAL MODEL AGAINST MANUAL SCAVENGING**

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Abstract

The multifaceted Indian society provides variety in each aspect of its social life. The diversities of the land in ethnicity, language, caste, religion, region and much more crosscut at the Indian milieu. The Indian Constitution, an organic document with political and institutional measures recognises and accommodates the country's diversity, its Preamble assures the dignity of an individual. Fundamental and human rights are recognised (Art.14, 16(2), 17, 19(1)(a), 21). However, the existence of the embedded Caste System in India has led various castes to be exterior and an outsider to the traditional Indian society. These are the castes of Manual Scavengers who prima-facie belong to the Dalit castes and are forced to take up the hereditary occupation of Manual Scavenging, and as a result, face social exclusion. With its predominant presence in India, Manual Scavenging is the most Surviving Symbol of Untouchability; violation of human dignity and not a profession but only a sub-humane occupation, as cited by the ILO. The shackles of the caste system and prejudices make the situation gloomier when scavengers are not allowed with an alternate job even when they desire to opt-out. To a relief the Indian Apex Court in *Safai Karamchari Andolan & Ors v. Union of India* (2013) called this practice as inhumane and has given directions for rehabilitation. The liberation of scavengers requires a relative evaluation of this practice. Secondly, the paper provides the inherent bottlenecks of the Act of 2013 which bans Manual Scavenging; recommends and suggests the methods substituting scavenging with technology and machinery. Media could be a stakeholder, changing people's attitude towards Scavengers, popularizing ideas of Low-cost Sanitation; Sanitation Engineering (technological sanitation); acquainting and motivating people with its utility and acceptability; ultimately leading to liberation of scavengers via rehabilitation and change in livelihoods.

Key Words: Manual Scavenging; Untouchability; Dignity; Low-cost Sanitation; Sanitation Engineering; Liberation of Scavengers



SEKİZ HAFTALIK İNTERVAL ANTRENMANLARIN KADIN FUTBOLCULARIN BAZI FİZYOLOJİK PARAMETLER ÜZERİNE ETKİSİ

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Özet

Bu çalışmanın amacı; elit kadın futbolcularda 8 haftalık yüksek şiddetli interval antrenmanın sporcuların, fiziksel, fizyolojik ve kardiyovasküler değişimlerin belirlenmesi, antrenman performanslarında ve alınacak parametrelerde meydana gelen farklılıkların ne tür etmenlere bağlı olduğunu belirlemektir. Bu çalışmada toplam 30 kadın futbolcu gönüllülük esasına göre yer almıştır. Sporcular her bir grupta 10'ar kişi olacak şekilde üç gruba ayrıldı. Araştırma nicel araştırma türünde ön test- son test kontrol gruplu deneysel tasarıma uygun olarak gerçekleştirildi. Belirlenen amaç doğrultusunda çalışmanın evrenini Türkiye'deki kadın futbolcular oluştururken örneklemini ise; Diyarbakır ilinde Türkiye Futbol Federasyonu Kadınlar 1. Liginde aktif sportif yaşantısını devam ettiren ve yaşları 18 ile 25 arasında değişen toplam 30 kadın futbolcu oluşturdu. Sporculara 8 hafta ve haftada 3 gün olmak üzere ortalama 20 dakikalık egzersiz programı uygulandı. Antrenman programı uygulanan 30 kadın sporcudan 10'u kontrol grubu, 10'u uygulanan antrenman programına göre 30 sn hareket, 30 sn dinlenme, aralığı verilen grup ve kalan 10 sporcu için ise antrenman programına göre 60 sn hareket 60 sn dinlenme aralığı verilen grup oluşturdu. Bu egzersiz protokolünde ise set arası 3 dk dinlenme verildi. Çalışma kapsamında; sporculara ön test, son test modeli uygulandı. Deney gruplarında yer alan futbolculara rutin antrenman planlarına ek olarak 8 hafta boyunca interval kardiyo antrenman modeli uygulandı. Hematolojik değişimler için kan örnekleri alındı. Veriler Windows için spss 22.0 istatistiksel paket programında analiz edildi. Gruplar arası farklılıklar kruskal-wallis testi kullanılarak belirlendi. İstatistiksel anlamlılık düzeyi < 0.05 olarak kabul edildi. Araştırmada alınan kan parametrelerinde insülin, kortizol ve glukoz değerleri arasında sadece glukozda anlamlı farklılık tespit edilmiştir. Sonuç olarak sporculara uygulanan hiit egzersiz protokolü kan parametreleri üzerine olumlu etki yaptığı söylenebilir.

Anahtar Kelimeler: Kadın futbolcular, Hiit Antrenman, Kan parametreleri

THE EFFECT OF EIGHT WEEKS INTERVAL TRAINING ON SOME PHYSIOLOGICAL PARAMETERS OF WOMEN FOOTBALL PLAYERS

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Abstract

The purpose of this study is to evaluate the physical, physiological, and cardiovascular changes caused by 8 weeks of high-intensity interval training in top female football players, as well as what variables influence variations in training performances and parameters to be taken into account. This research included 30 female football players who participated voluntarily. Athletes were separated into three groups of ten persons apiece. The study was conducted as a quantitative study using an experimental design with a pretest-posttest control group. In accordance with the stated goal, the universe of the study is made up of female football players in Turkey, and the sample is made up of 30 female football players between the ages of 18 and 25 who participate in the Turkish Football Federation Women's 1st League in the province of Diyarbakir. The participants were subjected to a 20-minute workout routine three days a week for eight weeks. The training program was applied to 30 female athletes, 10 of whom were the control group, 10 of whom were the group that received 30 seconds of movement, 30 seconds of rest, interval according to the training program, and the remaining 10 athletes were the group that received 60 seconds of movement and 60 seconds of rest according to the training program. Between sets in this workout regimen, 3 minutes of rest was allowed. The athletes were subjected to a scope of work that included pre-test and post-test models. In addition to their regular training routines, the football players in the experimental groups were subjected to an 8-week interval cardio training model. The Kruskal-Wallis h test was used to assess group differences. The statistical significance threshold was set at 0.05. In the blood parameters taken in the study, a significant difference was found between insulin, cortisol and glucose values only in glucose. As a result, it can be said that the hiit exercise protocol applied to the athletes has a positive effect on blood parameters.

