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4TH INTERNATIONAL EASTERN BLACK SEA FAMILY MEDICINE CONGRESS

June 4–6, 2026 | Ordu, Türkiye

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PROCEEDINGS

of the 4th International Eastern Black Sea Family Medicine Congress

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Table of Contents
(ToC)

IMPORTANT NOTICE *7*

FOREWORD *8*

KAHSED CAQE *9*

Purpose and Scope **9**

Website Policy **9**

Submission Types **9**

Peer Review Process **9**

Ethics Committee Approval **10**

Ethical Review Policies **10**

Artificial Intelligence Policy **12**

Ownership and Management **12**

Publication Frequency and Language Policy **12**

Copyright and Licensing **12**

Access Policy **12**

Archiving and Long-Term Access Policy **12**

Revenue Sources and Publishing Model **13**

Advertising and Sponsorship Policy **13**

Direct Marketing Policy **13**

SCIENTIFIC PROGRAM *14*

ORAL PRESENTATION PROGRAM *17*

ONLINE ORAL PRESENTATION PROGRAM *30*

COMMITTEE *33*

Organizing Committee **34**

Scientific Committee **36**

INTERNATIONAL PARTICIPANTS *45*

ORAL PRESENTATIONS *48*

EBFMC26-OP-01 · Fournier's Gangrene with Self-Debridement: A Case Presentation **49**

EBFMC26-OP-02 · Clinical Factors Associated with Survival in a Real-World Cohort of Patients with Cancer **51**

EBFMC26-OP-03 · Recurrent Peripartum Cardiomyopathy and Heart Failure: Multidisciplinary Approach and Management Strategies **60**

EBFMC26-OP-04 · Biphasic Sacral Autonomic Dysfunction Following Neuraxial Anesthesia for Cesarean Section: A Steroid-Responsive Case Report **62**

EBFMC26-OP-05 · The Association of Healthy Nutritional Attitudes and Quality of Life with Anemia During Pregnancy: A Sample from Yozgat **64**

EBFMC26-OP-06 · Tafamidis Treatment in Cardiac Transthyretin Amyloidosis: Clinical and Echocardiographic Features (Single-Centre Real-World Data) 66

EBFMC26-OP-07 · Reversal of Cardiorenal Dysfunction with Dobutamine in Low-Output Heart Failure: A Case Report 72

EBFMC26-OP-08 · Epidemiological Characteristics of Pediatric Patients Referred to the Ophthalmology Clinic with Suspected Papilledema 75

EBFMC26-OP-09 · Biomarkers Associated with Pressure Ulcers in Home Care Patients 77

EBFMC26-OP-10 · Investigation of Rational Drug Use and Associated Factors in Adult Patients Applying to Cukurova University Training Family Health Center 79

EBFMC26-OP-11 · Examining the Relationship Between Rumination, Depression, and Smoking Cessation Among Medical Students 86

EBFMC26-OP-12 · Integration of Polygenic Risk Scores into Primary Preventive Medicine: The Cardiovascular Disease Example 90

EBFMC26-OP-13 · Relationship Between Oral Health and Constipation in Older Adults 95

EBFMC26-OP-14 · Adherence to LDL Cholesterol Targets in Patients with Type 2 Diabetes Mellitus 97

EBFMC26-OP-15 · Misinformation and Conspiracy Theories Regarding the Side Effects of COVID-19 Vaccines: An Analysis of YouTube Video Content 100

EBFMC26-OP-16 · Management of Patients After Metabolic and Bariatric Surgery in Primary Care 113

EBFMC26-OP-17 · Colorectal Cancer Screening Strategies in Family Medicine and Changing Guidelines 115

EBFMC26-OP-18 · A Case of Optic Disc Drusen Mimicking Papilledema 117

EBFMC26-OP-19 · Clinical and Medico-Legal Characteristics of Motorcycle-Related Injuries: A Retrospective Analysis 121

EBFMC26-OP-20 · Clinical and Medico-Legal Characteristics of Foreign National Cases: A Retrospective Analysis 127

EBFMC26-OP-21 · A Case of Infectious Mononucleosis with Exudative Tonsillopharyngitis 131

EBFMC26-OP-22 · Burden of Congenital Heart Disease and Associated Anomalies in Children with Down Syndrome: A Single-Center Cross-Sectional Study 133

EBFMC26-OP-23 · The Relationship between Possible Sarcopenia in Geriatric Individuals and Frailty Syndrome, Perceived Loneliness, Ageism, and Malnutrition: A Cross-Sectional Study 135

EBFMC26-OP-24 · Results of a Smoking Cessation Outpatient Clinic in a Training and Research Hospital: A Retrospective Analysis of the Effectiveness of Pharmacological Treatment 137

EBFMC26-OP-25 · Evaluation of the Conformity of Artificial Intelligence Use in Direct Graphs in Upper Extremity Fractures to Primary Health Care: A Review on Diagnostic Accuracy and Clinical Applicability 139

EBFMC26-OP-26 · Lingual Abscess Following a Bee Sting: An Uncommon Cause of Tongue Infection - A Case Report 141

EBFMC26-OP-27 · Clinical Determinants of Polysensitization in Patients Undergoing Allergy Testing: A Retrospective Cross-Sectional Study 146

EBFMC26-OP-28 · Clinical Approach to Wernicke Encephalopathy with a Case Presentation 151

EBFMC26-OP-29 · Retrospective Evaluation of Syphilis Total Antibody Screening Tests Requested from Family Health Centers in Turkey: Reactivity Rates and Confirmation Results 155

EBFMC26-OP-30 · Retrospective Analysis of Anti-HIV ELISA Screening in Family Health Centers: Reactivity Rates and Outcomes of Confirmatory Testing 161

EBFMC26-OP-31 · Severe Hypothyroidism Despite Ongoing Levothyroxine Therapy with Rapid Biochemical Improvement: A Case Report 165

EBFMC26-OP-32 · Assessment of Medical Students' Attitudes toward Patient Safety Culture 168

EBFMC26-OP-33 · Retrospective Evaluation of Clinical and Demographic Characteristics of Patients Diagnosed with Pityriasis Rosea who Presented to the Dermatology Outpatient Clinic within the Last Year 173

EBFMC26-OP-34 · Evaluation of Consultations to the Palliative Care Center in the Last One Year 180

EBFMC26-OP-35 · Association Between Artificial Intelligence Literacy and Acceptance of Generative AI Among Family Physicians: A Cross-Sectional Study 182

EBFMC26-OP-36 · Varicella Infection in an Unvaccinated Adolescent Immigrant: A Case Report 184

EBFMC26-OP-37 · Early Post-Infarction Ventricular Septal Rupture and Cardiogenic Shock Following Acute Anterior Myocardial Infarction: Case Report 188

EBFMC26-OP-38 · Evaluation of Bone Mineral Density in Patients with Chronic Hepatitis B Receiving Tenofovir Therapy 190

EBFMC26-OP-39 · Perception of Quality of Life in Patients Diagnosed with Lung Cancer: A Mixed-Method Study 192

EBFMC26-OP-40 · Medical Education in Balkan Countries: A Comprehensive Comparative Overview 194

EBFMC26-OP-41 · A Qualitative Study on Media Literacy, Loneliness, and Well-Being Among Older Adults 196

EBFMC26-OP-42 · A Preliminary Study on the Relationship between Online Shopping Addiction Tendencies and Marital Harmony and Satisfaction 198

EBFMC26-OP-43 · Pulmonary Tuberculosis in a Patient Under Follow-Up in a Palliative Care Unit: A Case Report 200

EBFMC26-OP-44 · Effects of Intestinal Protozoa and Treatment Approaches 204

EBFMC26-OP-45 · Vector-Borne Parasitic Diseases and Their Global Distribution 208

EBFMC26-OP-46 · Distribution of Microorganisms Isolated from Chronic Wound Infections in the Wound Care Center Outpatient Clinic and Their Antimicrobial Susceptibility Profiles 212

EBFMC26-OP-47 · Investigation of Microorganisms Isolated from Pressure Ulcers in the Palliative Care Unit 219

EBFMC26-OP-48 · Serum 25-Hydroxyvitamin D Levels in Newly Diagnosed Myopic Children: A Potential Biomarker of Myopia Risk 225

EBFMC26-OP-49 · An Unusual Cause of Acute Diplopia: Isolated Lateral Rectus Myositis 229

EBFMC26-OP-50 · Healthy and Sustainable Lifestyle and Health Management Self-Efficacy in Individuals with Chronic Diseases 233

EBFMC26-OP-51 · The Relationship Between HALP and Modified Scores with Osteoporosis in Individuals Aged 80 and Over 235

EBFMC26-OP-52 · A Case of Paraplegia Associated with a Cervical Fracture Following a Cervical Vertebra Infection 237

EBFMC26-OP-53 · Neonatal Cephalic Pustulosis: A Case with Rapid Response to Topical Antifungal Therapy 240

EBFMC26-OP-54 · Knowledge Levels of Family Medicine Residents Regarding Measurement Techniques for Pediatric Malnutrition 242

EBFMC26-OP-55 · Assessing the Diagnostic Value of Hematological and Biochemical Parameters for Hypothyroidism in Female Patients 244

EBFMC26-OP-56 · The Relationship Between Advanced T Stage and Metastasis in Head and Neck-Sited Malignant Melanomas: A Five-Year Single-Centre Retrospective Analysis 246

EBFMC26-OP-57 · You Are the Cure: Strengthening Syphilis Surveillance and Continuity of Care through Family Medicine Collaboration in North Macedonia 248

EBFMC26-OP-58 · When First-Line Therapy Fails: Challenges in Helicobacter pylori Eradication in Primary Care 250

EBFMC26-OP-59 · Prognostic Factors and Survival Outcomes in Cancer Patients: A Real-World Retrospective Study 252

EBFMC26-OP-60 · Alpha-gal Syndrome in an Endemic Black Sea Region: A Single-Center Clinical and Epidemiological Study from Ordu, Türkiye 254

EBFMC26-OP-61 · Case Report: Post-vaccination Parotitis Following MMR Immunization in a Healthcare Worker 258

EBFMC26-OP-62 · Correlation of Severe Stenoses Detected via Coronary Computed Tomography Angiography with Invasive Coronary Angiography: A Vessel-Based Diagnostic Accuracy Study 260

EBFMC26-OP-63 · Epidemiological Analysis of Patients Referred from Family Medicine to the Otorhinolaryngology Department 264

EBFMC26-OP-64 · Pigmented Purpuric Dermatosis 266

EBFMC26-OP-65 · Atypical Presentation of Acute Severe Headache in Childhood: A Case of Herpes Zoster Ophthalmicus 268

EBFMC26-OP-66 · Passive Tobacco Smoke Exposure: A Bibliometric Analysis of Scientific Publications Focused on Child Health 270

EBFMC26-OP-67 · A Resident's Perspective on Training Family Health Centers: An Experience-Based Report 272

EBFMC26-OP-68 · Microparasite, Macro Impact: The Reality of Scabies Management in Primary Care 275

EBFMC26-OP-69 · Early Recognition and Multi-Modal Management of Suspected Cutaneous Vasculitis in a Primary Care Setting 282

EBFMC26-OP-70 · The Scientific Characteristics and Thematic Distribution of Oral Presentations at the 3rd International Eastern Black Sea Family Medicine Congress 284

EBFMC26-OP-71 · Wolbachia Bacteria: Interaction with the Parasitic Host and Potential for Biological Control 286

EBFMC26-OP-72 · The Relationship between Wolbachia Bacteria and Nematodes: Its Significance in Parasitic Diseases 291

EBFMC26-OP-73 · Short-Term Outcomes of Cytisine Treatment in Patients Attending a Smoking Cessation Clinic 295

EBFMC26-OP-74 · Assessment of Migrant Parents' Knowledge of Developmental Dysplasia of the Hip Screening: A Pilot Study 297

EBFMC26-OP-75 · Epidemiological Evaluation of Thyroid Fine-Needle Aspiration Biopsy Results in a Single Center: A Retrospective Analysis Based on the Bethesda System 299

EBFMC26-OP-76 · The Role of Age in Predicting Malignancy in Breast Tru-Cut Biopsies: A Single-Center Experience 303

EBFMC26-OP-77 · Refractory Seizures Secondary to Hypoxic-Ischemic Encephalopathy in the Neonatal Period: A Case Report 306

EBFMC26-OP-78 · R-Wave Peak Time as an Early Electrocardiographic Marker of Subclinical Left Ventricular Remodelling in Young Hypertensive Patients 308

EBFMC26-OP-79 · Evaluation of YouTube Videos on Breastfeeding and Breast Milk: A Cross-Sectional Content Analysis 310

ONLINE ORAL PRESENTATIONS 312

EBFMC26-OOP-01 · Screen Exposure During Meals in Children with Autism Spectrum Disorder: Relationship with Feeding Problems, Food Selectivity, and Co-Occurring Screen Habits 313

EBFMC26-OOP-02 · Cyberchondria Research in Türkiye: A Descriptive Analysis of Medical Residency Theses (2010-2026) 315

EBFMC26-OOP-03 · Microbiota Research in Türkiye: A Document Analysis of Medical Residency Theses 317

EBFMC26-OOP-04 · Prevalence of Refractive Errors in Children Aged 7 Years and Younger: The Role of Behavioral Visual Symptoms in Early Detection 319

EBFMC26-OOP-05 · 72-Hour Vision Loss: A Case of Post-Traumatic Fulminant Endophthalmitis 323

EBFMC26-OOP-06 · Validity and Reliability of the Turkish Version of the Modified Vaccine Hesitancy Scale for Childhood, Influenza, and HPV Vaccines 328

EBFMC26-OOP-07 · Post-Vaccination Symptom: Local Reaction or a Bleeding Disorder? 330

EBFMC26-OOP-08 · Is Montelukast Being Replaced by Antihistamine-Montelukast Combination Therapy? A 10-Year Trend 332

EBFMC26-OOP-09 · Evaluation of Glycemic and Metabolic Characteristics in Patients Undergoing HbA1c Testing in Primary Care: A Retrospective Descriptive Study 334

EBFMC26-OOP-10 · Substance Use Profile by Age and Gender in AMATEM Patients: A Retrospective Analysis 336

EBFMC26-OOP-11 · Comparative Discriminative Performance of Albumin, Lymphocyte Count, Prognostic Nutritional Index, and a Multivariable Inflammation-Nutrition Model in MINOCA and INOCA 338

EBFMC26-OOP-12 · Systemic Reactions During Skin Prick Testing in Children: Rare but Not Negligible 342

EBFMC26-OOP-13 · Vocational Inclusion Through Teachers' Eyes: A Qualitative Analysis of Stigma, Burnout, and Barriers to Employment 344

EBFMC26-OOP-14 · Toxicities of Systemic Cancer Therapies in Primary Care 346

EBFMC26-OOP-15 · Electrolytes and Acute Kidney Injury Biomarkers in Cancer Patients: Implications for Primary Care Referral 348

EBFMC26-OOP-16 · Whole-Exome Sequencing Reveals the Neurogenetic Spectrum of Pediatric Epilepsy in Türkiye 350

INVITED PAPERS 352

EBFMC26-IP-01 · From High-Risk Pregnancy to Safe Motherhood: The Role of Antenatal Care and Gestational Diabetes Management 353

EBFMC26-IP-02 · Electronic Tracking and Communication Systems for Safe Medication Management in Primary Care 355

EBFMC26-IP-03 · The Pluripotent Family Physician, an American Example 359

EBFMC26-IP-04 · Family, School, and Physician Collaboration Against Screen Addiction: A Holistic Approach 363

EBFMC26-IP-05 · Community-Based Education Programs and Health Literacy 368

EBFMC26-IP-06 · Sustainability in Family Medicine and its Contribution to the Health System: The Interrelationships Between Performance, Motivation, Workload and Satisfaction 372

EBFMC26-IP-07 · An Introduction to Your Longevity Toolbox 376

EBFMC26-IP-08 · Stroke Mimics 381

EBFMC26-IP-09 · Academic Development and Promotion Process in Family Medicine in Türkiye 386

EBFMC26-IP-10 · Preventive Medicine Awareness and Community Education: Managing Health, not Disease 388

EBFMC26-IP-11 · The Academic Bridge Between Universities and Family Health Centers 392

EBFMC26-IP-12 · Burn Trauma: Prevention, Primary Care Management and Rehabilitation 397

EBFMC26-IP-13 · HIV from Diagnosis to Follow-up: Early Diagnosis and Indicator Diseases in Primary Care 401

EBFMC26-IP-14 · Reaching the Goal Together: Common Monitoring Protocols in Chronic Disease Management 406

EBFMC26-IP-15 · HIV Infection: A Reality Managed in Unison (Co-Living with HIV: Epidemiological Realities, Privacy, and Monitoring) 411

EBFMC26-IP-16 · Producing Science in Primary Care: From Practice to Evidence Generation 413

EBFMC26-IP-17 · Low Back Pain: Risk Factors and Preventive Strategies 417

ACKNOWLEDGEMENTS & DISCLOSURES 419

OUR SPONSORS 420

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FOREWORD

Dear Guests,

We are delighted to invite you to the 4th International Eastern Black Sea Family Medicine Congress, to be held on June 4–6, 2026. Our congress welcomes not only professionals in the field of Family Medicine but also all disciplines involved in disease management with a multidisciplinary approach. We especially value collaboration with specialists from Internal Medicine, Emergency Medicine, Pulmonology, Cardiology, Orthopedics and Traumatology, Neurology, Physical Therapy and Rehabilitation, Psychiatry, Otorhinolaryngology, Pediatrics, Obstetrics and Gynecology, Ophthalmology, Dermatology, General Surgery, Urology, Anesthesiology and Reanimation, Medical Biochemistry, Pathology, and Medical Genetics in order to foster knowledge exchange and shared insights with family physicians on the front lines of healthcare.

Our congress will host distinguished national and international speakers who will present the latest literature, combine it with practical applications, and offer a rich program of interactive panels, training sessions, oral presentations, and social events. We are especially excited to welcome participants from across the country, especially from the Black Sea region, as well as our international guests from various parts of the world.

We believe that by uniting our strengths, we will elevate the value and vision of Family Medicine to even greater heights. We look forward to meeting you at our congress.

Sincerely,

On behalf of the Organizing Committee,

Prof. Özgür Enginyurt, MD

Congress President

KAHSED CAQE

(KAHSED Continuous Academic Quality Enhancement)

Purpose and Scope

The primary aim of the congress is to support and promote current and multidisciplinary approaches in the fields of family medicine and health management. The congress is not limited to family medicine alone; it also encourages interdisciplinary exchange of knowledge and experience across a wide range of specialties, including Emergency Medicine, Pulmonology, Cardiology, Orthopedics and Traumatology, Neurology, Physical Medicine and Rehabilitation, Psychiatry, Otorhinolaryngology, Pediatrics, Obstetrics and Gynecology, Ophthalmology, Dermatology, General Surgery, Urology, Anesthesiology and Reanimation, Medical Biochemistry, Pathology, and Medical Genetics. Our congress is organized in accordance with internationally recognized scientific and ethical standards within the scope of family medicine and related disciplines.

Within the framework of current topics in family medicine and interdisciplinary collaboration, the congress features sessions conducted by nationally and internationally recognized experts in their respective fields, integrating up-to-date literature with practical applications. In this context, the congress aims to contribute to scientific richness and practical implementation while supporting the professional development of family medicine specialists.

The congress program includes interactive panels, educational sessions, oral presentations, and social activities designed to enhance participants' academic and professional perspectives.

Furthermore, the congress aims to strengthen interdisciplinary cooperation and to enhance the scientific value of family medicine at both national and international levels.

All papers to be published within the scope of the congress must provide original contributions consistent with the scientific framework and themes defined by the congress. Presentation of the papers at the congress is mandatory, as open discussions and academic interactions around the presentations are of great importance for scientific integrity and academic completeness.

The Congress Proceedings Book is prepared for researchers, practitioners, educators, and policymakers working in family medicine and related disciplines.

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Submissions may be made in either abstract or full-text format. All submissions are subject to peer review, and those accepted following the review process will be published in the Congress Proceedings Book. Each participant may submit a maximum of two separate contributions as the submitting author; however, they may be listed as a co-author on additional submissions.

Peer Review Process

Submitted manuscripts will be evaluated based on subject-specific academic standards and scientific accuracy. Studies to be published within the scope of the congress undergo a detailed peer review process to ensure alignment with the congress themes and to provide original contributions to the literature. Submissions with insufficient scientific content or those falling outside the scope of the congress will not be published. All manuscripts selected for the Congress Proceedings Book are reviewed transparently and objectively.

Manuscripts are evaluated through a double-blind peer review process. In this process:

- Reviewers evaluate manuscripts anonymously and cannot access author identities.

- Authors are not informed of the reviewers' identities.
- The evaluation is based on scientific contribution, methodological soundness, ethical compliance, academic writing quality, and language use.

The peer review process follows these steps:
1. Preliminary Evaluation: The submission is checked for format and content compliance.
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- Originality of Submissions: By submitting their work, authors are deemed to confirm that the submission is original, has not been previously published elsewhere, and is not under consideration for publication in the proceedings of another conference, a journal, or a book. Multiple or duplicate submissions will not be accepted.

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- To reject content if an ethical violation is identified and inform the author(s).
- To initiate the necessary procedures and notify authors when an ethical breach is confirmed.
- Editors and the publication board are responsible for taking reasonable measures to detect research misconduct. In suspicious cases, additional explanations or data may be requested from the authors.

Additional Explanations
- Members of the Editorial Board are researchers and healthcare professionals actively engaged in family medicine and related disciplines.
- The editorial and organizing committees hold the following responsibilities during the congress process:
- Ensuring the scientific and ethical suitability of submitted manuscripts.
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- Ensuring that manuscripts conform to the Congress Proceedings Book format.

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SCIENTIFIC PROGRAM

Courses

Date - Hour	Hall Boztepe	Hall Yason	Hall Hoynat
04.06.2026 09:00-12:30	Wound Care Training **Yasemin Kılıç Öztürk** **Hüseyin Can**	Intra-articular Injection and Pain Blockade Training **Serbülent Gökhan Beyaz**	Hands on Workshop Point Of Care Ultrasound (POCUS) Training **Dale R. Agner, David Culpepper,** **Tony Kim**
04.05.2026 13:30-17:30	Cognitive Behavioural Therapy Training **Kadir Özdel**		Hands That Bring Life to Days: Multidisciplinary Approach Training in Palliative Care* **Özgür Enginyurt** **Yasemin Kılıç Öztürk** **Bestegül Çoruh Akyol** **Hurisah Aksakal**

* The Turkish Ministry of Health will carry out certification in accordance with Article 8/5 of Chapter Three of the Directive on the Procedures and Principles for the Implementation of Palliative Care Services.

Scientific Program – Friday, June 5, 2026

HOUR	HALL BOZTEPE	HALL YASON	HALL HOYNAT
	A UNITED STAND ON MENTAL HEALTH	**HIV INFECTION: A REALITY MANAGED IN UNISON**	**ORAL PRESENTATION-1**
09:00 09:45	Family, School and Doctor Cooperation Against Screen Addiction • Early Warning, Early Support: Intervention for Substance Use Disorders **M: Memnune Çiğdem Apaydın Kaya, Fatih Büyükcam** **S: Tahsin Çelepkolu, Ayşe Nur Topuz**	• HIV from Diagnosis to Follow-up: Early Diagnosis and Indicator Diseases in Primary Care • Co-managing Life with HIV; Epidemiological Facts, Privacy and Monitoring **M: Celali Kurt, Soner Yıldız** **S: Hatun Öztürk Çerik, Levent Şensoy**	**Moderators:** **Tuba Gül** **Dilara Canbay Özdemir**
	CURRENT APPROACHES TO UPPER RESPIRATORY TRACT INFECTIONS IN CHILDREN	**RATIONAL MEDICINE COOPERATION: BEING THE SOLUTION AT THE FIRST LEVEL**	**ORAL PRESENTATION -2**
09:45 10:30	**M: Hilal Özkaya, Arzu Altunçekiç Yıldırım** **S: Emin Ünüvar**	Primary care role in chronic disease and polypharmacy management • Safe medication management with electronic monitoring and communication systems **M: M. Fatih Karakuş, Bestegül Çoruh Akyol** **S: İsmail Arslan, Volkan Atasoy**	**Moderators:** **Arzu Ayraler** **Sevgi Çıraklı**
10:30 – 11:00		***COFFEE BREAK***	
11:00 12:00	Eczacıbaşı İlaç Pazarlama	**SATELLITE SYMPOSIUM – Madefix in Wound Treatment – With Unconditional Training Support from ECZACIBAŞI** **Madefix in Wound Treatment** **S: Hüseyin Can**	Eczacıbaşı İlaç Pazarlama
12:00 – 13:15		**LUNCH**	
	INNOVATIVE PRACTICES IN FAMILY MEDICINE: POCUS and LONGEVITY		**ORAL PRESENTATION -3**
13:15 14:00	• Use of POCUS in Differential Diagnosis • Longevity and Family Medicine **M: Tony Kim, Michel Naydenov** **S: David Culpepper ,Dorothy Contiguglia-Akcan**		**Moderators:** **Türkan Mutlu Yar** **M. Mustafa Uzan**
14:00 15:00	Nestlé Nutrition & Health	**SATELLITE SYMPOSIUM – Effective Management in Clinical Nutrition – With Unconditional Training Support from NESTLE** Nutritional Management Strategies in Elderly Patients Clinical Role of Specific Nutrients in Neurological Diseases **M: Çetin Kürşat Akpınar, S: Kubilay İşsever, Hasan Doğan**	Nestlé Nutrition & Health
15:00 – 15:30		***COFFEE BREAK***	
15:30 – 16:00		**OPENING CEREMONY**	
	COLLABORATION AND PROTECTION IN VULNERABLE GROUPS		**ORAL PRESENTATION -4**
16:00 16:45	Being Aware of Child Abuse • From High-Risk Pregnancy to Safe Motherhood • Elderly-Friendly Primary Health Care: Joint Monitoring Models with Geriatrics **M: İlhami Ünlüoğlu, Derya İren Akbıyık** **S: Neslişah Köksal, Güzin Zeren Öztürk, Memnune Çiğdem Apaydın Kaya**		**Moderators:** **Ülkü Karaman** **Melike Karabulut Özer**
	AWARENESS AND PUBLIC EDUCATION IN PREVENTIVE MEDICINE	**BURN TRAUMA: PRIMARY CARE MANAGEMENT AND REHABILITATION PROCESS**	**ORAL PRESENTATION -5**
16:45 17:30	• Managing Health, Not Illness • Community-Based Education Programs and Health Literacy **M:Mehmet Ungan, Çiğdem Gereklioğlu** **S: R. Şule Sürmelibey Gümüştakım, Elif Ateş**	**M: Onur Yalçın, Aybegüm Kalyoncu Ayçenk** **S: Volkan Altınok**	**Moderators:** **Ömer Karaman** **M. Emin Göktepe**

Scientific Program – Saturday, June 6, 2026

SAAT	HALL BOZTEPE	HALL YASON	HALL HOYNAT
09:00 09:45	**SEARCHING FOR SOLUTIONS IN CASES: SOLUTIONS AT THE MULTIDISCIPLINARY TABLE** M: Cüneyt Ardıç, R. Şule Sürmelibey Gümüştakım S: Hüseyin Can	**EUROPEAN YOUNG FAMILY DOCTORS MOVEMENT (EYFDM SESSION)** • Strengthening Professional Identity - Charlotte Morris • Policy Transfer (Advocacy) - Paula Sala Ivars • Knowleledge Circulation - Rüveyda Nur Ağırbaş • EYFDM Hippokrates Exchange Programme Experiences - Lisa Toemen • RCGP Primary Care Show Exchange Program Experiences - Hande Nur Erölmez • EYFDM Presentation - Rüveyda Nur Ağırbaş,Hande Büydağ Nam, Gülşah Onur, Büşra Bilik Sezer M: Şeyma Handan Akyön	**SÖZLÜ SUNUM-6** **Moderators:** Asiye Sezer Olgun Neslişah Köksal
09:45 10:30	**ACADEMIC FAMILY MEDICINE AND RESEARCH COLLABORATIONS** • Producing science at the primary care • A bridge between the university and the field M: Yasemin Kılıç Öztürk, M. Mustafa Uzan S: Mehmet Ungan, Onur Öztürk		**SÖZLÜ SUNUM-7** **Moderators:** Sibel Tunç Karaman Kübra Uyar Zekey
10:30 11:00	*COFFEE BREAK*		
11:00 11:45	**PANEL: ACADEMIC DEVELOPMENT AND CHANGE IN THE FIELD OF FAMILY MEDICINE IN TURKIYE** • Academic Accumulation and Promotion Process • Current Status of Academic Promotions M: Güzin Zeren Öztürk, Özgür Enginyurt S: İlhami Ünlüoğlu, Mümtaz Mazıcıoğlu	**ONLINE ORAL PRESENTATION - 1** **Moderators:** Gülru Pemra Cöbek Ünalan Fatma Esra Günaydın	**ORAL PRESENTATION -8** **Moderators:** Asiye Sezer Olgun Volkan Atasoy
11:45 12:30	**COLLABORATION WITH FAMILY MEDICINE AND SECONDARY-TERTIARY CARE** • Information Flow and Feedback Mechanisms from Family Physicians to Hospitals • Common Monitoring Protocols for Chronic Diseases • Electronic Health Records and Digital Integration M: Derya İren Akbıyık, Elif Ateş S: Mahcube Çubukcu, Dursun Barut, Fethi Sada Zekey	**ONLINE ORAL PRESENTATION -2** **Moderators:** Gülru Pemra Cöbek Ünalan Zeyneb İrem Yüksel Salduz	**ORAL PRESENTATION -9** **Moderators:** Selen Karaoğlanoğlu Halit Canberk Aydoğan
12:30 13.15	**PLURIPOTENT GENERAL PRACTIONER** • American Example • European Example M: Yasemin Kılıç Öztürk, David Culpepper S: Dale Agner, Yanica Vella		
13:15 –14:00	**LUNCH**		
14:00 14:40	Viennalife VIENNA INSURANCE GROUP **YOUR FAMILY'S SURVIVAL GUARANTEE – VIENNALIFE Unconditional Education Support** S: Uğur Ekiz		Mavi Yaşam SİGORTA
14.40 15.25	**LOOKING AT BACK PAIN FROM DIFFERENT PERSPECTIVES** • Risk Factors and Preventive Strategies • Diagnosis and Red Flags M:Tahsin Çelepkolu, Onur Öztürk S: Yasemin Kılıç Öztürk, Çağatay Öztürk	**MANAGEMENT OF CHALLENGING SITUATIONS** • Stroke Symptoms • Approach to Wheezing Diseases in Children • Urinary Infections in Diabetic Individuals M: Hüseyin Can, Hristina Leskaroska S: Robin Mantooth, Shirley Mulvaney, Dragan Milovanović	**ORAL PRESENTATION -10** **Moderators:** Mahcube Çubukçu Latife Merve Yıldız
15:25 16:10	**SUSTAINABILITY IN FAMILY MEDICINE AND CONTRIBUTION TO THE HEALTH SYSTEM - SESSION 1** • Family Medicine at the Heart of Healthcare Transformation • Performance, motivation, workload and satisfaction relationships M: Dursun Barut, Ayşe Nur Topuz S: Hristina Leskaroska, Sibel Tunç Karaman		**ORAL PRESENTATION -11** **Moderators:** Tuğba Dağaşan Elif Negiş
16.10- 16.30	*COFFEE BREAK*		
16.30 17.15	**SUSTAINABILITY IN FAMILY MEDICINE AND CONTRIBUTION TO THE HEALTH SYSTEM – SESSION 2** * Effective Use of Resources and Quality of Service *Development of Family Medicine Policies * Global Examples M: İsmail Arslan, Arzu Ayraler S: Hilal Özkaya, Hüseyin Can, Onur Dika, Ziya Köseoğlu		**ORAL PRESENTATION -12** **Moderators:** Hatun Öztürk Çerik Fethi Sada Zekey
17:15 18:00	**PANEL: WE ARE THE SOLUTION / Dr. Adnan SERT Special Session** M: İlhami Ünlüoğlu, Mümtaz Mazıcıoğlu, Güzin Zeren Öztürk S: Cüneyt Ardıç, Emrah Çelenk, Ömer Ufkun Yıldırım		
18:00-18:30	**CLOSING CEREMONY**		

ORAL PRESENTATION PROGRAM

4th International Eastern Black Sea Family Medicine Congress
04-06 June 2026

Presentation durations are limited to 6 minutes. Slide sharing will be available during the presentations. For any issues regarding the presentation schedule or content, you can send an email to kahsedbilimseldestek@gmail.com

05 JUNE FRIDAY / 09:00 – 09:45

ORAL PRESENTATION-1 *(HOYNAT)*
Chairs: *Dr. Tuba GÜL – Dr. Dilara CANBAY ÖZDEMİR*

	Titles	**Presenter**
OP-01	Fournier's Gangrene with Self-Debridement Case Presentation	Merve Koybasi Acet
OP-02	Clinical Factors Associated with Survival in a Real-World Cohort of Patients with Cancer	Neslihan Ozyurt
OP-03	Recurrent Peripartum Cardiomyopathy and Heart Failure: Multidisciplinary Approach and Management Strategies	Elif Keles Tayfur
OP-04	Biphasic Sacral Autonomic Dysfunction Following Neuraxial Anesthesia for Cesarean Section: A Steroid-Responsive Case Report	Beria Nur Ertugrul
OP-05	The Association of Healthy Nutritional Attitudes and Quality of Life with Anemia During pregnancy: A Sample from Yozgat	Joud Baki
OP-06	Tafamidis Treatment in Cardiac Transthyretin Amyloidosis: Clinical and Echocardiographic Features (Single-Centre Real-World Data)	Nihan Bahadir
OP-07	Reversal of Cardiorenal Dysfunction with Dobutamine in Low-Output Heart Failure: A case report	Nihan Bahadir

05 JUNE FRIDAY / 09:45 – 10:30

ORAL PRESENTATION-2 *(HOYNAT)*
Chairs: *Dr. Arzu AYRALER – Dr. Sevgi ÇIRAKLI*

	Titles	**Presenter**
OP-08	Epidemiological Characteristics of Pediatric Patients Referred to the Ophthalmology Clinic with Suspected Papilledema	Aslihan Uzun
OP-09	Biomarkers Associated with Pressure Ulcers in Home Care Patients	Asiye Sezer Olgun
OP-10	Investigation of Rational Drug Use and Associated Factors in Adult Patients Applying to Cukurova University Training Family Health Center	Ayşe Nur Topuz
OP-11	Examining the Relationship Between Rumination, Depression, and Smoking Cessation Among Medical Students	Ayse Nur Topuz
OP-12	Integration of Polygenic Risk Scores into Primary Preventive Medicine: The Cardiovascular Disease Example	Cagri Dogan
OP-13	Relationship Between Oral Health and Constipation in Older Adults	Irem Tanriverdi
OP-14	Adherence to LDL Cholesterol Targets in Patients with Type 2 Diabetes Mellitus	Mehmet Yildiz

05 JUNE FRIDAY / 13:15 – 14:00

ORAL PRESENTATION-3 *(HOYNAT)*
Chairs: *Dr. Türkan Mutlu YAR – Dr. M. Mustafa UZAN*

	Titles	**Presenter**
OP-15	Misinformation And Conspiracy Theories Regarding the Side Effects of Covid-19 Vaccines: An Analysis of YouTube Video Content	Meltem Yilmaz
OP-16	Management Of Patients After Metabolic and Bariatric Surgery in Primary Care	Mumin Demir
OP-17	Colorectal Cancer Screening Strategies in Family Medicine and Changing Guidelines	Mumin Demir
OP-18	A case of optic disc drusen mimicking papilledema	Seda Uzunoglu
OP-19	Clinical and Medico-Legal Characteristics of Motorcycle-Related Injuries: A Retrospective Analysis	Halit Canberk Aydogan
OP-20	Clinical and Medico-Legal Characteristics of Foreign National Cases: A Retrospective Analysis	Halit Canberk Aydogan
OP-21	A Case of Infectious Mononucleosis with Exudative Tonsillopharyngitis	Elif Gokce Kasapoglu Arslan

05 JUNE FRIDAY / 16:00 – 16:45

ORAL PRESENTATION-4 *(HOYNAT)*
Chairs: *Dr. Ülkü KARAMAN – Dr. Melike KARABULUT ÖZER*

	Titles	**Presenter**
OP-22	Burden of Congenital Heart Disease and Associated Anomalies in Children with Down Syndrome: A Single-Center Cross-Sectional Study	Nurgül Tokali
OP-23	The Relationship Between Possible Sarcopenia in Geriatric Individuals and Frailty Syndrome, Perceived Loneliness, Ageism, and Malnutrition: A Cross-Sectional Study	Yavuz Korkmaz
OP-24	Results of a Smoking Cessation Outpatient Clinic in a Training and Research Hospital: A Retrospective Analysis of the Effectiveness of Pharmacological Treatment	Yavuz Korkmaz
OP-25	Evaluation of the Conformity of Artificial Intelligence Use in Direct Graphs in Upper Extremity Fractures to Primary Health Care: A Review on Diagnostic Accuracy and Clinical Applicability	Muhammed Emin Goktepe
OP-26	Lingual Abscess Following a Bee Sting: An Uncommon Cause of Tongue Infection A Case Report	Muhammed Emin Goktepe
OP-27	Clinical Determinants of Polysensitization in Patients Undergoing Allergy Testing: A Retrospective Cross-Sectional Study	Saban Melih Simsek
OP-28	Clinical Approach to Wernicke Encephalopathy with a Case Presentation	Zeynep Meltem Arslan

05 JUNE FRIDAY / 16:45 – 17:30

ORAL PRESENTATION-5 *(HOYNAT)*
Chairs: *Dr. Ömer KARAMAN – Dr. Muhammed Emin GÖKTEPE*

	Titles	**Presenter**
OP-29	Retrospective Evaluation of Syphilis Total Antibody Screening Tests Requested from Family Health Centers in Turkey: Reactivity Rates and Confirmation Results	Canset Nur Aydogan
OP-30	Retrospective Analysis of Anti-HIV ELISA Screening in Family Health Centers: Reactivity Rates and Outcomes of Confirmatory Testing	Canset Nur Aydogan
OP-31	Severe Hypothyroidism Despite Ongoing Levothyroxine Therapy with Rapid Biochemical Improvement: A Case Report	Abdullah Bilgin
OP-32	Assessment of Medical Students Attitudes Toward Patient Safety Culture	Arzu Ayraler
OP-33	Retrospective evaluation of clinical and demographic characteristics of patients diagnosed with Pityriasis Rosea who presented to the dermatology outpatient clinic within the last year	Nihal Sari
OP-34	Evaluation of Consultations to the Palliative Care Center in the Last One Year	Mustafa Uzan
OP-35	Association Between Artificial Intelligence Literacy and Acceptance of Generative AI Among Family Physicians: A Cross-Sectional Study	Sibel Tunc Karaman

06 JUNE SATURDAY / 09:00 - 09:45

ORAL PRESENTATION-6 *(HOYNAT)*
Chairs: *Dr. Asiye SEZER OLGUN – Dr. Neslişah KÖKSAL*

	Titles	**Presenter**
OP-36	Varicella Infection in an Unvaccinated Adolescent Immigrant: A Case Report	Kevser Osmanoglu
OP-37	Early Post-Infarction Ventricular Septal Rupture and Cardiogenic Shock Following Acute Anterior Myocardial Infarction: Case Report	Fatma Demirci
OP-38	Evaluation of Bone Mineral Density in Patients with Chronic Hepatitis B Receiving Tenofovir Therapy	Salih Yilmaz
OP-39	Perception of Quality of Life in Patients Diagnosed with Lung Cancer: A Mixed-Method Study	Elif Negis
OP-40	Medical Education in Balkan Countries: A Comprehensive Comparative Overview	Elif Negis
OP-41	A Qualitative Study on Media Literacy, Loneliness, and Well-Being Among Older Adults	Ozge Hakyemez
OP-42	A Preliminary Study on the Relationship Between Online Shopping Addiction Tendencies and Marital Harmony and Satisfaction	Aleyna Selcuk

06 JUNE SATURDAY / 09:45- 10:30

ORAL PRESENTATION-7 *(HOYNAT)*
Chairs: *Dr. Sibel TUNÇ KARAMAN – Dr. Kübra UYAR ZEKEY*

	Titles	**Presenter**
OP-43	Pulmonary Tuberculosis in a Patient Under Follow-Up in a Palliative Care Unit: A Case Report	Tugba Dagasan
OP-44	Effects of Intestinal Protozoa and Treatment Approaches	Turkan Mutlu Yar
OP-45	Vector-Borne Parasitic Diseases and Their Global Distribution	Turkan Mutlu Yar
OP-46	Distribution of Microorganisms Isolated from Chronic Wound Infections in the Wound Care Center Outpatient Clinic and Their Antimicrobial Susceptibility Profiles	Soner Yildiz
OP-47	Investigation Of Microorganisms Isolated from Pressure Ulcers in the Palliative Care Unit	Soner Yildiz
OP-48	Serum 25-Hydroxyvitamin D Levels in Newly Diagnosed Myopic Children: A Potential Biomarker of Myopia Risk	Orkun Cetin
OP-49	An Unusual Cause of Acute Diplopia: Isolated Lateral Rectus Myositis	Alara Ekinci

06 JUNE SATURDAY / 11:00 – 11:45

ORAL PRESENTATION-8 *(HOYNAT)*
Chairs: *Dr. Asiye SEZER OLGUN – Dr. Volkan ATASOY*

	Titles	**Presenter**
OP-50	Healthy and Sustainable Lifestyle and Health Management Self-Efficacy in Individuals with Chronic Diseases	Kubra Uyar Zekey
OP-51	The Relationship Between HALP and Modified Scores with Osteoporosis in Individuals Aged 80 and Over	Gamzenur Teker Tekbil
OP-52	A Case of Paraplegia Associated with a Cervical Fracture Following a Cervical Vertebra Infection	Hidir Ozer
OP-53	Neonatal Cephalic Pustulosis: A Case with Rapid Response to Topical Antifungal Therapy	Ulku Hacer Madenus
OP-54	Knowledge Levels of Family Medicine Residents Regarding Measurement Techniques for Pediatric Malnutrition	Ulku Hacer Madenus
OP-55	Assessing the Diagnostic Value of Hematological and Biochemical Parameters for Hypothyroidism in Female Patients	Mehmet Yildiz
OP-56	The Relationship Between Advanced T Stage and Metastasis in Head and Neck-Sited Malignant Melanomas: A Five-Year Single-Centre Retrospective Analysis	Ali Adnan Ozdemir

06 JUNE SATURDAY / 11:45 – 12:30

ORAL PRESENTATION-9 *(HOYNAT)*
Chairs: *Dr. Selen KARAOĞLANOĞLU - Dr. Halit Canberk AYDOĞAN*

	Titles	**Presenter**
OP-57	You Are the Cure: Strengthening Syphilis Surveillance and Continuity of Care through Family Medicine Collaboration in North Macedonia	Hristina Leskaroska
OP-58	When First-Line Therapy Fails: Challenges in Helicobacter pylori Eradication in Primary Care	Hristina Leskaroska
OP-59	Prognostic Factors and Survival Outcomes in Cancer Patients: A Real-World Retrospective Study	Aykut Turhan
OP-60	Alpha-gal Syndrome in an Endemic Black Sea Region: A Single-Center Clinical and Epidemiological Study from Ordu, Turkey	Kasim Okan
OP-61	Case Report: Post-vaccination Parotitis Following MMR Immunization in a Healthcare Worker	Asiye Sezer Olgun
OP-62	Correlation of Severe Stenoses Detected via Coronary Computed Tomography Angiography with Invasive Coronary Angiography: A Vessel-Based Diagnostic Accuracy Study	Suleyman Kasar

06 JUNE SATURDAY / 14:40 – 15:25

ORAL PRESENTATION-10 *(HOYNAT)*
Chairs: *Dr. Mahcube ÇUBUKÇU – Dr. Latife Merve YILDIZ*

	Titles	**Presenter**
OP-63	Epidemiological Analysis of Patients Referred from Family Medicine to the Otorhinolaryngology Department	Mehmet Fatih Çakmak
OP-64	Pigmented Purpuric Dermatosis	Hilal Meltem Saydam
OP-65	Atypical Presentation of Acute Severe Headache in Childhood: A Case of Herpes Zoster Ophthalmicus	Nese Senturk
OP-66	Passive Tobacco Smoke Exposure: A Bibliometric Analysis of Scientific Publications Focused on Child Health	Asuman Okur
OP-67	A Residents Perspective on Training Family Health Centers: An Experience-Based Report	Buse Nur Erdogan
OP-68	Micro Parasite, Macro Impact: The Reality of Scabies Management in Primary Care	Tulay Aksoy

06 JUNE SATURDAY / 15:25 – 16:10

ORAL PRESENTATION-11 *(HOYNAT)*
Chairs: *Dr. Elif NEGİŞ – Dr. Tuğba DAĞAŞAN*

	Titles	**Presenter**
OP-69	Early Recognition and Multi-Modal Management of Suspected Cutaneous Vasculitis in a Primary Care Setting	Bojana Gannoune
OP-70	The Scientific Characteristics and Thematic Distribution of Oral Presentations at the 3rd International Eastern Black Sea Family Medicine Congress	Nafiye Ebru Terzi
OP-71	Wolbachia Bacteria: Interaction with the Parasitic Host and Potential for Biological Control	Turkan Mutlu Yar
OP-72	The Relationship between Wolbachia Bacteria and Nematodes: Its Significance in Parasitic Diseases	Turkan Mutlu Yar
OP-73	Short Term Outcomes of Cytisine Treatment in Patients Attending a Smoking Cessation Clinic	Kubra Guner Karaca
OP-74	Assessment of Migrant Parents' Knowledge of Developmental Dysplasia of the Hip Screening: A Pilot Study	Kubra Guner Karaca

06 JUNE SATURDAY / 16:30 – 17:15

ORAL PRESENTATION-12 *(HOYNAT)*
Chairs: *Dr. Hatun ÖZTÜRK ÇERİK – Dr. Fethi Sada ZEKEY*

	Titles	**Presenter**
OP-75	Epidemiological Evaluation of Thyroid Fine-Needle Aspiration Biopsy Results in a Single Center: A Retrospective Analysis Based on the Bethesda System	Hilal Altas
OP-76	The Role of Age in Predicting Malignancy in Breast Tru-Cut Biopsies: A Single-Center Experience	Hilal Altas
OP-77	Refractory Seizures Secondary to Hypoxic-Ischemic Encephalopathy in the Neonatal Period: A Case Report	Sevgi Cirakli
OP-78	R-Wave Peak Time as Early Electrocardiographic Marker of Subclinical Left Ventricular Remodeling in Young Hypertensive Patients	Mustafa Kamil Saglam
OP-79	Evaluation of YouTube Videos on Breastfeeding and Breast Milk: A Cross-Sectional Content Analysis	Irem Sarikaya

ONLINE ORAL PRESENTATION PROGRAM

4th International Eastern Black Sea Family Medicine Congress
04-06 June 2026

Presentation durations are limited to 6 minutes. Slides can be shared via Zoom during the presentation. Zoom session links will be shared with speakers before the conference. For any issues related to the presentation schedule and content, you can email kahsedbilimseldestek@gmail.com

06 JUNE 2026 SATURDAY / 11:00 - 11:45

ONLINE ORAL PRESENTATION-1 *(YASON)*
Chairs: *Dr. Gülru Pemra Cöbek ÜNALAN - Dr. Fatma Esra GÜNAYDIN*

	Titles	**Presenter**
OOP-01	Screen Exposure During Meals in Children with Autism Spectrum Disorder: Relationship with Feeding Problems, Food Selectivity, And Co-Occurring Screen Habits	Dilek Altunvarmis
OOP-02	Cyberchondria Research in Türkiye: A Descriptive Analysis of Medical Residency Theses (2010-2026)	Zeyneb Irem Yuksel Salduz
OOP-03	Microbiota Research in Türkiye: A Document Analysis of Medical Residency Theses	Zeyneb Irem Yuksel Salduz
OOP-04	Prevalence of Refractive Errors in Children Aged 7 Years and Younger: The Role of Behavioral Visual Symptoms	Kader Kasar
OOP-05	72-Hour Vision Loss: A Case of Post-Traumatic Fulminant Endophthalmitis	Kader Kasar
OOP-06	Validity and Reliability of the Turkish Version of the Modified Vaccine Hesitancy Scale for Childhood, Influenza, and HPV Vaccines	Elif Akti Cakir
OOP-07	Post-Vaccination Symptom: Local Reaction or a Bleeding Disorder?	Tugba Balik Kozak

06 JUNE 2026 SATURDAY / 11:45 - 12:30

ONLINE ORAL PRESENTATION-2 *(YASON)*
Chairs: *Dr. Gülru Pemra CÖBEK ÜNALAN - Dr. Zeyneb İrem YÜKSEL SALDUZ*

	Titles	**Presenter**
OOP-08	Is Montelukast Being Replaced by Antihistamine Montelukast Combination Therapy? A 10-Year Trend	Fatma Esra Gunaydin
OOP-09	Evaluation of Glycemic and Metabolic Characteristics in Patients Undergoing HbA1c Testing in Primary Care: A Retrospective Descriptive Study	Ozden Kokurcan
OOP-10	Substance Use Profile by Age and Gender in AMATEM Patients: A Retrospective Analysis	Ozden Kokurcan
OOP-11	Comparative Discriminative Performance of Albumin, Lymphocyte Count, Prognostic Nutritional Index, and a Multivariable Inflammation-Nutrition Model in MINOCA and INOCA	Sencer Camci
OOP-12	Systemic Reactions During Skin Prick Testing in Children: Rare but Not Negligible	Sibel Kaplan Sarikavak
OOP-13	Vocational Inclusion Through Teachers' Eyes: A Qualitative Analysis of Stigma, Burnout, and Barriers to Employment	Talat Sarikavak
OOP-14	Toxicities of Systemic Cancer Therapies in Primary Care	Albiona Poci
OOP-15	Electrolytes and Acute Kidney Injury Biomarkers in Cancer patients: Implications for Primary Care Referral	Matilda Imeraj
OOP-16	Whole-Exome Sequencing Reveals the Neurogenetic Spectrum of Pediatric Epilepsy in Türkiye	Mehmet Burak Mutlu

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ORAL PRESENTATIONS

EBFMC26-OP-01 · Fournier's Gangrene with Self-Debridement: A Case Presentation

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This paper underwent a ***double-blind peer review process*** *and was approved for publication by the Scientific Committee of the conference.*

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ETHICS STATEMENT
Written informed consent was obtained from the patient.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Necrotising fasciitis is a highly progressive necrotising infectious disease that can affect soft tissues and fasciae. The clinical presentation involving the external genital system is termed Fournier's gangrene. Risk factors include diabetes mellitus, alcohol, advanced age, immunosuppression, and malignancy (1). Given that recent studies have reported mortality rates of up to 40%, early diagnosis and treatment are essential (2). This case presentation aims to highlight a patient who underwent near spontaneous debridement under antibiotic therapy and to draw attention to the fact that this clinical presentation may occur in different ways, albeit rarely.
Case Presentation: An 80-year-old male patient presented to the emergency department with complaints of scrotal pain and tissue loss for approximately 10 days. After commencing treatment at an external centre, he removed a piece of tissue from the wound site himself, and a few days later, the remaining piece fell into his underwear. During the assessment in the emergency department, the patient was agitated but in good general condition. The urogenital examination revealed an open wound extending from the inferior scrotum to the anus, with patchy bleeding and minimal purulent discharge. There was redness, increased heat, and tenderness on palpation around the wound. There was no history other than lung cancer and chemotherapy. No additional pathology was detected in the patient's imaging studies. The patient was evaluated in conjunction with general surgery and admitted to the level 3 intensive care unit with a suspected diagnosis of Fournier's gangrene. Subsequently, the patient was taken to the operating theatre for debridement, but no necrosis or infected areas

were detected in the wound area, and the blood supply to the entire area was normal. The procedure was concluded after the dressing was changed. The patient's wound site was monitored daily, wound dressings were applied, and the wound site was closed on the 14th day of admission, after which the patient was discharged.
Conclusion: Fournier's gangrene is a disease that requires immediate intervention upon detection and can be fatal (2). Although its clinical presentation can vary greatly, in rare cases, such as this one, it may present in a regressed state without complications. In such cases, regular antibiotic therapy and debridement are of vital importance. In our case, we wanted to highlight the importance of appropriate antibiotic therapy by describing a case of Fournier's gangrene that resolved spontaneously with correct antibiotic therapy without the need for debridement.

KEYWORDS
Fournier’s Gangrene, Debridement, Antibiotic Therapy

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EBFMC26-OP-02 · Clinical Factors Associated with Survival in a Real-World Cohort of Patients with Cancer

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ETHICS STATEMENT
This study was approved by the Ethics Committee (Date: 17 October 2025; Approval No: 2025/345).

ARTIFICIAL INTELLIGENCE STATEMENT
AI was used for text editing. The authors take full responsibility for the content of this study.

ABSTRACT
Introduction: Survival in patients with cancer is influenced by multiple clinical and demographic factors. However, real-world studies evaluating these determinants across heterogeneous cancer populations remain limited. This study aimed to investigate clinical factors associated with overall survival in a large real-world cohort of patients with cancer.
Materials and Methods: This retrospective cohort study included patients diagnosed with cancer and followed at a tertiary oncology center. Demographic and clinical variables including age, sex, body mass index (BMI), stage at diagnosis, performance status, and comorbidities were recorded. Overall survival (OS) was estimated using the Kaplan-Meier method, and survival differences were assessed with the log-rank test. Multivariate Cox proportional hazards regression analysis was performed to identify independent prognostic factors associated with survival.
Results: A total of 1,029 patients were included in the analysis. The mean age at diagnosis was 62.8 years, and 55% of patients were male. The most common malignancies were lung, breast, and colorectal cancers. At diagnosis, the majority of patients presented with advanced disease, with stage III and IV accounting for more than two-thirds of cases. The median overall survival for the entire cohort was 22.4 months. Survival differed significantly according to stage, performance status, and BMI.
In multivariate analysis, advanced stage and poor performance status were independently associated with increased mortality. Compared with stage I disease, the risk of death increased for stage II (HR: 2.11, 95% CI: 1.32-3.38, p=0.002), stage III (HR: 3.95, 95% CI: 2.62-5.96, p<0.001), and stage IV (HR: 8.78, 95% CI: 5.81-13.27, p<0.001). Poor performance status (ECOG ≥2) was strongly associated with increased mortality

(HR: 4.45, 95% CI: 3.51-5.63, p<0.001). In contrast, higher BMI (≥25 kg/m²) was associated with improved survival (HR: 0.64, 95% CI: 0.55-0.76, p<0.001).
Conclusion: In this large real-world cohort of patients with cancer, stage at diagnosis, performance status, and BMI emerged as key determinants of survival. These findings highlight the importance of clinical and patient-related factors in prognostic assessment and may help guide risk stratification and patient management in routine clinical practice.

KEYWORDS
Cancer, Overall Survival, Prognostic Factors, Body Mass Index, Performance Status

INTRODUCTION

Cancer remains one of the leading causes of morbidity and mortality worldwide and represents a major public health challenge. According to the World Health Organization, cancer accounted for nearly 10 million deaths globally in 2020, making it the second leading cause of death after cardiovascular diseases (1). Despite significant advances in screening programs, early diagnosis, and the development of targeted and immunotherapeutic agents, survival outcomes vary substantially among patients with cancer and are influenced by both tumor-related and patient-related factors.

Among the most consistently reported prognostic determinants are stage at diagnosis and functional status. Advanced stage disease has been repeatedly associated with significantly poorer survival across multiple cancer types, reflecting both tumor burden and metastatic dissemination. Similarly, performance status, particularly as assessed by the Eastern Cooperative Oncology Group (ECOG) Performance Status scale, is widely recognized as one of the strongest predictors of survival and treatment tolerance in oncology practice. Previous studies have demonstrated that impaired performance status is strongly associated with increased mortality and poorer treatment outcomes in patients with cancer (2,3).

In addition to these well-established prognostic factors, the role of body composition and nutritional status in cancer outcomes has gained increasing attention in recent years. Body mass index (BMI), a widely used measure of body composition, has been associated with both cancer incidence and prognosis. Interestingly, several observational studies have reported a paradoxical association between higher BMI and improved survival in patients with established cancer, a phenomenon often referred to as the “obesity paradox.” This unexpected relationship has been described in multiple malignancies, including lung, colorectal, and renal cancers (4,5).

Although numerous studies have evaluated prognostic factors within specific tumor types, real-world analyses examining survival determinants across heterogeneous cancer populations remain relatively limited (6,7). Large observational cohorts that include multiple malignancies may provide important insights into how patient-related and disease-related factors interact to influence survival in routine clinical practice.

Therefore, the aim of the present study was to evaluate clinical factors associated with overall survival in a large real-world cohort of patients with cancer, with particular emphasis on stage at diagnosis, performance status, and body mass index.

METHODS

This retrospective cohort study included patients diagnosed with cancer and followed at a tertiary oncology center. Demographic and clinical data were collected from institutional medical records.

Variables recorded included age at diagnosis, sex, body mass index (BMI), cancer type, stage at diagnosis, performance status according to the Eastern Cooperative Oncology Group (ECOG) scale, and the presence of comorbidities such as diabetes mellitus, chronic obstructive pulmonary disease, hypertension, and coronary artery disease.

Overall survival (OS) was defined as the time from cancer diagnosis to death from any cause or last follow-up.

Survival probabilities were estimated using the Kaplan-Meier method, and comparisons between groups were performed with the log-rank test. Multivariate Cox proportional hazards regression analysis was used to identify independent factors associated with overall survival. Hazard ratios (HRs) and 95% confidence intervals (CIs) were calculated for each variable. Statistical significance was defined as a p-value <0.05.

RESULTS

A total of 1,029 patients were included in the analysis. The cohort consisted of 566 males (55.0%) and 463 females (45.0%). The mean age at diagnosis was 62.8 ± 12.9 years, and the mean BMI was 27.6 ± 5.3 kg/m². The most common malignancies were lung cancer (22.8%), breast cancer (20.5%), and colorectal cancer (13.2%), followed by gastric and prostate cancers (Table 1 and 2).

Table 1

Distribution of Cancer Types in the Overall Cohort (n=1,029)

Cancer Type	
Lung cancer	22.8%
Breast cancer	20.5%
Colorectal cancer	13.2%
Gastric cancer	7.9%
Prostate cancer	6.6%
Brain tumors	4.5%
Endometrial cancer	3.9%
Bladder cancer	3.2%
Pancreatic cancer	2.8%
Head and neck cancers	2.2%
Ovarian cancer	2.0%
Renal malignancies	1.7%
Biliary tract cancers	1.6%
Sarcoma	1.5%
Cervical cancer	1.2%
Other malignancies	<1% each

Table 2

Sex-Specific Distribution of Cancer Types

Cancer Type	Male	Female
Lung cancer	37.5%	5.0%
Breast cancer	—	45.6%
Colorectal cancer	14.1%	12.1%
Prostate cancer	12.0%	—
Gastric cancer	11.0%	4.1%
Brain tumors	6.2%	2.4%
Bladder cancer	5.5%	0.4%
Endometrial cancer	—	8.6%
Ovarian cancer	—	4.5%
Cervical cancer	—	2.6%
Pancreatic cancer	2.8%	2.8%
Head and neck cancers	3.0%	1.3%
Sarcoma	1.4%	1.5%

At diagnosis, 36.7% of patients had stage IV disease and 35.8% had stage III disease, indicating that the majority of patients presented with advanced-stage cancer. Regarding performance status, 62.4% of patients had an ECOG performance status ≥2. Comorbidities were present in 55.4% of the cohort, with hypertension, diabetes mellitus, and coronary artery disease being the most frequently observed conditions (Table 3).

Table 3

Baseline Demographic and Clinical Characteristics

Variable	% or Mean ± SD
Age at diagnosis (years)	62.8 ± 12.9
BMI (kg/m²)	27.6 ± 5.3
Sex	
Male	55.0%
Female	45.0%
Stage at diagnosis	
Stage I	12.8%
Stage II	14.7%
Stage III	35.8%
Stage IV	36.7%
ECOG performance status	
0–1	37.6%
≥2	62.4%
Comorbidity	55.4%
Diabetes mellitus	18.3%
Chronic obstructive pulmonary disease	8.6%
Hypertension	39.1%
Coronary artery disease	15.1%
Vital status at last follow-up	
Alive	38.7%
Deceased	61.3%

Abbreviations: BMI, body mass index; ECOG, Eastern Cooperative Oncology Group; SD, standard deviation.

The median overall survival for the entire cohort was 22.4 months. Survival differed significantly according to stage at diagnosis. Median overall survival was 208.9 months for stage I disease, 93.1 months for stage II, 39.1 months for stage III, and 11.2 months for stage IV disease ($p<0.001$). Kaplan-Meier survival curves demonstrated a clear stepwise decline in survival with advancing stage (Figure 1). Performance status was also strongly associated with survival. Patients with ECOG ≥2 had a median survival of 16.8 months, whereas median survival was not reached for patients with ECOG 0-1 during follow-up ($p<0.001$). Kaplan–Meier analysis confirmed a substantial separation of the survival curves between these groups (Figure 2). BMI was significantly associated with survival outcomes. Patients with BMI ≥25 kg/m² had a median overall survival of 44.2 months compared with 16.8 months among those with BMI <25 kg/m² ($p<0.001$) (Table 4). Kaplan-Meier curves demonstrated significantly longer survival among patients with higher BMI (Figure 3).

Figure 1

Kaplan-Meier curves for overall survival according to stage at diagnosis. A progressive decline in survival was observed with advancing stage (log-rank p<0.001)

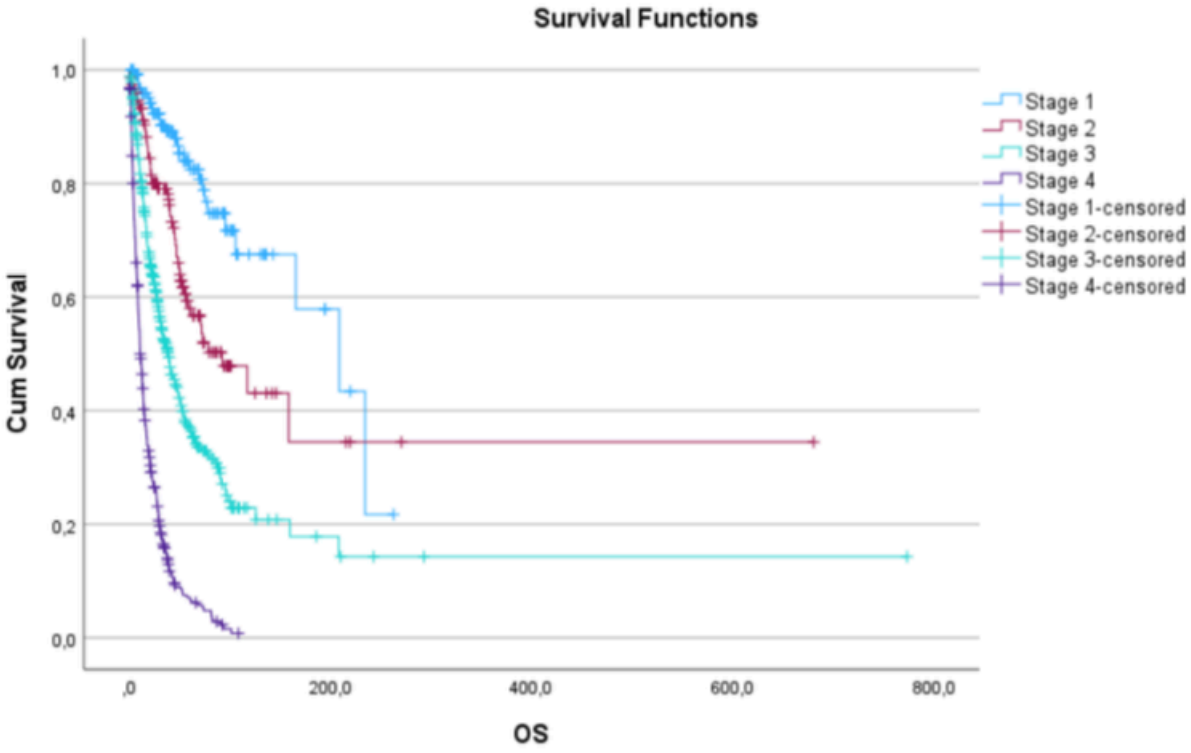


Figure 2

Kaplan-Meier curves for overall survival stratified by ECOG performance status. Patients with ECOG ≥2 demonstrated significantly shorter survival compared to those with ECOG 0–1 (log-rank p<0.001)

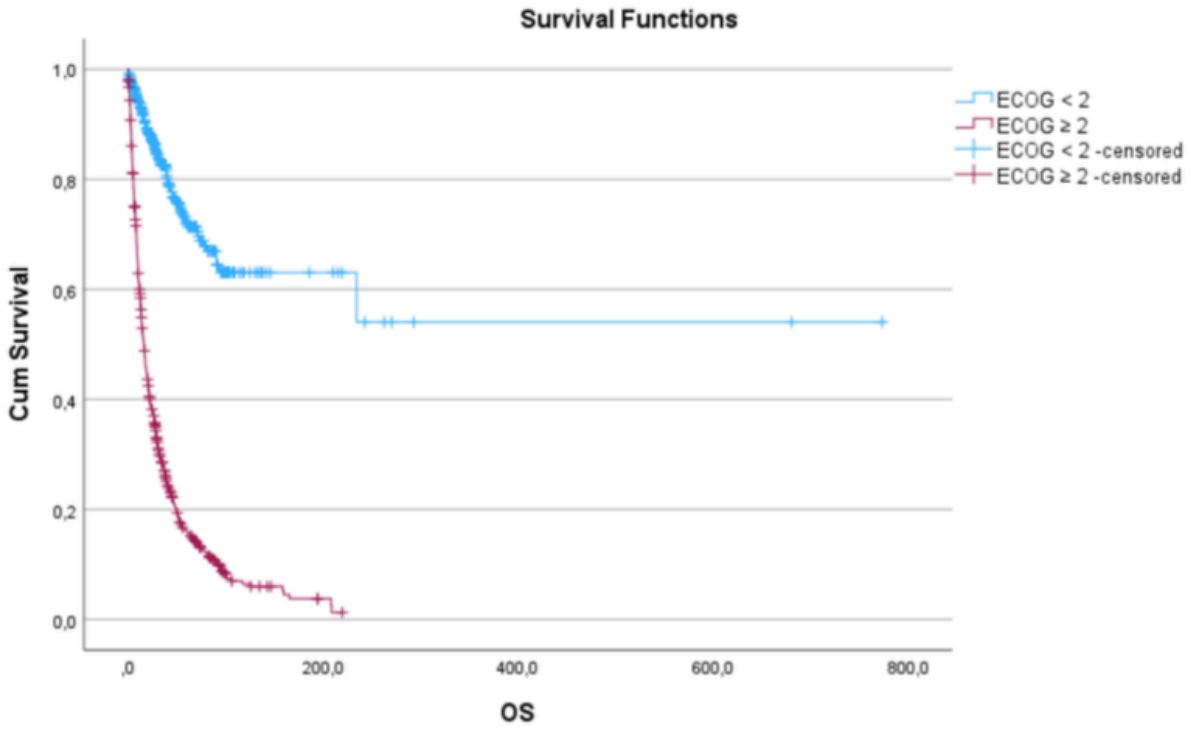


Table 4

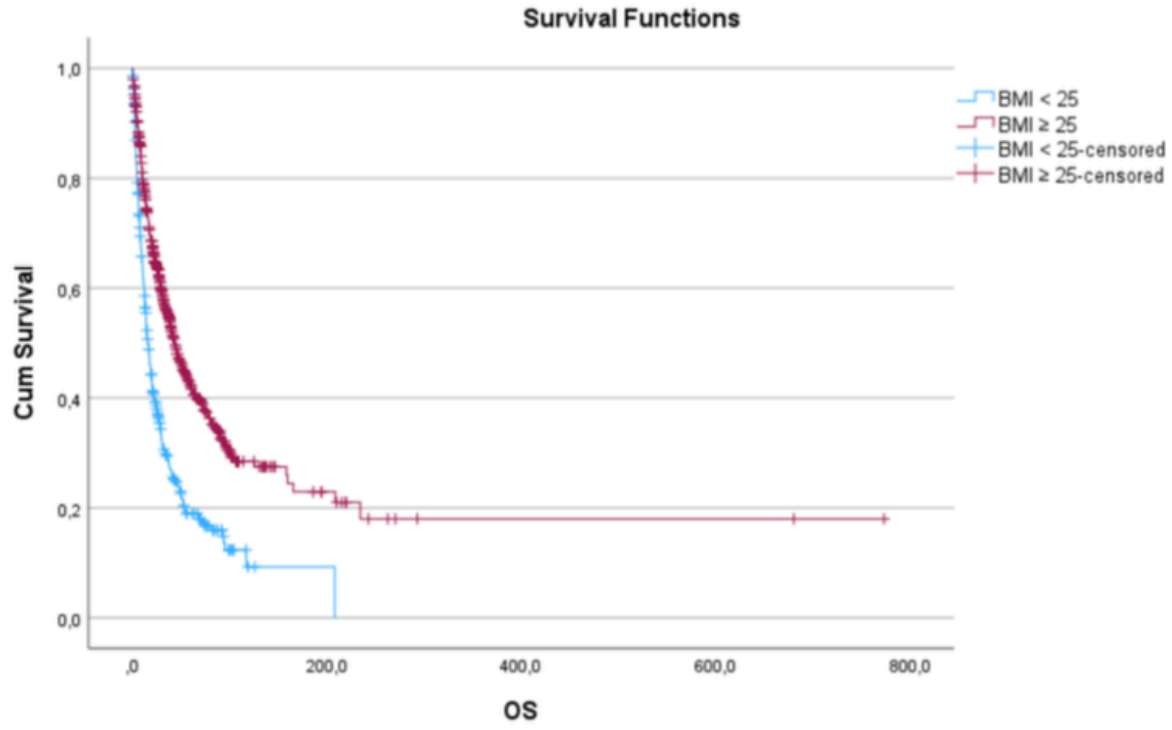
Overall Survival According to Clinical Variables

Variable	Group	Median OS (months)	IQR / 95% CI	p-value
Entire cohort	—	22.4	9.1–46.2 (IQR)	—
Stage	I	208.9	121.9–296.0	<0.001
	II	93.1	51.4–134.7	
	III	39.1	31.5–46.7	
	IV	11.2	9.6–12.8	
ECOG	0–1	Not reached	—	<0.001
	≥2	16.8	14.8–18.9	
BMI	<25	16.8	14.0–19.5	<0.001
	≥25	44.2	38.1–50.3	

Abbreviations: OS, overall survival; CI, confidence interval; IQR, interquartile range; ECOG, Eastern Cooperative Oncology Group performance status; BMI, body mass index.

Figure 3

Kaplan-Meier curves for overall survival according to body mass index (BMI) categories. Patients with BMI ≥25 kg/m² had significantly longer survival compared to those with BMI <25 kg/m² (log-rank p<0.001)



In multivariate Cox regression analysis, BMI ≥25 kg/m² was independently associated with a reduced risk of mortality (HR=0.64, 95% CI: 0.55-0.76, p<0.001). Conversely, ECOG performance status ≥2 (HR=4.45,

95% CI: 3.51-5.63, p<0.001) and advanced stage at diagnosis were independently associated with increased mortality risk (Table 5).

Table 5

Multivariate Cox Proportional Hazards Analysis for Overall Survival

Variable	HR	95% CI	p-value
BMI ≥25 kg/m²	0.64	0.55–0.76	<0.001
ECOG ≥2	4.45	3.51–5.63	<0.001
Stage II vs I	2.11	1.32–3.38	0.002
Stage III vs I	3.95	2.62–5.96	<0.001
Stage IV vs I	8.78	5.81–13.27	<0.001

CONCLUSION

In this large real-world cohort of patients with cancer, stage at diagnosis, performance status, and body mass index emerged as independent determinants of overall survival. As expected, advanced stage at diagnosis was strongly associated with a markedly increased risk of mortality, reflecting the well-established prognostic impact of tumor burden and metastatic dissemination across multiple malignancies (8). Similarly, impaired functional status, as reflected by a higher ECOG performance score, was independently associated with significantly worse survival outcomes. These findings are consistent with previous large analyses demonstrating that performance status is one of the most powerful predictors of survival and treatment tolerance in oncology populations, regardless of tumor type (2,3,9,10).

Interestingly, our analysis also demonstrated a significant association between body mass index and survival outcomes, with patients with BMI ≥25 kg/m² exhibiting longer overall survival compared with those with lower BMI. This observation is in line with the so-called “obesity paradox,” a phenomenon increasingly reported in oncology, in which overweight or moderately obese patients demonstrate improved survival compared with normal-weight or underweight patients after cancer diagnosis. Several large observational studies and meta-analyses have described this paradoxical association in malignancies such as lung cancer, colorectal cancer, and renal cell carcinoma (11,12,13).

Although the underlying mechanisms remain incompletely understood, several hypotheses have been proposed, including the protective role of greater metabolic reserves, differences in systemic inflammatory responses, and potential confounding by cancer-related cachexia in patients with lower BMI (14). From a clinical perspective, these findings underscore the importance of considering nutritional status and body composition as integral components of prognostic assessment in patients with cancer (15,16).

Taken together, the results of this study highlight that both disease-related factors, such as tumor stage, and patient-related factors, including functional status and body composition, play a crucial role in determining survival outcomes in routine oncology practice. Recognizing these determinants may contribute to improved risk stratification, more individualized treatment planning, and better supportive care strategies for patients with cancer.

However, this study has several limitations. The inclusion of a heterogeneous cancer population may have introduced variability related to tumor biology and treatment modalities, which could influence survival outcomes. Therefore, the findings should be interpreted with caution, and tumor-specific analyses are warranted in future studies.

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EBFMC26-OP-03 · Recurrent Peripartum Cardiomyopathy and Heart Failure: Multidisciplinary Approach and Management Strategies

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ETHICS STATEMENT
Written informed consent was obtained from the patient for the publication of this case report and any accompanying clinical information and images. All identifying information has been kept confidential.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: This case presents the management of a pregnant patient who developed recurrent peripartum cardiomyopathy and heart failure, despite the high risks of morbidity and mortality. The patient was successfully managed through a multidisciplinary approach involving family medicine, obstetrics and gynecology, cardiology, and anesthesia.
Case Presentation: A 35-year-old woman with a history of chronic hypertension, asthma, and peripartum cardiomyopathy during her first pregnancy was categorized as high-risk. Despite receiving contraception counseling from cardiology, she became pregnant unintentionally. Upon pregnancy detection, the patient was referred to cardiology by family medicine. Due to concerns about possible termination risks, she discontinued cardiology follow-up. At 24 weeks of pregnancy, the patient presented with increasing dyspnea and fatigue and was referred to cardiology for monitoring. Cardiac assessment revealed sinus rhythm at 110 BPM (Beats Per Minute), and transthoracic echocardiography showed a diastolic end-diameter of 65 mm, LVEF of 35-40%, global severe hypokinesia, moderate-to-severe mitral regurgitation, and mild tricuspid regurgitation. Her functional capacity was classified as Class 2. The patient was diagnosed with heart failure due to recurrent peripartum cardiomyopathy and was recognized as a high-risk pregnancy (1). A multidisciplinary team was

formed for close monitoring, including family medicine, obstetrics and gynecology, cardiology, and anesthesia.
At 34 weeks, the patient was admitted with superimposed preeclampsia due to elevated blood pressure and was monitored until delivery. Given the risk of premature birth, betamethasone doses were administered for fetal lung maturation. A Rhythm Holter was applied, and the patient was diagnosed with sinus tachycardia. Chronic hypertension was managed with nifedipine 60 mg once daily, and carvedilol 6.25 mg twice daily was added to her treatment regimen.
Considering maternal clinical status and without maternal or fetal emergencies, it was decided to perform a cesarean section at 37 weeks under controlled conditions. The patient was monitored in the intensive care unit postoperatively with close hemodynamic monitoring. A 2470-gram live female infant was delivered via cesarean section. The patient, stable and compensated under medical treatment, was discharged on postoperative day 5 with a functional capacity classification of Class 1.
Conclusion: This case demonstrates the positive impact of early diagnosis, close monitoring, and multidisciplinary teamwork on maternal outcomes. Family physicians play a key role in recognizing early symptoms, ensuring timely referrals, and coordinating care during pregnancy. This case highlights the crucial role of a family medicine-centered multidisciplinary approach in maintaining maternal health in recurrent peripartum cardiomyopathy.

KEYWORDS
Peripartum Cardiomyopathy, Pregnancy, Family Medicine

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OP-04 · Biphasic Sacral Autonomic Dysfunction Following Neuraxial Anesthesia for Cesarean Section: A Steroid-Responsive Case Report

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ETHICS STATEMENT
Written informed consent was obtained from the patient.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Background: Neuraxial anesthesia is widely used in obstetric practice and is generally considered safe. However, neurological complications may rarely occur (1,2). Sacral autonomic dysfunction is extremely rare and its pathophysiology remains unclear.
Case Presentation: We report a case of transient lower extremity paresis with early-onset voiding and defecatory difficulty following neuraxial anesthesia for cesarean section. Motor symptoms resolved spontaneously, but persistent detrusor-sphincter dyssynergia and anal sphincter hypertonia developed and completely resolved after a single intramuscular dose of dexamethasone.
Conclusion: The clinical course supports a biphasic mechanism involving an initial pharmacologic block followed by secondary inflammatory dysfunction.

KEYWORDS
Neuraxial Anesthesia, Sacral Autonomic Dysfunction, Detrusor-Sphincter Dyssynergia

INTRODUCTION
Neuraxial anesthesia is a standard technique for cesarean section with a low complication rate (1). Rare neurological complications such as transient neurologic symptoms, radiculopathy, and cauda equina-like syndromes have been reported (2,3). Sacral autonomic dysfunction affecting bladder and anal sphincter function is exceedingly rare. Proposed mechanisms include mechanical, neurotoxic, and inflammatory processes (3,4). This case demonstrates a biphasic course suggesting sacral autonomic involvement.

CASE PRESENTATION

A 24-year-old woman underwent cesarean section under neuraxial anesthesia at the L2 level. Immediately after the procedure, she developed voiding and defecatory difficulty with right lower extremity weakness. The motor deficit resolved within 36 hours. However, intermittent painful voiding, need for digital rectal stimulation, and anal sphincter spasm persisted. Neurological examination revealed increased anal sphincter tone with normal motor and sensory findings. Lumbar spine MRI showed no compressive pathology. On day 10, a single intramuscular dose of dexamethasone was administered, resulting in complete resolution.

DISCUSSION

This case illustrates a rare sacral autonomic dysfunction with a biphasic course. The early phase reflects the pharmacologic effect of local anesthetics on sacral segments (S2-S4) (3). Persistence of sphincter dysfunction despite motor recovery, along with detrusor-sphincter dyssynergia and anal hypertonia, suggests a secondary inflammatory process. The marked response to corticosteroids supports this hypothesis. Previous studies indicate that inflammation may contribute to neurological complications after neuraxial anesthesia (1,2). Localization to S2-S4 segments and increased sphincter tone favor functional sacral involvement rather than peripheral root injury. Cauda Equina Syndrome and Conus Medullaris Syndrome were excluded based on normal imaging, absence of persistent deficits, and complete steroid response (2,4).

CONCLUSION

Sacral autonomic dysfunction following neuraxial anesthesia is a rare but reversible condition that may follow a biphasic course. This case supports an inflammatory mechanism and suggests corticosteroid therapy may be beneficial in selected patients.

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OP-05 · The Association of Healthy Nutritional Attitudes and Quality of Life with Anemia During Pregnancy: A Sample from Yozgat

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ETHICS STATEMENT
For this study, approval was obtained from the Ethics Committee in Yozgat Bozok University. Written informed consent was obtained from all participants before participating in the study.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Anemia during pregnancy is a major public health concern, affecting approximately 40% of pregnant women worldwide and contributing to serious obstetric complications (1). Micronutrient deficiencies remain among the leading causes of maternal anemia (2). Although the Turkish Ministry of Health provides free iron and vitamin supplementation to pregnant women (3), preventing anemia requires a broader evaluation of dietary habits and overall well-being. This study investigates the relationship between nutritional attitudes and anemia, and their combined effects on quality of life among pregnant women in Yozgat, Türkiye.
Materials and Methods: This cross-sectional study was conducted at the Obstetrics and Gynecology clinics of Yozgat Bozok University Hospital. Of a target sample of 400 pregnant women, 228 participants were enrolled at the time of analysis. Data were collected through face-to-face interviews using a structured questionnaire covering sociodemographic and obstetric characteristics, the Quality of Life Gravidarum Scale (4), and the

Healthy Nutrition Attitude Scale (5). Routine prenatal laboratory results were retrieved from hospital records. Statistical analysis was performed using IBM SPSS Statistics, version 20, with bivariate analyses and multivariate logistic regression.
Results: The prevalence of maternal anemia among participants was 5.7% (n=13), with iron deficiency identified as the most common underlying etiology. In bivariate analyses, non-anemic women were significantly more likely to avoid junk food than anemic women (p=0.008). Women with normal serum iron levels scored significantly higher on healthy eating knowledge (p=0.005), carbohydrate awareness (p=0.046), and avoidance of meal replacement with junk food (p=0.033). Lower fast-food consumption was associated with optimal vitamin B12 levels (p=0.044). Anemia also adversely affected quality of life: anemic women reported greater worry about housework (p=0.012) and higher anxiety about childbirth (p=0.019) compared to non-anemic women. Multivariate logistic regression identified unhealthy nutritional habits, residence in a town rather than a city, and second-trimester pregnancy as independent risk factors for anemia (p=0.040, p=0.021, and p=0.006, respectively). Independent predictors of poor quality of life included middle-school educational attainment (p=0.031), active smoking (p=0.022), and second-trimester pregnancy (p=0.040), while living in a nuclear family was a significant protective factor (aOR [Adjusted Odds Ratio]=0.056, p=0.023).
Conclusion: This study identifies unhealthy nutritional habits, town residence, and second-trimester pregnancy as modifiable or targetable risk factors for anemia in pregnant women. Comprehensive primary healthcare strategies that integrate nutritional education particularly targeting women in towns, those with lower educational attainment, and smokers are needed to reduce anemia burden and improve quality of life during pregnancy.

KEYWORDS
Anemia, Pregnancy, Nutritional Attitudes, Quality of Life

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EBFMC26-OP-06 · Tafamidis Treatment in Cardiac Transthyretin Amyloidosis: Clinical and Echocardiographic Features (Single-Centre Real-World Data)

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ETHICS STATEMENT

The study protocol was approved by Ordu University Ethics Committee (Approval No: 2025/296, 12/09/2025) and conducted in accordance with the principles of the Declaration of Helsinki.

ARTIFICIAL INTELLIGENCE STATEMENT

No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT

Background: Cardiac amyloidosis (CA) is an infiltrative cardiomyopathy characterized by extracellular deposition of misfolded amyloid fibrils within the myocardium, leading to progressive diastolic dysfunction, heart failure, and conduction abnormalities. Transthyretin cardiac amyloidosis (ATTR-CA) is a progressive infiltrative cardiomyopathy and is particularly a significant cause of heart failure in the elderly population. Tafamidis is a disease-modifying treatment that stabilises transthyretin, preventing the formation of amyloid

fibrils and slowing disease progression. This study aims to compare the clinical and echocardiographic features of ATTR-CA patients who received tafamidis treatment with those who did not.
Methods: In this retrospective study, a total of 53 patients aged ≥18 years diagnosed with transthyretin cardiac amyloidosis were included from a single tertiary centre. Diagnosis was established according to current guideline recommendations, based on positive bone scintigraphy (Perugini grade ≥2) in the absence of monoclonal protein, along with supportive echocardiographic findings. The patients were divided into two groups: those receiving tafamidis treatment (n=31) and those not receiving it (n=22). Clinical features, laboratory parameters, and echocardiographic findings were evaluated retrospectively. Statistical analysis was performed using IBM SPSS Statistics 21.0, and a p-value of less than 0.05 was considered statistically significant.
Results: No significant differences were found among the patients included in the study in terms of demographic characteristics. Patients receiving tafamidis treatment had significantly higher levels of BNP (p=0.012) and serum creatinine (p=0.031). Echocardiographic assessment revealed that patients on tafamidis had a lower left ventricular ejection fraction (p=0.007) and a larger right atrial area (p=0.046). Additionally, the degrees of mitral regurgitation (p=0.043) and tricuspid regurgitation (p=0.022) were observed to be more advanced in patients receiving tafamidis. Although the prevalence of atrial fibrillation was higher in the tafamidis group, it did not reach statistical significance (p=0.096).
Conclusion: Elevated BNP levels, reduced LVEF, and more significant right heart dilation have been observed in patients with ATTR cardiac amyloidosis receiving Tafamidis therapy. These findings suggest that Tafamidis is often initiated in patients with more advanced cardiac involvement in real-world clinical settings. Larger and prospective studies are necessary to more definitively elucidate the impact of Tafamidis treatment on clinical outcomes and echocardiographic characteristics in ATTR cardiomyopathy.