Keywords: Female football players, Hiit Training, Blood parameters



SMART CITIES OF INDIA: A MEASURE FOR SUSTAINABLE DEVELOPMENT

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Abstract

In the last few decades, massive unstoppable changes have come in the urban landscape of countries all over the world. Despite being a reluctant urbanizer, India has witnessed wide-reaching changes with mass exodus of the rural populace to the urban spaces. A number of problems have surfaced in the cities due to scarcity of resources impacting the lives of residents adversely. Many problems that have gripped the urban spaces are depleting Air Quality Index (AQI), traffic congestion, insufficient and contaminated water, waste accumulation, rampant corruption, mental and physical stress, etc. The already scarce resources are depleting very fast and hence, is the need to utilize these optimally. The Government of India (GoI) has initiated the Smart Cities' mission and reinforced it in phases to include more and more cities into the ambit of Smart Cities. Such Smart Cities employ new technologies to address pressing needs in multifarious dimensions including social, cultural, economic, environmental etc. Everything is data-driven having no space for speculation and collection of the real-time data from these urban spaces is instrumental in suggestions and recommendations for creating more sustainable cities. So, application of ICT-enabled solutions, Artificial Intelligence (AI), Big Data, Internet of Things (IoT), use of wireless networks in delivery mechanisms and services is a major task before the urban planners to rejuvenate the cities to make cities truly 'smart'. Green building industry, retrofitting of existing buildings, waste and energy management, use of smart technology in smooth urban mobility and transport, healthcare management, physical safety and secure neighbourhood, affordable housing, parking facilities, e-governance and so on are measures to make cities 'smart' in India facilitating a better version of the cities by making them environmentally more sustainable, a step towards embracing our duty to facilitate sustainability in the world at large.

Keywords: Smart City, Smart City Mission, Sustainable Development, Green Buildings

INTRODUCTION

Today, more than 55% of the world's population (42 billion) lives in cities, which is projected to increase to 66% by 2050 (United Nations, 2015). This means, approximately 7 out of 10 people on the planet will live in cities (WHO, 2020). The modern and universal process of urbanisation can be directly linked to the industrial revolution and concomitant economic development in the cities of the world (Gupta & Hall, 2020). Cities are the power engines of any country's economic development, accounting for more than 80% of world's GDP generated in cities. The Industrial Revolution in the United Kingdom (UK) began in the 17th

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century. Then after, urban areas of developed countries had seen a high degree of urbanization. On the other hand, cities of developing nations have experienced urbanisation since the middle of the 20th century. So far it has been observed that urbanization is an inevitable and universal phenomenon. Overcrowding, traffic, and a lack of urban services are all problems that might arise as a result of rapid urbanisation. To solve these issues, a growing number of towns are looking into the idea of a Smart City (SC).

In the early 2000s, e-governance initiatives and partnership between different companies and governments of USA and Europe gave birth to the smart city concept (Coe et al., 2001). But the concept of a " Smart City" (SC) has gained popularity in recent years, with experts all over the world claiming that SCs provide viable answers to current urban difficulties brought on by increasing urbanisation. In literature, one can find many definitions for “smart cities” (Albino et al., 2015). As per Caragliu et al. (2011) –“A city is smart when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance”. SCs makes optimum use of smart technologies including Artificial Intelligence (AI) and the Internet of Things (IoT) in services rendered by the city and makes the infrastructure more intelligent enabling it to address urban concerns effectively.

Smart Cities also have promising solutions for various environmental problems as well. For example, they have a critical role in combating climate change, adopting new technologies in order to reduce greenhouse gases and overall increasing cities energy efficiency. High sustainability and smart checks to curb the carbon footprints derived from a city weigh heavily in determining the efficiency and ‘smart’-ness of a city (Somayya, et. al., 2014). The smart city targets are inter-connected with sustainability goals and they often share similar targets. The concept of smart city promotes the idea of environmental sustainability by mitigating the impact of climate change by implementing new and innovative technology in urban areas that need a significant investment. To support this idea, both developed and developing countries are enthusiastic about the notion, launching and investing significant capital for the projects.

Almost 250 smart city projects are going on in 178 cities of the world (Yigitcanlar et al., 2018), with worldwide smart city market was estimated at \$1.565 trillion in 2020 and expected to reach approximately \$2.5 trillion by 2026 (Glasmeier, & Christopherson, 2015). Out of 178 cities, 100 cities are from India.

The paper is exploratory in nature taking data from the secondary resources to analyse how sustainability is interwoven into the growth of Indian Smart Cities and how it needs to be further emphasised to have better results.

SMART CITY MISSION OF INDIA

The shifting of the Indian population from rural to urban society is one of the major demographic shifts of the world, and poses a major societal challenge. Because of the enormous population load, Indian cities are currently facing various challenges, including a lack of financial, technological, and governance capacity to accommodate all urban people in an equitable and prosperous manner (Hoelscher, 2016). The shifting emphasis from villages

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to cities serves as a setting for urban development efforts in India. Initially, the Indian Constitution gave the responsibility for urban development to the states. Only a few states were able to take substantial measures towards the city's growth. This is the reason why the centre has helped in accelerating the development of the cities. For example, in 1978, the Government of India (GoI) introduced Integrated Development of Small and Medium Towns (IDSMT) scheme (Aijaz and Hoelscher 2015). Now, the most recent manifestation of urban development initiatives is "smart cities". In India, the term "smart city" initially appeared in the late 2000s, establishing a relationship between the available infrastructure and Information and Communication Technology (ICT) (Hoelscher, 2016). Later, in 2015, the Indian government linked "smart cities" to India's urban policy goal at national level under "Smart City Mission" (Höffken and Limmer 2019).

India's Smart Cities Mission was introduced by the Ministry of Housing and Urban Affairs (MoHUA), Government of India on 25 June 2015, with the primary goal of encouraging cities to offer basic infrastructure, a good quality life, clean and sustainable environment for their residents by implementing 'smart solutions'. The mission covered 100 cities from all over India for the duration of five-year, from 2015-16 to 2019-20 with a budget of Rs. 48,000 crore (US\$ 7.4 billion). The state and local governments are anticipated to pay an equal amount. As per the mission guidelines, the whole process, from the development of smart city concepts and plans through their execution, would be inclusive, participative, and transparent (MoUD, 2015a).

The establishment of Smart Cities in India involves three main approaches (MoUD, 2015b):

1. Core urban infrastructure elements for smart cities: These core components involve physical and social infrastructure services such as continuous electricity supply, proper potable water supply, appropriate solid waste management system, better transportation system, good governance, safety and security of all citizens, good education system, high standard of living, affordable housing for all, better hospital facilities etc. Essential ingredient of Smart living is smooth mobility and ease of commuting.

2. Smart core infrastructure solutions based on ICT: Smart infrastructure can be defined as the 'cyber-physical system' integrating all elements and the use of modern technology (ICT) in order to apply smart solutions to enhance the effectiveness of core infrastructures with comparatively minimal expenditures. Smart Cities make use of Internet of Things (IoT) to compile and analyze data, newer research in intelligent technologies like Artificial Intelligence and synergies between technologies for making services more value-added, efficient, sustainable, productive and safe. Various **technological tools are used** to enhance the quality of life of the residents and used for making the infrastructure robust. ICT presence is ubiquitous and immense data collected every minute due to wireless connectivity and use of smart devices can play a pivotal role in sustainability offering smart solutions to the issues posed by rapid urbanization. Dense environment, like that of the cities, requires its sub-systems (transportation, energy, education, healthcare, buildings, physical infrastructure and public safety) to work as one system with intelligence being infused into each subsystem (Gurdgiev & Keeling, 2010).

3. Development based on Area: The cities are expected to attain the aim of holistic development by the addition of different layers of smartness. To meet goals and demands of

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local people, urban planners should strive to build the complete urban infrastructure, which is represented by the four pillars of comprehensive development- social, institutional, physical, and economic infrastructure. (MoUD, 2015a).

These components include improvement and redevelopment of cities (retrofitting or renewing) as well as city extension (Greenfield development) by applying modern technology solutions (ICT) to the present urban areas in order to convert them into better-planned human settlements and thus improve the infrastructure and services of the entire city.

Social Infrastructure: The components strive to develop human and social capital such as healthcare, education, housing, and so on. In addition, the city should encourage inclusion of the vulnerable segments of society.

Institutional Infrastructure: Institutional Infrastructure deals with the governance of any city. It aspires to produce strong governance, particularly e-government, planning, management and public involvement by incorporating modern technology (ICT) into the system. The most crucial component is to encourage local skill development and to include it into local urban development decision making.

Physical Infrastructure: Physical Infrastructure involves building a cost effective and efficient infrastructure such as commercial & residential buildings, water supply and sewerage system, transportation system, solid waste management system, the energy system, sanitation facilities, drainage system, etc. These facilities are integrated through the use of modern technology.

Smart Cities focus on Green Standards to create a sustainable building industry and promote the techniques of the Green Buildings (GB) intelligently planned to optimise environmental benefits in the real estate to make it more liveable. Green and sustainable development is one that uses less water, optimises energy usage, conserves natural resources, creates less waste and provides inhabitants with a healthier space. Taking advantage of renewable energy is also stressed (Kaur, H. et. al., 2021). The essential ingredients of GB incorporate optimum water consumption, reduce and reuse of water, rainwater harvesting, shifting to solar and electric energy and employing other non-renewable sources for a visible cost-benefit effect. GB proposes structural infrastructural changes for daylight saving, increasing air-flow through proper cross ventilation, waste reduction and management, aesthetic environs with liveable, healthier and eco-friendly environments etc. Overall, the aim of GBs is to ensure material efficiency by use of eco-friendly material and proper reuse of materials for ensuring indoor comforts, energy efficiency by ensuring proper air flow through well-planned ventilation systems and using alternative sources of energy like solar power panels, waste materials' generated energy etc., design efficiency in new buildings and changes in previous construction, water efficiency by water management, green efficiency by toxic and waste reduction, pollution control, etc.

Retrofitting and remodelling is done in the old buildings to make it more sustainable by making changes in older fixtures, replacing leaking pipes, eco-friendly paints, LED bulbs, water treatment plants, landscaping and vertical gardens etc.



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Economic Infrastructure: To establish job possibilities and enhance economic infrastructure, smart cities must identify their key competencies, advantages, and potential to produce economic activity that benefit both the local residents and the migrant populations. This will be accomplished by knowing the city's GDP and how the local market may be expedited by promoting employment opportunities among the inhabitants.

CRITERIA FOR SMART CITIES SELECTION

The Indian Government has not adopted any specific model for the selection of smart cities in India. The emphasis is on developing a smart approach for the city based on the local framework and available resources. Cities vying for the selection must create its unique Smart City Proposal (SCP) that will be based on the city's individual demands. SCP mainly focuses upon the urban infrastructure services (like electricity supply, water supply, sewage management, transportation system etc.) required for the city (MoUD, 2015a).

Cities competing with each other to become a smart city is known as “city challenge”. The process of “city challenge” is actually divided into two stages; intra-state level selection and national level selection of cities. In the intra-state level, all the states will compete based on the pre-established parameters and scoring criteria provided by the Government. The potential cities having the best scores will be shortlisted and moved to participate in the next stage. In the next round, these selected cities have to produce SCP based on local requirements of the city. SCP is intended to encompass the selected model, whether redevelopment, retrofitting, greenfield development, or a combination of these, as well as a pan-city dimension with smart solutions. A board comprised of international and national professionals, organisations, and institutions evaluates all SCP received to MoUD and finally selected cities start taking steps to make their cities smart and those that were not chosen will begin working on upgrading their SCPs in order to be considered in the second round (MoUD, 2015a).

In India, till now, 98 cities have been nominated for the national smart cities initiative, based on state-level competition. In January 2016, 20 smart cities were chosen in Round 1 of the All-India Competition. Later, in May 2016, 13 additional smart cities were selected in the fast-track round. In the second round, 27 smart cities were chosen in September 2016. In round 3, among 45 potential smart cities competed, 30 smart cities were selected in June 2017. In the next round, 9 smart cities have been selected from the 15 potential smart cities in January 2018 (MoUD, 2021).

SUSTAINABLE DEVELOPMENT AND SMART CITY MISSION

The primary objective of a smart city is to make itself “more smarter,” efficient, equitable, liveable and more sustainable (NRDC, 2012). The perception of urban smartness is well linked with the envirocentric concept of sustainable urban development. At present, 'Sustainable Smart Cities (SSC)' is still a new idea, and 'Environmentally Sustainable Smart Cities (ESSC)' has yet to emerge. Sustainable Cities International looked into the "Indicators of Sustainability" to see how cities track and evaluate their progress as smart cities (Sustainable Cities International, 2012). The study included 32 sustainability indicators grouped into three categories: social (7), economic (12), and environmental (13) components. However, UN DESA - United Nations Department of Economic and Social Affairs (2007) has defined 50 indicators for Sustainable Development, whereas BIS and MoUD have identified

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93 and 67 indicators for Smart City Mission, respectively (Randhawa and Kumar, 2017). Each indicator is further divided into different themes. These themes are further dispersed throughout the sustainability dimensions of Environmental, Economic, and Social, in order to assess the cities in terms of sustainability under Smart Cities Mission.