KEYWORDS
Transthyretin Cardiac Amyloidosis, Tafamidis, Echocardiography, Heart Failure, Real-World Data

INTRODUCTION

Amyloidosis is a heterogeneous group of diseases characterised by the extracellular accumulation of misfolded amyloid proteins, leading to progressive tissue damage and organ dysfunction. The most common types of systemic amyloidosis include immunoglobulin light chain (AL) amyloidosis, serum amyloid A (AA) amyloidosis, and transthyretin (ATTR) amyloidosis (1, 2). Wild-type and hereditary ATTR usually affect the heart, while AL also involves the kidneys, and AA is systemic and inflammatory in origin. ATTR amyloidosis has two different forms: hereditary and wild-type ATTR amyloidosis. The hereditary form (ATTRv; 'v' for 'variant') is a progressive autosomal dominant disorder caused by mutations in the transthyretin (TTR) gene (3). The phenotypic spectrum can range from predominantly cardiomyopathic ATTR variants to those mainly presenting with polyneuropathy. Wild-type ATTR amyloidosis (ATTRwt), previously known as 'age-related systemic amyloidosis', is an age-related condition characterised by amyloid fibrils composed of normal, non-mutated TTR protein (4). Genetic testing is recommended to distinguish between ATTRv and ATTRwt amyloidosis (5).
Transthyretin cardiac amyloidosis (ATTR-CA) is an infiltrative cardiomyopathy characterised by the accumulation of amyloid fibrils formed due to the misfolding of transthyretin protein in the myocardium. The disease is increasingly recognised as one of the important causes of heart failure, particularly in the elderly population (6). ATTR-CA is most often associated with preserved ejection fraction (HFpEF), conduction system disorders, and atrial arrhythmias. Atrial fibrillation (AF) is quite prevalent in these patients, with some studies reporting a prevalence of up to 40–70% (7). Early diagnosis remains challenging due to the heterogeneity of clinical presentation and the frequent overlap with other cardiac conditions, particularly in elderly patients (8, 9).
The diagnostic approach to CA requires a high index of clinical suspicion, especially in patients with unexplained left ventricular hypertrophy, heart failure with preserved or mildly reduced ejection fraction, or discordance between increased wall thickness and low QRS voltages on electrocardiography (8, 10). Additional “red flag” features include bilateral carpal tunnel syndrome, peripheral neuropathy, orthostatic hypotension, and unexplained renal dysfunction (9). A key step in the diagnostic algorithm is the exclusion of light-chain (AL) amyloidosis using serum and urine immunofixation and free light chain analysis (8). In the absence of monoclonal protein, bone scintigraphy with technetium-labeled tracers (e.g., 99mTc-PYP, DPD,

or HMDP) plays a pivotal role, with grade 2–3 cardiac uptake being highly specific for transthyretin amyloidosis (ATTR-CA) (8, 11). This non-invasive diagnostic strategy has significantly improved early detection, allowing timely initiation of disease-modifying therapies and improved clinical outcomes (8, 12).
Management of cardiac amyloidosis includes both supportive care and disease-modifying therapies aimed at reducing amyloid deposition. Significant progress has been achieved in treating ATTR cardiomyopathy in recent years. In ATTR amyloidosis, available treatments include transthyretin stabilisers and gene-silencing agents. Tafamidis stabilises the transthyretin tetramer, preventing the formation of amyloid fibrils and thereby slowing disease progression. It is recommended for patients with adequate life expectancy and for those with ATTR cardiomyopathy classified as New York Heart Association Class I to III (13). It has been shown that tafamidis treatment in ATTR-CM significantly lowers mortality and cardiovascular hospitalisations (14). However, data on the clinical and echocardiographic features of patients receiving tafamidis treatment in real-world settings are limited. Therefore, this study aims to compare the clinical and echocardiographic characteristics of ATTR-CA patients who received tafamidis treatment with those who did not.

METHODS

Study population

A total of 53 patients diagnosed with transthyretin cardiac amyloidosis (ATTR-CA) were included in our retrospective, single-centre observational study. Patients followed up in our institution's cardiology clinic with a confirmed diagnosis of ATTR cardiac amyloidosis were included in the study. The diagnosis of ATTR cardiac amyloidosis was made in accordance with international guidelines, by evaluating clinical, imaging, and nuclear imaging findings collectively. During the diagnostic process, transthoracic echocardiography findings such as increased left ventricular wall thickness, diastolic dysfunction, and typical infiltrative cardiomyopathy were observed, and transthyretin amyloid deposition was demonstrated with bone scintigraphy in patients.
Serum and urine immunofixation electrophoresis, along with free light chain analyses, were performed to exclude monoclonal gammopathy. Based on these assessments, patients with AL amyloidosis were excluded, and those with imaging echocardiographical findings compatible with transthyretin accumulation were deemed to have ATTR cardiac amyloidosis. The patients were divided into two groups based on their treatment status: those receiving tafamidis therapy (n=31) and those not receiving tafamidis therapy (n=22). All patients underwent transthoracic echocardiography following a standard protocol. The echocardiographic assessment was performed using a GE Vivid E95 (GE Healthcare, Horten, Norway) device, in accordance with the guidelines of the American Society of Echocardiography (ASE) and the European Association of Cardiovascular Imaging (EACVI). Clinical variables recorded included age, gender, presence of hypertension, diabetes mellitus, coronary artery disease, chronic kidney disease, and a history of atrial fibrillation. Laboratory assessments consisted of serum levels of brain natriuretic peptide (BNP), as well as creatinine, urea, and haemoglobin levels. The clinical, laboratory, and echocardiographic data were retrospectively obtained from the hospital's electronic records system and analysed.

Statistical Analysis

The statistical analysis of the data collected in the study was conducted using IBM SPSS Statistics version 21.0 (IBM Corp., Armonk, NY, USA). Continuous variables were presented as mean ± standard deviation or median (interquartile range), while categorical variables were shown as frequency and percentage (%). The normality of data distribution was evaluated with the Shapiro–Wilk test. For the comparison of continuous variables with a normal distribution, the independent samples t-test was applied; for those not normally distributed, the Mann–Whitney U test was used. The Chi-square test or Fisher's exact test, as appropriate, was employed for comparing categorical variables. A p-value of less than 0.05 was deemed statistically significant.

RESULTS

A total of 53 patients were included in the study. The patients were divided into two groups: those receiving tafamidis treatment (n=31) and those not receiving tafamidis treatment (n=22). When evaluating demographic characteristics, no statistically significant differences were found between the groups in terms of age, gender, and accompanying comorbidities. Examination of laboratory parameters revealed that BNP levels were significantly higher in patients receiving tafamidis (p=0.012). Similarly, serum creatinine levels were also significantly higher in the tafamidis group (p=0.031). Echocardiographic assessment showed that the left ventricular ejection fraction (LVEF) was significantly lower in patients receiving tafamidis (p=0.007).

Additionally, the right atrial area was found to be significantly larger in the tafamidis group (p=0.046). In the evaluation of valvular pathologies, it was observed that the degrees of mitral and tricuspid regurgitation were more advanced in patients receiving tafamidis (p=0.043 and p=0.022, respectively). Although the prevalence of atrial fibrillation was higher among patients receiving tafamidis, this difference did not reach statistical significance (p=0.096).

DISCUSSION

ATTR cardiac amyloidosis is a progressive infiltrative cardiomyopathy associated with significant morbidity and mortality. The accumulation of amyloid fibrils composed of transthyretin protein in the myocardium leads to ventricular wall thickening, diastolic dysfunction, and in advanced stages, impaired systolic function. In recent years, with the clinical use of tafamidis, a stabiliser of transthyretin, it has been reported that there are positive effects on the natural course of ATTR cardiomyopathy. The ATTR-ACT study demonstrated that tafamidis treatment significantly reduces all-cause mortality and cardiovascular hospitalisations (14). However, it has been reported that tafamidis treatment is often started in more advanced stages of the disease in real-world data.

ATTR cardiomyopathy most often presents with a preserved ejection fraction heart failure (HFpEF) phenotype. Recent studies indicate that approximately 10–15% of the HFpEF population may have ATTR cardiac amyloidosis (15). In our study, both groups included patients with heart failure with preserved ejection fraction; the mean LVEF was 57.5% in patients not receiving tafamidis treatment, whereas it was significantly lower at 52% in patients receiving tafamidis treatment. ATTR cardiomyopathy most often presents with a preserved ejection fraction heart failure (HFpEF) phenotype, but as the disease progresses, the progressive accumulation of amyloid fibrils in the myocardium can also cause a decline in systolic function. In our study, the lower LVEF values observed in patients receiving tafamidis treatment support the idea that this group is at a more advanced stage of the disease.

Our study results show that, when a detailed analysis of echocardiographic data is performed, the degrees of mitral and tricuspid valve insufficiency and the right atrial areas are significantly larger in the patient group receiving tafamidis treatment. Valve pathologies and right heart remodelling in cardiac amyloidosis are significant aspects of the disease, yet they are often not sufficiently highlighted. The build-up of amyloid fibrils in the valve tissue can cause valve thickening, restricted leaflet movements, and functional valve insufficiencies. Echocardiographic and imaging studies have indicated that valve abnormalities are quite common in patients with cardiac amyloidosis. In a multicentre study conducted by Tomasoni et al., it was reported that approximately 40–50% of patients with cardiac amyloidosis experienced moderate to severe mitral regurgitation, while 50–70% had moderate to severe tricuspid regurgitation (16, 17) Most of these valve insufficiencies manifest as functional valve insufficiency due to ventricular remodelling, increased filling pressures, and atrial dilatation rather than primary valve disease (17).

Right heart involvement in ATTR cardiac amyloidosis is a significant yet often under-recognised aspect of the disease. The accumulation of amyloid fibrils not only in the left ventricular myocardium but also in the right ventricle and right atrium causes dilation of the right heart chambers and impairs their function; right atrial enlargement and tricuspid annulus dilatation significantly contribute to the development of tricuspid regurgitation. Recent research has shown that right heart parameters are prognostically important in ATTR cardiomyopathy; it has been highlighted that tricuspid regurgitation is closely linked with right heart remodelling and right atrial dilation, and may have prognostic value for clinical outcomes (17). In patients with cardiac amyloidosis, right atrial enlargement, tricuspid regurgitation, and right ventricular dysfunction have been reported to be associated with higher mortality (18, 19).

Our study results show that patients receiving tafamidis treatment have more severe mitral and tricuspid regurgitation, as well as a significantly larger right atrial area, which indicates greater cardiac remodelling and higher intracardiac filling pressures in these patients. These findings suggest that patients on tafamidis exhibit more advanced cardiac involvement and more pronounced cardiac remodelling.

Upon analysis of the laboratory data in our study, it was observed that patients undergoing tafamidis treatment had significantly elevated levels of BNP and creatinine. This finding can be explained by the fact that disease-modifying treatments are often initiated in patients with more advanced symptomatic patients. In particular, high BNP levels indicate more advanced myocardial infiltration and increased ventricular filling pressures. Furthermore, natriuretic peptides are regarded as crucial biomarkers for assessing disease severity in ATTR cardiac amyloidosis (16). Therefore, it is expected that patients receiving tafamidis treatment initially have

higher BNP levels and more advanced signs of cardiac involvement. Consequently, this finding supports the idea that patients on tafamidis treatment may have exhibited more advanced cardiac involvement at the outset. In our study, the significantly higher serum creatinine levels observed in patients receiving tafamidis treatment indicate that this patient group is in a more advanced stage of the disease due to amyloid infiltration and also exhibits renal involvement. Renal dysfunction associated with ATTR cardiomyopathy may be related to various pathophysiological mechanisms. In advanced heart failure cases, increased central venous pressure, renal venous congestion, and decreased cardiac output can lead to reduced renal perfusion, contributing to the development of cardiorenal syndrome; additionally, since ATTR amyloidosis is a systemic disease, the accumulation of amyloid fibrils in kidney tissue in some cases can contribute to renal dysfunction. The literature reports that renal impairment is quite common in patients with cardiac amyloidosis and that increased serum creatinine levels may be related to disease severity and prognosis (16, 20). Studies also suggest that renal dysfunction in patients with ATTR cardiomyopathy may be linked to mortality and clinical deterioration (14).

One of the significant pathophysiological characteristics of ATTR cardiac amyloidosis is atrial myopathy resulting from infiltration of the atrial myocardium. The deposition of amyloid fibrils within the atrial tissue precipitates the deterioration of both atrial mechanical and electrical functions, thereby promoting the onset of atrial fibrillation. Recent research indicates that atrial fibrillation is not solely an electrical arrhythmia but also a consequence of atrial structural and mechanical deterioration (21). In our study, the prevalence of atrial fibrillation was higher in the tafamidis group, but this was not statistically significant; it was thought that this situation might be related to the limited number of patients in the study.

This study highlights the clinical and echocardiographic differences between patients with ATTR cardiac amyloidosis who received tafamidis treatment and those who did not. Our findings suggest that patients on tafamidis therapy may have higher BNP and creatinine levels, along with more evident signs of cardiac remodelling. This indicates that, in real-world practice, tafamidis treatment is often started in patients at a more advanced disease stage. Additionally, the enlargement of the right atrium and more severe valvular regurgitations demonstrate that ATTR cardiomyopathy can significantly impact not only the left ventricle but also the right heart structures and the valvular apparatus. Therefore, a comprehensive echocardiographic assessment is crucial in patients with ATTR cardiac amyloidosis for evaluating the severity of the condition and guiding treatment planning strategy.

The retrospective and single-centre design of the study, as well as the relatively limited number of patients included, can be considered as limitations of the study. We believe that future studies with a larger patient population, prospective design, and multiple centres will be able to more comprehensively elucidate the relationship between clinical and advanced echocardiographic deformation parameters and long-term disease prognosis in ATTR cardiomyopathy.

CONCLUSION

Higher BNP levels, lower LVEF, and more pronounced right heart dilation have been observed in ATTR cardiac amyloidosis patients receiving Tafamidis treatment. These findings suggest that Tafamidis therapy is often initiated in patients with more advanced cardiac involvement in real-world practice. Early recognition of cardiac amyloidosis by physicians, followed by timely referral and multidisciplinary management, is essential for improving clinical outcomes. Larger and prospective studies will better elucidate the effects of Tafamidis treatment on clinical and echocardiographic features in ATTR cardiomyopathy.

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EBFMC26-OP-07 · Reversal of Cardiorenal Dysfunction with Dobutamine in Low-Output Heart Failure: A Case Report

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Ethics Committee Approval: Not applicable for this case report.
Informed Consent: Written informed consent was obtained from the patient's legal representative.

ARTIFICIAL INTELLIGENCE STATEMENT
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ABSTRACT
Introduction: Cardiorenal syndrome (CRS) is a complex condition frequently observed in advanced heart failure, resulting from bidirectional haemodynamic and neurohormonal interactions between the heart and kidneys (1). Low cardiac output and venous congestion impair renal perfusion, while systemic hypoperfusion and venous congestion contribute to both cardiorenal and cardiohepatic dysfunction (2). The management of CRS primarily focuses on relieving congestion and improving organ perfusion (3,4). However, when low cardiac output predominates, intravenous diuretic therapy alone may be insufficient (5). In such cases, intravenous dobutamine is used as short-term inotropic support, increasing cardiac output through β1-mediated enhancement of contractility and β2-mediated vasodilation, thereby temporarily improving renal and hepatic perfusion (6). Current guidelines recommend the short-term use of continuous positive inotropic

agents in patients presenting with low blood pressure and significantly depressed cardiac output to maintain systemic perfusion and preserve end organ performance (7).
Case: An 81-year-old male patient with a history of transcatheter aortic valve implantation, atrial fibrillation, and a left ventricular ejection fraction of 30% was admitted with decompensated heart failure. On admission, signs of congestion were present, and intravenous furosemide therapy was initiated (40 mg bolus followed by 20 mg/hour infusion). Initial hemodynamic assessment showed a blood pressure of 105/65 mmHg and a heart rate of 110 beats/min, without overt hypotension or cardiogenic shock. During follow-up, progressive increases in serum creatinine, AST, ALT, and lactate levels, along with reduced urine output, were observed, suggesting organ dysfunction associated with low cardiac output. Initial laboratory values were: creatinine 1.64 mg/dL, ALT 766 U/L, AST 886 U/L, lactate 2.6 mmol/L, and BNP 15,450 pg/mL. These values worsened to creatinine 2.89 mg/dL, ALT 1054 U/L, AST 1100 U/L, lactate 5.5 mmol/L. Urine output decreased to 0.35 mL/kg/hour, with a negative response to diuretic therapy and an estimated cumulative urine output of approximately 600 mL over 24 hours despite ongoing furosemide infusion. Although the patient remained normotensive, the clinical picture was consistent with a “cold–wet” phenotype, indicating low cardiac output with persistent congestion. Intravenous dobutamine was initiated at 5 mcg/kg/min and titrated to 10 mcg/kg/min. After 24 hours of dobutamine therapy, creatinine decreased to 1.7 mg/dL, ALT to 533 U/L, AST to 674 U/L, lactate to 1.5 mmol/L, urine output increased to 0.9 mL/kg/hour, and BNP decreased to 13,200 pg/mL, with a total urine output exceeding 1800 mL in 24 hours. These findings were consistent with improved organ perfusion secondary to increased cardiac output and reduced systemic vascular resistance. Dobutamine infusion was continued at 10 mcg/kg/min for 48 hours, during which renal function stabilized and the need for renal replacement therapy was avoided. However, during hospitalisation, the patient developed sepsis secondary to a urinary tract infection believed to be a nosocomial infection, which led to progressive clinical deterioration and ultimately death 8 days after first admission.
Conclusion: This case demonstrates that low cardiac output in the absence of cardiogenic shock can lead to cardiorenal and cardiohepatic dysfunction, and that dobutamine therapy may improve organ perfusion and support biochemical recovery. The inotropic response appears to have both diagnostic and therapeutic value in this context, in line with advanced heart failure guidelines recommending short-term inotropic support for selected patients with hypoperfusion. However, despite initial clinical improvement, the development of sepsis significantly contributed to mortality, highlighting that in advanced heart failure, infectious complications remain major determinants of outcome.

KEYWORDS
Cardiorenal Syndrome, Low Cardiac Output, Dobutamine, Cardiohepatic Dysfunction, Heart Failure, Organ Perfusion

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EBFMC26-OP-08 · Epidemiological Characteristics of Pediatric Patients Referred to the Ophthalmology Clinic with Suspected Papilledema

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ETHICS STATEMENT
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ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Ophthalmology consultations are common in outpatient clinics, emergency departments, and inpatient wards, and one of the most frequent indications for consultation is the suspicion or exclusion of papilledema (1-5). This study aims to evaluate the epidemiological characteristics of pediatric patients referred with suspected papilledema.
Material and Methods: Pediatric patients referred with suspected papilledema to a tertiary ophthalmology clinic between August 2024 and December 2025 were included in this retrospective study. Patient records were reviewed for demographic characteristics, presenting symptoms, and diagnostic outcomes. Examinations included best-corrected visual acuity (BCVA) measurement, fundoscopic examination, visual field testing, optical coherence tomography (OCT), ocular ultrasonography (USG), and fundus photography.
Results: The records of 44 pediatric patients referred by pediatric neurology to the ophthalmology clinic with a preliminary diagnosis of papilledema were retrospectively reviewed. The mean age of the patients was 12.09 ± 4.18 years; 27 (61.36%) were female and 17 (38.64%) were male. Magnetic resonance imaging was performed in 70.45% of patients, lumbar puncture in 22.73%, visual field testing in 34.09%, OCT in 54.54%, and ocular USG with fundus autofluorescence in 20.45%. Papilledema was detected in 15 patients (34.09%); bilateral optic atrophy was present in 3 (6.82%) and unilateral optic atrophy in 1 (2.27%). Pseudopapilledema was observed in 9 patients (20.45%), whereas 16 patients (36.36%) showed no optic disc pathology. The most

common presenting complaint was headache (54.55%). Among patients with papilledema, 86.66% had normal BCVA. Visual field defects were identified in 3 patients, with 2 patients exhibiting decreased visual acuity and color vision impairment.
Conclusion: Papilledema screening is a critical component of ophthalmological evaluation, particularly in patients presenting with associated neurological symptoms (6,7). Accurate assessment is essential to differentiate pseudopapilledema from true papilledema, thereby preventing unnecessary medical or surgical interventions (8,9).

KEYWORDS
Optic Disc, Drusen, Papilledema, Optical Coherence Tomography

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EBFMC26-OP-09 · Biomarkers Associated with Pressure Ulcers in Home Care Patients

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ETHICS STATEMENT
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ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Patients receiving Home Health Care (HHC) are at increased risk of developing pressure ulcers (PU) due to advanced age, infection, malnutrition, prolonged immobility, etc. (1). Elevated C-reactive protein (CRP) levels reflect increased inflammation, while low albumin levels indicate malnutrition; both have been associated with more severe PU and delayed wound healing (2). In addition, the CRP/albumin ratio has been reported as a prognostic marker reflecting both inflammation and nutritional status (3). However, studies evaluating the risk of developing PU in HHC patients based on biochemical markers are limited. This study aimed to investigate the relationship between the development of PU and albumin, CRP, white blood cell (WBC), and neutrophil levels in patients receiving home health care.
Materials-Methods: This descriptive retrospective study included a total of 56 individuals (42 females, 14 males), comprising 28 patients with PU and 28 controls matched for age and sex, all registered in the Home Health Care unit of Kastamonu Training and Research Hospital. Laboratory data from the last six months were reviewed, and the most recent values were used. Categorical variables were reported as numbers and

percentages, whereas continuous variables were provided as mean ± standard deviation or median. When applicable, Pearson's chi-square and Fisher's exact tests compared categorical variables. A p-value <0.05 was considered statistically significant.
Results: An elevated CRP level (>5 mg/L) was associated with PU (p=0.005). The relationship between albumin levels and PU was not significant (p=0.108); 46.4% of all participants had low albumin levels. High WBC counts (>10.5×10^3/μL) and PU were not significantly associated (p=0.051). In contrast, a statistically significant association was found between neutrophil levels (>7×10^3/μL) and the presence of PU (p=0.001).
Conclusions: This study demonstrated that elevated CRP levels and neutrophil counts were significantly associated with PU presence, suggesting that inflammation may play an important role in PU development. Although no significant association was found between albumin levels and PU development, the high prevalence of hypoalbuminemia indicates that malnutrition is common in this population and should not be overlooked in clinical practice. Due to the retrospective design of the study, comorbidities and PU infections were not included in the analysis. This is a limitation of the study, and prospective studies are needed.

KEYWORDS
Home Health Care, Pressure Ulcers, Malnutrition, Inflammation

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EBFMC26-OP-10 · Investigation of Rational Drug Use and Associated Factors in Adult Patients Applying to Cukurova University Training Family Health Center

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ETHICS STATEMENT

This verbal/poster presentation was produced from the thesis study by Makbule Tanrikulu Dusgun who completed and presented the study in 2024. Ethics committee approval was obtained from the Non-Interventional Research Ethics Committee of Cukurova University (date: December 2, 2022, number: 34/128).

ARTIFICIAL INTELLIGENCE STATEMENT

No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT

Introduction: When used improperly, medications can cause life-threatening health problems. The World Health Organization (WHO) defines rational use of medicines (RUM) as the use of medicines appropriate to patients' clinical needs, in doses that meet their individual requirements, for the appropriate duration, and at the lowest cost to the patient and society. This study aims to investigate rational drug use and related factors in adult patients admitted to Cukurova University Training Family Health Center. Materials and Methods: The population of the study consisted of individuals aged 18 years and over enrolled in Cukurova University Training Family Health Units for any reason. In this cross-sectional study, the participants were administered the Rational Drug Use Scale and Hospital Anxiety and Depression Scale with the sociodemographic information form by face-to-face interview technique between December 15, 2022 and January 15, 2023. Statistical analyses were performed by using the Statistical Package for Social Sciences (SPSS Inc., Chicago, IL., USA) 23.0 program. Statistical significance level was taken as 0.05 in all tests.

Results: The mean age of the 361 participants was 33.6±11.6 years, 230 (63.7%) were female, 271 (75.1%) were using over-the-counter medication and 73.96% (n=267) of the participants had adequate knowledge about rational drug use, the level of knowledge increased with increasing educational level ($p<0.001$), participants whose income was higher than their expenses ($p<0.05$) and those with additional diseases ($p<0.05$) had higher levels of knowledge about rational drug use ($p<0.05$). It was determined that those who applied to a health institution when they had a complaint, smokers ($p<0.05$), those who lived with their families ($p<0.05$), and those who used over-the-counter medication ($p=0.001$) had lower rational drug use knowledge levels. There was a moderate positive correlation between the participants' rational drug use knowledge levels and their anxiety and depression levels ($r=0.396$; $r=0.311$, respectively). There was a strong positive correlation between anxiety and depression levels of the participants ($r=0.788$).
Conclusion: It is necessary to use social media channels more actively in trainings to be organized on rational drug use, to develop positive strategies on issues such as preventing the use of non-prescription drugs, preventing drug waste, to provide more education and counseling services to the community about drug use by physicians in primary health care institutions, to train health professionals about the principles of rational drug use and to continue the studies to be carried out on this subject.

KEYWORDS
Family Medicine, Rational Drug Use, Anxiety, Depression

INTRODUCTION

The World Health Organization (WHO) defined Rational Use of Medicines (or Rational Drug Use-RDU) during a landmark conference in Nairobi in 1985. According to the WHO, rational drug use requires that: "Patients receive medications appropriate to their clinical needs (appropriate indication), in doses that meet their own individual requirements (appropriate drug, appropriate dose), for an adequate period of time (appropriate duration), and at the lowest cost to them and their community (affordability)." (1,2,3).
The irrational use of medicines and other health technologies is widespread. In developing countries, more than 50% of people who do receive medicines are prescribed medicines incorrectly; of these more than half fail to take them correctly. The problem of antibiotic resistance is a major clinical and public health problem resulting in treatment failures and huge spending on new-generation antibiotics (4).
The main factors underlying the irrational use of drugs are diverse. They can be categorized as those deriving from patients, prescribers, workplace, supply system, including industry influences, regulation, drug information, and misinformation, and combinations of these factors. Although various factors may contribute to irrational medication use at different stages of the medication cycle, the lack of adequate knowledge and skills among both healthcare providers and patients, unrestricted access to medications, financial incentives from pharmaceutical companies, inadequate prescription oversight, inappropriate drug promotion, the presence of biases regarding medications, overworked healthcare personnel, the profit motive in drug sales, and the inclusion of medications under health insurance coverage have been identified as factors contributing to irrational medication use (5,6,7).
The impact of irrational drug use is predictable. Reduction in the quality of drug therapy leads to increased morbidity and mortality, wastage of resources leading to reduced availability of other vital drugs, increased costs, increased risk of unwanted affects and the emergence of antimicrobial drug resistance (8).
As the first point of contact for patients and a key player in promoting rational drug use, family physicians play a pivotal role in both prescribing medications appropriately and providing education and raising awareness among patients and pharmacists. This study aims to investigate rational medication use and related factors among adult patients visiting the Cukurova University Family Health Center.

MATERIALS AND METHODS

This cross-sectional descriptive study was conducted with 361 participants (131 males and 230 females) who were registered at the Family Health Center of Cukurova University between December 15, 2022, and January 15, 2023. Ethics committee approval was obtained from the university (date: December 02, 2022/number:34/128), and the participants gave their informed consent. Those who had any psychiatric disorders and cognitive/physical dysfunctions that could hinder participation were excluded.

Data collection tools included a Sociodemographic Data Collection Form that includes 20 questions and developed by the researchers, the Rational Drug Use Scale, and the Hospital Anxiety and Depression Scale. The forms were completed via face-to-face interviews.
The Rational Drug Use Scale was developed by Demirtaş and colleagues in 2018. The possible maximum score is 42 and the minimum is zero. Higher scores indicate better knowledge level (9).
The Hospital Anxiety and Depression Scale was developed by Zigmond and Snaith in 1983 (10). The Turkish validity and reliability study was conducted by Aydemir et al in 1997. The scale consists of 14 questions. The cut-off score is 10/11 for anxiety and 7/8 for depression (11).

Statistical Analyses
The Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, USA) version 23.0 was used for the statistical analysis of the data. Categorical measures were summarized as counts and percentages, while continuous measures were summarized as means and standard deviations (with medians and minimum-maximum values where appropriate). For parameters showing a normal distribution, the independent samples t-test was used for analyses involving two groups, and the one-way ANOVA test was used for analyses involving more than two groups. For variables with more than two groups, the Tukey post hoc test was used to determine the source of differences between groups. The Pearson correlation test was used to determine the relationship between scales. A significance level of 0.05 was used for all tests.

RESULTS
The mean age of the participants was 33.6±11.6 years (median 31, range 18-72), 54.8% were married, and most of them (46.5%) were graduates of university. While 43.8% were working, 41.6% had less income than expenses. The mean number of admissions to any health facilities was 3.34±3.1 (median 2, range 0-28). The reasons for admission were receiving a medication administration record (9.7%), for physical examination (73.4%), and for prescribing their ongoing medications (16.9%). Of the participants, 29.4% had a systemic disorder including diabetes mellitus (n:36, 34.0%), hypertension (n:36, 34.0%), and thyroid dysfunction (n:9, 8.4). Medication using behaviors of the participants are given in Table 1.

Table 1

Medication Using Behaviors of the Participants

	Number (n)	Percent (%)
Use of non-prescription drugs		
No	90	24,9
Yes	271	75,1
Non-prescription drugs (n=271)		
Supplements	38	14,0
Cold and flu tablets	96	35,4
Analgesics	233	86,0
Multivitamins	31	11,4
Analgesic gels	85	31,4
Myorelaxants	63	23,2
Antibiotics	6	2,2
The way of obtaining non-prescription drugs (n=271)		
Pharmacy	235	86,7
İnternet	6	2,2
Neighbours/relatives	30	11,1
Number of the medications that were not used/completed		
None	89	24,7
1-5 boxes	179	49,6
>5 boxes	93	25,8
The way of using prescription drugs		
I use during the time recommended by the doctor	136	37,7
I use until the drug is finished	100	27,7
I use until my complaints resolve	125	34,6
Causes for discontinuation of the drug		
Allergy	19	7,3
Thinking that it is not useful	2	0,8
Not to use many drugs	34	13,0
Recovery	183	70,1
Forgetting to use	20	7,6
Other	3	1,2
How do you discontinue the antibiotics?		
When the treatment is completed as recommended by the dcotor	207	57,2
When the drug is finished	68	18,8
When I feel good	86	23,8

The knowledge level of rational drug use was sufficient, and the participants had a risk of anxiety and/or depression (Table 2).

Table 2

Distribution of Scale Scores

Scale	Number (n)	Percent (%)	Mean ±SD	Min-Max
HADS-A				
Below threshold scores (0-10)	37	10,25	11,9±2,9	3-17
Above threshold scores (11-21)	324	89,75		
HADS-D				
Below threshold scores (0-7)	70	19,39	9,2±2,1	1-17
Above threshold scores (7-21)	291	80,61		
AİKÖ				
Below threshold scores (0-34)	94	26,04	36,6±4,8	20-42
Above threshold scores (35-42)	267	73,96		

HADS-A: Hospital Anxiety and Depression Scale-anxiety subscle ,HADS-D: Hospital Anxiety and Depression Scale-depression subscale, RDUS: The Rational Drug Use Scale, SD: Standard deviation

No difference was detected between scale scores and gender, marital status, and working status ($p>0.005$). Knowledge level of rational drug use was found to increase as education level increased ($p<0.001$). While no difference was found between monthly income and anxiety and depression ($p=0.197$ and $p=0.122$, respectively), knowledge level of RDU was found to increase as monthly income increases ($p<0.05$).

Similarly, there was no difference between family type ($p=0.720$ and $p=0.443$, respectively), smoking status ($p=0.153$ and $p=0.212$) and anxiety and depression, knowledge level of RDU was found to be lower among those with a core family and smokers ($p<0.05$ for both).

The knowledge level of RDU was lower among those who admit to a health facility when they have a health problem as compared to those who admit to a health facility once a year ($p=0.020$), and among those who use unprescribed medications ($p=0.001$). The knowledge level of RDU was higher among the participants with a disease, who use the medications for the period recommended by the doctor ($p<0.05$ for both).

A positive moderate relationship was found between the knowledge level of RDU and anxiety and depression levels ($r=0.396$; $r=0.311$, respectively). A positive strong relationship was found between anxiety and depression levels of the participants ($r=0.788$).

DISCUSSION

Our study has revealed that 73.96 of the participants had a sufficient knowledge level of RDU. Alpaydin et al. (12), Ekici et al. (13), Demirtas et al. (14), and Sahin et al. (15) from our country have found similar results. On the other hand, Akyol (16) found a low level of knowledge of RDU among patients with diabetes.

Our study did not find a difference between gender and knowledge level of RDU, similar to other studies (17-20). Deniz et al. (21) and Ercan et al. (22), Bian C. et al. (23) found higher knowledge level among females, Mamo S. et al. found higher knowledge level among males (24).

We did not find a difference between the knowledge level of RDU and age, similar to Kilic et al. (18), and Ucma et al. (25). Alpaydin et al. (12), Deniz et al. (21), Demirtas et al. (14), and Ince et al. (26) found higher knowledge level among those with a higher age, while Sendir et al. (27) and Akyol et al. (16) found the opposite.

There was no difference between the knowledge level of RDU and marital status, similar to other studies in the literature (25,26,28), while Akyol et al. found a higher level among married participants (16).

The difference among studies from different regions with regard to knowledge level, and gender, age, and marital status may be due to cultural and regional factors, and also study designs.

In our study, the knowledge level of RDU increased as educational status increased, similar to the literature (18,27,29-31). However, some authors did not find a difference (25,26). Our study found a higher level of knowledge among those whose income was more than expenses, similar to the literature (14,18,19,23,32) Some authors did not find a difference (29,30). While it may be expected that a better education and financial status bring a better knowledge level about general issues, they may not guarantee a better understanding and awareness.

Our study has revealed that the vast majority (75.1%) of the participants were using unprescribed medications, the leading one was analgesics followed by cold and flu medications. There were non-used or uncompleted boxes in houses of 75.3% of the participants. This ratio was found to be between 28.9% and 84.25% indifferent studies (26,33-37). This may reflect the national health policies besides individual differences.

In our study, consistent with the literature, no significant difference was found between smoking and scores on anxiety and depression scales; however, unlike the literature, it was found that smokers had lower levels of knowledge regarding the rational use of medications compared to non-smokers. Bozan et al. found no difference between smoking and anxiety and depression (38). A study did not find a difference between smoking and RDU (26). We wanted to investigate the relationship between knowledge level and smoking, as a harmful health behavior, literature data show conflicting results reflecting the influence of confounding factors.

In our study, while no significant difference was found in anxiety and depression levels among participants with comorbid conditions, their knowledge of RDU was higher. In this regard, our study does not align with the literature that show inconsistent results (15,29,39) anxiety and depression.

Our study has found a positive moderate difference between knowledge level of RDU and anxiety and depression. Limited data exist in the literature. A study from Karabuk has revealed that RDU decreased as death anxiety increased (40).

In conclusion, although our study has found that about three quarters of the participants had a sufficient level of knowledge about RDU, to improve it, it is recommended that social media channels be used more actively in educational programs on rational drug use; that positive strategies be developed to curb the use of over-the-counter medications and prevent drug waste; that physicians at primary care facilities provide the public with counseling services regarding drug use; that healthcare workers be trained on the principles of rational drug use; and that efforts in this area be sustained. In this regard, it should be kept in mind that the principles of rational drug use must be implemented in collaboration with various stakeholders, including physicians, pharmacists, the government, and civil society organizations.

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EBFMC26-OP-11 · Examining the Relationship Between Rumination, Depression, and Smoking Cessation Among Medical Students

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This study does not require ethics committee approval.

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No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Tobacco use remains a major contributor to the global burden of disease and smoking cessation is often influenced by psychological factors. This study aims to examine the relationship between ruminative thinking and depressive symptoms, as well as their impact on motivation and success in smoking cessation among medical students.
Materials and Methods: This cross-sectional, quantitative study included 6th-year medical students at Cukurova University who were current smokers. Data were collected via an anonymous online survey between August and October 2025, with informed consent obtained from all participants. The study utilized four instruments: a Demographic Information Form, the 23-item Positive and Negative Rumination Scale (PANRS), the 21-item Beck Depression Inventory (BDI), and the Smoking Cessation Success Prediction Scale (Cronbach's alpha=0.78).

Results: A total of 38 participants were included (63.2% male, 36.8% female), aged between 23 and 28 years. The mean smoking duration was 5.36 years, with an average daily consumption of 14.9 cigarettes. Participants reported an average of one prior quit attempt. According to the Fagerström Test, dependence levels ranged from very low (39.5%) to very high (2.6%). Based on BDI scores, 42.1% had minimal, 23.7% mild, 26.3% moderate, and 7.9% severe depressive symptoms. Correlation analysis revealed a significant negative relationship between BDI scores and positive rumination ($r=-0.344$, $p<0.05$), and a strong positive relationship between BDI scores and negative rumination ($r=0.686$, $p<0.001$). A marginal negative correlation was observed between positive and negative rumination ($r=-0.384$, $p=0.056$). Additionally, a significant positive correlation was found between nicotine dependence and daily cigarette consumption ($r=0.453$, $p<0.001$). No significant associations were identified between smoking cessation success and BDI scores, positive or negative rumination.
Conclusion: The findings indicate a strong association between depressive symptoms and ruminative thinking patterns, with higher levels of depression linked to increased negative and decreased positive rumination. However, these factors were not significant predictors of smoking cessation success in this sample. These findings should be interpreted with caution due to the relatively small sample size, which represents an important limitation of the study. Additionally, the specific characteristics of medical students may have influenced the results. Nonetheless, incorporating emotional regulation and rumination-focused strategies into smoking cessation programs may be beneficial. Further research with larger and more diverse samples is recommended.

KEYWORDS
Smoking Cessation, Rumination, Depression

INTRODUCTION

Tobacco use continues to be one of the leading causes of preventable diseases and mortality worldwide. Medical students, who will become future physicians, serve as key role models in promoting healthy lifestyle behaviors and implementing smoking cessation interventions within society (1,2). However, medical education-particularly during clinical internship periods-may predispose students to cigarette smoking and psychopathologies due to factors such as increased academic stress, examination anxiety, and sleep deprivation (3,4).

The literature reports a strong bidirectional relationship between cigarette smoking and depressive disorders; the prevalence of depressive symptoms among smokers is significantly higher than among non-smokers (5,6). One of the cognitive mechanisms underlying this relationship is “rumination.” Rumination is defined as a repetitive and passive focus on negative mood states and their possible causes and consequences (7). Negative rumination has been shown to increase the severity of depression and elevate the risk of failure in smoking cessation attempts (8,9). Conversely, positive rumination is thought to exert a protective and mood-regulating effect.

Understanding the interaction between nicotine dependence and cognitive processes among medical students is critical for developing more effective smoking cessation strategies. Therefore, this study aimed to examine the relationships among smoking patterns, nicotine dependence levels, rumination types, and depression in intern doctors, and to evaluate the factors predicting smoking cessation success.

MATERIALS AND METHODS

Study Design and Sample

This cross-sectional quantitative study was conducted between August and October 2025 with 38 sixth-year medical students attending the Family Medicine internship at Cukurova University Faculty of Medicine who were active smokers. The sample was formed on a voluntary basis through an anonymous online survey.

Measurement Instruments and Parameters

The academic validity of the study parameters was ensured using the following instruments:

1. Demographic and Smoking Behavior Form: Age, gender, number of cigarettes smoked daily, and total smoking duration (years) were recorded.

2. Positive and Negative Rumination Scale: This 23-item scale evaluates rumination in two dimensions. Negative rumination measures the tendency to focus on mistakes and negative experiences, whereas positive rumination assesses focusing on positive experiences to regulate mood.
3. Beck Depression Inventory (BDI): A 21-item instrument evaluating depressive symptoms experienced during the previous week (e.g., sadness, pessimism, feelings of failure), scored between 0 and 3.
4. Smoking Cessation Success Prediction Scale: Used to evaluate participants' self-efficacy and perceived likelihood of successfully quitting smoking (Cronbach's alpha=0.78).
5. Fagerström Test for Nicotine Dependence: Used to determine the level of physical nicotine dependence, ranging from very low to very high.

Statistical Analysis

The data were analyzed using SPSS software. After examining the normality of variable distributions, Pearson Correlation Analysis was performed to evaluate the relationships among scale scores. A p-value of <0.05 was considered statistically significant.

RESULTS

Of the participants, 63.2% were male and 36.8% were female, with an age range of 23–28 years. The mean daily cigarette consumption was 14.9 cigarettes, and most participants (39.5%) were classified within the "very low" nicotine dependence category. Regarding depressive symptoms, 42.1% of participants exhibited minimal, 26.3% moderate, and 7.9% severe depressive symptom levels (Table 1).

Table 1

Distribution of Smoking Behavior and Psychological Parameters (n=38)

Parameter	Mean / n	SD / %
Smoking Duration (years)	5.36	-
Daily Cigarette Consumption	14.9	-
BDI Score Distribution		
Minimal (0–13)	16	42.1
Mild (14–19)	9	23.7
Moderate (20–28)	10	26.3
Severe (29–63)	3	7.9
Nicotine Dependence		
Very Low	15	39.5
Very High	1	2.6

Correlation analysis revealed a statistically strong positive relationship between BDI scores and negative rumination. In contrast, a negative correlation was observed between positive rumination and BDI scores. While a significant correlation was found between nicotine dependence and daily cigarette consumption, no significant association was identified between smoking cessation success and either rumination or depression.

DISCUSSION

This study revealed the complex relationship between nicotine dependence and psychological parameters among intern doctors undergoing family medicine training. The most striking finding of our study was the strong positive correlation identified between Beck Depression Inventory scores and negative rumination ($r=0.686$). This finding is fully consistent with the literature suggesting that ruminative thinking styles exacerbate and sustain depressive symptoms (7,10). On the other hand, the negative correlation between positive rumination and BDI scores ($r=-0.344$) suggests that focusing on positive experiences may function as a protective mechanism within this group.

It is noteworthy that 34.2% of participants exhibited moderate to severe depressive symptoms. Although the prevalence of depression among medical students is known to be higher than in the general population, the

rates observed in our study are consistent with the 24.4–31% prevalence rates reported in similar student populations (3,5). This situation may reflect the negative impact of heavy workloads and concerns about the future during the internship period on mental health.

Regarding nicotine dependence, the finding that 39.5% of students were classified within the "very low" dependence category is encouraging. Previous studies have reported that situational or low-level smoking behavior, rather than regular heavy smoking, is more common among young populations and medical students (4,11). In our analyses, a moderate correlation (r=0.453) was observed between nicotine dependence level and daily cigarette consumption; however, no significant relationship was found between the smoking cessation success prediction scale and either depression or rumination. This may be attributable to the limited sample size (n=38) or to the possibility that medical knowledge acquired during medical education artificially elevates students' perceptions of self-efficacy independent of their psychological state (2,12).

This study has several limitations. Due to its cross-sectional design, causal relationships between variables cannot be established. Additionally, analyses conducted on a small sample size of 38 participants limit the generalizability of the findings to all medical students. Nevertheless, the strong association identified between negative rumination and depression indicates that cognitive-behavioral approaches and rumination management strategies should be incorporated into smoking cessation counseling programs offered in medical faculties.

In conclusion, smoking behavior and depressive symptoms appear to be closely intertwined among intern doctors, with negative rumination playing a central role in this process. Future studies with larger sample sizes should prospectively evaluate the effects of interventions focusing on cognitive processes on smoking cessation success.

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ETHICS STATEMENT
This study does not require ethics committee approval.

ARTIFICIAL INTELLIGENCE STATEMENT
This study utilized an artificial intelligence agent (ChatGPT) to correct grammatical errors in the Turkish draft, translate the text into English, and identify additional sources to strengthen the existing references.

ABSTRACT
Objective: This review examines the fundamental principles of polygenic risk scores (PRS), the level of clinical evidence with specific focus on cardiovascular disease (CVD), and their potential for integration into primary care, with emphasis on sample collection, analytical infrastructure, and clinical workflow.
Methods: A structured literature search was performed in PubMed, Cochrane, and ClinicalTrials.gov for studies published between 2015 and 2025, using keywords including “polygenic risk score,” “cardiovascular disease,” “primary care,” and “preventive medicine.” Original research, meta-analyses, clinical guidelines, and scientific statements (AHA, ESC) were prioritized.
Results: Contemporary GWAS-derived cardiovascular PRS (e.g., the Inouye metaGRS with ~1.7 million SNPs; the Khera GPS with ~6.6 million SNPs) demonstrate C-statistic increments of approximately 0.03–0.09 for coronary artery disease. In Khera et al. (2018), the GPS identified 8.0% of the population at ≥3-fold elevated CAD risk. Transferability across ancestries remains problematic, with performance loss of approximately 15–40% in non-European populations.
Conclusion: PRS holds strong complementary potential to conventional risk tools. Broad clinical implementation requires standardized cutoff points, ethical frameworks, provider education, and cost-effectiveness analyses. Integration into family medicine has the potential to meaningfully reduce cardiovascular mortality.

KEYWORDS
Polygenic Risk Score, Cardiovascular Disease, Primary Prevention, Genomic Medicine, Family Medicine, GWAS, Personalized Medicine, Clinical Workflow

INTRODUCTION

Cardiovascular diseases (CVD) remain among the leading causes of death worldwide, accounting for approximately 17.9 million deaths annually. Conventional CVD risk prediction tools—the Framingham Risk Score, SCORE2/SCORE2-OP, and the ACC/AHA Pooled Cohort Equations (PCE)—rely on phenotypic variables such as age, sex, smoking status, blood pressure, lipid profile, and diabetes (1,2). Although their population-level performance is acceptable, these tools tend to underidentify young, asymptomatic individuals who carry a high genetic burden but whose phenotypic risk profile has not yet matured (3).

With the rapid expansion of genome-wide association studies (GWAS) and large biobank infrastructures (UK Biobank, FinnGen, All of Us), polygenic risk scores (PRS)—which provide a quantitative summary of the genetic architecture of complex diseases—have become clinically relevant (4,5). A PRS represents the weighted sum of millions of single nucleotide polymorphisms (SNPs), each multiplied by its effect size, revealing an individual's lifelong, largely stable genetic burden profile. This review systematically addresses the methodological foundations of PRS, clinical evidence for CVD, the practical pathway for integration into primary care, and current limitations.

POLYGENIC RISK SCORES: FUNDAMENTALS

Polygenic diseases arise from the combined effect of hundreds to millions of genetic variants, each contributing only a small effect. A PRS is calculated as: $PRS = \Sigma(\beta_i \times G_i)$, where β_i is the GWAS-derived effect size and G_i is the number of risk-allele copies (0, 1, or 2) (6,7). The PRS development cycle comprises: (i) GWAS-based discovery of per-SNP effect sizes; (ii) LD-based correction via Pruning & Thresholding (P+T) or Bayesian approaches such as LDpred2 (8) and PRS-CS (9); (iii) validation using AUC, C-statistic, NRI, and IDI; and (iv) clinical integration with phenotypic risk tools (SCORE2, PCE) including cutoff definition. The PGS Catalog (10) serves as an open-access archive of published PRS coefficients. The most comprehensive cardiovascular GWAS data derive from the UK Biobank (>500,000 individuals) (11).

EVIDENCE FOR PRS IN CARDIOVASCULAR DISEASES

Coronary Artery Disease (CAD)

CAD is the most intensively studied cardiovascular subtype. Inouye et al. (2018) evaluated a metaGRS comprising ~1.7 million SNPs against 22,242 CAD cases in the UK Biobank; individuals in the top 20% of the PRS distribution had ~4-fold higher risk than the bottom 20% (HR≈4.17) (12). Khera et al. (2018) developed a genome-wide polygenic score using LDpred that identified 8.0% of the population at ≥3-fold elevated CAD risk—a prevalence approximately 20-fold higher than the carrier frequency of monogenic mutations conferring comparable risk (13). Mega et al. (2015) demonstrated, in 48,421 individuals across five trials, that the relative risk reduction from statins in the high genetic-risk group (48%) was significantly greater than in the low-risk group (13%); the number needed to treat (NNT) to prevent one event was substantially lower in the high-risk group (14). Natarajan et al. (2017) confirmed greater subclinical atherosclerosis burden and statin benefit in high-PRS individuals (15).

Among the most recent real-world evidence, the GENVASC study (Samani et al., 2024) prospectively followed 44,141 individuals within the UK NHS; a CVD-PRS integrated with QRISK2 (Integrated Risk Tool) increased the proportion of individuals classified as high-risk by approximately 11.7% overall and 47.7% in the 40–54 age subgroup (16).

Atrial Fibrillation, Hypertension, and Stroke

Nielsen et al. (2018) identified 111 AF loci and demonstrated risk-stratification capability (17). Marston et al. (2023) reported ~2.5-fold higher incident AF risk in the top PRS quintile (HR 2.45; 95% CI 1.99–3.03) (18). For hypertension, Evangelou et al. (2018) identified 535 novel loci in >1 million individuals with a ~16.9 mmHg systolic BP difference between top and bottom PRS deciles (19). Giri et al. (2019) expanded this with 208 novel common and 53 rare variants in >750,000 individuals (20). For ischemic stroke, Abraham et al. (2019) developed a metaGRS with predictive performance comparable to clinical risk factors; subtype-specific PRS models have been reported (21).

Table 1

PRS performance across CVD subtypes (representative ranges)

CVD Subtype	Representative Study	PRS AUC	Added Value
CAD	Inouye 2018, Khera 2018	0.72–0.81	ΔC ≈ +0.03–0.09
Atrial Fibrillation	Nielsen 2018, Marston 2023	0.70–0.79	Significant NRI
Hypertension	Evangelou 2018, Giri 2019	0.68–0.73	Small but consistent
Ischemic Stroke	Abraham 2019	0.67–0.76	Variable by subtype

INTEGRATION INTO PRIMARY CARE

Practical Implementation

PRS analysis requires genomic DNA, obtainable from peripheral venous blood (2–10 mL EDTA; gold standard) or saliva kits. The dominant genotyping model in international clinical practice is SNP array (e.g., Illumina GSA; ~650,000–900,000 SNPs; approximately $30–70) combined with statistical imputation to ~30 million variants via public reference panels (TOPMed or Michigan Imputation Server). The bioinformatics pipeline includes: quality control (PLINK v2; call rate >95%, MAF >1%, HWE $p>1\times10^{-6}$), ancestry inference via PCA, haplotype phasing (Eagle/SHAPEIT), imputation (Minimac4/Beagle), PRS calculation using validated SNP weight tables from the PGS Catalog, ancestry-specific standardization, and clinical reporting (risk category and recommended action) (5,22). In Türkiye, the core of this infrastructure exists within the Türkiye National Genome Center (TUGEM) at the TÜSEB Aziz Sancar Research Institute (30).

Clinical Workflow and Action Plan

We propose a seven-step workflow adapted from Geisinger MyCode, Vanderbilt BioVU, and the NHS GENVASC models (16): (1) conventional risk assessment (SCORE2/PCE); (2) informed consent and pre-test counseling; (3) sample collection at primary care; (4) centralized laboratory analysis (2–6 weeks); (5) face-to-face result disclosure using absolute-risk language; (6) clinical action plan integrating PRS with conventional risk (Table 2); and (7) long-term EHR-integrated follow-up with cascade testing of first-degree relatives when warranted.

Table 2

Clinical action matrix integrating PRS with SCORE2

SCORE2 Category	PRS Result	Recommended Action
High (≥10%)	Any	Guideline-based statin ± aggressive lifestyle—PRS not needed
Intermediate (5–10%)	High (>80th %ile)	Consider statin initiation + lifestyle intervention
Intermediate (5–10%)	Low/Moderate	Standard care: lifestyle-first approach, 2-year follow-up
Low (<5%)	High	Intensive lifestyle; early statin may be considered; 3-yr follow-up
Low (<5%)	Low	Routine prevention; 5-year follow-up

Current guidelines (AHA 2022 Scientific Statement; NICE 2023) do not support routine population-wide PRS screening but identify reasonable candidates: individuals with early-onset family history of CVD (first-degree relative <55 male years / <65 female years), intermediate-risk patients with uncertain statin decisions, patients with indeterminate coronary artery calcification (CAC) scores, and asymptomatic individuals under 40 with risk-related concerns (5). Khera et al. (2016) demonstrated that adherence to a healthy lifestyle reduces coronary events by ~46% even in high-PRS individuals, emphasizing modifiable absolute risk (23).

LIMITATIONS AND CHALLENGES

Cross-ancestry transferability: Over 80% of PRS models derive from European-ancestry populations. Martin et al. (2019) demonstrated approximately 4.9-fold lower performance in African-ancestry populations (24). Multi-ancestry PRS development is advancing (25), but no PRS validated for the Turkish population is yet available.

Heritability gap and standardization: CAD heritability is estimated at ~40–60%, but current GWAS explain only ~20–30% of this variance (4). Gene–environment interactions modulate PRS impact. No global clinical consensus on algorithm selection, SNP count, or cutoff points has been established. The 2019 ACC/AHA guideline cites PRS as a "risk-enhancing factor" without recommending routine use; the 2021 ESC guideline characterizes PRS as "promising but not yet mature" (1,2).

Cost-effectiveness and ethics: Kiflen et al. (2022) reported borderline cost-effectiveness (CAD $172,906/QALY) (26); Sun et al. (2021) modeled 20–35% reduction in number needed to screen (27). Ethical challenges include incidental findings, insurance discrimination (Türkiye's KVKK framework for genetic data remains immature), informing family members, and genomic data security.

FUTURE PERSPECTIVES

Key future directions include: (i) multi-trait PRS integrating metabolic syndrome, hypertension, diabetes, and coronary disease simultaneously (SBayesRC, MTAG) (28); (ii) monogenic–polygenic hybrid screening, where high polygenic CAD risk is clinically meaningful even without a monogenic LDLR/APOB/PCSK9 variant (29); (iii) EHR integration of genomic data, following the Geisinger MyCode and Vanderbilt BioVU models; (iv) AI-supported non-linear PRS models capturing epistatic interactions (22); and (v) Türkiye-specific PRS calibration leveraging the TÜSEB/TUGEM national genome infrastructure (30). Türkiye's unique population-genetic structure at the convergence of Middle Eastern, Eurasian, and Mediterranean gene pools necessitates local calibration cohorts. Joint initiatives between the Turkish Society of Medical Genetics, TAHUD, and the Turkish Society of Cardiology will be critical for a pilot CVD-PRS programme on a 3–5 year horizon.

CONCLUSION

Polygenic risk scores offer a concrete framework for personalized CVD prevention by quantifying the genetic burden that conventional risk tools cannot capture. Primary care is the critical implementation point, and the proposed seven-step workflow provides a practical roadmap. Family physicians need to acquire genomic literacy to interpret PRS results and communicate risk within a biopsychosocial framework. While cross-ancestry transferability, lack of standardization, and cost-effectiveness uncertainty indicate PRS has not yet entered routine practice, the field is progressing rapidly. In Türkiye, the TUGEM infrastructure provides foundational ground for this transition, and close collaboration between family physicians and the medical genetics workforce will be decisive in realizing a Türkiye-specific PRS integration model.

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EBFMC26-OP-13 · Relationship Between Oral Health and Constipation in Older Adults

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This paper underwent a ***double-blind peer review process*** *and was approved for publication by the Scientific Committee of the conference.*

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ETHICS STATEMENT
This study was approved by the Ethics Committee of Bezmialem Vakif University, and written informed consent was obtained from all patients.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: With the aging of the global population, the prevalence of chronic constipation is increasing and negatively affects the quality of life of older individuals (1,2). Constipation is a multifactorial condition, and inadequate dietary fiber and fluid intake are among the key factors affecting bowel motility (3,4). Although age-related deterioration in oral health is known to influence dietary habits (5), studies examining its relationship with constipation are limited. This study aimed to evaluate the relationship between oral health and constipation in older adults.
Materials and Methods: This cross-sectional study included individuals aged ≥65 years admitted to the Geriatrics Outpatient Clinic of Bezmialem Vakif University Faculty of Medicine Hospital. Participants underwent comprehensive geriatric assessment including demographic characteristics, comorbidities, functional status (Lawton-Brody, Barthel Index), sarcopenia (SARC-F), nutritional status (Mini Nutritional Assessment), and laboratory parameters. Oral health was assessed using the Oral Health Assessment Tool

Turkish version (OHAT-TR), and scores ≥3 indicated poor oral health. Constipation was evaluated using Rome IV criteria, and stool form was assessed using the Bristol Stool Form Scale. Statistical significance was set at $p<0.05$.
Results: A total of 122 older adults were included (mean age 80.9±7.4 years; 68% female). Constipation prevalence was 37.7%, and 56.6% were at risk for poor oral health. Hypertension (74%) was the most common comorbidity. A significant association was found between OHAT risk group and constipation ($p<0.05$). Participants in the OHAT risk group had higher SARC-F, EAT-10, and HbA1c levels, and lower Barthel, Lawton-Brody, and vitamin D levels (all $p<0.05$). In univariate analysis, constipation was associated with OHAT risk group (OR: 2.41; 95% CI: 1.11-5.22; $p=0.026$), but this association lost significance after adjustment.
Conclusion: Approximately one-third of participants had constipation and more than half had poor oral health. Although oral health was associated with constipation, this relationship may be influenced by functional status. Poor oral health was significantly associated with indicators of functional decline. These findings suggest that oral health may reflect overall physical capacity and could serve as a practical clinical indicator in geriatric care.

KEYWORDS
Oral Health, Constipation, Older Adults

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EBFMC26-OP-14 · Adherence to LDL Cholesterol Targets in Patients with Type 2 Diabetes Mellitus

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ETHICS STATEMENT
All data were handled in accordance with patient privacy and confidentiality principles.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Cardiovascular disease remains the leading cause of morbidity and mortality in patients with Type 2 diabetes mellitus (T2DM) (1,2). Achieving low-density lipoprotein cholesterol (LDL-C) target levels is a key component of cardiovascular risk reduction (2,3). This study aimed to evaluate the rate of achieving LDL-C targets and factors associated with target attainment among patients with T2DM in a primary care setting.
Materials and Methods: This cross-sectional study was conducted between October 1, 2025, and March 15, 2026 in a Family Health Center located in the Giresun province, Türkiye. In this study, the medical records of adult patients previously diagnosed with T2DM were retrospectively reviewed. Patients were divided into two groups according to whether they achieved LDL-C target levels, based on the 2021 Dyslipidemia Diagnosis and Treatment Guideline of the Turkish Society of Endocrinology and Metabolism. Variables including age, sex, marital status, smoking, alcohol use, body mass index (BMI), physical activity status, daily fruit and vegetable consumption, LDL-C levels, oral antidiabetic drug (OAD) use, insulin use, and statin use were analyzed. Continuous variables were compared using the independent-samples t-test or the Mann–Whitney U test, while categorical variables were analyzed using the chi-square test or Fisher's exact test. A p-value <0.05 was considered statistically significant.
Results: A total of 174 patients diagnosed with T2DM were included in the study. The mean age of the participants was 62.47 ± 10.17 years, and 51.1% were female. LDL-C targets were achieved in 25.3% of patients. Statin use was significantly higher among patients who achieved LDL-C targets compared to those who did not (52.3% vs. 33.8%, p=0.030). Similarly, OAD use was more common in patients achieving targets

(100% vs. 85.4%, p=0.004). Male sex was also associated with higher target attainment (68.2% vs. 42.3%, p=0.003). Patients who achieved LDL-C targets had a significantly lower BMI (29.52 vs. 31.61, p=0.023). No significant differences were observed in age, smoking status, alcohol consumption, ≥30 minutes of daily physical activity, daily fruit and vegetable consumption, or insulin use (all p>0.05) (Table 1).

Table 1

Comparison of Clinical and Demographic Characteristics According to LDL Cholesterol Target Achievement in Patients with Type 2 Diabetes Mellitus

Variables	Total (n = 174)	LDL-C target not achieved (n = 130)	LDL-C target achieved (n = 44)	p
Age, Mean ± SD	62.47 ± 10.17	63.04 ± 9.90	60.77 ± 10.87	0.202
Female sex, n (%)	89 (51.1%)	75 (57.7%)	14 (31.8%)	**0.003**
Married, n (%)	156 (89.7%)	112 (86.2%)	44 (100%)	**0.008***
Current smoking, n (%)	37 (21.3%)	27 (20.8%)	10 (22.7%)	0.784
Alcohol consumption, n (%)	5 (2.9%)	2 (1.5%)	3 (6.8%)	0.103*
BMI, median (min–max)	31.21 (22.21-47.96)	31.61 (23.05-47.96)	29.52 (22.21-47.22)	**0.023**
Physical activity status (≥30 minute/day), n (%)	41 (23.6%)	28 (21.5%)	13 (29.5%)	0.279
Daily fruit and vegetable intake, n (%)	83 (47.7%)	61 (46.9%)	22 (50.0%)	0.724
OAD use, n (%)	155 (89.1%)	111 (85.4%)	44 (100%)	**0.004***
Insulin use, n (%)	25 (14.4%)	19 (14.6%)	6 (13.6%)	0.873
Statin use, n (%)	67 (38.5%)	44 (33.8%)	23 (52.3%)	**0.030**
LDL-C, median (min–max)	112.50 (34.20-216.82)	120.30 (70.20-216.82)	67.29 (34.20-98.10)	**<0.001**

*Footnotes: Data are presented as mean ± standard deviation (SD), median (minimum–maximum), or number (percentage), as appropriate. Comparisons between groups were performed using the independent-samples t-test for normally distributed variables and the Mann–Whitney U test for non-normally distributed variables. Categorical variables were compared using the Pearson chi-square test or Fisher's exact test, as appropriate. Bold p-values indicate statistically significant differences (p <0.05). * Fisher's exact test was used when expected cell counts were <5.*

Abbreviations: BMI, body mass index; LDL-C, low-density lipoprotein cholesterol; OAD, oral antidiabetic drug; SD, standard deviation; min–max, minimum–maximum.

Conclusion: The rate of achieving LDL-C target levels (25.3%) among patients with T2DM is insufficient. Statin use, OAD therapy, male sex, and lower BMI were associated with better target attainment. These findings highlight the importance of statin use and OAD therapy in lipid management among patients with T2DM and emphasize the need for improved lipid management strategies and interventions to increase adherence to guideline-recommended therapies in primary care settings (2,4).

KEYWORDS

Type 2 Diabetes Mellitus, LDL Cholesterol, Statin Therapy, Cardiovascular Risk, Primary Care

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EBFMC26-OP-15 · Misinformation and Conspiracy Theories Regarding the Side Effects of COVID-19 Vaccines: An Analysis of YouTube Video Content

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ETHICS STATEMENT
This study does not require ethics committee approval.

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No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Objective: The aim of this study is to examine misinformation and conspiracy theories regarding the side effects of COVID-19 vaccines circulating on the YouTube platform, and to reveal how this content is presented and how it contributes to the spread of misinformation (infodemic).
Method: In this study, which employed a mixed-methods approach, videos on the YouTube platform were screened, and 109 videos were included in the analysis following exclusion criteria. The coding and thematic analysis of qualitative data were conducted manually by three independent researchers without the use of any software and were finalized through consensus (inter-researcher agreement). The videos were classified into "Trust-Inducing," "Trust-Eroding," and "Neutral/Undecided" categories based on their content; the quantitative data obtained (view counts, likes, comment counts, etc.) were analyzed using statistical tests.
Results: 46.8% of the analyzed videos were "Trust-Eroding," 32.1% were "Trust-Building," and 21.1% were "Neutral/Undecided." Although no statistically significant difference was found in view counts between the groups (p=0.377), it was observed that the average view count for videos that instilled distrust (99,862) was

significantly higher than the others due to the influence of outliers. Median values, which exclude outliers, indicate that content containing misinformation is being promoted more prominently by the platform's algorithm. Additionally, it was found that 48.6% of the 35 videos sourced from healthcare professionals included in the study contained "trust-eroding" content. Qualitative analysis revealed that the most common themes were inducing fear of heart attacks or cancer (12.8%) and "cleansing recommendations" such as bloodletting and detox after vaccination (11.9%).
Conclusion: YouTube continues to be a significant risk area for the spread of conspiracy theories regarding the side effects of COVID-19 vaccines and unscientific commercial marketing. In particular, the fact that healthcare workers—who are generally regarded as scientific authorities in society—are producing a high volume of infodemics and engaging in alternative medicine marketing out of concern for click-through rates poses a significant ethical issue in health communication. For future studies, it is recommended to conduct algorithmic analyses using Big Data analytics on more comprehensive datasets.

KEYWORDS
COVID-19 Vaccines, YouTube, Vaccine Side Effect, Infodemic

INTRODUCTION

It is reported that the number of social media users worldwide is approximately 5 billion (1). In the digital age, social media platforms—particularly YouTube—play a significant role in the public's access to health-related information and in decision-making regarding healthcare services(2, 3). This platform, which has a vast user base worldwide, operates using an algorithm based on users' viewing history, likes, and interactions. While this algorithm aims to increase user engagement, it can lead to the promotion of content that lacks scientific evidence but has high view potential(4).

YouTube has become a platform where both anti-vaccine groups and advocates for vaccine safety come together; it has enabled both pro-vaccine and anti-vaccine videos to reach wide audiences (5). By providing a digital space where people can share unverified information anonymously and without hesitation, YouTube contributes to the spread of both accurate and misleading information about vaccines(6). It has been found that YouTube is one of the most frequently used social media platforms for sharing misconceptions about vaccines(7).

On the other hand, one strategy recommended for achieving high vaccination rates is to use social media to raise awareness about the importance of vaccines (8). Video-sharing sites are among the most popular websites; particularly YouTube, which receives approximately 2 billion views daily (2), is widely used to search for health information and can influence users' health-related attitudes and behaviors (e.g., vaccination habits)(9).

The reasons behind COVID-19 vaccine hesitancy are multifaceted and complex. Fear of side effects and concerns about the speed at which vaccines were developed have been cited as the primary causes of this hesitancy (10). Additionally, misinformation about COVID-19 and vaccines has spread at a pace that led the WHO to use the term "infodemic" on social media platforms (11). An infodemic refers to "an overwhelming amount of information, including false or misleading information, circulating in digital and physical environments during a disease outbreak" (12).

During the COVID-19 pandemic, the increased use of social media and the prevalence of anti-vaccine content on these platforms raised concerns that social media could contribute to vaccine hesitancy(13). Reviewing information about vaccines found on YouTube is useful for planning and conducting effective information campaigns(14). Therefore, many researchers have evaluated the characteristics of YouTube videos providing information about vaccines, including COVID-19 vaccines (15-18). However, studies examining information about COVID-19 vaccines in Turkish-language content are limited. The aim of this study is to examine misinformation and conspiracy theories circulating on YouTube regarding the side effects of COVID-19 vaccines and to reveal how this content is presented. Selected YouTube videos are analyzed to evaluate the types of claims regarding vaccine side effects, the forms of discourse used, and how this content contributes to infodemics.

METHODS

Although this study is based on qualitative content analysis, it exhibits a structure consistent with a mixed-methods approach due to the analysis of quantitative data such as the number of views, likes, and comments on the videos.

Data Collection Tool and Process

In this study, a structured data collection form created by the researchers was used as the data collection tool to systematically examine YouTube videos regarding the side effects of COVID-19 vaccines. This form was designed to allow for the simultaneous collection of both quantitative and qualitative data.

The data collection form consists of the following variables: video title, video duration, view count, like count, comment count, researcher notes regarding the video's content, channel name, and video source. While quantitative variables (views, likes, comments, and video duration) were used for descriptive statistics, the qualitative notes regarding the video's content served as the basis for content analysis.

The data collection process was conducted by three independent researchers; each researcher recorded the videos separately into a data collection form.

Search Strategy and Keywords

A keyword-based search strategy was used to identify videos on the YouTube platform regarding the side effects of COVID-19 vaccines. Video screenings were conducted to include content published between 2023, 2024, and 2025.

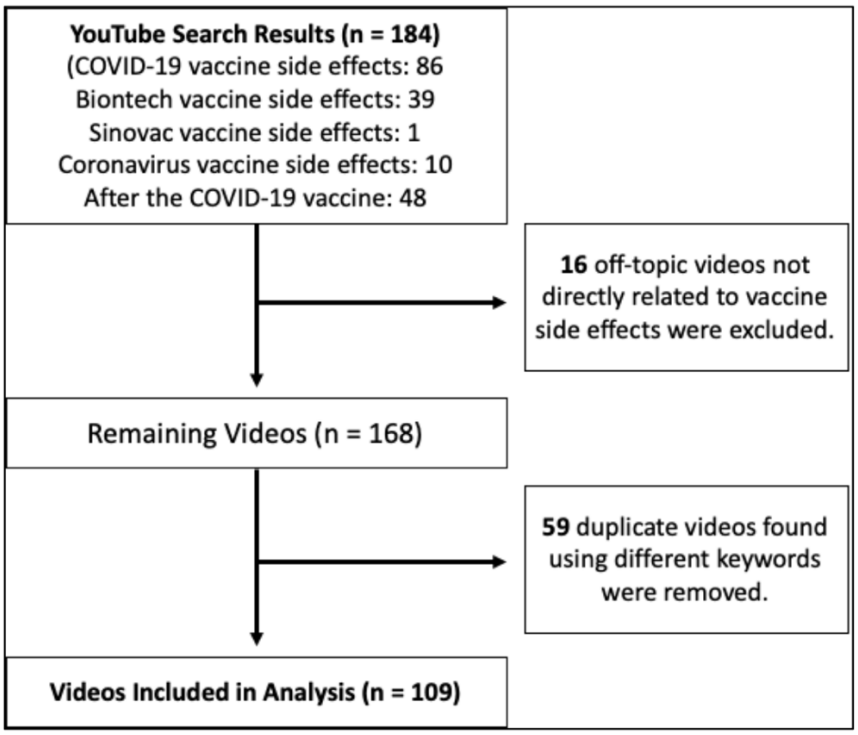
The following keywords (search terms) were used during the search process:

- "COVID-19 vaccine side effects"
- "Biontech vaccine side effects"
- "Sinovac vaccine side effects"
- "Coronavirus vaccine side effects"
- "After the COVID-19 vaccine"

These keywords were selected based on the most frequently used terms regarding the side effects of COVID-19 vaccines in the literature and public discourse. Videos obtained through searches using different keywords were screened for duplicate content, and duplicates were removed from the scope of the study. Additionally, off-topic videos not directly related to vaccine side effects were excluded. Following all screening and deduplication processes, a total of 109 videos were included in the analysis. The process of selecting, screening, and including videos in the analysis is presented in Figure 1.

Figure 1

The processes for including videos in the analysis



Data Analysis and Thematic Coding

The collected data were analyzed using content analysis in accordance with a qualitative research approach. During evaluation phase, categories were determined by consensus among three separate researchers. The coding process took into account the overall discourse of the videos, the language used, and the messages conveyed.

As a result of the content analysis, the videos were divided into three main categories: confidence-building, confidence-eroding, and neutral/undecided. This classification was based on the perception the videos created regarding COVID-19 vaccines.

Under the "Trust-Building" category, the following subcategories were identified: public health messages, correction of misinformation, scientific support, and positive experiences. The videos in this group were evaluated as containing content that supports trust in the vaccine, aligns with scientific data, and conveys a positive attitude.

Under the "Mistrust-Inducing" heading, there are subcategories including fear/anxiety, anti-vaccination sentiment, conspiracy theories/pseudoscience, negative personal experiences, and advice on "detoxing" from vaccines. This content contains statements that foster mistrust in vaccines, lack scientific basis, or reinforce negative perceptions.

Under the "Neutral/Undecided" heading, the subcategories include unbiased news, mixed messages, and clinical information. Videos in this group are classified as informative content or content presenting different viewpoints together, without containing explicit guidance regarding vaccines.

During the content analysis process, videos were evaluated not only in terms of main and subcategories but also in terms of recurring message patterns within the videos. To this end, researchers' notes regarding the videos' content were reviewed, and prominent messages were identified using open coding. Following the coding process, the most frequently recurring messages in the videos were ranked by frequency. The process of identifying recurring messages was conducted independently by three researchers; subsequently, the codes were compared to reach consensus on common messages. Any discrepancies between researchers were discussed and resolved through consensus, thereby enhancing the reliability of the coding process. No software was used in the qualitative analysis process; analyses were conducted based on the researchers' direct evaluations.

In addition to qualitative content analysis, quantitative variables related to the videos (number of views, number of likes, number of comments, and video duration) were compared across categories and presented as counts and percentages. Since the quantitative data did not follow a normal distribution, the Kruskal-Wallis test was used to compare three or more independent groups.
The analysis of the research data was conducted using the IBM SPSS Statistics 22.0 software package. A significance level of $p<0.05$ was accepted for all statistical analyses.

Ethical Considerations
This study utilized publicly available data from YouTube and did not involve human participants or personal data requiring ethical approval. Therefore, formal ethical approval was not required for this study.

RESULTS
No statistically significant differences were found between groups in terms of view count ($p=0.377$) and number of comments ($p=0.174$) regarding the content characteristics and source distribution of YouTube videos about COVID-19 vaccines. However, when examining descriptive statistics, it is observed that the average view count for "Trust-Eroding" videos (99,862) is significantly higher than that of other groups; the wide range of standard deviations and the presence of outliers (videos with over 2 million views) appear to have influenced this statistical result. When examining the median values, which exclude the influence of outliers, the median view count for 'Trust-Eroding' content (3,772) is higher than that of 'Trust-Building' (2,310) and 'Neutral' (544) videos, indicating that videos containing misinformation are being delivered to more users by the platform's algorithm. Of the 35 videos sourced from healthcare professionals included in the study, 48.6% (n=17) contained "Trust-Eroding" content, a higher proportion than "Trust-Building" videos (42.9%, n=15). 47.2% of news channels (n=36) and 53.8% of individual channels (n=26) consist of content that creates distrust. In these groups as well, videos that create distrust are predominant. 50% of videos from civil society organizations (n=10) contain content that builds trust. There are only 2 videos belonging to healthcare institutions, and all of these videos (100%) fall into the trust-inspiring category (Table 1).

Table 1

Content characteristics and source distribution of YouTube videos about COVID-19 vaccines

	Inspiring confidence	Creating Insecurity	Neutral/Undecided	p
Video length (seconds)	Mean±SD=258±402 Median=119 Min-Max=23-1790	Mean±SD=224±368 Median=90 Min-Max=12-2300	Mean±SD =210±290 Median =95 Min-Max=10-1066	0,863
Number of Views	Mean±SD =20.181±2310 Median =2310 Min-Max=12-170.000	Mean±SD =99.862±30.641 Median =3772 Min-Max=4-2.032.237	Mean±SD =32.458±12.717 Median =544 Min-Max=10-581.166	0,377
Number of likes	Mean±SD =277±30 Median =30 Min-Max=0-3500	Mean±SD =1234±3930 Median =33 Min-Max=0-24.000	Mean±SD =3689±17.507 Median =10 Min-Max=0-84.000	0,214
Number of comments	Mean±SD =66±160 Median =4 Min-Max=0-780	Mean±SD =141±272 Median =6 Min-Max=0-981	Mean±SD =34±72 Median=1 Min-Max=0-257	0,174
Resource Allocation				-
News channels (n=36)	6 (16,7)	17 (47,2)	13 (36,1)	
Healthcare professionals (n=35)	15 (42,9)	17 (48,6)	3 (8,6)	
Individual channels (n=26)	7 (26,9)	14 (53,8)	5 (19,2)	
Civil society organizations (n=10)	5 (50,0)	3 (30,0)	2 (20,0)	
Healthcare institutions (n=2)	2 (100,0)	-	-	

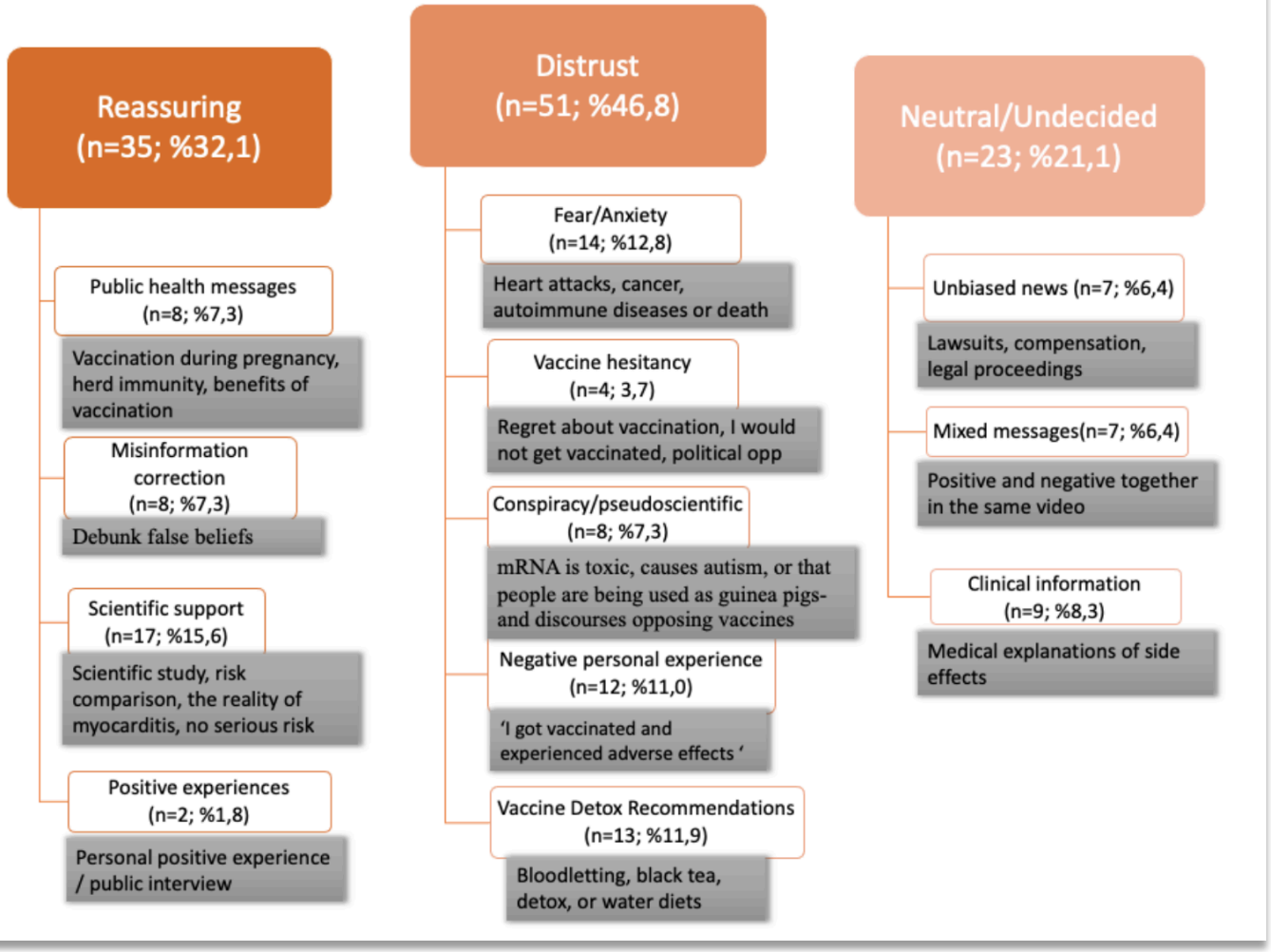
When examining the distribution of content related to COVID-19 vaccine side effects in YouTube videos according to themes of trust, distrust, and neutrality;

"Distrust-inducing" content accounted for the largest share among the videos analyzed, at 46.8% (n=51). The most common theme is "Fear/Anxiety" (n=14; 12.8%), which includes videos claiming that vaccines cause heart attacks, cancer, autoimmune diseases, or death. This is followed by "Vaccine Detox Recommendations" (n=13; 11.9%), which promote unscientific methods such as bloodletting, black tea, detox, or water diets. Additionally, "Negative personal experience" videos (n=12; 11.0%) based on narratives such as "I got vaccinated and experienced adverse effects" also hold a significant place. At a lower rate, "Conspiracy/pseudoscientific" claims (n=8; 7.3%)—such as that mRNA is toxic, causes autism, or that people are being used as guinea pigs—and discourses opposing vaccines and policies (n=4; 3.7%) are observed (Figure 2).

32.1% of the videos (n=35) were classified under the “Reassuring” category. The strongest subtheme within this category is “Scientific support” (n=17; 15.6%) videos, which emphasize that there is no serious risk by comparing risks. Videos containing “Public health messages” such as vaccination during pregnancy and herd immunity (n=8; 7.3%) were observed at the same rate as “Misinformation correction” videos that debunk false beliefs (n=8; 7.3%). Public interviews sharing personal positive experiences, however, were observed at the lowest rate (n=2; 1.8%) (Figure 2).
21.1% of the videos (n=23) contain “Neutral/Undecided” messages. The most common type of video in this category is “Clinical information” (n=9; 8.3%), which provides medical explanations of side effects. “Mixed messages” (n=7; 6.4%), which present both positive and negative views in the same video, and “Unbiased news” videos (n=7; 6.4%), which address topics such as lawsuits or court proceedings, show an equal distribution (Figure 2).

Figure 2

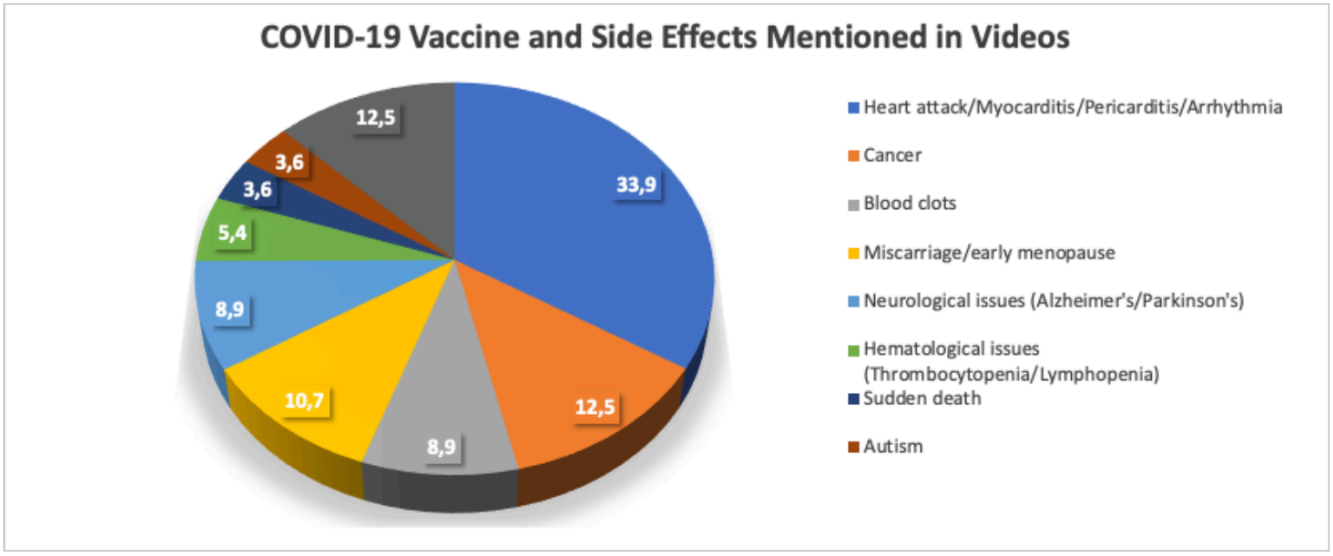
Themes of trust, distrust, and neutral content regarding COVID-19 vaccine side effects in YouTube videos



The most frequently mentioned side effect category in the analyzed videos was “Heart attack/Myocarditis/Pericarditis/Arrhythmia,” accounting for 33.9%. Claims related to “Cancer” followed, at 12.5%. Claims regarding “Miscarriage/early menopause,” reflecting concerns about reproductive health, accounted for 10.7%. In the videos, the side effects “Blood clots” and “Neurological issues (Alzheimer's/Parkinson's)” each accounted for 8.9%. At lower rates, claims regarding “Hematological issues (Thrombocytopenia/Lymphopenia)” at 5.4%, “Sudden death” at 3.6%, and “Autism” at 3.6% also stand out. Various other side effects not included in these main categories are grouped under the “Other” heading and account for 12.5% (Figure 3).

Figure 3

Side effects of the COVID-19 vaccine in YouTube videos



When listing the most frequently repeated messages regarding COVID-19 vaccine side effects in YouTube videos;

Content backed by scientific evidence occupies a significant place among the most frequently repeated messages in these videos. At the top of the list is the message that the vaccine does not cause heart attacks and that the primary cardiovascular risk lies in the COVID-19 infection itself. The presentation of studies supporting the absence of a link between the vaccine and cancer, along with the emphasis that vaccines reduce mortality rates by providing herd immunity, have also made the list. Additionally, scientific content explaining that COVID-19 itself increases the risk of blood clots, autoimmune diseases, and death, along with doctors' efforts to correct misinformation on social media, has frequently been shared with the audience (Table 2).

Contrary to scientific data, messages fueling unfounded fears also dominate the list. The claim that the vaccine causes serious side effects such as heart attacks, blood clots, and cancer was the second most common message. The claim that mRNA vaccines cause myocarditis in young people is also a popular argument for mistrust. Non-scientific protection recommendations—such as "detox, herbal remedies, and cupping"—that capitalize on these fears have risen to third place. Personal accounts of unexpected side effects allegedly experienced after vaccination also appear as content that fuels anti-vaccine narratives (Table 2).

Beyond medical content, news about lawsuits and compensation processes following vaccination also stand out as the fourth most frequently encountered message (Table 2).

Table 2

The most frequently repeated messages about COVID-19 vaccine side effects in YouTube videos

10 MOST FREQUENTLY REPEATING MESSAGES
1. The vaccine does not cause heart attacks / the risk exists with COVID.
2. Claims that vaccines cause serious side effects (heart problems, blood clots, cancer)
3. Recommendations for "detox/herbal/cupping therapy" to protect against post-vaccination side effects.
4. Post-vaccination lawsuits – compensation news.
5. Those who say there is no link between vaccines and cancer, and that studies support this.
6. The protective effect of vaccines on herd immunity and mortality rate.
7. Claims that mRNA vaccines cause myocarditis in young people.
8. Correction of social media misinformation by physicians
9. Stories describing personal, unexpected side effects after receiving the vaccine.
10. Scientific evidence suggests that COVID itself increases the risk of blood clots, autoimmune processes, and death.