Environmental Dimension: The primary focus of Sustainable Development is the protection and conservation of our natural environment, as evidenced by the fact that the development takes a holistic approach. In the environmental dimension, energy indicators are primarily concerned with the use of renewable energy. It also examines the consequences on air, land, and water quality on humans in the urban areas. Environmental consequences may differ depending on energy generation and its consumption techniques, transformation processes, regulatory measures, and pricing systems (Vera, Langlois, Rogner, Jalal, & Toth, 2005). BIS and the MoUD indicators primarily examine the influence of ongoing developments on the natural environment. While, the atmospheric theme under environmental dimension is concerned with the high degree of air and noise pollution in metropolitan areas.

Economic Dimension: The economic dimension of sustainability is concerned about the economic and technological activities at local as well as at international level. The major indicators of economic dimension are GDP contribution by different sectors, jobs creation, market growth etc. GDP contribution by the tourism sector is also a unique indicator but ignored by the Indian standards. The MoUD indicators do not pay much attention to the economic dimension. On the other hand, BIS indicators are entirely focused on the city's economy and financial growth.

Social Dimension: All the developmental activities directly or indirectly linked with the social dimension with primary focus to improve and maintain social quality of human beings. Social dimension can be directly linked with issues like education, poverty and human health. Governance theme ensures transparency and local public involvement in all urban developmental projects at the local level. Both the BIS and MoUD have introduced various themes under social dimension such as housing schemes for weaker class urban citizens, safety for women and children, improving the status of various minor communities and better surveillance systems.

The aim of sustainable development is to improve social and economic conditions along with the environment and promote equality; as a result, the economic, social, and environmental systems are all interdependent (Diesendorf, 2000). On the basis of the above three dimensions, Randhawa and Kumar, 2017 did a comparative analysis and found that India's smart city mission integrates all three dimensions and promotes the quality of life in urban settlements in terms of economic, physical and social development using new modern technology. However, study suggested that the environmental dimension is still lacking in the mission and environmental indicators were given less attention (Randhawa and Kumar, 2017). Therefore, the mission's strategy is consistent with sustainable development; however, it still fails to attain full sustainability.

CONCLUSION

From the last few decades, continuous increase in the urban population of India creates various environmental externalities due to rapid urbanisation, industrialization, scarcity of

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urban resources, increasing number of vehicles, which ultimately leads to traffic congestion, air and noise pollution problems. These problems have raised severe concerns about our long-term well-being and even our survival. Understanding the fact that immediate actions are required to tackle environmental externalities in a responsible, effective, and efficient manner is very important. To curb these problems in a sustainable way, the Indian government introduced the smart city concept to solve the aforementioned challenges by developing new, innovative and smart methods to handle the complexity of urban living and apply multidisciplinary solutions.

Smart city mission in India was launched in 2015 to provide a clean and sustainable environment to the citizens of urban areas. Smart city mission follows different approaches, which involve development of core urban infrastructure with the use of modern technology (ICT). The Smart Cities Mission aims to attain sustainability in its approach with primary attention to address social and economic improvement and to provide advanced infrastructure services in order to make cities more liveable and compact.

In the Indian scenario, the challenges are considerably high due to huge investment and large-scale infrastructural changes but the cost, if seen in terms of long-term gains, is truly worthwhile. Avinash Shivajirao Pawar says, “We must think boldly and broadly about energy efficiency, conservation, and smart growth. Sustainability of growth – not mere growth – is the goal of both the smart company and the smart city. While, clearly, this is true for reasons related to the wellbeing of our environment, it is equally true for reasons related to the competitive arena of the business world. Beyond the obvious importance of safeguarding our environment and health, high performance green building will also benefit India’s economy” (Avinash Shivajirao Pawar, 2012). ‘Green construction is an answer to the mistakes humans made in the past. Apart from the innumerable environmental benefits, the green buildings offer plenty of financial incentives to builders and the occupants. They are cost-efficient in a number of ways and levels. The optimized performance over time in green buildings influences lowered life-cycle and the operation and maintenance costs’ (<https://timesofindia.indiatimes.com/readersblog/live-better/green-building-where-future-lives-3090/>). Green buildings comprise a major component of futuristic planning in smart cities to make them more sustainable, liveable and economical.

However, the mission still requires major attention over environmental aspects, which is again vital for the city's sustainable growth. However, the smart city concept lacks global standards and differs from country to country.

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NEXUS BETWEEN RULE OF LAW, FDI, HIGH-TECH EXPORTS, EDUCATION & INNOVATION

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Abstract

This paper empirically examines G20 nations using a data set for the period 1997-2015 by a panel threshold model. Innovation is represented by an R&D variable to analyze and study empirically. Moreover, the rule of law, educations are defined as endogenous proxies where FDI, high-tech exports, and GDP per capita are defined as economic variables. According to the analysis results, in the first regimen where the FDI level is low, the increase in FDI has a positive effect on R&D. FDI increase above this level has a negative effect on R&D.

Keywords: Innovation, Rule of Law, Social Dimensions of Innovation, R&D, Panel Threshold, FDI, G20 Countries

I. Introduction

Innovation is related to economic as well as non-economic factors (Burns et al., 2015). Additionally, the different influences on innovation vary in importance from country to country and from one time period to another. Because innovation is path-dependent to regional endogenous as well as global economic factors. However, the earlier economists neglected the flow of new knowledge outside the framework of economic models (Freeman & Soete, 2017). Endogenous growth theories explain the local economic and non-economic factors (Padgett & Powell, 2012; Romer, 2008), where eclectic theory explains the country-specific non-economic factors of Foreign Direct Investment (FDI) depending on ownership, location, and internalization advantages (Buckley & Casson, 2001; Hill et al., 1990). Consequently, there are still research areas at the intersection set of intangible and tangible dimensions of innovation economics between country-specific context (Beladi et al., 2016; Cheng et al., 2019; Erdogan & Unver, 2015; Kayalvizhi & Thenmozhi, 2018; Rogers, 1983).

Innovation or spillover of knowledge in macro terms may be mediated by trade openness, patent rights, human capital, financial development, and FDI penetration (Iršová & Havránek, 2013). There is an economic correlation between innovation and FDI that fast rates of investment favor the diffusion of innovations (Antonelli, 2008). Eventually, high levels of

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investments can help introduce new technologies, when an appropriate institutional system of interaction between the academic community, public research centers, and the business community is in place. However, according to eclectic theory economic growth turns on the point that capital investments include the selection of the proper social context (Buckley & Casson, 2001; Rosenberg, 2008). Unlike the existing studies, this paper examines whether existing FDI thresholds may affect the spillover effects on innovation in most developed countries.