DISCUSSION

This study examined videos shared on YouTube between 2023 and 2025 regarding the side effects of COVID-19 vaccines, revealing how the content was framed in terms of trust levels. Following screening and selection processes, a total of 109 videos were included in the analysis. The findings indicate that the discourse on vaccine side effects on the platform is not solely for informational purposes but is also shaped by risk perception and trust/distrust.

46.8% of the videos consisted of content that created distrust, 32.1% that instilled trust, and 21.1% that was neutral/undecided. This distribution is consistent with studies indicating that misinformation, conspiracy narratives, and emphasis on risks related to vaccines are dominant on social media (19-22). YouTube is a significant source of both reliable and misleading information, but the high visibility and appeal of misinformation makes it a critical and risky platform for vaccine communication(19, 23, 24). The higher prevalence of content that creates distrust suggests that discussions about vaccine side effects on YouTube are often conducted through narratives based on anxiety and skepticism.

Even before COVID-19, misinformation about vaccines on social media had caused significant setbacks in efforts to increase vaccination rates. Past research has examined how prevalent anti-vaccine content is on social media. Initial studies on YouTube showed that among videos related to vaccines, negative feelings toward vaccines increased from 32% in 2007(25) to 51.7% in 2012 (26) and 65.5% in 2017 (27). Song and Gruzd examined the importance of anti-vaccine content within the vaccine-related video network and suggested that viewing anti-vaccine content facilitates pathways to more anti-vaccine content through a recommendation system (28). However, a study by Abul-Fottouha et al. found that pro-vaccine videos (64.75%) were more common than anti-vaccine videos (19.98%) on YouTube, with 15.27% of videos being neutral (29). Tang et al. found that when users search on YouTube using keywords, they are more likely to find pro-vaccine videos published by trusted sources such as government agencies and hospitals, regardless of whether they use pro-vaccine or anti-vaccine keywords (19).

In the qualitative analysis, the most frequently repeated messages included "claims that vaccines cause serious side effects (heart disease, blood clots, cancer)," "claims that mRNA vaccines cause myocarditis in young people," and "post-vaccination lawsuits and compensation claims." It was also noteworthy that some videos included suggestions with questionable scientific basis, such as "detox, herbal remedies, or cupping therapy,"

to protect against side effects. This indicates that the discourse on side effects is not limited to claims but can also be linked to directing people towards alternative practices. In contrast, reassuring content emphasized scientific explanations highlighting that vaccines are not linked to heart attacks or cancer, information regarding the increased risk of blood clots and death from COVID-19 infection, and messages about health professionals correcting misinformation on social media. Although some rare but serious adverse events associated with COVID-19 vaccines, such as myocarditis, thrombosis, and Guillain-Barré syndrome, have been confirmed in large cohorts and pharmacovigilance systems, the absolute incidence of these events is low, and the benefit-risk balance is favorable when compared to the protection provided by the vaccines(30-33). For example, although myocarditis after mRNA vaccines has increased, particularly in young men, 10–100 cases per million doses are reported, with the majority of cases being mild and clinically resolving rapidly (30, 31, 34). However, the disproportionate emphasis on these rare events on social media is pushing the risk of severe illness and death from COVID-19 into the background, increasing vaccine hesitancy (20). Content that exaggerates, takes out of context, or associates vaccine side effects with conspiracy theories has been found to erode trust, increase vaccine hesitancy, and negatively impact global vaccine acceptance, particularly during the COVID-19 pandemic(20, 35-37). A systematic review was conducted on 19 studies that measured or discussed the impact of misinformation spread on social media on vaccine hesitancy. These studies suggest that misinformation spread on social media has a negative impact on vaccine hesitancy and vaccination rates (20).

In contrast, reassuring content highlighted scientific explanations emphasizing that vaccines are not linked to heart attacks or cancer, information regarding the increased risk of blood clots and death from COVID-19 infection, and messages about health professionals correcting misinformation on social media. The emphasis on health professionals correcting misinformation on social media in the videos is also consistent with communication findings in the literature. Experimental studies show that "fact-checking" tags added to posts containing misinformation, and corrections based on highly reliable sources such as universities/health institutions, can positively influence vaccine attitudes and partially mitigate the negative impact of misinformation (38, 39).

An examination of the source distribution revealed that content was most frequently produced by news channels and healthcare professionals. While news channels had a relatively high proportion of neutral content (36.1%), it was noteworthy that healthcare professional channels contained both trustworthy and untrustworthy content. Another study showed that the vast majority of videos were uploaded by television news channels, followed by healthcare professionals(23). On individual channels, it was determined that content creating distrust was more visible. The limited representation of health institutions on the platform suggests that the visibility of corporate health communication on YouTube may be relatively low. Many studies have shown that news channels and individual/independent users dominate in the production of COVID-19 videos, while health authorities and government channels are underrepresented in terms of both number and viewership (40-43). In many analyses, videos from individual channels have been identified as the source of the most misinformation or misleading content, with a particular concentration of conspiracy narratives, personal harm stories, and "alternative health" claims (20, 23, 37, 44).

While healthcare professionals generally offer higher content quality and medical accuracy, studies have shown that content is produced that both supports vaccines and is susceptible to skepticism/misinformation; some members of this group also interact with alternative treatments or anti-vaccine messages (23, 43, 45). One of the most striking findings of the study in terms of medical ethics and public health communication is that 48.6% of the 35 videos originating from healthcare professionals fall into the 'Creating Distrust' category. It is noteworthy that healthcare professionals, who are considered scientific authorities in society, generate similar levels of infodemics through individual accounts. This situation is thought to stem from the concern for clicks (ratings) brought about by the YouTube platform and the goal of gaining followers through populist rhetoric. Indeed, the fact that a significant portion (11.9%) of the content creating distrust offers unscientific advice such as post-vaccination cupping, detox, and lavender tea indicates that healthcare professionals or content creators are using the climate of fear for the commercial marketing of alternative medicine methods. The standards of communication ethics for experts on digital platforms during health crises need to be re-evaluated.

In conclusion, while scientific content about COVID-19 vaccine side effects can be found on YouTube, it appears that messages promoting distrust are more prevalent. Therefore, it is crucial for public health that

healthcare institutions and professionals produce more visible and regular content on these platforms, correct misinformation, and strengthen communication strategies that support health literacy.

LIMITATIONS OF THE STUDY

The study has some limitations. Given YouTube's massive data volume, with thousands of new videos added every second, and its user-specific search algorithms, the sample of 109 videos included in the analysis within a specific time period may not fully reflect the overall trends of the platform. Future studies are recommended to conduct algorithmic analyses on more comprehensive datasets using Big Data analytics and Machine Learning methods, and to examine the differences in misinformation regarding vaccine types (mRNA and inactive). In addition, the videos were identified using YouTube's search function, which relies on a relevance-based ranking system influenced by factors such as popularity and user engagement; therefore, the results may not fully represent all available content on the platform.

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EBFMC26-OP-16 · Management of Patients After Metabolic and Bariatric Surgery in Primary Care

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ABSTRACT
Introduction: Metabolic and bariatric surgery (MBS) remains the most durable intervention for severe obesity and its attendant comorbidities (1). Yet the operation itself is only the beginning. Many patients face long-term hazards—micronutrient deficiencies chief among them, followed by weight regain—that demand lifelong surveillance (2). As time passes and patients drift away from specialist surgical centres, primary care practitioners (PCPs) become their first port of call; this gap in structured follow-up widens with each passing year. We aimed to distil a practical, up-to-date guide for PCPs from the clinical literature published between 2020 and 2026.
Materials and Methods: We reviewed published guidelines, cohort studies, and qualitative research spanning 2020 to 2026. Our focus fell on three areas: what current nutritional monitoring protocols look like in practice, which barriers PCPs encounter when managing these patients day to day, and how the PCP's role within the bariatric shared-care model has evolved.
Results: A 2026 report by Henao-Carrillo and Aschner identified "therapeutic inertia" as a stubborn obstacle in primary care obesity management. In practical terms, clinicians often fail to escalate treatment even when weight-loss or metabolic targets go unmet—a pattern rooted in knowledge gaps about post-bariatric physiology and, at the provider level, in weight stigma (3). The consequences are not one-sided. Patients who regain weight tend to avoid follow-up visits; many anticipate judgement in primary care settings and would

rather stay away than face it (1,4). This cycle—clinician hesitation meeting patient avoidance—is, we would argue, the central challenge of long-term bariatric care.

On the nutritional front, the evidence is more straightforward. Current guidelines call for a daily complete multivitamin containing iron, zinc, and copper after every bariatric procedure (5). Specific targets warrant attention: vitamin B12 should be given at 350–1000 mcg orally each day or 1000 mcg intramuscularly every three months; vitamin D3 at 2000–4000 IU daily, aiming for a serum 25(OH)D level above 75 nmol/L; and elemental iron at 45–60 mg daily for women who menstruate (5,6). These numbers are not difficult to remember—yet audits consistently show that PCPs undertest and underreplace.

Conclusion: Better bariatric outcomes hinge on PCPs who are willing to confront therapeutic inertia and weight stigma head-on. Structured annual reviews and clear-cut micronutrient replacement protocols form the backbone of long-term safety for these patients. That said, none of this works without trust. Patients must feel welcome at every visit, regardless of where their weight trajectory has taken them; the moment they stop coming through the door, the best protocol in the world becomes irrelevant.

KEYWORDS

Bariatric Surgery, Primary Care, Micronutrient Deficiency, Therapeutic Inertia, Weight Stigma, Shared Care Model

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EBFMC26-OP-17 · Colorectal Cancer Screening Strategies in Family Medicine and Changing Guidelines

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ABSTRACT
Introduction: Colorectal cancer (CRC) ranks as the third most diagnosed malignancy and the second deadliest cancer worldwide. For decades, routine screening began at age 50—a threshold most clinicians took for granted. That changed in 2021, when the US Preventive Services Task Force (USPSTF) moved the starting age down to 45 for average-risk adults; the decision rested on a worrying rise in early-onset disease (1). This five-year shift has placed family physicians at the centre of a broader, more complex set of screening conversations. We set out to examine how primary care has responded to these updated recommendations by drawing on the literature published between 2020 and 2026.
Materials and Methods: We searched clinical databases and population-level reports from 2020 through 2026. Three questions guided our review: how rapidly clinicians adopted the 45-years rule in daily practice, what the newer blood-based tests—often called liquid biopsies—offer in terms of patient uptake and diagnostic accuracy, and whether sustained contact with a primary care provider improves long-term screening adherence.
Results: Primary care physicians adapted to the new threshold remarkably fast. Within just five months of the guideline update, screening orders for patients aged 45–49 caught up with those for the 50-and-over group—a 37-percentage-point jump in ordering rates across primary care settings (2). The speed of this response

deserves emphasis; prior guideline changes in other cancer types have taken considerably longer to influence physician behaviour.

Blood-based screening, meanwhile, has carved out a niche of its own. The Food and Drug Administration (FDA)-approved cell-free DNA Shield test now gives patients who refuse or delay conventional methods a genuinely non-invasive alternative. Recent data suggest that adherence to blood-based testing runs roughly 11 percentage points higher than to stool-based approaches (3,4). Whether this advantage holds over multiple screening rounds remains an open question—but the early signal is encouraging.

Perhaps the most telling observation from 2026 concerns the family physician's role itself. A Flemish study found that having a designated general practitioner is a strong protective factor against non-adherence to post-screening colonoscopy (5). US data reinforce this finding: patients who have a personal provider and a routine check-up within the past year carry nearly six times the odds of meeting their screening targets (6). The upshot is clear—test choice matters, but the clinician–patient relationship may matter more.

Conclusion: Taken together, the evidence points to two practical levers for improving CRC screening uptake: starting at 45 instead of 50 and offering blood-based options to those who refuse conventional tests. For family physicians, though, the most powerful tool may be the simplest one—a regular follow-up schedule and a medical home model that keeps patients connected over time. No screening test works if the patient never shows up; trust and continuity are, at present, the strongest safeguards against low compliance.

KEYWORDS

Colorectal Cancer Screening, USPSTF, Liquid Biopsy, Primary Care, Early-Onset Colorectal Cancer, Screening Adherence

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EBFMC26-OP-18 · A Case of Optic Disc Drusen Mimicking Papilledema

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No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Background: Optic disc drusen (ODD) are calcified deposits composed of axonal remnants located anterior to the lamina cribrosa of the optic disc and may mimic papilledema.
Case Presentation: In this study, we present a case referred to our clinic with a suspicion of papilledema. A 40-year-old female patient presented to the ophthalmology clinic with a complaint of headache. Her visual acuity was normal in both eyes; however, bilateral optic disc swelling with blurred margins was observed, leading to a preliminary diagnosis of papilledema and referral to the neurology clinic. Following normal neurological evaluation findings, the patient was re-consulted to the ophthalmology clinic. After a comprehensive ophthalmologic assessment, including ocular ultrasonography and fundus autofluorescence imaging, a diagnosis of optic disc drusen was established, and papilledema was excluded.
Conclusions: Clinical suspicion of ODD is crucial in cases presenting with optic nerve head edema. Early diagnosis of ODD can prevent unnecessary investigations and interventions related to intracranial pathology.

KEYWORDS
Optic Disc Drusen, Papilledema, Idiopathic Intracranial Hypertension

INTRODUCTION

Optic disc drusen (ODD) are congenital calcifications of the optic nerve head located anterior to the lamina cribrosa. Approximately 69–91% of ODD cases are bilateral, with a higher prevalence reported in females (61–71%) (1,2). Impaired axonal transport and axonal degeneration of optic nerve fibers are thought to play a role in the development of ODD (3,4).

Clinically, ODD are detected in approximately 0.3% of adults and 0.4% of children, whereas histopathological studies report a prevalence ranging from 0.5% to 3.7% (5,6). This discrepancy may be explained by the fact that only about 40% of drusen are located on the surface of the optic nerve head and can be recognized as irregular, refractile deposits during routine ophthalmoscopic examination.

In contrast, deeply located drusen within the optic disc may give the disc an elevated or swollen appearance, leading to pseudopapilledema. Therefore, in patients presenting with optic disc edema, it is important to consider ODD to avoid unnecessary interventions such as lumbar puncture.

Various imaging modalities, including ocular ultrasonography, fundus autofluorescence (FAF), and optical coherence tomography (OCT), can aid in the diagnosis of ODD. In particular, ODD should always be considered in the differential diagnosis of optic nerve head edema in suspected papilledema cases.

In this study, we present a case of ODD that was previously misdiagnosed as papilledema. Informed consent was obtained from the patient.

CASE PRESENTATION

A 40-year-old female patient was initially evaluated at an external center for headache and referred to the neurology department with a preliminary diagnosis of bilateral papilledema made by an ophthalmologist. The patient was hospitalized for further evaluation to investigate the etiology of papilledema. Brain magnetic resonance imaging (MRI) and magnetic resonance venography (MRV) findings were normal.

As no abnormalities were detected in laboratory investigations, a lumbar puncture (LP) was planned to evaluate for idiopathic intracranial hypertension (IIH). However, prior to the procedure, the patient was re-consulted to the ophthalmology clinic.

The patient reported only intermittent headaches, with no significant past medical history. She denied additional visual symptoms such as transient visual loss, blurred vision, or diplopia.

Best-corrected visual acuity was normal in both eyes. Direct and indirect light reflexes were normal. No relative afferent pupillary defect (RAPD) was detected. Biomicroscopic anterior segment examination was unremarkable in both eyes.

Dilated fundus examination revealed elevated optic discs with blurred margins bilaterally (Figure 1). The patient underwent OCT, ocular ultrasonography, FAF, and visual field testing. Ocular ultrasonography demonstrated hyperreflective signals at the bilateral optic nerve heads. FAF imaging revealed bilateral hyperautofluorescence on the optic disc surface (Figure 2). Visual field examination showed no defects.

Based on these findings, a diagnosis of bilateral optic disc drusen was established.

Figure 1

Bilateral optic discs appear elevated with blurred margins

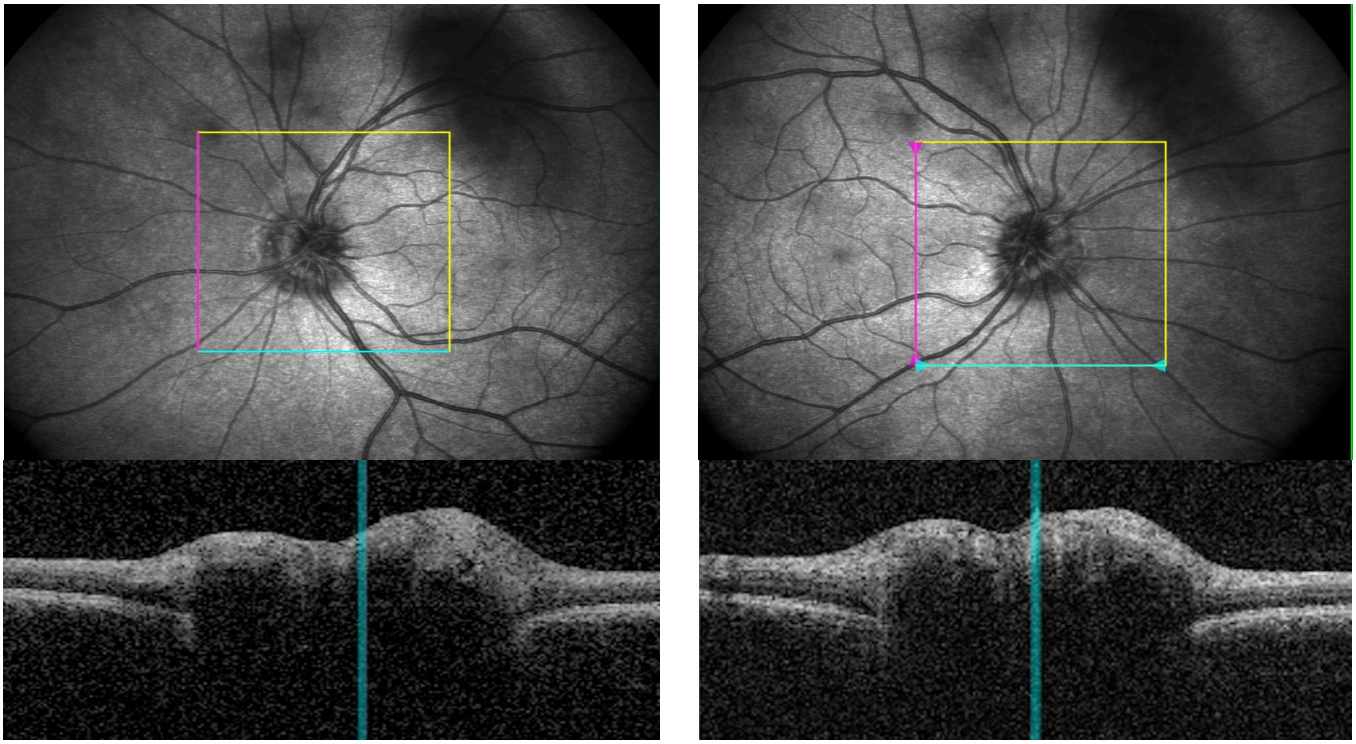
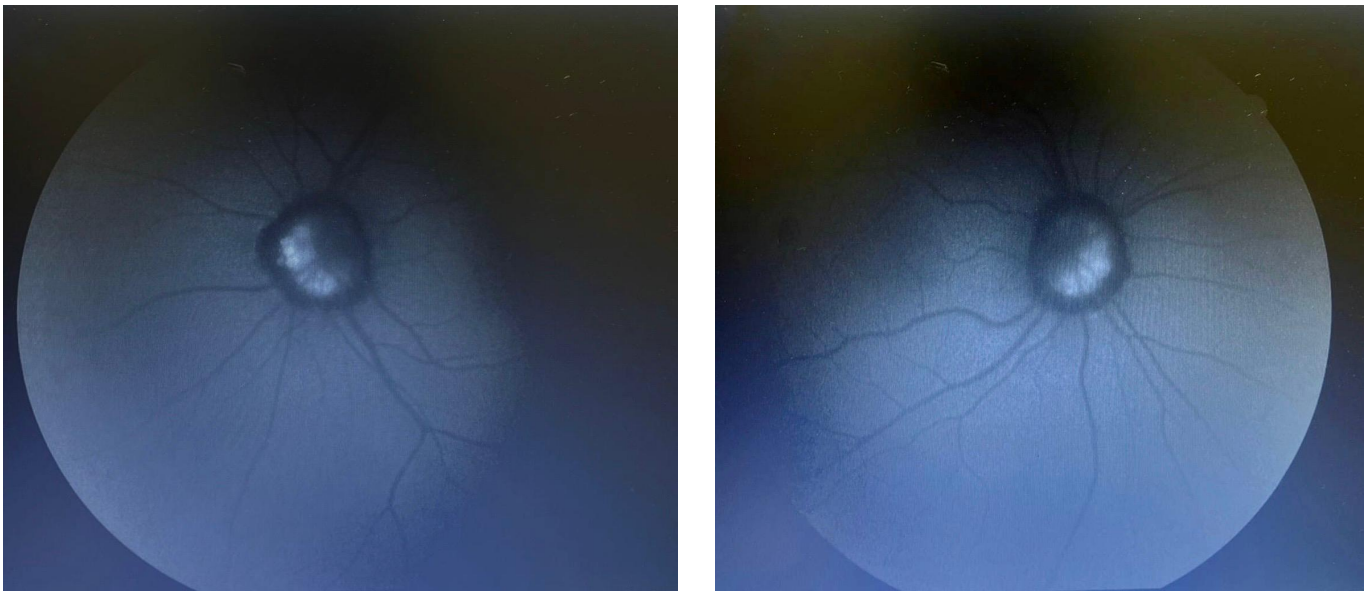


Figure 2

Fundus autofluorescence (FAF) imaging demonstrates bilateral hyperautofluorescence on the optic disc surface



DISCUSSION

Optic disc drusen (ODD) are yellowish, refractile, hyaline-containing deposits composed of calcified axonal remnants located on or within the optic disc. The ophthalmoscopic appearance of ODD may vary depending on their location within the optic nerve head. Although they may be superficial, they are more commonly buried (deeply located), particularly in younger patients (1).

In cases of superficial ODD, diagnosis is usually straightforward and can be readily made during routine fundus examination. However, due to the higher prevalence of buried drusen in younger individuals, ODD

may mimic optic disc edema (7). Therefore, children and young adults are more prone to misdiagnosis, particularly as papilledema.
Although decreased visual acuity is rare in ODD, mild visual field defects may occur (2). The most commonly reported visual field defects include inferior nerve fiber bundle defects, enlargement of the blind spot, and concentric constriction (1,8).
Ancillary imaging methods such as ultrasonography (USG), computed tomography (CT), fluorescein angiography, and OCT play a crucial role in accurate diagnosis (1,9). In younger patients, ODD may not always be detectable with ultrasonography due to insufficient calcification. Orbital and cranial CT imaging may be useful both for excluding intracranial mass lesions and for detecting buried optic disc drusen (10).
Considering that papilledema is often bilateral, its differentiation from buried ODD located within the optic nerve head can be challenging. As a result, many patients with buried ODD undergo unnecessary and extensive investigations to exclude causes of increased intracranial pressure.
ODD should be considered in the differential diagnosis of all patients with suspected papilledema. If drusen are not visible on fundus examination, the possibility of buried drusen should be kept in mind, and noninvasive imaging modalities such as OCT, FAF, and ocular ultrasonography should be utilized to establish the diagnosis, thereby avoiding unnecessary invasive procedures.

CONCLUSION

Optic disc edema is not always associated with increased intracranial pressure; therefore, alternative diagnoses should be considered before reaching a definitive conclusion based on comprehensive clinical evaluation. ODD should be kept in mind in the differential diagnosis of papilledema, and early diagnosis may help prevent unnecessary investigations and interventions for suspected intracranial pathologies.
Accordingly, ophthalmologists, neurologists, and reporting radiologists should consider the possibility of ODD when evaluating patients presenting with atypical optic disc edema.

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EBFMC26-OP-19 · Clinical and Medico-Legal Characteristics of Motorcycle-Related Injuries: A Retrospective Analysis

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ARTIFICIAL INTELLIGENCE STATEMENT

No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT

Introduction: This study aimed to evaluate the demographic, clinical, and medico-legal characteristics of injuries related to motorcycle accidents and to define the regional epidemiological pattern.
Materials and Methods: A total of 284 motorcycle accident cases evaluated at the Department of Forensic Medicine, Ordu University Training and Research Hospital between January 1, 2019, and December 31, 2024 were retrospectively analyzed. Data were assessed in terms of demographic characteristics, injury patterns, clinical processes, and forensic report outcomes. Statistical analyses were performed using Fisher's exact test for categorical variables and the Mann–Whitney U test for continuous variables.
Results: Of the cases, 88.0% were male, and the mean age was 27.5±10.1 years. A total of 92.3% of accidents occurred in urban areas, and a marked increase was observed over the years. The most frequently affected regions were the lower (82.7%) and upper extremities (70.4%), with a fracture rate of 33.1%. Hospitalization (16.2%), surgical intervention (9.9%), and intensive care requirement (3.2%) were identified. Injuries were classified as not manageable by Simple Medical Intervention (SMI) in 38.0% of cases, and the rate of life-

threatening condition was 6.3%. Hospitalization, intensive care requirement, and the presence of multiple trauma were significantly associated with non-SMI classification ($p<0.01$).
Conclusion: This study shows that motorcycle accidents form a distinct pattern characterized by concentration in young males, extremity injuries, and association with trauma severity. In the context of increasing case numbers and urban exposure, targeted approaches are needed to reduce the clinical and medico-legal burden of motorcycle trauma.

KEYWORDS
Motorcycle Accidents, Injury Patterns, Forensic Medicine

INTRODUCTION

In the global transportation ecosystem, motorcycles have become indispensable components due to their economic accessibility, fuel efficiency, and maneuverability in dense urban traffic. However, these advantages also bring a significant safety gap. Motorcycle users constitute the most at-risk group within the vulnerable road users category, as their vehicles lack a structurally protective cabin and kinetic energy is directly transferred to the body during collisions. Epidemiological studies have demonstrated that a motorcycle rider has a 35-fold higher risk of death and an 8-fold higher risk of injury compared to automobile drivers at the time of an accident. This situation elevates motorcycle accidents from being merely a traffic issue to a public health problem characterized by high morbidity and mortality rates (1–3).
In recent years, a fundamental shift has occurred in the vehicle composition of traffic in Turkey. According to the Turkish Statistical Institute (TURKSTAT), the number of registered motorcycles, which was approximately 3.3 million in 2019, exceeded 5 million by the end of 2023, marking a record increase (4). In particular, the annual increase in the number of motorcycles in traffic exceeding 937 thousand in 2023 is evidence of this dramatic shift in transportation preferences (5). This acceleration is driven not only by individual transportation needs but also by the massive growth of "fast delivery" and "courier" models carried out through digital platforms (6). The widespread use of motorcycle couriers in urban areas has increased the exposure time of motorcycles in traffic and, consequently, the risk of accidents.
The medico-legal evaluation of motorcycle accidents is of critical importance due to the severity of injuries and the criminal liabilities under the Turkish Penal Code (TPC). While analyzing the trauma in such cases, forensic medicine specialists are obliged to determine whether the injury endangers life, whether it can be resolved with simple medical intervention (SMI), and its permanent effects on bodily functions, within the framework of the relevant articles of the TPC (Articles 86, 87, and 89). Particularly, bone fractures, internal organ injuries, and head traumas constitute the basis of the "not manageable by SMI" and/or "life-threatening" categories in forensic reporting (7).
Ordu province provides a sample for examining this issue due to both the traffic dynamics on the Black Sea coastal road and the dense motorcycle traffic in urban settlements.
The aim of this study is to retrospectively examine the demographic data, trauma patterns, injury severity, and forensic report outcomes of motorcycle riders who applied to the Department of Forensic Medicine at Ordu University Training and Research Hospital, in order to reveal region-specific epidemiological data and contribute to the literature.

MATERIALS AND METHODS

This study is a retrospective, descriptive analysis of cases who applied to the Department of Forensic Medicine at Ordu University Training and Research Hospital between January 1, 2019, and December 31, 2024, and were determined to have been injured as a result of motorcycle accidents. The data were examined based on hospital records and forensic reports, focusing on variables such as age, sex, accident location, injury regions, lesion types, bone fractures, internal organ injuries, hospitalization, and the need for surgical intervention. Medico-legal evaluations were categorized according to the criteria of the Turkish Penal Code as treatability by Simple Medical Intervention (SMI), life-threatening condition, and trauma severity (single/multiple). IBM SPSS Statistics Version 20 was used for statistical analysis. The distribution of continuous variables was assessed using the Shapiro–Wilk test. Fisher's exact test was used for comparisons of categorical variables, and the Mann–Whitney U test was used for comparisons of continuous variables. A p value of <0.05 was considered statistically significant.

Ethical approval for the study was obtained from the Ordu University Non-Interventional Scientific Research Ethics Committee with the decision dated 27.02.2026 and numbered 2026/67.

RESULTS

In this study, a total of 284 cases in which the injuries of individuals (driver or passenger) on motorcycles were evaluated medico-legally due to motorcycle accidents at the Department of Forensic Medicine, Ordu University Training and Research Hospital between 01.01.2019 and 31.12.2024 were examined. A marked male predominance was observed in the gender distribution of the cases, with 88.0% (n=250) being male and 12.0% (n=34) female. Dates of birth ranged between 22.11.1949 and 09.07.2017, and the mean age at the time of the incident was calculated as 27.5±10.1 years. The median age was 25 years (IQR: 21–32), and the age range was 4–71 years. A significant increasing trend was observed in the distribution of accidents by years. The lowest number of cases was in 2019 (n=22; 7.7%), and the highest was in 2024 (n=97; 34.2%). The year 2023 also drew attention with a high number of cases (n=66; 23.2%). The vast majority of accidents occurred in urban areas (92.3%; n=262), while non-urban accidents remained limited (7.7%; n=22). The dates of forensic examination ranged between 21.01.2019 and 18.12.2024. The time between the accident and forensic examination was 26.1±74.6 days on average, with a median of 5.5 days (IQR: 2–20.25). The distribution of this duration was wide. In terms of helmet use, 26.4% (n=75) of the cases were helmet users, while 7.7% (n=22) were non-users. Alcohol status was limited to the extent that it could be obtained from medical records, with 5 cases (1.8%) testing positive and 3 cases (1.1%) negative.

When injury regions were evaluated with multiple coding, the most common combination was the simultaneous involvement of upper and lower extremities (29.9%; n=85). In region-based analysis, lower extremities (82.7%) and upper extremities (70.4%) were prominently affected at least once. These were followed by injuries to the face (22.2%), head (9.5%), chest (9.5%), and back (7.0), respectively. Regarding lesion types, abrasion was the most frequent lesion (43.7%; n=124). In lesion-based evaluation, abrasion was also the most common finding in terms of being observed at least once (76.8%; n=218), followed by ecchymosis (26.1%) and laceration (16.2%). Internal organ injury was not detected in the majority of cases (94.4%; n=268), and was present in only 5.6% (n=16). In contrast, the fracture rate was higher, with fractures detected in 33.1% (n=94) of cases. In terms of fracture localization, lower extremity (10.2%) and upper extremity (9.5%) fractures were the most common. The hospitalization rate was 16.2% (n=46), and the majority of cases were managed on an outpatient basis (83.8%). Intensive care requirement was observed in 3.2% (n=9), and surgical intervention was required in 9.9% (n=28). In terms of trauma severity, multiple trauma was present in 68.7% (n=195) of cases, while single trauma was observed in 31.3% (n=89).

In forensic report evaluation, injuries were classified as manageable with Simple Medical Intervention (SMI) in 62.0% (n=176) of cases and not manageable in 38.0% (n=108). The rate of life-threatening condition was 6.3% (n=18). Data regarding muscle and ligament injuries were largely missing (99.3%), with only one case reported for each variable; therefore, no further analysis was performed for these variables.

In advanced statistical analyses, Fisher's exact test was used for categorical variables and the Mann–Whitney U test was used for continuous variables. Hospitalization was strongly associated with classification as not manageable by SMI (Fisher's exact test, $p=3.62\times10^{-21}$; OR=125.0). Intensive care requirement (Fisher's exact test, p=0.00013) and the presence of multiple trauma (Fisher's exact test, p=0.00233) were also significantly associated with non-SMI classification. No significant association was found between gender or accident location and SMI classification ($p>0.05$). The high proportion of missing data for helmet use limited the analytical power of this variable. In the analysis of life-threatening conditions, cases with life-threatening injuries were significantly younger (Mann–Whitney U test, p=0.040). The median age was 21.0 years (IQR: 18.0–26.75) in cases with life-threatening conditions and 25.0 years (IQR: 21.0–32.0) in those without.

When the relationship between surgical intervention and age was examined, cases undergoing surgery were significantly older (Mann–Whitney U test, p=0.00226). The median age was 30.0 years (IQR: 26.0–36.75) in surgically treated cases and 24.0 years (IQR: 20.0–31.0) in non-surgical cases. In the analysis of helmet use (n=97), no statistically significant association was found between helmet use and trauma severity indicators ($p>0.05$). Finally, the rate of multiple trauma was significantly higher in non-urban accidents (Fisher's exact test, p=0.00329; OR=10.62), suggesting that non-urban accidents may be associated with higher-energy trauma.

DISCUSSION

The fact that an overwhelming majority of the cases (88.0%) were male confirms the predominance of motorcycle use and risky driving behaviors among males. This finding is in full agreement with similar studies in the literature (1,2). The tendency of male drivers to drive at higher speeds, their higher frequency of traffic rule violations, and the preference of motorcycles by males as either a hobby or a commercial vehicle may be considered the main reasons for this result.

The mean age of 27.5 years identified in our study is lower than the mean ages reported in the literature by Çeliksöz et al. (31.8) and Höskükler et al. (36.1) (1,3). This may be related to the mobility of the young population in the region. The significantly younger age of cases with life-threatening conditions in our study ($p=0.040$) indicates inexperience and a risky driving profile. In contrast, the increased need for surgical intervention at older ages ($p=0.002$) suggests that decreased bone quality and tissue healing capacity with age complicate clinical management.

The marked increase in the number of cases over the years can be explained by a real increase in exposure related to the widespread use of motorcycles. Our data suggest that this increase is not random when evaluated together with national data. Indeed, in 2024, 85.5% of fatal and injury traffic accidents occurred within residential areas; motorcycles constituted 31.5% of vehicles involved in accidents, 40% of deceased drivers, and 54.1% of injured drivers. In this context, our findings can be interpreted as a regional reflection of the increasing national burden of motorcycle-related trauma rather than a local increase.

The fact that the majority of accidents occurred in urban areas (92.3%) is directionally consistent with national statistics (85.5% of fatal and injury accidents occurred within residential areas in 2024) (8). The urban environment may create a favorable risk matrix for motorcycle accidents due to factors such as the high number of intersections, intense vehicle/pedestrian interaction, and the increasing use of motorcycles for short-distance delivery and commuting purposes. On the other hand, the significantly higher rate of multiple trauma in non-urban accidents in our study (OR=10.62) supports that rural/non-urban road accidents may be associated with "higher-energy trauma." This interpretation is consistent with WHO data showing a direct relationship between speed and injury severity (1% increase in average speed → 4% increase in fatal risk) (9).

In terms of injury patterns, the most prominent feature of our study is the very high involvement of extremities (lower extremity 82.7%; upper extremity 70.4%; the most common combination being simultaneous involvement of upper and lower extremities at 29.9%). This pattern is consistent with national and international literature indicating the predominance of extremity injuries in motorcycle accidents. A study conducted in Turkey between 2005–2012 reported that the most common injury was in the lower extremity (75.8%) and the most common fracture was tibial shaft fracture (28%, 40% of which were open fractures), demonstrating the central role of lower extremity trauma in terms of both frequency and severity (10). A classical hospital series from 2008 reported that musculoskeletal system injuries ranked first at 50%, with tibia-fibula fractures being the most common extremity injuries (11). A recent large-scale retrospective series including forensic report classification reported that the most frequently affected regions were the lower (44.4%) and upper extremities (38.7%), followed by head (26.0%) and facial injuries (21.6%). These comparisons support that the extremity predominance observed in our study represents an "expected" pattern (1).

The predominance of abrasion (76.8%) among lesion types confirms friction injuries defined as "road rash," resulting from sliding of the body on the ground (12). The relatively low rate of internal organ injuries (5.6%) may be attributed to the majority of cases being relatively low-speed urban accidents; however, the fracture rate of 33.1% indicates that the trauma severity is sufficient to exceed soft tissue damage.

The fracture rate of 33.1% supports the significant orthopedic burden of motorcycle trauma. In orthopedic-focused series, approximately half of the cases required surgical treatment (49.0%), and an average of 1.2 fractures per case was reported. Since such selected series represent more severe cases, the fracture rate of 33.1% in our study can be considered a moderate but clinically meaningful indicator for general motorcycle trauma reflected in forensic evaluation (13). The predominance of fractures in the lower and upper extremities is also consistent with distributions frequently reported in the literature (10).

Clinical process indicators (hospitalization 16.2%; intensive care 3.2%; surgery 9.9%) are generally consistent with ranges reported in the literature; notably, our intensive care rate (3.2%) is strikingly identical to that reported in a large emergency department series (3.2%) (14). These findings indicate that our study presents a profile highly consistent with the literature not only in terms of injury patterns but also in clinical resource utilization and trauma burden.

The classification of 62.0% of cases as manageable by SMI and 38.0% as not manageable is similar to the data from Eskişehir (66.0% SMI) (1). The strong association between hospitalization and non-SMI classification (OR=125.0) in advanced statistical analyses demonstrates that forensic criteria are highly correlated with clinical severity. Intensive care requirement (p=0.00013) and the presence of multiple trauma (p=0.00233) are the strongest indicators that an injury cannot be considered "manageable by simple medical intervention" under the Turkish Penal Code (7).

The life-threatening rate of 6.3% and the significantly younger age in these cases (p=0.040) indicate a pattern of more severe trauma in younger individuals. This may be explained by risk-taking behavior and high-speed exposure and is consistent with WHO data emphasizing the determining effect of speed on injury severity (9). Conversely, the higher age observed in cases requiring surgical intervention (p=0.00226) may be related to age-dependent fracture patterns and differences in tissue response. More detailed clinical outcome data are required to clarify this relationship.

The low rate of helmet use (26.4%) is inconsistent with strong evidence demonstrating that helmets significantly reduce head injuries and mortality. Although their effect on rotational injuries is limited, their protective role against skull fractures and focal brain injuries is clear. The lack of a significant association in our study may be explained by the high rate of missing data (65.9%).

CONCLUSION

This study demonstrates that motorcycle accidents are concentrated in young males, are characterized by extremity injuries, and that fracture rates and trauma severity indicators are decisive in clinical and medico-legal evaluation. Despite the predominance of urban accidents, the higher trauma severity observed in non-urban settings indicates that motorcycle trauma exhibits a heterogeneous but predictable injury pattern. In this context, motorcycle trauma should be considered a systematic risk area with increasing frequency, predictable severity, and significant clinical and medico-legal consequences.

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OP-20 · Clinical and Medico-Legal Characteristics of Foreign National Cases: A Retrospective Analysis

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ETHICS STATEMENT
Ethical approval for this study was obtained from the Non-Interventional Scientific Research Ethics Committee of Ordu University (date: 27.02.2026, decision no: 2026/54). The study was conducted in accordance with the principles of the Declaration of Helsinki.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Objective: This study aimed to evaluate the medico-legal and clinical characteristics of foreign national cases presenting to a forensic medicine clinic in Ordu and to provide implications for primary healthcare practice.
Methods: In this retrospective descriptive-analytical study, 75 foreign national cases evaluated between January 1, 2017 and December 31, 2025 were included. Demographic data, event characteristics, injury patterns, clinical severity indicators, and medico-legal report outcomes were analyzed. Fisher's exact and Mann-Whitney U tests were used; effect sizes were expressed as odds ratios (OR) with 95% confidence intervals.
Results: The mean age was 27.1±12.9 years and 64.0% were male. Assault was the most common cause (66.7%). Injuries were predominantly located in the extremities and face; the most frequent lesion types were abrasions (53.3%) and ecchymosis (26.7%). In 69.3% of cases, injuries were manageable with simple medical intervention (SMI). The rate of severe medico-legal reports (injuries not treatable with simple medical intervention) was 14.7%, and was significantly associated with hospitalization (OR=36.0; p=0.001) and

specialist consultation (OR=7.63; p=0.038). Assault was associated with a lower likelihood of severe reports (OR=0.224; p=0.035). Female sex was significantly associated with assault (OR=4.47; p=0.012).
Conclusion: Although most foreign national forensic cases fall within the spectrum of minor trauma, clinical severity indicators play a decisive role in determining medico-legal outcomes. These findings strongly emphasize the importance of early recognition, accurate assessment, and appropriate referral of forensic cases in primary and emergency healthcare settings.

KEYWORDS
Forensic Medicine, Foreign Nationals, Trauma, Assault, Medico-Legal Evaluation

INTRODUCTION

Forced migration and international mobility have led to a marked increase in the number of foreign nationals seeking healthcare services in Türkiye. This increase has expanded not only the burden on emergency departments but also the patient load and clinical diversity within primary healthcare services (1).
Foreign nationals constitute a vulnerable group in terms of trauma, violence, and other conditions requiring medico-legal notification, and a considerable proportion of these cases may initially present to primary healthcare services (2). However, language barriers, cultural differences, and socioeconomic vulnerabilities create significant challenges, particularly in obtaining an accurate medical history, properly evaluating trauma-related events, and recognizing medico-legal conditions (3). This may lead to both clinical assessment errors and deficiencies in medico-legal reporting (4).
Studies conducted in Türkiye indicate that foreign national cases are heterogeneous and that trauma-related presentations, particularly assault, are prominent (5,6). Therefore, understanding the clinical characteristics and medico-legal aspects of this patient group is of critical importance for accurate referral and appropriate medico-legal process management in primary healthcare settings.
In this context, the present study aimed to systematically analyze the medico-legal evaluation processes, reasons for presentation, and clinical characteristics of foreign national cases in Ordu province, and to contribute to the early recognition and appropriate referral of medico-legal cases in primary healthcare services.

MATERIALS AND METHODS

This study is a retrospective descriptive and analytical clinical series examining foreign national cases evaluated in the Department of Forensic Medicine at Ordu University Training and Research Hospital between January 1, 2017 and December 31, 2025. A total of 75 cases who underwent medico-legal evaluation following admission to the emergency department were included in the study.
Descriptive data were presented as mean±standard deviation, median (interquartile range), and percentages. Categorical variables were analyzed using Fisher's exact test, while continuous variables were analyzed using the Mann-Whitney U test according to distribution characteristics. Effect sizes were expressed as odds ratios (OR) with 95% confidence intervals for categorical comparisons. A p-value of <0.05 was considered statistically significant.

RESULTS

A total of 75 foreign national cases were included in the study. The mean age of the cases was 27.1±12.9 years, with a median age of 24.9 years (IQR: 18.8–34.5), and the age range was 1.35–63.24 years. Of the cases, 64.0% (n=48) were male and 36.0% (n=27) were female. In terms of nationality, Syrians constituted the largest group with 58.7% (n=44), followed by Iraq (14.7%; n=11) and Afghanistan (14.7%; n=11). The place of residence of all cases was recorded as central (100%). Event dates ranged between July 7, 2017, and September 28, 2025, while dates of birth ranged between August 17, 1961, and February 20, 2019.
The most common origin of the event was assault, identified in 66.7% (n=50) of cases. This was followed by medico-legal traffic accidents (6.7%; n=5). Suicide attempts, motor vehicle accidents, sharp object injuries, and firearm injuries were each observed at a rate of 4.0% (n=3). Other causes were observed at lower frequencies.
The time interval between emergency department examination and forensic medical examination was 26.3±41.8 days on average, with a median of 8 days (IQR: 2–37.5), ranging from 0 to 240 days.

In terms of injury locations, the most frequently affected regions were the upper extremities (37.3%; n=28), lower extremities (28.0%; n=21), and face (24.0%; n=18). This was followed by the head (14.7%), neck (8.0%), chest (5.3%), back (5.3%), and abdomen (1.3%). No injury was detected in 18.7% (n=14) of cases. Multiple region involvement was common, with the most frequent combination being simultaneous upper and lower extremity injuries (9.3%).

Regarding lesion types, abrasions (53.3%; n=40) and ecchymosis (26.7%; n=20) were the most common findings. No lesion was observed in 24.0% (n=18) of cases. Other lesions included lacerations (10.7%), incisions (9.3%), edema (8.0%), and less frequent findings. The most common lesion combination was ecchymosis with abrasion (13.3%).

In terms of clinical severity indicators, consultation was requested in 8.0% (n=6) of cases, bone fractures were present in 9.3% (n=7), hospitalization occurred in 6.7% (n=5), intensive care requirement in 4.0% (n=3), and surgical intervention in 4.0% (n=3). Internal organ injury was observed in only one case (1.3%). Multiple trauma was identified in 29.3% (n=22) of cases.

According to medico-legal report evaluation, 69.3% (n=52) of cases were classified as injuries without life-threatening conditions and manageable with simple medical intervention, 10.7% (n=8) as injuries without life-threatening conditions but not manageable with simple medical intervention, and 4.0% (n=3) as life-threatening injuries not manageable with simple medical intervention. No trauma was detected in 16.0% (n=12) of cases.

For analytical purposes, cases were categorized as “severe report” (not manageable with simple medical intervention, with or without life-threatening condition; n=11, 14.7%) and “non-severe” (manageable with simple medical intervention or no trauma).

A significant association was found between hospitalization and severe reports (p=0.001; OR=36.0; 95% CI: 3.52–368.63). Consultation requirement was also associated with a higher likelihood of severe reports (p=0.038; OR=7.63; 95% CI: 1.31–44.40).

In contrast, the likelihood of severe reports was lower in assault cases (p=0.035; OR=0.224; 95% CI: 0.058–0.857). The rate of severe reports was 8.0% in assault cases and 28.0% in non-assault cases.

No statistically significant association was found between severe reports and age (p=0.41), sex (p=0.085), nationality (p=0.75), multiple trauma (p=0.28), intensive care requirement (p=0.055), internal organ injury (p=0.15), or the time interval between emergency and forensic examination (p=0.72).

In analyses based on event origin, female sex was significantly associated with assault (p=0.012; OR=4.47; 95% CI: 1.34–14.93). In addition, age was significantly higher in assault cases (p=0.021). No significant association was found between nationality and assault (p=0.81).

DISCUSSION

The young age profile and male predominance observed in our study are consistent with previous studies on foreign national forensic cases in Türkiye (5,6). This finding suggests that foreign national individuals predominantly present to healthcare services due to trauma and medico-legal conditions, particularly within the young and active age group.

The predominance of assault as the primary origin of events is also in line with the literature. Indeed, assault has been reported as the leading cause in forensic outpatient clinic-based series, whereas traffic accidents and other traumatic causes are more frequently observed in emergency department-based studies (3,5,6). This indicates that inter-center differences are not solely related to regional characteristics but are also influenced by the clinical pathways through which cases are selected.

The predominance of injuries manageable with simple medical intervention (SMI) in medico-legal reports is consistent with similar clinical series. Hosukler et al. reported that 70.4% of cases referred for definitive reports had injuries manageable with SMI (5). Likewise, a forensic outpatient clinic study focusing on victims of violence reported that 74.4% of cases had injuries manageable with SMI (7). In our study, the rate of SMI-positive / life-threatening negative injuries was 69.3%, which falls within the expected range.

The finding that assault was associated with a lower likelihood of “severe reports” (OR<1) can be explained clinically by the predominance of superficial blunt trauma findings (abrasion/ecchymosis) in assault cases, with fractures and internal organ injuries being less frequent. This suggests that assault cases in our study were largely within the minor trauma spectrum, while more severe injuries tended to cluster in other event categories.

The findings regarding examination timing are noteworthy; the median delay of 8 days (mean 26 days) between emergency department and forensic evaluation, along with the absence of trauma findings in some cases, highlights the time-dependent nature of clinical assessment. It is well known that delayed examinations may lead to the resolution of physical findings and inadequate documentation (8). This suggests that the delay observed in our study may be associated with factors such as medico-legal process dynamics and the need for communication/translation in foreign national cases.

The association between female sex and assault observed in our study may be consistent with literature indicating increased exposure to violence among migrant women; however, due to the limited availability of detailed variables such as victim–perpetrator relationship and event location, this finding should be interpreted cautiously and requires further validation through more detailed classification (2,3). Similarly, Öztuna et al. reported that trauma types may vary according to sex and nationality, and that sociodemographic factors can influence the context of trauma (3).

CONCLUSION

In conclusion, foreign national forensic cases in our study were largely within the spectrum of assault and minor trauma, with most injuries being manageable with simple medical intervention. However, clinical indicators such as hospitalization and consultation requirements were found to be associated with more severe medico-legal report outcomes.

These findings highlight the need to improve early recognition, appropriate referral, and standardized clinical-forensic evaluation processes for foreign national cases, particularly in primary care and emergency healthcare settings.

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EBFMC26-OP-21 · A Case of Infectious Mononucleosis with Exudative Tonsillopharyngitis

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ETHICS STATEMENT
Ethical committee approval was not deemed necessary for this study. Verbal consent has been obtained from the patient's family.

ARTIFICIAL INTELLIGENCE STATEMENT
Generative AI tools were used only for language editing (grammar, spelling, clarity).

ABSTRACT
Introduction: Tonsillopharyngitis is a common reason for healthcare visits, particularly in children, with increased incidence during winter and spring. Viral agents account for the majority of cases. Clinical decision tools such as the Centor and MISTIK criteria are widely used to differentiate viral from bacterial etiologies and to reduce unnecessary antibiotic use. However, physicians may still prescribe antibiotics due to concern about complications of Group A Beta-Hemolytic Streptococcus (GABHS), especially in the presence of tonsillar exudate. Importantly, several viral infections may also present with exudative tonsillopharyngitis. This report presents a case of infectious mononucleosis initially evaluated as bacterial tonsillopharyngitis in the emergency department.
Case Presentation: A 5-year-old boy presented with a 4-day history of sore throat, nasal congestion, fever, and reduced oral intake without cough. Three days earlier, he had been prescribed azithromycin (200 mg/day) for presumed bacterial upper respiratory tract infection. During treatment, he experienced two episodes of vomiting and diarrhea. His history revealed term birth (2750 g), brief neonatal respiratory distress, milk allergy, and a prior antibiotic-related rash. Family history was unremarkable.
Physical examination showed bilateral, painful, mobile anterior cervical lymphadenopathy (2×1 cm) and hypertrophic tonsils with exudate. Vital signs were stable (Temperature: 36.3°C, pulse: 87 beats/minute, respiratory rate: 22 breaths/minute). Breath sounds were normal, and no abnormalities were noted on

examination of other systems. The modified Centor score was 4 (age 3-14 years: 1 point, absence of cough: 1 point, presence of lymphadenopathy: 1 point, and presence of exudate on the tonsils: 1 point), suggesting bacterial etiology (1). To clarify the diagnosis, throat culture and viral panel were obtained. The patient was hospitalized due to poor oral intake and managed supportively.
Abdominal ultrasonography revealed splenomegaly (100 mm) and hepatomegaly (112 mm). Viral panel testing was positive for Adenovirus, Rhinovirus, and Epstein-Barr Virus, confirming infectious mononucleosis. Throat culture remained negative.
Conclusion: This case highlights that exudative tonsillopharyngitis is not always bacterial in origin. Although clinical scoring systems like the Centor criteria are useful, they are not definitive, particularly in pediatric patients. Reliance solely on clinical findings may lead to unnecessary antibiotic use. Supporting clinical evaluation with diagnostic tools such as throat culture and viral testing can improve accuracy and help prevent inappropriate antibiotic prescribing.

KEYWORDS
Antibiotic Resistance, Family Medicine, Infectious Mononucleosis, Tonsillopharyngitis

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EBFMC26-OP-22 · Burden of Congenital Heart Disease and Associated Anomalies in Children with Down Syndrome: A Single-Center Cross-Sectional Study

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ABSTRACT

Introduction: Down syndrome is one of the most common chromosomal anomalies, characterized by multisystem involvement, and congenital heart diseases constitute a major cause of morbidity in these individuals. The high prevalence rates reported in the literature highlight the importance of early diagnosis and regular cardiological follow-up. Additionally, the frequent presence of extracardiac anomalies necessitates a multidisciplinary evaluation. This study aimed to assess the frequency of congenital heart disease and accompanying anomalies in patients with Down syndrome.

Materials and Methods: This retrospective study was conducted between 2024 and 2025 in a tertiary care center, within a pediatric cardiology clinic. A total of 72 patients were included in the study. Demographic characteristics, electrocardiographic and echocardiographic findings, comorbid conditions, as well as histories of interventional procedures and surgeries were analyzed. The obtained data were evaluated using descriptive statistical methods.

Results: Of the patients included in the study, 58.3% were male and 41.7% were female. Age distribution analysis revealed that the highest proportion of patients was in the 6-12 years age group. When cardiac findings were evaluated, and hemodynamically insignificant lesions (such as patent foramen ovale, mild valvular insufficiencies, small secundum atrial septal defects, and small ventricular septal defects) were excluded, congenital heart disease was identified in 50% of the cases. The most common cardiac anomaly was ventricular septal defect (VSD) (19.4%), followed by atrioventricular septal defect (AVSD) (13.9%), tetralogy

of Fallot (6.9%), and large atrial septal defect (ASD) (5.5%). The presence of a history of surgical or interventional procedures in approximately one-third of the patients (33.3%) indicates that cardiac pathologies represent a significant clinical burden in this patient group. In terms of extracardiac comorbidities, multisystem involvement was frequently observed. Notably, additional conditions such as hypothyroidism, biotinidase deficiency, hematological malignancies (acute lymphoblastic leukemia [ALL], acute myeloid leukemia [AML]), duodenal atresia, celiac disease, Hirschsprung disease, immunodeficiency, and nephrocalcinosis were identified.
Conclusion: The high prevalence of congenital heart diseases in children with Down syndrome and the need for interventional or surgical treatment in a considerable proportion of cases once again emphasize the importance of early diagnosis, regular cardiological follow-up, and a multidisciplinary approach in the management of this patient population.

KEYWORDS
Down Syndrome, Congenital Heart Disease, Pediatric Cardiology

COI ***& Other Declarations:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****. Generative AI tools were used only for language editing grammar and application form. Authors verified all content.*

EBFMC26-OP-23 · The Relationship between Possible Sarcopenia in Geriatric Individuals and Frailty Syndrome, Perceived Loneliness, Ageism, and Malnutrition: A Cross-Sectional Study

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ETHICS STATEMENT
Ethical approval was obtained (Decision No: 2026/125, Date: 10.03.2026).

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Sarcopenia refers to the general loss of muscle strength and mass associated with aging. According to the European Working Group on Sarcopenia in Older People (EWGSOP-2) criteria, patients with reduced muscle strength are classified as having possible sarcopenia (1). Possible sarcopenia is not merely a physical impairment; it is a dynamic process closely interacting with clinical conditions such as frailty and malnutrition, which threaten an individual's functional independence (2). This study aimed to determine the prevalence of possible sarcopenia in geriatric individuals and to examine its relationship with frailty, malnutrition, loneliness, discrimination, depression, and urinary incontinence.
Materials and Methods: This cross-sectional and descriptive study was conducted with voluntary individuals aged 65 and older who presented to the Family Medicine Outpatient Clinic of Malatya Training and Research Hospital. Muscle strength and calf circumference were measured. The following instruments were applied: a sociodemographic data form, urinary incontinence assessment form, SARC-F scale, Loneliness Scale for the

Elderly, Clinical Frailty Scale, Malnutrition Scale, Ageism Scale, and Geriatric Depression Scale. The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 22.0. Descriptive data were presented as frequency (n), percentage (%), mean±standard deviation (SD), or median(min-max). Pearson correlation analysis was used for the statistical analysis of the data. A p-value less than 0.05 was considered statistically significant.
Results: The study included 71 geriatric individuals with a mean age of 71.27 ± 5.13 years (Min: 65, Max: 87). Of the participants, 54.9% (n = 39) were men and 45.1% (n = 32) were women. The mean Body Mass Index was 28.52 ± 6.57 kg/m^2, and the mean calf circumference was 36.56 ± 4.05 cm. Among the 32 female participants, possible sarcopenia was identified in 34.4% (n = 11), while 65.6% (n = 21) had normal muscle strength. Among the 39 male participants, 23.1% (n = 9) were found to have possible sarcopenia, and 76.9% (n = 30) were evaluated as normal. Individuals with higher muscle strength were found to have significantly lower levels of frailty ($r = -0.555$; $p < 0.001$), lower perceived ageism ($r = -0.318$; $p < 0.01$), and lower severity of urinary incontinence ($r = -0.275$; $p < 0.05$).
Conclusion: Individuals with higher muscle strength exhibited significantly lower levels of frailty, perceived ageism, and severity of urinary incontinence. A strong negative correlation between muscle strength and frailty was identified.

KEYWORDS
Sarcopenia, Frailty, Urinary Incontinence, Ageism in Older Adults

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EBFMC26-OP-24 · Results of a Smoking Cessation Outpatient Clinic in a Training and Research Hospital: A Retrospective Analysis of the Effectiveness of Pharmacological Treatment

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ETHICS STATEMENT
Ethical approval was obtained from the Malatya Turgut Ozal University Health Sciences Scientific Research Ethics Committee (dated March 11, 2026, and numbered 2026/128).

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: According to data from the Turkish Statistical Institute (TUIK), tobacco use among individuals aged 15 and over in Türkiye increased from 27.3% in 2014 to 28.3% in 2022. The majority of tobacco users are men, with a recorded prevalence of 41.3% among males in 2022. The average daily cigarette consumption is 17.1 cigarettes, which is above the global average (1). In our outpatient clinic, nicotine replacement therapy (NRT) and medications containing cytisine as the active ingredient are used as smoking cessation methods. Recent studies and meta-analyses have demonstrated not only the effectiveness of cytisine compared to placebo, but also its superior success rates compared to nicotine replacement therapy in both the short and long term (2).

Materials and Methods: This study included patients who applied to the smoking cessation clinic at Malatya Training and Research Hospital between December 1, 2025, and March 1, 2026, and whose examination data and cessation/failure status were available. Ethical approval was obtained from the Malatya Turgut Ozal University Health Sciences Scientific Research Ethics Committee (dated March 11, 2026, and numbered 2026/128). The SPSS software package was used for data analysis. Descriptive statistics are presented as number, percentage, mean, and standard deviation. The Chi-square test was used to evaluate the relationships between categorical variables. The statistical significance level was accepted as $p<0.05$.
Results: A total of 302 individuals were included in the study. Of the participants, 43.0% (n=130) were female and 57.0% (n=172) were male. The mean age was 37.12±10.29 years, with a median age of 36.50 (min: 19, max: 65). The mean Fagerström Nicotine Dependence score was 6.68±2.07, with a median value of 7. In the analysis, which evaluated a total of 302 individuals, the most commonly used method was cytisine (n=254, 84.1%), followed by nicotine gum (n=44, 14.6%), patches (n=2, 0.7%), and motivational interviewing (n=2, 0.7%). Regarding smoking cessation status, it was determined that 39.7% of participants had quit smoking, 37.4% had not been able to quit, and 22.8% had reduced their cigarette consumption. No statistically significant relationship was found between the smoking cessation method and the cessation status (p=0.073).
Conclusion: When the methods were evaluated separately, 43.7% of cytisine users quit smoking, 35.0% did not quit, and 21.3% reduced their consumption. Among nicotine gum users, 20.5% quit smoking. No statistically significant relationship was found between the smoking cessation method and the success of quitting.

KEYWORDS
Smoking, Cytisine, Nicotine Replacement Therapy, Smoking Cessation

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EBFMC26-OP-25 · Evaluation of the Conformity of Artificial Intelligence Use in Direct Graphs in Upper Extremity Fractures to Primary Health Care: A Review on Diagnostic Accuracy and Clinical Applicability

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ETHICS STATEMENT
This study does not require ethics committee approval.

ARTIFICIAL INTELLIGENCE STATEMENT
Generative AI tools were used only for language editing (grammar, spelling, clarity).

ABSTRACT
Aim: With the development of artificial intelligence models, initial diagnosis, surgical procedures, operation planning, decision-making during and after the operation have begun to be made with the help of these systems. Especially in the last 5 years, literature has emerged on this subject. In the light of this literature, it was aimed to evaluate the diagnostic performance of the applications in the detection of upper extremity fractures in direct graphies and to reveal the clinical applicability with a first-line and family-medicine view.
Method: Current systematic reviews, meta-analyses published in PubMed examining the detection of upper limb fractures by AI in direct graphs, were reviewed in a structured manner. In particular, the focus was on distal radius, scaphoid and pediatric elbow fractures.
Findings: According to the current literature, AI systems are reported to have shown high diagnostic performance in detecting upper-extremity fractures. In a 2025 systematic review and meta-analysis focusing on upper extremity trauma radiographs, pooled sensitivity was reported as 97.65%, specificity was reported as 91.38%, and average AUC was reported as 0.932 (1). In a 2024 meta-analysis of distal radius fractures, it was reported that artificial intelligence in distal radius fractures performs closely to human readers, while in

scaphoid fractures it exhibits higher sensitivity but more variable specificity (2). High levels of diagnostic accuracy (sensitivity approximately 0.93) were reported in pediatric elbow fractures (3).
AI-supported readings have been shown to increase sensitivity by 10.4% (75.2% versus 64.8%), while retaining specificity shortens the average reading time per case by 6.3 seconds (4).
AI has also been proven to improve fracture detection of radiology and orthopedic residents in both pediatric and adult patients (5).
An AI model developed for the detection of distal radius, ulnar styloid and scaphoid fractures has been clinically verified in conventional wrist radiographs, as well as automated classification of distal radius fractures by a two-stage community deep learning framework (6).
Results: AI is an effective decision support tool in evaluating upper extremity fractures in direct graphies. Although performance varies according to the anatomical region, it appears to be particularly strong in distal radius and pediatric elbow fractures. It has the potential to support appropriate dispatch decisions by reducing the risk of missed fractures during primary and early evaluation processes. The modifications made by adding clinical decision support systems and family medicine systems provide early advantage in the diagnosis of patients and increase the comfort of the patient and physician.

KEYWORDS
Artificial Intelligence, Fractures, Direct Graph, Upper Extremity, Diagnostic Accuracy

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EBFMC26-OP-26 · Lingual Abscess Following a Bee Sting: An Uncommon Cause of Tongue Infection - A Case Report

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ETHICS STATEMENT
Ethical approval was not required for this case report, as per institutional guidelines. The patient was informed about the academic nature of the study, and written informed consent was obtained for the use of clinical data in the preparation of the manuscript.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Tongue abscesses are extremely rare but potentially life-threatening clinical conditions due to their proximity to the airway, which may lead to obstruction. While trauma and infection are the most frequently reported causes of lingual abscesses, congenital cystic lesions may also contribute to their development. Our case is unique due to the fact that the tongue abscess developed after the bee sting.
Case Report: We present an 82-year-old male patient who developed a tongue abscess following a bee sting, an exceptionally uncommon etiology. In our patient, swelling, pain, and difficulty in swallowing developed shortly after the sting. Prompt diagnosis was made through clinical examination and imaging. The patient was successfully treated with open surgical drainage and empiric intravenous antibiotic therapy. The patient showed rapid clinical improvement and achieved complete resolution without any complications or long-term sequelae.
Conclusion: This case highlights the importance of early recognition and intervention in preventing airway compromise in rare presentations of tongue abscesses.

KEYWORDS
Abscess, Bee, Tongue Diseases

INTRODUCTION

A tongue abscess is an extremely rare and challenging clinical condition that can cause potential airway obstruction due to the localization of the disease (1).

Etiological factors, such as lingual tonsillitis, trauma, and an infected thyroglossal cyst, can lead to the development of a tongue abscess (2). Traumas are generally considered the etiological factor for an anterior tongue abscess. We presented an 82-year-old patient in our study who experienced a tongue abscess following a bee sting. Our case is unique due to the fact that the tongue abscess developed after the bee sting.

Patients' complaints of admission are usually in the form of odynophagia, local pain, and swelling of the tongue. Treatment should be primarily in the form of drainage of the abscess and the provision of appropriate antibiotic treatment. In addition, treatments may be required to ensure airway safety when necessary (3). This report aims to present a rare case of tongue abscess developing secondary to a bee sting and discuss the clinical presentation, diagnosis, and management in light of the literature.

CASE PRESENTATION

An 82-year-old male patient with a medical history of diabetes mellitus and hypertension presented to the emergency department nine days prior with bee stings localized to the right lateral aspect of the tongue. At the initial presentation, the patient exhibited tongue swelling, pain, dysarthria, and impaired oral intake. Intramuscular dexamethasone and analgesic therapy were administered as initial treatment. Due to persistent symptoms, intravenous methylprednisolone was subsequently initiated in the emergency department and continued for an additional five days. No antibiotic therapy was administered during the follow-up period.

The patient presented to our clinic with worsening tongue swelling, accompanied by erythema, burning sensation, and swelling in the right side of the neck. The tongue pain significantly impaired both oral intake and speech. Clinical examination revealed a focal abscess approximately 3 cm in diameter located in the right anterolateral aspect of the tongue, along with diffuse edema and inflammation throughout the tongue (Figure 1). In addition, multiple tender lymphadenopathies were noted in the right submandibular and upper cervical regions, along with signs of cellulitis in the subcutaneous tissues.

Laboratory investigations revealed neutrophil predominance, leukocytosis, and elevated acute-phase reactants. Initial management involved needle aspiration for drainage of the abscess, followed by microbiological culture of the aspirated material. Subsequently, surgical drainage was performed under local anesthesia. The patient was admitted to the hospital, and empirical antibiotic treatment with amoxicillin-clavulanate (1 g four times daily) and clindamycin (600 mg four times daily) was initiated. Intravenous fluid replacement and analgesia were provided due to poor oral intake. In addition, oral care with sodium bicarbonate solution and topical oral treatment with benzydamine was administered. Microscopic examination demonstrated polymorphonuclear leukocytes, and culture of the abscess yielded growth of Streptococcus mitis/oralis. The empirically initiated antibiotic therapy with amoxicillin-clavulanate and clindamycin was continued based on culture sensitivity results. Analgesic therapy and intravenous fluid support were also provided during the first two days of treatment. Tongue and neck swelling progressively regressed within three days of therapy, and the patient required a total hospital stay of five days. Computed tomography (CT) imaging performed on the third day of drainage and antibiotic therapy revealed no residual abscess (Figure 2).

Figure 1

Tongue abscess approximately 3 cm in size on the right-lateral side of the tongue



Figure 2

Regressed abscess focus on the lateral side of the right tongue. White arrow: incision on the lateral side of the tongue



Subsequently, antibiotic therapy was started intravenously and completed orally for 2 weeks. No recurrence or complication was observed in the 1-month follow-up of the patient.

DISCUSSION

Tongue abscesses are extremely rare clinical entities with the potential to become life-threatening. The existing literature includes only a limited number of case reports and a few case series. Due to its anatomical localization, the tongue is susceptible to trauma and infections. However, the continuous cleansing effect of saliva, along with its immunological and antimicrobial properties, as well as the presence of a keratinized and thick mucosal layer that acts as a barrier to penetration, provide the tongue with a natural defense mechanism against infections (1). While trauma to the tongue is frequently identified as the primary cause of anterior tongue abscesses, posterior abscesses are generally associated with etiological factors such as lingual tonsillitis or infected thyroglossal duct cysts. In the present case, an anterior tongue abscess developed secondary to a

bee sting (3). To the best of our knowledge, this represents the first reported case of a tongue abscess following a bee sting in the literature.

Etiological factors such as poor oral hygiene, dental caries, smoking, and alcohol consumption may predispose individuals to infections of the oral soft tissues. However, our patient had no history of chronic alcohol use, smoking, or dental infections. Comorbid conditions, including diabetes mellitus, HIV infection, and the use of immunosuppressive medications, are recognized as predisposing factors for the development of tongue abscesses (4). In this case, the patient had a 10-year history of diabetes mellitus and had received intravenous and oral methylprednisolone therapy for nine days following the bee sting. These factors may have contributed to the development of the tongue abscess by impairing immune function.

Ultrasonography, computed tomography (CT), and magnetic resonance imaging (MRI) can be utilized in the diagnosis of tongue masses. Although vascular lesions and abscesses can theoretically be identified and differentiated using ultrasonography, the application of the ultrasound probe within the oral cavity is technically challenging, making ultrasonography not always a practical option in such cases (5-7).

The management of tongue abscesses typically involves a combination of drainage, antibiotic therapy, and, when indicated, airway protection (8). Drainage can be performed either via needle aspiration or open surgical incision (9). Most authors advocate for open surgical drainage due to its advantages, including more effective evacuation of purulent material, the ability to perform wound care, and obtaining tissue samples for biopsy when necessary (3). Antibiotic therapy constitutes a critical component in the treatment of tongue abscesses. Empirical antibiotic regimens commonly include agents such as amoxicillin-clavulanate, clindamycin, cephalosporins, or metronidazole. However, antimicrobial therapy should be adjusted based on culture and sensitivity results (10).

In conclusion, early diagnosis and timely management of tongue abscesses are crucial to prevent airway obstruction and systemic complications. Clinicians should keep in mind that even minor trauma, such as a bee sting, can lead to deep tissue infection, particularly in patients with impaired immune function due to conditions like diabetes mellitus or corticosteroid therapy.

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Written Consent for Publication: Written informed consent was obtained from the patient for publication of this case and accompanying images.

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Authors' Contributions: K.K. conceived and designed the study, collected clinical data, performed the literature review, and wrote the main manuscript text. K.K. and M.E.G also prepared the figure and revised the manuscript. The authors read and approved the final version of the manuscript.

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OP-27 · Clinical Determinants of Polysensitization in Patients Undergoing Allergy Testing: A Retrospective Cross-Sectional Study

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ETHICS STATEMENT

The study was approved by the Giresun Training and Research Hospital Scientific Research Ethics Committee and conducted in accordance with the Declaration of Helsinki (decision number 04.02.2026/15).

ARTIFICIAL INTELLIGENCE STATEMENT

No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT

Introduction: Complete blood count (CBC)-derived inflammatory indices are increasingly utilized in the evaluation of allergic diseases. However, it remains uncertain whether these indices reflect allergen sensitization patterns or are predominantly influenced by individual patient factors. The present study investigated the relationship between eosinophil-derived inflammatory indices and allergen sensitization patterns in patients with positive skin-prick test results.

Materials and Methods: This retrospective cross-sectional study included 377 patients who had at least one positive allergen skin test and concurrent CBC results. Patients were categorized by allergen group (seasonal, perennial, animal dander, food, and insect) and by sensitization load (single, double, or multiple sensitizations). Eosinophil-derived indices were calculated, including the eosinophil-to-neutrophil ratio (Eoz/Neu), eosinophil-to-lymphocyte ratio (Eoz/Lym), lymphocyte-to-monocyte ratio (Lym/Mono), and eosinophil-to-monocyte ratio (Eoz/Mono). Hierarchical linear regression analyses were conducted to identify independent predictors of inflammatory indices. Age and sex were included in the first block, disease group in the second, and allergen sensitization categories in the third.

Results: Of the 377 patients, 57.6% were female and 42.4% were male. Asthma was present in 52.3% of patients, while 45.9% had allergic rhinitis. Male patients exhibited significantly higher Eoz/Neu, Eoz/Lym, and Eoz/Mono indices compared to female patients ($p<0.01$ for all). Univariate analyses indicated that perennial sensitization was associated with higher eosinophil-derived indices, whereas other allergen groups did not show such associations. Hierarchical regression analyses demonstrated that sex was the strongest independent predictor of both Eoz/Neu ($\beta\approx0.20$, $p<0.001$) and Eoz/Lym ($\beta\approx0.24$, $p<0.001$). Perennial

sensitization remained an independent predictor only for Eoz/Lym (β=0.106, p=0.039). Other allergen sensitization types and sensitization load were not independently associated with inflammatory indices.
Conclusion: Eosinophil-derived inflammatory indices in patients with positive allergy tests are primarily influenced by individual factors, particularly sex, rather than by the number or type of allergen sensitizations. Perennial sensitization demonstrates a limited but independent association with eosinophil-related indices. These findings indicate that CBC-derived inflammatory markers may reflect individual inflammatory profiles rather than sensitization burden in allergic patients.

KEYWORDS
Allergy, Eosinophil, Inflammatory Indices, Sensitization, Complete Blood Count

INTRODUCTION

Allergic diseases are a heterogeneous group of conditions characterized by chronic inflammation resulting from IgE-mediated immune responses to environmental allergens. Allergic diseases, particularly allergic rhinitis and asthma, exhibit significant variation among individuals in symptom burden, disease severity, and treatment response (1,2). One of the key determinants of this heterogeneity is polysensitization, defined as an individual's sensitization to multiple allergens (3).

It has been reported that polysensitization may be associated with a more severe clinical course, a higher symptom burden, and increased disease severity compared to monosensitized individuals (3-5). It has been demonstrated that IgE-mediated polysensitization is more common in individuals with coexisting asthma and allergic rhinitis and is associated with a more complex disease phenotype (4). Additionally, evidence suggests that multisensitization may be associated with asthma severity and disease control (5).

In assessing allergic sensitization, skin prick testing and/or specific IgE measurements are widely used in clinical practice and objectively demonstrate sensitization (6). However, it is not merely the presence of a positive test result, but also the number of positive allergens and the burden of sensitization, that are important for clinical outcomes (3,5). Nevertheless, few retrospective studies examine the clinical and biological markers of polysensitization in conjunction with real-world data.

The systemic manifestations of allergic inflammation can be indirectly assessed through blood count parameters, which are readily available in routine clinical practice. In particular, eosinophil count and percentage are recognized as biological markers of Type 2 inflammation in allergic diseases (7). Although it has been reported that eosinophil levels may be associated with the clinical burden and course of allergic diseases, the relationship between polysensitization and these hematological parameters remains unclear (7,8).

This study aims to comprehensively examine the relationships between polysensitization and allergy-related clinical diagnoses, comorbidities, and hematological parameters through a retrospective evaluation of a large patient cohort who underwent allergy testing over the past four years. Based on real-world data, this analysis may contribute to a better understanding of the potential clinical and biological markers of polysensitization, thereby aiding in the identification of high-risk patient profiles in allergic diseases. In this regard, the proposed study aims to fill a significant gap in the literature.

MATERIALS AND METHODS

This retrospective cross-sectional study included patients who presented to the pulmonary outpatient clinic between 2023 and 2025 and had at least one positive allergen skin test result and concurrent complete blood count results. Patients were classified by allergen groups (seasonal, perennial, animal dander, food, and insect) and by sensitization load (single, double, and multiple sensitization).

The study was approved by the Scientific Research Ethics Committee and conducted in accordance with the Declaration of Helsinki (decision number 04.02.2026/15).

Eosinophil-derived indices, including eosinophil-to-neutrophil ratio (Eoz/Neu), eosinophil-to-lymphocyte ratio (Eoz/Lym), lymphocyte-to-monocyte ratio (Lym/Mono), and eosinophil-to-monocyte ratio (Eoz/Mono), were calculated.

STATISTICAL ANALYSIS

Statistical analyses of sociodemographic data, clinical parameters, and scale scores were conducted using SPSS Statistics version 21.0 (IBM Corp., Armonk, NY, USA). The normality of the data distribution was evaluated using the Kolmogorov–Smirnov test. Numerical variables with normal distribution were expressed

as mean ± standard deviation (SD), whereas non-normally distributed variables were expressed as median (minimum–maximum). Categorical variables were presented as frequencies (n) and percentages (%). Hierarchical linear regression analyses were performed to determine independent predictors of inflammatory indices. Age and sex were entered in the first block, disease group in the second block, and allergen sensitization categories in the third block.

RESULTS

Among 377 patients, 57.6% were female, and 42.4% were male. Asthma was present in 52.3% of patients, and allergic rhinitis in 45.9% (Table 1).

Table 1

Demographic and Clinical Characteristics of Participants

Variable	n (%) / Mean ± SS
Total number of patients	377
Age (years)	47.77 ± 16.55
Gender	
Female	217 (57.6%)
Male	160 (42.4%)
Disease group	
Allergic rhinitis	180 (47.7%)
Asthma	197 (52.3%)
Allergen sensitization	
Seasonal positive	210 (55.7%)
Perennial positive	237 (62.9%)
Animal positive	158 (41.9%)
Food positive	256 (67.9%)
Insect positive	49 (13.0%)
Sensitization type	
Single group	72 (19.1%)
Two groups	139 (36.9%)
Multiple groups	166 (44.0%)

Male patients had significantly higher Eoz/Neu, Eoz/Lym, and Eoz/Mono indices than females ($p<0.01$ for all) (Table 2).

Table 2

Eosinophil-Derived Inflammation Indices by Gender

Parameters	Female (n=217)	Male (n=160)	P value
Eoz/Neu	0.0496 ± 0.037	0.0727 ± 0.065	<0.001
Eoz/Lym	0.0891 ± 0.063	0.1303 ± 0.101	<0.001
Eoz/Mono	0.4029 ± 0.329	0.5123 ± 0.407	0.004
Lym/Mono	4.81 ± 1.83	4.13 ± 1.60	<0.001
Plt/Lym	131.6 ± 49.6	111.0 ± 38.8	<0.001

In univariate analyses, perennial sensitization was associated with higher eosinophil-derived indices, whereas other allergen groups were not (Table 3).

In hierarchical regression analyses, sex was the strongest independent predictor of both Eoz/Neu (β≈0.20, p<0.001) and Eoz/Lym (β≈0.24, p<0.001). Perennial sensitization remained an independent predictor only for Eoz/Lym (β=0.106, p=0.039). Other types of allergen sensitization and sensitization load were not independently associated with inflammatory indices.

Table 3

Hierarchical Linear Regression Analysis for Eoz/Lym

Variable	β	P value
Model 1		
Age	0.046	0.367
Gender	0.240	<0.001
Model 2		
Disease group	-0.028	0.592
Model 3		
Seasonal	0.018	0.730
Perennial	**0.106**	**0.039**
Animal	0.002	0.966
Food	-0.018	0.725
Insect	-0.013	0.800

Table 4

Comparison of Eoz/Lym by Allergen Group

Group	Negative	Positive	P value
Perennial	0.0926 ± 0.072	0.1148 ± 0.089	0.013
Seasonal	0.110 ± 0.091	0.103 ± 0.077	>0.05
Animal	0.0106 ± 0.081	0.106 ± 0.088	>0.05
Food	0.112 ± 0.086	0.103 ± 0.083	>0.05

DISCUSSION

This study examined the clinical and hematological determinants of polysensitization in a real-world cohort of patients undergoing allergy testing. The results demonstrate that although polysensitization is highly prevalent, its association with systemic inflammatory markers, particularly eosinophil-derived indices, is limited. Instead, sex and perennial sensitization emerge as the primary determinants of eosinophil-related inflammatory responses.

Polysensitization is widely associated with more severe disease phenotypes, increased symptom burden, and multimorbidity, particularly among patients with asthma and allergic rhinitis (3,4). The MeDALL hypothesis posits that IgE polysensitization reflects a complex and persistent type 2 inflammatory signaling pathway (3). However, in this study, sensitization load was not independently associated with eosinophil-derived indices. This finding indicates that the clinical impact of polysensitization may not be adequately represented by peripheral blood systemic inflammatory markers. Instead, polysensitization may signify immunological complexity and local tissue-level inflammation rather than systemic eosinophilic activity.

Perennial sensitization was the only allergen category that remained independently associated with the Eoz/Lym ratio. This observation aligns with the established role of perennial allergens, particularly house dust mites, in inducing chronic and sustained allergic inflammation (5). Continuous exposure to these allergens

may result in persistent immune activation, potentially explaining the modest but significant increase in eosinophil-related indices observed in this cohort.

A notable finding is the pronounced effect of sex on eosinophil-derived indices. Male patients exhibited significantly higher Eoz/Neu, Eoz/Lym, and Eoz/Mono ratios, and sex remained the strongest independent predictor in regression analyses. Although current asthma and allergy guidelines emphasize heterogeneity in disease expression (1,2), sex-related differences in systemic inflammatory responses are not routinely addressed in clinical practice. These results indicate that sex may represent an important biological factor influencing eosinophil-associated inflammation and should be considered in future research.

Disease group (asthma versus allergic rhinitis) was not associated with inflammatory indices after adjustment. This result contrasts with previous evidence indicating that eosinophil levels are associated with asthma severity and disease burden (8). However, eosinophils reflect type 2 inflammation mechanisms (7), and their levels may be influenced by treatment, disease control status, and other confounding factors not assessed in this study. Consequently, the absence of a significant association in this analysis does not necessarily contradict existing literature but underscores the complexity of interpreting peripheral inflammatory markers in heterogeneous clinical populations.

Eosinophil-derived indices are accessible and cost-effective markers of systemic inflammation in clinical practice. However, the present findings indicate that these indices may have limited utility for reflecting the burden of sensitization or for distinguishing polysensitized patients. This limitation is particularly relevant given the growing emphasis on personalized approaches in allergy management (1).

Several limitations warrant consideration. First, the retrospective design restricts causal interpretation. Second, the absence of detailed clinical parameters, including disease severity, symptom scores, and treatment regimens, may have influenced the results. Third, peripheral blood markers may not accurately reflect local airway inflammation, which is central to allergic diseases. Finally, sensitization was categorized qualitatively, and quantitative IgE levels were not assessed.

CONCLUSION

Eosinophil-derived inflammatory indices in patients with positive allergy tests are primarily influenced by individual factors, particularly sex, rather than by the number or type of allergen sensitizations. Perennial sensitization demonstrates a limited but independent association with eosinophil-related indices. These findings indicate that complete blood count (CBC)-derived inflammatory markers may reflect individual inflammatory profiles rather than the burden of sensitization in patients with allergic disease.

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EBFMC26-OP-28 · Clinical Approach to Wernicke Encephalopathy with a Case Presentation

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ETHICS STATEMENT
This study does not require ethics committee approval. Informed consent was obtained from the patient for the publication of this case report.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Wernicke encephalopathy is a metabolic disorder caused by thiamine deficiency and may lead to permanent neurological deficits, coma, and death if not treated promptly. Although the classic triad consists of encephalopathy, ophthalmoparesis, and ataxia, all three findings are present in only a minority of patients, which may delay diagnosis. In thiamine deficiency, impaired glucose metabolism results in lactic acid accumulation and cellular damage, particularly in metabolically active brain regions such as the thalamus, mammillary bodies, periaqueductal gray matter, and periventricular areas. Although uncommon, bilateral basal ganglia involvement may also occur. Early treatment with high-dose intravenous thiamine is essential and should not be delayed.
Case Presentation: A 42-year-old male with a history of chronic alcohol use presented to the emergency department with acute altered consciousness and delirium. Due to a decreased Glasgow Coma Scale score, he was intubated and admitted to the intensive care unit. Neurological consultation was requested after admission. Diffusion MRI revealed hyperintense lesions in the bilateral medial thalami, bilateral caudate nuclei, bilateral putamen, periventricular region of the fourth ventricle, and cerebellar vermis. Serum thiamine levels could not be measured; however, Wernicke encephalopathy was diagnosed based on clinical presentation and imaging findings. After sedation was discontinued, the patient was confused, able to follow simple commands but unable to perform complex tasks. Bilateral horizontal saccades were markedly slowed, while ataxia could not be reliably assessed. The patient was treated with intravenous thiamine at 500 mg three times daily for 2 days, followed by 200 mg/day for 5 days, and then continued on intramuscular thiamine at 100 mg/day. Follow-up MRI demonstrated hyperintensities in the same regions on FLAIR sequences.
At the second-week follow-up, the patient was conscious, oriented, and cooperative, with normal eye

movements. At the fourth-month follow-up, MRI showed regression of the previously observed lesions. Conclusion: Wernicke encephalopathy is a clinical diagnosis that requires a high index of suspicion, especially in patients with risk factors such as chronic alcohol use. Early recognition and prompt treatment with high-dose intravenous thiamine are crucial, as neurological symptoms are reversible in the early stages.

KEYWORDS
Wernicke Encephalopathy, Thiamine Deficiency

INTRODUCTION

Wernicke encephalopathy is an acute metabolic disorder resulting from thiamine deficiency and may lead to severe neurological complications if not recognized and treated promptly. It is most commonly associated with chronic alcohol use; however, it may also occur in conditions associated with malnutrition, impaired gastrointestinal absorption, or increased metabolic demand (1,2).

The classical clinical triad includes encephalopathy, ophthalmoplegia, and ataxia; however, all three findings are present in only approximately 16% of patients. The reported frequencies of the individual components are encephalopathy (82%), ophthalmoplegia (29%), and ataxia (23%). Notably, nearly 19% of patients may not exhibit any of these findings simultaneously (3,4).

Thiamine plays a critical role as a cofactor in key enzymatic processes within the tricarboxylic acid cycle. Deficiency leads to impaired glucose metabolism, lactate accumulation, and cellular energy failure, particularly affecting metabolically active brain regions such as the medial thalami, mammillary bodies, periaqueductal gray matter, and periventricular regions. In rare cases, basal ganglia involvement may also be observed (5,6). The diagnosis of WE is primarily clinical. According to the European Federation of Neurological Societies (EFNS) criteria, the presence of at least two of the following supports the diagnosis: dietary deficiency, ocular abnormalities, cerebellar dysfunction, and cognitive impairment (7). Magnetic resonance imaging (MRI) serves as a supportive diagnostic tool, with a reported sensitivity of 53% and specificity of 93% (8,9). Importantly, treatment should not be delayed while awaiting imaging or laboratory confirmation, as delayed therapy increases the risk of irreversible neurological injury (10).

High-dose intravenous thiamine is recommended for treatment, typically 500 mg three times daily for 2 days, followed by 200 mg/day intravenously for the subsequent 5 days (11).

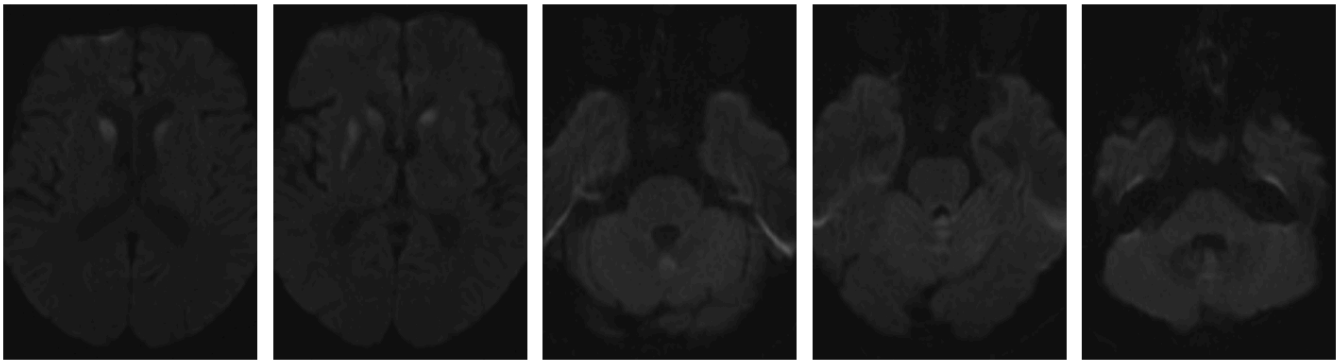
CASE PRESENTATION

A 42-year-old man with a history of chronic alcohol use presented to the emergency department with acute altered mental status and delirium. Due to a decreased Glasgow Coma Scale score, the patient was intubated and admitted to the intensive care unit. A neurological consultation was requested.

Diffusion-weighted MRI revealed hyperintense lesions in the bilateral medial thalami, bilateral caudate nuclei, bilateral putamen, the periventricular region surrounding the fourth ventricle, and the cerebellar vermis (Figure 1). Although serum thiamine levels could not be measured, a diagnosis of Wernicke encephalopathy was established based on the clinical presentation and imaging findings.

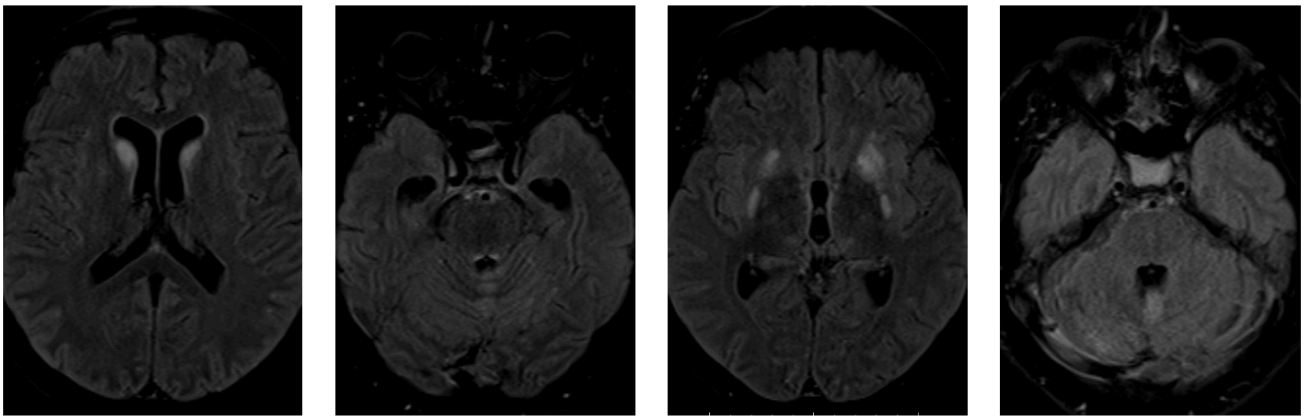
Figure 1

MRI diffusion-weighted sequence findings on initial presentation



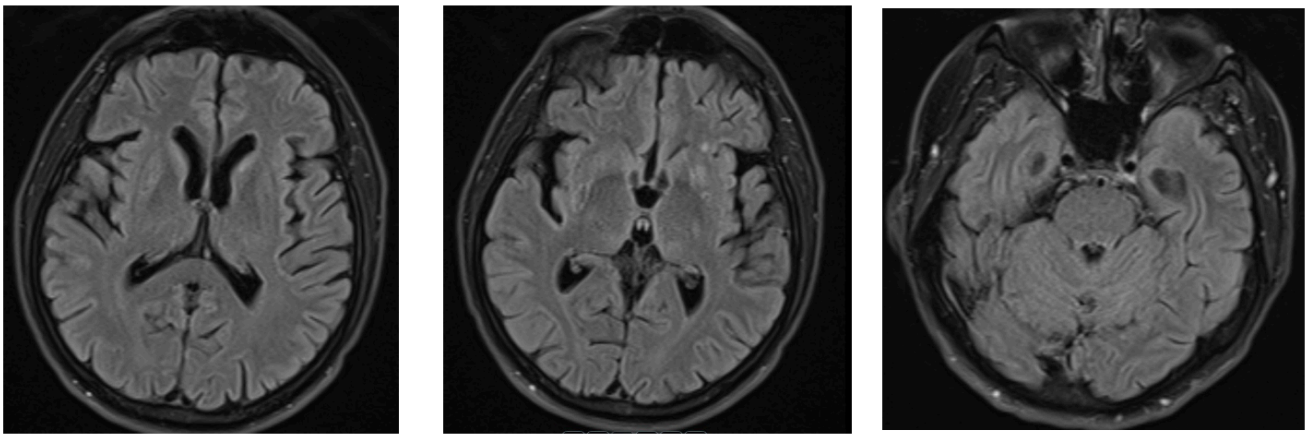
Following discontinuation of sedation, the patient was confused and able to follow simple commands but unable to perform complex tasks. Bilateral horizontal saccades were markedly slowed. Ataxia could not be reliably assessed because of the patient's impaired level of consciousness.
High-dose intravenous thiamine therapy was initiated immediately (500 mg three times daily for 2 days, followed by 200 mg/day for 5 days). Treatment was subsequently continued with intramuscular thiamine at a dose of 100 mg/day. Follow-up MRI demonstrated persistent hyperintensities in the same regions on FLAIR sequences (Figure 2).

Figure 2
MRI FLAIR sequence findings on follow-up imaging



At the second-week follow-up, the patient was conscious, oriented, and cooperative, with normal ocular movements. At the fourth-month follow-up, MRI showed marked regression of the previously observed lesions on FLAIR sequences (Figure 3).

Figure 3
MRI flair sequence findings at fourth-month follow-up



CONCLUSION
Wernicke encephalopathy remains a clinical diagnosis that requires a high index of suspicion, particularly in patients with risk factors such as chronic alcohol use. Early recognition and prompt treatment with high-dose intravenous thiamine are essential, as neurological deficits may be reversible when therapy is initiated in the early stage of the disease.

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OP-29 · Retrospective Evaluation of Syphilis Total Antibody Screening Tests Requested from Family Health Centers in Turkey: Reactivity Rates and Confirmation Results

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This paper underwent a ***double-blind peer review process*** *and was approved for publication by the Scientific Committee of the conference.*

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ETHICS STATEMENT
This study was approved by the Non-Interventional Scientific Research Ethics Committee of Ordu University (Date: February 27, 2026; Decision No: 63).

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: This study aimed to evaluate the seroreactivity rate of syphilis total antibody screening tests requested from family medicine units, and to analyze the demographic characteristics of reactive cases along with the distribution and results of confirmatory tests.
Materials and Methods: In this retrospective descriptive study, syphilis total antibody test results performed between May 2024 and January 2026 were analyzed. Reactive cases were identified and evaluated in terms of age, sex, and available confirmatory test results (TPHA, VDRL, FTA-ABS). Statistical analyses were performed using SPSS v29.0, with $p<0.05$ considered significant.
Results: A total of 13,177 tests were evaluated, of which 65 (0.49%) were reactive. Reactivity was significantly higher in males compared to females ($p=0.008$). The mean age of reactive cases was significantly higher than non-reactive cases (48.7 vs 34.9 years, $p<0.001$). Confirmatory test results were available for 18 cases, of which 88.9% had at least one positive treponemal test, while all VDRL tests were negative.
Conclusion: Syphilis seroreactivity was higher in males in this population. The predominance of treponemal test positivity with non-treponemal negativity suggests past or latent infections rather than active disease.

Despite limitations, the findings highlight the importance of confirmatory testing and surveillance in primary care settings.

KEYWORDS
Syphilis, Serological Screening, Reverse Algorithm, Treponemal Tests

INTRODUCTION

Syphilis is a systemic infectious disease caused by *Treponema pallidum* subsp. *pallidum*, characterized by multisystem involvement and potentially severe complications if left untreated (1). Over the past decades, there has been a marked increase in its incidence worldwide, and the disease is now recognized as a global public health concern (1,2). A similar upward trend has been observed in Turkey; according to data from the Turkish Ministry of Health, the number of annual cases rose from 502 in 2015 to 2,785 in 2021, and further to 3,542 in 2022 (3,4). This rise has underscored the critical importance of screening and early diagnosis, particularly among vulnerable populations such as pregnant women, individuals living with HIV, and migrants (5).

Due to the inability to culture *T. pallidum* in vitro, the laboratory diagnosis of syphilis relies predominantly on serological testing (1,3). Currently, three main diagnostic algorithms are employed: the traditional, reverse, and ECDC algorithms (3). The reverse algorithm begins with highly sensitive automated treponemal tests such as EIA, CMIA, or ECLIA for screening and is particularly suitable for laboratories with high sample throughput (3,4). However, in populations with low syphilis prevalence, the rate of false-positive results may increase depending on the signal-to-cutoff (s/co) values of these tests (3). Therefore, reactive screening results must be confirmed with additional serological tests such as TPHA (*Treponema pallidum* hemagglutination assay), VDRL (Venereal Disease Research Laboratory test), or FTA-ABS (Fluorescent Treponemal Antibody Absorption test) (2,4). Reference laboratories operating under the Public Health General Directorate in Turkey play a key role in confirming such questionable serological findings and generating evidence-based national surveillance data (1). The literature emphasizes that low s/co values obtained in screening tests often indicate past infections or false positives, and that integrating patient demographics and confirmation test results into interpretation enhances diagnostic accuracy (3,4).

This study aims to retrospectively analyze cases with seropositive syphilis total antibody test results in our hospital, focusing on the demographic characteristics of these individuals, the distribution of additional confirmatory tests requested by clinicians (TPHA, VDRL, FTA-ABS IgM/IgG), and the correlation with confirmation results provided by the Reference Laboratory of the Public Health General Directorate. The findings are of particular relevance for monitoring local seroprevalence and informing the development of effective public health policies.

MATERIALS AND METHODS

This retrospective descriptive study evaluates the results of syphilis total antibody tests performed on serum samples referred from family health centers in Ordu to the Microbiology Laboratory of Ordu State Hospital between May 2024 and January 2026. The data included in the study were obtained from the hospital information management system, and all personally identifiable information was removed to ensure patient confidentiality. The anonymized data were transferred to a Microsoft Excel® file, and the analyses were conducted using this platform.

Serum samples sent to our hospital were processed by centrifugation, after which the obtained serum was tested using an ELISA assay (Elecsys® Syphilis, cobas 6000 e 601, Roche Diagnostics, Mannheim, Germany). This test is based on the electrochemiluminescence (ECLIA) method and detects total antibodies (IgG and IgM) against *Treponema pallidum* in human serum. Initially, cases that tested seropositive for syphilis total antibodies were identified, and their electronic medical records were reviewed retrospectively. For each seropositive individual, it was investigated whether they had presented to our hospital and whether additional confirmatory serological tests such as the *Treponema pallidum* hemagglutination assay (TPHA), Venereal Disease Research Laboratory (VDRL) test, or Fluorescent Treponemal Antibody Absorption (FTA-ABS) IgM and IgG tests had been requested by clinicians. In addition, confirmation test results reported by the Reference Laboratory of the Public Health General Directorate were also evaluated. Based on the collected data, the total number of tests performed, the seropositivity rate, the demographic characteristics of

seropositive cases (including age and sex distribution), the types of additional tests requested, and the results of these tests were analyzed.

The data were analyzed using descriptive statistics. Continuous variables were presented as mean ± standard deviation and median values, while categorical variables were expressed as frequencies and percentages. For comparisons between groups, the chi-square test or Fisher's exact test was used for categorical variables, and the Mann–Whitney U test was applied for continuous variables. The association between reactivity and sex was assessed using odds ratios with 95% confidence intervals. The relationship between age groups and reactivity was evaluated using the chi-square test. A p-value of less than 0.05 was considered statistically significant. All statistical analyses were performed using IBM SPSS Statistics version 29.0 (Armonk, NY, USA).

RESULTS

A total of 13,177 syphilis total antibody tests were evaluated during the study period. The mean age of the entire cohort was 35.00 ± 15.56 years, with a median age of 30 years (Q1–Q3: 24–44). Of all individuals tested, 6,889 were female and 6,288 were male (Table 1).

Among the 13,177 tests, 65 (0.49%) were found to be reactive. Of these reactive cases, 42 (64.62%) were male and 23 (35.38%) were female. The reactivity rate was significantly higher in males compared to females (p=0.008) (Table 2).

The mean age of the reactive group was 48.74 ± 16.33 years, which was significantly higher than that of the non-reactive group (p<0.001) (Table 3). Patients in the reactive group were notably older than those in the non-reactive group.

A statistically significant association was observed between age groups and test reactivity (p<0.001), with higher reactivity rates noted in older age groups (Table 4). Reactivity was lower in younger individuals and increased markedly after the age of 45.

Among the reactive cases, additional confirmatory tests were requested for 18 individuals (27.69%). The most frequently performed tests in this subgroup were FTA-ABS IgG and FTA-ABS IgM (Table 5). Of these tests, 82.35% of FTA-ABS IgG results, 71.43% of TPHA results, and 80% of *Treponema pallidum* total antibody tests were positive. All VDRL test results were negative. At least one confirmatory test was positive in 16 of the 18 cases (88.89%) for whom additional testing was performed (Table 6).

Table 1

Gender Distribution in the Overall Test Population

Gender	n	%
Female	6.889	52.28
Male	6.288	47.72
Total	13.177	100.00

Table 2

Reactivity Rates in Females and Males

Gender	Reactive (n)	Total (n)	Reactivity (%)
Male	42	6.288	0.67
Female	23	6.889	0.33

Table 3

Age Comparison between Reactive and Non-Reactive Groups

Group	n	Mean ± SD	Median (Q1–Q3)	Min–Max
Reactive	65	48.74 ± 16.33	51 (34–59)	21–84
Non-reactive	13.112	34.94 ± 15.53	30 (24–44)	0–102

Table 4

Distribution of Reactivity by Age Group

Age Group (years)	Reactive (n)	Total (n)	Reactivity (%)
0–17	0	716	0.00
18–24	3	2.611	0.11
25–34	14	4.838	0.29
35–44	9	1.861	0.48
45–54	16	1.330	1.20
55–64	11	984	1.12
65–74	8	579	1.38
75–84	4	217	1.84
85+	0	41	0.00

Table 5

Distribution of Additional Tests Performed

Test Performed	n
FTA-ABS IgG	17
FTA-ABS IgM	17
VDRL with titer	10
Treponema pallidum TPHA	7
Treponema pallidum total antibody (IgM + IgG)	5
Total	56

Table 6

Test-Specific Result Distribution

Test	Total (n)	Positive n (%)	Negative n (%)	Borderline n (%)
FTA-ABS IgG	17	14 (82.35)	3 (17.65)	0
FTA-ABS IgM	17	3 (17.65)	14 (82.35)	0
VDRL with titer	10	0	10 (100.00)	0
TPHA	7	5 (71.43)	1 (14.29)	1 (14.29)
Treponema pallidum total antibody (IgM + IgG)	5	4 (80.00)	1 (20.00)	0

DISCUSSION

Syphilis remains a significant public health concern with a notably increasing incidence both globally and in Turkey (6). According to data from the Turkish Ministry of Health, the number of annual cases rose from 502 in 2015 to 4,290 in 2024, with an incidence reaching 5.01 per 100,000 population (6). In line with this upward epidemiological trend, the 0.49% reactivity rate detected in samples received from family health centers in Ordu underscores the continued relevance of syphilis screening in primary care settings. This rate is higher than the reported prevalence in premarital screening programs in Isparta (0.1–0.2%) but lower than the 1.35% observed in a tertiary care hospital in Samsun (7,8).

In terms of gender distribution, the findings of our study are fully consistent with the existing literature. The fact that 64.62% of reactive cases were male and that the reactivity rate was significantly higher among men compared to women (OR=2.01) aligns with national statistics and other regional studies (6). A 20-year retrospective analysis conducted in Bursa reported a male proportion of 74.6%, while studies from Samsun

indicated a rate of 69.3% (7,9). These findings support the observation that syphilis is more frequently encountered in male populations, particularly among high-risk groups where unprotected sexual contact is more common (9).

When considering the age factor, it is noteworthy that the median age of the reactive group in our study (51 years) was significantly higher than that of the non-reactive group (30 years). While national data indicate that the highest number of cases is concentrated in the 25–34 age group, our findings showed that reactivity increased to between 1.12% and 1.84% in age groups 45 years and older. This is consistent with the trend reported in the literature indicating an age-related rise in seropositivity (6,10). The high reactivity rates observed in older age groups are often attributed to residual serological markers of previously treated infections or to cases of late latent syphilis (9,11).

One of the most critical components of our study was the evaluation of confirmatory testing. Among the 65 cases identified as reactive, additional test results were available for only 18 patients (27.69%). This limited availability reflects the inherent challenges of retrospective data collection from primary care records, a difficulty also noted in similar retrospective studies (7,9). In evaluating the available results, a striking pattern emerged: all VDRL test results (100%) were negative, while FTA-ABS IgG and TPHA were positive in 82.35% and 71.43% of cases, respectively. This finding closely aligns with the literature, where positive treponemal tests alongside negative non-treponemal tests (VDRL/RPR) are commonly interpreted as evidence of previously treated infections, late latent syphilis, or false-positive screening results (7,9,11).

In particular, reverse algorithm methods such as ECLIA have been shown to yield false-positive results at low signal-to-cutoff (s/co) values. A study conducted in Samsun reported that 90% of reactivity occurred within the 1.00–2.00 s/co range (7). Similarly, in our study, the combination of negative VDRL results with high positivity rates in treponemal tests suggests that a substantial proportion of this population screened through family medicine units may not be in an active or infectious stage but rather carry serological traces of past infections (9).

CONCLUSION

Syphilis screening conducted through family medicine units in the Ordu region indicates that serological positivity is more prominent among older male populations. The finding of 100% VDRL negativity in cases with available confirmatory tests suggests that previous exposure rather than active infection is predominant in this population. Despite the inherent limitations of retrospective data, the presence of at least one positive confirmatory test in 88.89% of reactive cases underscores the reliability of the screening tests and highlights the importance of continued screening strategies.

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OP-30 · Retrospective Analysis of Anti-HIV ELISA Screening in Family Health Centers: Reactivity Rates and Outcomes of Confirmatory Testing

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This paper underwent a ***double-blind peer review process*** *and was approved for publication by the Scientific Committee of the conference.*

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ETHICS STATEMENT

This study was approved by the Ordu University Non-Interventional Scientific Research Ethics Committee (Date: 27 February 2026, Decision No: 62).

ARTIFICIAL INTELLIGENCE STATEMENT

No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT

Introduction: HIV infection remains a major public health concern in Türkiye, with a steadily increasing number of new cases. Primary care settings represent the main entry point for HIV screening, where fourth-generation ELISA tests are widely used; however, false-positive results remain a significant challenge.
Materials and Methods: In this retrospective study, records of anti-HIV tests requested from family health centers between May 2024 and January 2026 were analyzed. Reactive samples were evaluated according to the national HIV diagnostic algorithm using confirmatory tests performed at the national reference laboratory. Demographic characteristics and reactivity values were compared between confirmatory positive and negative groups.
Results: A total of 23,535 tests were analyzed, of which 47 (0.20%) were reactive. Confirmatory testing identified 11 (23.4%) true positive and 36 (76.6%) false-positive cases. The majority of confirmatory positive patients were male (81.8%). Mean age was 33.5±13.6 years in the positive group and 35.8±16.0 years in the negative group, with no significant difference. Reactivity (S/CO) values were significantly higher in confirmatory positive cases compared to negatives ($p<0.05$).
Conclusion: Despite low reactivity rates, a high proportion of false positives was observed. Higher S/CO values were associated with true positivity. Careful application of the national diagnostic algorithm, particularly confirmatory testing and appropriate interpretation of low-level reactivity, is essential to improve diagnostic accuracy and reduce unnecessary workload and patient burden.

KEYWORDS
Anti-HIV, ELISA, Confirmatory Test

INTRODUCTION

Human immunodeficiency virus (HIV) infection is a critical public health problem in Türkiye, with a steadily increasing number of newly diagnosed cases (1,2). According to the 2024 data of the Ministry of Health of the Republic of Türkiye, there are more than 45,000 confirmed individuals living with HIV in our country, and accurate and timely diagnosis is of great importance for controlling this increase (1,3). The current national HIV diagnostic algorithm, implemented in 2019 in Türkiye, follows a three-step strategy in accordance with the recommendations of the Centers for Disease Control and Prevention (CDC) (1,2). The first step of the algorithm consists of fourth-generation ELISA (Combo) tests, which simultaneously detect HIV-1/2 antibodies and p24 antigen, thereby shortening the window period (3,4). Samples with repeatedly reactive results in the screening test should be confirmed in the second step using HIV-1/2 antibody differentiation rapid confirmatory tests, which have replaced Western blot and provide faster results (1,2,3). If the result at this stage is negative or indeterminate, HIV-1 nucleic acid testing (NAT/PCR) is performed as the third step, particularly to exclude acute HIV infection (1,3).

Family medicine units providing primary healthcare services represent the initial point at which HIV screening is most frequently performed, particularly in processes such as premarital screening and antenatal follow-up (1,3). However, reactive results with low predictive value in screening tests may prolong the process of sending samples to confirmatory centers, increase laboratory workload, and cause significant psychological stress for patients (1,2,3).

The aim of this study is to retrospectively evaluate the reactivity rates of Anti-HIV ELISA tests requested from family medicine units between May 2024 and January 2026, as well as the confirmatory outcomes of these results within the framework of the current national algorithm. Within the scope of the study, the age- and sex-based demographic distributions of samples found to be reactive in the screening test will be analyzed. This study aims to contribute to the evaluation of screening effectiveness at the primary care level, to determine false-positive rates, and to identify the need for decentralization in the diagnostic process, thereby providing concrete data for national HIV statistics.

MATERIALS AND METHODS

In this retrospective study, records of samples sent for anti-HIV screening from family medicine units in Ordu province to the Medical Microbiology Laboratory of the Central Laboratory of Ordu State Hospital between May 2024 and January 2026 were reviewed, and test results were analyzed. The samples received in our laboratory were centrifuged to obtain serum and subsequently tested using a fourth-generation anti-HIV ELISA assay (Elecsys® HIV combi PT, cobas 6000 e 601, Roche Diagnostics, Mannheim, Germany). The assay is a fourth-generation test that simultaneously detects HIV p24 antigen and antibodies to HIV types 1 and 2, with a signal-to-cut-off (S/CO) range of 0.00–0.89. Patients' age and sex data were obtained from the hospital information management system. Only laboratory data generated as part of routine healthcare services were used in the study; no additional samples were collected from patients and no clinical interventions were performed. All data were anonymized prior to analysis.

When anti-HIV test results were reactive, the test was repeated. Samples showing reactivity in at least one test were sent to the National AIDS Confirmation and Viral Hepatitis Reference Laboratory of the General Directorate of Public Health for confirmatory testing. At this center, samples are analyzed using HIV-1/2 antibody differentiation rapid confirmatory tests, an additional fourth-generation ELISA test (ELFA), and, when necessary, HIV-1 RNA nucleic acid testing.

In statistical analyses, continuous variables were expressed as mean ± standard deviation and median, while categorical variables were presented as numbers and percentages. The distribution of continuous variables was assessed for normality. For group comparisons, the Mann–Whitney U test and Fisher's exact test were used. Missing data were excluded from the analysis. A p value of <0.05 was considered statistically significant. Statistical analyses were performed using IBM SPSS Statistics version 29.0 (Armonk, NY, USA).

This study was approved by the Ordu University Non-Interventional Scientific Research Ethics Committee (Date: 27 February 2026, Decision No: 62).

RESULTS

Between May 2024 and January 2026, a total of 23,535 samples were analyzed. Among 23,535 Anti-HIV tests, 47 samples (0.20%) were found to be reactive. Of the reactive cases, 23 (48.9%) were female and 24 (51.1%) were male, and no statistically significant difference was observed between sexes in terms of reactivity rates ($p>0.05$). Upon confirmatory testing, 11 of the reactive samples were positive and 36 were negative (Table 1). In the confirmatory positive group, 9 patients were male and 2 were female, and no significant difference was observed between male and female patients in terms of age ($p>0.05$) (Table 2). The mean age of the confirmatory positive group was 33.5±13.6 years, whereas the mean age of the negative group was 35.8±16.0 years, with no statistically significant difference between the groups ($p>0.05$).

In contrast, the reactivity values of confirmatory positive patients were significantly higher than those of confirmatory negative patients in both the initial and repeat measurements (Table 3). Patients were stratified into three age groups as <35 years, 35–55 years, and >55 years. Confirmatory positivity rates were 0.061%, 0.015%, and 0.052%, respectively. No statistically significant difference was found between the age groups in terms of confirmatory positivity ($p=0.381$).

Table 1

Overall distribution of the study population and reactivity results

Variable	n	%
Total number of tests	23,535	100
Number of reactive samples	47	0.20
Confirmatory negative	36	76.6*
Confirmatory positive	11	23.4*

*Note: *Percentages were calculated based on reactive samples (n=47). The overall reactivity rate was 0.20% among all tests.*

Table 2

Sex distribution of reactive samples and the confirmatory positive group

Variable	Female n (%)	Male n (%)
Reactive samples (n=47)	23 (48.9)	24 (51.1)
Confirmatory positive group (n=11)	2 (18.2)	9 (81.8)

Table 3

Comparison of age and reactivity values between confirmatory positive and negative groups

Variable	Positive (n=11)	Negative (n=36)	p
Age, mean ± SD	33.5 ± 13.6	35.8 ± 16.0	>0.05
Age, median (IQR)	28.0 (26.0–35.5)	31.5 (24.75–46.0)	
Result 1, mean ± SD	1545.1 ± 923.4	6.39 ± 11.28	<0.05
Result 1, median (IQR)	1727.5 (1225.8–2007.3)	2.04 (1.42–5.13)	
Result 2, mean ± SD	1415.2 ± 942.9	4.65 ± 7.69#	<0.05
Result 2, median (IQR)	1717.0 (964.2–1858.0)	1.54 (1.38–4.37)	

Note: For reactive samples, the initial test result was recorded as the first measurement (Result 1) and the result obtained upon repeat testing was recorded as the second measurement (Result 2).

DISCUSSION

This study is of strategic importance for evaluating the effectiveness of HIV screening strategies in primary healthcare and the implementation outcomes of the current national algorithm. In our study, among 23,535 anti-HIV tests requested from family medicine units between May 2024 and January 2026, a reactivity rate of 0.20% was detected, and confirmatory positivity was observed in 23.4% of these reactive samples. When these

findings are considered together with national statistics indicating that the number of individuals living with HIV in Türkiye has exceeded 54,000 and that the number of new cases is steadily increasing, the critical role of screening tests in early diagnosis is further supported (5).
In terms of sex distribution, the finding that 81.8% of the confirmatory positive group were male is in close agreement with the 82.1% male proportion reported by the Ministry of Health (5). This finding is also consistent with results from similar studies conducted in centers such as Ordu (90.7%), Rize (88.2%), and Kırıkkale (64%). The mean age of 33.5±13.6 years observed in our study is consistent with the 25–34 age group, in which HIV cases are most frequently reported in Türkiye (5). This indicates that HIV infection remains a public health issue, particularly among the young and sexually active population (6,8).
The false-positive rate of 76.6% observed in our study was similar to those reported in Kırıkkale (79.5%) and Turhal (88.4%), but higher than the rates reported in studies from Ordu (55.6%) and Rize (57.3%) (6,7,8,9). It is well established that the positive predictive value of fourth-generation ELISA tests decreases in populations with low HIV prevalence (9). False-positive results have been attributed to factors such as pregnancy, autoimmune diseases, recent vaccinations, and technical errors (8,9). In our study, the finding that reactivity (S/CO) values were significantly higher in confirmatory positive patients than in the negative group ($p<0.05$) supports the association between higher signal values and true positivity. In studies conducted in Tokat and other centers, it has been suggested that determining center-specific cut-off values may reduce unnecessary confirmatory test referrals and the psychological burden on patients (9).

CONCLUSION

In conclusion, family medicine units represent a key point for achieving decentralization in HIV screening. However, the high false-positive rates observed at low S/CO values indicate that confirmatory steps in the algorithm, particularly nucleic acid testing (NAT) at low values, remain essential. Careful implementation of the national HIV diagnostic algorithm will both improve early diagnosis and optimize the workload in the diagnostic process.

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EBFMC26-OP-31 · Severe Hypothyroidism Despite Ongoing Levothyroxine Therapy with Rapid Biochemical Improvement: A Case Report

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ETHICS STATEMENT
Ethics committee approval was not required for this case report in accordance with institutional policies. Written informed consent was obtained from the patient for publication of this case report.

ARTIFICIAL INTELLIGENCE STATEMENT
AI tools were used only for language editing and formatting of the manuscript. All clinical content, interpretation, and conclusions are the responsibility of the authors.

ABSTRACT
Introduction: Hypothyroidism has been associated with reversible elevations in liver enzymes; however, this relationship may be overlooked in primary care settings, particularly in patients receiving ongoing levothyroxine therapy (1,2).
Case Presentation: A 64-year-old woman with known diabetes mellitus, hyperlipidemia, coronary artery disease, and hypothyroidism following total thyroidectomy presented to the family medicine outpatient clinic with complaints of marked fatigue and shortness of breath even with minimal activity. Physical examination revealed edema of the face, hands, and feet. Laboratory evaluation demonstrated severe hypothyroidism with thyroid-stimulating hormone (TSH) levels above 53 mIU/L and free thyroxine (fT4) of 0. Liver enzymes were

elevated (AST: 256 U/L, ALT: 184 U/L), while creatine kinase (CK) was 611 U/L. Viral and autoimmune hepatitis were excluded. Abdominal ultrasonography demonstrated hepatomegaly and grade 2 hepatosteatosis. Although hepatosteatosis may have contributed to the enzyme abnormalities, severe hypothyroidism was considered one of the major contributing factors. The patient reported regular levothyroxine use; however, she had refused recommended laboratory monitoring and follow-up for approximately 1.5 years. Levothyroxine dosage was increased from 200 µg/day to 300 µg/day following endocrinology consultation. Within approximately 15 days, thyroid function tests and liver enzymes improved significantly.
Conclusion: This case highlights the importance of regular follow-up, laboratory monitoring, and reassessment of treatment adherence in patients receiving levothyroxine therapy in primary care settings. Severe hypothyroidism may still occur despite ongoing treatment and can be associated with reversible liver enzyme elevation (1,3,6).

KEYWORDS
Hypothyroidism, Levothyroxine, Liver Enzymes, Hepatosteatosis, Primary Care, Case Report

INTRODUCTION

Hypothyroidism is a common endocrine disorder with multisystemic manifestations (6). In addition to classical symptoms such as fatigue, weight gain, and edema, hypothyroidism may also affect hepatic metabolism and be associated with elevated liver enzymes (1,2,6). Although mild transaminase elevations have been reported previously, severe biochemical abnormalities may still be overlooked in routine clinical practice, especially in patients already receiving levothyroxine replacement therapy (1,3). This case is clinically relevant to primary care because it demonstrates that inadequate follow-up and lack of laboratory monitoring may lead to prolonged uncontrolled hypothyroidism and reversible systemic biochemical abnormalities.

CASE PRESENTATION

A 64-year-old woman with known diabetes mellitus, hyperlipidemia, coronary artery disease, and hypothyroidism following total thyroidectomy presented to the family medicine outpatient clinic with complaints of marked fatigue and shortness of breath even with minimal activity. On physical examination, noticeable edema was observed on the face, hands, and feet. Laboratory tests were requested; although the patient was initially reluctant, she agreed after being informed about the importance of further evaluation. Laboratory results showed severe hypothyroidism, with a thyroid-stimulating hormone (TSH) level above 53 mIU/L and a free thyroxine (fT4) level of 0. She was referred to the endocrinology clinic and subsequently hospitalized for further assessment. Her history revealed a total thyroidectomy performed 12 years earlier due to compressive symptoms related to goiter. She reported regular use of levothyroxine at a dose of 200 µg/day. She also had a long-standing history of diabetes mellitus (36 years), as well as a history of coronary angiography three years earlier, and prior surgeries including TAH-BSO, bladder suspension, and cholecystectomy. Laboratory investigations revealed elevated aspartate aminotransferase (AST: 256 U/L), alanine aminotransferase (ALT: 184 U/L), and creatine kinase (CK: 611 U/L), while troponin levels were negative. Further work-up was carried out to explore possible causes of liver enzyme elevation. Viral and autoimmune hepatitis were excluded. Abdominal ultrasonography demonstrated hepatomegaly and grade 2 hepatosteatosis. Although hepatosteatosis may have contributed to the enzyme abnormalities and should be considered as a potential confounding factor, the presence of severe hypothyroidism suggested that it was likely one of the major contributing factors. Given the persistence of severe hypothyroidism despite ongoing levothyroxine therapy, several possibilities were considered, including poor adherence, malabsorption, and thyroid hormone resistance (4,5,8). Although the patient reported regular levothyroxine use and stated that she avoided food or other medications for at least 30 minutes after administration, she had demonstrated poor adherence to long-term follow-up and laboratory monitoring recommendations prior to admission, having refused recommended laboratory evaluations for approximately 1.5 years. The absence of gastrointestinal symptoms made malabsorption less likely (4). Thyroid hormone resistance was considered less likely given the biochemical improvement observed after treatment adjustment (8). Cortisol and adrenocorticotropic hormone (ACTH) levels were evaluated, and the treatment plan was adjusted accordingly. Following endocrinology consultation, the levothyroxine dose was increased from 200 µg/day to 300 µg/day. Autoimmune markers for autoimmune hepatitis were negative. During follow-up, a clear improvement was

observed in both thyroid function tests and liver enzymes. Within approximately 15 days after treatment adjustment, TSH decreased to 3.42 mIU/L, while T3 was 3.11 and free T4 was 0.53. At the same time, AST and ALT levels declined to 53 U/L and 90 U/L, respectively. This relatively rapid biochemical improvement suggests that hypothyroidism played a significant role in the overall clinical picture.

DISCUSSION

Hypothyroidism may cause hepatic dysfunction through multiple mechanisms, including impaired lipid metabolism, hepatic steatosis, reduced hepatic blood flow, and muscle injury associated with hypothyroid myopathy (1,2,6). Elevated liver enzymes related to hypothyroidism are generally reversible following appropriate thyroid hormone replacement (1,3,6). This case is particularly relevant to primary care practice because hypothyroidism-related liver enzyme abnormalities may easily be attributed to more common causes such as hepatosteatosis (1,2). In the present case, hepatosteatosis may have contributed to the abnormal liver function tests; however, the marked hypothyroid state, prolonged lack of laboratory monitoring, and relatively rapid biochemical improvement following treatment adjustment support the contribution of uncontrolled hypothyroidism to the clinical picture. Another important aspect of this case is the role of inadequate follow-up and laboratory monitoring (5,7). Although the patient reported regular levothyroxine use, she had declined recommended laboratory evaluations for approximately 1.5 years. This highlights the importance of long-term follow-up and periodic reassessment in patients receiving thyroid hormone replacement therapy (5,7).

CONCLUSION

This case highlights the importance of regular follow-up, laboratory monitoring, and reassessment of treatment adherence in patients receiving levothyroxine therapy in primary care settings. Severe hypothyroidism may still occur despite ongoing levothyroxine treatment and can be associated with reversible liver enzyme elevation (1,3,6). When treatment response appears inadequate, factors such as dosing, administration habits, follow-up adherence, drug interactions, and other possible causes should be carefully reassessed in routine clinical practice.

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ETHICS STATEMENT

The research was approved by the Ethics Committee of Giresun Training and Research Hospital (dated December 4, 2023, Ref. No.: 53593568-771-230873030).

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Manus AI tools were used only for language editing (grammar, spelling, clarity). Authors verified all content.

ABSTRACT

Introduction: This study aimed to assess medical students' knowledge and attitudes toward patient safety culture and to identify the factors influencing these attitudes.
Materials and Methods: A cross-sectional study was conducted with 109 medical students from a university in Turkey. Data were collected using a sociodemographic questionnaire and the Patient Safety Attitude Scale. Descriptive statistics, t-tests, and one-way ANOVA were used in the statistical analyses.

Results: The mean age of the participants was 23.1±2.0 years, and the mean total scale score was 51.0±7.8. It was found that those who had not received patient safety training (52.2±7.5) exhibited more negative attitudes compared to those who had received training (46.4±7.6) (p=0.002). Similarly, it was observed that those who reported making a medical error (54.5±3.5) exhibited more negative attitudes compared to those who did not (50.7±8.1) (p=0.011).
Conclusion: The study revealed that medical students with experience of medical errors approach patient safety processes with a more critical and realistic perspective. It is of vital importance to integrate practical models that instill an awareness of safety culture into medical curricula, rather than relying solely on theoretical knowledge.

KEYWORDS
Patient Safety, Medical Education, Attitudes, Patient Safety Culture, Medical Students

INTRODUCTION

Patient safety is a fundamental principle of global healthcare services, which are operating amid rapidly evolving new treatment models and technological advancements (1). The World Health Organization (WHO) has established a global action plan with the vision of improving patient safety, aiming for a world where "no one is harmed in healthcare and every patient receives safe and respectful care at all times and in all places" (2). Reducing the risks associated with medical errors is a global priority for both healthy individuals and patients (3).

It has been reported that establishing a safe environment in healthcare improves healthcare outcomes and enhances service quality; furthermore, receiving patient safety education leads to increased knowledge and skills among medical students and fosters positive behavioral changes (4). The WHO has developed a multidisciplinary patient safety curriculum to support the integration of patient safety education into university curricula in the fields of dentistry, medicine, midwifery, nursing, and pharmacy (5). Studies conducted in the Turkish context also reveal that medical students adopt positive attitudes toward patient safety culture; however, they highlight that the time allocated to this topic in the curriculum and practical applications are insufficient (3).

This study aims to assess medical students' attitudes toward patient safety culture and to identify the sociodemographic and educational factors influencing these attitudes. The findings are intended to contribute to the development of patient safety-focused medical education curricula and to the provision of a safer healthcare system.

MATERIALS AND METHODS

The data collection tools used in this study consist of a Sociodemographic Characteristics Data Form designed to determine the participants' sociodemographic characteristics, and the Patient Safety Attitude Scale, which assesses medical students' attitudes toward patient safety culture. The data were collected by the researchers through face-to-face or online surveys administered to the students.

The study included a total of 109 students enrolled in the 2nd, 3rd, 4th, 5th, and 6th years at Giresun University Faculty of Medicine. The sample consists of 46 male (42.2%) and 63 female (57.8%) students: 17 (15.6%) second-year, 25 (22.9%) third-year, 19 (17.4%) fourth-year, 24 (22.0%) in 5th grade, and 24 (22.0%) in 6th grade. Since the goal was to reach the entire population of 626 students, a sample was not selected, and efforts were made to include all students in the study.

Ethical Approval: The necessary permission to conduct this study was obtained from the Dean's Office of the Faculty of Medicine at Giresun University. The research was approved by the Ethics Committee of Giresun Training and Research Hospital (dated December 4, 2023, Ref. No.: 53593568-771-230873030).

The Patient Safety Attitude Scale (PSAS) was first developed in 2009 by Carruthers and colleagues as a 7-point Likert-type scale consisting of 26 items to assess medical students' attitudes toward patient safety culture (6). The scale was adapted into Turkish by Torun and colleagues in 2018 (7). During this adaptation process, two items from the original scale were removed, and a 5-point Likert-type scale (ranging from 1 = "Strongly Disagree" to 5 = "Strongly Agree") was used instead of the original 7-point scale. The scale consists of nine sub-factors: (1) Patient Safety Education Received to Date (3 items), (2) Comfort in Reporting Errors (3 items), (3) Work Hours as a Cause of Errors (3 items), (4) Inevitable Errors (3 items), (5) Professional Incompetence as a Cause of Error (3 items), (6) Responsibility for Informing (3 items), (7) Teamwork (2

items), (8) The Patient's Role in the Error (2 items), and (9) The Importance of Patient Safety in the Curriculum (2 items). Six of these items are phrased negatively. The lowest possible total score participants can achieve on the scale is 24, and the highest possible total score is 120. Permission to use the scale was obtained from Torun.

RESULTS

A total of 109 medical students participated in this study. The sociodemographic characteristics of the participants and their scores on the Patient Safety Culture Attitude Scale are presented below.

The mean age of the students participating in the study was found to be 23.1±2.0 years. The vast majority of participants were single (99.1%, n=108). When their places of residence were examined, it was found that 44.0% (n=48) lived in city centers and 30.3% (n=33) lived in metropolitan areas. In terms of monthly family income, it was determined that 60.6% (n=66) had an income equal to their expenses. 63.4% of the students were female (n=63), and 36.6% were male (n=46). The median length of stay in the hospital was recorded as 20.0 hours (min: 4.0; max: 96.0). While 89.4% of participants indicated they had previously heard of the concept of "Patient Safety," 76.4% stated they had not attended any training or conference on patient safety. The mean total scale score was found to be 51.0±7.8. The mean scores for the subscales are presented in Table 1.

Table 1

Descriptive Statistics of Participants' Age and Scale Scores

Variable	Mean ± SD
Age (years)	23.1 ± 2.0
Total scale score	51.0 ± 7.8
Patient Safety Training Received to Date	8.2 ± 2.5
Convenience in Reporting Errors	7.8 ± 2.2
Working Hours as a Reason for Error	4.4 ± 1.6
Unavoidable Error	5.7 ± 1.8
Professional Incompetence as the Cause of Error	6.9 ± 2.2
Information Responsibility	8.6 ± 2.0
Teamwork	3.1 ± 1.1
The Patient's Role in Error	3.4 ± 1.4
The Importance of Patient Safety in the Curriculum	2.9 ± 1.3

No statistically significant difference was found between male and female participants in terms of mean total scale scores (p=0.298). A statistically significant difference was found between class level and total scale

score (p=0.004). Second-year students had a higher mean scale score (56.6±5.9) compared to other classes, while third-year students had lower scores compared to other classes. No significant difference was found in mean scale scores in terms of length of hospital stay (p=0.167).

A statistically significant difference was found in scale scores based on participants' perceived adequacy of knowledge in the field of patient safety culture (p=0.001). Those who did not perceive their knowledge as insufficient had a higher mean scale score (53.6±6.8) than those who indicated partially sufficient (49.2±7.7) and sufficient (44.8±8.8) knowledge. A statistically significant difference was found between groups in terms of the adequacy of the time allocated for training (p=0.001). Those who thought the training was insufficient had a higher mean scale score (53.0±7.8) than those who considered it partially sufficient (50.5±6.6) and those who considered it sufficient (42.4±5.3). A statistically significant difference was also found in scale scores based on the perceived adequacy of knowledge regarding the concept of medical error (p=0.001). Those who did not find their knowledge sufficient had the highest mean scale score (54.3±7.6), while those who found it partially sufficient (48.7±6.7) and those who found it sufficient (48.4±8.6) had lower scores. No statistically significant difference was found between receiving training on how to explain medical errors to patients and the total scale score (p=0.096).

It was found that those who had not received patient safety training had significantly higher mean scores (8.5±2.6) in the "Patient safety training received to date" sub-dimension compared to those who had received training (7.1±1.9) (p=0.007). Similarly, in the "Responsibility to inform" sub-dimension, the mean score of participants who had not received training (9.0±1.7) was found to be significantly higher than those who had received training (6.9±2.2) (p=0.001). In terms of the total scale score, the mean total score of participants who had not received training (52.2±7.5) was higher than that of those who had received training (46.4±7.6), and this difference was statistically significant (p=0.002).

Participants who did not know the definition of patient safety had a statistically significantly higher mean score (9.2±2.4) in the "Patient safety training received to date" sub-dimension compared to those who knew it (7.3±2.2) (p=0.001). Similarly, in the "Comfort in reporting errors" sub-dimension, the mean score of those who did not know the definition (8.4±2.0) was significantly higher than that of those who knew it (7.3±2.2) (p=0.006). In the "Responsibility to inform" sub-dimension, the mean score of participants who did not know the definition (9.1±1.6) was significantly higher than that of those who knew it (8.1±2.3) (p=0.004). In terms of the total scale score, the mean total score of those who did not know the definition (53.7±6.7) was also higher than that of those who knew it (48.6±8.0) (p=0.001).

According to specialization preference, a statistically significant difference was found between the groups only in the "Inevitable Error" sub-dimension (p=0.020). The mean score for Inevitable Error was higher in participants who did not consider specialization (7.2±1.5) compared to other groups; this was followed by basic sciences (6.3±1.4), internal medicine (5.6±1.7), and surgical sciences (5.4±1.8). No statistically significant differences were found in other sub-dimensions and the total scale score according to specialization preferences (p>0.05).

DISCUSSION

This study aimed to evaluate medical students' attitudes toward patient safety culture in terms of various sociodemographic and experiential factors. The findings reveal the complex nature of students' perceptions of patient safety and highlight potential areas for improvement in medical education.

In this study, the mean overall attitude score toward patient safety culture among medical students was found to be 51.0±7.8. This value is consistent with the positive attitudes reported in similar studies in the literature (4,8). For example, a comprehensive study by Al-Sawalha and colleagues indicated that medical students' attitudes toward patient safety were positive (4). This suggests that students prioritize patient safety in line with their professional ethics and sense of responsibility.

LIMITATIONS OF THE STUDY

This study is a cross-sectional study conducted with students from a single medical school. This may limit the generalizability of the findings. Additionally, the relatively small number of students with experience of making medical errors may have affected the statistical power of this group. Future studies could address these limitations by using larger sample sizes and longitudinal designs.

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ETHICS STATEMENT

The study protocol was reviewed and approved by the Scientific research Ethics Committee of Giresun Training and Research Hospital (approval no: 18.02.2026/06).

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No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT

Introduction: Pityriasis rosea (PR) is a widespread, acute, spontaneously resolving papulosquamous rash disease, likely of viral etiology. Although several studies have reported the distribution and clinical features of the disease in different regions of Turkey, data specific to Giresun are lacking. This study aimed to retrospectively evaluate the clinical and demographic characteristics of patients diagnosed with PR in a dermatology outpatient clinic in Giresun over the past year and to contribute to the literature from the Eastern Black Sea region.

Materials and Methods: The study included patients who presented to the Dermatology outpatient clinic between January 1, 2025, and January 1, 2026, and were clinically diagnosed with PR. Patients' demographic data, disease duration, time, accompanying and triggering factors, dermatological examination findings and characteristics, disease type, localization, accompanying comorbidities, and treatments used were recorded from the hospital system. The study protocol was reviewed and approved by the Scientific Research Ethics Committee of Giresun Training and Research Hospital (approval no: 18.02.2026/06).

Results: A total of 89 patients were included in the study. Of the patients, 59.6% (n=53) were female and 40.4% (n=36) were male. The mean age of the patients was 27.73 ± 12.58 (5-66) years. The distribution of patients according to age and the month and season in which the disease developed are shown in Tables 1 and 2. A single medallion plaque was observed in 52.8% (n=47) of patients, and multiple medallion plaques in

2.2% (n=2). Regarding the location of medallion plaques, they were most frequently observed on the trunk in 65.3% (n=32), on the upper extremity in 20.4% (n=10), and on the lower extremity in 8.2% (n=4). Typical PR clinical presentation was present in 78.7% (n=70). The most commonly used treatment options were topical corticosteroids (96.6%), moisturizers (78.7%), and oral antihistamines (68.5%).
Conclusion: In this study, when PR was evaluated in terms of possible etiopathogenetic, seasonal factors and clinical features, it was determined that it consisted mostly of typical PR cases that occurred in the winter season, mostly located on the trunk, accompanied by medallion plaques and collar-shaped scaly macules. This study is the first to reveal the clinical and demographic characteristics of PR in Giresun province in the Eastern Black Sea region. To better understand the similarities and differences in the epidemiology and presentation of the disease, it would be beneficial to conduct more comprehensive and larger-scale studies from various regions of the country.

KEYWORDS
Clinical Features, Etiology, Pityriasis Rosea, Season

INTRODUCTION

Pityriasis rosea (PR) is a widespread, acute, spontaneously resolving papulosquamous rash disease, likely of viral etiology (1). The incidence of this commonly observed disease in the general population ranges from 0.3% to 3% (2). Clinically, the disease is usually recognized by the development of a slightly raised, oval, scaly patch of skin, called a "herald patch" (3). Although there are studies evaluating the distribution and clinical characteristics of the disease in different regions of our country, the incidence, clinical-demographic characteristics, and underlying etiological causes related to the geographical features specific to Giresun province have not yet been investigated (4,5,6,7). This study aims to contribute to the literature by retrospectively evaluating the clinical and demographic characteristics of patients diagnosed with PR in the dermatology outpatient clinic in Giresun province, representing the Eastern Black Sea region, over the past year.

MATERIALS AND METHODS

The study included patients who presented to the Dermatology outpatient clinic between January 1, 2025, and January 1, 2026, and were clinically diagnosed with PR. For diagnosis, having a history consistent with PR and meeting three basic clinical characteristics from the diagnostic criteria found in the literature are accepted (8). Patients in whom a definitive diagnosis of PR could not be made (presence of numerous small vesicles in the center of two or more lesions, lesions mostly located on the palms and soles of the feet, and clinical or serological evidence of secondary syphilis) were excluded from the study. Patients' demographic data, disease duration, time, accompanying and triggering factors, dermatological examination findings and characteristics, disease type, localization, accompanying comorbidities, and treatments used were recorded from the hospital system. The study protocol was reviewed and approved by the Scientific Research Ethics Committee of Giresun Training and Research Hospital (approval no: 18.02.2026/06). All statistical analyses will be performed using SPSS software (version 24.0, IBM Corp., Armonk, NY, USA).

RESULTS

A total of 89 patients were included in the study. Of the patients, 59.6% (n=53) were female and 40.4% (n=36) were male. The mean age of the patients was 27.73±12.58(5-66) years. The distribution of patients according to age and the month and season in which the disease developed are shown in Tables 1 and 2. The mean duration of illness was 2.27±1.54 (1-8) weeks. At the onset of the disease, 64% (n=57) of patients had subjective symptoms and 14.6% (n=13) had prodromal symptoms. The most frequent triggering factors in its etiology were, respectively, upper respiratory tract infections (6.7%, n=6), drug history (4.5%, n=4), and trauma (fiber, sac, etc.) history (1.1%, n=1). 2.2% of patients had a history of PR (Table 3). A single medallion plaque was observed in 52.8% (n=47) of patients, multiple medallion plaques in 2.2% (n=2), and no medallion plaques in 44.9% (n=40). Regarding the location of medallion plaques, they were most frequently observed on the trunk in 65.3% (n=32), on the upper extremity in 20.4% (n=10), and on the lower extremity in 8.2% (n=4). The most common character of secondary lesions was scaly macules, occurring in 93.3% (n=83) of cases. Typical PR clinical presentation was present in 78.7% (n=70) and atypical PR presentation in 21.3% (n=19) of patients (Table 4). The most commonly used treatment options were topical corticosteroids (96.6%),

moisturizers (78.7%), and oral antihistamines (68.5%). Table 5 shows the treatment agents used in patients and their response rates.

Table 1

Distribution of patient numbers by age group

Age range (years)	n=89	%
0-9	3	3.4
10-19	20	22.5
20-29	35	39.3
30-39	18	20.2
40-49	5	5.6
50-59	6	6.7
>60	2	2.2

Table 2

Seasonal and monthly distribution of patient numbers

Monthly distribution	**n=89(100%)**
January	21(23.6%)
February	10(11.2%)
March	14(15.7%)
April	12(13.5%)
May	7(7.9%)
June	2(2.2%)
July	4(4.5%)
August	0(0%)
September	4(4.5%)
October	3(3.4%)
November	6(6.7%)
December	6(6.7%)
Seasonal distribution	**n=89(100%)**
Autumn	13(14.6%)
Winter	37(41.6%)
Spring	33(37.1%)
Summer	6(6.7%)

Table 3

Clinical and epidemiological features of the patients with pityriasis rosea

Characteristics	n=89	%
Age (years); mean±SD	27.73±12.58(5-66)	
Sex		
Female	53	59.6%
Male	36	40.4%
Disease duration(weeks); mean±SD	2.27±1.54(1-8)	
The presence of subjective symptoms (pruritus, burning, stinging, etc.)	57	64%
The presence of prodromal symptoms (fever, headache, artralgia, etc.)	13	14.6%
Trigger factors prior to PR		
History of respiratory tract infection	6	6.7%
History of drug use prior to PR	4	4.5%
History of trauma(friction or scrubbing)	1	1.1%
History of previous PR	2	2.2%
The presence of comorbidities	44	49.4%
Allergic rhinitis	23	25.8%
Goiter	12	13.5%
Asthma	9	10.1%
Hypertension	6	6.7%
Fibromyalgia	4	4.5%
Other diseases	14	15.7%

SD: Standard deviation, **PR:** Pityriasis rosea

Table 4

Morphology, distribution, and other clinical features of skin lesions

Features	n	%
Signs (n=89)		
Single Herald Patch	47	52.8%
Multiple Herald Patch	2	2.2%
No Herald patch	40	44.9%
Location of Herald patch(n=49)		
Trunk	32	65.3%
Upper limb	10	20.4%
Lower limb	4	8.2%
Axilla	2	4.1%
Neck- face	1	2%
Character of secondary eruptions (n=89)		
Collar scaly macules	83	93.3%
Purpuric lesions	3	3.4%
Urticarial lesions	3	3.4%
Lichenoid lesions	0	0%
PR Clinical Type (n=89)		
Typical	70	78.7%
Atypical	19	21.3%
Presence of a pine tree pattern (n=89)	50	56.2%
Duration of clinical improvement (n=89)		
Resolution <2 weeks	23	25.8%
Resolution 2–4 weeks	39	43.8%
Resolution >4 weeks	27	30.3%
Presence of recurrence (n=89)	6	6.7%

PR: Pityriasis rosea

Table 5

Distribution of treatments used and treatment responses

Treatment agents used	n(%)
Topical corticosteroids Good response	86(96.6%) 80(93%)
Moisturizers Good response	70(78.7%) 63(90%)
Oral antihistamines Good response	61(68.5%) 54(88.5%)
Systemic steroids Good response	14(15.7%) 11(78.6%)
Phototherapy Good response	3(3.4%) 2(66.7%)

CONCLUSION

In this study, when PR was evaluated in terms of possible etiopathogenetic, seasonal factors and clinical features, it was determined that it consisted mostly of typical PR cases that occurred in the winter season, mostly located on the trunk, accompanied by medallion plaques and collar-shaped scaly macules. For PR, a common skin disease worldwide, the literature presents conflicting findings regarding gender predisposition. Although several previous studies found female-dominant ratios of 1.5/1, 1.2/1 and 1.9/1, another study found that women and men were affected with equal frequency (9,10,11,12). In this study, the female/male ratio was found to be approximately 1.47/1, indicating female dominance. Although it can occur at almost any age, approximately 75% of cases occur between the ages of 10 and 35 (13). In this study, consistent with the literature, the vast majority of patients were between 10 and 40 years old. Looking at its seasonal distribution, global data indicates that PR is more prevalent in Sudan, the United Kingdom, and the United States of America during the colder months (9,14,15). Although studies conducted in different regions of our country have not revealed a consistent seasonal distribution, in our study, the majority of cases occurred during the colder and rainier winter and spring seasons (5,6,16). In terms of comorbidities, allergic diseases and thyroid diseases were found to be the most common group of diseases accompanying PR. In conclusion, the clinical characteristics of the cases in this study mostly showed results consistent with the classical PR model. This study is the first to reveal the clinical and demographic characteristics of PR in Giresun province in the Eastern Black Sea region. To better understand the similarities and differences in the epidemiology and presentation of the disease, it would be beneficial to conduct more comprehensive and larger-scale studies from various regions of the country.

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EBFMC26-OP-34 · Evaluation of Consultations to the Palliative Care Center in the Last One Year

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ABSTRACT

Introduction: Palliative care is an approach aimed at improving the quality of life of patients and their relatives in the presence of life-threatening illnesses. In the course of major neurological diseases such as Alzheimers disease and cerebrovascular disorders, as well as in advanced organ failure and oncological diagnoses, the goal is to support patients and their relatives through pain management, pressure ulcer care, nutritional support, and rehabilitation programs. This study aimed to evaluate consultations directed to the palliative care center, to identify patient characteristics, and to determine for what purposes and needs other departments refer patients to palliative care.

Materials and Methods: The study was conducted at the 1st Palliative Care Center of Tepecik Training and Research Hospital, Bornova Additional Service Building. Data were obtained by retrospectively reviewing consultations referred to our center through the hospital information management system between 01.01.2025 and 31.12.2025. In this cross-sectional descriptive study, data were evaluated in terms of age, gender, the department from which the consultations originated, the purpose of consultation, and the month in which they were initiated.

Results: A total of 184 consultations were recorded within one year. All consultations were found to be related to planning patient transfer to our center. The age distribution of patients was 18-64 years: 19.6% (n=36), and ≥65 years: 80.4% (n=148). The study included 97 male and 87 female patients. Consultations most frequently originated from intensive care units (ICUs) (35.9%; n=66), followed by General Surgery (11.4%; n=21), Orthopedics (9.8%; n=18), Neurosurgery (8.2%; n=15), Infectious

Diseases (8.2%; n=15), and Internal Medicine (7.6%; n=14). Consultations from other departments constituted 19.0% (n=35) of the total. When consultation reasons were examined, the most common reason was malnutrition (35.9%; n=66), followed by pain (26.6%; n=49), need for respiratory support (20.7%; n=38), and wound care management (15.2%; n=28). The need for continuation of antibiotic therapy was identified in 4.3% (n=8) of cases, while other reasons accounted for 2.2% (n=4). A statistically significant relationship was found between age groups (18-64 and ≥65 years) and consultation reasons (p=0.039). In the ≥65 age group, the most common reason for transfer was malnutrition, followed by respiratory issues and pain. In the 18-64 age group, pain-related consultations were relatively more prominent.
Discussion and Conclusion: Different needs are observed in consultations referred to our palliative care center from various departments, with nutritional support and pain palliation being the most common reasons for referral. Another notable finding is the increasing number of consultations for younger adult patients.

KEYWORDS
Palliative Care, Consultation Evaluation, Nutrition, Pain Management

COI ***& Other Declarations:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****. AI tools were used solely for English language editing.*

EBFMC26-OP-35 · Association Between Artificial Intelligence Literacy and Acceptance of Generative AI Among Family Physicians: A Cross-Sectional Study

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ABSTRACT
Objective: This study aimed to examine the relationship between artificial intelligence (AI) literacy and acceptance of generative artificial intelligence (GenAI) among family physicians.
Materials and Methods: This descriptive cross-sectional study was conducted between October 1 and December 31, 2024, using an online self-report survey. Data were collected using a researcher-developed Descriptive Information Form, the Artificial Intelligence Literacy Scale (AILS), and the Generative Artificial Intelligence Acceptance Scale (GAIAS). Statistical analyses were performed using IBM SPSS Statistics version 27. Group comparisons were conducted using appropriate non-parametric and chi-square based tests,

and correlations were assessed using Pearson or Spearman coefficients, with $p<0.05$ considered statistically significant.
Results: A total of 200 family physicians participated in the study, with a mean age of 38.57 ± 7.81 years. Female participants accounted for 56.5% of the sample. The largest subgroup consisted of contracted family medicine residents (66.5%), followed by family physicians (14.5%), family medicine specialists (10.5%), and full-time family medicine residents (8.5%). Nearly all participants had not received AI-related training (97.5%). The mean AILS score of the participants was 58.47 ± 10.48, and the mean GAIAS score was 71.77 ± 10.47. A statistically significant moderate positive correlation was found between AI literacy and GenAI acceptance ($r=0.507$, $p<0.05$). By contrast, both AILS and GAIAS scores differed significantly according to interest in AI, trust in AI-based systems, opinions regarding the use of AI in medicine, and frequency of AI use in professional practice (all $p<0.001$ for GAIAS; p values ranging from <0.001 to 0.004 for AILS).
Conclusion: There was a significant positive association between AI literacy and acceptance of GenAI among family physicians. These findings suggest that strengthening physicians' AI-related knowledge and evaluative competencies, while also fostering trust in AI systems, may support the responsible and effective use of GenAI in primary care.

KEYWORDS
Artificial Intelligence, Attitudes, Family Physicians, Generative Artificial Intelligence, Literacy

COI ***& Other Declarations:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****. No AI tools were used in the preparation of this work. Ethical approval for the study was obtained from the Local Ethics Committee (Date: 25.09.2024; Number:53).*

EBFMC26-OP-36 · Varicella Infection in an Unvaccinated Adolescent Immigrant: A Case Report

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ETHICS STATEMENT

This study does not require ethics committee approval. Written informed consent was obtained from the patient's family.

ARTIFICIAL INTELLIGENCE STATEMENT

No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT

Introduction: Varicella-zoster virus (VZV) is a common childhood infection that is usually benign; however, it may present with more severe clinical manifestations in adolescents and high-risk populations. This case highlights the clinical significance of varicella infection in an unvaccinated adolescent immigrant and emphasizes the role of primary care in preventing vaccine-preventable diseases.
Case Presentation: A 13-year-old Afghan male presented with a four-day history of fatigue, generalized body pain, headache, sore throat, fever, and pruritic rash that started behind the ears and spread over the entire body. The patient had not been vaccinated in Türkiye, and his previous vaccination history was unknown. Physical examination revealed polymorphic lesions, including papules, vesicles, and crusted lesions involving the entire body. There was no neck stiffness, and the neurological examination was normal. Minimal lymphadenopathy was present in the cervical and inguinal regions. Varicella was considered as a preliminary diagnosis, and VZV IgM testing was performed, which returned positive. Laboratory findings showed CRP: 18 mg/dL. Based on clinical and laboratory findings, the patient was diagnosed with varicella. Monkeypox was considered in the differential diagnosis but was excluded due to clinical incompatibility. Due to the patient's adolescent age, extensive skin involvement, and systemic symptoms indicating increased risk of complications, hospitalization was indicated. Intravenous acyclovir therapy was initiated according to current

clinical guidelines (3x10 mg/kg for 10 days). Supportive therapy including antipyretics and antihistamines was administered. The patient showed significant clinical improvement and was discharged in good condition. The clinical appearances of polymorphic vesicular lesions are demonstrated in Figures 1-4.

Figure 1

Polymorphic Vesicular Lesions



Figure 2

Polymorphic vesicular lesions



Figure 3
Polymorphic vesicular lesions



Figure 4
Polymorphic vesicular lesions



Discussion: Although varicella is generally mild in childhood, it tends to be more severe in adolescents and is associated with a higher risk of complications (1,2). Factors such as widespread rash, systemic symptoms, and prolonged disease course may necessitate hospitalization. Current guidelines recommend intravenous acyclovir in patients with severe disease, complications (such as pneumonia, encephalitis, or secondary bacterial infections), or those at increased risk (3). Adolescents aged ≥12 years are considered a higher-risk group and may benefit from antiviral therapy (4). This case underscores the burden of vaccine-preventable diseases in migrants and the need to address vaccination gaps. Family physicians and primary care systems play a crucial role in identifying unvaccinated individuals, ensuring timely vaccination, and preventing severe disease outcomes.

Conclusion: Varicella remains a significant cause of morbidity in unvaccinated individuals. Unvaccinated adolescents, particularly among migrant populations, are at increased risk for severe disease, emphasizing the importance of early diagnosis, appropriate antiviral therapy, and primary care-based vaccination strategies.

KEYWORDS
Varicella, Adolescent, Vaccination, Immigrants, Primary Health Care

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EBFMC26-OP-37 · Early Post-Infarction Ventricular Septal Rupture and Cardiogenic Shock Following Acute Anterior Myocardial Infarction: Case Report

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ETHICS STATEMENT
Written informed consent was obtained from the patient's next of kin for the publication of this case report and any accompanying images.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Ventricular septal rupture (VSR) is a rare but catastrophic mechanical complication of acute myocardial infarction (1). VSR carries a high mortality rate, particularly in elderly patients with delayed presentation. We report a case of a 91-year-old patient who developed VSR shortly after successful PCI.
Case Presentation: A 91-year-old male with a history of asthma presented with intensifying chest pain lasting 10 hours. He was referred to our center with a preliminary diagnosis of ST-segment elevation myocardial infarction. The initial ECG showed ST-segment elevation in leads V4-V6. Physical examination revealed bilateral pretibial edema and basal rales. Bedside echocardiography showed an ejection fraction of 35%, moderate mitral regurgitation, and mild aortic/tricuspid insufficiency. Laboratory results were significant for elevated Troponin I (16 ng/mL), CK-MB (75 U/L), CRP (131 mg/L), and elevated BUN (51.6 mg/dL).
The patient was taken to the catheterization laboratory. Coronary angiography revealed a totally occluded LAD after the D1 branch, along with diffuse disease. The patient underwent PCI. During the procedure, the patient developed worsening pulmonary edema and desaturation. Post-procedural ECG showed persistent ST elevation consistent with an apical aneurysm.

While receiving IV furosemide infusion in the coronary intensive care unit, the patient suddenly developed profound hypotension, tachycardia, and diaphoresis. Emergent transthoracic echocardiography identified a ventricular septal rupture. The patient was intubated and started on positive inotropic support and fluid resuscitation. Cardiovascular surgery was consulted; immediate surgical intervention was unavailable. While preparing for an intra-aortic balloon pump (IABP), the patient suffered a cardiac arrest. Despite aggressive cardiopulmonary resuscitation, the patient could not be revived.
Discussion: This case highlights the critical nature of mechanical complications in the elderly following STEMI. Even after successful revascularization, sudden hemodynamic deterioration should prompt immediate evaluation for VSR. The high mortality rate in this demographic underscores the challenges of managing post-MI complications when surgical windows are narrow. In a study conducted by Erdogan et al., 17 patients who developed post-myocardial infarction (MI) ventricular septal defect (VSD) underwent surgical repair (2). Among these, eight patients presented with cardiogenic shock at the time of the procedure, while 10 patients achieved hemodynamic stabilization through preoperative intra-aortic balloon pump (IABP) support prior to surgery.
Conclusion: In conclusion, preoperative IABP support is of critical importance for patients in cardiogenic shock due to post-MI VSR associated with extensive myocardial infarction and widespread myocardial damage (3). Achieving hemodynamic stabilization via positive inotropic agents and IABP support allows for the procedure to be performed under elective conditions, leading to more successful clinical outcomes.

KEYWORDS
Ventricular Septal Rupture (VSR), Mechanical Complication, Late Clinical Presentation, Hemodynamic Collapse, Drug-Eluting Stent (DES), Left-to-Right Shunt, Multiorgan Failure

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EBFMC26-OP-38 · Evaluation of Bone Mineral Density in Patients with Chronic Hepatitis B Receiving Tenofovir Therapy

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ETHICS STATEMENT

Ethical approval for this study was obtained from the Non-Interventional Scientific Research Ethics Committee of Trabzon University Faculty of Medicine, with approval dated October 6, 2025, and numbered 10496660-2025/25003.

ARTIFICIAL INTELLIGENCE STATEMENT

No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT

Aim: To evaluate bone mineral density (BMD) in adult patients with chronic hepatitis B (CHB) receiving tenofovir disoproxil fumarate (TDF).
Materials and Methods: This single-center, retrospective, cross-sectional study included 108 adult patients with documented CHB who had received TDF for at least six months and had undergone dual-energy X-ray absorptiometry (DXA) based on routine clinical indications at Trabzon Kanuni Training and Research Hospital. Age, sex, and duration of TDF treatment were recorded using a standardized data collection form. T-score and Z-score values obtained from DXA were analyzed. Abnormal BMD was defined as osteopenia or osteoporosis according to T-scores in patients aged ≥50 years and as BMD below the expected range for age according to Z-scores in patients aged <50 years, in line with internationally accepted densitometric criteria (1). Group comparisons were performed using the independent-samples t test and chi-square test. Factors associated with abnormal BMD were assessed using multivariable logistic regression, with age, sex, treatment duration, hyperlipidemia, diabetes mellitus, and hypertension entered simultaneously into the model. A p value of <0.05 was considered statistically significant.

Results: A total of 108 patients were included, with a mean age of 50.2 years, and 42.6% were male (n=46). The median duration of TDF treatment was 52 months (IQR: 30). The mean lumbar spine anteroposterior T-score was 0.554±1.265, and the mean femoral neck T-score was 0.700±0.952. The mean lumbar spine anteroposterior Z-score was 0.406±1.216, and the mean femoral neck Z-score was 0.133±0.869. No statistically significant association was found between TDF treatment duration and BMD measures. Older age was associated with lower BMD measures. In multivariable analysis, increasing age was independently associated with abnormal BMD (OR: 1.12, 95% CI: 1.06-1.17), whereas hypertension was inversely associated with abnormal BMD (OR: 0.23, 95% CI: 0.06-0.90).
Conclusion: In adult patients with CHB receiving TDF, no statistically significant association was observed between TDF treatment duration and BMD. This finding should be interpreted cautiously given the cross-sectional design and limited sample size. Increasing age showed the strongest association with abnormal BMD. The inverse association between hypertension and abnormal BMD may reflect residual confounding or differences in comorbidity profile. Because DXA was performed as part of routine clinical care, selection bias cannot be excluded. The absence of pre-treatment DXA data also limits interpretation, and causal inferences cannot be made.

KEYWORDS
Chronic Hepatitis B, Tenofovir, Bone Mineral Density

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EBFMC26-OP-39 · Perception of Quality of Life in Patients Diagnosed with Lung Cancer: A Mixed-Method Study

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ETHICS STATEMENT
The study was approved by the Non-Interventional Clinical Research Ethics Committee of UHS Izmir Tepecik Training and Research Hospital (Decision No: 2020/3-16, Date: 27.02.2020). Written informed consent was obtained from all participants.

ARTIFICIAL INTELLIGENCE STATEMENT
Artificial intelligence (Google Gemini) was used to assist with summarizing the abstract to meet the word count limits and for translating the final text from Turkish into English. The authors reviewed and take full responsibility for the content and accuracy of the submitted work.

ABSTRACT
Objective: Lung cancer profoundly affects patients' quality of life (QoL) due to high mortality and severe symptom burden (1). In modern oncology and palliative care, overall survival alone is insufficient for evaluating treatment success; patient-reported outcomes (PROs) and QoL measurements are critical endpoints (2,3). Monitoring physical, psychological, and social well-being is vital for individualizing clinical decisions and palliative care effectiveness (4,5). Our study aims to evaluate how lung cancer patients in a palliative care center perceive QoL and the dynamics affecting this perception (6).

Material and Methods: This mixed-methods study included lung cancer patients at the Palliative Care Center of Izmir Tepecik Training and Research Hospital (December 2019 - August 2020). Quantitatively, the EQ-5D-3L questionnaire was administered to 80 patients. Qualitatively, semi-structured face-to-face interviews were conducted with 30 patients, selected via maximum variation sampling based on sociodemographic and clinical variables, until data saturation.
Results: Participants' mean age was 62.88±10.69 years; 86.3% (n=69) were male. The mean EQ-5D index was 0.58±0.26, and the Visual Analog Scale (VAS) score was 59.50±19.89. No significant relationship existed between QALY index/VAS scores and gender, age, education, marital status, diagnosis duration, or chemotherapy/radiotherapy status. However, VAS scores were significantly higher in patients with children, and the QALY index was higher in the high-income group. Qualitatively, data were coded into 13 themes and 43 sub-themes. Patients predominantly emphasized dimensions rarely included in standard scales, such as social support, healthcare system impact, economic status, and anxieties.
Conclusion: Multidimensional factors affect QoL in lung cancer patients. While quantitative data showed sociodemographic characteristics had limited effects on QoL scores, qualitative findings revealed deeper, more diverse perceptions. This suggests standard scales alone may insufficiently reflect patients' subjective conditions. Evaluating QoL in cancer patients requires a holistic approach encompassing physical, psychological, social, and spiritual dimensions, integrating subjective assessments alongside standard scales.

KEYWORDS
Quality of Life, Pulmonary Cancer, Biopsychosocial Approach, Family Medicine

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EBFMC26-OP-40 · Medical Education in Balkan Countries: A Comprehensive Comparative Overview

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ETHICS STATEMENT
This study does not require ethics committee approval.

ARTIFICIAL INTELLIGENCE STATEMENT
Artificial intelligence (Google Gemini) was used to assist with summarizing the abstract to meet the word count limits and for translating the final text from Turkish into English. The authors reviewed and take full responsibility for the content and accuracy of the submitted work.

ABSTRACT
Objective: Medical education in the Balkans is shaped by a complex historical and political background (1). This study provides an unprecedented, comprehensive comparative analysis of medical education, specialization, and Continuous Medical Education (CME) systems across Türkiye and nine Balkan nations, aiming to highlight structural similarities, disparities, and regional challenges.
Material and Methods: This descriptive study utilized Qualitative Evidence Synthesis (QES) to analyze 2024-2025 data. Institutional frameworks, admission systems, residency models, and global academic performances (QS, ARWU, EduRank) were evaluated. Data were sourced from official health ministries, higher education

councils, and national medical chambers, focusing strictly on civilian, university-based medical faculties awarding MD degrees.
Results: While medical faculty density is comparable across the region, structural paradigms diverge significantly. For university admissions, Türkiye employs a fully centralized system, whereas Balkan nations prefer university-based or hybrid models (2,3). EU members and Türkiye ensure transparency by issuing ECTS-compliant Diploma Supplements (4). Regarding residency, Türkiye utilizes a transparent, centralized merit-based exam (TUS), contrasting with the Balkan approach of hospital-level interviews and discretionary quotas (5). Furthermore, residency funding varies drastically: trainees in Türkiye, Greece, and Montenegro are salaried public employees, whereas Bulgaria, Serbia, and Bosnia and Herzegovina heavily rely on tuition-based or unpaid volunteer models (6-9). Relicensing also differs; CME is voluntary in Türkiye but constitutes a mandatory statutory requirement for license renewal (every 5-7 years) overseen by Medical Chambers in most Balkan states (10-13). Academically, Türkiye and Greece emerge as regional powerhouses, leading in QS and ARWU global rankings (14,15).
Conclusion: This first-of-its-kind comprehensive analysis reveals a dichotomy between centralized/salaried models and decentralized/self-funded frameworks in the region. Despite producing high-quality educational output, the most critical challenge across the Balkans is the inability to retain talented physicians. To mitigate brain drain, regional policymakers must prioritize developing sustainable employment, fair compensation, and satisfaction-oriented policies to keep qualified physicians within local healthcare systems.

KEYWORDS
Balkan Countries, Comparative Analysis, Medical Education, Residency Training

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EBFMC26-OP-41 · A Qualitative Study on Media Literacy, Loneliness, and Well-Being Among Older Adults

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ETHICS STATEMENT
This study was approved by the Ordu University Educational Research Ethics Committee (Date: 24/04/2026, Meeting No: 5, Decision No: 2026-113).

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Insufficient media literacy skills can leave older adults vulnerable to misinformation and digital risks (1). Psycho-social changes that emerge with advancing age can make it difficult to keep up with technological developments. This situation can limit older adults' social interactions (2,3). This study aims to examine the effects of media literacy skills on perceptions of loneliness and psychological well-being by addressing older adults' digital adaptation processes from a qualitative perspective.
Materials and Methods: The study was conducted using a phenomenological design, one of the qualitative research approaches (4). Purposeful sampling was employed, and semi-structured interviews were conducted

with a total of 6 participants (5 women, 1 man) aged 65 and older residing in the provinces of Giresun and Ordu. The data obtained were analyzed using content analysis (codes, categories, themes).
Results: It was found that participants actively use digital media tools (Digital Media Usage Profile, n=27). Second, it is noteworthy that social media is primarily used for information-seeking and maintaining social connections (Digital Usage Motivations). However, it was noted that participants require environmental support for technical tasks but consider themselves competent in content consumption (Digital Self-Efficacy and Support Needs). It was revealed that awareness levels regarding digital risks are low, and half of the participants have experienced fraud in the past (Cyber Risk Perception; Digital Victimization Experiences). Although some individual protective strategies were developed following these experiences, it is understood that their fact-checking skills regarding misinformation remain limited (Individual Digital Security Strategies; Media Literacy). Finally, it is understood that older adults integrate technology into their daily routines rather than placing it at the center of their lives, and that social media usage exhibits a pattern linked to social support.
Conclusion: The findings of the study indicate that older adults use digital media not merely as a passive tool, but actively for the purposes of acquiring information, satisfying curiosity, and engaging in social communication. Additionally, it has been determined that the strategies older adults develop to address digital risks are largely experience-based and that they develop awareness through trial and error. Accordingly, it is recommended that educational programs addressing digital risks be presented through an intergenerational model that includes critical analysis and cybersecurity awareness. Additionally, it is considered important for professionals working in primary care, where older adults most frequently receive services, to engage in informational and guidance activities that support digital literacy.

KEYWORDS
Aging, Media Literacy, Perception of Loneliness, Well-being

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EBFMC26-OP-42 · A Preliminary Study on the Relationship between Online Shopping Addiction Tendencies and Marital Harmony and Satisfaction

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ETHICS STATEMENT
This study was approved by the Ordu University Educational Research Ethics Committee (Date: 24/04/2026, Meeting No: 5, Decision No: 2026-115).

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Purpose: Today's rapidly advancing technology brings not only benefits but also risky behaviors. Online shopping addiction is among these risky behaviors (1,2). The emotional bond between spouses, the quality of communication, sexual interaction, the mechanism for joint decision-making, and harmony in daily life are among the fundamental components of this concept (3). Individuals with low marital harmony and marital satisfaction may develop different coping strategies to manage their unmet emotional needs within the relationship (1). Considering all these potential relationships, this study aims to examine the relationship between the tendency toward online shopping addiction and marital harmony and satisfaction among married individuals.
Method: This study was conducted using a correlational research design within the framework of quantitative research methods (4). The study sample consisted of married individuals selected through criterion sampling, and participants were subsequently reached using convenience sampling (4). A total of 103 married individuals (76 women and 27 men) residing in the provinces of Ordu, Samsun, and Istanbul participated in the study. During the data collection process, the Online Shopping Addiction Scale, the Revised Couple

Adjustment Scale, the Marital Satisfaction Scale, and a demographic information form were administered via Google Forms. Descriptive statistics, Pearson correlation analysis, the independent samples t-test, and one-way ANOVA were used to analyze the data.
Results: In the examinations conducted among the subscales of the scales, significant negative correlations were found between the tolerance and mood change subscales of online shopping addiction and the compromise subscale of couple harmony. Consistent with the literature, a positive, strong, and significant correlation was found between marital harmony and marital satisfaction. As a result of statistical analyses conducted with demographic variables, it was observed that the tendency toward online shopping addiction did not show a significant difference based on age, gender, income level, number of children, or education level. Regarding marital satisfaction, however, a significant difference was observed only based on the number of years married; a statistically significant difference was determined between individuals married for 0-5 years and those married for 6-10 years.
Conclusion: These findings suggest that the tendency toward online shopping addiction may influence marital processes not directly, but rather indirectly through relational and individual dynamics; marital satisfaction and harmony, however, are particularly closely linked to the marital process itself. Based on the research findings, it is recommended that practitioners consider various other variables when assessing this tendency.

KEYWORDS
Online Shopping Addiction Tendency, Marital Adjustment, Marital Satisfaction

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EBFMC26-OP-43 · Pulmonary Tuberculosis in a Patient Under Follow-Up in a Palliative Care Unit: A Case Report

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ETHICS STATEMENT

This study does not require ethics committee approval. Informed consent was obtained from the patient for the publication of this case report.

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Artificial intelligence tools were used only for English language editing and academic writing support. All scientific content and final approval remain the responsibility of the authors.

ABSTRACT

Introduction: Tuberculosis (TB) is an important infectious disease that may reactivate following immunosuppressive treatments. High-dose pulse corticosteroid therapy used for multiple sclerosis (MS) relapses can suppress cellular immunity and increase the risk of opportunistic infections. This case report presents a patient who developed pulmonary TB after pulse steroid therapy.

Case Presentation: A patient with a known diagnosis of MS who was being followed in the palliative care unit received pulse steroid therapy for 10 days due to MS activation. Following treatment, the patient developed persistent fever, cough, weight loss, and night sweats. Physical examination revealed rales in the bilateral upper lung zones. Laboratory tests showed elevated C-reactive protein (CRP) and anemia. Thoracic computed tomography (CT) demonstrated bilateral apical cavitary lesions, ground-glass opacities, and a tree-in-bud pattern. Based on the clinical and radiological findings, pulmonary TB was suspected. Sputum examination for acid-fast bacilli (AFB) was reported as 4+ positive, and standard antituberculosis treatment was initiated.

Conclusion: This case indicates that even short-term high-dose corticosteroid therapy may predispose patients to the reactivation of latent infections and the development of pulmonary TB. Careful assessment for infection risk and close clinical follow-up are essential in patients for whom immunosuppressive therapy is planned.

KEYWORDS

Pulmonary Tuberculosis, Palliative Care, Night Sweats, Weight Loss, Family Medicine

INTRODUCTION

Tuberculosis (TB) is an infectious disease caused by Mycobacterium tuberculosis and predominantly involves the lungs. Immunosuppressed patients are vulnerable to the development of infections. Immunosuppressive medications may suppress the immune system and thereby predispose patients to opportunistic infections. High-dose corticosteroids used in the treatment of multiple sclerosis (MS) may suppress cellular immunity and facilitate either the reactivation of latent TB infection or the development of a new infection. In this case report, a patient who developed pulmonary TB after pulse steroid therapy administered for MS is presented. Previous reports have described TB infections in patients who were immunosuppressed due to conditions such as hepatitis B virus (HBV) infection, human immunodeficiency virus (HIV) infection, kidney transplantation, and Crohn's disease, or in those receiving immunosuppressive therapy for these conditions (1-3).

CASE PRESENTATION

The patient, who had a known diagnosis of MS and was being followed in the palliative care unit due to impaired oral intake and poor general condition, received pulse steroid therapy for 10 days upon the recommendation of the Neurology Department because of MS activation. At baseline, the patient had complaints such as cough and sputum production. During follow-up after steroid therapy, persistent fever, weight loss, and night sweats developed. On physical examination, widespread rales were heard in the bilateral upper lung zones.

Laboratory evaluation showed a white blood cell count of 8.80 x 10^9/L, hemoglobin of 9.7 g/dL, CRP of 176 mg/L, and creatinine of 0.32 mg/dL. In the laboratory investigations performed because of persistent fever, elevated CRP and anemia were notable. Chest radiography demonstrated infiltrative areas in the upper lung zones. Contrast-enhanced thoracic CT revealed cavitary lesions in the apical segments of both upper lobes, ground-glass opacities, interlobular septal thickening, and tree-in-bud appearances (Figure 1). When the contrast-enhanced thoracic CT findings and clinical features were evaluated together, pulmonary TB secondary to immunosuppression was considered. Sputum examination for AFB was reported as 4+ positive (Figure 2). The treatment plan consisted of 2 months of isoniazid + rifampicin + pyrazinamide + ethambutol (HRZE), followed by 4 months of isoniazid + rifampicin (HR) (4).

Figure 1

Contrast-enhanced thoracic CT image showing apical cavitary involvement

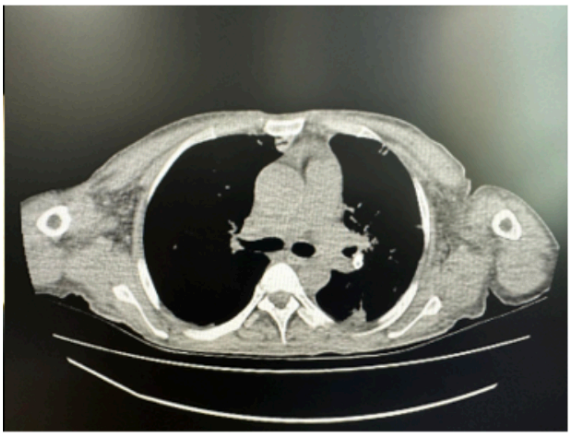
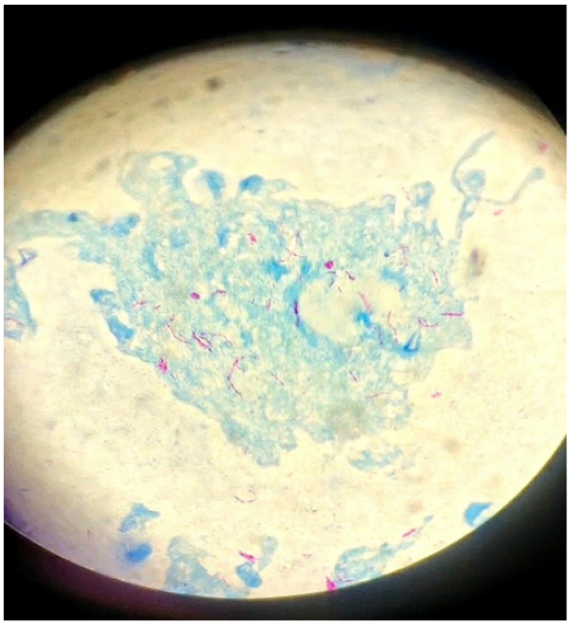


Figure 2

Microscopic image showing acid-fast bacilli (AFB) positivity



DISCUSSION AND CONCLUSION

High-dose corticosteroid therapy is effective in MS relapses; however, it may increase the risk of infection by suppressing cellular immunity. In the present case, the development of pulmonary TB supports the possibility that corticosteroids may facilitate the reactivation of latent infections. Although short-term pulse therapies are generally considered safe, opportunistic infections and TB should be carefully considered, particularly in regions with an increased TB burden or in patients with additional risk factors.