Endogenous growth theory (or economic theory of endogenous growth) says that there is a need for the state to invest in knowledge-related assets as well as monetary capital (Grillo & Nanetti, 2016). As such, different levels of investment in social systems by reinforcing the rule of law (Andreopoulos et al., 2018) and human capital— through training and education — help explain the innovation over time. Concerning the endogenous economic growth theory divergence not only occurs between country groups but also divergence may occur within a group of countries (Lucas, 1988; Xie, 1994).

FDI can make meaningful contributions to the innovation level of countries. Due to the nature of macroeconomics, the nonlinear structure of the relations between the series has been tried to be revealed with the threshold methodology in this study. Unlike the present studies, in this study, it is examined whether there exist FDI thresholds, which may be affected by endogenous structures in Group 20 (G20) countries. G20, which consists of 19 countries and the European Union Commission, which are among the largest economies in the world, constitutes two-thirds of the world's population and produces 70% of the world's product, according to the World Bank data, as an average of 1995-2015. In addition, the G20 countries, as countries with high R&D levels, have 60% of world exports, 61% of imports, and 55% of foreign direct investments (inflow) in the same period (European Commission data is not included in the calculation to avoid recalculation). In this context, G20 countries lead innovation with their high R&D potential, considering their economic and social data. However, an important issue here is to determine what the driving force of innovation is for these countries.

This paper contributes in three ways to literature. First, the non-linear relationship between FDI and innovation is studied with the heterogeneous panel threshold method for the first time. This method takes heterogeneity into account and examines the non-linear effect of FDI flows on R&D (Research & Development). Second, depending on empirical results; the paper tested whether the value of each endogenous variable depends on the value of the exogenous variable (FDI). Third, this study contributes to the determinants of innovation, including endogenous structural factors in our empirical specification. In doing so, this study has helped the new endogenous growth literature to explain differences in social standards and human capital between nations can influence long-term innovation by, for example, encouraging education, training, capital formation, and R&D. Moreover, this paper is one of the first studies that investigate the non-linear relation between FDI (external factor) and context bounded innovation.

II. Data

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In our study, R&D expenditures and FDI relationships for G20 countries are analyzed from 1997 to 2015. 0, four out of the G20 countries are excluded from the analysis. Countries included in the analysis, Argentina, Australia, Canada, China, France, Germany, India, Italy, Japan, Mexico, Russia, Saudi Arabia, Korea, Turkey, United Kingdom, and the United States. In the study, Brazil, Indonesia, South Africa, and European Union were excluded from the analysis. First of all, R&D data for Brazil, Indonesia, and South Africa, which is the focus of our study, is not available for the period 1995-2015 (especially the early years). On the other hand, since data are not available for all European Union countries, there are serious deficiencies in the data set. On the other hand, the inclusion of important countries of the European Union such as Germany, Italy, and France in the analysis on a country basis also prevents the European Union from being included in the analysis as a single country. All data were obtained from the World Bank database. Our variables in the study are as follows:

Research & Development (R&D) is the representative of innovation, which is gross domestic expenditures on basic research, applied research, and experimental development, expressed as a percent of GDP, in the Business and public environment.

Foreign direct investment (FDI) occurs when a corporation in one country establishes a business operation in another country, by setting up a new wholly-owned affiliate, acquiring a local company, or forming a joint venture in the host economy (Moran, 2012). Ownership of 10% or more of the ordinary share of the voting stock is the criterion for determining the existence of a direct investment relationship.

GDP per capita is gross domestic product divided by midyear population.

Rule of Law is perceptions of the extent to which agents have confidence in and abide by society's rules (Haggard & Tiede, 2011).

School enrollment (tertiary): Enrolment rates in tertiary education are expressed as net enrolment rates, which are calculated by dividing the number of students of any age enrolled in these levels of education by the size of the population of that age (OECD.org, 2018). Tertiary education is generally considered higher education.

Medium and hi-tech exports (% manufactured exports) are the share of medium and hi-tech manufactured exports in total manufactured exports. The descriptive statistics are in Table 1.

Table 1: Descriptive Statistics

Variables	Long Definitions	Mean	Std. Dev.	Min	Max
R&D	Research & Development	1.597	0.9128	0.287	4.288
FDI	Foreign direct investment	4.93E+10	7.55E+10	-2.51E+10	5.09E+11
gdppc	Gross Domestic Product per capita	25532.31	17891.02	670.61	55017.25
law	Rule of Law	68.28	25.308	16.584	96.287
schen	School enrollment (tertiary):	103.518	4.976	92.253	121.085
mhtech	Medium and hi-tech exports	54.844	18.59	17.132	85.388

Table 1 shows that the average R&D expenditure is 1.5%, the average FDI is \$ 49 billion, the average per capita output series is \$ 25 thousand, and the Rule of Law series is 68 (highest 100 is the lowest 0), the average of the schen (education) is 103, and the share of



technological exports in total exports is 54. Country-based descriptive statistics are in the appendix. When the average values of the data are considered, the USA has the highest average for per-capita output, and India has the lowest average. The countries with the lowest and highest averages for R&D expenditures are Mexico and Japan, relatively. The rule of law series, FDI series, mhtech series, and schen for the lowest and highest average countries respectively; Australia-Russia, Japan-UK; India-Japan and Canada-Argentina. The average, standard deviation, and the highest and lowest values for the other series are shown in the table in the appendix.

III. Empirical Evidence

Our study will investigate the relationship between R&D expenditures and foreign direct investments with the non-linear panel OLS method. Analysis of the stationarity of the series is important. As mentioned, it is necessary to examine the dependence of the cross-section dependence in investigating the stationarity of the series. Table 2 shows the cross-section dependence of the series in the appendix. When the results are examined, it is seen that the rule of law, and school enrollment rate series do not have cross-section dependence, and other series have cross-sectional dependence.

Table 3 shows the Pesaran CADF test results for series with cross-sectional dependence in the appendix. In Table 3, it is seen that test statistics with up to five lags for both the intercept and intercept & trend models for the R&D, FDI, lgdppc, and lmhtech series. According to the results, the basic hypothesis that the series is not stationary cannot be rejected, and it is decided that the difference of variables is stationary. Since the rule of law and lschen do not have cross-sectional dependence, the stationarity of these series is investigated by LLC, IPS, and Hadri tests. In Table 4, it can be seen LLC, IPS, and Hadri Panel unit root test results in the appendix. According to the test results of Table 4, according to LLC and IPS test results, the llaw series is stationary, and according to the Hadri test series is not stationary. The lschen series is stationary according to the LLC test results, while it is not stationary according to the IPS and Hadri test results. Results show that the llaw series is stationary for the two-unit root test, and lschen is not stationary that for the two-unit root test. It is decided that the first difference of lschen is stationary, whereas the llaw series is stationary. Table 5 shows the analysis results of the existence of the panel threshold effect up to three thresholds in the appendix. According to the test results, the basic hypothesis that there is no threshold effect at a 5% significance level is rejected and determined that there is a threshold value.