Similar cases have been reported in the literature. TB has developed in patients receiving immunosuppressive therapy for Crohn disease or after transplantation (2,3). Steroid use may also mask TB-related symptoms and delay diagnosis. Therefore, pretreatment risk assessment, routine tuberculin skin testing (TST/PPD) or appropriate TB screening in high-risk patient groups, and close follow-up during treatment are important. Early diagnosis and appropriate treatment can improve clinical outcomes, and a multidisciplinary approach plays a critical role in patient management.

This case demonstrates that pulse corticosteroids used in the treatment of MS may represent an important risk factor for the development of new TB infection or the reactivation of latent TB. Even short-term pulse steroid

therapy may activate TB. In patients who develop fever, weight loss, and pulmonary infiltration during or after immunosuppressive treatment, opportunistic infections should be included in the differential diagnosis. Accordingly, patients should be carefully evaluated for infection before immunosuppressive treatment, necessary screening should be performed in high-risk patients, and close clinical monitoring should be maintained throughout treatment. Early diagnosis and appropriate therapeutic approaches may reduce morbidity and mortality.

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This study does not require ethics committee approval.

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No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Intestinal protozoa remain a major public health concern worldwide, particularly in developing countries with inadequate sanitation and limited access to clean water. Among these parasites, *Giardia intestinalis*, *Entamoeba histolytica*, and *Cryptosporidium* spp. are the most common etiological agents responsible for gastrointestinal infections, causing considerable morbidity, especially in children, older adults, and immunocompromised individuals.
Methods: This review summarizes the current literature on the epidemiology, pathogenesis, clinical manifestations, diagnostic approaches, and treatment strategies of the major intestinal protozoan infections. Relevant published studies were evaluated to provide a comprehensive overview of recent advances in diagnosis and management.
Results: The reviewed literature indicates that intestinal protozoan infections exhibit diverse pathogenic mechanisms and clinical presentations, ranging from asymptomatic carriage to severe diarrheal disease. Conventional microscopic examination remains widely used for diagnosis; however, antigen detection assays and molecular techniques have significantly improved diagnostic sensitivity and specificity. Although antiparasitic drugs such as metronidazole, tinidazole, nitazoxanide, and paromomycin remain the mainstay of treatment, drug resistance and treatment failures have emerged as increasing challenges.

Conclusion: Early and accurate diagnosis, appropriate therapeutic interventions, and effective preventive measures are essential for reducing the global burden of intestinal protozoan infections. Continued research into improved diagnostic tools, novel therapeutic agents, and prevention strategies is needed to enhance disease control and patient outcomes.

KEYWORDS
Intestinal Parasites, Protozoa, Treatment

INTRODUCTION

Parasitic infections are among the major infectious diseases affecting millions of people worldwide. Intestinal protozoa exhibit particularly high prevalence in regions with inadequate sanitation conditions. According to the World Health Organization (WHO), protozoan intestinal infections are important causes of growth retardation, malnutrition, and chronic gastrointestinal disorders in children (1-5).

Intestinal protozoa are generally transmitted through the fecal-oral route. Consumption of contaminated water and food, poor hygiene practices, and environmental contamination play significant roles in the spread of these infections. In recent years, increasing international travel, migration movements, and the growing number of immunosuppressed patients have further increased the importance of protozoan infections.

Among the most clinically significant intestinal protozoa are *Giardia intestinalis*, *Entamoeba histolytica*, and *Cryptosporidium* species. These pathogens cause disease through different pathogenic mechanisms and produce diverse clinical manifestations (3-6-9,10-12).

MATERIALS AND METHODS

This study was prepared as a literature-based review. Searches were conducted in PubMed, Scopus, and Web of Science databases using the keywords "intestinal protozoa," "*Giardia intestinalis*," "*Entamoeba histolytica*," "*Cryptosporidium*," "diagnosis," and "treatment."

Recently published international articles, reviews, and guidelines were evaluated, focusing on the epidemiology, clinical characteristics, and treatment approaches of intestinal protozoan infections.

RESULTS

Giardia intestinalis

Giardia intestinalis is one of the most common intestinal protozoa worldwide. The infection primarily colonizes the small intestine and causes disruption of the villous architecture. This leads to a reduction in the absorptive surface area and results in malabsorption.

Clinical manifestations include watery or greasy diarrhea, abdominal pain, bloating, nausea, and weight loss. Long-term infections in children may result in growth and developmental retardation. In some cases, the infection remains asymptomatic, and infected individuals may serve as reservoirs for transmission (2,6,9,12).

Entamoeba histolytica

Entamoeba histolytica is the causative agent of amebiasis and is particularly prevalent in tropical regions. The parasite invades the colonic mucosa, causing ulcerations.

Patients may develop bloody and mucus-containing stools, abdominal pain, and dysentery. One of the most important characteristics of the parasite is its ability to spread beyond the intestine. Trophozoites reaching the liver through the portal circulation can cause amoebic liver abscesses. Less commonly, pulmonary and cerebral involvement may also occur (4,8).

Cryptosporidium spp.

Cryptosporidium species are important opportunistic pathogens, particularly in immunosuppressed individuals. In healthy individuals, they usually cause self-limiting watery diarrhea, whereas severe and prolonged diarrhea may develop in patients with HIV infection or organ transplant recipients.

Severe fluid loss, electrolyte imbalances, and malnutrition are among the major complications. In HIV-positive individuals with low CD4 counts, cryptosporidiosis may contribute significantly to mortality (3,7).

DIAGNOSTIC METHODS

Traditionally, stool microscopy has been used for the diagnosis of intestinal protozoa. However, microscopic examination has several limitations, including dependence on operator expertise and reduced sensitivity in cases with low parasite burdens.

Today, antigen detection assays and molecular methods are increasingly utilized. Polymerase chain reaction (PCR)-based techniques provide high sensitivity and specificity, offering significant advantages, particularly in the diagnosis of mixed infections (2,3,7,8,12).

TREATMENT APPROACHES

Metronidazole and tinidazole are commonly used for the treatment of *Giardia intestinalis* infections. Although treatment success rates are generally high, resistant cases have been increasingly reported in recent years.

For *Entamoeba histolytica* infections, treatment with metronidazole or tinidazole followed by a luminal amebicide is recommended. This approach ensures the eradication of cysts remaining in the intestinal lumen.

Nitazoxanide is one of the most frequently used drugs for *Cryptosporidium* infections. However, treatment success in immunosuppressed patients depends not only on antiparasitic therapy but also on restoration and improvement of immune function (2,4,7-9).

DRUG RESISTANCE AND FUTURE PERSPECTIVES

Resistance to antiparasitic drugs has become an increasingly important challenge. Drug resistance may lead to treatment failure and chronic infections. Therefore, identifying novel drug targets and developing agents with different mechanisms of action are essential.

Recent advances in molecular biology and genomics have contributed to the development of new therapeutic strategies. In addition, research on vaccine development is ongoing (2,3,7,12).

DISCUSSION

Intestinal protozoa remain common causes of infection worldwide. In developing countries, inadequate access to clean water and poor sanitation facilitate the transmission of these infections.

The literature indicates that *Giardia intestinalis*, *Entamoeba histolytica*, and *Cryptosporidium* species are important causes of morbidity (2,4,7,8,12). Long-term consequences, particularly in children, may include growth retardation, malnutrition, and reduced educational performance.

Advances in diagnostic methods enable earlier and more accurate diagnosis. Nevertheless, treatment alone is insufficient for infection control. Provision of safe drinking water, improved sanitation, and public education on hygiene practices are also necessary (2,7,10-12).

CONCLUSION

Intestinal protozoa continue to be important infectious agents worldwide. Early diagnosis, appropriate treatment, and effective public health measures constitute the cornerstone of infection control. Rapid diagnosis and effective treatment are particularly crucial for preventing severe complications in immunosuppressed individuals. In the future, the development of new antiparasitic drugs and the wider implementation of molecular diagnostic methods are expected to contribute significantly to the control of these infections.

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ETHICS STATEMENT
This study does not require ethics committee approval.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Vector-borne parasitic diseases are among the infectious diseases that affect millions of people worldwide and cause significant morbidity and mortality. Diseases such as malaria, leishmaniasis, and African trypanosomiasis are particularly prevalent in tropical and subtropical regions; however, their geographical distribution is expanding due to climate change, urbanization, and global population movements.
Methods: This review evaluates the global spread of vector-borne parasitic diseases, their epidemiological characteristics, environmental factors influencing transmission, and current control strategies.
Results: The literature indicates that climate change expands vector habitats and increases the risk of infection.
Conclusion: Furthermore, the integrated implementation of early diagnosis, effective treatment, vector control programs, and community-based preventive measures is critical for reducing the disease burden.

KEYWORDS
Vector, Malaria, Leishmaniasis, Trypanosomiasis, Climate Change, Parasitology

INTRODUCTION

Parasitic diseases have been among the most important groups of infectious diseases affecting human health throughout history. A significant proportion of these diseases depend on vectors during certain stages of their life cycles. Vectors are organisms that transmit parasites from one host to another and play a critical role in disease spread. Mosquitoes, sand flies, tsetse flies, and various arthropods are among the most important vectors (1-3,4).

Today, vector-borne diseases threaten more than half of the world's population. According to the World Health Organization (WHO), millions of people become ill each year due to malaria, leishmaniasis, and other vector-borne infections. These diseases impose substantial economic and social burdens on healthcare systems, particularly in low- and middle-income countries.

In recent years, factors such as climate change, globalization, increased international travel, and rapid urbanization have altered the distribution of vectors. Many vector species previously confined to specific regions have begun to appear in new geographical areas, leading to significant changes in the epidemiology of parasitic diseases.

The aim of this review is to evaluate the global spread of vector-borne parasitic diseases, examine the factors influencing their distribution, and present current control strategies (5-8).

MATERIALS AND METHODS

This study was prepared as a literature-based review. Recent studies published in PubMed, Scopus, Web of Science, and Google Scholar databases were examined. The keywords used in the literature search included “vector-borne parasites,” “malaria,” “leishmaniasis,” “trypanosomiasis,” “climate change,” “vector control,” and “global health.” The selected publications were evaluated in terms of epidemiology, parasite biology, vector ecology, the effects of climate change, and control strategies, and current information was systematically analyzed.

RESULTS

Malaria and Its Global Importance

Malaria is a major parasitic disease caused by *Plasmodium* species and transmitted by *Anopheles* mosquitoes. *Plasmodium falciparum* is particularly associated with severe clinical manifestations and high mortality. Malaria remains a major public health problem, especially in sub-Saharan Africa. Children and pregnant women constitute the highest-risk groups. The disease may present with severe complications such as fever, chills, anemia, and multiple organ failure (2).

Leishmaniasis

Leishmaniasis is a zoonotic infection caused by *Leishmania* species and transmitted through sand flies (3). The disease can occur in cutaneous, mucocutaneous, and visceral forms. Visceral leishmaniasis is the most severe clinical form and can be fatal if left untreated. The disease is particularly prevalent in South America, Africa, the Middle East, and South Asia (9).

African Trypanosomiasis

African sleeping sickness, caused by *Trypanosoma brucei*, is transmitted by tsetse flies. The disease initially presents with fever and lymphadenopathy and later progresses to central nervous system involvement. If untreated, neurological complications develop and the disease can ultimately result in death (10).

Climate Change and Disease Distribution

Climate change directly affects the life cycles of vectors. Rising temperatures, altered rainfall patterns, and environmental changes create new habitats for mosquitoes and other vectors. As a result, vectors are increasingly being detected in previously non-endemic regions, facilitating the spread of diseases into new geographical areas. Recent reports have documented the expansion of certain vector species in Europe and North America (6,8).

Globalization and Human Mobility

The increase in international travel and migration facilitates the movement of infected individuals and vectors across regions. Global trade networks and rapid transportation systems play a significant role in the

dissemination of infections. Therefore, vector-borne diseases should be considered not only local but also global public health concerns (11).

CURRENT CONTROL STRATEGIES

Vector Control

Reducing vector populations forms the basis of disease control. Commonly used methods include insecticide application, insecticide-treated bed nets, and environmental management measures (7).

Early Diagnosis and Treatment

Advances in diagnostic methods facilitate the early detection of infections. Early diagnosis reduces complications and helps interrupt transmission chains.

Community-Based Prevention

Public awareness, implementation of personal protective measures, and environmental hygiene practices play important roles in controlling infections.

Biological Control and Genetic Approaches

Biological control methods have gained increasing importance in recent years. The use of symbiotic bacteria such as *Wolbachia* and genetic interventions aim to reduce vector populations. These approaches are considered innovative strategies that complement traditional control programs.

DISCUSSION

Vector-borne parasitic diseases remain a major public health concern. Due to climate change and globalization, the geographical boundaries of these diseases are continuously shifting. Infections traditionally confined to tropical regions now pose increasing risks in other continents (5,6,8,11).

Current evidence indicates that drug treatment alone is insufficient. Successful control programs require integrated approaches that include surveillance systems, vector control, early diagnosis, and community participation (7).

Additionally, antiparasitic drug resistance and insecticide resistance are among the major challenges expected in the future. Therefore, the development of new drugs and alternative control strategies is of great importance.

CONCLUSION

Vector-borne parasitic diseases continue to represent serious global health challenges. Climate change, urbanization, and human mobility contribute to their increasing spread. Reducing the disease burden requires early diagnosis, effective treatment, sustainable vector control programs, and international collaboration. In the future, biological control methods, genetic approaches, and novel antiparasitic drugs are expected to play significant roles in disease management.

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EBFMC26-OP-46 · Distribution of Microorganisms Isolated from Chronic Wound Infections in the Wound Care Center Outpatient Clinic and Their Antimicrobial Susceptibility Profiles

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ETHICS STATEMENT
Ethical approval for this study was obtained from the Ordu University Ethics Committee.

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ABSTRACT
Introduction: Chronic wound infections, particularly diabetic foot infections, are an important cause of morbidity and may lead to deep tissue involvement, limb loss, or sepsis. Identification of causative microorganisms and their antimicrobial susceptibility profiles is essential for planning appropriate empiric therapy. This study aimed to retrospectively evaluate the distribution of microorganisms isolated from diabetic foot wounds and other complicated chronic wounds (including pressure injuries, venous ulcers, etc.), together with their antimicrobial susceptibility profiles, in patients admitted to the Wound Care Center outpatient clinic. Materials and Methods: In this retrospective study, chronic wound specimens sent to our laboratory from the Wound Care Center outpatient clinic between May 2025 and March 2026 were analyzed. Gram staining was

performed to assess specimen quality and to evaluate the presence of leukocytes, epithelial cells, and microorganisms. Specimens were inoculated onto 5% sheep blood agar and eosin methylene blue (EMB) agar and incubated at 37°C. Identification and antimicrobial susceptibility testing were performed using the BD Phoenix automated system (Becton Dickinson, USA) and the disk diffusion method. Only the first culture-positive isolate from each patient was included in the study. Antimicrobial susceptibility results were interpreted according to EUCAST criteria. Contamination was defined as cultures showing growth of more than four organisms on the relevant culture medium and specimens demonstrating abundant epithelial cells but few leukocytes on Gram staining.
Results: A total of 131 wound cultures were evaluated. Ninety-eight (74.8%) specimens showed growth, yielding a total of 117 isolates. No growth was observed in 9 (6.9%) specimens, while 24 (18.3%) specimens were considered contaminated. Of the isolates, 84 (71.8%) were Gram-negative bacteria, 29 (24.8%) were Gram-positive bacteria, and 4 (3.4%) were identified as Candida spp. Among Gram-negative bacteria, the most frequently isolated microorganism was Pseudomonas aeruginosa with 16 (13.7%) isolates, followed by Klebsiella pneumoniae with 13 (11.1%), Escherichia coli with 12 (10.3%), Proteus spp. with 10 (8.5%), and Acinetobacter baumannii with 8 (6.8%). Multidrug resistance was observed among P. aeruginosa, K. pneumoniae, and A. baumannii isolates. Among Gram-positive bacteria, the most frequently isolated species was Staphylococcus aureus, with 14 (12.0%) isolates.
Conclusion: Gram-negative bacteria were predominant in chronic wound infections followed in the Wound Care Center outpatient clinic, and multidrug resistance was notable among major pathogens. Regular monitoring of local pathogen distribution and antimicrobial resistance patterns may contribute to more appropriate empiric treatment selection and improve the management of chronic wound infections.

KEYWORDS
Antimicrobial Resistance, Empiric Therapy, Wound Culture

INTRODUCTION

Chronic wounds are clinical conditions that include various entities such as diabetic foot ulcers, venous ulcers, and pressure ulcers; they may increase morbidity, lead to limb loss, and impose a substantial burden on the healthcare system. The presence of microorganisms and the development of infection in chronic wounds may be influenced by several factors, including wound etiology, duration, anatomical location, patients' comorbidities, and previous antibiotic use. Disruption of this microbial structure and biofilm formation may be associated with prolonged inflammation, reduced response to antibiotics, and delayed wound healing (1).
Although culture results are important for clinical management in the evaluation of wound infections, it should be kept in mind that all chronic wounds may be colonized to some extent. Therefore, the diagnosis of infection should not be based solely on culture results but should be evaluated clinically together with local or systemic signs of inflammation. In wounds suspected of infection, appropriate sampling is recommended, preferably using an aseptically obtained tissue specimen when possible (2). Gram staining may be used as an auxiliary laboratory technique in assessing the microbiological quality of wound specimens and interpreting the clinical significance of microorganisms grown in culture (3).
Antimicrobial resistance is one of the major challenges complicating the management of wound infections. In the World Health Organization's 2024 Bacterial Priority Pathogens List, resistant Gram-negative bacteria and clinically important pathogens such as *Pseudomonas aeruginosa* (*P. aeruginosa*) and *Staphylococcus aureus* (*S. aureus*) are reported among the priority groups in terms of public health (4). In chronic wound and diabetic foot infections, the distribution of causative agents may vary according to geographical region, level of healthcare service, patient population, previous antibiotic exposure, and sampling method (5).
Commonly encountered pathogens in wound infections include *S. aureus*, *P. aeruginosa*, *Escherichia coli* (*E. coli*), *Klebsiella pneumoniae* (*K. pneumoniae*), and other Gram-negative bacilli; however, this distribution may differ considerably among centers. Therefore, regular monitoring of local microbiological surveillance data is important for rationalizing empirical treatment approaches and supporting antimicrobial stewardship programs (6). This study aimed to retrospectively evaluate the distribution of microorganisms isolated from wound, tissue, and abscess cultures obtained from patients admitted to the wound care outpatient clinic, as well as their antimicrobial susceptibility profiles.

MATERIALS AND METHODS

This study was designed as a retrospective and descriptive study to evaluate the distribution of microorganisms isolated from wound, tissue, and abscess cultures obtained from patients admitted to the wound care outpatient clinic, as well as their antimicrobial susceptibility profiles. Wound, tissue, and abscess specimens sent from the wound care outpatient clinic to the Microbiology Laboratory of Ordu University Training and Research Hospital between May 2025 and March 2026 were included in the study. Data were obtained retrospectively from the hospital information management system.

In cases where the same pathogen was repeatedly isolated from the same patient, only the first isolate was considered clinically significant. Thus, the potential effect of recurrent isolates on the results was minimized. Specimens in which more than four microorganisms grew on the same culture medium, or specimens evaluated on Gram staining as having >25 epithelial cells and <10 leukocytes, were interpreted in favor of contamination and excluded from the analysis.

Gram staining was performed for all specimens received by the laboratory. Sample quality was evaluated by Gram staining based on the presence of leukocytes and epithelial cells, as well as whether microorganisms were observed. Specimens were inoculated onto 5% sheep blood agar and eosin methylene blue agar media and incubated at 37°C. Identification of the grown microorganisms and antimicrobial susceptibility testing were performed using the BD Phoenix automated system (Becton Dickinson, USA) and the disk diffusion method. Antimicrobial susceptibility results were interpreted according to EUCAST criteria.

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics software (Version 25.0; IBM Corp., Armonk, NY, USA). Since the study was descriptive in nature, data were presented as numbers and percentages. Microorganism distributions, culture results, and antimicrobial resistance rates were evaluated using frequency analysis.

RESULTS

During the study period, a total of 131 wound, tissue, and abscess cultures sent from the wound care outpatient clinic were evaluated. Microbial growth was detected in 98 of these specimens (74.8%). A total of 117 isolates were obtained from culture-positive specimens. No growth was observed in 9 cultures (6.9%), while 24 cultures (18.3%) were considered contaminated.

Of the isolated microorganisms, 84 (71.8%) were Gram-negative bacteria, 29 (24.8%) were Gram-positive bacteria, and 4 (3.4%) were *Candida* spp. The most frequently isolated microorganism was *P. aeruginosa*, accounting for 13.7% of all isolates. This was followed by *S. aureus* (12.0%), *K. pneumoniae* (11.1%), *E. coli* (10.3%), and *Proteus* spp. (8.5%). The overall distribution of microorganisms is presented in Table 1.

Table 1

Distribution of microorganisms isolated from wound specimens

Pathogen	n	%
Pseudomonas aeruginosa	16	13.7
Staphylococcus aureus	14	12.0
Klebsiella pneumoniae	13	11.1
Escherichia coli	12	10.3
Proteus spp.	10	8.5
Acinetobacter baumannii	8	6.8
Enterococcus spp.	8	6.8
Morganella morganii	6	5.1
Coagulase-negative staphylococci	5	4.3
Candida spp.	4	3.4
Klebsiella oxytoca	4	3.4
Citrobacter spp.	4	3.4
Stenotrophomonas maltophilia	3	2.6
Serratia marcescens	3	2.6
Providencia spp.	3	2.6
Other	4	3.4
Total	**117**	**100**

Among Gram-negative bacteria, resistance rates varied according to the causative agent. In *P. aeruginosa* isolates, resistance rates were 56.2% for ciprofloxacin, 37.5% for cefepime, 25.0% for meropenem, and 25.0% for piperacillin-tazobactam. In *K. pneumoniae* isolates, resistance to cefepime, ceftazidime, and ceftriaxone was 61.5%, ciprofloxacin resistance was 53.8%, and piperacillin-tazobactam resistance was 46.2%. In *E. coli* isolates, ceftriaxone resistance was 58.3%, while resistance to ciprofloxacin and trimethoprim/sulfamethoxazole (SXT) was 41.7%. Antimicrobial resistance rates of Gram-negative bacteria are presented in Table 2.

Table 2

Antibiotic resistance rates among frequently isolated Gram-negative bacteria (%)

Antibiotic	*P. aeruginosa*	*K. pneumoniae*	*E. coli*	*Proteus* spp.	*A. baumannii*
Amikacin	6.3	23.1	0	10	25
Ampicillin	*	100	66.7	100	*
Cefepime	37.5	61.5	33.3	10	*
Ceftazidime	25	61.5	33.3	40	*
Ceftazidime/avibactam	12.5	0	0	0	*
Ceftriaxone	*	61.5	58.3	40	*
Ciprofloxacin	56.2	53.8	41.7	70	25
Ertapenem	*	38.5	16.7	10	*
Gentamicin	*	23.1	0	50	37.5
Imipenem	12.5	23.1	8.3	0	25
Meropenem	25	23.1	0	0	25
Piperacillin/tazobactam	25	46.2	25	0	*
SXT	50	38.5	41.7	50	25

* Not available in the EUCAST clinical breakpoint tables, *A. baumannii*: *Acinetobacter baumannii*, SXT: trimethoprim/sulfamethoxazole

Among Gram-positive bacteria, the most frequently isolated pathogen was *S. aureus*. Methicillin resistance was detected in 21.4% of S. aureus isolates. The highest resistance rates were observed for tetracycline (61.5%), fusidic acid (57.1%), and clindamycin (35.7%). In contrast, no resistance was detected to amikacin,

daptomycin, gentamicin, linezolid, teicoplanin, or SXT. The antimicrobial resistance profile of *S. aureus* isolates is presented in Table 3.

Table 3

Antimicrobial resistance rates of S. aureus isolates (%)

Antibiotic	%
Amikacin	0
Cefoxitin screening test	21.4
Ciprofloxacin	14.3
Clindamycin	35.7
Daptomycin	0
Erythromycin	21.4
Fusidic acid	57.1
Gentamicin	0
Levofloxacin	14.3
Linezolid	0
Moxifloxacin	14.3
Rifampicin	28.6
Teicoplanin	0
Tetracycline	61.5
SXT	0

DISCUSSION

Although colonization may frequently be observed in wound cultures, microbiological data obtained from these specimens represent a valuable source of surveillance, particularly in chronic wounds and ulcers, as they reflect regional microbial distribution and antimicrobial resistance patterns (7). In the present study, the predominance of Gram-negative bacteria was consistent with recent data reported in the literature on wound infections. Yucens et al. evaluated 478 wound cultures and identified Gram-negative bacteria in 85.7% of the isolates; the most common pathogens were reported as *E. coli* (21.5%) and *P. aeruginosa* (14%) (8). Mansoor et al. reported a culture positivity rate of 43.9% among 4,378 wound specimens and stated that 73.5% of the isolates consisted of Gram-negative bacilli, while *S. aureus* was the most common pathogen among Gram-positive bacteria (6). In their study evaluating 432 isolates, Coskun et al. reported that 57.6% of the microorganisms were Gram-negative bacteria and 41.2% were Gram-positive bacteria; the rates of *E. coli* and *P. aeruginosa* were each 11.1%, while the rates of *Klebsiella* spp. and *Proteus* spp. were each 6.7% (5). When these findings are considered together, the predominance of Gram-negative bacteria in wound cultures is consistent with our study and supports the need to consider center-specific microbiological distribution when planning empirical treatment for chronic wound infections.

The finding that *S. aureus* was the most frequently isolated pathogen among Gram-positive bacteria is also consistent with the literature. Yucens et al. reported the rate of *S. aureus* as 11.7% and methicillin resistance among these isolates as 8.9% (8). Khalid et al. evaluated 1,186 wound and pus culture requests and found a culture positivity rate of 58.3%; among the isolates, *S. aureus* and *P. aeruginosa* were reported at rates of 38.2% and 12.9%, respectively. In the same study, the methicillin resistance rate among *S. aureus* isolates was reported as 40.5% (9). Sandru et al. stated that *S. aureus* was reported in the range of 38.6–45.8% and *P. aeruginosa* in the range of 0–27.3% in chronic wound cases, with methicillin resistance detected in 32.6% of *S. aureus* isolates (7). The variation in reported methicillin resistance rates across studies may be attributable to differences in patient populations, wound characteristics, previous antibiotic exposure, and center-specific resistance patterns. This indicates that not only pathogen distribution but also local resistance data should be monitored in wound cultures.

When evaluated in terms of antimicrobial resistance patterns, resistance rates in wound infections appear to vary considerably among centers. Sahin et al. reported ciprofloxacin resistance as 93.7%, ceftriaxone resistance as 81.2%, and cefepime resistance as 78.1% among *E. coli* strains isolated from wound cultures; among *K. pneumoniae* isolates, they reported ceftazidime resistance as 82.6%, piperacillin-tazobactam resistance as 67.3%, and imipenem resistance as 26.1%. In the same study, resistance rates for *P. aeruginosa*

to ciprofloxacin, piperacillin/tazobactam, ceftazidime, and meropenem were reported as 65.7%, 25.7%, 31.4%, and 11.4%, respectively (10). Khalid et al., on the other hand, detected a very low amikacin resistance rate among Gram-negative isolates (0.6%) and reported imipenem and meropenem resistance rates as 10.8% and 3%, respectively (9). Mansoor et al. also reported susceptibility rates among *E. coli* isolates as 75.0% for amikacin, 45.0% for imipenem, and 57.8% for piperacillin/tazobactam (6). These varying rates demonstrate that antibiotic susceptibility profiles in wound infections are not uniform and that empirical treatment decisions should be supported by each center's current culture and antibiogram data.

In our study, the isolation of some less frequently detected Gram-negative pathogens with high resistance potential is also clinically important. In the World Health Organization's 2024 Bacterial Priority Pathogens List, carbapenem-resistant Enterobacterales, carbapenem-resistant *P. aeruginosa*, carbapenem-resistant *A. baumannii*, and methicillin-resistant *S. aureus* are included among priority resistant pathogens (4). Therefore, culture results obtained from wound care outpatient clinics may guide not only individual patient treatment but also regional antimicrobial stewardship policies.

This study has some limitations. Due to its retrospective and single-center design, the results should not be generalized to all patient groups. Since patients' comorbidities, previous antibiotic use, wound duration, clinical course, and treatment responses could not be evaluated in detail, it was not possible to establish a causal relationship between microbiological findings and clinical outcomes.

CONCLUSION

Gram-negative bacteria were found to have a prominent role in wound, tissue, and abscess cultures obtained from patients admitted to the wound care outpatient clinic, and variable resistance rates to different antibiotic groups were observed among the main isolated pathogens. This finding indicates that empirical treatment decisions in chronic wound infections should be planned not solely according to general approaches, but by taking into account current center-specific culture and antibiogram data. Evaluation of culture results together with clinical findings, accurate distinction of contamination, and regular continuation of local microbiological surveillance are essential requirements for the more rational management of wound infections and appropriate antimicrobial use.

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EBFMC26-OP-47 · Investigation of Microorganisms Isolated from Pressure Ulcers in the Palliative Care Unit

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ETHICS STATEMENT
Ethical approval for this study was obtained from the Ordu University Ethics Committee.

ARTIFICIAL INTELLIGENCE STATEMENT
Generative AI tools were used only for language editing.

ABSTRACT
Introduction: Wound infections are an important cause of morbidity in bedridden patients with chronic diseases and malnutrition. This study aimed to retrospectively evaluate the species distribution and antimicrobial susceptibility profiles of microorganisms isolated from chronic wound and soft tissue specimens from patients hospitalized in the palliative care unit.
Materials and Methods: Chronic wound, tissue, and abscess specimens sent from the palliative care service between March 2023 and March 2026 were included. Specimen quality was assessed by Gram staining.

Samples were inoculated onto 5% sheep blood agar and eosin methylene blue agar and incubated at 37°C. Identification and antimicrobial susceptibility testing were performed using the BD Phoenix automated system and disk diffusion method. Only the first culture-positive isolate from each patient was included. Results were interpreted according to EUCAST criteria. Specimens with abundant epithelial cells, scarce leukocytes, or growth of more than four organisms were considered contaminated.
Results: A total of 326 specimens were analyzed. Growth was detected in 261 (80.2%) specimens, while no growth was observed in 28 (8.5%) and 37 (11.3%) were considered contaminated. Overall, 325 isolates were obtained, including 255 (78.5%) Gram-negative bacteria, 49 (15.1%) Gram-positive bacteria, and 21 (6.4%) *Candida* spp. The most frequently isolated Gram-negative bacteria were *Pseudomonas aeruginosa* (22.5%) and *Klebsiella pneumoniae* (16.0%). Multidrug resistance was particularly notable in *K. pneumoniae*, *P. aeruginosa*, and *A. baumannii* strains. Among Gram-positive bacteria, *Enterococcus* spp. were the most common group, accounting for 8.3% of isolates.
Conclusion: Wound specimens from palliative care patients predominantly yielded multidrug-resistant Gram-negative bacteria. Regular local surveillance of pathogen distribution and resistance patterns may improve empirical treatment and infection management. The increase in *Pseudomonas* and *Candida* isolation also suggests the need for periodic revision of empirical treatment strategies.

KEYWORDS
Antimicrobial Resistance, Palliative Care, Pressure Ulcer

INTRODUCTION

Soft tissue infections encompass a broad clinical spectrum ranging from superficial skin involvement to abscesses, ulcers, surgical site infections, and deep tissue involvement (1). Diabetic foot ulcers, venous ulcers, pressure injuries, and other chronic wounds with delayed healing are associated with high morbidity and increased healthcare utilization (2, 3). In chronic wounds, microbial colonization may vary depending on the anatomical location of the wound and patient-related comorbidities; therefore, pathogen distribution and antimicrobial resistance profiles may differ across centers and patient groups (3,4).
Accurate identification of the causative pathogen in wound and soft tissue infections is possible through appropriate sampling and microbiological examination (1). Inflammation, necrotic material, recurrent contamination, and biofilm formation complicate infection management in chronic wounds. Biofilm formation has been reported to contribute to persistent inflammation, delayed healing, and increased antimicrobial resistance in chronic wounds (3, 5). In addition, the fungal component, particularly *Candida*, has been reported to constitute an important part of the microbial burden in some types of chronic wounds (6).
The problem of antimicrobial resistance directly affects both treatment selection and the accuracy of empirical approaches in chronic wound care. Therefore, antimicrobial strategies are recommended to be planned in accordance with local microbiological data and resistance patterns (4).
Palliative care patients constitute a vulnerable group in terms of chronic wound development and wound-related complications due to advanced age, immobility, malnutrition, multiple comorbidities, and the need for long-term care (3,4). In these patients, wound management focuses not only on healing but also on the control of pain, exudate, odor, infection burden, and other symptoms affecting quality of life (7,8). Therefore, determining the distribution of microorganisms isolated from wound, tissue, and abscess specimens sent from the palliative care unit, as well as their antimicrobial resistance rates, is important for clinical management and for updating local empirical treatment approaches (1,4). This study aimed to evaluate the species-level distribution of microorganisms isolated from wound, tissue, and abscess specimens sent from the palliative care service and the antimicrobial resistance profiles of the most frequently detected pathogens.

MATERIALS AND METHODS

This study was designed as a retrospective, descriptive study to evaluate the distribution of microorganisms isolated from soft tissue specimens obtained from patients hospitalized in the palliative care service of Ordu University Training and Research Hospital and their antimicrobial resistance profiles. Wound, tissue, and abscess specimens sent from the palliative care service to the microbiology laboratory between March 2023 and March 2026 were included in the study. Data were retrospectively obtained from the hospital information management system and laboratory records. All specimens were first evaluated by Gram staining, and the presence of microorganisms as well as leukocytes and epithelial cells was assessed. Specimens showing >25

epithelial cells and <10 leukocytes per field, as well as those with four or more different colony morphologies in culture, were considered contaminated. Specimens were inoculated onto 5% sheep blood agar and eosin methylene blue (EMB) agar and incubated at 37°C. Identification and antimicrobial susceptibility testing were performed using the BD Phoenix (Becton Dickinson, USA) automated system and the disk diffusion method. Susceptibility results were interpreted according to the criteria of the European Committee on Antimicrobial Susceptibility Testing (EUCAST). In repeated specimens from the same patient, only the first culture-positive isolate was included in the analysis. Species-level microorganism distribution and resistance rates of the most frequently isolated major pathogens were analyzed. Statistical analysis was performed using SPSS Statistics 25.0 (IBM Corp., Armonk, NY, USA). Categorical variables were presented as numbers and percentages, and microorganism distribution and antimicrobial resistance rates were evaluated using frequency and percentage values.

RESULTS

During the study period, a total of 326 soft tissue specimens were sent from the palliative care service to the microbiology laboratory. Growth was detected in 261 (80.2%) specimens, while no growth was observed in 28 (8.5%) and 37 (11.3%) were considered contaminated. A total of 325 isolates were obtained from culture-positive specimens; of these, 255 (78.5%) were Gram-negative bacteria, 49 (15.1%) were Gram-positive bacteria, and 21 (6.4%) were identified as *Candida* spp. The most frequently isolated pathogen was *P. aeruginosa*, and the species-level distribution is presented in Table 1.

Table 1

Distribution of microorganisms isolated from wound specimens

Pathogen	n	%
Pseudomonas aeruginosa	73	22,5
Klebsiella pneumoniae	52	16,0
Escherichia coli	36	11,1
Acinetobacter baumannii	30	9,3
Proteus spp.	28	8,6
Enterococcus spp.	27	8,3
Candida spp.	21	6,5
Coagulase-negative staphylococci	8	2,5
Staphylococcus aureus	7	2,2
Stenotrophomonas maltophilia	7	2,2
Serratia marcescens	6	1,8
Morganella morganii	6	1,8
Providencia spp.	6	1,8
Klebsiella oxytoca	5	1,5
Enterobacter spp.	4	1,2
Streptococcus spp.	4	1,2
Other	5	1,5
Total	**325**	**100,0**

Among Gram-negative bacteria, notable resistance rates were observed to cefepime, ceftazidime, ciprofloxacin, and piperacillin-tazobactam in P. aeruginosa; to cephalosporins, ciprofloxacin, and piperacillin-tazobactam in *K. pneumoniae*; to ampicillin, ciprofloxacin, and ceftriaxone in *E. coli*; to amikacin, ciprofloxacin, imipenem, and meropenem in *A. baumannii*; and to trimethoprim/sulfamethoxazole (SXT), ciprofloxacin, gentamicin, and ampicillin in *Proteus* spp. Detailed resistance data for Gram-negative bacteria are presented in Table 2.

Table 2

Antimicrobial resistance rates (%) of frequently isolated Gram-negative bacteria

Antibiotic	*P. aeruginosa*	*K. pneumoniae*	*E. coli*	*A. baumannii*	*Proteus* spp.
Amikacin	17,8	55,8	0	93,3	10,7
Ampicillin	*	100	94,4	*	60,7
Cefepime	57,5	94,2	55,6	*	7,1
Ceftazidime	50,7	92,3	55,6	*	7,1
Ceftazidime-avibactam	17,8	21,2	0	*	0
Ceftriaxone	*	96,2	69,4	*	32,1
Ciprofloxacin	53,4	90,4	80,6	93,3	60,7
Ertapenem	*	76,9	11,1	*	7,1
Gentamicin	*	65,4	25,0	86,7	60,7
Imipenem	41,1	61,5	2,8	90,0	14,3
Meropenem	35,6	61,5	0	90,0	0
Piperacillin/tazobactam	42,5	86,5	33,3	*	0
SXT	*	82,7	50,0	83,3	71,4

* Antibiotics not included in the EUCAST clinical breakpoint tables.

Among Gram-positive bacteria, the most frequently isolated group was *Enterococcus* spp. in which high-level gentamicin and streptomycin resistance rates were 74.1% and 81.5%, respectively. In contrast, no resistance to linezolid, teicoplanin, or vancomycin was observed (Table 3).

Table 3

Antimicrobial resistance rates in *Enterococcus* spp. isolates

Antibiotic	Resistance rate (%)
Ampicillin	14,8
High-level gentamicin	74,1
Linezolid	0
High-level streptomycin	81,5
Teicoplanin	0
Vancomycin	0

DISCUSSION

Discussing wound and soft tissue infections in palliative care patients requires evaluating not only the isolated microorganisms but also the healthcare-associated microbiological burden in a vulnerable patient population. It has been reported that infections are common in patients receiving end-of-life care, that antimicrobials may often be continued until the time of death, and that this group may constitute an important reservoir for multidrug-resistant microorganisms (1).

The distribution of pathogens in wound infections may vary considerably between centers. In their study evaluating 1,254 wound cultures with growth, Duran et al. reported Gram-negative bacteria, Gram-positive bacteria, and fungi rates of 71.5%, 28.3%, and 0.2%, respectively; the most common pathogens were *E. coli* (24.2%), *Staphylococcus aureus* (*S. aureus*, 16.8%), *P. aeruginosa* (11.5%), and *K. pneumoniae* (10.3%) (9). Şahin et al., on the other hand, found a Gram-negative rate of 78.1% in 462 wound cultures and reported *Proteus mirabilis* (21.2%), *A. baumannii* (16.7%), and *E. coli* (13.9%) as the leading isolates (10). In the series by Yucens et al. focusing on diabetic foot infections, monomicrobial growth was observed in 66.9% and polymicrobial growth in 32.1% of 478 samples; the Gram-negative rate was reported as 85.7%, and the most common pathogens were *E. coli* (21.5%) and *P. aeruginosa* (14%) (11). These findings show that pathogen distribution may vary according to wound type, care setting, length of hospital stay, comorbidity, and sampling method.

The role of *P. aeruginosa* in the ecology of chronic wounds is particularly important. In their review of global studies conducted between 2005 and 2022, Phan et al. showed that *S. aureus* was the most common pathogen overall, whereas *P. aeruginosa* ranked second in most major continents outside South America. The same review emphasized that *P. aeruginosa* could rank first in some Southeast Asian countries and that this variability was related to wound type and regional ecology (12). These findings suggest that Gram-negative predominance or *Pseudomonas* frequency in chronic wound and soft tissue specimens may be consistent with the literature.

The prominence of resistant Gram-negative bacteria in wound specimens represents a clinical reflection of a global public health problem. In the World Health Organization 2024 Bacterial Priority Pathogens List, carbapenem-resistant *A. baumannii* and *K. pneumoniae* are classified as critical priority pathogens, while carbapenem-resistant *P. aeruginosa* is classified as a high-priority pathogen (13). In the global analysis published by the Antimicrobial Resistance Collaborators, the number of deaths associated with bacterial antimicrobial resistance in 2019 was reported as 4.95 million, whereas 1.27 million deaths were directly attributable to antimicrobial resistance (14). Therefore, the presence of resistant Gram-negative bacteria in wound and soft tissue specimens obtained from palliative care patients should be considered within the context of the broader antimicrobial resistance problem.

Resistance rates reported in the national literature also indicate that empirical treatment in wound infections should be shaped according to pathogen distribution and resistance patterns. In their five-year series, Duran et al. reported that carbapenem resistance reached 23.1% in Enterobacterales, 28% in *P. aeruginosa*, and 83.3%–100% in *A. baumannii* (9). Şahin et al. reported ciprofloxacin resistance of 93.7%, ceftriaxone resistance of 81.2%, and ertapenem resistance of 40.6% in *E. coli* isolates; ceftazidime resistance of 82.6%, piperacillin/tazobactam resistance of 67.3%, and imipenem resistance of 26.1% in *K. pneumoniae* isolates; ciprofloxacin resistance of 65.7% and meropenem resistance of 11.4% in *P. aeruginosa* isolates; and ciprofloxacin resistance of 96.1% and imipenem resistance of 68.8% in *A. baumannii* isolates (10). These data indicate that culture- and antibiogram-based treatment approaches are important in wound infections.

The fungal component should not be overlooked in chronic wound infections. Ge and Wang stated that in chronic non-healing wounds, fungi are not merely colonizers but may also contribute to bacterial evasion from antibiotics and host immune responses. In the same review, biofilm formation was emphasized as the major mechanism of fungal resistance or tolerance in chronic wounds, and *Candida albicans* was highlighted as one of the principal fungal pathogens associated with these infections (6). Therefore, fungal growth in chronic wound and soft tissue specimens should be interpreted together with the clinical picture.

From the perspective of palliative care, in Özdemir's study evaluating various clinical specimens, the finding that *P. aeruginosa* ranked first among wound infection pathogens at 30% and that no vancomycin resistance was detected in enterococcal isolates is noteworthy (15). This finding suggests that both Gram-negative predominance and preserved susceptibility to selected agents in some Gram-positive organisms may coexist in palliative care patients (15,16). The contribution of the present study is that it provides additional data on the local microbiological distribution of wound, tissue, and abscess specimens in the palliative care service. However, the retrospective design, heterogeneity of the specimens, inability to separately analyze polymicrobial growth, and the lack of direct correlation with clinical outcomes are the main limitations of the study.

CONCLUSION

This study provides local data on the microorganisms isolated from wound, tissue, and abscess specimens sent from the palliative care service and their antimicrobial resistance patterns. When considered together with the literature, it appears that pathogen distribution in wound and soft tissue infections may vary between centers, whereas resistant Gram-negative bacteria are becoming increasingly prominent. Therefore, infection management in palliative care patients should be supported by proper sampling, careful exclusion of contamination, regular surveillance, and culture-based antimicrobial approaches. Larger studies with broader sample sizes and direct correlation with clinical outcomes will provide a stronger contribution to this field.

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EBFMC26-OP-48 · Serum 25-Hydroxyvitamin D Levels in Newly Diagnosed Myopic Children: A Potential Biomarker of Myopia Risk

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ETHICS STATEMENT

This study was approved by the Giresun Training and Research Hospital Clinical Research Ethics Committee (Committee Name: Giresun Eğitim ve Araştırma Hastanesi Klinik Araştırmalar Etik Kurulu; Date: 13.05.2026; Decision No: 13.05.2026/09).

ARTIFICIAL INTELLIGENCE STATEMENT

No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT

Introduction: Myopia, the most common refractive error worldwide, is becoming more common, especially in children. Recent research has looked at biochemical factors, like vitamin D, to see if they might be involved in the development of myopia. This study aimed to compare serum 25-hydroxyvitamin D levels between newly diagnosed myopic children and children without refractive errors.

Materials and Methods: In this retrospective cross-sectional study, 176 myopic children aged 4–18 years and 84 healthy controls were evaluated. All participants had available serum 25-hydroxyvitamin D measurements within the past year and no systemic or additional ophthalmological diseases. Patients receiving vitamin D supplementation were excluded. Age, sex, and serum 25-hydroxyvitamin D levels were recorded, and spherical equivalent values were analyzed in the myopia group. Statistical analyses were performed using the Mann–Whitney U test and Kruskal–Wallis test.

Results: There were no significant differences between groups in terms of age and sex ($p>0.05$). The myopia group exhibited significantly reduced serum 25-hydroxyvitamin D concentrations relative to the control group (13.64±4.86 vs. 24.72±8.13 ng/mL, $p<0.001$). Conversely, no statistically significant disparities in vitamin D levels were detected across the myopia subgroups, irrespective of severity ($p>0.05$).
Conclusion: In children recently diagnosed with myopia, serum 25-hydroxyvitamin D concentrations were notably diminished; however, these levels did not correlate with the severity of myopia. These observations imply that vitamin D could potentially function as a biomarker for myopia risk, although further extensive prospective investigations are necessary to confirm this association.

KEYWORDS
Myopia, Myopic Children, Vitamin D

INTRODUCTION

Myopia is a refractive error that impairs visual acuity and is the most common refractive disorder worldwide (1). It is estimated that approximately 2 billion people are affected by myopia, and this number is projected to double by 2050, affecting nearly half of the global population (1,2). In recent years, in addition to environmental factors, the role of biochemical markers in the development of myopia has been increasingly investigated, and the potential effects of vitamin D on scleral remodeling have attracted attention (3,4). Although several studies have reported an association between low vitamin D levels and myopia, there is also strong evidence suggesting that this relationship may be influenced by outdoor activity (5,6). The aim of this study was to compare serum 25-hydroxyvitamin D levels between myopic children and children without refractive errors.

MATERIALS AND METHODS

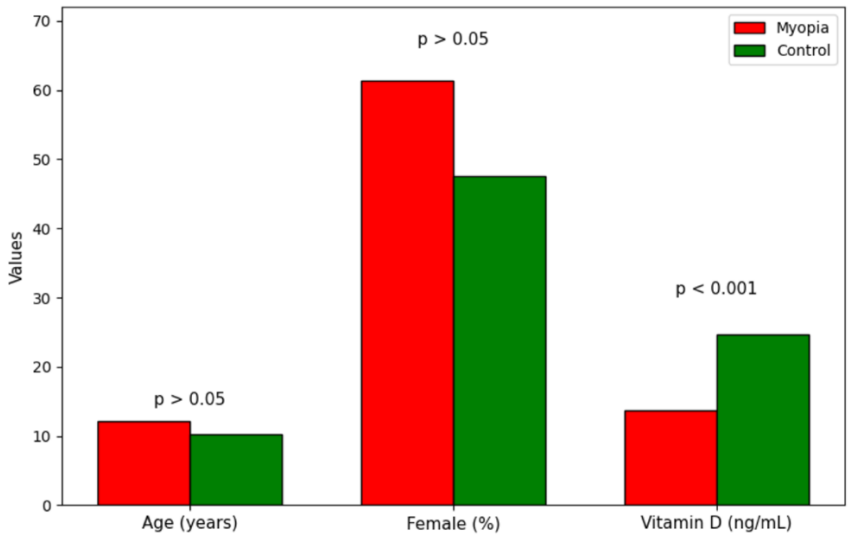
In this retrospective cross-sectional study, 176 myopic children aged 4–18 years who were prescribed corrective glasses and 84 healthy children without refractive errors were evaluated. All participants presented to our outpatient clinic in February 2026, had no systemic or additional ophthalmological diseases, and had available serum 25-hydroxyvitamin D measurements within the past year in the E-Nabız system. No additional tests were requested, and patients receiving vitamin D supplementation were excluded.
Age, sex, and serum 25-hydroxyvitamin D levels were recorded for all participants, and spherical equivalent values were additionally analyzed in the myopia group. Myopia subgroups were categorized as low (−0.50 to −2.75 D), moderate (−3.00 to −5.75 D), and high (≤ −6.00 D). Statistical analyses were performed using IBM SPSS version 25.0. The Mann–Whitney U test was used for comparisons between groups, while the Kruskal–Wallis test was used to evaluate differences among myopia subgroups.

RESULTS

In the baseline evaluation, the mean age was 12.10±3.68 years in the myopia group and 10.21±4.08 years in the control group. The myopia group consisted of 61.4% females (n=108) and 38.6% males (n=68), whereas the control group included 52.4% males (n=44) and 47.6% females (n=40). No statistically significant differences were found between the groups in terms of age and sex distribution.
Serum 25-hydroxyvitamin D levels were significantly lower in the myopia group compared to the control group (13.64±4.86 vs. 24.72±8.13 ng/mL, $p<0.001$). However, when we looked at subgroups based on the severity of myopia, we did not find any significant differences in age, sex, or serum 25-hydroxyvitamin D levels among the low (13.80±4.89), moderate (12.61±5.04), and high (16.02±2.41) myopia groups ($p>0.05$) (Figure 1).

Figure 1

Comparison of age, female proportion, and serum 25-hydroxyvitamin D levels between myopic (red) and control (green) groups



DISCUSSION

Myopia is a refractive condition in which the image is focused in front of the retina due to increased axial length or enhanced refractive power of the cornea and/or lens (1). It has become a major global public health concern, particularly due to its rapidly increasing prevalence in childhood (2). Established risk factors include genetic predisposition, increased screen exposure, reduced time spent outdoors, and early onset of myopia (7). As the degree of myopia increases, so does the risk of vision-threatening complications such as myopic macular degeneration, retinal detachment, and glaucoma. Additionally, corrective measures such as glasses and contact lenses impose a significant economic burden (1). Therefore, early detection and prevention of myopia progression are of great importance (8).

Serum 25-hydroxyvitamin D is derived from multiple sources; vitamin D_2 and D_3 obtained through diet and sunlight are hydroxylated in the liver to form 25-hydroxyvitamin D, which primarily regulates calcium–phosphate metabolism (4). In addition, it has been shown to play a role in dopamine metabolism (4). Experimental studies have demonstrated that vitamin D exerts neurotrophic effects on the dopaminergic system (3). Accordingly, it can be hypothesized that axial elongation triggered by low dopamine levels may be slowed in the presence of adequate vitamin D (3).

There is currently no consensus in the literature as to whether the association between vitamin D and myopia reflects a direct biological effect or an indirect marker of sunlight exposure (4,6). In either case, vitamin D appears to play a role in myopia development, which is also supported by our findings.

Another focus of our study was the relationship between serum 25-hydroxyvitamin D levels and myopia severity. Although some studies have reported a decrease in vitamin D levels with increasing myopia severity, no significant differences were observed among subgroups in our study (9).

CONCLUSION

In conclusion, serum 25-hydroxyvitamin D levels were found to be significantly lower in myopic children; however, no association was observed between vitamin D levels and myopia severity. These findings suggest that vitamin D may serve as a biochemical marker for myopia risk and could be included in routine evaluations in primary healthcare settings, allowing for early supplementation when necessary. Nevertheless, further large-scale, prospective, and laboratory-based studies are needed.

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EBFMC26-OP-49 · An Unusual Cause of Acute Diplopia: Isolated Lateral Rectus Myositis

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ETHICS STATEMENT
Written informed consent was obtained from the patient.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Orbital myositis is a rare idiopathic inflammatory condition affecting extraocular muscles and may present with acute diplopia and pain.

Case Presentation: A 56-year-old female with no known systemic or ophthalmologic history presented with a one-week history of diplopia in the left eye. Best-corrected visual acuity was 20/20 in both eyes. Pupillary reflexes were normal. The examination revealed slight tenderness and a small amount of warmth in the left eyelid, but no redness or swelling. Tests of eye movement showed limited movement to the left, with worsening double vision. The pressure inside the eye and the front and back parts of the eye appeared normal. An MRI of the orbit, done with contrast, showed only the left lateral rectus muscle was thickened and enhanced, which was consistent with orbital myositis. The patient was treated with intravenous corticosteroids, followed by a gradual decrease in the dose. The symptoms improved, and a follow-up MRI four weeks later showed the inflammation had decreased.
Conclusion: Isolated lateral rectus myositis should be considered in patients with sudden double vision and limited eye movement. Early diagnosis and quick treatment with corticosteroids usually lead to a good outcome.

KEYWORDS
Diplopia, Orbital Myositis, Extraocular Muscles

BACKGROUND

Orbital myositis is a rare subtype of idiopathic orbital inflammatory disease characterized by inflammation of one or more extraocular muscles. Orbital myositis usually appears suddenly, causing eye pain, double vision, and limited eye movement. Unlike thyroid eye disease, which affects the eyes, orbital myositis often involves the muscle tendon. This condition can also appear on one side of the face and show uneven symptoms (1,2). While any extraocular muscle may be implicated, the medial and inferior rectus muscles are more commonly affected. Isolated involvement of a single extraocular muscle, especially the lateral rectus, is comparatively rare (3). Early diagnosis is crucial, as timely corticosteroid treatment typically results in swift symptom alleviation and mitigates the risk of enduring complications (2,4).

CASE PRESENTATION

A 56-year-old female with no known systemic disease or prior ophthalmologic history presented to our clinic with a one-week history of diplopia in the left eye.

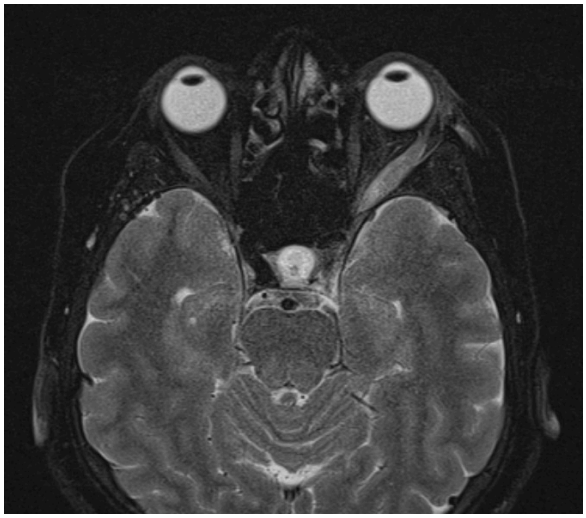
The patient was alert and cooperative. Best-corrected visual acuity was 20/20 in both eyes. Pupils were equal in size and reactive to both direct and indirect light. Examination revealed mild tenderness and minimal warmth of the left eyelid, without erythema or edema.

Ocular motility examination demonstrated limitation of abduction in the left eye, accompanied by increased diplopia in left gaze. Intraocular pressure was 12 mmHg in the right eye and 13 mmHg in the left eye. Slit-lamp biomicroscopy and fundus examination were unremarkable in both eyes.

Contrast-enhanced orbital magnetic resonance imaging (MRI) was performed to evaluate possible orbital inflammatory pathology. Imaging revealed isolated enlargement, increased signal intensity, and contrast enhancement of the left lateral rectus muscle. These findings were consistent with orbital myositis (Figure 1).

Figure 1

Contrast-enhanced orbital MRI revealed isolated left lateral rectus muscle involvement



The patient was treated with intravenous corticosteroids at a dose of 1 mg/kg/day for 10 days. Following clinical improvement, therapy was transitioned to oral corticosteroids with gradual tapering over four weeks. At follow-up, the patient's symptoms had completely resolved. Repeat orbital MRI at 4 weeks demonstrated regression of inflammation, and treatment was discontinued.

DISCUSSION

Orbital myositis, a localized inflammatory condition, is part of the group of idiopathic orbital inflammatory diseases. It can mimic several other orbital problems, such as thyroid eye disease, orbital cellulitis, and cancerous growths (1,5). Clinically, patients typically present with acute pain, diplopia, and limitation of extraocular movements. In contrast to thyroid-associated orbitopathy, orbital myositis frequently involves the myotendinous junction and is often unilateral, as seen in our patient (2,6). Magnetic resonance imaging is the modality of choice for diagnosis. Typical findings include enlargement of the affected extraocular muscle with increased signal intensity and contrast enhancement. Tendon involvement is an important distinguishing feature from thyroid orbitopathy, in which the tendon is usually spared (5,6). When the lateral rectus muscle is affected by itself, it's rare and can lead to diagnostic confusion, especially in patients who mainly have double vision instead of pain. In these cases, imaging is crucial for making a diagnosis (3). Systemic corticosteroids are still the first treatment option and usually lead to quick improvement for most patients. A positive response to corticosteroid treatment also supports the diagnosis of orbital myositis (2,4). In this case, the clinical symptoms and imaging results improved after corticosteroid treatment, which is consistent with previous reports.

CONCLUSION

Isolated lateral rectus myositis should be considered in the differential diagnosis of acute diplopia with extraocular movement restriction. Prompt imaging and corticosteroid therapy lead to excellent clinical outcomes.

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ETHICS STATEMENT
Prior to this study ethical approval was obtained from the Non-Interventional Clinical Research Ethics Committee of Yozgat Bozok University with approval number 2025-GOKAEK-2511_2025.06.04_469.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Chronic diseases are conditions that profoundly impact individuals' quality of life and health management. In this process, healthy and sustainable lifestyle practices, together with people's self-efficacy in health management, are crucial. Individuals with elevated self-efficacy are reported to be more successful in sustaining lifestyle modifications and controlling their health conditions (1,2).
Materials and Methods: The research was designed as a case-control study and was carried out in family medicine outpatient clinics at university hospitals throughout four provinces in Türkiye. Participants completed the Healthy and Sustainable Lifestyle Scale (LOHAS), the Self Rated Abilities for Health Practices (SRAHP), and the Short Form of the International Physical Activity Questionnaire (IPAQ-SF). Numerical data were analyzed using descriptive statistical methods, including standard deviation, mean, and frequency and percentage for categorical variables. The independent groups t-test, one-way ANOVA, and correlation analysis were employed to assess the association between variables.
Results: Of the participants, 49% (n=1623) have a chronic illness, and 57.4% (n=1904) are women. Of the participants, 48.7% (n=1613) indicated that their first point of contact when they have a health issue would be a hospital. Participants without chronic diseases have significantly higher LOHAS and SRAHP scores compared to those with chronic diseases ($p<0.001$; $p<0.001$, respectively). The physical activity levels of individuals without chronic diseases are statistically significantly higher than those with chronic diseases ($p=0.023$). It has been determined that individuals with chronic illnesses prefer professional health sources such as hospitals/universities more, while individuals without chronic illnesses use the internet more ($p<0.001$). It has been determined that the rate of individuals without chronic diseases using artificial intelligence in the healthcare field is significantly higher compared to those with chronic diseases ($p<0.001$). A significant negative relationship was found between age and the SRAHP score ($r=-0.156$, $p<0.001$). A significant positive relationship was found between the LOHAS and the SRAHP score ($r=0.637$, $p<0.001$).
Conclusion: The findings indicate that the presence of chronic illness negatively affects individuals' lifestyle, self-efficacy and physical activity levels. The dependence of individuals with chronic illnesses on professional sources for accessing health information indicates that these individuals exhibit less autonomy in using digital health tools. The strong relationship between self-efficacy and a healthy lifestyle indicates that an individual's belief in their ability to manage their own health directly fosters healthy behaviors. The reduction of self-efficacy with age indicates that older individuals require more support in managing their health.

KEYWORDS
Sustainability, Healthy Lifestyle, Self-Efficacy, Chronic Disease

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EBFMC26-OP-51 · The Relationship Between HALP and Modified Scores with Osteoporosis in Individuals Aged 80 and Over

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ETHICS STATEMENT
Ethics committee approval has been obtained. Approval date and number: April 6, 2026- 2026/26089

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Osteoporosis is a major public health problem associated with increased fracture risk, functional dependency, and mortality in older adults (1). Age-related inflammation, malnutrition, and hematological alterations contribute to its pathogenesis (2-4). In advanced age, hemoglobin reflects not only hematological status but also nutritional state and physiological reserve. Low hemoglobin levels are associated with protein-energy malnutrition, sarcopenia, and frailty, which may adversely affect bone health (5). Therefore, hemoglobin can serve as an indirect marker of nutritional and systemic health in elderly individuals (5). The HALP score (hemoglobin × albumin × lymphocyte / platelet) has emerged as an immuno-nutritional biomarker reflecting inflammation and nutritional status (6,7). However, its role in predicting osteoporosis remains unclear. Given the limitations of hemoglobin in very old populations, alternative components may be more informative. This study aimed to evaluate the association between HALP and osteoporosis in individuals aged ≥80 years and to assess modified scores using uric acid (UALP) or creatinine (KALP).
Materials and Methods: This cross-sectional study was conducted between February 1 and March 15, 2026, in a geriatric outpatient clinic. Seventy-one individuals aged ≥80 years with DEXA measurements and concurrent laboratory data were retrospectively included. Those with leukocyte counts >10000 were excluded. Osteoporosis was defined as a T-score≤-2.5. HALP, UALP, and KALP scores were calculated. Diagnostic

performance was assessed using ROC analysis, and logistic regression was adjusted for age, diabetes mellitus, and cardiac disease.
Results: The mean age was 86.5±4.6 years, and osteoporosis was present in 23 participants (32.4%). There were no significant differences in age or sex between groups ($p>0.05$). Diabetes mellitus was more prevalent in the non-osteoporotic group (45.8% vs. 13.0%; $p=0.007$). HALP, UALP, and KALP scores were all significantly lower in the osteoporosis group (35.7±14.6 vs. 48.0±17.4; $p=0.005$; 15.1±5.8 vs. 23.4±9.1; $p<0.001$; 22.4±8.5 vs. 35.8±15.8; $p<0.001$, respectively). ROC analysis showed that HALP (AUC=0.717; $p=0.003$), UALP (AUC=0.776; $p<0.001$), and KALP (AUC=0.791; $p<0.001$) significantly discriminated osteoporosis, with higher performance for UALP and KALP. In multivariable analysis, all scores were independently associated with osteoporosis (HALP: OR=0.95, $p=0.010$; UALP: OR=0.80, $p=0.001$; KALP: OR=0.90, $p=0.006$).
Conclusion: HALP, UALP, and KALP scores were associated with osteoporosis. Modified scores incorporating creatinine and uric acid showed better discriminative performance, suggesting that markers of metabolic reserve and muscle mass may be more appropriate than hemoglobin in very old populations. Larger prospective studies are needed.

KEYWORDS
Osteoporosis, HALP Score

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OP-52 · A Case of Paraplegia Associated with a Cervical Fracture Following a Cervical Vertebra Infection

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ETHICS STATEMENT
This study does not require ethics committee approval. Informed consent was obtained from the patient for the publication of this case report and any accompanying images.

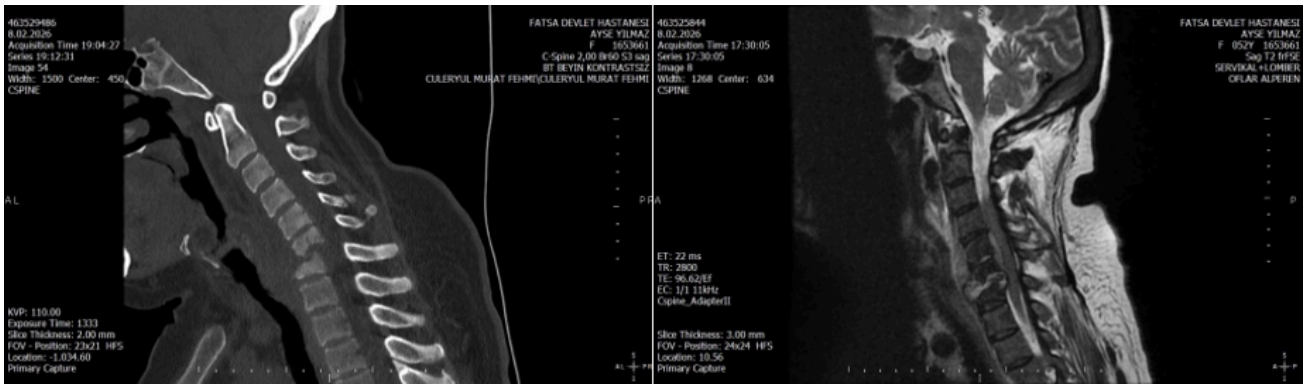
ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Bacterial infections of the spine are commonly seen, particularly in patients with underlying risk factors, and must always be considered in the differential diagnosis of patients presenting with neck, back or lower back pain (1,2,3). The aim of this study is to present the clinical, radiological and laboratory findings of a patient who was admitted to the emergency department with a diagnosis of paraplegia following a cervical fracture caused by an epidural abscess and osteomyelitis, and who was undergoing haemodialysis treatment for chronic kidney failure, and to inform our colleagues working in primary healthcare about this condition.
Materials and Methods: The pre- and post-operative radiological, clinical and laboratory findings of a 52-year-old female patient, who was admitted to the emergency department of Ordu University Training and Research Hospital with a diagnosis of cervical fracture complicated by paraplegia, were evaluated.
Results: She is undergoing haemodialysis following a diagnosis of chronic kidney failure. She is using insulin following a diagnosis of type 2 diabetes. She suddenly developed weakness in her legs and collapsed to the floor at home without any prior trauma.

Neurological examination
Alert, cooperative, oriented, with paraplegia below T1 and anaesthesia. The patient's spinal MRI and CT scans revealed an epidural abscess and osteomyelitis in the cervical region (Figure 1).

Figure 1

The patient's pre-operative CT and MRI scans



Laboratory findings

WBC: 9.750, CRP: 180, Hb: 8. Following epidural abscess drainage and C7-T1 discectomy via an anterior cervical approach, a PEEK cage and an anterior cervical plate were placed in the space (Figure 2).

Figure 2

The patient's post-operative CT scan



The patient's weakness in the legs resolved completely during the post-operative period (Figure 3).

Figure 3
The patient's post-operative appearance



Following completion of intravenous teicoplanin antibiotic treatment, the patient was switched to oral sulbactam and ampicillin and discharged with the necessary advice. Cultures of samples taken from the patient revealed growth of Staphylococcus aureus; the pathology report indicated osteomyelitis and an epidural abscess.
Conclusion: In patients presenting with neck, back or lower back pain, spinal infections should be included in the differential diagnosis if additional symptoms are present.

KEYWORDS
Spine, Infection, Paraplegia

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OP-53 · Neonatal Cephalic Pustulosis: A Case with Rapid Response to Topical Antifungal Therapy

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ETHICS STATEMENT

This report is a single case report and does not involve any experimental intervention, research protocol, or randomization. Therefore, approval from an ethics committee was not required. Written informed consent for the scientific presentation of the case and its publication in the congress proceedings was obtained from the patient or the patient's legal representative.
All personal information has been kept confidential, and no identifying information that could reveal the patient's identity has been included. The case report was prepared in accordance with the principles of the Declaration of Helsinki, with full respect for patient privacy and confidentiality.

ARTIFICIAL INTELLIGENCE STATEMENT

No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT

Introduction: Neonatal cephalic pustulosis (NCP) is a benign dermatosis characterized by erythematous papules and pustules localized to the face and scalp during the first weeks of life (1). Although it is often confused with neonatal acne, the absence of comedones and its association with Malassezia species are important distinguishing features (2). While the condition is usually self-limiting, some cases show a remarkable and rapid response to antifungal therapy.
Case Presentation: A term-born, otherwise healthy female infant with no known comorbidities was brought to our clinic at 5 weeks of age due to progressively increasing facial eruptions. According to the history, the lesions had started at approximately 3 weeks of age and had become more prominent over time. Initially presenting as mild erythema, they evolved into papulopustular lesions. At a previous medical visit, an intensive emollient for atopic skin (Atoderm Intensive Baume) had been recommended; however, the lesions became more pronounced following this treatment. On physical examination, numerous monomorphic papules

and pustules on an erythematous background were observed, predominantly involving the cheeks, forehead, and periorbital region. No comedones were present. Systemic examination was unremarkable. The patient was diagnosed with neonatal cephalic pustulosis based on clinical findings.
Treatment and Follow-up: Topical antifungal therapy with ketoconazole cream was initiated twice daily. By the second day of treatment, marked fading of the lesions, reduction in erythema, and cessation of new lesion development were observed. At the end of one week, the lesions had completely resolved without any residual scarring.
Discussion: Although neonatal cephalic pustulosis is generally a benign and self-limiting condition, it may cause considerable parental anxiety. Malassezia species are thought to play a role in its pathogenesis, and rapid response to antifungal therapy supports the diagnosis. Two important points were noted in this case: (1) Exacerbation after emollient use (occlusive moisturizers may promote Malassezia proliferation); (2) Dramatic response to antifungal treatment (clinical improvement within 48 hours is an important diagnostic clue).
Conclusion: Neonatal cephalic pustulosis is a benign condition that, when correctly recognized, can prevent unnecessary treatments. Short-term topical antifungal therapy may have both diagnostic and therapeutic value.

KEYWORDS
Neonatal Cephalic Pustulosis, Infant Acne, Malassezia, Topical Antifungal Treatment, Ketoconazole, Papulopustular Rash

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EBFMC26-OP-54 · Knowledge Levels of Family Medicine Residents Regarding Measurement Techniques for Pediatric Malnutrition

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ETHICS STATEMENT
Participation in this study was entirely voluntary. Electronic informed consent was obtained from all participants prior to completing the anonymous online questionnaire. No personally identifiable information was collected, and all data were anonymized and handled confidentially. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Childhood malnutrition remains a major public health issue affecting growth and development (1). Early detection is essential for preventing long-term adverse outcomes (2). Mid-Upper Arm Circumference (MUAC) is a practical, rapid, and cost-effective screening tool for the evaluation of pediatric malnutrition (3). Nevertheless, its effective implementation depends on the knowledge and awareness levels of healthcare professionals.
Aim: To evaluate the knowledge, attitudes, and practices of family medicine residents regarding pediatric malnutrition measurement techniques.
Methods: This web-based, cross-sectional, and descriptive study was conducted in March 2026 among 70 family medicine residents working in the provinces of Trabzon and Rize. Participation was based on voluntariness, and the web-based survey link was distributed through the social networks of the resident physicians. Data were collected using a structured questionnaire covering sociodemographic characteristics as well as clinical practices, knowledge, and attitudes regarding the assessment of malnutrition in children.

Results: Among participants, the median age was 29 years (IQR: 28-31) and 70% were female. While 32.9% of the participants reported having received prior training on pediatric nutrition/malnutrition, 78.6% stated that they perform pediatric follow-ups in primary care. However, only 34.3% were found to conduct regular malnutrition assessments. Regarding the methods used for malnutrition assessment, the most common parameters were weight (94.3%) and height (91.4%), followed by Body Mass Index (BMI) (67.1%) and weight-for-height ratio (61.4%). MUAC measurement was utilized by only 11 (15.7%) participants, and 24.3% of the residents reported that they had never heard of MUAC measurement before. An analysis of the responses to knowledge-based questions on MUAC revealed that 35.7% correctly identified the recommended age group (6-59 months). The rate of correctly identifying that the yellow color indicates moderate malnutrition was 84.3%, while 85.7% correctly identified the threshold for severe acute malnutrition (<11.5 cm). In terms of attitudes, 84.3% of the participants agreed that malnutrition assessment is essential in primary care. Agreement on the routine use of MUAC measurement was moderate (31.4% strongly agree, 25.7% agree). Only 17.1% of the participants considered their knowledge level to be sufficient, while 90% expressed a need for further training in malnutrition assessment. Additionally, 72.8% of the participants believed that the use of MUAC should be expanded in family health centers.
Conclusion: Family medicine residents demonstrated insufficient knowledge and low utilization of MUAC despite positive attitudes. These findings highlight a gap in training and clinical practice. Improving training through continuing medical education, promoting MUAC use in primary care, and implementing standardized screening protocols are recommended.

KEYWORDS
Pediatric Malnutrition, MUAC, Family Medicine Residents, Screening, Primary Care

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EBFMC26-OP-55 · Assessing the Diagnostic Value of Hematological and Biochemical Parameters for Hypothyroidism in Female Patients

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ETHICS STATEMENT
All data were handled in accordance with patient privacy and confidentiality principles.

ARTIFICIAL INTELLIGENCE STATEMENT
It was used for grammar checking and editing. No text was created.

ABSTRACT
Introduction: Hypothyroidism is a well-known endocrine disorder that predominantly affects women and is frequently associated with systemic immunological and hematological alterations. The neutrophil-to-lymphocyte ratio (NLR), white blood cell count (WBC), neutrophil count (NEU), and thyroid stimulating hormone (TSH) have emerged as potential markers of thyroid dysfunction (1,2). This study aimed to observe the diagnostic accuracy of these parameters in identifying hypothyroidism in female patients using receiver operating characteristic (ROC) curve analysis with usual blood parameters.
Methods: This one-month cross-sectional study included 299 female patients from a family medicine clinic. Patients were divided into two groups receiving medication (n=26) or not (n=273). ROC curve analysis was performed for age, NEU, TSH, NLR, and WBC. The area under the curve (AUC) with 95% confidence intervals (CI) was calculated, cut-off values were determined and their sensitivity and specificity values were calculated.
Results: Age demonstrated the highest discriminatory performance with an AUC of 0.724 (95% CI: 0.646-0.794) and an optimal cut-off of ≥50 years, yielding a sensitivity of 61.5% and a specificity of 66.3%. NEU achieved an AUC of 0.668 (95% CI: 0.556-0.776) with a cut-off of ≤3.33 $\times 10^3/\mu L$, yielding a sensitivity of 61.5% and a specificity of 61.5%. TSH yielded an AUC of 0.666 (95% CI: 0.543-0.780) at a cut-off of ≥2.16

μIU/mL, yielding a sensitivity of 65.4% and a specificity of 63.4%. NLR showed an AUC of 0.641 (95% CI: 0.526-0.745) with a cut-off of ≤1.60, yielding a sensitivity of 57.7% and a specificity of 59.3%, while WBC had an AUC of 0.639 (95% CI: 0.525-0.750) at a cutoff of $\leq 6.11 \times 10^3/\mu L$, yielding a sensitivity of 65.4% and a specificity of 64.5%. All five parameters demonstrated statistically significant, albeit moderate, discriminatory ability.
Conclusion: Age, NEU, TSH, NLR, and WBC all exhibit moderate diagnostic performance in distinguishing women on thyroid medication from those not on thyroid medication in a primary care setting. NLR, as a simple and cost-effective inflammatory marker, demonstrated meaningful discriminatory value comparable to TSH at balanced sensitivity/specificity thresholds. These findings suggest that routine hematological indices may serve as adjunctive screening tools for identifying women on thyroid medication, warranting further investigation in larger prospective cohorts.

KEYWORDS
Hypothyroidism, NLR, Neutrophil-to-Lymphocyte Ratio, TSH, WBC, Diagnostic Accuracy

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OP-56 · The Relationship Between Advanced T Stage and Metastasis in Head and Neck-Sited Malignant Melanomas: A Five-Year Single-Centre Retrospective Analysis

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Ethical approval for this study was obtained from the Non-Interventional Clinical Research Ethics Committee of University of Health Sciences, Dr. Abdurrahman Yurtaslan Ankara Oncology Training and Research Hospital (Decision No: 2025-01/08).

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Malignant melanoma (MM) is acknowledged as a very aggressive cancer originating from melanocytes, characterized by significant metastatic potential (1). In the last thirty years, the number of people with melanoma has increased significantly over the world, and it has become a major public health problem, especially for people with light skin (2). Current epidemiological data show that there are more than 300,000 new instances of melanoma each year around the world, and the death rate is especially high in the latter stages of the disease (3).
Material and Methods: A retrospective assessment was conducted on the data of 14 patients diagnosed with malignant melanoma in the head and neck region from 2019 to 2023. We looked at the person's age, gender, histological subtype, TNM stage, sentinel lymph node biopsy (SLNB) status, technique of surgery and reconstruction, and whether or not they had distant metastases.
Results: The mean age of the patients was 73.9±13.2 years, and 64.3% were male. Nodular melanoma was the most common histological subtype (50.0%), followed by mucosal melanoma (28.6%). The majority of patients (64.3%) presented with advanced-stage disease (T4). During follow-up, distant metastasis developed in 6

patients (42.9%), with the brain being the most frequent metastatic site (28.6%). Metastasis occurred in 66.7% of patients with T4 stage disease, whereas no metastasis was observed in patients with Tis-T3 stages (p=0.031). Advanced T stage was associated with a markedly increased risk of metastasis (OR=20.43; 95% CI: 0.86-88.00). Although not statistically significant, patients with mucosal melanoma demonstrated a higher metastasis rate (75%) compared to other subtypes (OR=7.00; 95% CI: 0.56-87.50; p=0.222). The retrospective design and the relatively small sample size increase the risk of selection bias and limit the generalisability of the findings.
Conclusions: The advanced stage rate and metastatic potential are high in head and neck malignant melanomas. Stage T4, in particular, is a major risk factor for the development of metastases. The high tendency for metastasis in the mucosal subtype is noteworthy. The findings indicate the need to improve early diagnosis methods and keep a close eye on high-risk subgroups.

KEYWORDS
Malignant Melanoma, Head and Neck, Metastasis

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EBFMC26-OP-57 · You Are the Cure: Strengthening Syphilis Surveillance and Continuity of Care through Family Medicine Collaboration in North Macedonia

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ABSTRACT
Introduction: Sexually transmitted infections (STIs) are re-emerging globally, with syphilis serving as an important marker of human immunodeficiency virus (HIV) transmission risk. In primary care, early detection, continuity of care and sustained patient engagement are essential for effective STI control. Recent public health initiatives in North Macedonia, including the national pre-exposure prophylaxis (PrEP) program for HIV, launched in 2021, have expanded access to sexual health services, including testing and counselling. This study aimed to assess trends in reported syphilis incidence over time and explore their implications for family medicine, particularly in relation to screening practices, surveillance, and continuity of care.
Materials and methods: A retrospective comparative study was conducted using national surveillance data from the Annual Communicable Disease Reports of the Institute of Public Health of North Macedonia. Reported syphilis cases were analysed across two unequal periods: a 10-year baseline (2012-2021) providing a stable estimation of pre-PrEP incidence and a 3-year follow-up (2022-2024) reflecting the early phase of PrEP implementation. Annual incidence per 100,000 population was calculated to standardize comparisons. Differences between periods were assessed using incidence rate ratios (IRRs) with 95% confidence intervals and chi-square test. PrEP was not introduced as study intervention but was considered a contextual public health program that may have influenced surveillance intensity, testing uptake, case detection, and reporting practices, processes often initiated or coordinated within primary care.

Results: Between 2012 and 2021, 32 syphilis cases were reported nationally, averaging 3.2 cases/year, with an annual incidence of 0.18 per 100,000 population (95% CI: 0.12-0.25). During PrEP implementation (2022-2024), 136 cases were reported, averaging 45 cases/year, with annual incidence of 2.5 per 100,000 (95% CI: 2.07-2.99). This represents an approximately 14-fold increase in annual incidence compared with the preceding decade (IRR: 14; 95% CI: 9.4-20.5; chi-square = 87.4, $p<0.001$), indicating a significant statistical difference.
Conclusion: The substantial increase in reported syphilis incidence, following the implementation of the PrEP program, likely reflects improved case detection and increased screening uptake rather than a true increase in transmission alone. These findings highlight the central role of family physicians in opportunistic screening, risk assessment, patient education, and longitudinal follow-up. Strengthening primary care capacity, enhancing collaboration between family medicine and public health, and integrating STI and HIV services are essential to ensure continuity of care and sustain prevention efforts. Despite limitations, including unequal observation periods and small baseline numbers, the results underscore the importance of coordinated, patient-centered approaches in addressing evolving STI trends.

KEYWORDS
Syphilis, Sexually Transmitted Infections, Family Medicine, Primary Health Care, Continuity of Care

COI ***& Other Declarations:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****. No artificial intelligence tools were used in the preparation, writing, or revision of this study. This study does not require ethics committee approval.*

EBFMC26-OP-58 · When First-Line Therapy Fails: Challenges in Helicobacter pylori Eradication in Primary Care

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ABSTRACT

Introduction: Antimicrobial resistance, particularly to clarithromycin, has emerged as a major challenge in achieving successful first-line Helicobacter pylori eradication worldwide. Treatment failures can increase morbidity and complicate care in primary settings. Family physicians must navigate guideline recommendations, local antibiotic availability, and patient-specific factors to optimize eradication outcomes while ensuring continuity of care.

Case presentation: A 61-year-old patient presented to primary care with dyspepsia, epigastric pain, bloating, nausea, and early satiety. Initial evaluation included laboratory testing and H. pylori serology, which showed elevated IgG (5.12; positive >1.0). Based on available local resources and guideline recommendations, empirical first-line therapy was initiated with amoxicillin 1 g twice daily, clarithromycin 500 mg twice daily, and rabeprazole 20 mg twice daily for 14 days, followed by ongoing proton pump inhibitor (PPI) therapy once daily for one month. Three months later, eradication was assessed using a urea breath test, which remained positive (≥4), indicating treatment failure. Abdominal ultrasonography was unremarkable and upper gastrointestinal endoscopy revealed chronic erosive antral gastritis.

Management and outcome: In accordance with international guidelines and considering local antibiotic limitations, second-line therapy consisted of a levofloxacin-based regimen: rabeprazole 20 mg twice daily, amoxicillin 1 g twice daily and levofloxacin 500 mg once daily, supplemented with bismuth for 14 days. PPI

therapy was continued throughout the course. The patient was counseled on adherence, potential side effects, and the importance of follow-up testing to confirm eradication.
Conclusion: This case highlights the challenges primary care clinicians face in H. pylori management when first-line therapy fails. Lack of local antimicrobial resistance data and limited access to certain antibiotics, such as tetracycline, may necessitate deviations from standard regimens. Levofloxacin or bismuth-based second-line regimens remain effective alternatives. Family physicians play a pivotal role in early detection, individualized treatment selection, patient education and coordination of follow-up testing, reflecting interdisciplinary collaboration. Confirmation of eradication with noninvasive testing after therapy is essential to ensure treatment success and prevent ongoing gastrointestinal morbidity. Strengthening awareness, collaboration and access to guideline-based therapies in primary care is key to improving patient outcomes in H. pylori management.

KEYWORDS
Helicobacter pylori, Antimicrobial Resistance, Family Medicine, Primary Health Care

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EBFMC26-OP-59 · Prognostic Factors and Survival Outcomes in Cancer Patients: A Real-World Retrospective Study

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ETHICS STATEMENT
The study was conducted in accordance with the Declaration of Helsinki and approved by the Non-Interventional Scientific Research Ethics Committee of the Ordu University Faculty of Medicine (Approval No: 2025/369; date: 31 October 2025).

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Cancer epidemiology and outcomes vary across populations, and real-world evidence is essential for regional planning and prognostic assessment beyond clinical trial settings (1,2). Although fundamental clinical parameters, such as age, sex, performance status, and tumor stage, continue to play a pivotal role in prognosis (3-5), there remains a lack of comprehensive data from varied real-world clinical practice settings. Therefore, this study evaluated the association of these clinical parameters with overall survival (OS) in a large real-world oncology cohort.
Materials and Methods: This single-center retrospective study included adult patients (aged ≥18 years) with a primary cancer diagnosis who were treated at the Medical Oncology Clinic of Ordu University Training and Research Hospital. Overall survival (OS), defined as the time from diagnosis to death or last follow-up, was estimated using the Kaplan-Meier method and compared between groups using the log-rank test (two-sided $p < 0.05$). To assess the independent association between clinical variables and survival outcomes, a multivariate Cox proportional hazards regression model was applied.
Results: We included 1055 patients (mean age 62.7±12.9 years; 54.8% male). Lung (23.4%), breast (20.9%), and colorectal cancers (12.9%) were the most common malignancies. Lung cancer predominated among men (38.6%), whereas breast cancer was most frequent among women (46.3%). Most patients presented with advanced disease (Stage III-IV, 72.6%) and an Eastern Cooperative Oncology Group (ECOG) performance status ≥2 (61.6%). Overall survival differed significantly by age (<65 vs. ≥65 years: 49.4 months, 95% confidence interval [CI]: 39.5-59.3 vs. 20.4 months, 95% CI: 16.8-24.0), sex (female vs. male: 73.4 months,

95% CI: 54.7-92.1 vs. 18.2 months, 95% CI: 15.3-21.1), ECOG performance status (<2: not reached vs. ≥2: 16.5 months, 95% CI: 14.7-18.4), and stage at diagnosis, with progressively shorter survival observed from Stage I to Stage IV (all p<0.001). In a multivariate Cox regression analysis, age ≥65 years (hazard ratio [HR]: 1.27, 95% CI: 1.08-1.50), ECOG ≥2 (HR: 4.21, 95% CI: 3.32-5.34), and advanced stage at diagnosis (stage IV vs. stage I, HR: 8.53, 95% CI: 5.62-12.94) were significantly associated with worse overall survival (all p<0.01).
Conclusion: In this real-world, single-center cohort study, age, sex, ECOG performance status, and tumor stage at diagnosis were key determinants of OS across a large, heterogeneous cancer population. These readily available clinical parameters provide meaningful prognostic information and support risk stratification in routine oncology practice (1,6).