On the other hand, the basic hypotheses suggesting that there are no two and three threshold values that cannot be rejected. As a result, it is decided that there is a non-linear relationship between innovation and foreign direct investments. In the appendix, the panel threshold test results are seen in Table 6. According to test results in the first regime, where foreign direct investment inflows (% of GDP) are below 2.8% (lower regime), it has a positive effect on R&D expenditures. In the second regime, where direct investment inflows (% of GDP) are over 2.8% (higher regime), the increase in foreign direct investments has a mitigating effect on R&D expenditures. As a result, in the analysis where foreign direct investment is a regime variable, the relationship between foreign direct investments and R&D expenditures is in the form of reverse U.



The rule of law influences the institutional environment for innovation. Rosenbusch et al. (2019) found that the rule of law encourages innovation offshoring, which translates to improved innovation. The authors explored the relationship between innovation and rule of law in the context of institutional arbitrage and institutions that facilitate reverse knowledge transfer for activities related to knowledge transfer. The research found that innovation offshoring has a positive relationship with innovation growth, and the relationship is moderated by institutional environments such as the rule of law. Thus, we can conclude that G20 countries benefit from high innovation performance caused by strong innovation systems at home. Using the findings by Rusenbusch and colleagues, we assert that an environment of rule of law guarantees the protection of intellectual property rights that spur innovation.

When the control variables are examined, there is no statistically significant effect of the rule of law, and the middle-high tech export variable on R&D. Increases in the GDP per capita expenditures decrease R&D expenditures while increasing the education level increases R&D expenditures.

IV. Conclusion & Implications

The main aim of this paper is to forecast the scope of a change in the R&D levels of the model (proxy of innovation) in response to a change in rule of law, GDP per capita, education, and hi-tech exports and FDI variables in the period between 1997 and 2015 within G20 countries. At the same time, eclectic theory supports that those endogenous variables are context bounded.

An innovation indicator, the ratio of R&D expenditures to output, and the ratio of direct investments to US \$ for foreign direct investments are preferred for economic analyses. Adherence to the legal rules, which has been one of the institutional factors on the agenda recently, has been included in the analysis as the control variable. Other control variables are per-capita income, education, and medium-high technology exports figures.

When linear methods analyze the effects of FDIs on innovation, this relationship is generally meaningless or negative (Arun & Yıldırım, 2017). So, in our study, it was tried to address the innovation capacity of countries in the face of increasing foreign investments' threshold effects.

Threshold Point for FDI

According to test results, 2.8% FDI (% of GDP) is the threshold point of the reverse U shape at which positive effects turn to negative on innovation. More clearly, FDI positively affects innovation to a threshold point of 2.82%. after that point effect of FDI becomes negative. These results support the eclectic theory that FDI uses the advantages within the host country that increasing innovation after the threshold level of FDI will attract more FDI. So, we confirmed eclectic theory empirically. However, this threshold level can be distinctive for each country. So more empirical research is needed for distinct business environments and countries.

Interestingly, economic concerns are going in front of a suitable environment at the country level, and high-tech exports do not significantly affect innovation. The only GDP per capita is affecting innovation, and the increase of this variable may mean a more skilled and high-paid



workforce is developing. It would be interesting to provide additional evidence from other endogenous variables to show effects on innovation.

Implications

The study implies that countries should be patient about seeing the effects of FDI. For the structural variables, the only GDP per capita and education are significant, and FDI is related non-linear to innovation. GDP per capita positively and education level negatively affect innovation. On the other hand, despite some authors (Albuquerque, 2003), high-tech exports and the rule of law variables are not significant. So, not all the structural factors in the host countries, as eclectic and endogenous theories predicting, affect the FDI.

FDI inputs are the most effective and easy way for countries to increase R&D and innovation, which is an important determinant of competitiveness. FDI inflow can positively influence the host nations by increasing the innovation and R&D capacity of the regional companies and promoting their products and technology. However, qualified human capital can be attracted by foreign-owned firms, thus starving the local economy of good-quality resources, which is one of the negative effects usually is conditioned on several factors (Apostolov, 2016; Gorodnichenko et al., 2014). In this context, increasing FDI inputs is important for countries as both an effective way of increasing innovative capacity and a source of quality and sustainable financing for current account deficit financing. At the same time, empirical practices regarding this situation, which are considered theoretically, show that FDI may not have positive effects on the level of innovation and the current account deficit of countries.

As it is found out that education is negatively affecting innovation because, contrary to the basic human capital, the important competencies are those who, even though not specific to a particular company, can confer greater value to one company area than to another, e.g., intrapreneurs. Exclusive knowledge can improve production or innovation. Examples of such capabilities are identified in specific know-how that adds value to the techniques used by competitors. This highly valuable human capital has irreplaceable technical skills and essential expertise that bring a high added value not only to the processes but also to the innovation process. These skills are held by employees who possess essential qualities that give the product or process characteristics that are difficult to obtain. Innovation role involves a high degree of formal education, as individuals are required to solve problems through specific scientific or industry application training. According to the theory of the modern imaginative class, the development of the creative economy should be supported to support the functions that super creators and creators cannot perform (Naylor & Florida, 2003). It is essential to recall new national or international technical profiles to increase the scientific use of products, promote the introduction of modern technology, or improves the technology already on the market. In particular, the search for human capital, that of the super creative class, that of exclusive competence, becomes potentially strategic for innovative development. The human capital must then be brought together in a convenient environment. So, the considerably educated superclass may leave their nation for more fitting environments with the ease of FDI. As a result, education negatively affects innovation in the country's origin because highly educated human capital seems to leave more developed countries.