KEYWORDS
Cancer Epidemiology, Real-World Evidence, Overall Survival, Age, Sex, Performance Status, Tumor Stage

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EBFMC26-OP-60 · Alpha-gal Syndrome in an Endemic Black Sea Region: A Single-Center Clinical and Epidemiological Study from Ordu, Türkiye

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ETHICS STATEMENT
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ARTIFICIAL INTELLIGENCE STATEMENT
Generative AI tools were used solely for language editing (grammar, spelling, and clarity). The authors reviewed and verified all content.

ABSTRACT
Introduction: Alpha-gal syndrome (AGS) is an emerging form of food allergy associated with tick exposure and is classically characterized by delayed allergic reactions after mammalian meat consumption (1-3). However, increasing evidence suggests variability in symptom onset. Data from endemic regions remain limited.
Materials and Methods: This single-center retrospective study included 20 patients diagnosed with AGS between January 2025 and January 2026 at a tertiary allergy clinic in Ordu, Türkiye. Diagnosis was based on a compatible clinical history and positive alpha-gal-specific IgE. Demographic, clinical, and laboratory data were obtained from electronic medical records. Patients were categorized according to symptom onset as early (≤3 hours) or delayed (>3 hours). Delayed reactions (>3 hours) were observed in 65% of patients, whereas early reactions (≤3 hours) occurred in 35%. Very early reactions (<1 hour) were identified in 20% of cases. Serum tryptase levels were significantly higher in patients with delayed reactions compared to those with early reactions (p=0.025). A similar difference was observed when patients with very early reactions (<1 hour) were compared with the remaining patients (p=0.037). Gastrointestinal symptoms were significantly more frequent in patients with delayed reactions than in those with early reactions (92.3% vs 42.9%, p=0.031).
Conclusion: AGS demonstrates heterogeneous clinical presentations in endemic regions. Although delayed reactions predominate, a substantial proportion of patients exhibit early and very early reactions. Among the evaluated parameters, serum tryptase was the only biomarker associated with symptom onset timing in this cohort.

KEYWORDS
Alpha-gal Syndrome, Tick Exposure, Delayed Hypersensitivity, Gastrointestinal Symptoms, Tryptase

INTRODUCTION

Alpha-gal syndrome (AGS) is an emerging form of food allergy associated with tick exposure and is classically characterized by delayed allergic reactions following mammalian meat consumption (1-3). However, increasing evidence suggests considerable variability in symptom onset. Data from endemic regions remain limited, particularly regarding clinical heterogeneity and factors associated with reaction timing.

MATERIALS AND METHODS

This single-center retrospective study was conducted at a tertiary allergy clinic between January 2025 and January 2026. Patients aged ≥18 years with a clinical history compatible with alpha-gal syndrome and positive alpha-gal-specific IgE were included. Patients with incomplete clinical data or alternative diagnoses explaining symptoms were excluded.

Data were obtained through retrospective review of electronic medical records. The following variables were recorded: demographic characteristics, clinical features (including symptom type and presence of anaphylaxis), history of tick exposure, and laboratory parameters (total IgE, alpha-gal-specific IgE, eosinophil count, serum tryptase, and vitamin B12 levels).

Patients were categorized according to symptom onset after mammalian meat ingestion as early (≤3 hours) or delayed (>3 hours). Reactions occurring within <1 hour were additionally defined as very early reactions.

Statistical analyses were performed using SPSS software. Continuous variables were expressed as mean ± standard deviation or median (interquartile range), and categorical variables as number (percentage). Group comparisons were conducted using the Mann–Whitney U test for continuous variables and chi-square or Fisher's exact test for categorical variables. A p-value <0.05 was considered statistically significant.

RESULTS

The baseline demographic and clinical characteristics of the study population are summarized in Table 1. Clinical features are presented in Table 2. A total of 20 patients were included (mean age 31.7±11.4 years; 50% female). The majority of patients had a history of anaphylaxis (90%), and gastrointestinal and respiratory symptoms were common (75% and 90%, respectively).

Table 1

Baseline demographic and clinical characteristics of the study population (n=20)

Variable	Value
Sex (Female/Male), n (%)	10 (50) / 10 (50)
Age, years	31.7 ± 11.4
Body mass index (kg/m²)	27.1 ± 5.4
Alpha-gal-specific IgE (kU/L)	5.6 (IQR: 14.6)
Total IgE (kU/L)	194 (IQR: 299)
Eosinophil count (cells/µL)	105 (IQR: 200)
Serum tryptase (ng/mL)	3.1 ± 1.3
Age at first tick exposure, years	7.2 ± 3.6
Total number of tick exposures	20 (IQR: 40)
Age at first reaction, years	9.2 ± 6.5
Diagnostic delay, years	20.6 ± 11.0

Data are presented as mean ± standard deviation or median (interquartile range, IQR).

Table 2

Clinical characteristics and symptom profile of patients with alpha-gal syndrome (n=20)

Variable	n (%)
History of anaphylaxis	18 (90)
Gastrointestinal symptoms	15 (75)
Respiratory symptoms	18 (90)
Syncope	4 (20)
Initial reaction manifestations	
Pruritus	20 (100)
Urticaria	15 (75)
Gastrointestinal symptoms	5 (25)
Anaphylaxis	3 (15)

Data are presented as number (percentage).

Delayed reactions (>3 hours) were observed in 65% of patients, whereas early reactions (≤3 hours) occurred in 35%. Very early reactions (<1 hour) were identified in 20% of cases.

No significant differences were observed between early and delayed reaction groups in terms of age, sex, body mass index, tick exposure history, total IgE, alpha-gal-specific IgE, alpha-gal/total IgE ratio, eosinophil count, or vitamin B12 levels (all $p>0.05$).

Serum tryptase levels were significantly higher in patients with delayed reactions compared to those with early reactions ($p=0.025$). Similarly, in the comparison of very early (<1 hour) versus later reactions, tryptase levels remained significantly different ($p=0.037$), while no other laboratory parameters showed a significant association.

Gastrointestinal symptoms were significantly more frequent in patients with delayed reactions than in those with early reactions (92.3% vs 42.9%, $p=0.031$).

Exploratory subgroup analyses based on clinical phenotypes (including anaphylaxis, respiratory symptoms, syncope, and family history) did not demonstrate consistent or clinically meaningful associations between laboratory parameters and disease manifestations.

DISCUSSION

In this study conducted in an endemic region, AGS demonstrated marked heterogeneity in symptom onset, with a substantial proportion of patients presenting with early and very early reactions in addition to the classical delayed pattern.

The most notable finding was the consistent association between serum tryptase levels and reaction timing. Patients with delayed reactions had significantly higher tryptase levels, and this relationship persisted in analyses focusing on very early reactions. In contrast, conventional immunological markers such as total IgE, alpha-gal-specific IgE, and eosinophil counts were not associated with symptom timing.

These findings suggest that mechanisms beyond classical IgE-mediated pathways may contribute to the variability in clinical presentation, highlighting the potential role of alternative immunological or non-IgE-mediated pathways in AGS. The lack of association between alpha-gal-specific IgE levels and clinical phenotypes further supports the complexity of disease expression.

Although multiple exploratory subgroup analyses were performed, most did not yield consistent associations, likely due to the limited sample size. Therefore, these findings should be interpreted cautiously.

CONCLUSION

AGS shows heterogeneous clinical presentations in endemic regions. Although delayed reactions remain predominant, early and very early reactions are not uncommon. Serum tryptase was the only parameter consistently associated with symptom onset timing in this cohort.

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EBFMC26-OP-61 · Case Report: Post-vaccination Parotitis Following MMR Immunization in a Healthcare Worker

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ETHICS STATEMENT
Informed written consent was obtained from the patient for publication.

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No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Mumps is a viral disease caused by a paramyxovirus, characterized by pain and swelling in the parotid and other salivary glands (1). Its incidence has significantly decreased following vaccination. The measles-mumps-rubella (MMR) vaccine, which contains live attenuated mumps virus, is an effective and safe vaccine (2). However, rarely, serious adverse side effects such as parotitis, orchitis, aseptic meningitis, and hearing loss can occur after vaccination (3). Healthcare workers are among the groups at high risk of exposure to infectious diseases (4). The Ministry of Health recommends that healthcare workers without evidence of immunity receive two doses of the MMR vaccine at least 4 weeks apart (5). This case report presents a case of mumps following MMR vaccination in a healthcare worker.
Case Presentation: A 27-year-old woman presented with painful swelling in the left preauricular region. Her history revealed mumps during childhood and MMR vaccination two weeks prior to presentation as part of healthcare worker immunization. Initial examination revealed a tender swelling of approximately 1 cm, and nonsteroidal anti-inflammatory therapy was started. Three days later, the swelling extended to the left parotid and neck region, accompanied by subfebrile fever, malaise, and arthralgia. Laboratory tests showed normal leukocyte and CRP levels, with elevated serum amylase. Mumps serology was positive for IgM and IgG. Ultrasonography revealed enlargement of the parotid gland with heterogeneous parenchymal appearance, consistent with an infectious process. Symptomatic treatment, rest, and isolation were recommended.

Symptoms regressed within approximately 10 days; persistent swelling prompted short-term low-dose corticosteroid therapy, resulting in complete clinical recovery. No complications or secondary transmission were observed.
Conclusion: This case highlights the importance of patient follow-up for rare adverse events after vaccination. Post-vaccination parotitis is rare but self-limiting, and can be safely managed with symptomatic treatment and isolation.

KEYWORDS
Mumps, MMR Vaccine, Unwanted Side Effect, Parotitis

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OP-62 · Correlation of Severe Stenoses Detected via Coronary Computed Tomography Angiography with Invasive Coronary Angiography: A Vessel-Based Diagnostic Accuracy Study

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ETHICS STATEMENT
This study was approved by Ordu University Ethics Committee.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Coronary computed tomography angiography (CCTA) has emerged as a first-line non-invasive imaging modality for the diagnostic evaluation of suspected coronary artery disease (CAD). By providing high spatial resolution and an excellent negative predictive value, CCTA serves as a highly effective "gatekeeper" to reduce unnecessary invasive coronary angiography (ICA) (1,2). Despite its high sensitivity, the diagnostic specificity and positive predictive value (PPV) of CCTA remain vulnerable to the overestimation of stenosis severity. This overestimation is primarily driven by heavy coronary calcification, which generates blooming and beam-hardening artifacts that obscure the true luminal diameter (3,4). Consequently, in patients with severe calcification, CCTA often yields false-positive results, necessitating precise anatomical correlation between CCTA-derived severe stenoses (>70%) and the reference standard, ICA. Variations in diagnostic accuracy among the major coronary vessels due to differing calcification burdens can heavily influence downstream clinical decision-making. Therefore, this study aims to investigate the vessel-specific diagnostic performance of CCTA in detecting severe stenoses and to assess its comparative accuracy against ICA.
Methods: A total of 695 patients were initially screened. After excluding patients with poor image quality (n=6), previous coronary artery bypass grafting (n=8), and coronary stents (n=4), 677 patients (2,708 arterial segments) were included in the final analysis. The left main coronary artery (LMCA), left anterior descending artery (LAD), circumflex artery (CX), and right coronary artery (RCA) were evaluated using CCTA. Findings of severe stenosis (>70%) were compared with ICA, which served as the reference standard.

Results: CCTA identified severe stenosis in 44 vessels (1.62%) across 32 patients (LAD: 25, RCA: 13, CX: 5, LMCA: 1). Two vessels were excluded from the final correlation analysis due to unavailable ICA data. Among the 42 validated stenoses, 37 (88.1%) were confirmed by ICA, while 5 vessels (3 LAD, 1 RCA, 1 CX) were classified as moderate stenosis (50–69%) by ICA. The overall positive predictive value (PPV) was calculated as 88.1%. Vessel-based PPVs were 87.0% for the LAD, 92.3% for the RCA, 80.0% for the CX, and 100% for the LMCA.
Conclusion: CCTA demonstrates a high correlation with ICA in detecting severe coronary stenoses. The high PPVs, particularly in the LMCA and RCA segments, highlight the reliability of CCTA in clinical decision-making. The concentration of false-positive results within the LAD segment suggests that calcification-related blooming artifacts remain a primary factor in the overestimation of stenosis severity, underscoring the need for careful evaluation of heavily calcified segments.

KEYWORDS
Coronary Computed Tomography Angiography, Invasive Coronary Angiography, Severe Stenosis, Diagnostic Accuracy, Positive Predictive Value

INTRODUCTION

Coronary computed tomography angiography (CCTA) has rapidly emerged and solidified its role as a first-line, non-invasive imaging modality for the diagnostic evaluation of patients with suspected stable coronary artery disease (CAD). By providing exceptional spatial resolution and an inherently high negative predictive value, CCTA serves as a highly effective "gatekeeper" in the diagnostic pathway, significantly reducing the burden and risks associated with unnecessary invasive coronary angiography (ICA) (1,2). Current guidelines increasingly favor CCTA for patients with a low-to-intermediate pre-test probability of CAD (3).

Despite its excellent sensitivity, the diagnostic specificity and positive predictive value (PPV) of CCTA remain vulnerable to the overestimation of stenosis severity. This overestimation is primarily driven by the presence of heavy coronary calcification. High-density calcified plaques generate blooming and beam-hardening artifacts, which artificially expand the apparent volume of the calcium and obscure the true contrast-filled luminal diameter. Consequently, in patients with severe calcific burden, CCTA often yields false-positive results for severe stenosis, necessitating precise anatomical correlation between CCTA-derived severe stenoses (>70%) and the reference standard, ICA (4,5).

Variations in diagnostic accuracy among the major coronary vessels exist, often due to differing anatomical courses, motion artifacts, and varying calcification burdens, which can heavily influence downstream clinical decision-making. Therefore, this study aims to investigate the vessel-specific diagnostic performance of CCTA in detecting severe stenoses and to assess its comparative accuracy against ICA.

MATERIALS AND METHODS

Study Population

A total of 695 patients who underwent CCTA at our hospital between December 2024 and March 2026 were included in the study. Patients were excluded based on the following criteria: poor image quality precluding diagnostic evaluation (n=6), a history of previous coronary artery bypass grafting (CABG) (n=8), and the presence of previously deployed coronary stents (n=4). Following these exclusions, 677 patients, encompassing a total of 2,708 distinct major arterial segments, were included in the final analysis.

Image Acquisition and Analysis

The CCTA examinations were performed on a 160-slice CT scanner (Aquilion Lightning SP, Canon Medical Systems, Otawara, Japan) according to our institution’s protocol. The images were evaluated by a radiologist (S.K.) with five years of experience in cardiovascular radiology. Image analysis was performed by evaluating the major coronary arteries: the left main coronary artery (LMCA), left anterior descending artery (LAD), circumflex artery (CX), and right coronary artery (RCA). A narrowing of the vessel lumen between 1-24% was classified as minimal, 25-49% as mild, 50-69% as moderate, and 70% or more as severe.

Reference Standard and Correlation

Findings of severe stenosis (>70%) identified on CCTA were subsequently compared with ICA, which served as the gold standard reference modality. Concordance was defined as an ICA confirmation of >70% stenosis

in the corresponding vessel segment. Discordance (overestimation by CCTA) was recorded when ICA revealed a non-severe stenosis in a segment categorized as severely stenotic by CCTA.

RESULTS

Of the 677 patients analyzed, CCTA identified severe stenosis (>70%) in 44 individual vessels (representing 1.62% of the total 2,708 analyzed segments) across 32 patients. The anatomical distribution of these CCTA-detected severe stenoses was as follows: LAD: 25 vessels, RCA: 13 vessels, CX: 5 vessels and LMCA: 1 vessel.

Two vessels initially flagged by CCTA were excluded from the final correlation analysis due to the unavailability of corresponding ICA data. Both vessels that showed severe stenosis in the CCTA but for which ICA data was unavailable were LAD vessels. This resulted in a total of 42 validated severe stenoses available for head-to-head comparison.

Among these 42 lesions, 37 (88.1%) were definitively confirmed as severe stenoses (>70%) by ICA. The remaining 5 vessels were classified as having moderate stenosis (50–69%) by ICA, representing an overestimation by CCTA. The anatomical distribution of these 5 false-positive results was concentrated primarily in the anterior circulation: 3 in the LAD, 1 in the RCA, and 1 in the CX. The three false-positive LAD vessels had coronary calcium scores of 798, 405, and 0. The false-positive CX had a coronary calcium score of 405, and the RCA had a coronary calcium score of 455.

The overall positive predictive value (PPV) for CCTA in detecting severe stenosis was calculated as 88.1% (95% CI: 78.3% – 97.9%). When stratified by specific vessels, the PPVs demonstrated notable anatomical variation: LMCA: 100% (1/1 confirmed), RCA: 92.3% (12/13 confirmed), LAD: 87.0% (20/23 confirmed) and CX: 80% (4/5 confirmed).

DISCUSSION

The results of this study reaffirm the robust diagnostic capabilities of CCTA, demonstrating a high overall correlation (88.1% PPV) with ICA in the detection of severe coronary stenoses. The particularly high PPVs observed in the LMCA (100%) and RCA (92.3%) segments highlight the reliability of CCTA in accurately guiding clinical decision-making and confidently triaging patients for invasive procedures when lesions are detected in these territories (6).

However, the analysis of discordant results reveals critical vessel-specific limitations. All 5 cases of overestimation (false positives) by CCTA corresponded to moderate (50–69%) stenoses on ICA. Notably, the majority of these false positives (3 out of 5) were localized within the LAD. The LAD is frequently subject to complex anatomical variants, significant cardiac motion, and, crucially, a higher predilection for dense, eccentric calcifications.

These findings suggest that calcification-related blooming and beam-hardening artifacts remain the primary factors driving the overestimation of stenosis severity in CCTA. When dense calcium is present, the apparent volume of the plaque obscures the true luminal boundary, leading to conservative, false-positive reads(4, 5). This effect appears most pronounced in the LAD and CX, where spatial resolution limits are tested by continuous cardiac motion and smaller distal vessel calibers compared to the proximal RCA and LMCA.

This data emphasizes a critical clinical caveat: while CCTA is an excellent gatekeeper, radiologists and cardiologists must exercise careful, critical evaluation of heavily calcified segments, particularly within the LAD. In cases of intermediate-to-severe calcific lesions where the lumen cannot be clearly delineated, functional testing or direct progression to ICA may be required to prevent mismanagement based on artifactual overestimation.

Despite its clinical relevance, this study has several limitations that should be acknowledged. First, the study was designed as a retrospective, single-center investigation. Second, the evaluation of CCTA images was performed by a single experienced radiologist (S.K.). Consequently, interobserver agreement could not be assessed, which is a common metric in diagnostic accuracy studies to ensure consistency across different readers. Third, verification bias is an inherent limitation of this study. To maintain ethical standards and minimize patient risk, ICA was performed only in patients with severe stenosis findings on CCTA. This selective verification precludes the calculation of sensitivity and specificity, as the true disease status of patients with negative or mild CCTA findings remains unknown. Furthermore, while certain demographic data were missing for some patients, the primary focus remained on the radiological correlation. Finally, although we attributed the majority of false-positive results to high coronary calcium scores, we did not

perform a detailed, individual plaque characterization (e.g., assessing positive remodelling or low-attenuation plaque features) for all segments. However, the high calcium burden (typically >400 Agatston units) in these false-positive cases strongly suggests that blooming and beam-hardening artifacts were the dominant drivers of stenosis overestimation in our cohort.

CONCLUSION

CCTA demonstrates a predictably high correlation with ICA in detecting severe coronary stenoses, serving as a reliable non-invasive diagnostic tool. The high PPVs, particularly in the LMCA and RCA, validate its clinical utility. However, the concentration of false-positive results within the LAD segment indicates that calcium-induced blooming artifacts continue to compromise specificity by causing stenosis overestimation. This highlights the ongoing need for meticulous image interpretation and potentially complementary functional assessment when evaluating heavily calcified coronary segments.

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OP-63 · Epidemiological Analysis of Patients Referred from Family Medicine to the Otorhinolaryngology Department

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ABSTRACT

Introduction: A substantial proportion of patients presenting to family physicians have ear, nose, and throat (ENT) complaints. Although most cases can be effectively managed in primary care, a subset requires referral to ENT specialists. This study aimed to perform an epidemiological analysis of patients referred from family medicine to an ENT clinic, comparing pediatric and adult populations in terms of presenting symptoms, diagnoses, and management outcomes.

Materials and Methods: This retrospective study was conducted at Ordu University Training and Research Hospital between June 2024 and December 2025. A total of 508 patients referred from family physicians were included, comprising 346 adults and 162 pediatric patients. Demographic characteristics, presenting symptoms, diagnoses, and treatment/follow-up outcomes were analyzed. Patients with insufficient clinical or referral data were excluded.

Results: In the adult group, the most common reasons for referral were otalgia (17.9%), hearing loss or ear fullness (15.3%), nasal symptoms (13.0%), vertigo (12.1%), and chronic sore throat (10.1%). In the pediatric group, the leading complaints were snoring/obstructive sleep apnea (27.8%), hearing loss or ear fullness (23.5%), nasal symptoms (13.6%), otalgia (13.0%), and chronic cough (10.5%).

A considerable number of patients were managed without the need for advanced intervention. In adults, 161 patients (46.5%) were successfully treated in primary care, while 96 required ENT follow-up and 89 were referred to other specialties. In pediatric patients, 52 (32.1%) were managed in primary care, 91 required ENT follow-up, and 19 were referred to other departments. Common diagnoses included otitis media, allergic rhinitis, sinusitis, reflux-related conditions, and head and neck masses, some of which required urgent or advanced management.

Conclusion: A significant proportion of ENT-related conditions can be effectively managed at the primary care level. However, appropriate referral remains essential for patients requiring advanced evaluation or multidisciplinary care. Strengthening referral systems and interdepartmental communication may reduce unnecessary secondary and tertiary care utilization while improving patient outcomes.

KEYWORDS
Family Medicine, Otorhinolaryngology, Primary Care, Referral System, Epidemiology

COI ***& Other Declarations:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****. Generative artificial intelligence (ChatGPT, OpenAI) was used only for language editing and formatting purposes. All scientific content, interpretation, and conclusions are the responsibility of the authors.*

EBFMC26-OP-64 · Pigmented Purpuric Dermatosis

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ETHICS STATEMENT
This study does not require ethics committee approval. Informed consent was obtained from the patient for the publication of this case report.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Pigmented purpuric dermatoses (PPD) are benign dermatoses characterized by increased capillary fragility and erythrocyte extravasation, typically localized in the lower extremities, especially the pretibial region. Clinically, they can be confused with small vessel vasculitis due to their petechial and purpuric rashes. It has been reported that factors such as prolonged standing, intense physical activity, and venous stasis may play a role in the development of the disease (1,2). In this case, a case of PPD that may be confused with vasculitis in the differential diagnosis is presented, and the importance of clinical and histopathological evaluation is emphasized.
Case Presentation: A 53-year-old male patient presented with a rash on both lower extremities. His history revealed that he walked approximately 30,000-35,000 steps daily and stood for long periods during a 2-week Umrah pilgrimage. The rash started approximately 3 days before his return from the trip and spread over time. The itching was mild but increased over time.
The patient was evaluated at a healthcare facility during his travels, and a preliminary diagnosis of insect bite was considered. After returning to Türkiye, he applied to the dermatology outpatient clinic due to the worsening of the lesions.

Dermatological examination revealed symmetrically distributed petechial and purpuric lesions extending from the ankle to the knee on both lower extremities, which did not fade upon pressure. The lesions were observed to have a tendency to coalesce in places.
In the differential diagnosis, small vessel vasculitis, irritant contact dermatitis, and pigmented purpuric dermatosis were considered. A skin biopsy was taken to clarify the diagnosis. Histopathological examination revealed mild chronic inflammatory cell infiltration and erythrocyte extravasation in the perivascular space of the upper dermis. The absence of leukocytoclasia and fibrinoid necrosis helped differentiate it from small vessel vasculitis. These findings, evaluated together with the clinical findings, supported the diagnosis of pigmented purpuric dermatosis.
The patient was started on moderate-potency topical corticosteroid treatment and antiseptic cream as supportive therapy. Significant clinical regression of the lesions was observed within 10 days after treatment.
Conclusion: Pigmented purpuric dermatosis should always be considered in the differential diagnosis of petechial and purpuric rashes seen in the lower extremities. Prolonged standing and intense physical activity are important triggering factors. Because it can be clinically confused with vasculitis, histopathological evaluation is of great importance for accurate diagnosis.

KEYWORDS
Pigmented, Purpura, Dermatosis

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EBFMC26-OP-65 · Atypical Presentation of Acute Severe Headache in Childhood: A Case of Herpes Zoster Ophthalmicus

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ETHICS STATEMENT
Written informed consent was obtained from the patient's parents.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Herpes Zoster Ophthalmicus (HZO), caused by reactivation of Varicella Zoster Virus affecting the ophthalmic branch of the trigeminal ganglion, is rare in children (1-3). We report an atypical HZO case presenting with severe headache, initially diagnosed as migraine, later confirmed after vesicular lesions appeared in the left frontal and periorbital areas.
Case Presentation: A five-year-old girl presented with severe headache and burning in the left frontal region for three days. At the time of admission, her vital signs were stable, and she had a history of minor head trauma one week prior; brain CT and cranial MRI were found to be normal. On physical examination, somnolence, agitation, photophobia, and phonophobia were observed. However, no focal neurological deficit was detected, and the initial ophthalmologic evaluation revealed no ocular involvement. Intravenous hydration support was

started due to insufficient oral intake, and alternating analgesic treatment with paracetamol and ibuprofen was arranged. On the third day, as the headache persisted despite analgesic therapy, vesicular lesions developed in the left frontal and periorbital regions. Based on these findings, the patient was diagnosed with HZO and referred to Pediatric Infectious Diseases. Intravenous acyclovir 30 mg/kg/day (in 3 doses) was started. The diagnosis was supported by simultaneous detection of VZV IgM and IgG positivity. Ophthalmology re-evaluation revealed no ocular involvement. By the seventh day of treatment, her lesions had crusted, clinical symptoms had completely regressed, and antiviral therapy was discontinued. Immunological evaluation revealed no immunodeficiency.
Conclusion: Childhood HZO usually has a mild course; trigeminal involvement is rare (2,3). Headache may precede the rash and mimic migraine (2,3). In this case, migraine and post-traumatic headache were initially considered, but the appearance of lesions confirmed the diagnosis. Persistent, treatment-resistant headache in children should prompt consideration of Herpes Zoster, even without rash. Early diagnosis and antiviral therapy reduce the risk of corneal complications and postherpetic neuralgia (1,3). This case highlights the importance of dermatological examination and close follow-up in cranial pain evaluation.

KEYWORDS
Child, Herpes Zoster Ophthalmicus, Headache, Migraine

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EBFMC26-OP-66 · Passive Tobacco Smoke Exposure: A Bibliometric Analysis of Scientific Publications Focused on Child Health

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This study does not require ethics committee approval.

ARTIFICIAL INTELLIGENCE STATEMENT
Generative AI tools were used only for language editing (grammar, spelling, clarity). Authors verified all content.

ABSTRACT
Introduction: Exposure to passive tobacco smoke remains a major public health concern, particularly for children, who are at increased risk of adverse outcomes such as lower respiratory tract infections, asthma exacerbations, otitis media, sudden infant death syndrome, and chronic respiratory diseases (1,2). This study aimed to evaluate the general characteristics and research trends of scientific publications on passive tobacco smoke exposure and child health indexed in the Web of Science database.
Materials and Methods: Data were retrieved from the Web of Science (WoS) Core Collection (SCI-E, SSCI, ESCI). Boolean operators (OR, AND) were used to combine keywords related to tobacco smoke exposure and child health. The search strategy included the following keywords: ("tobacco smoke exposure" OR "secondhand smoke" OR "passive smoking" OR "environmental tobacco smoke" OR "inhalation passive smoke") AND ("child health" OR "children"). The initial search yielded 1,865 records. Filters were applied for publication year (1981-2025), document type (article), and language (English). After title/abstract screening, irrelevant articles, duplicate removal, and data cleaning, 1,793 publications were included. Bibliometric analysis was conducted using the Bibliometrix package in R.
Results: Publications peaked in 2021 (n=109). The most productive journals were Pediatrics (n=62), Nicotine & Tobacco Research (n=60), and International Journal of Environmental Research and Public Health (n=48).

Most studies were conducted by universities (n=1152), and 466 publications involved international collaboration. The United States led in productivity, followed by China and the United Kingdom. Thematic analysis identified environmental tobacco smoke and exposure as core themes, while children, asthma, and passive smoking were well-developed and central topics. Exposure had the highest centrality (2.873). In terms of density, children (8.721) and pregnancy (8.444) were identified as well-developed themes. Regarding frequency, exposure (n=4698) was the most commonly studied topic, followed by children (n=3857) and pregnancy (n=3339). Bibliometric indicators demonstrated that Pediatrics had the highest impact (h-index=40). Network analysis revealed that Winickoff JP played a key bridging role (betweenness=183.835), while Merianos AL showed high influence (PageRank=0.048), although the overall network structure was relatively low-density.
Conclusion: Research predominantly focuses on child health, asthma, and environmental exposure, led by the United States, China, and the United Kingdom. While earlier studies emphasized respiratory outcomes, recent research has shifted toward early-life exposure, cognitive effects, and molecular mechanisms. These trends highlight the need for further investigation into long-term developmental and epigenetic effects of passive smoking in children. Strengthening public health policies and preventive strategies to reduce children's exposure to tobacco smoke remains essential.

KEYWORDS
Tobacco Smoke, Secondhand Smoke, Child Health, Bibliometric Analysis

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EBFMC26-OP-67 · A Resident's Perspective on Training Family Health Centers: An Experience-Based Report

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ETHICS STATEMENT

Ethical approval was not required, as this report is based solely on personal observations and does not include patient data, interviews, or identifiable information.

ARTIFICIAL INTELLIGENCE STATEMENT

AI-assisted tools were used only for language editing purposes (grammar and clarity). No AI tool was used in the generation of scientific content, interpretation, or conclusions. All ideas, observations, and interpretations presented in the manuscript belong entirely to the authors.

ABSTRACT

Introduction: Training Family Health Centers (TFHCs) constitute a key component of family medicine residency training in Türkiye, providing an integrated environment where clinical service and academic education coexist. These centers enable residents to engage in real-life primary care practice while maintaining structured training under supervision. This report aims to present observations on the functioning of TFHCs, their contributions to residency training, and the challenges encountered during service delivery from the perspective of a family medicine resident.

Design and Context: This paper is an experience-based descriptive report reflecting the observations of a family medicine resident during routine clinical practice. The observations were made in a training family health center affiliated with a tertiary care training and research hospital in Türkiye between January 1 and February 28, 2026. The report is based solely on professional experience and reflective observation.
Observations: One of the most valuable aspects of my TFHC experience was the opportunity to follow up with the same patients over time, which fostered continuity of care. This continuity also allowed me to gain a more comprehensive understanding of patients' medical and psychosocial histories. Active participation in vaccination and screening programs increased my awareness of preventive medicine. The environment also provided significant experience in chronic disease management and improved my communication skills through interaction with diverse patient populations. In addition, it supported the development of my time management skills and my ability to work effectively in high-patient-volume environments. Interacting with diverse patient populations has contributed to the development of my communication skills, particularly in addressing varying expectations and health literacy levels, which strengthened my biopsychosocial perspective in patient assessment. Despite these contributions, I observed several challenges. High patient volume significantly limited the time available for educational activities and detailed clinical evaluation. Frequent requests for employment-related medical reports represented another challenge. These requests often involved medico-legal uncertainty and occasionally led to tension in physician-patient relationships, particularly when inappropriate requests were declined. Furthermore, the need to provide care to a large number of patients within limited time constraints made me concerned about the quality and depth of clinical assessment.
Conclusions and Recommendations: TFHC experience is a vital component of family medicine residency training and contributes to our clinical, communicative, organizational, and preventive care competencies as residents. We believe that improvements in trainer-to-resident ratios and a better balance between service provision can enhance both training quality and primary healthcare delivery.

KEYWORDS
Family Medicine, Residency Training, Primary Care, Training Family Health Center, Experiential Report

INTRODUCTION

Training Family Health Centers (TFHCs) constitute a key component of family medicine residency training in Türkiye, providing an integrated environment where clinical service and academic education coexist. These centers enable residents to engage in real-life primary care practice while maintaining structured training under supervision, in accordance with the national regulations governing residency education and Training Family Health Centers in Türkiye (1). This report aims to present observations on the functioning of TFHCs, their contributions to residency training, and the challenges encountered during service delivery from the perspective of a family medicine resident.

DESIGN AND CONTEXT

This paper is an experience-based descriptive report reflecting the observations of a family medicine resident during routine clinical practice. The observations were made in a training family health center affiliated with a tertiary care training and research hospital in Türkiye between January 1 and February 28, 2026. The report is based solely on professional experience and reflective observation within the scope of the organizational framework defined by the relevant national regulation (1).

OBSERVATIONS

One of the most valuable aspects of my TFHC experience was the opportunity to follow up with the same patients over time, which fostered continuity of care. This continuity also allowed me to gain a more comprehensive understanding of patients' medical and psychosocial histories.

Active participation in vaccination and screening programs increased my awareness of preventive medicine. The environment also provided significant experience in chronic disease management and improved my communication skills through interaction with diverse patient populations. In addition, it supported the development of my time management skills and my ability to work effectively in high-patient-volume environments.

Interacting with diverse patient populations has contributed to the development of my communication skills, particularly in addressing varying expectations and health literacy levels, which strengthened my biopsychosocial perspective in patient assessment.
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CONCLUSIONS AND RECOMMENDATIONS

TFHC experience is a vital component of family medicine residency training and contributes to our clinical, communicative, organizational, and preventive care competencies as residents. We believe that improvements in trainer-to-resident ratios and a better balance between service provision can enhance both training quality and primary healthcare delivery.

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EBFMC26-OP-68 · Microparasite, Macro Impact: The Reality of Scabies Management in Primary Care

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ETHICS STATEMENT
This study does not require ethics committee approval.

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No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Scabies is an ectoparasitic infestation caused by *Sarcoptes scabiei* var. *hominis*, which remains widely prevalent worldwide and has shown an increasing incidence in many regions in recent years. Despite the relatively low parasite burden, the infestation results in pronounced clinical manifestations and exhibits high transmissibility. These characteristics position scabies not merely as an individual dermatological condition but as a significant public health concern.
Clinical Approach and Diagnosis: In primary care settings, scabies most commonly presents with pruritus, and diagnosis is largely based on the integration of clinical findings and epidemiological history. Nocturnal exacerbation of itching, characteristic anatomical distribution of lesions, and the presence of similar symptoms among household contacts carry high predictive value for diagnosis. Due to the limited accessibility of confirmatory microscopic diagnostic methods in primary care, clinical acumen and a high index of suspicion play a central role in decision-making.
Discussion: One of the major challenges in scabies management is that a substantial proportion of cases perceived as treatment failure are actually attributable to inappropriate treatment practices rather than true pharmacological resistance. Inadequate or incorrect application of topical agents, non-adherence to recommended treatment duration, omission of repeat dosing, and, critically, failure to treat close contacts simultaneously are key contributors to persistent or recurrent infestations. These factors facilitate ongoing transmission within households and communal living environments. Another important challenge in clinical management is post-scabetic pruritus, which may persist after successful eradication of the parasite. Misinterpretation of this condition as active infestation often leads to unnecessary retreatment and reinforces

the misconception of drug resistance. Therefore, accurate assessment of treatment response and proper patient education are essential components of rational management. Effective control of scabies extends beyond individual treatment and requires a comprehensive approach that includes simultaneous management of contacts and interruption of transmission chains. In this context, primary healthcare services play a pivotal role in early diagnosis, appropriate treatment, and implementation of community-level control measures.
Conclusion: In conclusion, although scabies is characterized by a limited parasitic burden at the etiological level, it results in substantial clinical, epidemiological, and societal consequences. Effective management, therefore, depends not only on pharmacological interventions but also on accurate clinical evaluation, appropriate patient and contact management, and the organizational efficiency of primary healthcare systems.

KEYWORDS
Scabies, *Sarcoptes scabiei* var. hominis, Ectoparasitic Infestation, Primary Care, Clinical Diagnosis, Public Health

INTRODUCTION

Scabies, an ectoparasitic infestation caused by *Sarcoptes scabiei* var. *hominis*, continues to represent a significant global health concern due to its widespread distribution and associated morbidity. Historically, the disease has been predominantly linked to poverty, overcrowding, and poor hygienic conditions. However, accumulating epidemiological data indicate that scabies is increasingly affecting individuals across diverse socioeconomic backgrounds and is no longer restricted to traditionally recognized high-risk populations. Over the last two decades, numerous countries have reported a notable increase in scabies cases, highlighting its resurgence as a significant public health challenge (1). Recent epidemiological investigations have documented increasing incidence rates in both developing and industrialized regions. The burden of infestation appears to be particularly high among migrants, refugees, asylum seekers, institutionalized individuals, frequent travelers, and younger age groups. Moreover, factors such as rapid population movement, urbanization, inadequate sanitation, limited access to clean water, and communal living arrangements have been identified as key drivers facilitating the persistence and spread of scabies within communities (2,3). The growing recognition of scabies as a global health issue has prompted increased attention from international health organizations. In 2017, the World Health Organization (WHO) classified scabies as a Neglected Tropical Disease (NTD), emphasizing its considerable health burden and the necessity for strengthened surveillance, prevention, and control measures. This designation has contributed to a substantial increase in scientific interest, resulting in expanded research efforts focused on the epidemiology, diagnosis, treatment, and public health implications of the disease (4).

In contemporary clinical practice, healthcare professionals across multiple disciplines are reporting an increasing frequency of scabies diagnoses. Dermatologists, infectious disease specialists, primary care physicians, and public health practitioners increasingly acknowledge the disease as a growing challenge for healthcare systems. Consequently, a thorough understanding of current epidemiological patterns, transmission dynamics, risk factors, and evidence-based control strategies is essential for reducing disease burden and improving community-level health outcomes.

MATERIALS AND METHODS

This study was conducted as a narrative literature review. A comprehensive search of the PubMed, Scopus, and Web of Science databases was performed using the keywords “scabies,” “*Sarcoptes scabiei*,” “primary care,” “diagnosis,” “treatment,” “drug resistance,” and “public health.” Relevant articles published in English within the last ten years were identified and evaluated. Systematic reviews, meta-analyses, clinical guidelines, consensus statements, epidemiological studies, and original research articles focusing on the epidemiology, clinical presentation, diagnosis, management, treatment outcomes, and public health impact of scabies were included. Publications that did not provide sufficient scientific evidence, duplicate reports, conference abstracts lacking full-text availability, and studies unrelated to human scabies were excluded from the review. The selected literature was critically examined, and current evidence regarding the epidemiology, clinical manifestations, diagnostic approaches, treatment strategies, drug resistance, and public health management of scabies was synthesized and presented.

RESULTS

Clinical Features and Management of Scabies

Scabies is a transmissible ectoparasitic skin infestation caused by *Sarcoptes scabiei* var. *hominis* and is predominantly spread through prolonged direct contact with an infested individual. Clinically, the condition is characterized by severe itching accompanied by papular, vesicular, or eczematous eruptions that typically involve characteristic predilection sites, including the interdigital areas of the hands, flexor surfaces of the wrists, axillary regions, periareolar skin, periumbilical area, and external genitalia. The development of clinical symptoms is primarily associated with a delayed cell-mediated (type IV) hypersensitivity response elicited by mite-derived antigens, including the mites themselves, their ova, and fecal material, which collectively trigger the inflammatory cutaneous manifestations observed in affected individuals (5). During a primary scabies infestation, clinical symptoms generally emerge between two and six weeks after initial exposure, corresponding to the period required for sensitization of the host immune system to mite-derived antigens. In contrast, individuals with a history of previous infestation typically experience a much shorter incubation period following reinfestation, owing to the rapid activation of immunological memory mechanisms. Among the various clinical manifestations, nocturnal pruritus is regarded as one of the most characteristic features of scabies and serves as a valuable diagnostic indicator in patients presenting with unexplained itching (6). Crusted scabies is a rare but severe form of infestation characterized by a massive mite burden, extensive hyperkeratosis, and widespread skin involvement. It occurs predominantly in elderly, immunocompromised, or neurologically impaired individuals and carries a high risk of transmission and secondary bacterial infections (7).

Scabies is primarily transmitted through prolonged direct skin-to-skin contact. Human infestation is caused by the host-specific mite Sarcoptes scabiei var. hominis, whereas animal-derived mites rarely establish persistent infestations in humans [8]Secondary bacterial infections are among the most common complications of scabies and typically result from excoriation-related skin barrier disruption. Staphylococcus aureus and Streptococcus pyogenes are the principal pathogens involved, causing conditions such as impetigo, cellulitis, and furunculosis (9).

Accurate diagnosis and prompt treatment are fundamental to the successful management and control of scabies. To improve diagnostic consistency, the International Alliance for the Control of Scabies (IACS) established standardized diagnostic criteria in 2020, categorizing cases as confirmed, clinical, or suspected scabies (10). Although diagnosis is largely based on clinical findings and patient history, definitive confirmation requires the microscopic detection of mites, eggs, or fecal pellets. However, false-negative results may occur, particularly in patients with a low mite burden, limiting the sensitivity of skin scraping techniques (11). In clinical practice, scabies is frequently diagnosed on the basis of characteristic pruritus, typical lesion distribution, and suggestive clinical findings. Dermoscopy has emerged as a valuable adjunctive tool that can facilitate diagnosis and improve diagnostic confidence (12). Topical 5% permethrin cream is considered the first-line treatment for classical scabies because of its high efficacy and favorable safety profile. Alternative therapeutic options include benzyl benzoate, sulfur preparations, and oral ivermectin, depending on clinical circumstances (13). Oral ivermectin is an effective therapeutic option, particularly in extensive infestations and community-based treatment programs. For crusted scabies, combined use of oral ivermectin and topical scabicides is generally recommended because of the exceptionally high mite burden (14). Although concerns regarding antiscabietic drug resistance have increased, most treatment failures are associated with inadequate treatment, poor compliance, reinfestation, or post-scabetic reactions rather than true resistance (13,14). Effective patient education and contact management are critical for optimizing treatment outcomes.

Successful management of scabies extends beyond individual treatment and includes strategies aimed at preventing transmission. Environmental decontamination and simultaneous treatment of close contacts are key measures for reducing reinfestation and controlling outbreaks (14,15).

Epidemiological Characteristics of Scabies

Scabies is a globally distributed ectoparasitic infestation and remains an important public health problem. It is estimated that approximately 200–300 million people are affected annually worldwide, although prevalence varies considerably across geographical regions (15). The highest disease burden is observed in tropical and subtropical areas, particularly in resource-limited settings characterized by overcrowding, inadequate sanitation, and restricted access to clean water (16).

Although scabies can affect individuals of all ages and both sexes, epidemiological studies consistently report higher prevalence rates among children, adolescents, and young adults (17,18). Variations in sex-specific prevalence have also been described, suggesting that demographic, behavioral, and socioeconomic factors may influence transmission patterns (9,19). While traditionally associated with poverty and poor hygiene, scabies is now recognized as a disease affecting all socioeconomic groups. Nevertheless, overcrowding remains a major risk factor for transmission. Outbreaks frequently occur in institutional and communal settings, including nursing homes, prisons, refugee camps, military facilities, childcare centers, and student dormitories, where prolonged close contact facilitates the spread of infestation (6).

Collectively, these findings indicate that scabies should be regarded not only as a dermatological condition but also as a multifactorial public health challenge influenced by socioeconomic conditions, population mobility, and living environments. Understanding these determinants is essential for the development of effective prevention, surveillance, and control strategies.

Recent evidence highlights the important role of population mobility in the epidemiology of scabies. Migration, displacement, refugee movements, and international travel contribute substantially to disease transmission and geographical spread (20).

Accordingly, scabies is commonly reported among refugees, asylum seekers, and travelers returning from endemic regions (21). Several factors have been associated with an increased risk of infestation, including close household contact with affected individuals, bed-sharing, residence in crowded environments, and recent travel to endemic areas (22). Understanding these determinants is essential for the development of effective prevention, surveillance, and control strategies.

Improvement and Control Strategies in Scabies Management

Scabies is an important public health problem that can significantly impair quality of life through intense pruritus, sleep disturbance, psychosocial distress, and reduced daily functioning (23). Therefore, effective control requires not only appropriate treatment of affected individuals but also the implementation of preventive and community-based public health measures.

Historically, the lack of internationally standardized guidelines for the diagnosis and management of scabies limited control efforts and contributed to variations in clinical practice (24). Although recent guidelines have improved diagnostic and therapeutic standardization, continued implementation of evidence-based recommendations remains essential for effective disease control (25). Population mobility, migration, and international travel have further emphasized the need for comprehensive control strategies. Key interventions include early case detection, contact tracing, simultaneous treatment of close contacts, and environmental decontamination of potentially contaminated clothing, bedding, and personal belongings to interrupt transmission chains (26). Delayed diagnosis, inadequate treatment adherence, and incomplete management of close contacts continue to represent major barriers to successful control programs. Consequently, patient education, treatment compliance, and awareness among healthcare professionals should be strengthened to improve clinical outcomes and reduce transmission (8).

The introduction of the European Scabies Management Guidelines and the International Alliance for the Control of Scabies (IACS) Consensus Criteria has contributed substantially to the standardization of diagnosis and management worldwide (10). Nevertheless, sustainable control requires a multidisciplinary approach involving clinicians, medical parasitologists, public health professionals, and epidemiologists. Early diagnosis, evidence-based treatment, contact management, health education, and epidemiological surveillance remain the cornerstone strategies for reducing the burden of scabies at both community and global levels.

DISCUSSION

Recent epidemiological evidence indicates that scabies is no longer confined to populations living under poor socioeconomic and hygienic conditions but has emerged as a significant public health concern across diverse demographic and socioeconomic groups. Increasing incidence rates reported from Europe, Asia, and Oceania, together with findings from the Global Burden of Disease Study, demonstrate that scabies continues to impose a considerable global health burden and contributes substantially to years lived with disability (2,8)

The resurgence of scabies appears to be driven by multiple interacting factors, including migration, international travel, overcrowding, and disparities in healthcare access. Outbreaks frequently occur in institutional and communal settings such as refugee camps, nursing homes, prisons, and student dormitories, emphasizing the importance of social and environmental determinants in disease transmission (20,21).

Despite advances in diagnostic standardization, timely diagnosis remains a major challenge. In many healthcare settings, diagnosis relies largely on clinical assessment because confirmatory parasitological methods are not routinely available. Consequently, scabies may be misdiagnosed as other pruritic dermatoses, resulting in delayed treatment and ongoing transmission within affected communities (10) .

Treatment failure represents another important challenge in scabies management. Current evidence suggests that recurrent or persistent infestations are more commonly associated with inadequate treatment, poor adherence, reinfestation, or failure to treat close contacts than with true pharmacological resistance (13). Furthermore, post-scabetic pruritus may persist after successful treatment and can be mistaken for active infestation, leading to unnecessary retreatment and misconceptions regarding drug resistance (26).

The clinical significance of scabies extends beyond cutaneous manifestations. Secondary bacterial infections caused primarily by *Staphylococcus aureus* and *Streptococcus pyogenes* may result in serious complications, including impetigo, post-streptococcal glomerulonephritis, acute rheumatic fever, and invasive bacterial infections, particularly among vulnerable populations living in resource-limited settings (9).

Taken together, these findings highlight that scabies should be regarded as a multifactorial public health problem rather than merely a dermatological infestation. Sustainable control requires an integrated approach combining early diagnosis, evidence-based treatment, simultaneous management of close contacts, patient education, environmental measures, and effective epidemiological surveillance. Strengthening primary healthcare services and increasing awareness among healthcare professionals remain essential for reducing the burden of scabies and preventing future outbreaks.

CONCLUSION

Scabies remains a common and highly contagious ectoparasitic infestation that continues to impose a substantial public health burden worldwide despite the availability of effective treatment options. Recent increases in disease incidence, coupled with factors such as migration, population mobility, overcrowding, and socioeconomic disparities, have contributed to its re-emergence as a significant global health concern. Beyond its cutaneous manifestations, scabies is associated with impaired quality of life, psychosocial consequences, and secondary bacterial complications that may further increase disease burden.

Effective control requires a comprehensive approach that combines early diagnosis, evidence-based treatment, simultaneous management of close contacts, patient education, environmental measures, and ongoing epidemiological surveillance. Strengthening healthcare awareness, improving access to diagnostic and treatment services, and implementing coordinated public health strategies are essential for reducing transmission and achieving sustainable control of this neglected yet increasingly important parasitic disease.

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EBFMC26-OP-69 · Early Recognition and Multi-Modal Management of Suspected Cutaneous Vasculitis in a Primary Care Setting

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ABSTRACT

Background: Cutaneous small-vessel vasculitis (CSVV) often presents a diagnostic challenge in primary care due to its overlapping clinical features with other dermatological conditions. Prompt differentiation between isolated cutaneous involvement and systemic disease is vital for preventing long-term complications, particularly renal sequelae.

Case Description: A 45-year-old female presented to our primary care clinic, PZU Dr. Sofija Medika, with a sudden onset of bilateral lower extremity erythema, palpable purpuric lesions, and intense pruritus. The patient was hemodynamically stable and denied systemic symptoms such as fever or arthralgia. Under the supervision of the clinical mentor, a comprehensive diagnostic workup was initiated, including a complete blood count, coagulation profile, and immunological screening (ANA and ANCA). A renal ultrasound was performed to exclude secondary glomerulonephritis. All systemic and imaging evaluations were within normal limits.

Management and Outcomes: The patient was treated with a multi-targeted therapeutic regimen consisting of systemic corticosteroids (dexamethasone) on a tapering schedule, intravenous Vitamin C, and antihistamines. To support vascular integrity, vasoactive agents (Diosmin and Pentoxifylline) were administered alongside high-dose Vitamin D (300,000 IU) and antioxidants. Topical management included boric acid compresses and betamethasone/gentamicin cream. Significant clinical improvement, characterized by a reduction in erythema and resolution of pruritus, was observed within 45 days.

Conclusion: This case underscores the critical role of primary care physicians in the early detection and management of vasculitic processes. By implementing a rapid diagnostic and multi-modal therapeutic strategy, clinicians can achieve high rates of recovery and effectively monitor for systemic risks in a community-based setting.

KEYWORDS
Corticosteroid Therapy, Vasoactive Agents, Dermatologic Pharmacotherapy, Patient Recovery, Primary Care Interventions, Clinical Management

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EBFMC26-OP-70 · The Scientific Characteristics and Thematic Distribution of Oral Presentations at the 3rd International Eastern Black Sea Family Medicine Congress

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ETHICS STATEMENT
This study was based on publicly available conference abstracts and did not involve human participants, patient data, or identifiable personal information. Therefore, ethics committee approval was not required.

ARTIFICIAL INTELLIGENCE STATEMENT
Generative AI tools were used only for language editing.

ABSTRACT
Introduction: Scientific evaluation of congress presentations can provide valuable insight into current research priorities, thematic trends, and clinical focus areas in family medicine. This study aimed to analyze the distribution, thematic trends, and scientific characteristics of oral presentations at the 3rd International Eastern Black Sea Family Medicine Congress and to identify prevailing research patterns and clinical orientations across disciplines.
Methods: This study is a descriptive cross-sectional study based on a document analysis of conference abstracts. A total of 132 oral presentation abstracts published in the congress abstract book were initially identified (1). After exclusion of 18 invited presentations, the remaining 114 abstracts were analyzed. Abstracts were systematically classified according to predefined categories, including study design, primary topic, clinical function, secondary topic, and authorship characteristics. Data were analyzed using descriptive statistics.

Results: A total of 114 abstracts were included in the final analysis. Most abstracts were presented face-to-face (n=91; 79.82%), while 23 (20.18%) were presented online.
Regarding study design, 65 abstracts (57.02%) were original research articles, 41 (35.96%) were case reports, and 8 (7.02%) were review articles. The most common thematic areas were non-communicable diseases (n=61; 53.51%) and preventive medicine/public health (n=38; 33.33%), followed by infectious diseases (n=12; 10.53%) and basic sciences (n=3; 2.63%). Regarding clinical function, studies were most frequently diagnosis-oriented (n=40; 35.09%), followed by treatment (n=28; 24.56%), other categories (n=26; 22.81%), and prevention (n=20; 17.54%). Among secondary topics, epidemiology and trend analyses were the most common (n=48; 42.11%), followed by diagnostic challenges (n=33; 28.95%) and clinical decision-making (n=16; 14.04%). Screening and vaccination were equally represented (n=6 each; 5.26%), while basic science/experimental studies were less frequent (n=3; 2.63%). Atypical presentation and rare disease categories were each identified in one study (n=1; 0.88%). Family medicine was the most common first-author specialty (n=48; 42.11%), followed by pediatrics (n=10; 8.77%). Oncology, cardiology, neurosurgery, and ophthalmology were each represented by four abstracts (n=4; 3.51%). Female first authors were more frequent (n=71; 62.28%) than male first authors (n=43; 37.72%).
Conclusion: Oral presentations at the congress were predominantly focused on non-communicable diseases, followed by preventive care topics. In addition, a higher proportion of abstracts were led by female first authors. These findings offer a snapshot of current research priorities within family medicine and may help guide future scientific programs and research planning.

KEYWORDS
Congress, Abstracts, Bibliometric Analysis

REFERENCES
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EBFMC26-OP-71 · Wolbachia Bacteria: Interaction with the Parasitic Host and Potential for Biological Control

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ETHICS STATEMENT
This study is based exclusively on previously published literature and does not involve human or animal subjects. Therefore, ethical approval was not required.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation of this manuscript.

ABSTRACT
Introduction and Objective: *Wolbachia* is an intracellular endosymbiotic bacterium infecting a wide range of invertebrates, particularly arthropods and filarial nematodes. Its obligate symbiotic relationship with parasitic hosts plays a crucial role in parasite development, reproduction, and survival. This interaction has gained increasing attention as a potential target for novel biological control strategies.
This study aims to evaluate *Wolbachia*-parasite interactions and their potential applications in biological control through a narrative literature review.
Method: This study was designed as a narrative review. A literature search was conducted using PubMed, Scopus, and Web of Science databases. The search included the following keywords combined with Boolean operators (AND/OR): *Wolbachia*, endosymbiont, filarial nematodes, parasite interaction, and biological control. Relevant original research articles and review papers published in English were included. The collected studies were analyzed in terms of host-parasite interaction, immune modulation, reproductive manipulation, and biological control applications.
Findings: *Wolbachia* plays a fundamental role in the biology of filarial nematodes, particularly in embryogenesis, development, and fertility. Antibiotic targeting of *Wolbachia* has been shown to reduce

parasite lifespan and reproductive capacity. Additionally, elimination of *Wolbachia* enhances the immune response within the host organism, thereby reducing parasite pathogenicity. *Wolbachia* also manipulates host reproduction through mechanisms such as cytoplasmic incompatibility, which contributes to its effectiveness in vector control strategies. Furthermore, it modulates host immune responses and influences reproductive processes, making it a powerful tool for biological control.
Conclusion: *Wolbachia* represents a promising target for controlling parasitic diseases due to its essential role in parasite survival. Antibiotic-based targeting strategies have demonstrated significant potential in reducing parasite burden. These bacteria-based biological control approaches may offer innovative and sustainable solutions for both treatment and prevention of parasitic infections.

KEYWORDS
Wolbachia, Biological Control, Filarial Nematodes, Dengue, *Aedes aegypti*, Endosymbiosis

INTRODUCTION

Vector-borne and parasitic infections are among the major public health problems affecting millions of people worldwide. Diseases such as dengue, Zika, chikungunya, lymphatic filariasis, and onchocerciasis cause significant morbidity and economic losses, particularly in tropical and subtropical regions. Although insecticides and antiparasitic drugs currently used for the control of these diseases have achieved considerable success, increasing resistance, environmental concerns, and sustainability issues have highlighted the need for alternative approaches (1-3).
In this context, *Wolbachia* has emerged as a promising biological agent for the control of infectious diseases. First described by Hertig and Wolbach in 1924, this bacterium is now recognized as one of the most widespread endosymbiotic microorganisms. It is estimated that approximately half of all insect species worldwide harbor *Wolbachia* (3-6).
The significance of *Wolbachia* extends beyond its prevalence. The bacterium can alter the reproductive system of its host, modulate immune responses, and, in some cases, suppress pathogen replication. These characteristics make *Wolbachia* a unique target for both the treatment of parasitic infections and the control of vector-borne diseases.
The aim of this review is to evaluate the interactions between *Wolbachia* and parasitic hosts and to examine its biological control potential in light of current literature (2,4,7-12).

MATERIALS AND METHODS

This study was prepared as a literature-based review. Recent studies indexed in PubMed, Scopus, Web of Science, and Google Scholar were examined.
The literature search included the keywords "*Wolbachia*," "endosymbiont," "filarial nematodes," "vector control," "biological control," "dengue," "*Aedes aegypti*," "cytoplasmic incompatibility," and "pathogen blocking."
The selected publications were evaluated regarding the biological characteristics of *Wolbachia*, its interactions with hosts, its effects on filarial nematodes, and its applications in biological control.

Biological Characteristics of Wolbachia

Wolbachia is an obligate intracellular bacterium belonging to the class Alphaproteobacteria. It depends on host cells for survival and is primarily transmitted maternally from female hosts to their offspring.
One of the most remarkable features of this bacterium is its ability to manipulate host reproductive systems in ways that enhance its own transmission. As a result, *Wolbachia*-infected individuals gain a reproductive advantage, ensuring the persistence of the bacterium across generations.
Its widespread distribution and ability to exert diverse biological effects in different host species have made *Wolbachia* a unique subject of study in microbiology and parasitology (1,9,12).

Interactions with Parasitic Hosts

The relationship between *Wolbachia* and parasites is particularly evident in filarial nematodes. In species such as *Brugia malayi*, *Brugia timori*, *Wuchereria bancrofti*, and *Onchocerca volvulus*, the bacterium is considered an indispensable component of the parasite's life cycle.

Wolbachia plays essential roles in embryonic development, fertility, larval transformation, and metabolic processes. Studies have demonstrated that elimination of *Wolbachia* halts parasite development, reduces reproductive capacity, and shortens parasite lifespan.
Therefore, *Wolbachia* is regarded not merely as a symbiont but as an essential biological partner required for the vital functions of filarial nematodes (1,6,11).

Reproductive Manipulation Mechanisms
The success of *Wolbachia* in population biology is largely attributed to its ability to manipulate host reproduction (2,9).

Cytoplasmic Incompatibility
This is the most common mechanism. When *Wolbachia*-infected males mate with uninfected females, embryos fail to develop. In contrast, infected females can reproduce successfully with both infected and uninfected males. This reproductive advantage facilitates the rapid spread of *Wolbachia* within host populations (2,9,12).

Parthenogenesis Induction
In some species, females can reproduce without fertilization. This increases the likelihood of maternal transmission of *Wolbachia* (2,9).

Feminization
Wolbachia may convert genetically male individuals into phenotypic females, thereby increasing the number of infected females within the population (2,9).

Male Killing
In certain species, infected male larvae die during development. Consequently, resources become available to female offspring, promoting the spread of the bacterium (2,9).

Wolbachia and Viral Blocking Mechanisms
One of the most remarkable discoveries in recent years is the ability of *Wolbachia* to inhibit the replication of several viruses.
Research has shown that *Aedes aegypti* mosquitoes infected with *Wolbachia* exhibit significantly reduced replication of dengue, Zika, chikungunya, and yellow fever viruses.
The principal mechanisms underlying this effect include:
Activation of innate immune responses
Competition with viruses for intracellular resources
Suppression of viral replication
Enhanced production of antiviral molecules
As a result, mosquitoes carrying *Wolbachia* become substantially less capable of transmitting these viruses, even when infected (7,10).

Wolbachia as a Therapeutic Target in Filarial Diseases
Conventional treatment of filariasis relies on ivermectin, albendazole, and diethylcarbamazine. However, these drugs often have limited efficacy against adult parasites (7,10,12).
The anti-*Wolbachia* approach targets the parasite's essential symbiotic partner rather than the parasite itself.
Following doxycycline treatment:
Wolbachia burden decreases.
Embryogenesis is suppressed.
Microfilarial density is reduced.
Adult filarial worms become sterile.
Parasite lifespan is shortened.
For these reasons, *Wolbachia* is currently considered an important therapeutic target in the treatment of filarial infections (1,6,11).

Wolbachia and Vector Control Programs

One of the most successful applications of *Wolbachia*-based biological control has been in programs targeting *Aedes aegypti* mosquitoes.

Field studies conducted in Australia, Indonesia, Brazil, and Singapore have demonstrated that *Wolbachia*-infected mosquitoes can successfully establish themselves within natural mosquito populations.

A randomized controlled trial conducted in Yogyakarta, Indonesia, reported:

Approximately 77% reduction in dengue incidence

Approximately 86% reduction in dengue-related hospitalizations

These findings demonstrate that *Wolbachia*-based biological control remains effective under real-world field conditions (3,5,8).

ADVANTAGES AND LIMITATIONS

Advantages

Environmentally friendly

High species specificity

Reduces dependence on chemical insecticides

Provides long-term protection

Can be self-sustaining under certain conditions

Limitations

Similar success has not been achieved in all vector species

Long-term ecological effects remain incompletely understood

Implementation costs may be high in some regions

Different *Wolbachia* strains may vary in effectiveness

DISCUSSION

In recent years, *Wolbachia* has emerged as one of the biological agents driving a paradigm shift in the control of infectious diseases. Whereas traditional approaches target pathogens or vectors directly, *Wolbachia*-based strategies rely on modifying biological processes (2,4,12).

In filarial nematodes, elimination of the bacterium disrupts the parasite's life cycle, while in mosquitoes it reduces viral transmission. This dual effect distinguishes *Wolbachia* from other biological control agents.

Evidence from the literature suggests that *Wolbachia* may find broader applications in both therapeutic and preventive strategies in the future (2,3,10,12).

CONCLUSION

Wolbachia has emerged as an important biological tool in the control of infectious diseases through its complex symbiotic relationships with parasitic hosts. Its critical role in the life cycle of filarial nematodes and its ability to reduce viral transmission in mosquitoes make it valuable for both therapeutic and preventive approaches.

Future developments involving novel *Wolbachia* strains, advances in genomics, and expanded field applications are expected to further increase the importance of this bacterium in public health interventions.

As both a therapeutic target and a biological control agent, *Wolbachia* is likely to play an increasingly significant role in the prevention and management of infectious diseases worldwide.

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EBFMC26-OP-72 · The Relationship between Wolbachia Bacteria and Nematodes: Its Significance in Parasitic Diseases

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ETHICS STATEMENT
This study does not require ethics committee approval.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation of this manuscript.

ABSTRACT
Introduction: *Wolbachia* is an intracellular bacterium that lives in many invertebrate organisms and has a unique obligate symbiotic association with some filarial nematodes. Nematodes rely on the bacterium for their development, reproduction and life cycle. Filarial nematodes represent one of the top world public health problems. Thus, the objective of this study is to review the literature regarding *Wolbachia* and its association with nematodes in order to ascertain its relevance for controlling parasitic diseases.
Materials and Methods: The following study is a literature overview from international level of the symbiosis between *Wolbachia* and nematodes. The keywords used were *Wolbachia*, filarial nematodes, symbiosis, parasite biology and antibiotic therapy in the PubMed, Scopus, and Web of Science databases. The review concentrated on studies involving nematode species. Data were analyzed using content analysis to take a deeper look into *Wolbachia*'s interaction with nematode physiology, reproduction, host immune response and potential therapeutic approaches.
Results: Literature data show the indispensable biomedical roles of *Wolbachia* in filarial nematodes. The bacterium has been also shown to have direct life-cycle effects, inhibiting nematode embryonic development and larval metamorphosis, as well as reducing their fertility. Research has found that antibiotic-induced

elimination of *Wolbachia* leads to a substantial decrease in nematode reproductive output and life span. Also, the lack of *Wolbachia* efficiently prevents parasite development inside the host and decreases its pathogenicity. Additional research has shown that *Wolbachia* can modulate the immune system during nematode-host interactions and is involved in the maintenance of chronic infections.
Conclusion: In conclusion, *Wolbachia* bacteria should be identified as a key molecular target for the control of parasitic disease as they obligate symbionts in filarial nematodes.

KEYWORDS
Wolbachia, Filarial Nematodes, Symbiosis, Filariasis, Doxycycline, Endosymbiont

INTRODUCTION

Parasitic diseases are among the major public health problems affecting millions of people worldwide. In particular, filarial infections such as lymphatic filariasis and onchocerciasis cause significant morbidity in tropical and subtropical regions. A better understanding of the biology of filarial nematodes, the causative agents of these diseases, is essential for the development of novel therapeutic approaches (1-6).
Wolbachia was first described in 1924 by Hertig and Wolbach in *Culex pipiens* mosquitoes (7). Today, it is regarded as one of the most widespread endosymbiotic bacteria in the world. Studies have revealed the presence of *Wolbachia* in a substantial proportion of insect species as well as in many filarial nematodes.
The relationship between filarial nematodes and *Wolbachia* is far more complex than a typical host–microorganism association. The bacterium provides essential metabolic support for the development and reproduction of the parasite, while the nematode offers a secure environment for bacterial survival. Because of this mutual dependence, elimination of *Wolbachia* can severely disrupt the life cycle of filarial nematodes. In recent years, advances in understanding the biology of *Wolbachia* have contributed to the development of novel strategies for the treatment of filarial diseases. In particular, anti-*Wolbachia* therapies have emerged as promising alternatives to conventional antiparasitic approaches (7-12).

MATERIALS AND METHODS

This study was prepared as a literature review. PubMed, Scopus, Web of Science, and Google Scholar databases were searched. The keywords used included “Wolbachia,” “filarial nematodes,” “endosymbiosis,” “filarial diseases,” “doxycycline,” “Wolbachia therapy,” and “host immune response.”
Selected studies were evaluated with respect to the biological characteristics of *Wolbachia*, its relationship with filarial nematodes, its effects on the immune system, and its role in therapeutic applications. Current research findings and foundational studies were analyzed together.

General Characteristics of Wolbachia

Wolbachia is a Gram-negative, obligate intracellular bacterium belonging to the class Alphaproteobacteria. It is widely distributed in nature and occurs not only in arthropods but also in many species of filarial nematodes. The bacterium generally resides within the cytoplasm of host cells and is transmitted vertically from mother to offspring. This characteristic ensures the persistence of *Wolbachia* across generations.
While *Wolbachia* often acts as a reproductive manipulator in arthropods, it establishes a far more complex and obligatory symbiotic relationship with filarial nematodes (1,7,12).

Symbiotic Relationship with Filarial Nematodes

Wolbachia is commonly found in filarial nematodes such as *Brugia malayi*, *Brugia timori*, *Wuchereria bancrofti*, and *Onchocerca volvulus* (1,2,12).
The bacterium is densely localized in the reproductive organs, embryonic tissues, and hypodermal cells of nematodes. This distribution pattern suggests a direct role for *Wolbachia* in parasite reproduction.
Studies have shown that embryogenesis is severely disrupted in the absence of *Wolbachia*. Furthermore, the bacterium is believed to provide essential metabolic support for larval development and the survival of adult parasites.
Filarial nematodes are unable to synthesize certain metabolic products and compensate for these deficiencies through their association with *Wolbachia*. In particular, the bacterium contributes significantly to heme synthesis, nucleotide metabolism, and the biosynthesis of certain vitamins.

Therefore, *Wolbachia* is considered not merely an endosymbiont but an integral component of filarial nematode biology (1,2,4).

Effects of Wolbachia on Embryogenesis and Fertility

One of the most remarkable features of *Wolbachia* is its influence on the reproductive capacity of filarial nematodes.

Several experimental studies have demonstrated that elimination of *Wolbachia* through antibiotic treatment leads to a marked reduction in female nematode fertility. In some cases, complete sterilization has been reported.

The bacterium is thought to contribute to various metabolic processes involved in embryonic development. In the absence of *Wolbachia*, embryos fail to develop normally, and microfilariae cannot be produced.

These findings highlight the critical importance of *Wolbachia* for the continuation of filarial nematode populations (1-3,5,8,11).

Interactions with the Host Immune System

Wolbachia influences not only nematode biology but also the immune system of the human host.

In filarial infections, bacterial lipoproteins and other molecules are recognized by the host immune system, triggering inflammatory responses. In particular, activation of Toll-like receptors stimulates the release of various cytokines.

Several studies have suggested that a substantial proportion of the inflammation observed in filarial diseases is caused not directly by the nematode itself but by *Wolbachia*-derived molecules.

On the other hand, *Wolbachia* may modulate immune responses in a manner that facilitates long-term parasite survival within the host, thereby contributing to the chronic nature of infection (2,9).

Anti-Wolbachia Therapies

Conventional treatment of filariasis is primarily based on antiparasitic drugs such as ivermectin, diethylcarbamazine, and albendazole. However, these drugs often exhibit limited efficacy against adult parasites.

A more recent therapeutic approach targets not the parasite directly but the *Wolbachia* bacterium that is essential for its survival.

Doxycycline is currently the most widely used anti-*Wolbachia* agent. Treatment with doxycycline significantly reduces the bacterial load, suppresses embryogenesis, and shortens the lifespan of adult filarial worms.

Studies have demonstrated that a 4–6 week course of doxycycline therapy results in a substantial reduction in microfilariae and induces sterilization of adult filarial nematodes.

One of the major advantages of this approach is the lower incidence of severe inflammatory reactions compared with treatments that directly kill parasites. Since the parasite dies gradually following the depletion of *Wolbachia*, adverse inflammatory responses are generally less pronounced (3,5,8,11).

Wolbachia and Future Therapeutic Strategies

Researchers are currently focusing on the development of shorter and more effective anti-*Wolbachia* treatment regimens.

Novel anti-*Wolbachia* compounds such as AWZ1066S have shown promising results in preclinical and early clinical studies. These agents are expected to eliminate *Wolbachia* more rapidly and with greater efficacy than existing therapies.

In addition to its significance in filarial infections, *Wolbachia* has attracted considerable attention as a biological control tool for mosquito-borne viral diseases. Mosquitoes infected with *Wolbachia* have been shown to reduce the transmission of viruses such as dengue, Zika, and chikungunya.

Therefore, *Wolbachia* is increasingly recognized not only as a therapeutic target but also as a valuable biological control agent with broad public health applications (7,10-11).

DISCUSSION

The relationship between *Wolbachia* and filarial nematodes represents one of the most fascinating examples of symbiosis in parasitology. For many years, *Wolbachia* was regarded merely as an auxiliary microorganism.

However, current evidence demonstrates that it plays a central role in the life cycle of filarial nematodes. Studies reported in the literature indicate that the bacterium is critically involved in embryogenesis, fertility, metabolism, and immune regulation. Consequently, elimination of *Wolbachia* exerts profound biological effects on the parasite (1-3,5).

The success of anti-*Wolbachia* therapies has been considered the beginning of a new era in the control of filarial infections. Nevertheless, prolonged treatment durations and limitations associated with antibiotic use remain important challenges that need to be addressed.

Future development of more effective and shorter treatment regimens is expected to make substantial contributions to global filarial disease elimination programs (10-12).

CONCLUSION

Wolbachia is an obligate endosymbiotic bacterium that maintains a mutually dependent relationship with filarial nematodes and is essential for parasite survival. The bacterium plays key roles in embryogenesis, fertility, metabolic activities, and interactions with the host immune system.

Anti-*Wolbachia* therapies have demonstrated highly promising outcomes in the control of filarial infections.

A deeper understanding of *Wolbachia* biology is expected to facilitate the development of more effective and targeted therapeutic strategies in the future.

Given its dual importance as both a therapeutic target and a biological control agent, *Wolbachia* is likely to remain a major focus of parasitological and infectious disease research in the coming years.

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EBFMC26-OP-73 · Short-Term Outcomes of Cytisine Treatment in Patients Attending a Smoking Cessation Clinic

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ETHICS STATEMENT
Written informed consent was obtained from all patients.

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No artificial intelligence tools were used in the preparation of this manuscript.

ABSTRACT
Introduction: The tobacco epidemic is one of the greatest public health threats the world has ever faced (1). Cytisine, a natural plant alkaloid, acts as a partial agonist of α4β2 nicotinic acetylcholine receptors, reducing nicotine withdrawal symptoms and blocking the effects of nicotine (2). In Türkiye, cytisine treatment has been initiated free of charge for eligible patients in smoking cessation clinics since 2024. This study aimed to evaluate the short-term (first-month) effectiveness of cytisine (Nikitabs) treatment in a smoking cessation clinic.
Materials and Methods: In this cross-sectional descriptive study, the one-month outcomes of 70 patients who attended a smoking cessation clinic affiliated with a district health directorate between January 1, 2026, and March 1, 2026, were evaluated. Data on patients' age, sex, educational status, treatment modality (cytisine or cognitive behavioral therapy), Fagerstrom nicotine dependence scores, and treatment outcomes were recorded. Smoking cessation was defined based on patients' self-reported abstinence at one-month follow-up. Statistical analysis was performed using SPSS 26.0, $p<0.05$ was considered significant.
Results: The mean age of the 70 patients was 45±13.2 years and 67.1% were male. Regarding educational status, 40% had a university degree or higher, 31.4% were high school graduates, 17.1% had primary school education, and 11.4% had secondary school education. Cytisine treatment was initiated in 67.1% (n=47) of patients, while 32.9% (n=23) received only psychosocial support. Overall, 38.6% (n=27) of patients quit smoking, 37.1% (n=26) failed to quit, 7.1% (n=5) did not initiate treatment, and 17.1% (n=12) were lost to follow-up. No significant association was found between sex and smoking cessation status (p=0.353), nor between education level and cessation success (p=0.998). The median Fagerstrom nicotine dependence score

was 5.5 (IQR 25-75: 4-7), indicating moderate dependence. Fagerstrom scores differed significantly across outcome groups (p=0.014); however, no statistically significant difference was observed between quitters and non-quitters in pairwise comparison (p=0.114). According to treatment type, 57.4% of patients receiving cytisine quit smoking, while 21.3% failed, 10.6% did not initiate treatment, and 10.6% were lost to follow-up. In contrast, no smoking cessation success was observed in patients receiving only cognitive behavioral therapy during the first month; 69.6% failed to quit and 30.4% were lost to follow-up. A statistically highly significant association was found between treatment type and smoking cessation status (p<0.001).
Conclusion: Cytisine treatment significantly improves short-term smoking cessation outcomes. However, the small sample size, short follow-up period, and loss to follow-up should be considered when interpreting the results.

KEYWORDS
Cytisine, Smoking Cessation, Treatment Outcomes

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EBFMC26-OP-74 · Assessment of Migrant Parents' Knowledge of Developmental Dysplasia of the Hip Screening: A Pilot Study

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ETHICS STATEMENT
Written informed consent was obtained from all participating parents.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation of this manuscript.

ABSTRACT
Introduction: Developmental dysplasia of the hip (DDH) is a pediatric condition characterized by an abnormal femoral head–acetabulum relationship, detectable from early infancy (1). If untreated, DDH may cause pain, disability, and early osteoarthritis. The American Academy of Pediatrics recommends screening in primary care (2). This study aimed to evaluate the knowledge level and awareness of DDH screening among migrant parents.
Materials and Methods: This cross-sectional descriptive study was conducted between March 1 and March 30, 2026, among 75 migrant parents aged 18–49 years attending a Foreign Nationals Outpatient Clinic. Written informed consent was obtained from all participating parents. Data were obtained from parents regarding sociodemographic characteristics, knowledge of DDH, screening awareness and practices, and healthcare access. DDH knowledge was evaluated based on awareness of the disease, screening necessity, methods, and timing. Data analysis included descriptive statistics and the chi-square test using SPSS version 26.0. Statistical significance was set at $p<0.05$.
Results: Most participants were female (77.3%) and aged 26–35 years (53.3%), with Afghan (44%) and Syrian (32%) as the main nationalities. The majority were unemployed (74.7%) and had lived in Türkiye for over 5 years (82.7%). Primary school was the most common education level (25.3%), and 44% had three or more

children. Regarding DDH, 41.3% had prior knowledge, 44% were aware of screening necessity, 40% had their children screened, and 32% knew the correct screening time. Information sources included hospital healthcare professionals (34.7%) and family physicians (10.7%). A total of 80% reported easy healthcare access. A statistically significant association was found between educational level and DDH knowledge level ($p<0.001$), awareness of screening necessity ($p=0.001$), screening practices ($p=0.014$), knowledge of screening methods ($p=0.001$). A significant relationship was also identified between number of children and awareness of screening necessity ($p=0.046$). DDH knowledge level was significantly associated with nationality ($p=0.040$). No statistically significant association was found between DDH knowledge level, screening practices, or knowledge of screening timing and age, sex, duration of residence in Türkiye, child's age and number, or employment status ($p>0.05$). Additionally, no significant relationship was found between ease of access to healthcare, appointment status, or language barriers and DDH knowledge or screening practices ($p>0.05$).
Conclusion: Since DDH screening relies on primary care, family physicians play a key role in early diagnosis and prevention. However, health literacy and communication barriers may limit screening among migrant populations. Therefore, targeted education and strengthened primary care are needed to improve awareness and screening uptake.

KEYWORDS
Migrant Parents, Developmental Dysplasia of the Hip, Screening

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EBFMC26-OP-75 · Epidemiological Evaluation of Thyroid Fine-Needle Aspiration Biopsy Results in a Single Center: A Retrospective Analysis Based on the Bethesda System

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ETHICS STATEMENT
The study protocol was approved by the Ordu University Ethics Committee.

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Generative AI tools were used only for language editing (grammar, spelling, clarity).

ABSTRACT
Objective: To evaluate the epidemiological distribution and diagnostic profile of thyroid fine-needle aspiration biopsy (FNAB) results in a single center using the Bethesda System for Reporting Thyroid Cytopathology.
Materials and Methods: This retrospective study included 1352 thyroid nodules evaluated by FNAB between May 2021 and December 2025. Analyses were performed on a per-nodule basis. Bethesda classification was directly recorded. Nondiagnostic, benign, AUS/FLUS, and malignant categories were analyzed. Malignancy was defined as Bethesda categories IV-VI.
Results: The nondiagnostic rate was 15.2%, while benign cytology (Bethesda II) constituted 53.3% of cases. AUS/FLUS (Bethesda III) accounted for 26.7%. The overall malignancy rate (Bethesda IV-VI) was 4.7%.
Conclusion: The distribution of Bethesda categories in this center is generally consistent with published data; however, the relatively high AUS rate suggests potential interpretative variability. Continuous quality improvement and adherence to standardized reporting systems are essential to optimize diagnostic performance.

KEYWORDS
Thyroid Nodule, Fine-Needle Aspiration Biopsy, Bethesda Classification, Epidemiology, AUS

INTRODUCTION
Fine-needle aspiration biopsy (FNAB) is the primary diagnostic method for evaluating thyroid nodules and plays a central role in risk stratification and clinical decision-making (1). With the increasing use of high-

resolution ultrasound, the detection rate of thyroid nodules has risen substantially, making accurate and reproducible diagnostic tools essential in avoiding unnecessary surgical interventions.

The Bethesda System for Reporting Thyroid Cytopathology provides a standardized framework for reporting FNAB results, allowing categorization into six diagnostic groups with associated malignancy risks and recommended management strategies (2,3). This system has improved communication between clinicians and cytopathologists and has facilitated more consistent clinical decision-making.

In addition to cytological classification, ultrasound-based risk stratification systems, such as the American College of Radiology Thyroid Imaging Reporting and Data System (ACR TI-RADS) and European Thyroid Association guidelines, contribute to biopsy decision-making and follow-up strategies (4–6). These systems, when used in conjunction with FNAB, enhance diagnostic accuracy and optimize patient management.

Despite these advances, FNAB remains subject to variability. Diagnostic performance is influenced by multiple factors, including sampling adequacy, nodule characteristics, operator experience, and cytopathological interpretation. In particular, nondiagnostic results and indeterminate categories such as atypia of undetermined significance/follicular lesion of undetermined significance (AUS/FLUS) continue to represent major challenges (3,7).

Nondiagnostic cytology can lead to repeat procedures, delayed diagnosis, and increased healthcare costs (7,8). Similarly, AUS/FLUS categories introduce clinical uncertainty, often requiring repeat biopsy or molecular testing. Therefore, understanding the distribution of Bethesda categories at an institutional level is crucial for evaluating diagnostic performance and identifying potential areas for improvement.

Although numerous studies have evaluated FNAB accuracy, fewer have focused on the epidemiological distribution of Bethesda categories within a single center and its implications for clinical practice. Such analyses are important for internal quality assessment and benchmarking against international standards.

Therefore, the aim of this study is to provide a comprehensive epidemiological evaluation of thyroid FNAB results in a single center, focusing on the distribution of Bethesda categories and the overall diagnostic profile in a real-world clinical setting.

MATERIALS AND METHODS

Study Design and Population

This retrospective study included 1352 thyroid nodules evaluated by FNAB between May 2021 and December 2025. Analyses were conducted on a per-nodule basis. Ethical approval was obtained from the institutional review board.

Bethesda Classification

Bethesda categories were directly recorded from cytopathology reports.

Definitions

Nondiagnostic: Bethesda I
Benign: Bethesda II
AUS/FLUS: Bethesda III
Malignancy: Bethesda IV–VI

Statistical Analysis

Descriptive statistics were used to present categorical distributions.

RESULTS

Bethesda Distribution

Bethesda I (nondiagnostic): (#205) 15.2%
Bethesda II (benign): (#722)53.3%
Bethesda III (AUS/FLUS): (#362)26.7%
Bethesda IV–VI (malignant/suspicious): (#17-32-15) 4.7%

Diagnostic Profile

Benign cytology represented the majority of cases, followed by AUS/FLUS. The nondiagnostic rate was within an acceptable range but remained above ideal targets reported in guidelines.

The relatively high proportion of AUS/FLUS cases suggests a tendency toward conservative interpretation.

DISCUSSION

This study presents a comprehensive epidemiological analysis of thyroid FNAB results in a single center, demonstrating that the overall distribution of Bethesda categories is broadly consistent with published literature, while also highlighting specific institutional characteristics.

The benign category (Bethesda II) constituted the majority of cases, which aligns with expected distributions reported in large series (3,9). This finding supports the role of FNAB as an effective triage tool in the management of thyroid nodules, allowing a substantial proportion of patients to avoid unnecessary surgical intervention.

The nondiagnostic rate of 15.2% observed in this study reflects moderate sampling adequacy. Although this rate was within ranges reported in the literature, it exceeded the commonly accepted quality benchmark of less than 10%, which is frequently used as an indicator of adequate sampling performance (2,7,10-13).

Nondiagnostic results are clinically significant, as they often necessitate repeat FNAB, prolong diagnostic processes, and increase patient anxiety and healthcare utilization.

One of the most notable findings of this study is the relatively high proportion of AUS/FLUS cases (26.7%), which exceeds commonly reported ranges of approximately 8–10% (3). This finding suggests a tendency toward conservative or cautious interpretation. While this approach may reduce false-negative diagnoses, it may also increase the number of indeterminate results, leading to additional investigations and potential overtesting.

Interpretative variability is a well-recognized limitation of cytopathology and is influenced by both subjective assessment and institutional reporting culture (3,9). The high AUS rate observed in this study highlights the need for continuous quality assurance, including interobserver agreement studies and periodic review of diagnostic criteria.

Importantly, FNAB performance is not solely dependent on cytopathological interpretation. Technical factors, including needle placement, number of passes, and adequacy assessment, also play a critical role (10,11). Therefore, improving diagnostic outcomes requires a multidisciplinary approach involving radiologists, pathologists, and clinicians.

From an epidemiological perspective, institutional audits such as this study are essential for benchmarking performance against international standards. Identifying deviations in category distribution - particularly in nondiagnostic and AUS rates - provides actionable insight for targeted quality improvement.

This study has several limitations. First, its retrospective design may introduce selection bias. Second, histopathological correlation was not available for all cases, limiting the assessment of true malignancy rates. However, the large sample size and real-world data provide valuable insight into routine clinical practice.

CONCLUSION

This single-center epidemiological study demonstrates that FNAB results are largely consistent with expected Bethesda distributions, although a relatively high AUS rate indicates potential interpretative variability.

Improving FNAB performance requires:

- optimization of sampling techniques
- enhanced operator experience
- strict adherence to standardized pathology reporting systems

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EBFMC26-OP-76 · The Role of Age in Predicting Malignancy in Breast Tru-Cut Biopsies: A Single-Center Experience

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ETHICS STATEMENT
This study was approved by Ordu University Ethics Committee.

ARTIFICIAL INTELLIGENCE STATEMENT
Generative AI tools were used only for language editing (grammar, spelling, clarity). Authors verified all content.

ABSTRACT
Objective: To evaluate the relationship between age and malignancy in patients undergoing breast tru-cut biopsy and to determine clinically relevant age cut-off values.
Materials and Methods: This retrospective single-center study included patients who underwent breast tru-cut biopsy during the period May 2021 to December 2025. Repeated cases from the same patient were excluded, and analysis was performed on 783 unique cases. Pathology results were classified as benign or malignant. The association between age and malignancy was assessed using the chi-square test. The predictive performance of age was evaluated using receiver operating characteristic (ROC) analysis.
Results: No malignancy was detected in patients under 30 years of age (0%), whereas the malignancy rate was 71.6% in patients aged ≥30 years ($p<0.001$). In patients under 40 years, the malignancy rate was 29.1%, compared to 74.9% in those aged ≥40 years (OR=7.28, $p<0.001$). ROC analysis demonstrated good discriminatory performance of age (AUC=0.81), with an optimal cut-off value of 54 years.
Conclusion: Age is a strong predictor of malignancy in breast tru-cut biopsies. The risk of malignancy increases significantly after the age of 40, and a cut-off value of 54 years may be useful in clinical risk stratification.