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Appendix

Appendix 1: Descriptive Statistics (Country Based)

Countries	MEAN						STD.ERROR					
	mhtec h	gdppc	law	lschen	fdidp	rndex p	mhtec h	gdppc	law	lschen	fdigd p	rndex p
Argentina	38.805	9142.649	34.14	115.45	2.522	0.492	6.531	1210.406	9.208	3.495	1.573	0.086
Australia	29.855	48846.98	95.32	103.25	3.097	1.979	8.655	4467.003	0.369	2.353	2.096	0.304
Canada	58.623	46220.57	95.04	107.81	3.444	1.845	2.379	3191.633	0.367	1.364	2.185	0.122
China	53.555	3449.657	7	4	3.579	1.362	7.222	1626.812	2.598	4.710	0.692	0.458
France	65.833	39776.84	89.29	102.58	2.185	2.140	1.005	1845.146	1.409	1.709	1.040	0.078
Germany	72.414	40496.04	94.13	103.30	2.315	2.549	0.810	3022.198	0.608	1.170	2.623	0.225
India	24.558	1102.696	55.80	103.73	1.476	0.765	4.354	336.434	3.544	6.975	0.807	0.063
Italy	53.824	35854.05	69.04	101.78	1.048	1.136	0.613	1445.371	5.310	0.987	0.857	0.118
Japan	81.778	43917.86	87.46	105.70	0.185	3.130	2.460	1807.629	1.643	1.334	0.148	0.182
Mexico	76.645	9052.552	37.39	102.61	2.669	0.426	1.858	362.603	3.375	1.455	0.609	0.082
Russia	29.653	9087.394	22.18	102.78	2.175	1.096	5.585	2198.955	2.933	6.325	1.164	0.089
Saudi Arabia	44.420	6703.372	57.21	102.78	1.643	0.759	4.803	725.092	1.846	4.562	1.369	0.088
Korea	72.741	19132.04	78.10	100.56	1.081	2.998	2.824	3740.030	1.764	1.860	0.455	0.757
Turkey	37.868	10059.46	53.73	102.96	1.435	0.637	5.665	1922.595	2.682	2.301	0.966	0.164
United Kingdom	66.892	38244.93	94.64	103.43	4.265	1.621	3.082	2573.594	0.655	2.653	2.957	0.044
United States	70.047	47429.78	92.41	101.17	1.844	2.633	5.267	2905.743	1.144	1.281	0.671	0.109
Countries	MINIMUM						MAXIMUM					
	mhtec h	gdppc	lawt	lschen	fdigd p	rndex p	mhtec h	gdppc	law	lschen	fdigd p	rndex p
Argentina	28.322	6816.730	19.95	108.26	0.806	0.389	49.67	10780.00	52.25	119.44	8.461	0.639
Australia	17.132	40151.80	94.71	100.31	-	3.623	41.31	55017.20	96.28	106.56	7.012	2.401
Canada	54.483	38968.00	94.25	102.80	0.141	1.619	63.06	50303.80	95.50	102.80	9.202	2.028
China	37.153	0	8	96.987	2.192	0.639	60.52	0	40.75	118.94	4.600	2.056
France	64.295	1443.770	7	99.203	0.204	2.020	67.78	6496.620	8	8	3.879	2.278
Germany	70.876	35122.70	85.39	104.90	-	0.725	74.10	41642.30	91.46	104.90	8	2.917
India	18.030	35560.20	93.12	101.45	0.479	0.624	6	45412.60	95.21	105.21	3.657	0.867
Italy	52.133	33616.00	62.44	99.765	-	0.983	54.93	38236.80	77.57	103.62	2.995	1.343

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Japan	78.094	41098.00	83.91	-	85.38	47163.50	90.14	101.83				
		0	1	97.771	0.053	2.770	8	0	4	9	0.489	3.401
			29.80	103.25			80.07		43.06	108.20		
Mexico	72.243	8296.170	8	9	1.474	0.288	4	9715.680	9	5	3.972	0.537
			16.58				38.44	11803.70	26.52	121.08		
Russia	21.679	5505.630	4	95.049	0.501	0.954	4	0	6	6	4.503	1.286
			54.78				51.13		62.26	112.66		
Saudi Arabia	30.718	5639.440	5	96.660	0.229	0.584	8	7583.590	0	8	5.979	0.898
		12652.40	75.06				76.17	24870.80	81.25	102.85		
Korea	67.025	0	1	97.021	0.297	2.067	2	0	0	2	2.049	4.289
			48.36				43.42	13898.70	57.10	107.27		
Turkey	24.496	7631.650	9	98.674	0.306	0.362	8	0	9	2	3.653	0.882
United		32556.30	92.58				71.11	41536.90	95.50	107.55	10.02	
Kingdom	62.003	0	4	99.748	0.610	1.546	7	0	0	8	3	1.691
		40965.80	89.95				76.06	51933.40	93.56	103.23		
United States	61.742	0	2	99.165	0.997	2.471	1	0	4	5	3.404	2.819

Table 2: Cross-Section Dependence Test Results

Variables	CD Test Stat.	Prob.
rndexp	22.180	0.000
lgdppc	37.110	0.000
lmhtech	3.490	0.000
fdi	6.800	0.000
llaw	-0.170	0.862
lschen	-0.950	0.340

Table 3: Pesaran CADF Unit Root Analysis Results

Variables	Lags	Specification without trend		Specification with trend	
		Zt-bar	p-value	Zt-bar	p-value
lmhtech	1	0.595	0.724	0.195	0.577
	2	1.781	0.963	1.813	0.965
	3	1.363	0.914	2.732	0.997
	4	-3.010	0.001	0.390	0.652
	5	17.020	1.000	15.762	1.000
lfdi	1	-1.730	0.042	-1.487	0.069
	2	-0.282	0.389	0.490	0.688
	3	0.811	0.791	1.983	0.976
	4	2.502	0.994	5.774	1.000
	5	17.020	1.000	15.762	1.000
R&D	1	1.626	0.948	4.256	1.000
	2	0.680	0.752	4.993	1.000
	3	2.739	0.997	5.504	1.000
	4	2.983	0.999	3.700	1.000
	5	17.020	1.000	15.762	1.000

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lgdppc	1	-1.460	0.072	0.351	0.637
	2	-1.120	0.131	0.408	0.658
	3	-0.108	0.457	0.611	0.730
	4	2.074	0.981	-0.541	0.294
	5	17.020	1.000	15.762	1.000

Note: ***, ** and * show stationarity at 1%, 5% and 10% significance levels, respectively.

Table 4: LLC, IPS and Hadri Panel Unit Root Analysis Results

Variables	Intercept		Intercept&Trend	
	Stat.	Prob.	Stat.	Prob.
LLC Test				
llaw	-3.786	0.000	-3.444	0.000
lschen	-3.714	0.000	-2.721	0.003
IPS Test				
llaw	-3.188	0.001	-4.056	0.000
lschen	-0.401	0.344	0.580	0.719
Hadri Test				
llaw	17.413	0.000	21.546	0.000
lschen	8.758	0.000	13.287	0.000

Table 5: Panel Threshold Effect Test

Threshold	F stat.	Prob.	Crit.10	Crit.5	Crit.1
Single	9.120	0.010	5.239	5.718	8.694
Double	2.880	0.630	7.870	9.623	13.631
Triple	10.240	0.183	13.225	16.020	22.175

Table 6: Panel Threshold Model Estimation Results

Dependent Variable: R&D	
Threshold Value	% 2.82***
%95 Confidence Interval	[1.92, 3.33]
Foreign Direct Investment Regimes	
$\hat{\beta}_1$	0.005 (0.002)***
$\hat{\beta}_2$	-0.013 (0.005)***
Control Variables	
llaw	-0.010 (0.046)
dlgdppc	-0.272 (0.128)**
dlnhtech	-0.071 (0.077)
dlschen	0.329 (0.196)*

Note: *, **, *** respectively show 10%, 5% and 1% significance. Standard errors are located in parentheses.



EVALUATION OF POSSIBLE COMPLICATIONS OF DIABETES MELLITUS ON MALE INFERTILITY

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Abstract

Many studies in recent years show a marked decrease in male reproductive functions and an increase in the subfertile male population. Male infertility occurs due to many different reasons. Past infections, genetic causes, hormonal disorders, metabolic diseases such as diabetes, kidney failure, and pathologies such as undescended testes are among the main causes of male infertility, regardless of environmental factors. Diabetes can lead to infertility in men. High blood sugar levels cause many complications in the body. Some of these problems are directly related to infertility, including decreased sperm quality. If there is excess sugar in the blood, the sperm produced in the testicles are likely to have fertilization defects. In our study, diabetes-induced infertility studies were compiled.

Key words: Infertility, testis, spermatogenesis, diabetes

ERKEK KISIRLIĞINDA DİABETES MELLİTUS'UN OLASI KOMPLİKASYONLARININ DEĞERLENDİRİLMESİ

Özet

Son yıllarda yapılan birçok çalışma, erkek reproduktif fonksiyonlarında belirgin bir azalma ve subfertil erkek popülasyonunda bir artış olduğunu göstermektedir. Erkek infertilitesi pek çok değişik nedene bağlı olarak ortaya çıkar. Geçirilmiş enfeksiyonlar, genetik sebepler, hormonal bozukluklar, diyabet, böbrek yetmezliği gibi metabolik hastalıklar, inmemiş testis gibi patolojiler de çevresel etkenlerden bağımsız olarak erkek infertilitesinin başlıca nedenleri arasında yer alır. Diyabet erkeklerde infertiliteye yol açabilir. Kan şekeri miktarının yüksek olması vücutta birçok komplikasyonlara neden olur. Bu problemlerden bazıları doğrudan

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azalan sperm kalitesi dahil olmak üzere infertilite ile ilişkilidir. Kan içinde aşırı şeker varsa, testislerde üretilen spermelerin dölleme kusurlarının olması muhtemeldir. Çalışmamızda diyabet kaynaklı infertilite çalışmalarını derlenmiştir.

Anahtar kelimeler: İnfertilite, testis, spermatogenezis, diyabet

Introduction

Many studies in recent years show a marked decrease in male reproductive functions and an increase in the subfertile male population. Male infertility occurs due to many different reasons. Past infections, genetic causes, hormonal disorders, metabolic diseases such as diabetes, kidney failure, and pathologies such as undescended testes are among the main causes of male infertility, regardless of environmental factors. In addition to these, environmental factors such as nutrition, increase in environmental pollution, exposure to radiation, chemical substances, increase in cigarette consumption, use of alcohol and addictive substances are other reasons that have increased the incidence of male infertility recently (1,2). Diabetes can lead to infertility in men. High blood sugar levels cause many complications in the body. Some of these problems are directly related to infertility, including decreased sperm quality. If there is excess sugar in the blood, sperm produced in the testicles are likely to have fertilization defects (3).

The high level of sugar in the blood inhibits the ability to reproduce, which in turn causes damage to the nerves in large and small vessels, causing problems in the organ in which this damage occurs. While this effect of diabetes on sexual health causes vaginal dryness, sexual reluctance and infections in women, it can lead to more sexual weakness in men (4). There are many direct and indirect reasons why diabetes causes infertility in men. In case of excess sugar in the blood, it can be an important factor in infertility because the sperm produced in the testicles have defects that prevent fertilization. Obesity in diabetes gives symptoms such as fatigue, loss of libido and inability to maintain an erection (5). DM may impair the normal functioning of spermatogenesis (with endocrine control or directly), as well as affect penile erection and ejaculation, thereby weakening male reproductive functions. It is thought that the increase in the incidence of systemic diseases such as DM triggered the decrease in semen quality in the last 50 years (6). It has often been seen to be associated with diabetes in models made in male experimental animals, and therefore infertility appears to occur as a side effect in men with diabetes (7). In diabetic rats; Decreased testicular weight, sperm density, and testosterone levels were often associated with increased abnormal spermatogenesis. Thus, in diabetes, testicular germ cell apoptosis is increased, resulting in testicular dysfunction. Diabetes causes functional and structural changes in humans and experimental animals. Changes in testicles; It includes atrophy in the seminiferous tubules, irregularity and cell loss in the germ epithelium lining the walls of the tubules, cessation of spermatogenesis and spermiogenesis, thickening of the basement membrane, and structural and functional disorders in the Leydig cells of the interstitial tissue (8,9). Diabetic rats exhibit abnormal sexual steroid feedback in the hypothalamic-pituitary pathway due to decreased pituitary sensitivity and abnormal steroid transport to effector cells. It has been shown that the pituitary response to GnRH is reduced in rat models of diabetes. It has been reported that there are



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fluctuations in LH and FSH responses when GnRH is administered to diabetic individuals. This hypothesis is supported by the increased frequency of LH release as a result of insulin administration to the lateral ventricle of STZ-induced ewes. It is thought that the increase in carbohydrate balance in laboratory animals, as in diabetes, and functional activity disorders of the reproductive system are associated with the hypothalamus-pituitary tract and gonads. Studies have also shown a direct link between blood sugar levels and sperm quality (10).

Conclusion

The incidence of defective or dead sperm found in patients with high blood sugar levels has been reported to be greatly increased in semen. It has also been reported that the total sperm count is significantly reduced in patients with diabetes. This shows that there is a direct link between diabetes and infertility, the fact that fertilization cannot occur due to the low sperm count in the semen. Studies have shown that people with diabetes in this condition can get rid of these negativities by applying appropriate treatment methods (exercise, appropriate medications and nutrition).

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