KEYWORDS
Breast Biopsy, Tru-Cut, Age, Malignancy, ROC Analysis

INTRODUCTION

Breast tru-cut biopsy is a widely used and reliable diagnostic method for evaluating breast lesions (1,2). Predicting malignancy risk is essential for clinical decision-making and patient management.

Age is one of the most important risk factors for breast cancer. Epidemiological studies have consistently shown that the incidence of breast cancer increases with age, with a significant rise after the age of 40 and a peak incidence in the 50–60 age range (3,4). However, studies evaluating the relationship between age and tru-cut biopsy outcomes and identifying clinically useful cut-off values remain limited (3,5).

The aim of this study was to investigate the association between age and malignancy in a single-center cohort and to determine clinically relevant age thresholds.

MATERIALS AND METHODS

Study Design

This retrospective study was conducted at a single center.

Patient Selection

Patients who underwent breast tru-cut biopsy between May 2021 and December 2025 were included. Repeated pathology results from the same patient were excluded to ensure unique case analysis. The study protocol was approved by the hospital's local ethics committee (2026/1).

Dataset

A total of 783 unique cases were analyzed.

Pathological Classification

Pathology results were categorized as:

- Benign
- Malignant

Indeterminate or unclear results were excluded.

Statistical Analysis

- Chi-square test was used for group comparisons
- Odds ratios (OR) were calculated
- ROC analysis was performed to evaluate the predictive performance of age
- The optimal cut-off value was determined using the Youden index

A p-value <0.05 was considered statistically significant.

RESULTS

No malignancy was observed in patients under 30 years of age (0%). In contrast, the malignancy rate was 71.6% in patients aged ≥30 years ($p<0.001$).

Among patients younger than 40 years, the malignancy rate was 29.1%, whereas it was 74.9% in patients aged 40 years and older. This difference was statistically significant, and the risk of malignancy was approximately seven times higher in patients aged ≥40 years (OR=7.28, $p<0.001$).

ROC analysis demonstrated that age had good predictive performance for malignancy (AUC=0.81). The optimal cut-off value was identified as 54 years.

In the lesion size analysis, no statistically significant difference was observed between benign and malignant groups ($p=0.144$), indicating that lesion size alone is not a reliable predictor of malignancy.

DISCUSSION

This study demonstrates a strong association between age and malignancy in patients undergoing breast tru-cut biopsy. The findings confirm that the risk of malignancy increases significantly with age.

In the literature, age is recognized as one of the most important risk factors for breast cancer. The incidence is known to be very low in women under 30 years, increases gradually in the 30s, and rises sharply after the age of 40 (3). Most breast cancer cases are diagnosed in women aged 50 years and older, with a median age

of approximately 60 years (4). Furthermore, mammographic and screening-based studies have highlighted that the majority of breast cancer cases are diagnosed in postmenopausal women (5,6).
In our study, no malignancy was detected in patients under 30 years, which is consistent with previous reports indicating that breast cancer is extremely rare in this age group (3). However, this finding should be interpreted cautiously due to the limited sample size.
The malignancy rate of 43.2% in the 30–40 age group appears higher than population-based estimates reported in the literature (1,2). This discrepancy is likely due to the selected nature of our cohort, as only patients who underwent biopsy were included.
The most clinically significant finding of this study is the marked increase in malignancy risk after the age of 40. Patients aged ≥40 years had a significantly higher malignancy rate, with a sevenfold increase in risk. This finding supports current screening guidelines that recommend initiating breast cancer screening at or around this age (4,7).
ROC analysis further demonstrated that age is a strong predictor of malignancy, with an AUC of 0.81. The optimal cut-off value of 54 years aligns with epidemiological data indicating increased incidence in the postmenopausal period.
Lesion size did not significantly differ between benign and malignant groups, suggesting that size alone is insufficient to distinguish malignancy. This finding is consistent with previous studies emphasizing the importance of morphological and radiological features rather than size alone (1,8).

LIMITATIONS

This study has several limitations. It is a retrospective, single-center study, which may limit generalizability. Additionally, pathology classification was based on text data, which may introduce classification bias. However, the exclusion of duplicate cases and the relatively large sample size strengthen the validity of the findings.

CONCLUSION

Age is a strong and independent predictor of malignancy in breast tru-cut biopsies. The risk increases significantly after the age of 40, and an optimal cut-off value of 54 years may be useful for clinical risk stratification. Lesion size alone is not sufficient to predict malignancy.

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OP-77 · Refractory Seizures Secondary to Hypoxic-Ischemic Encephalopathy in the Neonatal Period: A Case Report

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ETHICS STATEMENT
This study does not require ethics committee approval. Informed consent was obtained from the patient's family.

ARTIFICIAL INTELLIGENCE STATEMENT
AI tools used only for language editing (grammar, spelling, clarity).

ABSTRACT
Introduction and Objective: Hypoxic-ischemic encephalopathy (HIE) is a serious clinical condition caused by perinatal asphyxia and represents a major cause of morbidity and mortality in the neonatal period (1). Although therapeutic hypothermia is currently a standard and effective treatment method for reducing neurological damage (2,3), refractory seizures may develop later in some cases despite early clinical improvement (4,5). This report aims to present a case in which therapeutic hypothermia was applied following severe perinatal asphyxia and refractory post-hypoxic epilepsy developed during follow-up.
Case Report: A female infant born at 37 weeks + 5 days of gestation, weighing 3400 grams, was delivered via emergency cesarean section due to maternal history of gestational diabetes, gestational hypertension, preeclampsia and the development of placental abruption. The patient had no spontaneous respiration at birth, and the 1st-minute APGAR score was evaluated as 0. Despite 30 seconds of effective positive pressure ventilation after birth, the heart rate remained <60/min, and advanced resuscitation was initiated. After approximately 1 minute of cardiopulmonary resuscitation, the heart rate increased to >100/min, and the patient was admitted to the neonatal intensive care unit. Cord blood gas analysis revealed pH: 6.6, pCO_2: 145 mmHg,

and BE: -19. Based on these findings, the patient was diagnosed with hypoxic-ischemic encephalopathy and was referred to an external center for therapeutic hypothermia with a preliminary diagnosis of moderate-to-severe HIE according to the Modified Sarnat scoring system. At the external center, whole-body cooling therapy was administered for 72 hours, and the patient was followed intubated for a total of 6 days. The patient was discharged on the 18th day. On postnatal day 45, the patient presented to our emergency department with myoclonic jerks and was treated with a loading dose of 0.1 mg/kg midazolam and 40 mg/kg levetiracetam. During follow-up, neurological examination was evaluated as normal, and no seizures were observed during hospitalization; thus, the patient was discharged. Subsequently, the patient presented again with similar complaints on postnatal days 75 and 90. Due to the refractory clinical course, vigabatrin, phenobarbital, and topiramate were added to levetiracetam therapy. After being monitored seizure-free for 48 hours under multiple antiepileptic treatments, the patient was discharged with a plan for follow-up in the pediatric neurology outpatient clinic.
Discussion and Conclusion: Hypoxic-ischemic encephalopathy is a clinical condition that requires careful monitoring, as it may lead to long-term neurological impairment despite appropriate early treatment (1). Although early clinical stabilization can be achieved with therapeutic hypothermia (2,3), epileptic seizures may develop in the later period, particularly in cases with significant brain injury (4,5). In this patient, the development of refractory seizures during follow-up, despite an initially normal neurological examination, is noteworthy. Therefore, in patients with a history of HIE, early clinical well-being may be misleading, and long-term, close, and regular neurological follow-up is essential (1,5). This case demonstrates that post-hypoxic epilepsy may develop even in patients treated with therapeutic hypothermia and highlights the importance of a multidisciplinary approach in the follow-up of these patients (5).

KEYWORDS
Hypoxic-Ischemic Encephalopathy, Neonate, Seizure, Therapeutic Hypothermia

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OP-78 · R-Wave Peak Time as an Early Electrocardiographic Marker of Subclinical Left Ventricular Remodelling in Young Hypertensive Patients

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ETHICS STATEMENT
Ethics committee approval has been obtained. The approval was granted under Decision No. 2026/135.

ARTIFICIAL INTELLIGENCE STATEMENT
Generative AI tools were used only for language editing (grammar, spelling, clarity). Authors verified all content.

ABSTRACT
Introduction: Early detection of myocardial remodelling in young hypertensive individuals remains a significant clinical challenge, particularly in the absence of overt echocardiographic left ventricular hypertrophy (LVH). Conventional imaging modalities may fail to detect subtle structural changes at early stages (1,2). Therefore, there is growing interest in electrocardiographic markers that can reflect early myocardial involvement (1,2). This study aimed to evaluate the diagnostic value of R-wave peak time (RWPT) as an early marker of subclinical myocardial remodelling.
Materials and Methods: This cross-sectional study included 64 participants, comprising 32 young hypertensive patients and 32 age-matched normotensive controls. Young individuals were defined as those aged 18-45 years. Hypertension was diagnosed according to current ESC criteria (≥140/90 mmHg or antihypertensive treatment) and classified as Stage 1-2 (3).
Exclusion criteria included structural heart disease, arrhythmias, bundle branch block (QRS ≥120 ms), and reduced ejection fraction (<50%).

Transthoracic echocardiography was performed in all participants to assess left ventricular ejection fraction (EF), interventricular septum (IVS), and posterior wall (PW) thickness. Receiver operating characteristic (ROC) curve analysis was used to determine the optimal RWPT cut-off value.
Results: RWPT was significantly prolonged in the hypertensive group compared to controls (52.0 ± 5 ms vs. 41.2 ± 2 ms, $p<0.001$). Left ventricular systolic function was preserved in all participants (EF 55-65%), and structural parameters showed only borderline differences.
ROC analysis demonstrated excellent discriminative performance with an area under the curve (AUC) of 0.92 (95% CI: 0.85-0.98). An RWPT cut-off value of 46 ms yielded a sensitivity of 88% and specificity of 91%.
Conclusion: RWPT may represent a promising, simple, and reproducible electrocardiographic marker for the early detection of subclinical myocardial remodelling in young hypertensive patients. However, given the relatively small sample size and cross-sectional design, further large-scale prospective studies are required to validate its clinical applicability.

KEYWORDS
Hypertension, Electrocardiography, Ventricular Conduction, Myocardial Remodelling, Left Ventricular Hypertrophy

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EBFMC26-OP-79 · Evaluation of YouTube Videos on Breastfeeding and Breast Milk: A Cross-Sectional Content Analysis

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ETHICS STATEMENT
As this study analyzed publicly available, anonymized data from "https://www.youtube.com" and did not involve human participants or identifiable personal data, ethics committee approval was not required.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Breastfeeding is a fundamental component of maternal and infant health (1). Today, individuals increasingly access health-related information through digital platforms. YouTube is one of the most frequently used sources in this context; however, the accuracy and scope of its content vary. This study aimed to evaluate the content, sources, and engagement characteristics of YouTube videos related to breastfeeding and breast milk.
Materials and Methods: Data were collected from YouTube (2) using the Turkish keywords "anne sütü" (breast milk) and "emzirme" (breastfeeding) via the Turkish regional interface. To ensure comparability and reflect user preferences, only videos ≤10 minutes were included. The first 100 videos ranked by the default

relevance algorithm were analyzed. For each video, title, upload date, duration, views, likes, and comments were recorded. Content creators were classified by professional background and gender. Engagement was calculated using the like-to-view ratio. Videos were evaluated for breastfeeding technique, benefits of breast milk, breastfeeding-related problems, and misinformation.
Results: A total of 100 videos were analyzed. The mean video duration was 4.37 ± 2.70 minutes, with a median of 3.55 minutes (range: 0.30–9.98). The mean number of views was 118,871.21 ± 416,709.97, while the median was 3,800 (range: 27–2,869,109). The mean number of likes was 597.52 ± 2,397.19, with a median of 21.5 (range: 0–22,000). The mean like-to-view ratio was 1.62% ± 2.51%, with a median of 0.74% (range: 0.003–15.15). Regarding content creators, physicians constituted the largest group (n=33; 30.00%). These are followed by nurses (n=26; 23.64%) and midwives (n=17; 15.45%). Mothers (n=11; 10.00%) and other professional groups (n=11; 10.00%) also took part in a significant proportion. Most videos were presented by female speakers (81.48%). Content analysis revealed that breastfeeding technique was addressed in 36% of videos, benefits of breast milk in 44%, breastfeeding-related problems in 48%, and misinformation in 36%. Among the top three videos by like-to-view ratio, the first was presented by a physician and covered breastfeeding intervals along with techniques, benefits, problems, and misinformation. The second, presented by a nurse, focused on breast milk content and benefits. The third, presented by a mother, addressed the adequacy of breast milk.
Conclusion: YouTube videos on breastfeeding and breast milk show substantial variability in content, sources, and engagement. Although a significant proportion of videos are produced by healthcare professionals, essential topics such as breastfeeding technique and misinformation are not consistently covered.
The lack of correlation between high view counts and engagement suggests that popularity does not necessarily reflect informational quality. These findings highlight the need for more standardized, comprehensive, and evidence-based digital health content for breastfeeding education.
However, the algorithmic ranking system of YouTube may vary depending on user location, search history, and viewing behavior, which may limit the generalizability of the findings.

KEYWORDS
Breastfeeding, Social Media, Health Communication, Analysis

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ONLINE ORAL PRESENTATIONS

EBFMC26-OOP-01 · Screen Exposure During Meals in Children with Autism Spectrum Disorder: Relationship with Feeding Problems, Food Selectivity, and Co-Occurring Screen Habits

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ETHICS STATEMENT

This is a cross-sectional secondary data analysis. Ethics committee approval for the study was obtained from the University of Health Sciences, Adana City Training and Research Hospital Scientific Research Ethics Committee (decision no: 1298; date: 30.04.2026).

ARTIFICIAL INTELLIGENCE STATEMENT

No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT

Introduction: Feeding problems and food selectivity are among the most common co-occurring difficulties in children with autism spectrum disorder (ASD) (1,2). In the general pediatric population, screen use during meals has been associated with lower diet quality and less favorable family mealtime patterns (3-5). Therefore, this study aimed to examine the relationship between screen exposure during meals and feeding problems, food selectivity, and other screen habits in children with ASD.

Materials and Methods: This cross-sectional secondary data analysis included 109 children diagnosed with ASD who were followed up at the Child and Adolescent Psychiatry outpatient clinic of a tertiary training and research hospital. The primary outcome variable was defined as screen exposure during meals (present/absent). Primary relationships were evaluated with feeding problems and food selectivity. In the supporting analysis, screen frequency during meals (none/rarely/sometimes/often) was used as an ordinal variable. Daily screen time and problematic screen use were secondary variables. Categorical variables were compared using the chi-square or Fisher's Exact test, and continuous variables were compared using the Mann-Whitney U test. Multivariate models were adjusted for age, gender, and childhood autism rating scale (CARS) total score.

Results: Screen exposure during meals was present in 68 (62.4%) of the children. The groups were similar in terms of demographic variables and autism severity. Feeding problems were found more frequently in children with screen exposure during meals [50/67 (74.6%) vs 20/41 (48.8%); OR=3.09, 95% CI 1.36-7.03; p=0.006].

Food selectivity was also higher [56/67 (83.6%) vs 26/41 (63.4%); OR=2.94, 95% CI 1.19-7.27; p=0.017]. Furthermore, daily screen time of ≥2 hours [66/68 (97.1%) vs 31/41 (75.6%); p<0.001] and problematic screen use [51/68 (75.0%) vs 15/41 (36.6%); p<0.001] were more common. As the frequency of screens at meals increased, the rate of feeding problems rose from 33.3% to 86.2% (adjusted OR per tier=2.20; p-trend<0.001), and the rate of food selectivity rose from 55.6% to 86.2% (adjusted OR per tier=1.75; p-trend=0.011). Conclusion: Screen exposure during meals is common in children with ASD and is associated with feeding problems and negative screen patterns rather than autism severity. In family medicine practice, the question "Does the child use a screen while eating?" can be used as a practical screening question to detect feeding difficulties and unhealthy screen habits.

KEYWORDS
Autism Spectrum Disorder, Screen Time, Feeding Problem, Food Selectivity

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OOP-02 · Cyberchondria Research in Türkiye: A Descriptive Analysis of Medical Residency Theses (2010-2026)

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ETHICS STATEMENT
This study does not require ethics committee approval.

ARTIFICIAL INTELLIGENCE STATEMENT
Generative AI tools were used only for language editing (grammar, spelling, clarity). Authors verified all content.

ABSTRACT
Introduction: Cyberchondria, characterized by excessive online health-related searches accompanied by increased anxiety, has been associated with health anxiety and problematic internet use (1,2,3). In Türkiye, cyberchondria-related theses have not yet been examined. Therefore, this study aims to analyze such theses conducted in Türkiye.
Materials and Methods: This retrospective study was conducted on February 23, 2026. Theses addressing the topic of cyberchondria were searched in the database of the Higher Education Council National Thesis Center. The term 'cyberchondria' was searched in the title, abstract, and subject index fields of the theses. Medical specialty theses published between 2010 and 2026 were included in the study.
Results: A total of 57 medical specialty theses on cyberchondria were identified. Most were conducted in Family Medicine (n=40, 70.2%), followed by Public Health (n=6, 10.5%), Psychiatry (n=4, 7.0%), Pediatrics (n=2, 3.5%), and Rheumatology (n=1, 1.8%). Additionally, several theses were multidisciplinary, including collaborations between Family Medicine and Obstetrics and Gynecology (n=1, 1.8%), Family Medicine, Psychiatry, and Psychology (n=1, 1.8%), and studies conducted in Allergy and Immunology and Pediatrics (n=2, 3.5%).
Health Sciences University had the highest number of theses (n=11, 19.3%), followed by Akdeniz, Ankara Yildirim Beyazit, Kutahya Health Sciences, and Ondokuz Mayis universities (each n=3, 5.3%). Ankara, Izmir Katip Celebi, Mersin, Suleyman Demirel, and Trakya universities each contributed two theses (3.5%). One thesis each (1.8%) was conducted at Afyonkarahisar Health Sciences, Ataturk, Bolu Abant Izzet Baysal, Bursa

Uludag, Canakkale Onsekiz Mart, Cukurova, Dicle, Dokuz Eylul, Ege, Erzincan Binali Yildirim, Gazi, Hitit, Kocaeli, Manisa Celal Bayar, Necmettin Erbakan, Ordu, Pamukkale, Sakarya, Selcuk, Tokat Gaziosmanpasa, Van Yuzuncu Yil, and Zonguldak Bulent Ecevit universities. Additionally, two theses (3.5%) were conducted under the Ministry of Health.
In terms of temporal distribution, the number of theses showed a marked increase in recent years. One thesis (1.8%) was completed in 2016, two in 2018, two (3.5%) in 2019, one (1.8%) in 2020, two (3.5%) in 2021, nine (15.8%) in 2022, twelve (21.1%) in 2023, eleven (19.3%) in 2024, and seventeen (29.8%) in 2025.
Conclusion: Cyberchondria has been addressed in a limited number of medical specialty theses in Türkiye, predominantly within Family Medicine. Despite a recent increase, interdisciplinary research remains insufficient, highlighting the need for broader academic attention to support evidence-based preventive strategies.

KEYWORDS
Cyberchondria, Digital Health Behavior, Medical Specialty Theses

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OOP-03 · Microbiota Research in Türkiye: A Document Analysis of Medical Residency Theses

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ETHICS STATEMENT
This study does not require ethics committee approval.

ARTIFICIAL INTELLIGENCE STATEMENT
Generative AI tools were used only for language editing (grammar, spelling, clarity). Authors verified all content.

ABSTRACT
Introduction: The human microbiota, the community of microorganisms inhabiting the body, plays a key role in immune regulation, metabolic homeostasis, and neurobehavioral pathways (1,2). Recent studies have highlighted strong associations between gut microbiota composition and cardiometabolic diseases, mental health disorders, and inflammatory conditions (3). In Türkiye, medical specialty theses represent an important source of academic output reflecting evolving healthcare research priorities; however, the scope and characteristics of microbiota-focused research within these theses have not yet been systematically evaluated. Therefore, this study aims to analyze the presence, interdisciplinary distribution, and temporal trends of medical specialty theses addressing microbiota in Türkiye.
Materials and Methods: This retrospective study was conducted on February 26, 2026. Theses addressing the topic of microbiota were searched in the database of the Higher Education Council National Thesis Center. The keyword 'microbiota' was used as the primary search term in the title field. The title sections of the retrieved theses were reviewed. Medical specialty theses published between 2010 and 2026 were included in the study.
Results: A total of 67 theses on microbiota were identified across multiple medical specialties. The highest numbers were in Pediatrics (n=14), Microbiology (n=11), Obstetrics and Gynecology (n=8), and Family Medicine (n=7), followed by several other disciplines with smaller contributions. In terms of institutional distribution, theses were conducted in numerous universities across Türkiye, most frequently at Eskisehir Osmangazi University (n=7), Istanbul University Cerrahpasa (n=6), Selcuk University (n=6), Marmara

University (n=5), and Health Sciences University (n=5), with additional theses distributed among other universities. Regarding temporal distribution, the number of theses increased over time, rising from one thesis in 2013 to a peak in 2024 (n=15), followed by 2023 (n=10) and 2025 (n=10).
Conclusion: The topic of microbiota has been addressed in medical specialty theses across several disciplines, particularly in Pediatrics and other clinical fields. However, the number of theses remains limited, and interdisciplinary collaboration appears insufficient. Although a gradual increase in thesis production has been observed in recent years, the distribution across institutions and specialties suggests that microbiota research has not yet been comprehensively integrated into medical specialty training. Considering its expanding role in metabolic, immunological, and systemic diseases, broader and multidisciplinary academic attention is warranted. Strengthening research on microbiota may support the development of translational approaches and evidence-based strategies within healthcare systems.

KEYWORDS
Microbiota, Metabolic Health, Medical Specialty Theses

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EBFMC26-OOP-04 · Prevalence of Refractive Errors in Children Aged 7 Years and Younger: The Role of Behavioral Visual Symptoms in Early Detection

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ETHICS STATEMENT

Ethical approval for this study was obtained from the Ordu University Non-Interventional Scientific Research Ethics Committee (Decision No: 2026/111, dated 29.04.2026).

ARTIFICIAL INTELLIGENCE STATEMENT

No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT

Introduction: Early detection of visual disorders in childhood is essential for reducing preventable vision loss. In the preschool period, children are often unable to clearly express visual impairment; instead, clinical presentation is frequently driven by behavioral manifestations. This study aimed to determine the prevalence and distribution of refractive errors in children aged 7 years and younger, to evaluate the clinical relevance of behavior-related visual symptoms prompting referral, and to assess their role in early diagnosis.

Materials and Methods: This retrospective cross-sectional study reviewed the medical records of children aged 7 years and younger who were evaluated between January 2024 and March 2026. A total of 605 initial visits were screened. To ensure analytical accuracy, duplicate visits from the same patient were excluded, and the final analysis was conducted on 444 unique patients. Refractive errors were classified according to ICD codes as myopia (H52.1), hyperopia (H52.0), astigmatism (H52.2), and unspecified refractive disorder (H52.7). Patients were included in the refractive error group if any of these diagnoses were recorded as a primary, secondary, or additional diagnosis. It should be emphasized that this study reflects diagnostic yield within a clinical setting rather than population-based prevalence.

Results: A total of 444 patients were included in the analysis. Refractive errors were identified in 82 patients (18.4%). Among these, myopia was detected in 24 patients (29%), astigmatism in 21 (26%), hyperopia in 10 (12%), and unspecified refractive disorders in 27 (33%).

Evaluation of presenting complaints revealed that the most common reasons for referral were watching television at a close distance, frequent blinking, and routine eye examinations. In addition, behavioral and

functional symptoms such as squinting, holding objects very close to the eyes, and headache were frequently observed. These findings suggest that, in preschool-aged children, refractive errors are more often reflected in clinical practice through behavioral cues rather than explicitly reported visual impairment. Conclusion: The 18.4% prevalence of refractive errors observed in this study highlights the importance of early ophthalmologic evaluation in this age group. Behavioral signs, particularly close viewing distance, frequent blinking, and squinting may serve as important early indicators of underlying refractive errors. These findings underscore the need for careful assessment of behavioral visual cues to facilitate early diagnosis of visual disorders in childhood.

KEYWORDS
Pediatric Ophthalmology, Myopia, Astigmatism, Hyperopia, Digital Eye Strain

INTRODUCTION

Early diagnosis of refractive errors in childhood is critically important for reducing preventable vision loss. During the preschool period, children are often unable to verbally articulate visual problems. Therefore, clinical presentations frequently occur through behavioral visual symptoms. Recognition of behavioral symptoms may provide important clinical clues for early ophthalmological evaluation.

Behavioral Symptoms

- Squinting and frequent blinking
- Viewing television or digital screens at a close distance
- Holding books or tablets excessively close to the eyes
- Head tilt or abnormal head posture
- Photophobia and frequent eye rubbing
- Reduced attention span and difficulty concentrating
- Difficulty during reading activities
- Ocular fatigue / eye strain
- Viewing with one eye closed
- Decline in academic performance
- Headache

Behavior may speak before vision does.

Why Are Behavioral Visual Symptoms Important?

- Supports early ophthalmologic referral
- Contributes to the early diagnosis of refractive errors
- May reduce the risk of amblyopia development
- Helps preserve the visual development process
- May contribute to the prevention of academic and neurodevelopmental consequences

AIM

To determine the prevalence of refractive errors in children aged 7 years and younger
To evaluate the distribution of refractive errors
To demonstrate the clinical significance of behavioral visual symptoms
To emphasize awareness at the primary care level

MATERIALS AND METHODS

- In this retrospective cross-sectional study, the medical records of a total of 605 patients who presented with behavioral visual complaints between January 2024 and March 2026 were reviewed.
- For patients with multiple outpatient visits during the study period for follow-up or refractive correction purposes, only the initial presentation was included in the analysis.
- After exclusion of duplicate records, a total of 444 patients were enrolled in the study.

- All pediatric patients included in the study underwent a comprehensive ophthalmologic examination under cycloplegia in accordance with the standard clinical protocol of our department.

RESULTS

- A total of 444 patients were analyzed
- Refractive errors were detected in 82 patients (18.4%)
- Myopia: 29%
- Astigmatism: 26%
- Hyperopia: 12%
- Unspecified refractive error: 33%*

** (Patients in whom the refractive error subtype was not clearly specified in the retrospective records were classified under the unspecified refractive error group.)*

Among the 24 children diagnosed with myopia, the most common behavioral reason for presentation was viewing television or digital screens at a close distance, which was observed in approximately 70% of the patients.

- Squinting: 58%
- Inability to see the board clearly from a distance / attention difficulties: 42%
- Headache and ocular fatigue: 25%

Among children diagnosed with astigmatism, squinting (62%), photophobia (48%), and eye rubbing (43%) were more frequently observed. In addition, 33% of the patients were brought for ophthalmologic evaluation by their parents due to difficulty with focusing or concentration.

DISCUSSION

Although symptoms related to refractive errors have been more frequently described in school-aged children in the literature, studies focusing on behavioral visual symptoms during the preschool period remain limited. In a population-based cross-sectional study conducted in Beijing, China, in 2025, a total of 1,473 preschool children aged 36–83 months were evaluated (1). All participants underwent comprehensive ophthalmologic examination, including cycloplegic refraction assessment, and refractive errors were reported as the most common cause of visual impairment. The most frequently detected refractive error was astigmatism (24.2%), followed by hyperopia (19.6%), myopia (9.1%), and anisometropia (6.4%). In contrast, in our study involving children aged 7 years and younger presenting with behavioral visual symptoms, myopia (29%) and astigmatism (26%) were the predominant refractive errors identified.

In the MEPEDS study, cycloplegic refraction examinations were performed in preschool children aged 6–72 months, and hyperopia (25.6%) and astigmatism (6.3%) were reported to be common during the preschool period (2). In contrast, the prevalence of myopia was found to be relatively low (1.2%).

The high prevalence of myopia (29%) and astigmatism (26%) observed in our study may be associated with the fact that the study population consisted of symptomatic children presenting with behavioral visual complaints rather than a population-based screening cohort.

While the prevalence of astigmatism appears to be generally consistent with rates reported in the literature, the higher frequency of myopia detected in our cohort may be related to the more pronounced behavioral visual symptoms leading to clinical presentation in myopic children. These findings support the concept that behavioral visual symptoms may represent important early clinical indicators of refractive errors.

In a prospective study conducted in 2013, the relationship between refractive errors and behavioral problems, including attention, adaptation, and behavioral disturbances, was investigated in 183 children aged 5–12 years who presented to a general ophthalmology outpatient clinic. The study reported that such behavioral problems were significantly more common in children with hyperopia and hyperopic astigmatism compared with emmetropic children (3).

CONCLUSION

- Refractive errors during the preschool period may often not be directly expressed by children.
- Children frequently manifest visual problems through behavioral visual symptoms.

- Behaviors such as viewing television or digital screens at a close distance, squinting, and eye rubbing may represent early clinical clues.
- Our study demonstrated a noteworthy prevalence of refractive errors among children presenting with behavioral visual symptoms.
- Therefore, awareness among parents and primary care physicians is critically important for early diagnosis and the reduction of preventable vision loss.

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OOP-05 · 72-Hour Vision Loss: A Case of Post-Traumatic Fulminant Endophthalmitis

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This paper underwent a ***double-blind peer review process*** *and was approved for publication by the Scientific Committee of the conference.*

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ETHICS STATEMENT

This study does not require ethics committee approval. Informed consent was obtained from the patient for publication of this case report and accompanying images.

ARTIFICIAL INTELLIGENCE STATEMENT

No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT

Introduction: Ocular trauma involving organic materials may lead to rapidly progressive infections due to high-risk microbial inoculation. Injuries caused by plant-based materials are particularly critical in terms of filamentous fungal infections and may progress to fulminant endophthalmitis characterized by corneal melting and intraocular spread within a short period. In uncontrolled cases, further extension of the infection may result in panophthalmitis and ultimately lead to loss of the eye.

Case Presentation: A 45-year-old male patient with no known systemic disease, initially presented to a local emergency department after a foreign body entered his right eye while mowing grass three days prior. The clinical appearance at the time of initial presentation is shown in Figure 1. No intervention was performed during the initial evaluation, and the patient was referred to a provincial center. Review of medical records revealed that the foreign body was removed at the referral center. Three days after the trauma, the patient was referred to our hospital from another healthcare facility due to worsening vision loss, pain, and redness. At presentation, visual acuity in the right eye was no light perception. The eye was hypotonic, and ocular structures could not be clearly visualized due to dense purulent discharge (Figure 2).

Emergency orbital computed tomography demonstrated findings consistent with rupture of the right globe. During intraoperative evaluation under general anesthesia, severe corneal melting with loss of structural integrity, protrusion of the intraocular lens, and extensive intraocular hemorrhage were observed beneath dense purulent material (Figure 3). Samples of tissue and discharge were obtained and sent for microbiological and pathological analysis. A limited anterior vitrectomy was performed as permitted by surgical conditions, followed by primary closure to re-establish globe integrity. Empirical broad-spectrum antibacterial and

antifungal therapy was initiated, including systemic, intravitreal, and topical treatments. Considering the presence of active infection, irreversible surgical procedures were not performed during the same session. Following control of the infection, evisceration was considered sufficient due to irreversible intraocular damage. This approach was regarded as a clinically significant outcome, as it prevented the spread of infection to the orbital tissues and eliminated the need for enucleation. In accordance with the patient's preference, continuation of treatment at another tertiary care center was deemed appropriate.
Conclusion: Ocular injuries involving organic materials, particularly those associated with plant-based trauma, may lead to rapidly progressive infections resulting in irreversible damage within a short period. In primary care settings, the following principles are critical: Preservation of globe integrity; Avoidance of unnecessary manipulation; Prompt referral to appropriate centers without delay.

KEYWORDS
Organic Ocular Trauma, Intraocular Foreign Body, Globe Rupture, Endophthalmitis, Evisceration

INTRODUCTION

Endophthalmitis is a severe ocular infection characterized by intense inflammatory involvement of the vitreous cavity and intraocular structures, resulting from the invasion of intraocular tissues by bacterial, fungal, or, less commonly, parasitic microorganisms. Extension of the infection into the Tenon's capsule, sclera, and orbital soft tissues is defined as panophthalmitis; particularly in fulminant cases caused by highly virulent microorganisms, this condition may demonstrate rapid progression and lead to irreversible loss of the eye within a short period of time (1-3).

Classification of Endophthalmitis (Table 1)

Table 1

Clinical Type	Most Common Causative Agents	Features
Acute postoperative endophthalmitis	S. epidermidis, S. aureus, Streptococcus spp.	Most commonly occurs after cataract surgery
Delayed-onset endophthalmitis	Propionibacterium acnes	May present as chronic, recurrent uveitis
Traumatic endophthalmitis	*Bacillus cereus*, fungal agents	Progresses very rapidly and causes severe tissue destruction
Endogenous endophthalmitis	Candida, Staphylococcus, Streptococcus	Results from hematogenous spread from a systemic infectious focus

Causative Agents of Fulminant Endophthalmitis

- *Bacillus cereus:* May cause fulminant panophthalmitis progressing within hours and is considered one of the pathogens associated with the poorest visual prognosis.
- *Streptococcus species:* Associated with severe intraocular inflammation and rapid vitreoretinal destruction.
- *Pseudomonas aeruginosa:* Particularly in traumatic cases, it demonstrates a highly aggressive clinical course and may lead to rapid loss of the eye.
- *Candida species:* Although typically presenting with a more insidious course, delayed diagnosis may result in severe vitreous involvement and permanent visual impairment (1-4).

CASE REPORT

- 45-year-old male
- The patient initially presented to the emergency department of his local district hospital with a complaint of a foreign body entering his right eye while mowing grass (Figure 1).
- Review of the medical records revealed that no intervention was performed during the initial evaluation and the patient was referred to a tertiary center. At the referral center, the foreign body was removed and topical antibiotic therapy was initiated.

Figure 1

Clinical appearance at the time of initial presentation



- Three days after the trauma, the patient was referred to our hospital from another healthcare center due to progressively worsening visual loss, ocular pain, and redness. At presentation, visual acuity in the right eye was no light perception (NLP). Ophthalmologic examination revealed hypotony of the right eye, and the ocular structures could not be clearly visualized because of dense purulent secretion (Figure 2).

Figure 2

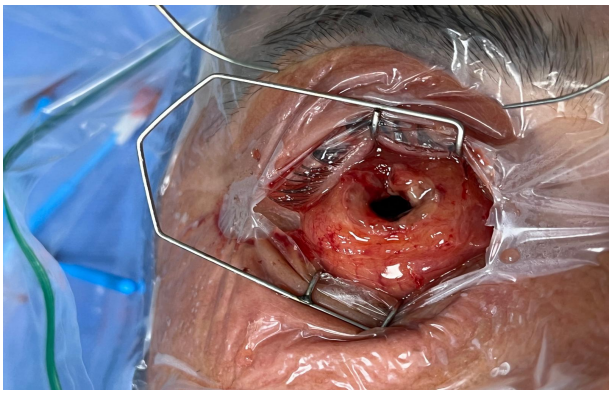
Clinical appearance 3 days after the trauma



Intraoperative evaluation performed under general anesthesia revealed severe corneal melting and loss of corneal integrity beneath dense purulent secretions, protrusion of the intraocular lens, and extensive intraocular hemorrhage (Figure 3).

Figure 3

Intraoperative view



Case / Microbiological and Pathological Examination

- Tissue and purulent secretion samples obtained during surgery were sent to the laboratory for microbiological and pathological evaluation. Despite microbiological sampling, no causative microorganism could be isolated.

Case / Surgical Management

- Necrotic tissues were debrided, and no intraocular foreign body was identified.
- Anterior vitrectomy was performed to the extent permitted by the surgical conditions, and primary suturation was attempted to preserve globe integrity.
- Empirical systemic, intravitreal, and topical broad-spectrum antibacterial and antifungal therapy was initiated. In accordance with clinical priorities, irreversible surgical procedures were not planned during the same session in the presence of active infection.

Case / Clinical Course

- During follow-up, after the infection had been brought under control, irreversible damage to the intraocular structures led to the decision that evisceration surgery would be sufficient.
- This approach was considered to provide an important clinical advantage by preventing the spread of infection to the orbital tissues and eliminating the need for enucleation.

DISCUSSION

The literature has shown that post-traumatic endophthalmitis cases, particularly those associated with *Bacillus cereus*, may progress within hours to severe vitreoretinal destruction, corneal melting, and eventual loss of the eye (1-2). In traumatic endophthalmitis, the presence of an intraocular foreign body and delayed wound repair have been demonstrated to be associated with poor prognosis. Similarly, fulminant cases developing after exposure to grass mowing, metal, or soil contamination frequently require evisceration or enucleation (3).

In our case, no causative microorganism could be isolated despite microbiological evaluation. Culture negativity is not uncommon in endophthalmitis and may occur particularly due to prior antibiotic administration, insufficient sample volume, rapid tissue necrosis, or the presence of fastidious microorganisms that are difficult to culture. The patient's immunocompetent status, the clinical course of the endophthalmitis, the history of organic ocular trauma, the rapid progression, and the intraoperative findings were considered consistent with infectious panophthalmitis. The literature reports that approximately 30% of infectious endophthalmitis cases may be culture-negative (4). Therefore, negative culture results should not exclude the diagnosis in cases with strong clinical evidence of infection.

Cases that initially appear benign following organic ocular trauma may progress within hours to days to devastating panophthalmitis (5).

CONCLUSION

- In accordance with the patient's preferences, it was decided that further treatment and reconstructive management would be continued at another tertiary referral center.
- This case demonstrates that fulminant infections developing after organic ocular trauma may rapidly progress to devastating panophthalmitis, highlighting the critical importance of early diagnosis and aggressive treatment.

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OOP-06 · Validity and Reliability of the Turkish Version of the Modified Vaccine Hesitancy Scale for Childhood, Influenza, and HPV Vaccines

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ETHICS STATEMENT
Ethical approval for this study was obtained from the Ankara University Faculty of Medicine Human Research Ethics Committee (Decision No: I06-589-25; Date: 06.08.2025).

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Immunization has been instrumental in advancing public health. However, vaccine hesitancy has increased in recent years (1). The World Health Organization has identified vaccine hesitancy as one of

the top ten threats to global health (2). The present study evaluates the validity and reliability of the Turkish version of a scale designed to assess parental hesitancy toward childhood, influenza, and HPV vaccines (3).
Materials and Methods: This methodological study was conducted between September 15 and December 15, 2025. Data were obtained from individuals attending the general outpatient clinics of the Departments of Family Medicine and Pediatrics at Ankara University Faculty of Medicine through face-to-face or online questionnaires. HPV-related items were not administered to participants whose children were younger than nine years. Data analysis was performed using IBM SPSS version 27. Descriptive statistics were reported as numbers and percentages. Item analysis and exploratory factor analysis were conducted to assess validity and reliability, and Cronbach's alpha coefficients were calculated.
Results: The participants were aged 21-60 years (mean±SD: 39.9±7.1), and 87.8% (332) were mothers. Most participants were university graduates (64.6%). Parents reported that 95.8% of children had received all vaccines recommended by the Ministry of Health. In the childhood vaccine subscale, item 7 was removed due to an item-total correlation below 0.20, and items 8 and 9 were removed because their factor loadings were below 0.30. The item-total correlations of the remaining six items ranged from 0.85-0.95. The subscale showed excellent internal consistency (Cronbach's α=0.97), with factor loadings ranging from 0.89-0.96 and explained variance of 86.6%. In the influenza subscale, item 7 was removed due to an item-total correlation below 0.20, and items 8 and 9 were removed because their factor loadings were below 0.30. The item-total correlations of the remaining six items ranged from 0.73-0.92. The subscale demonstrated high reliability (Cronbach's α=0.96), with factor loadings ranging from 0.80-0.95 and explained variance of 82.9%. In the HPV subscale, item-total correlations ranged from 0.39-0.83. The subscale showed good internal consistency (Cronbach's α=0.90), with factor loadings ranging from 0.37-0.92 and explained variance of 59.5%.
Conclusion: Three items were removed from the childhood vaccinations subscale and three from the influenza subscale of the 27-item Modified Vaccine Hesitancy Scale for Childhood, Influenza, and HPV Vaccines. The final 21-item version was found to be valid and reliable. Further research in diverse populations is recommended.

KEYWORDS
Vaccine Hesitancy, Childhood Vaccines, Influenza Vaccine, HPV Vaccine, Validity and Reliability

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OOP-07 · Post-Vaccination Symptom: Local Reaction or a Bleeding Disorder?

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ETHICS STATEMENT
This study does not require ethics committee approval. Written informed consent was obtained from the patient's legal guardians.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Hemophilia is a genetic bleeding disorder inherited in an X-linked recessive pattern (1,2). In this case report, the diagnostic process leading to severe hemophilia B in a 7-month-old infant who developed refusal to move the leg following vaccination is presented.
Case presentation: A seven-month-old male patient was brought by his mother to the family medicine outpatient clinic of a tertiary care hospital with the complaint of avoiding movement of his right leg. No remarkable findings were noted in his personal or family history. It was learned that his 6-month-old vaccinations had been administered 10 days earlier in accordance with the national immunization schedule. On physical examination induration and tenderness on palpation were observed in the distal part of the right thigh accompanied by irritability. There was no limitation in the movements of the left lower extremity. Further evaluation was planned as the findings were disproportionate to the expected response following injection and were sufficient to limit extremity movement. Laboratory investigations revealed that Hb, PLT, and PT values were within normal limits, while aPTT was prolonged at 67.2 seconds. Ultrasonography of the right thigh was reported as diffuse intramuscular hematoma in the deep muscle planes. Based on these findings, the patient was referred to the pediatrics department for evaluation of a bleeding diathesis. Following clinical evaluation, the presence of intramuscular hematoma on magnetic resonance imaging and decreased Factor IX activity (0.5%; reference: 70-120%) led to the consideration of Factor IX deficiency (severe hemophilia B), and the diagnosis was confirmed by genetic analysis. The patient is currently being followed through collaboration between the hematology and family medicine physicians, and vaccination practices and timing are being determined according to treatment schedules (3).

Conclusion: Musculoskeletal complaints that arise following injection procedures such as vaccination may not always represent simple local reactions. Careful and holistic evaluation of clinical findings in primary care, along with timely referral, is of critical importance for early diagnosis, initiation of treatment, and the implementation of preventive measures.

KEYWORDS
Hemophilia B, Vaccination, Intramuscular Injections, Infant

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OOP-08 · Is Montelukast Being Replaced by Antihistamine-Montelukast Combination Therapy? A 10-Year Trend

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ETHICS STATEMENT
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ARTIFICIAL INTELLIGENCE STATEMENT
AI Tools used for language editing. Authors verified all content.

ABSTRACT
Introduction: Allergic rhinitis is a common comorbidity in patients with asthma (1). A multinational study conducted in our country reported a prevalence of allergic rhinitis of approximately 50% among patients with asthma. According to data from the national adult asthma registry in Türkiye, 61.76% of adult asthma patients use montelukast (2). Leukotriene receptor antagonists act by binding to the cysteinyl leukotriene CysLT1 receptor, thereby inhibiting the effects of leukotriene D4, reducing bronchoconstriction, and suppressing inflammation. In recent years, fixed-dose combination preparations containing antihistamines and montelukast have become increasingly available (3). This study aimed to evaluate trends in the sales of

montelukast monotherapy and antihistamine-montelukast combination products in Türkiye over a 10-year period.
Materials and Methods: This study utilized IQVIA (IMS Health) pharmaceutical sales data for montelukast-containing products marketed in Türkiye between 2016 and 2025. Data were analyzed based on annual box sales. Products were categorized into two groups: montelukast monotherapy and fixed-dose antihistamine-montelukast combination preparations. Percentage changes over time were calculated based on annual sales volumes.
Results: Over the 10-year period, the highest percentage increase (323.5%) was observed in levocetirizine-montelukast combination products, whereas montelukast monotherapy sales decreased by 30.5%. In 2021, montelukast monotherapy accounted for 38.5% of total montelukast-containing product sales; this proportion declined to 22.9% by 2025, representing a relative decrease of 40.5%. In contrast, the share of antihistamine-montelukast combination products increased from 61.5% in 2021 to 77.1% in 2025, corresponding to a 25.3% relative increase.
Conclusion: This study demonstrates a shift in the utilization patterns of montelukast-containing products in Türkiye over the past decade, characterized by a decrease in montelukast monotherapy and an increase in antihistamine-montelukast combination products. While these findings reflect changing prescribing and market trends, the underlying clinical drivers of this shift cannot be determined from sales data alone. Further prospective and real-world studies are needed to evaluate the clinical implications of these trends.

KEYWORDS
Asthma, Rhinitis, Montelukast

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OOP-09 · Evaluation of Glycemic and Metabolic Characteristics in Patients Undergoing HbA1c Testing in Primary Care: A Retrospective Descriptive Study

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ETHICS STATEMENT
This study does not require ethics committee approval.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Diabetes mellitus is a major public health problem with increasing prevalence worldwide (1). Hemoglobin A1c (HbA1c) reflects long-term glycemic status and is widely used in the diagnosis and monitoring of diabetes, whereas fasting plasma glucose represents a single point-in-time measurement and may be insufficient in some patients (2). Data on the real-world glycemic and metabolic characteristics of patients undergoing HbA1c testing in primary care are limited, and discordance between HbA1c and fasting plasma glucose may affect early detection. This study aimed to evaluate the glycemic and metabolic characteristics of patients undergoing HbA1c testing in primary care and to assess the discordance between HbA1c and fasting plasma glucose.
Materials and Methods: This retrospective descriptive study included patients aged ≥18 years who presented to the Family Medicine outpatient clinic of Eskisehir Yunus Emre State Hospital between 2024 and 2025 and underwent HbA1c testing. Data on age, fasting plasma glucose, HbA1c, and lipid profile (total cholesterol, LDL-cholesterol, triglycerides) were obtained from electronic medical records. Glycemic status was defined according to American Diabetes Association criteria: HbA1c <5.7% as normal, 5.7-6.4% as prediabetes, and ≥6.5% as diabetes; fasting plasma glucose <100 mg/dL as normal, 100-125 mg/dL as impaired fasting glucose, and ≥126 mg/dL as diabetes (3).
Results: A total of 369 patients were included (mean age 46.5±15.8 years). Based on HbA1c, 51.8% were normal, 12.3% prediabetes, and 35.9% diabetes. Based on fasting plasma glucose, 67.0% were normal, 26.3% impaired fasting glucose, and 6.7% diabetes. A total of 99 patients (27%) had HbA1c ≥6.5% despite fasting plasma glucose <126 mg/dL. Mean total cholesterol, LDL-cholesterol, and triglyceride levels were 203 mg/dL, 126 mg/dL, and 134 mg/dL, respectively. Lipid parameters showed an increasing trend with higher HbA1c levels. A weak correlation was observed between HbA1c and fasting plasma glucose (r=0.08).

Conclusion: A substantial proportion of patients had diabetic-range HbA1c with discordant fasting glucose levels. Increasing HbA1c levels were associated with higher lipid parameters, suggesting elevated cardiometabolic risk. These findings indicate that reliance on fasting glucose alone may underestimate true glycemic burden, and that HbA1c use in primary care may improve early diagnosis and risk assessment.

KEYWORDS
HbA1c, Primary Care, Lipid Profile, Fasting Plasma Glucose, Diabetes

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EBFMC26-OOP-10 · Substance Use Profile by Age and Gender in AMATEM Patients: A Retrospective Analysis

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ETHICS STATEMENT
This study does not require ethics committee approval.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Substance use disorders represent a significant public health concern worldwide, with increasing prevalence and substantial social and clinical consequences (1). Demographic factors such as age and gender are known to influence patterns of substance use and treatment-seeking behavior (2). This study aimed to evaluate substance use profiles according to age and gender among patients admitted to the Alcohol and Substance Addiction Treatment and Training Center (AMATEM) in Eskisehir and to examine the effects of these variables on substance use.
Methods: This study was designed as a retrospective and descriptive analysis. Toxicology data of patients admitted to AMATEM between August 2024 and March 2026 were used. Substance use was coded as a binary variable (present/absent). Age groups were categorized and analyzed accordingly. The chi-square test was used to compare categorical variables. Additionally, logistic regression analysis was performed to determine factors affecting benzodiazepine use. Statistical significance was accepted as $p<0.05$.
Results: A total of 432 patients were evaluated. Of these, 408 were male (94.4%) and 24 were female (5.6%), with a mean age of 37.1±12.4 years. The most commonly used substances were benzodiazepines, buprenorphine, and cocaine. The most frequent co-use patterns were benzodiazepine-buprenorphine (n=339), benzodiazepine-cocaine (n=334), and benzodiazepine-opioid (n=305). No statistically significant differences were found in substance use according to gender ($p>0.05$ for all variables). However, significant differences were observed across age groups for benzodiazepine ($p=0.015$), opioid ($p=0.029$), and cannabis ($p=0.015$) use. Logistic regression analysis revealed that age had an independent and significant effect on benzodiazepine use ($p=0.005$), whereas gender did not ($p>0.05$).

Conclusion: Substance use profiles among patients admitted to AMATEM show significant variation by age. In particular, benzodiazepine use increases with age. These findings are consistent with national data from Türkiye, where substance use patterns and treatment admissions vary according to age and gender (3). This highlights the importance of considering demographic characteristics in the planning of prevention and treatment strategies in Türkiye.

KEYWORDS
AMATEM, Substance Use Disorder, Benzodiazepine, Cannabis

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OOP-11 · Comparative Discriminative Performance of Albumin, Lymphocyte Count, Prognostic Nutritional Index, and a Multivariable Inflammation-Nutrition Model in MINOCA and INOCA

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ABSTRACT

Introduction: The spectrum of non-obstructive coronary artery syndromes includes myocardial infarction with non-obstructive coronary arteries (MINOCA) and ischemia with non-obstructive coronary arteries (INOCA). Despite sharing common pathophysiological mechanisms such as microvascular dysfunction and systemic inflammation, these entities differ in clinical outcomes. The relative contribution of inflammation- and nutrition-related biomarkers in distinguishing these phenotypes remains unclear. We aimed to compare the discriminative performance of albumin, lymphocyte count, prognostic nutritional index (PNI), and a multivariable inflammation-nutrition model in differentiating MINOCA from INOCA.

Materials and Methods: A total of 101 patients (MINOCA: n = 34; INOCA: n = 67) were included. Albumin, lymphocyte count, and PNI were evaluated. PNI was calculated as 10 × albumin (g/dL) + 5 × lymphocyte count ($10^3/\mu L$). MINOCA was defined according to the universal definition of myocardial infarction in the absence of obstructive coronary artery disease (<50% stenosis). INOCA was defined as evidence of myocardial ischemia without obstructive coronary lesions. Five models were constructed: albumin, lymphocyte count, PNI, clinical model [age, sex, C-reactive protein (CRP)], and extended inflammation–nutrition model (age, sex, CRP, albumin, lymphocyte count). The clinical model was predefined based on established clinical relevance rather than data-driven selection. Logistic regression and receiver operating characteristic (ROC) analyses were performed. Discriminative performance was assessed using area under the curve (AUC), and comparisons were made using the DeLong test. All biomarkers were measured at the time of hospital admission before initiation of treatment.

Results: Albumin and PNI were significantly lower in the MINOCA group (p=0.007 for both) (Table 1). In univariate analysis, albumin demonstrated the strongest inverse association with MINOCA, followed by PNI

and lymphocyte count. Albumin showed moderate discrimination (AUC: 0.70), as did PNI (AUC: 0.69), whereas lymphocyte count was not discriminative (AUC: 0.44). The clinical model demonstrated limited performance (AUC: 0.59). The extended inflammation-nutrition model achieved the highest discriminative performance (AUC: 0.81) and significantly outperformed all other models ($p<0.05$) (Figure 1 and Table 2). Albumin demonstrated a significant association with MINOCA in both univariate and multivariable analyses, whereas PNI showed borderline significance and lymphocyte count was not independently associated (Table 3).

Table 1

Baseline demographic and laboratory characteristics of the study population

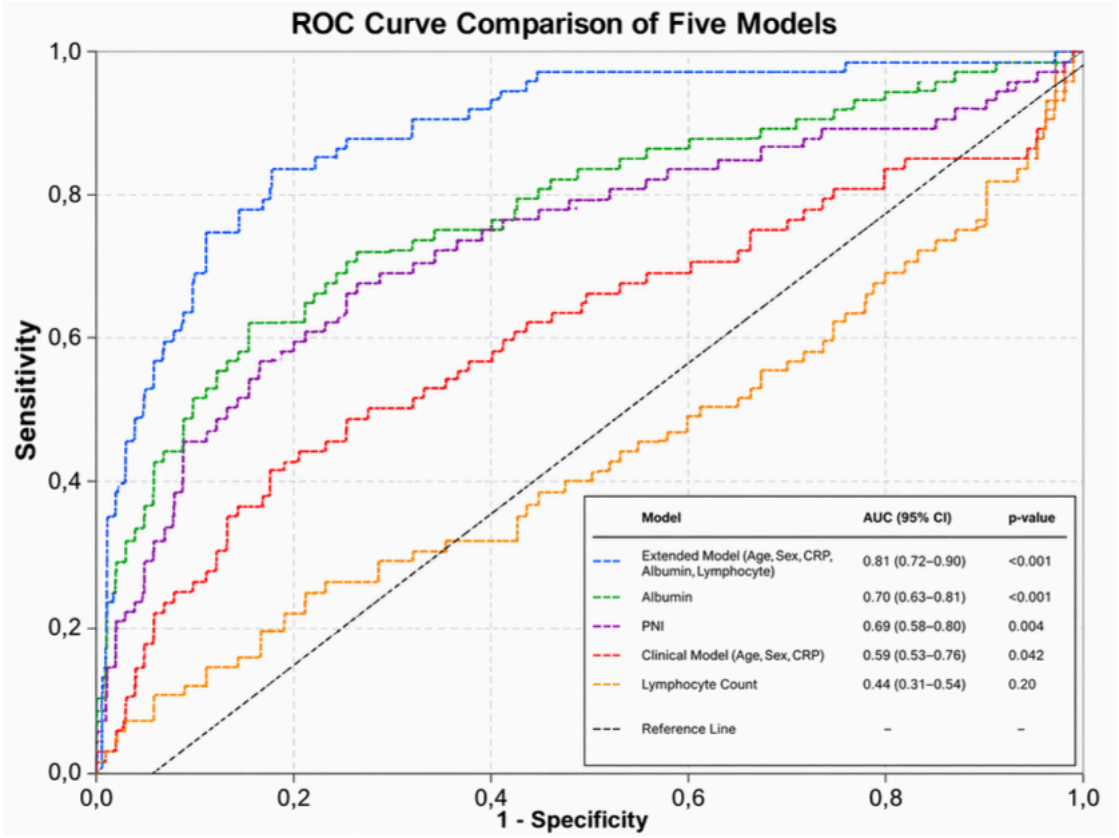
Variables	**MINOCA (n = 34)**	**INOCA (n = 67)**	**p-value**
Age (years)	61.2 ± 9.8	59.5 ± 10.4	0.38
Male sex, n (%)	20 (58.8)	36 (53.7)	0.62
Diabetes mellitus, n (%)	11 (32.4)	18 (26.9)	0.55
Hypertension, n (%)	18 (52.9)	31 (46.3)	0.52
Atrial fibrillation, n (%)	4 (11.8)	6 (9.0)	0.66
WBC (×10³/μL)	8.9 ± 2.1	8.3 ± 1.9	0.18
Neutrophil (×10³/μL)	5.6 ± 1.8	5.1 ± 1.6	0.14
Lymphocyte (×10³/μL)	1.8 ± 0.6	2.0 ± 0.7	0.11
Hemoglobin (g/dL)	13.2 ± 1.5	13.6 ± 1.4	0.21
Platelet (×10³/μL)	245 ± 62	238 ± 58	0.59
Creatinine (mg/dL)	1.01 ± 0.28	0.96 ± 0.24	0.32
ALT (U/L)	28 (20–36)	26 (18–34)	0.27
AST (U/L)	25 (19–33)	23 (18–30)	0.22
Glucose (mg/dL)	118 ± 34	112 ± 29	0.34
LDL-C (mg/dL)	122 ± 36	118 ± 33	0.56
CRP (mg/L)	**4.2 (2.8–6.5)**	**3.1 (2.1–4.8)**	**0.03**
Albumin (g/dL)	**3.98 ± 0.29**	**4.20 ± 0.26**	**0.007**
PNI	**50.30 ± 5.70**	**53.64 ± 5.85**	**0.007**

MINOCA: Myocardial infarction with non-obstructive coronary arteries, INOCA: Ischemia with non-obstructive coronary arteries, WBC: White blood cell, ALT: Alanine aminotransferase, AST: Aspartate aminotransferase, LDL-C: Low-density lipoprotein cholesterol, CRP: C-reactive protein, PNI: Prognostic nutritional index

*Continuous variables are presented as **mean ± standard deviation (SD)** or **median [interquartile range, (IQR)]**, depending on distribution. Categorical variables are presented as **number (percentage)**. Comparisons between groups were performed using the **independent samples t-test** or **Mann–Whitney U test** for continuous variables and the **chi-square test** for categorical variables. Statistically significant values are shown in **bold**.*

Figure 1

Comparative ROC curve analysis of albumin, lymphocyte count, prognostic nutritional index, and multivariable models for discriminating MINOCA from INOCA



ROC: Receiver operating characteristic, CRP: C-reactive protein, PNI: Prognostic nutritional index, AUC: Area under the curve, CI: Confidence interval

P-values compare each model's AUC with the refererence (no discrimination) using ROC analysis.

Table 2

Pairwise comparison of AUCs using DeLong test

Comparison	AUC (Model 1)	AUC (Model 2)	ΔAUC	p-value
Extended vs Albumin	0.81	0.70	0.11	**0.008**
Extended vs PNI	0.81	0.69	0.12	**0.01**
Extended vs Clinical	0.81	0.59	0.22	**<0.001**
Extended vs Lymphocyte	0.81	0.44	0.37	**<0.001**
Albumin vs PNI	0.70	0.69	0.01	0.352
PNI vs Clinical	0.69	0.59	0.10	0.07

AUC: Area under the curve, ΔAUC: Difference between model AUCs, PNI: Prognostic nutritional index

P-values were derived using the DeLong test for paired receiver operating characteristic curves. The extended model was predefined and included age, sex, C-reactive protein, albumin, and lymphocyte count. Statistical significance was defined as $p < 0.05$.

Table 3

Univariate and multivariable logistic regression analysis for predictors of MINOCA

	Univariate		Multivariable	
Variable	**OR (95% CI)**	**p-value**	**OR (95% CI)**	**p-value**
Age	0.990 (0.962 - 1.018)	0.495	0.947 (0.906 - 0.991)	**0.019**
Male sex	0.968 (0.423 - 2.215)	0.941	1.632 (0.552 - 4.826)	0.375
Diabetes mellitus	1.362 (0.520 - 3.570)	0.528		
Hypertension	0.765 (0.334 - 1.750)	0.526		
Atrial fibrillation	1.333 (0.212 - 8.385)	0.759		
WBC	0.947 (0.832 - 1.078)	0.411		
Neutrophil	0.966 (0.837 - 1.114)	0.637		
Lymphocyte	0.752 (0.472 - 1.201)	0.233	0.902 (0.525 - 1.550)	0.709
Hemoglobin	0.924 (0.731 - 1.168)	0.509		
Platelet	0.992 (0.985 - 0.998)	0.023		
Creatinine	0.243 (0.030 - 1.954)	0.183		
ALT	1.011 (0.992 - 1.032)	0.241		
AST	0.995 (0.986 - 1.004)	0.334		
Glucose	1.002 (0.997 - 1.007)	0.262		
LDL-C	1.003 (0.993 - 1.014)	0.474		
CRP	1.043 (0.926 - 1.175)	0.479	0.867 (0.729 - 1.032)	0.109
Albumin	0.055 (0.010 - 0.305)	**<0.001**	0.008 (0.001 - 0.166)	**0.001**
PNI	0.902 (0.833 - 0.975)	**0.010**		

MINOCA: Myocardial infarction with non-obstructive coronary arteries, OR: Odds ratio, CI: Confidence interval, WBC: White blood cell, ALT: Alanine aminotransferase, AST: Aspartate aminotransferase, LDL-C: Low-density lipoprotein cholesterol, CRP: C-reactive protein, PNI: Prognostic nutritional index

Values are presented as odds ratios (OR) with 95% confidence intervals (CI). Univariate models were constructed for each variable separately. The multivariable model included age, sex, CRP, albumin, and lymphocyte count, selected a priori based on clinical relevance and pathophysiological considerations. PNI was not included in the multivariable model due to collinearity with albumin and lymphocyte count.

Conclusion: In patients with non-obstructive coronary artery disease, albumin-based and multivariable inflammation-nutrition models provide superior discrimination between MINOCA and INOCA compared to PNI alone. These findings suggest that integrated modelling of inflammatory and nutritional status may better capture the underlying pathophysiological differences between these phenotypes.

KEYWORDS
Albumin, Inflammation, INOCA, MINOCA, Nutrition, PNI

COI ***& Other Declarations:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****. No AI tools were used in this study.*

EBFMC26-OOP-12 · Systemic Reactions During Skin Prick Testing in Children: Rare but Not Negligible

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ETHICS STATEMENT
Ethical approval was obtained from the Haseki Training and Research Hospital Ethics Committee.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Skin prick tests (SPTs) are widely used in the diagnosis of allergic diseases and are generally considered safe (1,2). However, data on systemic reactions (SRs), particularly in children, remain limited (3,4). This study aimed to evaluate the frequency and clinical characteristics of systemic reactions associated with SPTs in a pediatric population.
Materials and Methods: This retrospective study included children who underwent SPTs at the Pediatric Allergy Clinic of Haseki Training and Research Hospital between August 2024 and April 2026. Demographic characteristics, test indications, allergen types (food vs. inhalant), and the occurrence of local or systemic reactions were obtained from medical records. Patients who underwent prick-to-prick testing were excluded.
A total of 1861 patients were included (56% male), with a mean age of 7.3 ± 2.1 years. Among all performed tests, 376 (20.2%) were conducted with food allergens, while the remaining tests involved inhalant allergens.
Results: Systemic reactions were observed in 5 patients (0.27%). Among these, 2 patients underwent SPTs with food allergens and 3 with inhalant allergens. Anaphylaxis occurred in 3 patients (0.16%), including 2 patients tested with food allergens and 1 with inhalant allergens. The remaining reactions included urticaria in 1 patient and isolated rhinorrhea with sneezing in 1 patient.
All patients with anaphylaxis were treated with intramuscular adrenaline (0.01 mg/kg/dose), resulting in complete resolution of clinical symptoms. Serum tryptase levels obtained during or after the reactions were <11 ng/mL in all patients. Additionally, baseline serum tryptase levels evaluated for mast cell disorders were within normal limits (<11 ng/mL), with no evidence suggestive of underlying mast cell disease.
Conclusion: Systemic reactions during SPTs are uncommon in children, even in the absence of prick-to-prick testing (3,4). However, despite their low frequency, clinicians should remain cautious, as anaphylaxis may

occur with both food and inhalant allergens (3,4). SPTs should always be performed under appropriate medical supervision with preparedness for prompt recognition and management of systemic reactions (3,4).

KEYWORDS
Children, Skin Prick Test, Systemic Reaction, Anaphylaxis, Tryptase, Mast Cell Disease, Food Allergens, Inhalant Allergens

CONFLICT OF INTEREST DECLARATION
There is no commercial, financial, or personal conflict of interest in this study.

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OOP-13 · Vocational Inclusion Through Teachers' Eyes: A Qualitative Analysis of Stigma, Burnout, and Barriers to Employment

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ETHICS STATEMENT

This study was derived from the master's thesis titled "Istanbul Ili Silivri Ilcesinde Gorev Yapan Meslek Ogretmenlerinin Kaynastirma Egitimindeki Yeterlilik ile Kaynastirma Egitimine Iliskin Tutum ve Davranislarinin Incelenmesi", completed by Gokcer ASIK at Istanbul Gelisim University, Graduate School of Education, Department of Child Development, Istanbul, 2024. Ethical approval was granted by the Ethics Committee of Istanbul Gelisim University (Decision No: 2023-05-121; Date: 08.06.2023). Prior to data collection, all participants were informed about the purpose of the study and voluntary written consent was obtained. Participant confidentiality was maintained throughout the study.

ARTIFICIAL INTELLIGENCE STATEMENT

No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT

Introduction: Inclusive education in vocational settings aims to reduce social exclusion and promote participation for youth with special educational needs (1,2). However, the interplay between educator burnout, societal stigma, and systemic barriers to employment remains under-explored (3). This study investigates the attitudes and behaviors of vocational teachers and the structural obstacles to successful integration.
Materials and Methods: A qualitative phenomenological study was conducted with 33 vocational teachers in Silivri, Istanbul. Data were collected via 30 semi-structured interview questions and analyzed using NVIVO 11.
Results: Qualitative analysis yielded 153 themes and 1203 codings. A significant lack of specialized training was identified among teachers (60.6%), contributing to notable emotional strain and fatigue (F=36). Teachers

reported "Societal Stigma" and "Employer Profit Motive" as the primary barriers to post-graduation employment, reflected in an 84.8% failure rate in job placement. Teacher-led individualized education plans (IEP) and peer-mediated support strategies emerged as high-leverage points for promoting inclusion.
Conclusions: Inclusive education operates as a complex adaptive system in which stigma (4), inadequate training, and labor market dynamics reinforce a cycle of social exclusion (5). Family physicians, as frontline coordinators of care, are well-positioned to recognize school-based stress as a health determinant and to advocate for structural interventions that shift the focus from individual impairment toward removal of systemic barriers (6).

KEYWORDS
Inclusive Education, Stigma, Vocational Training, Teacher Burnout, Social Determinants of Health

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ETHICS STATEMENT
This study does not require ethics committee approval.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Background: Advances in systemic cancer therapies have improved cancer outcomes, but have also increased the range and complexity of treatment-related toxicities that may arise across care settings, including primary care (5,6).
Aims: This review aims to synthesise recent evidence on the spectrum, frequency, and clinical presentation of toxicities associated with systemic cancer therapies in primary care. It also explores the implications of these findings for shared-care models between family physicians and oncology specialists.
Methods: A structured review of literature published between 2020 and 2026 was conducted using databases such as PubMed, Scopus, and Web of Science. Eligible studies included systematic reviews, large observational cohorts, clinical guidelines, and real-world evidence addressing treatment-related toxicities in adult cancer populations. Outcomes of interest included the frequency and severity of adverse events, rates of hospitalisation, and treatment modifications. Findings were synthesised narratively, with attention to recurring toxicity patterns and consistency of reporting across studies.
Results: Treatment-related toxicities were reported in a substantial proportion of patients receiving systemic anticancer therapies, affecting approximately 60–90% of patients, with 30–50% developing moderate to severe toxicities requiring clinical intervention (3,5). The most frequently reported toxicities include gastrointestinal symptoms (approximately 40–70%), fatigue (50–80%), cutaneous toxicities (20–50%), and

haematological complications such as anaemia and neutropenia (20–40%), which often lead to treatment delays (3,5). Among patients receiving immune checkpoint inhibitors, immune-related adverse events occur in approximately 15–25% of cases, with 3–10% classified as severe (1,2). Cardiovascular, endocrine, and renal toxicities were reported less frequently, but remain clinically important because they may present later in the course of treatment or with less specific symptoms (1,4). Many of these complications are likely to be encountered, monitored, or first recognised in primary care settings, underscoring the need for effective coordination between oncology and family medicine services (6).
Conclusions: Toxicities associated with systemic cancer therapies are common, diverse, and highly relevant to primary care practice. Strengthening early detection, ongoing monitoring, and communication between family physicians and oncology teams is essential for improving patient safety and continuity of care. As systemic cancer treatment becomes increasingly complex, the development of clearer and more standardised shared-care models is becoming increasingly important.

KEYWORDS
Treatment-related toxicities, Systemic cancer therapies, Adverse events, Shared care, Primary care

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

EBFMC26-OOP-15 · Electrolytes and Acute Kidney Injury Biomarkers in Cancer Patients: Implications for Primary Care Referral

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ABSTRACT

Background: Acute kidney injury (AKI) is common in patients with cancer and can significantly affect treatment and overall outcomes. Conventional markers like serum creatinine often detect kidney damage too late, limiting early intervention. Biomarkers such as neutrophil gelatinase-associated lipocalin (NGAL) can identify kidney injury earlier, while changes in electrolyte levels may provide additional early warning signs. However, their combined value in guiding early detection and nephrology referral in primary care remains unclear.

Methods: This prospective cohort study followed 100 adult patients with solid cancers receiving systemic therapy over a period of six months. Patients with sepsis or advanced chronic kidney disease were excluded. AKI was defined according to KDIGO criteria. Blood samples were taken regularly to measure NGAL, cystatin C, creatinine, and key electrolytes including sodium, potassium, and calcium. We analyzed how these markers were associated with the onset, progression, and recovery of AKI, including primary care-initiated referral to nephrology.

Results: AKI occurred in 21% of patients, with NGAL levels rising notably earlier than creatinine. Among the cohort, 20% were referred to nephrology by primary care physicians due to clinically significant electrolyte abnormalities. Hyponatremia and hyperkalemia were strongly associated with worsening AKI and poorer recovery, while calcium disturbances were also linked to adverse outcomes. Patients with multiple electrolyte abnormalities had an even higher risk. AKI was more frequent among patients receiving nephrotoxic treatments such as platinum-based chemotherapy, anti-VEGF agents, and immune checkpoint inhibitors.

Conclusions: Electrolyte disturbances may serve as early and easily accessible indicators of kidney injury in cancer patients, especially when used alongside NGAL. For primary care providers, recognizing these early changes may allow for quicker referral to nephrology, better risk assessment, and prevention of severe AKI.

This combined approach encourages more proactive and coordinated care between primary care and specialist teams.

KEYWORDS
Acute Kidney Injury (AKI), Cancer, Primary Care Referral, NGAL, Electrolytes

COI ***& Other Declarations:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****. Written informed consent was obtained from the patient. Ethics Committee Approval was obtained. No artificial intelligence tools were used in the preparation, writing, or revision of this study.*

EBFMC26-OOP-16 · Whole-Exome Sequencing Reveals the Neurogenetic Spectrum of Pediatric Epilepsy in Türkiye

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This paper underwent a ***double-blind peer review process*** *and was approved for publication by the Scientific Committee of the conference.*

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ETHICS STATEMENT
The study was approved by the Ethics Committee of Harran University (HRU/25.14.16).

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Epilepsy is among the most common chronic neurological disorders worldwide and represents a major source of morbidity across the pediatric age range (1,2). Epilepsy is a clinically and genetically heterogeneous neurodevelopmental disorder, and diagnostic yield from next-generation sequencing varies substantially across cohorts and healthcare settings. Population-specific data remain particularly limited for pediatric patients from underrepresented regions.
Materials and Methods: In this retrospective two-center study, we evaluated 690 individuals with epilepsy onset at 18 years of age or younger who underwent whole-exome sequencing between January 2020 and April 2025. Patients with congenital infection, brain trauma, stroke, or perinatal asphyxia as the primary cause of epilepsy were excluded.
Results: Pathogenic or likely pathogenic findings were identified in 210 of 690 patients (30.4%). Sequence variants or small insertions/deletions accounted for 200 patients (29.0%), and clinically relevant copy number variants accounted for 10 patients (1.4%). The cohort included 370 males (53.6%) and 320 females (46.4%), spanning the full pediatric age range. We identified 73 novel sequence variants or small insertions/deletions in 71 patients, six additional variants with rs identifiers but without ClinVar records or prior case-based publications, and 21 variants that had previously been reported only once. Eleven copy number variants were detected in 10 patients; all but one were confirmed by orthogonal testing.

Conclusions: Several findings were considered of particular neurogenetic interest, including variants in genes with synaptic or ion-channel relevance and rare recurrent findings that may broaden the recognized phenotypic spectrum of pediatric epilepsy. Overall, this study supports the clinical utility of whole-exome sequencing in pediatric epilepsy and provides population-specific neurogenetic data from Türkiye, while also highlighting a subset of rare findings that require replication and functional validation.

KEYWORDS
Pediatric Epilepsy, Whole-Exome Sequencing, Neurogenetics, Diagnostic Yield, Rare Variants, Copy Number Variation

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COI ***Declaration:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****.*

INVITED PAPERS

EBFMC26-IP-01 · From High-Risk Pregnancy to Safe Motherhood: The Role of Antenatal Care and Gestational Diabetes Management

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ETHICS STATEMENT
This study does not require ethics committee approval.

ARTIFICIAL INTELLIGENCE STATEMENT
No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Introduction: Maternal health is a key indicator of the performance of health systems and overall socioeconomic development. Despite substantial advances in obstetric care, maternal mortality remains a major global public health challenge. According to the World Health Organization (WHO), approximately 287,000 women died from pregnancy- and childbirth-related causes in 2023, with most of these deaths considered preventable through timely diagnosis, evidence-based management, and effective referral systems (1). Achieving safe motherhood therefore requires a continuum of care that begins before conception and extends throughout pregnancy, childbirth, and the postpartum period.
A high-risk pregnancy is defined as one in which the likelihood of adverse maternal, fetal, or neonatal outcomes is greater than that in the general obstetric population. Risk factors include pre-existing chronic diseases, pregnancy-related disorders, advanced maternal age, obesity, multiple pregnancy, and unfavorable obstetric history. Early identification and appropriate management of these conditions through high-quality antenatal care are essential for reducing maternal and neonatal morbidity and mortality (2).
Discussion: Antenatal care is among the most effective public health interventions for improving maternal and neonatal outcomes (2). Comprehensive antenatal care includes medical history assessment, physical examination, laboratory investigations, health education, nutritional counseling, immunization, psychosocial support, and continuous risk assessment (2). The WHO recommends a structured antenatal care model that ensures regular monitoring of maternal and fetal well-being throughout pregnancy (2). Family physicians and other primary care professionals play a central role in delivering continuity of care, identifying pregnancy-related complications, and ensuring timely referral when specialized management is required (2). Clinical

conditions such as severe hypertension, vaginal bleeding, seizures, respiratory distress, severe anemia, and signs of preeclampsia require urgent obstetric evaluation (2).

Among high-risk pregnancy conditions, gestational diabetes mellitus (GDM) is one of the most common metabolic complications (3,4). GDM is defined as glucose intolerance first recognized during the second or third trimester of pregnancy in women without pre-existing diabetes (3,4). Physiological hormonal changes during pregnancy increase insulin resistance, and inadequate pancreatic β-cell compensation results in maternal hyperglycemia (3,4).

The impact of GDM extends beyond pregnancy. Maternal complications include gestational hypertension, preeclampsia, cesarean delivery, and a markedly increased lifetime risk of developing type 2 diabetes mellitus and cardiovascular disease. Fetal and neonatal complications include fetal macrosomia, shoulder dystocia, birth trauma, neonatal hypoglycemia, respiratory distress syndrome, hyperbilirubinemia, and an increased long-term risk of obesity, impaired glucose metabolism, and metabolic syndrome in offspring (3-5).

Universal screening for GDM is recommended between 24 and 28 weeks of gestation, while women with significant risk factors may benefit from earlier testing (3,4). Management is based primarily on lifestyle modification, including individualized medical nutrition therapy and regular physical activity (3,4,6). Evidence indicates that approximately 70–85% of women with GDM can achieve glycemic targets through lifestyle interventions alone, whereas insulin therapy remains the preferred pharmacological treatment when glycemic control cannot be achieved with non-pharmacological measures (3,6).

Conclusion: Safe motherhood depends on accessible, high-quality antenatal care, early identification of maternal and fetal risk factors, timely referral, and evidence-based management of high-risk pregnancy conditions, particularly gestational diabetes mellitus. Strengthening primary healthcare systems and promoting integrated, multidisciplinary models of maternity care are fundamental strategies for reducing preventable maternal and neonatal morbidity and mortality and for improving long-term health outcomes for both mothers and their children.

KEYWORDS

Diabetes, Gestational; Prenatal Care; Pregnancy, High-Risk; Pregnancy Complications

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EBFMC26-IP-02 · Electronic Tracking and Communication Systems for Safe Medication Management in Primary Care

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No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT
Safe medication management is a continuous clinical process and a core responsibility of primary care. Electronic tracking and communication systems improve medication safety by supporting appropriate prescribing, medication reconciliation, patient communication, and continuity of care. Evidence shows that clinical decision support systems, electronic prescribing, shared electronic health records, patient portals, and telemedicine reduce medication errors, improve medication adherence, and enhance care coordination. However, technological infrastructure alone is insufficient without an appropriate clinical culture and multidisciplinary collaboration. Strengthening integrated electronic medication management systems is essential for improving patient safety and the quality of primary care.

KEYWORDS
Primary Health Care, Medication Safety, Clinical Decision Support Systems, Electronic Prescribing

INTRODUCTION
Medication errors are a major but largely preventable cause of patient harm. The global cost of medication-related harm is around 42 billion dollars a year. About half of all patients with chronic illness do not take their medicines as prescribed, and nearly half of all medication errors happen when the prescription is written (1,2). In primary care, the family doctor is often the only one who sees the full picture of what a patient is taking. In Türkiye, over 504 million prescriptions were issued in 2024, with 43% coming from primary care (3). This responsibility, together with polypharmacy and chronic disease, means that primary care carries high risk but

also holds great potential for improvement. Electronic tracking and communication systems offer a practical, evidence-based way forward.

WHAT IS SAFE MEDICATION MANAGEMENT?

The World Health Organization defines safe medication management as making sure patients get the right drug, at the right dose, by the right route, at the right time, without avoidable harm (1). In primary care, this goes far beyond the act of prescribing. It is a continuous process that includes six steps: assessment, prescribing, dispensing, monitoring, structured review, and reconciliation when patients move between care settings. Of these, reconciliation is the riskiest. It means formally comparing a patient's medication list at each transition, especially after a hospital discharge, where specialist prescriptions may clash with long-term treatment.

THE WONCA PERSPECTIVE

The European definition of family medicine (WONCA Europe 2023) lists 6 core competencies and 12 characteristics. Out of these 18 items, 15 are directly related to safe medication use. This includes all six competencies such as person-centred care and comprehensive management and nine of the twelve characteristics, like continuity of care and care coordination. Safe medication management is not a side issue. It lies at the heart of family medicine, and electronic tools should support, not distract from, this core work (4).

ELECTRONIC SOLUTIONS FOR COMMON PROBLEMS

Research shows that well-designed electronic systems can help with five common clinical challenges:
Polypharmacy and interactions: Clinical decision support systems (CDSS) that use STOPP and Beers criteria reduce serious prescribing errors by about 56% (5).
Fragmented medication lists: Shared electronic health records cut reconciliation errors by 70% (6).
Poor adherence: Patient portals and SMS reminders improve adherence by 16–23% (7).
Discharge gaps: E-prescribing with automatic reconciliation lowers readmission rates by about 30% (8).
Homebound patients: Video consultations that link to the electronic health records and e-prescription work as well as face-to-face visits (9).
These tools work best when they are not separate modules but form a closed loop: data (layer 1) feed into decision support (layer 2), which is then communicated to patients and teams (layer 3), and the cycle begins again.

BUILDING A NATIONAL SYSTEM

To work well, these tools need to be part of an integrated national system, not isolated apps. A proper infrastructure includes a patient portal with medication history and lab results, a nationwide e-prescription platform, a scheduling system for repeat prescriptions, a home-health system for vulnerable patients, and links between hospitals and primary care for reconciliation.
Türkiye is a good example of such an architecture, and similar systems exist in the Netherlands, the UK, Denmark, and Estonia. Several countries also have regulations that require family doctors to monitor certain drugs by age, gender, or clinical condition.

CDSS AT THE POINT OF PRESCRIBING

Modern e-prescribing platforms, like Türkiye's MEDULA system, build clinical decision support directly into the workflow. Before a prescription is finalised, the system runs automatic checks and alerts the doctor. Four types of alerts are common: (i) drug–drug interaction, when a new drug interacts badly with something the patient already takes; (ii) diagnosis–treatment mismatch, when the drug does not fit the diagnosis code; (iii) authorisation or report required, to avoid later payment rejections; and (iv) dose, age, or gender warning, when the dose is unsafe for that patient. In MEDULA, all four alerts are live, and the doctor must either adjust the prescription or formally acknowledge the warning, making CDSS a mandatory checkpoint rather than an optional extra.

THE CULTURE GAP

Despite having the systems, up to 95% of CDSS alerts are overridden in daily practice. This is not because the alerts are clinically wrong, but because of alert fatigue. Good infrastructure is necessary but not enough. We also need to invest in clinical culture: pharmacist co-management for complex cases, tiered alerts that separate critical from advisory warnings, a requirement to document why an alert was overridden, and regular training.

Yet change is possible. A study from Istanbul family health centres showed that a mix of in-service training, rapid antigen kits, and public campaigns reduced antibiotic prescribing from 31.6% in 2014 to 25.6% in 2017, below the national average of 29.2% (10). The same prescription information system that made the campaigns possible also made the improvement measurable. The infrastructure is there, and the alerts are firing. The real gap is cultural, not technical.

FUTURE DIRECTIONS

Two simple ideas could make a big difference for patients. First, QR codes on medicine packaging - already trialled in several European countries - could link patients to short, visual, video-based guides that explain how to take the medicine, what to watch for, and when to call a doctor (11). The point is not to put the paper leaflet online, but to redesign the information for real people with limited health literacy.

Second, telemedicine platforms, which already exist legally and technically in many countries, could offer a dedicated online medication consultation service. Patients could talk to a pharmacist or family doctor, ask questions, report side effects, or get help with adherence, either by message or video call. Neither idea needs new technology. What is missing is the will to implement them.

CONCLUSION

Safe medication management is a continuous clinical process, not a checklist. Electronic systems give us the infrastructure for a closed loop that connects data, decision support, and communication. The evidence is clear: CDSS cuts serious errors by more than half, reconciliation reduces readmissions by a third, and digital reminders improve adherence by nearly a quarter. Many health systems already have the tools. What must follow is the clinical culture to use them. The WONCA Tree reminds us why this matters: 15 of the 18 core elements of family medicine connect directly to medication safety. This is not a niche concern but the everyday work of primary care.

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FREE TEXT

In exploring a future career in medicine, while in medical school, I could not decide. Global medicine, such as infectious disease, had great appeal, and knew I did not wish to be a sleep-deprived surgeon and wished to study more than HIV, which the first promising treatments had been discovered. Thereby, I decided not to decide for a few years, by serving as a General Practitioner in the US Air Force, something they call a Flight Surgeon. A Flight Surgeon is like a "Team Doctor" and "Sports Medicine" doctor for pilots and their families, practicing Family Medicine. The Air Force sent me to where the plains (steppes) meet the mountains in Montana. It is here I saw great Family Physicians caring for the whole person and did a great job staying current in medical advances. Being in rural Montana as a Flight Surgeon and doing search and rescue in the mountains for lost hikers as part of my duties, I saw the need for lower cost portable innovation in medical care. Ultimately, taking care of a person, more than a specific disease, is what appeals to me about Family Medicine, and the pursuit of staying current with low-cost innovation.

Several events and realizations shaped my medical training journey and philosophy of being a life-long learner. Common diseases can often present in ways not expected. The answer to complex problems can often have straightforward answers (once discovered, such as $E=MC^2$). I enjoy these types of challenges. Traumatic events can lead to unrecognized physical ailments, and medications will not heal traumatic memories (1,2). Additionally, I like procedures, but did not wish to be a surgeon, hence I pursued learning and performing endoscopy, upper and lower. Training in North America has historically provided great opportunities to be broad in one's training, and allows different disciplines to do similar procedures, if one demonstrates appropriate competency.

As mentioned, I have had a strong desire to learn more about and participate in global-international medicine. Serving for several months in my early training in Southeast Asia saw a rural hospital serving two million people provide excellent care with a minimum of resources. The hospital applied innovation and it was always looking for the straight-forward solution that would serve and save many. The surgeons that founded and ran the hospital did tremendous work. At the rural hospital, I had to rely on my physical exam skills, a great differential diagnosis, and learning the uncommon presentations of the common diseases. We only had an old X-Ray machine, a few lab tests, an operating room and our minds. I had not known that typhoid fever could

cause a perforation in the ileum-lower intestine without having air under the diaphragm (3). By LISTENING to those with experience in a different culture provided a great mentorship on realizing how we can learn from each other. Yet, the hospital had some limitations, as all the physicians were surgeons.

One day at the hospital an adolescent presented with a great struggle to breath, yet without any wheezing, and no known cause. He died. This haunted me. Retrospectively he likely had asthma or an anaphylactic reaction and needed epinephrine and steroids. Not all asthma wheezes. How to diagnose and manage hypoxia became a life-long journey on self-improvement and innovation. A two-day seminar in London, at the Royal Heart Lung Institute during residency, provided one of my greatest learning experiences for how to care for asthma, and the realizations that the practical European approach to medical care tailored to the person did much better than the North American approach of medical recommendations made by committee. The Global Initiative for Asthma largely mirrors what I learned in London back in the 1990's (4,5).

Another time at the same rural Southeast Asian hospital, a 50-year-old man presented with a heart attack, and the surgeons were taking care of him after his myocardial infarction. He smoked. He also wheezed. Yet nothing we did for his wheezing seemed to help. Beta-agonists, steroids, inhaled muscarinics had no effect. He did receive aspirin and beta-blockers for his myocardial infarction, determined by EKG and enzymes. Thrombolytics had yet to be released for general use, and we had no ultrasound in the 1990s at that hospital. Retrospectively, he wheezed from pulmonary edema due to cardiac dysfunction from his recent myocardial infarction. We had likely made the wrong diagnosis as to the cause of his wheezing (he had tachypnea, and a COPD or asthma exacerbation rarely has a respiratory rate around 30; but wheezing from pulmonary edema can have significant tachypnea, as the expiratory respiratory phase is not prolonged). Perhaps if we had ensured appropriate volume status with diuretics, he might have survived. This is why I have pursued bedside ultrasound; combining physical diagnosis with a lower-cost point-of-care evaluation. Heart failure not only can wheeze, it is found to be the cause of wheezing in up to one in five people presenting for emergency medical care (6).

This might sound insensitive, and a reflection on an era of medical training that often did not have as much medical supervision today, but an old mentor once said, "Don't Kill a Patient the Same Way Twice." I saw easily I could miss a common ailment with a less common presentation. Especially if I fixated on a specific, binary thought. Asthma always wheezes. Wheezing can't be heart failure. Hence, I began a life-long pursuit to keep learning and finding ways to provide great care with minimal resources. This also became the pursuit of learning how common diseases might have uncommon presentations. Or in other words, the atypical presentations of typical diseases. Therefore, in my clinics, I have a hand-held ultrasound, and a hand-held spirometer (pulmonary function test).

The problem of pain: I attended a one-day seminar in medical school by a pioneering surgeon named Dr Paul Brand, who pioneered restorative surgery for those with leprosy in India. He shared, "pain lets us know that something is wrong." The lack of pain fibers, which is what happens in leprosy, leads to damage of skin tissues, and without pain, we do not protect the injury. Thereby, infections and further damage leads to the loss of function of the limb, often by amputation. He took this knowledge and applied it to the diabetic foot, a total contact cast, the fore-runner of the commonly known "UNNA-Boot." Which is a wrapping that protects and helps heal injuries of the lower extremity resulting from the inability to feel. He is one of the pioneers of modern wound care today (7). Philosophically, he spoke of how we need pain in our lives, when things go wrong, in order to take the time to heal—and healing often means seeking the help of others. Hiding our wounds rarely leads to healing. As we have learned and experienced, psychological pain (or anxiety, fear, rage, bitterness) can have physical manifestations. This is the bio-psycho-social-spiritual conundrum.

Endoscopy: there is no greater conundrum of atypical presentations of common diseases other than the abdomen. As many have learned, the center of deep emotion is not always the heart, but often the gut. Past poets have referred to great emotional turmoil as great abdominal distress or a "visceral reaction" for which the root word comes from "viscus" or "hollow organs" such as the intestines. Indeed, the vagus nerve innervates our intestines, yet the emotional connection between the heart, brain and gut of emotions has remained elusive. Yet, as in the words of a recent best-seller, "The Body Keeps the Score" (8).

Endoscopy is where I learned the most about psycho-social aspects of medicine. Why endoscopy? The abdominal discomfort one often told me about had little correlation to what I actually found in the stomach. Someone mentioned to me that the best treatment for proton pump inhibitor resistant dyspepsia or gastroesophageal reflux disease are treatments that cover anxiety, and I had much more "success" when I included "anxiety" in the differential (9). I started including "anxiety" and "constipation" in the differential

diagnosis (and much of constipation is secondary to anxiety). Instead of asking if one had constipation, I asked if one needed to strain twice a week or more to have a bowel movement (much more pleasant than a ROME figure of constipation and trying to describe "scybalous"). I have found a simple x-ray (radiograph) of the stomach often led to the unrecognized diagnosis of significant constipation (10,11).

Asthma: half to two-thirds or more of severe asthmatics have historically considered themselves to be "fine" and in not any need of additional medications (or no medications), just intermittent use of albuterol or salbutamol (12). By Global Initiative of Asthma (GINA) guidelines, one albuterol (salbutamol) inhaler for mild intermittent asthma should last a year. However, when I reviewed pharmacy refill prescription history, I often found 3-5 inhalers being used (severe persistent), and yet the person still said they were "fine." This type of disconnect recognized in medicine led to the GINA recommendation of the combined beta-agonist inhaled corticosteroid inhalers (5). I had to use as much psychology as biology-physiology to help control one's asthma. I found >75% of those saying they had exercise induced asthma, in reality had mild to moderate persistent asthma that became symptomatic with exercise (13).

Additionally, I found the cost of pulmonary function tests to be more than my patients could afford, usually more than $1,000 or more due to insurance not covering much of the cost. I therefore looked for low-cost options and found a small-handheld pulmonary function test (PFT machine or spirometry) that I could provide at low-cost or no cost to my patients. This greatly improved my ability to make the correct diagnosis and better decide which medications they needed; or, if they needed to see a pulmonologist, or reassure that all is OK (just out of shape).

Memories that do not go away. I served in the US Air Force, and talked to many veterans from World War Two, the Vietnam War and other conflicts, learning about Post-Traumatic Stress Disorder (PTSD). In the 1980's we began to recognize that PTSD happened to people outside the military, when we realized one did not have to be "shell-shocked" or have violent "flashbacks" to have PTSD. In the Air Force, we found people that had an almost near-death experience, saw violent deaths or bodies, or fear-shame-guilt-helplessness beyond what they could emotional process were risk factors for PTSD. This included medical personnel seeing torn and burned bodies and being unable to make a healing connection with another person. Sleep is a huge issue with PTSD. A Vietnam veteran told me how he could sleep with prazosin, a non-selective alpha-blocker that crosses the blood-brain barrier. I began asking about their dreams. Any vivid or troubling dreams with fear of safety or seeing bodies? Quite regularly someone starts sharing their story of a violent assault, a near death experience, or somehow being around an incident with mangled bodies. Not uncommonly, these memories have led to an addiction or significant relational difficulties. We have medications to help depression and anxiety, but not medications that heal the wounded heart from these experiences.

I served for over 10 years at a free clinic within an emergency homeless shelter providing vocational and residential addiction treatment. This included mentoring medical students at the free clinic. We were surprised to see how appreciative people were when we listened to their stories, without trying to sell them anything or telling them what to do. I learned to listen better to their heart, soul and spirit. Even the bedside ultrasound seemed to make a connection with them, that I cared to take extra time (and showed them their heart, explaining what I saw). The bedside ultrasound helped turn ultra-sonic sound waves into a visual display that I could better understand. And see a different story than what I heard with a stethoscope.

I completed a fellowship in Addiction Medicine this past year. Medications do not erase the trauma where distressed emotions are generated. Being in a supportive and encouraging community helps reduce the effects of this trauma, but if never shared or always hidden, takes a toll on the body, or manifests itself in addictive behaviors or substance abuse. In North America, we see the effects not only of alcohol and tobacco, but also how methamphetamines and opiates destroy the heart. Harm-reduction strategies have not curbed our homeless population. The thing that surprised me the most with endoscopy, is that many still could not or would not have a screening colonoscopy, when I provided free access and transportation. They did not have a friend to watch them after the sedation of a colonoscopy. Or, were ashamed or afraid to have someone stay with them in their home to watch them after the sedation. Our disadvantaged populations with whom I provided care had a poverty of safe relationships. This is a different kind of poverty than I expected. And I found it running rampant in our homeless and addiction communities. The most effective treatment for alcohol addiction we have found is a 12-Step community for sustained abstinence. Medications and counseling greatly help addiction treatment. Yet none has yet to surpass the effectiveness of a 12-Step community for sustained abstinence (14,15,16).

It is in Montana that I have chosen to return to practice. I can practice the full scope of medicine there. Montana is about half the size of Turkey, with a population four times smaller than Izmir, Turkey. Half of Montana resembles the Kayseri region of Turkey, with the other half resembling the mountainous areas of Turkey. Mt Ararat reminds me of seeing Mt Rainier, where I went to college. In Izmir, Turkey, with NATO (US Air Force), is where I first practiced after finishing my Family Medicine residency. The physicians of Izmir helped me greatly to learn as a young physician. The land and people are intertwined with my journey in medicine, and finding ways to figure out the unexpected, hidden, yet common conditions, of our breath, stomach, head and heart.

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ABSTRACT
With the rapid advancement of digitalization, uncontrolled screen use has emerged as a global public health concern among children and adolescents. Screen addiction affects the brain's reward system, impairs the functioning of the prefrontal cortex, and disrupts physical, social, and psychological well-being. As a complex condition that cannot be resolved through willpower alone, effective management requires a multidisciplinary approach. Parents should adopt evidence-based digital parenting strategies, such as the 3-6-9-12 rule, while schools should promote early identification and digital literacy education. Healthcare professionals should implement appropriate clinical interventions, including cognitive behavioral therapy (CBT), when indicated. Addressing screen addiction requires a comprehensive ecosystem approach based on close collaboration among families, schools, and healthcare providers.

KEYWORDS
Child Development, Cognitive Behavioral Therapy, Internet Addiction Disorder, Parents, Schools

THE NEW PUBLIC HEALTH CRISIS OF THE DIGITAL AGE
With the rapid spread of portable digital devices such as smartphones, tablets, and laptops in the millennium we are in, humanity has irrevocably moved into the "digital age" (1-3). Although this technological transformation has made daily life easier, screen addiction (or digital addiction), caused by uncontrolled use, especially among children and adolescents, has become a global public health problem (4-6). Digital addiction is defined as the impairment of an individual's physical, mental, and social functioning as a result of excessive

and uncontrolled use of the internet, games, social media, or smartphones, the emergence of withdrawal symptoms when away from these devices, and the continuation of use despite negative consequences (5,7,8). The World Health Organization (WHO), emphasizing the seriousness of this situation, has included "Gaming Disorder" in the ICD-11 classification; the American Psychiatric Association defines "Internet Gaming Disorder" in the DSM-5 as a condition requiring further investigation (9,10). Data shows that people spend an average of more than 6.5 hours a day on online activities, meaning they spend almost a third of their lives using the internet (5). Even more worrying is that the age at which children are introduced to the digital world is decreasing day by day (11,12). Many children start using the internet before the age of 5, and some even encounter it before the age of 1 (12,13). Data from Turkey also supports this picture; it reveals that 42.1% of preschool children spend more than 1 hour a day in front of screens, and 47.6% of children start watching television before the age of 2 (5,13).

Combating screen addiction is not simply a matter of willpower involving limiting screen time (4, 9). The problem is a complex interplay of neurobiological, psychosocial, and environmental factors (14-16). Therefore, the solution necessitates a holistic ecosystem approach that includes conscious parenting within the family, guidance from the school, and medical supervision from a physician (7,11,18).

NEUROBIOLOGY AND CLINICAL DIFFERENTIAL DIAGNOSIS

The fundamental difference that distinguishes screen addiction from simply a "bad habit" lies in the tangible changes it causes in brain structure and function. At the neurobiological level, addiction "hacks" the brain's reward system (mesolimbic pathway). Instant notifications on social media, variable reward mechanisms in games, and endless scrolling features cause artificial dopamine bursts in the brain. Constantly stimulated dopamine receptors become desensitized (tolerant) over time, and the individual needs more screen time to experience the same initial pleasure. In this process, the prefrontal cortex, responsible for decision-making, planning, and impulse control, weakens. As a result, the individual becomes unable to impulsively give the command to "stop," even if they know the screen is harming them; This situation is called "Stop Signal" loss (15).

Clinically, there are clear lines separating addiction from habit. In ordinary "heavy use," the individual can easily tear themselves away from the screen and prioritize their academic/social responsibilities; however, in "addiction," the screen takes precedence oversleep, eating, and personal hygiene (8,17). When the device is taken away, the child exhibits severe temper tantrums, anxiety, and profound restlessness (withdrawal syndrome) (5,8). Furthermore, this picture is often like an "iceberg"; beneath the symptoms of addiction often lie comorbid diagnoses such as Attention Deficit Hyperactivity Disorder (ADHD), social anxiety, major depression, or specific learning disabilities (16,18). The child may be using the digital world as a "self-medication" tool to cope with feelings of failure in the real world or social anxiety (16).

THE ROLE OF THE FAMILY AND DIGITAL PARENTING

The family is the first and most critical determinant of a child's relationship with the digital world (1,2,19). However, many parents today make the mistake of using the screen as a "digital pacifier" to soothe a crying child, feed them, or focus on their own tasks (7,12). This prevents the child from developing emotional regulation skills and creates a cycle where the only way to cope with stress is to escape to the screen (12,19).

In the digital age, parenting roles have been redefined, and the concept of "digital parenting" has emerged (1,2). Digital parenting is a holistic approach that not only protects children from online risks but also supports their digital skills and guides their interaction with technology (2). Studies show that overly restrictive and punitive attitudes ("e-discipline") do not reduce the risk of addiction; on the contrary, they create resistance in the child and encourage covert use (1,19). In contrast, models where the parent acts as a role model, increases digital literacy, and maintains open communication have a higher success rate (1,2,7).

Parents' own screen use also creates a "mirror effect" on the child (7,13). If a parent bans their child from using screens while spending time on their own phone, it instills feelings of worthlessness in the child and causes the intervention to lose credibility (1,13).

The basic strategies recommended for families are:

1. The 3-6-9-12 Rule: Zero screen exposure under age 3, no personal devices before age 6, no unsupervised internet access before age 9, and social media restrictions before age 12 (11)
2. Digital Family Contract: Establishing written rules that all members of the household (including parents) follow, eliminating screen use as a reward or punishment tool (2,11).

3. Device-Free Zones: Designating the bedroom and dining table as "tech-free zones" (11). This is critical for maintaining sleep hygiene and strengthening family bonds (17).
4. Creating Alternatives (Physical Substitution): Ensuring that screen-free time is filled with real-world activities such as nature, sports, art, or peer play (4,18). This allows for the natural fulfillment of dopamine needs (15).

SCHOOL GUIDANCE AND EDUCATION-BASED INTERVENTIONS

Schools, as places where children spend most of their time and where social interactions are most intense, play a key role in the early detection of addiction (9). School-based intervention programs (e.g., 'Yeşilay Intervenes in Addiction at School' in Turkey) aim to identify students at risk before addiction develops and to provide initial psychoeducational interventions (5,11). In interventions, it is more effective to teach children "digital literacy" rather than simply imposing bans. Sources indicate that training that develops children's skills in recognizing online risks (cyberbullying, privacy violations) and setting healthy boundaries is more sustainable than methods that forcibly reduce screen time (9, 14).

PHYSICIAN'S MEDICAL SUPERVISION AND CLINICAL INTERVENTIONS

Primary care physicians are the "early warning center" of the screen addiction ecosystem. In routine child check-ups, screen exposure should always be inquired about along with vital signs such as height and weight. (3,5). A screen history taken in the doctor's office (e.g., "Is the tablet turned on while your baby/child is eating?" or "Does your child have tantrums when left without a device?") is sufficient to determine the risk analysis (8,12,13).
"Red flags" that doctors should recognize include delays in language development for their age, unexplained eye irritation/myopia, postural problems, daytime fatigue, and the parent immediately reaching for their phone to distract the child during the examination (3,5,17, 20). In cases where addiction is suspected, the doctor will establish an evidence-based roadmap including cognitive behavioral therapy (CBT), motivational interviewing, and family therapy.
Meta-analyses and systematic reviews confirm that the most effective method for screen addiction is Cognitive Behavioral Therapy (CBT). The CBT process generally consists of three phases (10,18):
1. Behavioral Modification: Creating "counter-timing" techniques and offline activity schedules that gradually reduce screen time.
2. Cognitive Restructuring: Breaking dysfunctional beliefs such as "I am worthless without the internet" and correcting cognitive conditioning that triggers overuse.
3. Relapse Prevention: Maintaining acquired healthy habits and treating accompanying psychological problems.
In addition, physical activity interventions (exercise, sports) have been proven to not only improve physical health but also significantly reduce internet addiction scores and depression symptoms by improving the autonomic nervous system. Digital-based interventions (websites, mobile applications, virtual reality platforms) that have emerged in recent years are also showing promising results, especially among adolescents. However, it is recommended that these tools be used as adjuncts to traditional face-to-face therapies, rather than as replacements (14,18).

HOLISTIC COLLABORATION SCENARIO AND SOLUTION-ORIENTED APPROACH

Success in combating screen addiction depends on the coordinated work of the family-school-physician triangle (9,11,14).
The practical flow of this collaboration should be as follows:
• Step 1 (Physician): During routine examinations, identify signs of addiction (obesity, sleep problems, language delay), explain the neurobiological effects of screens without judging the parent, and set goals (3,7,17).
• Step 2 (Family): Implement the "Family Screen Plan" recommended by the physician, create device-free areas, and act as a positive role model as a parent (2,11,13).
• Step 3 (School): By maintaining communication with the family, include the child in a peer mentoring system and support detachment from the virtual world through after-school social/sports activities (9,11).

In this process, instead of engaging in authority struggles against parental barriers such as "My child is smarter than me, they break the rules," the physician should recommend the use of technical filter software and mutual agreement (awareness) with the child about the risks of screens (2,11).

CONCLUSION

Screen addiction, as the "silent pandemic" of the digital age, threatens the developmental, physical, and social health of children. However, this technology is not an enemy, but a tool that needs to be managed. It has been understood that one-sided restrictions are ineffective, and the solution is possible only through integrated intervention in all micro-systems of the child's life. When the conscious guidance of parents, the protective education policies of schools, and the medical supervision of physicians are combined, a future can be built where screens are not a form of enslavement but a tool for healthy development and learning for children. Early intervention and multi-stakeholder collaboration are the strongest antidote in this struggle. Because, in a complex issue like screen addiction, which has neurobiological and social dimensions, the combination of family protection, school guidance, and the intervention power of the medical system is vital for children's "digital well-being."

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ABSTRACT
Health literacy — the capacity to access, understand, appraise and use health information and services to make sound health decisions — is increasingly recognized as a key determinant of health and a central concern for preventive medicine. International surveys indicate that limited health literacy affects a substantial share of the population: roughly 47% of adults in Europe and an estimated 80 million adults in the United States. In Türkiye, the 2018 national survey found that about 70% of the population has inadequate or limited health literacy, with the highest burden among older adults. Low health literacy is consistently associated with poorer outcomes, including more frequent hospitalization, lower uptake of preventive services, poorer medication use, and higher mortality among older adults. This extended abstract argues that community-based education programs — health education delivered with community participation in the settings where people live, work and gather — are among the most promising strategies for strengthening health literacy at the population level. Recent studies from low- and middle-income settings suggest that culturally adapted, community-based interventions can produce measurable gains. As the providers of continuous, first-contact, person-centered care, family physicians are uniquely positioned to embed health-literacy practices such as plain language and teach-back into routine encounters and to lead community-level initiatives. Practical strategies, current challenges, and recommendations for practice and policy are discussed.

KEYWORDS
Health Literacy, Community-Based Education, Preventive Medicine, Family Medicine, Primary Health Care, Patient Education, Health Promotion

INTRODUCTION AND BACKGROUND

Health literacy refers to the personal knowledge and competencies that enable people to access, understand, appraise and use information and services to make decisions about their health (1). In the widely cited integrated model of Sørensen and colleagues, these competencies span four processes — accessing, understanding, appraising and applying health information — across three domains: health care, disease prevention and health promotion (2). Nutbeam's classic framework further distinguishes functional, interactive and critical levels of health literacy, the latter reflecting the ability to analyze information and exercise greater control over the determinants of health (3).

Importantly, contemporary definitions have broadened the concept beyond the individual. The distinction between *personal* and *organizational* health literacy emphasizes that health-care systems and institutions share responsibility for making information and services easy to find, understand and use (4). This reframing shifts the focus from patient deficit alone toward the navigability of the system — a perspective particularly relevant to primary care.

THE SCALE OF THE PROBLEM

Limited health literacy is common rather than exceptional. The European Health Literacy Survey (HLS-EU) reported that approximately 47% of adults had inadequate or problematic health literacy, with wide variation between countries (from around 2% inadequate in some settings to over 27% in others). In the United States, an estimated 80 million adults are affected by limited health literacy (4).

In Türkiye, the Ministry of Health's 2018 Health Literacy Survey, based on a nationally representative sample of 6,228 households, found that roughly 70% of the population had inadequate or limited health literacy (5). The burden was markedly higher among older adults (with inadequacy approaching 90% in those aged 65 and over) and among individuals who did not use any media source for health information (about 57%, compared with about 18% among those who did). These gradients identify both the populations at greatest risk and a potential point of leverage: improving access to and engagement with trustworthy information.

The clinical relevance is well established. In an updated systematic review, Berkman and colleagues found that low health literacy was associated with more frequent hospitalization and emergency care, lower use of preventive services such as mammography and influenza vaccination, poorer ability to interpret labels and health messages, and, among older adults, poorer overall health status and higher mortality (6). Health literacy is therefore not a peripheral communication issue but a measurable determinant of clinical outcomes.

COMMUNITY-BASED EDUCATION PROGRAMS

Community-based education programs extend health education beyond the individual clinical encounter into the settings where people live, work and gather — schools, workplaces, neighborhoods and places of worship. Four features distinguish effective programs: (i) community participation, in which the target population co-designs and co-delivers the program rather than serving as a passive audience; (ii) on-site reach, meeting people in their own environments; (iii) cultural sensitivity, with content adapted to local language, beliefs and social context; and (iv) an equity focus, giving proportionate priority to disadvantaged groups so that interventions narrow rather than widen existing gaps.

Several complementary approaches are used in practice. Peer and lay-educator models disseminate messages through trusted community members; plain-language and feedback techniques (notably the teach-back method) improve comprehension at the point of care; mass and social-media campaigns extend reach; and organizational, multisectoral action seeks to build health-literate institutions through collaboration across the health, education, local-government and civil-society sectors. These approaches are not mutually exclusive; the most effective programs combine them in a layered fashion.

EVIDENCE OF EFFECTIVENESS

A growing body of evidence indicates that well-designed, culturally adapted community-based interventions can improve health literacy, particularly in under-resourced settings. A quasi-experimental study in severely impoverished rural counties in southwestern China reported significant improvements in health literacy following a community-based health-education program (7). A program for older adults in a socioeconomically disadvantaged community in Brazil demonstrated the feasibility of improving health literacy in low-resource settings (8). A 2025 systematic review of community-based interventions for parents and caregivers similarly suggested benefit in improving health literacy.

These findings should be interpreted with appropriate caution. Heterogeneity in intervention design, target populations, and — critically — in the instruments used to measure health literacy limits direct comparison between studies and complicates meta-analysis. Nevertheless, the overall direction of the evidence supports community-based, culturally tailored education as a viable strategy for population-level improvement.

THE ROLE OF THE FAMILY PHYSICIAN

Primary care is a natural hub for community education. The continuity of the family physician–patient relationship provides repeated, longitudinal opportunities for education that few other clinical settings can match. Routine encounters allow for opportunistic counseling, in which plain-language communication and teach-back can be embedded without adding a separate intervention. Family physicians are also well placed to lead and coordinate community-level initiatives in schools, workplaces and neighborhoods, and to act as a trusted bridge between individuals, communities and the wider health system — a role of growing importance in an era of widespread health misinformation.

Practical, immediately applicable strategies include: using teach-back to confirm understanding (asking patients to explain information in their own words rather than asking whether they understood); applying plain-language principles; limiting each encounter to two or three key messages; directing patients to reliable, verified information sources; simplifying signage, forms and materials at the organizational level; and using visual and culturally appropriate educational materials. Attention to digital health literacy — the ability to find, understand and appraise health information from electronic sources — is increasingly essential, as digital tools can both widen access and, where digital skills are lacking, create new forms of exclusion.

CHALLENGES AND RECOMMENDATIONS

Key challenges include the sustainability and scaling of programs, the lack of standardized tools for measuring impact, difficulty in reaching the most disadvantaged and non-literate groups, constraints in time, funding and workforce, and the dual pressures of the digital divide and information overload. To address these, the following are recommended: embed health-literacy practices into routine primary care; pursue multisectoral collaboration and organizational action; adapt programs to local culture and context; monitor impact using validated instruments; and incorporate health literacy into professional and public education curricula.

CONCLUSION

Health literacy is an overlooked yet decisive component of preventive medicine (9), directly linked to hospitalization, preventive-service uptake and mortality. Community-based, culturally sensitive education programs offer a promising and increasingly evidence-supported means of improving health literacy at the population level. Family physicians, as trusted bridges between individuals and communities, are central to this effort — not as an additional task, but as a way of enhancing the quality of the care they already provide.

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ABSTRACT
Family medicine has a central role in the capacity of health systems to provide accessible, continuous, comprehensive, preventive and person-centered care (1,2). However, the sustainability of this role depends not only on the structural position of family medicine within the health system, but also on the daily working conditions of family physicians. Workload, performance expectations, professional motivation and satisfaction are closely interconnected dimensions that influence whether family medicine practice can remain effective, meaningful and sustainable over time. This presentation examines the interrelationships between these dimensions and argues that the contribution of family medicine to the health system depends on maintaining a workable balance between what is expected from family physicians and what daily practice realistically allows. The central premise is that sustainable family medicine requires working conditions that allow physicians to sustain this responsibility in everyday clinical practice (3).
Workload in family medicine is often discussed in terms of patient numbers or consultation volume. However, contemporary family medicine workload is multidimensional and cannot be reduced to numerical volume alone. Clinical workload includes acute problems, chronic disease follow-up and the management of multimorbidity. Cognitive workload involves decision-making under uncertainty, prioritization and risk assessment (4). Administrative workload includes documentation, reporting requirements and digital health records (5,6). Relational workload is shaped by communication, patient expectations, continuity of care and the maintenance of trust. Preventive workload includes screening, counseling, immunization, lifestyle support and follow-up. Therefore, workload should be understood as the combined effect of volume, complexity, responsibility and competing demands. This distinction is important because the pressure experienced in family medicine is not only the result of more consultations, but also of increasingly complex, simultaneous

and competing clinical, relational, preventive and administrative tasks (4). In daily practice, these demands often overlap within a single consultation, requiring family physicians to distinguish urgent problems from routine needs, maintain structured chronic disease follow-up, avoid missed preventive opportunities and meet documentation requirements within limited time (4,5). In this context, prioritization becomes a core professional skill that protects patient safety, quality of care, continuity and sustainability.

Performance measurement is an important governance and quality-improvement tool in modern health systems (7). It can support accountability, make priorities visible, strengthen preventive care and improve chronic disease monitoring. However, performance is also a sensitive concept in family medicine because indicators do not only measure practice; they also shape it. What is measured becomes more visible, more frequently documented and often more strongly prioritized (7,8). Therefore, the central question is not whether performance should be measured, but what should be measured, how indicators should be interpreted and how the results should be used (7). Meaningful performance systems should not focus only on what is easy to count; they should reflect clinically relevant priorities such as prevention, chronic disease follow-up, continuity of care, patient safety, rational clinical decision-making and quality improvement (8). They should also take into account patient population characteristics, workload, available resources and service context (7). When performance measurement is clinically meaningful and fairly interpreted, it can support both quality of care and professional motivation. In contrast, when performance frameworks are disconnected from clinical reality and perceived mainly as administrative control, they may narrow clinical attention, increase documentation burden, weaken professional ownership and shift attention away from the broader goals of primary care (5,7).

Motivation in family medicine should not be understood simply as personal enthusiasm, individual energy or resilience. It is a professional resource shaped by the degree of fit between physicians' professional values and their working conditions. Meaningful patient relationships, continuity of care, clinical autonomy, a sense of competence, recognition and the perceived ability to provide good care all strengthen motivation (9). Family physicians remain motivated when they can use their clinical judgment, observe the impact of their work and feel that their contribution is recognized. Conversely, excessive or poorly structured workload, unclear or unfair performance pressure, limited time for meaningful care and low recognition of professional effort may weaken motivation over time (3,9). For this reason, sustaining motivation requires more than asking physicians to be resilient; it requires practice conditions in which professional commitment can be maintained (9,10).

Professional satisfaction is closely related to motivation but represents a distinct dimension of daily practice (10,11). It should not be reduced to personal happiness at work. In family medicine, professional satisfaction reflects whether daily practice feels meaningful, effective and manageable (11). It is shaped by workload, autonomy, recognition, professional effectiveness and the relationship between effort and impact (10,12). Satisfaction may increase when physicians feel that their work has a tangible impact on patient care, and may decrease when professional effort becomes disconnected from perceived impact or when daily practice becomes less manageable (10,11). In this sense, satisfaction can be interpreted as an experiential indicator of whether the practice environment allows family physicians to provide the kind of care that their role requires (12,13). It is also relevant to the functioning of primary care, because higher professional satisfaction may support physician engagement, communication, continuity and follow-up (11). Continuity strengthens trust between patients and physicians, and trust may support adherence, risk management and long-term care relationships (14). When physicians remain engaged and satisfied, the health system may benefit through stronger continuity, better preventive orientation, more consistent chronic disease follow-up and more efficient use of primary care capacity (14,15).

Workload, performance, motivation and satisfaction should therefore be understood as interacting dimensions rather than separate issues (3,7). Workload affects time, attention and prioritization; performance expectations shape routines, documentation and clinical focus; motivation supports engagement and professional effort; and satisfaction reflects whether practice remains effective, meaningful and manageable. When these dimensions are kept in balance, family medicine practice can remain sustainable. When the balance is lost, time pressure may reduce attention to complex needs, clinical priorities may shift toward measurable tasks, motivation may decline and satisfaction may decrease (4,11). Over time, this may make sustainable care more difficult to maintain. This four-way relationship shows that sustainability is not produced by a single policy, indicator or individual effort, but by the dynamic balance between system expectations and the realities of daily clinical practice (3,7).

Sustainable family medicine should not be understood as asking family physicians to do more with less. Rather, it requires creating conditions in which good care becomes possible. This includes protecting time for meaningful clinical encounters, supporting clinical autonomy, using fair and relevant performance indicators, reducing avoidable administrative workload, recognizing the expertise of family physicians and providing feedback that supports improvement (5,8). Sustainable practice also requires manageable workflows, team-based care, appropriate task sharing and evaluation systems that take context, workload and available resources into account (1,8). These strategies should not be viewed only as measures to improve physician well-being; they are also investments in care quality, continuity, prevention, chronic disease management and the long-term performance of the health system (1,14).

In conclusion, the sustainability of family medicine depends on the balance between workload, performance expectations, professional motivation and satisfaction. Workload is increasingly complex, and performance measurement should remain clinically meaningful, fair and supportive of improvement. Motivation is strengthened when physicians can work in alignment with their professional values, and satisfaction reflects whether daily practice remains manageable, effective and meaningful. To sustain family medicine, health systems must also sustain the physicians who sustain the system. This requires aligning expectations with practice realities, protecting the conditions that make good care possible and recognizing that better working conditions are closely linked to better care and more sustainable primary care.

KEYWORDS

Family Medicine, Motivation, Performance, Primary Care, Professional Satisfaction, Sustainability, Workload

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ABSTRACT
Longevity medicine is an emerging preventive healthcare discipline focused on extending healthspan by identifying and addressing the biological and lifestyle factors that contribute to aging and chronic disease. Rather than reacting to illness after it develops, longevity medicine emphasizes early assessment, risk reduction, and personalized interventions that preserve physical and cognitive function throughout life. This paper introduces a practical "Longevity Toolbox" for primary care clinicians, highlighting evidence-based approaches including comprehensive health assessments, functional performance testing, body composition analysis, biomarker evaluation, nutrition and exercise, sleep optimization, stress management, and social connection. Practical strategies are presented that can be readily incorporated into routine clinical practice without requiring expensive technologies or specialized equipment. By focusing on sustainable lifestyle interventions and ongoing monitoring, clinicians can help patients improve healthspan, reduce the burden of age-related disease, and maintain independence and quality of life.

KEYWORDS
Longevity Medicine, Healthy Aging, Healthspan, Preventive Medicine, Lifestyle Medicine, Functional Assessment

INTRODUCTION
Longevity medicine is an emerging field focused on helping people live healthier and more functional lives. Rather than waiting for disease to develop and then treating it, longevity medicine seeks to proactively prevent, detect, and manage the biological processes that contribute to aging and age-related disease. The ultimate goal

is not simply to extend lifespan, but to improve healthspan: the number of years a person can live in good health and maintain independence and quality of life (1,2,3).
As healthcare professionals increasingly recognize the importance of prevention, longevity medicine offers a practical framework for addressing the root causes of chronic disease while empowering patients to take an active role in their health. Through a combination of lifestyle interventions, appropriate screening, evidence-based therapies, and ongoing monitoring, clinicians can help patients age more successfully and reduce the burden of chronic illness (4).

WHAT LONGEVITY MEDICINE IS – AND IS NOT

Longevity medicine differs significantly from traditional reactive healthcare models. Traditional medicine often focuses on diagnosing and treating disease after symptoms develop, while longevity medicine shifts attention toward prevention and optimization. At its core, longevity medicine involves proactively preventing, detecting, and optimally managing age-related diseases. Rather than waiting for diabetes, cardiovascular disease, osteoporosis, or cognitive decline to emerge, clinicians identify risk factors early and intervene before significant damage occurs. Importantly, longevity medicine is not primarily about prescribing expensive supplements, pursuing unproven therapies, or chasing the latest anti-aging trend. Instead, it emphasizes evidence-based lifestyle modifications that support long-term health. Nutrition, exercise, sleep, stress management, and social connection remain the most powerful tools available. Another distinguishing feature is the relationship between clinician and patient. Longevity medicine relies on long-term partnerships focused on wellness building rather than episodic "sick visits". Patients become active participants in their care, collaborating with healthcare providers to establish goals, track progress, and make sustainable changes. Importantly, longevity should be accessible to everyone. The most effective interventions are often simple, affordable, and within the reach of patients regardless of socioeconomic status.

A NEW PERSPECTIVE ON AGING

Traditional medicine often begins with the question: "What diagnosis does this patient have?", whereas Longevity medicine asks a different set of questions: "How quickly is this patient aging?", "What factors are driving their aging process?", and "What interventions can help slow biological aging and improve health outcomes?". These questions recognize that aging itself is a risk factor for a variety of chronic diseases. By addressing the biological and lifestyle factors that accelerate aging, healthcare providers can reduce the likelihood of disease development while preserving physical and cognitive function (5). Longevity medicine focuses on upstream drivers of aging, including chronic inflammation, metabolic dysfunction, poor nutrition, inadequate physical activity, sleep disturbances, stress, and social isolation. Addressing these factors can help patients maintain strength, resilience, and independence as they grow older (4,5). Although advanced longevity assessments and emerging therapies continue to evolve, the foundation of Longevity medicine remains rooted in practical, evidence-based approaches that can be implemented today.

THE LONGEVITY TOOLBOX: ASSESSMENT AND MONITORING

Effective longevity care begins with a comprehensive assessment of a patient's current health status. This assessment extends beyond routine medical evaluations and includes multiple dimensions of physical, metabolic, and functional health. Patient history and questionnaires play a critical role in allowing clinicians to explore lifestyle factors such as nutrition, sleep habits, substance use, stress levels, mental health, social engagement, and overall quality of life. These factors often reveal opportunities for intervention that traditional medical evaluations may overlook. Anthropometric measurements provide valuable information about body composition and metabolic risk. Common measures include body mass index (BMI), waist circumference, and waist-to-height ratio. Cardiovascular assessment includes blood pressure and resting heart rate, both of which are important predictors of long-term health outcomes. Functional assessments such as hand-grip strength (6–9), walking speed (10–14), and sit-to-stand testing (15–21) offer practical insights into physical function and future health risks. Laboratory testing extends beyond routine blood work to include fasting insulin levels, advanced cholesterol markers such as ApoB and Lipoprotein(a), hormone testing, thyroid function studies, and inflammatory markers such as C-reactive protein (CRP) and high-sensitivity CRP (hsCRP). Body composition assessments using DEXA scanning or validated body composition scales provide a more detailed understanding of muscle mass and body fat distribution (22). Wearable technology

can also contribute valuable data regarding heart rate variability, sleep quality, and activity levels, helping patients and clinicians track progress over time.

THE LONGEVITY TOOLBOX: INTERVENTIONS

Once baseline assessments have been completed, targeted interventions can be implemented. Exercise is among the most powerful longevity tools available (23,24). Cardiovascular exercise, particularly moderate-intensity "Zone 2" training, supports cardiovascular health, metabolic flexibility, and endurance. Strength training performed two to three times per week helps preserve muscle mass, maintain bone density, and support functional independence (25–28). Balance training reduces fall risk (29,30), while high-intensity interval training (HIIT) can provide additional metabolic and cardiovascular benefits (32). Nutrition represents another cornerstone of longevity medicine. Many patients benefit from a Mediterranean-style dietary pattern rich in vegetables, fruits, legumes, whole grains, healthy fats, and lean protein sources (31,33). Therapeutic dietary approaches may be appropriate for specific health conditions while time-restricted eating and carefully supervised fasting protocols may also provide benefits through mechanisms related to metabolic adaptation and hormesis (34). Stress management and sleep optimization are additionally important. Chronic stress contributes to inflammation, metabolic dysfunction, and numerous chronic diseases. Deep breathing exercises, mindfulness practices, meditation, and other stress-reduction techniques can improve resilience and overall well-being (35). Sleep hygiene interventions support recovery, cognitive performance, immune function, and healthy aging. Social relationships and community engagement are often overlooked but remain critical determinants of longevity (36). Strong social connections are consistently associated with improved physical and mental health outcomes, reduced mortality risk, and enhanced quality of life (3). In some cases, nutraceuticals and pharmaceuticals may complement lifestyle interventions. Fairly accessible supplements include omega-3 fatty acids, magnesium, vitamin D3 combined with vitamin K2, and creatine. Pharmaceutical options such as metformin or hormone replacement therapy may be appropriate for selected patients when guided by clinical evidence and individualized assessment (37,38).

A PRACTICAL FRAMEWORK FOR CLINICAL PRACTICE

The most powerful longevity interventions require minimal equipment and are already within the scope of practice for many healthcare professionals. A practical framework that clinicians can readily incorporate into their practice without substantial time commitments or financial investment can be implemented through a simple three-step approach to caring for the longevity patient:

First, assess and educate: Establish baseline biomarkers, functional measures, lifestyle habits, and longevity goals. Help patients understand the factors influencing their health and aging trajectory.

Second, intervene: Implement evidence-based strategies focused on exercise, nutrition, sleep, stress management, cardiometabolic health, social connection, and mental well-being. Encourage sustainable behavior changes rather than short-term fixes.

Third, monitor and optimize: Reassess functional performance, biomarkers, and lifestyle habits regularly. Use objective data to refine interventions, reinforce progress, and identify new opportunities for improvement.

CONCLUSION

Longevity medicine represents a shift from reactive disease management to proactive health optimization. By focusing on the biological and lifestyle factors that influence aging, clinicians can help patients maintain function, prevent disease, and enjoy longer, healthier lives (1,5).

The true power of longevity medicine lies not in expensive technologies or experimental therapies, but in the consistent application of proven strategies: physical activity, proper nutrition, restorative sleep, stress management, meaningful relationships, and ongoing monitoring. These tools form the foundation of a practical, accessible, and evidence-based approach to healthy aging that can benefit patients across all stages of life (4,23).

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INTRODUCTION - WHY STROKE MIMICS MATTER

Stroke mimics are non-vascular conditions that present with acute neurological deficits simulating acute ischemic stroke. They represent a significant proportion of all acute stroke admissions - approximately 20–40% of stroke code activations - and pose a major diagnostic challenge in the emergency setting.
Key reasons to study stroke mimics:
• Misdiagnosis can lead to unnecessary thrombolysis, with associated risks of hemorrhage and resource waste
• Failure to identify the true underlying condition delays appropriate treatment
• In the MENA region, unique demographic and cultural factors influence the spectrum and frequency of stroke mimics

THE STROKE BURDEN IN TURKEY AND THE MENA REGION

Turkey sits at the crossroads of Europe and the Middle East, and its stroke epidemiology reflects features of both regions.
Regional context from the SITS-MENA registry and Global Burden of Disease data:
• MENA stroke patients are slightly younger than their European counterparts (median age ~65 years)
• Hypertension (66%) and diabetes (38%) are the prevailing risk factors in the MENA region — both more prevalent than in non-MENA cohorts
• Large artery atherosclerosis (25.3%) and lacunar strokes (24.1%) are the most common ischemic stroke etiologies in MENA
• Atrial fibrillation and cardioembolic stroke are suspected to be underdiagnosed in the region
• High systolic blood pressure (53.5%), high BMI (39.4%), and ambient particulate air pollution (27.1%) are the three largest contributors to stroke burden in the MENA region
• Only 21% of MENA stroke patients are admitted to dedicated stroke units, highlighting infrastructure gaps
These factors are directly relevant to the differential diagnosis of stroke mimics in Turkish emergency departments.

CLASSIFICATION OF STROKE MIMICS

Stroke mimics can be broadly classified into the following categories:

A. Neurological Mimics
- Seizure / postictal state (Todd's paralysis) — the most common mimic in many series (up to 35%)
- Migraine with aura / hemiplegic migraine
- Peripheral vestibulopathy (benign paroxysmal positional vertigo)
- Brain tumors (primary or metastatic)
- Subdural hematoma
- Multiple sclerosis / demyelinating disease
- Encephalitis / meningoencephalitis
- Transient global amnesia
- Bell's palsy
- Cranial and peripheral neuropathies

B. Metabolic / Toxic Mimics
- Hypoglycemia — a critical "do not miss" diagnosis
- Hyperglycemia / diabetic ketoacidosis
- Hyponatremia
- Hepatic encephalopathy
- Drug overdose or intoxication
- Wernicke's encephalopathy

C. Cardiovascular Mimics
- Syncope / presyncope
- Hypertensive encephalopathy
- Aortic dissection with neurological manifestations

D. Functional (Psychogenic) Stroke Mimics
- Conversion disorder / functional neurological disorder (FND)
- Somatization

E. Other
- Sepsis (especially in hospitalized patients)
- Recurrence of prior stroke deficits during intercurrent illness

FUNCTIONAL STROKE MIMICS — REGIONAL CONSIDERATIONS

Functional stroke mimics (FSM) deserve special attention in the context of Turkey and the broader MENA region.

Data from a large Middle Eastern stroke center (n = 1,961 patients) demonstrated:
- FSM accounted for 8.2% of all stroke presentations — higher than the 2–6% reported in Western series
- FSM frequency varied significantly by nationality, with Arab (15.6%) and African (16.8%) patients having the highest rates
- FSM patients were younger, more often female, and had fewer cardiovascular risk factors
- Proposed contributing factors include: psychosocial stress, vulnerable status as expatriates, sociopolitical instability, and exposure to trauma
- Middle Eastern countries may have higher rates of somatization of emotional distress

Clinical pearls for FSM recognition:
- Left-sided weakness is more common in FSM than in true stroke
- Hoover's sign (involuntary hip extension of the "weak" leg when flexing the contralateral hip against resistance) is a useful bedside test
- Give-way weakness and non-anatomical sensory loss patterns
- Inconsistency between observed and reported deficits
- A positive diagnosis of FND should be made based on clinical signs, not simply by exclusion

Cultural sensitivity note: In many Turkish and Middle Eastern communities, psychological distress may present somatically rather than through verbal expression of emotional symptoms. Clinicians should approach functional diagnoses with empathy and without stigma, framing FND as a real neurological condition rather than "imagined" illness. Early psychiatric or psychological consultation is recommended.

CLINICAL FEATURES THAT DISTINGUISH STROKE FROM MIMICS

Features favoring true stroke:

- Older age (>65 years)
- History of atrial fibrillation
- History of hypertension
- Unilateral limb weakness (especially upper extremity)
- Speech disturbance (aphasia)
- Facial droop
- Symptoms conforming to a recognized vascular territory
- Sudden, well-defined onset

Features favoring stroke mimic:
- Younger age (<50 years)
- Female sex
- History of seizures, migraine, or psychiatric disorders
- Isolated sensory symptoms without motor weakness
- Systolic blood pressure <150 mmHg at presentation
- Absence of facial droop
- No history of atrial fibrillation
- Altered mental status as the sole symptom (especially in hospitalized patients)
- Generalized weakness rather than focal deficits
- Gradual or fluctuating symptom onset

CLINICAL SCREENING TOOLS - THE FABS SCORE

The FABS score is a validated 6-point screening tool designed to identify stroke mimics among patients with acute neurological deficits and a negative head CT.

Each variable scores 1 point if present:
- F-absence of Facial droop
- A-negative history of Atrial fibrillation
- B-systolic Blood pressure <150 mmHg
- S-history of Seizures

Plus:
- A-Age <50 years
- S-isolated Sensory symptoms (no weakness)

A FABS score ≥3 identifies stroke mimics with:
- Sensitivity: 90%
- Specificity: 91%
- C-statistic: 0.95

The simplified FABS (sFABS) uses only 4 variables (facial droop, atrial fibrillation, age, blood pressure) and has been validated in Asian populations.

Limitations: Recent external validation in large telestroke networks has shown more modest performance, underscoring that clinical judgment remains essential. No scoring tool should replace comprehensive neurological assessment.

THE ROLE OF NEUROIMAGING

Non-contrast CT (NCCT)
- First-line imaging in the acute setting
- Excellent for ruling out hemorrhage and mass lesions
- Limited sensitivity for acute ischemic stroke, especially early and in the posterior fossa
- A normal CT does NOT exclude stroke

Multimodal CT (NCCT + CTA + CTP)
- CTA identifies large vessel occlusion — its absence makes stroke less likely
- CT perfusion (CTP) can demonstrate characteristic patterns:
- Stroke: matched or mismatched perfusion deficits in a vascular territory
- Seizure: hyperperfusion in the peri-ictal phase
- Migraine: oligemia without vessel occlusion
- Multimodal CT has high specificity (99.7%) but low sensitivity (24.7%) for stroke mimics

MRI with DWI (Diffusion-Weighted Imaging)
• The gold standard for confirming acute ischemic infarction
• DWI-positive lesions are present in ~90% of ischemic strokes
• DWI can also show abnormalities in some mimics (seizures, encephalitis, hypoglycemia) — interpretation requires clinical correlation
• Should be obtained within 24 hours when feasible

SPECIFIC STROKE MIMICS - CLINICAL PEARLS
Seizure / Postictal State:
• Most common stroke mimic in many series
• Todd's paralysis can produce hemiparesis lasting minutes to hours
• Look for: witnessed convulsive activity, tongue bite, incontinence, postictal confusion
• CTP may show hyperperfusion; DWI may show peri-ictal changes
• EEG if diagnosis uncertain
Migraine with Aura / Hemiplegic Migraine:
• Gradual "march" of symptoms over 20–60 minutes (vs. sudden onset in stroke)
• Positive symptoms (scintillating scotoma, tingling) more common than negative symptoms
• History of similar prior episodes
• Should be a diagnosis of exclusion in first presentations
Hypoglycemia:
• A critical, rapidly reversible mimic
• Can produce any focal neurological deficit including hemiparesis and aphasia
• Always check bedside glucose before initiating stroke workup
• Particularly relevant in Turkey given the high prevalence of diabetes in the MENA region (38%)
Peripheral Vestibulopathy:
• Isolated vertigo is the most common stroke mimic in some ED-based series
• HINTS exam (Head Impulse, Nystagmus, Test of Skew) differentiates peripheral from central causes
• A positive head impulse test and unidirectional nystagmus favor a peripheral cause
• Posterior circulation stroke must be excluded — vertebrobasilar occlusion can present with isolated vertigo
Functional Neurological Disorder (FND) :
• See Section 4 for regional considerations
• Positive clinical signs (Hoover's, drift without pronation, give-way weakness)
• Inconsistency and incongruence with recognized neurological disease
• Thrombolysis has been safely administered when FND could not be excluded in the acute window
Toxic-Metabolic Encephalopathy:
• Most common in-hospital stroke mimic
• Sedative medications (opioids, benzodiazepines), sepsis, electrolyte disturbances
• Altered mental status as the sole symptom is most often a mimic in hospitalized patients

SAFETY OF THROMBOLYSIS IN STROKE MIMICS
A critical question: What happens when a stroke mimic inadvertently receives thrombolysis?
Evidence from a comprehensive meta-analysis (9 studies, 8,942 IVT-treated patients, 392 stroke mimics):
• Symptomatic intracerebral hemorrhage (sICH) in stroke mimics: 0.5% (vs. ~2–5% in true stroke)
• Risk of sICH was significantly lower in mimics compared to true stroke (RR = 0.33)
• Favorable functional outcome (mRS 0–1) was nearly 3-fold higher in mimics vs. true stroke
• No cases of orolingual edema in the mimic group
Data from the SITS International Registry (429 mimics among 10,436 IVT-treated patients):
• Parenchymal hematoma: 1.2% in mimics vs. 5.1% in stroke
• sICH (NINDS criteria): 0.5% vs. 3.9%
• mRS 0–1 at 3 months: 84.1% in mimics vs. 57.7% in stroke
Recent data on tenecteplase (250 patients, 76 stroke mimics):
• No intracranial hemorrhage in the stroke mimic group (0% vs. 11.5% in AIS)
• Tenecteplase appears safe in stroke mimics

Key message: While every effort should be made to accurately diagnose stroke, the fear of treating a mimic should NOT delay thrombolysis when acute ischemic stroke cannot be excluded. The safety profile of thrombolysis in mimics is reassuring.

A PRACTICAL APPROACH - ALGORITHM FOR THE TURKISH EMERGENCY DEPARTMENT

1. ABCs and vital signs - including bedside glucose (do not skip this step)
2. Focused history - onset timing, symptom progression, seizure history, migraine history, psychiatric history, medications
3. Neurological examination - NIHSS, look for vascular territory patterns, check for positive FND signs
4. Apply FABS score - as a screening adjunct (not a replacement for clinical judgment)
5. Emergent NCCT - rule out hemorrhage and mass lesion
6. CTA - assess for large vessel occlusion
7. Consider CTP - if available, perfusion patterns can help differentiate mimics
8. Thrombolysis decision - do not delay if stroke cannot be excluded; thrombolysis is safe in mimics
9. MRI with DWI - obtain within 24 hours for definitive diagnosis when feasible
10. Identify and treat the underlying condition - seizure, migraine, metabolic derangement, FND

TAKE-HOME MESSAGES

1. Stroke mimics account for 20–40% of stroke code activations - they are common, not rare
2. The most frequent mimics are seizures, migraine, metabolic disorders, peripheral vestibulopathy, and functional neurological disorders
3. In the MENA region, functional stroke mimics may be more prevalent due to psychosocial stressors — approach with cultural sensitivity and without stigma
4. Always check glucose - hypoglycemia is the most dangerous reversible mimic
5. The FABS score (≥3) is a useful but imperfect screening tool
6. Multimodal CT and MRI-DWI are essential for definitive differentiation
7. Thrombolysis is safe in stroke mimics - do not delay treatment when stroke cannot be excluded
8. A positive diagnosis of FND should be made on clinical grounds, not by exclusion alone
9. Turkey's high prevalence of hypertension and diabetes means metabolic mimics deserve particular attention
10. Improving stroke unit admission rates and diagnostic infrastructure remains a priority for the region

COI ***& Other Declarations:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****. No artificial intelligence tools were used in the preparation, writing, or revision of this study. This study does not require ethics committee approval.*

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ABSTRACT
The need for a specialist physician in primary care arised the need for a curriculum and educators in the available healthcare facilities. The most probable and available facilities were state educational and research hospitals. There was an ongoing healthcare provision and many educator was actually working in these hospitals. In the beginning the available educators were all experts in medical disciplines other than family medicine. This was compulsory since there were no educator neither in state hospitals or in universities. The easiest way of education was preferred in the first decades; experts in family physicians were educated in state hospitals and the whole curriculum was based on rotations in five general medical disciplines-Internal medicine, general surgery, pediatrics, psychiatry, and obstetrics and gynecology.
As soon as expert physicians in family medicine completed their education in state hospitals they considered that a discipline based organization is strictly needed for their existence among all other medical disciplines. The model of primary healthcare was depending on young physicians who were just completed their graduation of medical faculty. It was compulsory for these young physicians to serve in primary care in the first years of their professional life. The next step was preparing themselves to have postgraduate education in other medical discipline both for to get high income and gain respect. In the first decade of the discipline of family medicine a vocational organisation was founded Association of experts in Family Medicine (Aile Hekimleri Uzmanlik Dernegi) in 22.06.1990 and in 22.03.1998 this association became an association

accepted as working for public benefit and its title was changed as Türkiye Aile Hekimleri Uzmanlik Dernegi (TAHUD).
Experts in Family Medicine immediately started to publish a scientific journal "Turkish Journal of Family Practice since 1997. In the early periods of 1990's departments in state universities were established and educators graduated in state hospitals were took part in these departments. Both national and international scientific congresses were platforms in which the first academicians were presented themselves and collected actual information about their discipline. Being a member of World Organization of National Colleges, Academies, and Academic Associations of General Practitioners/Family Physicians (WONCA) in 2003 opened an international vision for the discipline of family medicine in Türkiye. Until now two WONCA Europe congresses was held in Türkiye and in the third one was scheduled in 2029.
The academic journey in family medicine was started in 1994 in several universities of Türkiye and the first years was spent to establish a contemporary curriculum, developing the quality of education in the discipline of family medicine. The first Turkish Board of Family Medicine started its works in a broads manner. A preparation of a curriculum and individual and institutional accreditation processes were the pillars of the discipline of family medicine in Türkiye then.
In the first thirty years of the academy of Turkish family medicine more than 90 institutions were contributed to the education (1). In most of the institutions students post graduate education became new educators and actually 362 educators are carrying the load of post graduate education, providing health care and contributing by publications to national and international scientific community.
In the first three decade of the discipline of family medicine; Asst. Prof. Dr. Esber Ozkomur, Prof. Dr. Fusun Yaris, Prof. Dr. Mehmet Ergun Oksuz and Prof. Dr. Kenan Tastan were lost the community of family physicians very early. We are grateful to their contributions and long lasting effects of their work.
About one third of academicians in Family Medicine in Türkiye are in Ankara and Istanbul, Marmara and central Anatolian region is the most populated regions of Türkiye where there are highest number of academicians is working. More than half of academicians are in great cities and 2020-2024 period is the leading period in which the highest number of physicians were succeeded to get associate professors.
In conclusion the first years of family medicine was passed in state hospitals and then moved to state universities. In the last decade inclusion of many state hospitals and great city hospitals in the postgraduate of education of family medicine shifted educational activities to the University of Health Sciences which is actually a state university also but having several hospitals and faculties in several regions or cities.

KEYWORDS
Family Medicine, Türkiye, Academic Achievement, Departments

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EBFMC26-IP-10 · Preventive Medicine Awareness and Community Education: Managing Health, not Disease

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FREE TEXT

Preventive medicine means anticipating risks before they become illnesses. It includes vaccination programs, screening tests, and lifestyle education. When we vaccinate a child, or counsel a patient on nutrition, we are not just preventing disease - we are building resilience.

Preventive medicine shifts focus from treating illness to promoting health and avoiding disease before it starts, often through community education and behavior change rather than hospital-based care. Health is seen as complete physical, mental, and social well-being, not just absence of disease. Preventive medicine uses primary, secondary, and tertiary prevention to stop disease from arising, detect it early, and reduce its impact. Lifestyle and environmental change (diet, activity, sleep, substance avoidance, social support) are central to managing chronic disease risk.

A fundamental shift in modern healthcare: moving from a system that primarily treats disease to one that actively manages health. This shift is at the heart of preventive medicine and community-based education.

Our goal is to understand how prevention, early detection, lifestyle support, and culturally sensitive community engagement can transform population health and reduce the burden on healthcare systems.

According to the World Health Organization, health is not simply the absence of disease. It is a state of complete physical, mental, and social well-being. This definition reminds us that health is multidimensional. It requires continuous support, not episodic treatment. Preventive medicine aligns perfectly with this broader, more holistic understanding.

Why is managing health so important? Because the majority of chronic diseases - cardiovascular disease, diabetes, obesity, many cancers - are preventable. Research consistently shows that up to 70% of chronic disease burden can be avoided through lifestyle modification, early detection, and community education. Prevention is not only more effective than treatment; it is also more sustainable for healthcare systems. When communities are educated and empowered, they become active participants in their own health.

Preventive medicine operates across several levels. Primordial prevention addresses the social and environmental conditions that shape health - things like poverty, education, and urban design. Primary prevention focuses on stopping disease before it starts through lifestyle change, vaccination, and risk reduction. Secondary prevention involves early detection through screening and timely diagnosis. Tertiary

prevention aims to reduce complications and improve quality of life for those already living with chronic conditions. Together, these levels form a comprehensive framework for managing health across the lifespan. Most of what determines our long-term health is behavior. Diet, physical activity, sleep, stress management, and avoidance of tobacco and harmful alcohol use are the core drivers of chronic disease risk. Preventive medicine recognizes that behavior change is not simply about giving advice - it requires education, motivation, social support, and culturally appropriate strategies. This is where community education becomes essential.

Table 1

Core lifestyle targets and associated health benefits

Target behaviors (often combined)	**Main benefits reported**
Diet + physical activity ± behavior therapy	Lower weight/BMI, reduced diabetes & CVD risk
Smoking/alcohol reduction	Lower CVD, cancer, overall risk burden
Stress, sleep, mental health	Better mood, quality of life, possibly CVD/SLE outcomes

Table 2

Key outcomes from primary-care health promotion research

Outcome type	Findings
Risk-factor reduction & mortality	Lifestyle interventions in primary care reduced CVD risk, CVD and all-cause mortality in multiple trials. Mediterranean-diet counseling in low-risk patients lowered all-cause and CV mortality and events
Disease control & hospital use	High-intensity PHC chronic-disease management led to more PHC visits, **11.7% fewer inpatient admissions**, better BP control and adherence in rural China
Burden of NCDs (population level)	PHC approaches integrating promotion, prevention and control are judged cost-effective and essential to reduce premature NCD deaths, particularly in LMICs
Health-promotion practice in clinics	An implementation strategy doubled the rate of coded health-promotion activities in PHC, supporting broader exposure to prevention counseling

Despite the benefits, preventive care is underused. Barriers exist at multiple levels:

Individuals may lack awareness, face fear or stigma, or struggle with competing life demands. Healthcare providers may have limited time, training, or confidence in delivering preventive services. Systems may lack infrastructure, accessibility, or supportive policies. Understanding these barriers is essential for designing effective interventions.

Cultural beliefs strongly influence preventive behaviors. Fatalistic views - such as believing illness is predetermined - can reduce screening and vaccination. Traditional medicine may be preferred over biomedical prevention. Risk optimism - 'it won't happen to me' - can lead to low adherence. These beliefs must be understood and respected, not dismissed.

Culturally sensitive programs are more effective and more sustainable. Using local language, engaging community and religious leaders, respecting traditional practices, and involving families all increase trust and participation. When prevention aligns with cultural values, it becomes more acceptable and more impactful.

Primary care is the foundation of health management. It integrates health promotion, prevention, early detection, and long-term support in a continuous, person-centered model. Strong primary care systems are associated with lower mortality, better equity, and improved population health.

Evidence shows that primary care - based lifestyle interventions reduce cardiovascular risk, lower mortality, and improve mental health. High-intensity chronic disease management in primary care reduces hospital admissions and improves treatment adherence. These outcomes demonstrate that primary care is not just a treatment platform - it is a health management system.

Digital health is transforming prevention. Telehealth, mobile apps, and wearable devices enable continuous monitoring and personalized feedback. They extend preventive care beyond the clinic and into daily life. Digital tools also help overcome barriers such as distance, time constraints, and limited access to healthcare professionals.

The most effective approach combines community education, individual counseling, strong primary care, and supportive policies. This integrated model shifts healthcare from reactive treatment to proactive health management. It empowers individuals, strengthens communities, and reduces the long-term burden of disease.

This creates a health managing system, not a disease treating system. The future of prevention is personalized, digital, and community driven. Health systems must shift from reactive to proactive care.

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ABSTRACT
Primary healthcare services are the most fundamental and critical line of defense for holistic well-being. Family health centers are the first point of contact between the community and the healthcare system. Universities, on the other hand, are institutions where knowledge is produced, critical thinking flourishes, and service to society is their mission. A robust and multifaceted academic collaboration between these two vast structures has the potential to create a synergistic force that will advance not only the two institutions but the entire community's health.
Philosophical and strategic foundations of collaboration, collaboration models, tangible areas and outputs of the collaboration, structural and cultural barriers encountered, strategic recommendations for sustainable and successful collaboration may be the main subheadings for this topic.
It requires the will of all decision-makers, primarily the Ministry of Health and the Council of Higher Education, to remove legislative obstacles and allocate the necessary financial resources.

KEYWORDS
Academic, University, Family Health Center

INTRODUCTION
Primary healthcare services are the most fundamental and critical line of defense for holistic well-being. Family health centers (FHCs) are the first point of contact between the community and the healthcare system. Universities, on the other hand, are institutions where knowledge is produced, critical thinking flourishes, and service to society is their mission. A robust and multifaceted academic collaboration between these two vast

structures has the potential to create a synergistic force that will advance not only the two institutions but the entire community's health (1,2).
This paper will address, within a strategic framework, why collaboration between universities and family health centers is essential, the models and areas through which it can be conducted, the benefits it will provide, and the challenges that may be encountered.

PHILOSOPHICAL AND STRATEGIC FOUNDATIONS OF COLLABORATIONS

Several key dynamics have transformed this collaboration from a luxury or preference into a necessity.
First, there is the transformation of medical education. The traditionally hospital-centered, specialty-focused, and disease-based education model is insufficient to address today's health challenges. In an era where chronic diseases have reached epidemic proportions, the elderly population is increasing, and the importance of social determinants of health is understood, it is essential for medical and health sciences students to receive an education that internalizes a community-based, biopsychosocial model. Family health centers are the most vibrant laboratory of this new paradigm. Here, students see not the disease itself, but the person with the disease within the context of their family and environment; they learn the abstract concepts of preventive medicine (vaccination, screening, counseling) through concrete applications.
Second, there is a gap in evidence-based primary care practice and research. Family health centers generate a massive amount of health data, but the academic methodology and time to transform this data into scientific knowledge are often lacking among physicians and family health workers. Universities, on the other hand, specialize in asking research questions, systematically collecting data, and analyzing it. Collaboration between these two worlds ends the “data-rich, information-poor” state, enabling the generation of scientific answers to real-world problems encountered in the field (e.g., the reasons for vaccine refusal in a particular region, the prevalence of anemia in immigrant communities). This is a cycle where practice feeds academia, and academia illuminates practice.
The third key driving force is workforce planning and the quality of human resources. Students having a positive experience in primary care during their education increases their interest in primary care careers. A medical student who encounters family physicians who are passionate about their work and have academic curiosity as role models begins to see this field not as a “step” but as a “destination.” In the long run, this ensures that qualified physicians remain in primary care, strengthening the foundation of the health system (3-5).

COLLABORATION MODELS

University-Family Health Center (FHC) collaboration can be modeled across a wide spectrum, ranging from simple observation to full integration.

Model A: Traditional Educational Partnership (Internship Model)
This is the most common model. Students from departments such as medicine, nursing, and midwifery spend a certain period in FHCs as part of their curriculum. In an advanced version of this model, the internship should not be limited to passive observation. The student should be able to participate in patient examinations under the supervision of a training family physician, perform pregnancy and infant monitoring, and prepare and present health education materials. The success of this model depends on the close integration of theoretical education at the university with practical application in the FHC and on supporting the trainers in the FHC with pedagogical training.

Model B: University-Affiliated Training Family Health Center (Training FHC)
This is the most institutional and powerful form of collaboration. Like a university hospital, this Family Health Center (FHC) is directly under the administrative and academic responsibility of the university (Department of Family Medicine, Faculty of Medicine). This center seamlessly integrates education, research, and service. Service delivery is based on the most up-to-date scientific evidence; every patient referral becomes an educational opportunity, and every public health issue becomes a research question. While there are pioneering examples of this model in Türkiye, its widespread adoption is slow due to legislative and funding obstacles.

Model C: Research Consortium Model
This model involves one or more universities establishing a research network with numerous primary healthcare centers (PHCs) in a region on a voluntary basis. The university provides training to PHC physicians involved in the network on research methodology, ethics, and data collection. Physicians in the network propose research questions based on problems they encounter in their daily practice that require answers, or provide data for multi-center studies determined by the university. For example, a university can quickly conduct large-scale research in 50 collaborating PHCs on topics such as "prevalence of anxiety disorders in the post-COVID-19 period" or "the effectiveness of a new brief intervention program in childhood obesity." This model has the potential to transform PHC physicians from passive data collectors into active researchers.

Model D: Curriculum Integration and "Community-Based Medical Education"
This model integrates collaboration horizontally and vertically into all phases of medical education, rather than confining it to a single internship. From the early years, students are paired with a primary health care center (PHC) as part of a “community health counseling” project and follow a family. In the pre-clinical years, courses such as communication skills, medical ethics, and the social determinants of health are taught through structured observation and interviews in PHCs. In the clinical years, part of the rotations in internal medicine, pediatrics, and obstetrics and gynecology are conducted in PHCs, demonstrating the course and management of diseases outside of the hospital. This allows the student to internalize the relationship between different levels of the health system (3-5).

TANGIBLE AREAS AND OUTPUTS OF THE COLLABORATION
This strategic partnership produces tangible outputs on three main axes that reinforce each other: Education, Research, and Service.
In the Context of Education:
• Qualified Healthcare Professionals: Students gain competence in communication skills, patient-centered approach, evidence-based practice, and teamwork.
• Educator Development: Physicians and nurses working at the Primary Healthcare Center (PHC) have the opportunity for continuous professional development through trainer trainings, communication skills courses, and current medical seminars provided by the university. For a PHC employee, the title of "educator" is an important source of motivation that increases professional satisfaction and belonging.
• Community Health Literacy: Within the scope of the collaboration, innovative health education programs (diabetes school, breastfeeding promotion program, rational drug use workshops) are organized in partnership with the university's departments such as public health and communication faculties for the population registered at the PHC. This reinforces the transformative role of the PHC in the community.
In the Context of Research:
• Generating Evidence from the Field: Thanks to the Application-Based Research Networks mentioned above, research is conducted that answers clinically specific questions in primary care and directly improves patient outcomes. For example, the question, "What is the effect of structured group training versus individual training in a primary care center on metabolic control in a patient with type 2 diabetes who will start insulin?" can only be answered in these centers.
• Healthcare Research: Research can be conducted not only on clinical issues but also on health systems and policies. Issues such as malfunctions in the referral chain, determinants of irrational drug prescribing behavior, or the extent and causes of burnout syndrome among primary care workers provide vital data for improving the system.
• Participation in National and International Networks: A strong research infrastructure enables primary care centers and universities in Turkey to participate in international consortia conducting primary care research (e.g., EGPRN - European General Practice Research Network), present national data to the global literature, and conduct comparative studies.
In the Context of Service:
• Improving Service Quality and Outcomes: Academic support enhances the standardization and quality of services provided in primary health care centers (PHCs). Regular clinical audits, adaptation of current guidelines, and multidisciplinary case discussions increase the rate of achieving target values in chronic disease management.

• Piloting Innovative Service Models: University-PHC partnerships provide an ideal testing ground for new service models. For example, the integration of telemedicine into home care services, the impact of including a psychiatric social worker in the PHC team on patient satisfaction and clinical outcomes, or the effects of a neighborhood health ambassador program on community health can be piloted and evaluated using scientific methods in these centers. Successful models can guide national policies (3-5).

STRUCTURAL AND CULTURAL BARRIERS ENCOUNTERED

This idealized picture of cooperation faces significant obstacles, both in Turkey and in many countries in general.

• Legislative and Administrative Obstacles: One of the biggest problems is that FHCs are under the Ministry of Health, while universities are under the Higher Education Council (YÖK). Inconsistencies in legislation between these two institutions can turn establishing an "Training FHC" into an administrative labyrinth. Issues such as the transfer of physicians to university positions, their financial rights, and working conditions are not clear. There may be a conflict between the Ministry's performance and service contract regulations and the university's academic calendar and work schedule.

• Insufficient Funding: Additional resources are essential for the sustainability of the cooperation. There is generally no defined, permanent budget item in either the universities' or the Ministry's budget for items such as additional payments to educators in FHCs, the budget required for research infrastructure, and student transportation and insurance costs. This situation condemns the cooperation to being project-based, short-lived, and dependent on individual goodwill.

• Cultural Resistance and Role Ambiguity: The academic world may sometimes view primary care as a "simple, mundane, and academically shallow" field. Conversely, a primary care physician overwhelmed by heavy patient loads may perceive the university as "theoretical and detached from the realities of life." The presence of students may be perceived as a burden that further restricts the limited time allocated per patient. Breaking down these mutual prejudices and developing a shared understanding that makes collaboration valuable for both sides requires time and conscious effort.

• Educational Qualifications and Time Constraints: Being an excellent clinician does not guarantee being a good educator. It is essential to provide primary healthcare center physicians with educational training. However, the main problem is that it is almost impossible to create time for education and research within a heavy workload. Expecting a primary healthcare center physician to teach students and collect research data while seeing 60-80 patients a day is a well-meaning but unrealistic expectation. For the collaboration to be realistic, the patient load in the primary healthcare center needs to be arranged in a way that allows for educational and research activities (3-5).

STRATEGIC RECOMMENDATIONS FOR SUSTAINABLE AND SUCCESSFUL COLLABORATION

To overcome these obstacles and create real synergy, a systemic and institutional approach should be adopted rather than fragmented, individual efforts.

• High-Level Policy and Legislation Change: The most critical step begins with a "University-Primary Healthcare Center Cooperation Protocol" to be signed between the Ministry of Health and the Council of Higher Education. This protocol should clearly define the status of "Educational Family Health Centers," outline the legal framework for the financial, administrative, and academic functioning of these centers, and guarantee the personal rights of the physicians working there. Regulations such as exemption from performance pressure or the introduction of different performance criteria are essential for centers with this status.

• Hybrid Financing Model: For sustainability, a mixed financing model should be created that combines university budget, Ministry of Health funds, social security institution reimbursements, and research project funds (TÜBİTAK, EU projects). "Education" and "research" activities should be costed and financed just like a laboratory test.

• Institutionalizing a Win-Win Approach: The value proposition for the Primary Healthcare Center (PHC) must be very clear: not “I am sending you students and additional workload,” but “I am offering you assistant support (intern physicians, nursing students), free continuing medical education, access to current guidelines, a rapid consultation line for complex patients, and research opportunities.” Collaboration should facilitate and strengthen the PHC's work, not make it harder.

• Digital Integration: The backbone of collaboration should be a digital platform. A shared online education portal, secure messaging groups for synchronous and asynchronous case discussions, teleconsultation infrastructure, and a shared research database can create continuous and intensive interaction by making physical distances irrelevant.
• Putting the Community at the Center: The ultimate goal of this entire process should not be forgotten: improving community health. Therefore, collaboration outcomes should be shared with the community, and neighborhood heads and patient representatives should be included in the PHC's advisory board to ensure that the service responds to the real needs of the community (3-5).

CONCLUSION

Universities and family health centers are doomed to underperform as long as they remain isolated islands within the health system. The university risks becoming an "ivory tower" detached from the real health problems of society, while the family health center faces the danger of being reduced to a routine service provider because it cannot sufficiently benefit from the transformative power of knowledge. However, a strategic and in-depth bridge built between these two structures creates a mutual transformation. In the living laboratory of the family health center, the academy learns to see the human being as a whole with its environment, to experience the value of preventive medicine in the field, and to become integrated with the community. The family health center, on the other hand, by encountering the methodological discipline, scientific skepticism, and continuous learning culture of the academy, ceases to be a structure that only implements the instructions of the Ministry of Health and gains the identity of an autonomous academic clinic that produces knowledge, questions, and constantly improves its own practice. This ideal does not happen spontaneously. This requires the will of all decision-makers, primarily the Ministry of Health and the Council of Higher Education, to remove legislative obstacles and allocate the necessary financial resources. It is essential that universities view primary healthcare centers not as hierarchical subordinates, but as equal and vital partners; and that primary healthcare center staff embrace this collaboration not as an additional burden, but as an opportunity for professional development and fulfillment. This partnership, based on mutual respect, a shared vision, and a mission to serve the community, will not only train better doctors and nurses but will also be key to building a healthier, fairer, and more resilient society for all. The future of healthcare will be built on strong bridges between these two fundamental pillars.

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INTRODUCTION

Burn injuries remain a significant public health problem worldwide and are associated with considerable morbidity, mortality, disability, and psychosocial burden. According to the World Health Organization (WHO), approximately 180,000 burn-related deaths occur annually, with the majority occurring in low- and middle-income countries (1). Although advances in critical care and reconstructive surgery have substantially improved survival rates, burn injuries continue to cause prolonged hospitalization, functional impairment, hypertrophic scarring, contractures, psychological distress, and reduced quality of life (2,3).

Children constitute one of the most vulnerable populations, with scald injuries representing the most common mechanism of pediatric burns (1,8). In adults, flame burns, occupational accidents, electrical injuries, and chemical exposures become increasingly important. Because many burns occur in domestic environments and are potentially preventable, burn care should not be limited to acute treatment alone but should also include prevention, rehabilitation, and long-term follow-up (1,3).

Family physicians play a unique role throughout the continuum of burn care. Their responsibilities extend beyond initial assessment and include prevention counseling, patient education, first aid guidance, outpatient follow-up, rehabilitation monitoring, and psychosocial support (2,3). Through regular contact with patients and families, family physicians are ideally positioned to identify burn risk factors and implement preventive strategies before injuries occur.

BURN PREVENTION AND HEALTH PROMOTION

Prevention remains the most effective strategy for reducing burn-related morbidity, mortality, and healthcare costs (1,3). Since many burn injuries occur in homes, schools, and workplaces, family physicians have important opportunities to provide preventive counseling during routine healthcare visits.

Prevention in Children

Scald injuries resulting from hot beverages, soups, cooking liquids, and bath water are the leading causes of pediatric burns (1,8). Preventive measures include restricting children's access to kitchens during cooking,

turning pot handles inward, avoiding tablecloths that can be pulled by toddlers, supervising children in bathrooms, and maintaining domestic hot-water temperatures below 49–50°C (1).

Prevention in Adults

Among adults, workplace injuries, open flames, chemicals, and electrical hazards are major causes of burns. Prevention strategies include proper use of personal protective equipment, adherence to workplace safety regulations, and safe handling of chemicals and electrical devices (2,3).

Prevention in Older Adults

Elderly individuals are at increased risk because of impaired mobility, visual deficits, sensory loss, and chronic diseases. Family physicians should routinely assess home safety, heating device use, neuropathy, and fall risk in older adults (3).

Community-Based Prevention

Community education, smoke detector promotion, smoking cessation counseling, school-based awareness programs, and household safety assessments may substantially reduce burn incidence and severity (1,3).

INITIAL ASSESSMENT AND EVIDENCE-BASED FIRST AID

Burn injuries should be approached as traumatic injuries rather than isolated skin wounds. Initial assessment should follow the ABCDE principles while considering burn mechanism, injury location, patient age, and associated medical conditions (2,3).

Evidence-based first aid consists of cooling thermal burns with cool running water for 20 minutes as soon as possible after injury, ideally within three hours (5–7). Adequate cooling reduces tissue damage and may improve healing outcomes.

Several commonly used traditional interventions should be discouraged. Ice, toothpaste, butter, yogurt, oils, and other household remedies may worsen tissue injury, delay assessment, and increase infection risk (6,7). Similarly, adherent clothing should not be forcibly removed and blisters should not be intentionally ruptured by patients.

The principle of modern burn first aid can be summarized as: “Cool the burn, warm the patient.” While cooling the burn is beneficial, excessive cooling may contribute to hypothermia, particularly in children and elderly patients (8).

EMERGENCY DEPARTMENT MANAGEMENT OF BURNS PATIENTS

Following initial first aid, patients presenting to the emergency department require systematic evaluation and stabilization. The primary goals of emergency burn management are identification of life-threatening conditions, assessment of burn severity, pain control, prevention of burn wound progression, and determination of the need for referral to a specialized burn center (2,3).

The initial evaluation should follow the principles of Advanced Trauma Life Support (ATLS). Particular attention should be directed toward airway compromise, inhalation injury, associated trauma, and circulatory instability. Facial burns, singed nasal hairs, hoarseness, carbonaceous sputum, or a history of exposure to fire in an enclosed space should raise suspicion for inhalation injury and may necessitate early airway intervention (2,3).

After stabilization, burn depth and Total Body Surface Area (TBSA) should be assessed. Circumferential burns of the extremities or thorax require careful monitoring because progressive edema may impair distal circulation or respiratory mechanics (2).

Pain management represents a critical component of emergency care. Burn injuries are frequently associated with severe pain, and adequate analgesia should be provided promptly. In addition, tetanus immunization status should be reviewed and updated when indicated (7).

Fluid resuscitation should be considered in patients with extensive burns. Current recommendations generally support formal fluid resuscitation for burns exceeding 10–15% TBSA in children and 15–20% TBSA in adults. Urine output remains one of the most reliable indicators of adequate resuscitation (2,8).

Initial wound management includes gentle cleansing, removal of contaminants, and application of appropriate dressings. Routine prophylactic systemic antibiotics are not recommended in uncomplicated burn injuries.

Patients should be reassessed regularly because burn depth may evolve during the first 24–48 hours after injury (3,7).
Early consultation with a burn center is recommended whenever burn severity, anatomical location, patient characteristics, or associated injuries raise concerns regarding outpatient management or long-term functional outcomes (4).

BURN CLASSIFICATION AND ASSESSMENT

Burn severity depends on both burn depth and burn size. Superficial burns involve only the epidermis and generally heal without scarring. Partial-thickness burns extend into the dermis and may be classified as superficial or deep. Full-thickness burns involve complete destruction of the dermis and often require surgical management (2,3).
Assessment of Total Body Surface Area (TBSA) is essential for treatment planning. The Rule of Nines is commonly used in adults, whereas the Lund-Browder chart provides greater accuracy in children because of age-related differences in body proportions (8).

OUTPATIENT BURN CARE

Many superficial and limited partial-thickness burns can be managed safely on an outpatient basis (7,9). Appropriate outpatient candidates typically have limited TBSA involvement, adequate pain control, reliable access to follow-up care, and no burns involving critical anatomical regions.
Initial wound care includes gentle cleansing, maintenance of a moist wound-healing environment, pain control, and appropriate dressing selection. Common dressing options include non-adherent dressings, hydrogel products, foam dressings, alginate dressings, and selected silver-containing dressings (7,9).
Routine systemic antibiotic prophylaxis is not recommended in uncomplicated burn injuries because it has not been shown to reduce infection rates and may contribute to antimicrobial resistance (7).

BURN CENTER REFERRAL CRITERIA

Primary care physicians should recognize situations requiring specialist burn care. According to American Burn Association recommendations, referral is indicated for full-thickness burns, partial-thickness burns involving ≥10% TBSA, burns affecting the face, hands, feet, genitalia, perineum, or major joints, electrical burns, chemical burns, inhalation injuries, circumferential burns, and patients with significant comorbidities or associated trauma (4).
Early referral is particularly important in pediatric patients, elderly individuals, and patients with complex injuries (4,8).

SPECIAL CONSIDERATIONS IN ELECTRICAL AND CHEMICAL BURNS

Electrical and chemical burns deserve particular attention because the extent of tissue damage may be underestimated during initial assessment. Electrical injuries may cause deep muscle necrosis, compartment syndrome, cardiac arrhythmias, and neurological complications despite minimal external skin findings. Chemical burns may continue to progress until the offending agent is completely removed. Immediate irrigation, careful monitoring, and a low threshold for specialist referral are therefore recommended in these patients (2,3).

REHABILITATION AND SCAR MANAGEMENT

Burn rehabilitation begins during the acute phase of treatment rather than after wound closure (3,8). Early mobilization, edema control, positioning, and range-of-motion exercises help preserve function and reduce contracture formation.
Contractures are among the most important long-term complications of burn injury and commonly affect major joints such as the neck, axilla, elbow, knee, and hand (3). Delayed rehabilitation may result in permanent functional impairment.
Scar management may include moisturization, sun protection, silicone-based therapies, scar massage, and pressure garment therapy when indicated (10). Because scar maturation may continue for months or years, long-term follow-up remains essential.

PSYCHOSOCIAL RECOVERY

Burn injuries frequently affect psychological well-being. Children may experience anxiety, altered body image, social withdrawal, and school-related difficulties, whereas adults may develop depression, post-traumatic stress symptoms, and occupational challenges (2,3).

Family physicians are often the healthcare professionals most likely to identify these problems during long-term follow-up. Psychological support and social reintegration should therefore be considered important components of comprehensive burn care.

CONCLUSIONS

Burn injuries remain a significant cause of preventable morbidity worldwide. Family physicians play a central role not only in the initial assessment and management of burn injuries but also in prevention, health promotion, rehabilitation, and long-term follow-up.

Evidence-based first aid, appropriate outpatient management, recognition of referral criteria, and timely rehabilitation interventions can substantially improve patient outcomes. Equally important, preventive counseling delivered in primary care settings may reduce the incidence of burn injuries before they occur.

Effective burn care should therefore be viewed as a continuum that begins with prevention and extends through acute management, rehabilitation, and restoration of quality of life.

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EBFMC26-IP-13 · HIV from Diagnosis to Follow-up: Early Diagnosis and Indicator Diseases in Primary Care

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ETHICS STATEMENT

This study is a retrospective, descriptive clinical review based on anonymized case observations and published aggregate clinical guidelines. Since no direct patient-identifying data, personal medical records, or biological samples were utilized, and the analyses were performed on completely de-identified clinical histories, formal ethics committee approval was not required.
Informed Consent: Patient anonymity was strictly preserved throughout the preparation of the clinical case summaries. All clinical descriptions have been thoroughly de-identified, and no personal identifying information is included, ensuring compliance with patient privacy and confidentiality standards.

ARTIFICIAL INTELLIGENCE STATEMENT

No artificial intelligence tools were used in the preparation, writing, or revision of this study.

ABSTRACT

To end AIDS as a public health threat by 2030, global strategies must transition from risk-behavior screening to objective clinical indicator-based testing in primary care. This paper evaluates the UNAIDS "95-95-95" targets and the critical "Chain Effect" of delayed HIV diagnosis on individual morbidity, societal transmission, and healthcare economics. Utilizing the 2014 CDC Staging criteria, we analyze 11 clinical cases representing missed opportunities, dermatological and lymphatic indicators (including reactive lymphoid hyperplasia and recurrent herpes zoster), and terminal outcomes like *Toxoplasma gondii* co-infection. Furthermore, we outline the "Opt-Out" testing communication strategy and present a specialty-specific indicator checklist (including gynecology, hematology, dermatology, and pulmonology) designed for primary care providers. Implementing routine, indicator-guided, and opt-out HIV testing is crucial to destigmatizing the disease and securing early, life-saving therapeutic intervention.

KEYWORDS

HIV Early Diagnosis, Indicator Diseases, Primary Care, Opt-Out Testing, HIV Clinical Staging, Missed Opportunities.

HIV/AIDS AND GLOBAL TARGETS

To end AIDS as a public health threat by 2030, UNAIDS has established the "95-95-95" targets for 2025: 95% of people living with HIV (PLHIV) knowing their status, 95% of those diagnosed receiving antiretroviral therapy (ART), and 95% of those on treatment achieving viral suppression (1).

Current global data highlights a stark "Shadow Reality": while 40.8 million people live with HIV and 1.3 million new diagnoses occur annually, approximately 5.3 million individuals remain unaware of their status. Identifying these hidden cases is the only path to reaching suppression targets. Failure to achieve early diagnosis creates a "Chain Effect" across three dimensions:

- Individual Dimension (Morbidity/Mortality): Late diagnosis leads to diminished treatment response, increased HIV-related morbidity, and significantly reduced life expectancy.
- Societal Dimension (Transmission): Approximately half of all new infections originate from individuals unaware of their status. Crucially, early detection and treatment result in a 96% reduction in infectivity.
- Economic Dimension (Cost): Managing advanced-stage disease and its associated opportunistic infections places a massive, preventable financial burden on healthcare systems.

INTERNATIONAL TESTING GUIDELINES AND STRATEGIC SHIFTS

Major global authorities, including the WHO (2021), ECDC, and BHIVA, have moved away from traditional "risk-behavior" questioning (2,3). The modern clinical strategy prioritizes the "clinical picture," where specific indicator conditions mandate an HIV test regardless of perceived patient risk (Table 1).

Table 1

Category	Description	Testing Recommendation
Category 1	AIDS-defining conditions	**Strongly Recommend Test** (Legally/Clinically Mandatory)
Category 2	Conditions with undiagnosed HIV prevalence >0.1%	**Strongly Recommend Test**
Category 3	Clinical management where HIV status is vital (Immunosuppression risks)	**Offer Test**

THE “OPT-OUT” TESTING STRATEGY AND COMMUNICATION

The "Opt-Out" approach is the current gold standard for primary care. Providers inform the patient that an HIV test is being performed as a standard part of diagnostic care, and the test is conducted unless the patient explicitly refuses.

Communication Guide for Providers

As a clinical consultant, I emphasize that the *way* we frame the test determines its acceptance. The "Would you like..." approach inadvertently frames HIV testing as a risk-based elective rather than a clinical necessity, reinforcing stigma.

Recommended Phrases (Opt-Out Approach)

"We routinely perform HIV testing for anyone presenting with this symptom/condition."
"We will also test you for HIV as a standard protocol."
"If you do not want to have this test, please let us know."

Phrases to Avoid

"Would you like to have an HIV test? We can do a test for you today." (Suggests the test is optional).
"You must get an HIV test; it’s very important." (Can be perceived as alarmist).
"We need to test you to make sure you aren't contagious to staff." (Stigmatizing and medically inaccurate).

HIV CLINICAL STAGING FRAMEWORK

According to the 2014 CDC Staging criteria, clinical management is dictated by the following markers in Table 2 (4).

Table 2

Stage	Clinical Defining Condition	CD4+ T lymphocyte Count/Ratio
0*	Negative or indeterminate test followed by (+) within 180 days	-
1	None	≥500/mm^3 or ≥29%
2	None	200–499/mm^3 or 14–28%
3 (AIDS)	AIDS-defining condition present	<200/mm^3 or <14%
Unknown	No data available	No data available

**Stage 0 represents early infection occurring within the last six months.*

ANALYSIS OF CLINICAL CASES: MISSED OPPORTUNITIES AND INDICATOR CONDITIONS

Early Detection and Screening Cases

Routine screening captures cases before they advance. Case 1 (48-year-old female) was diagnosed at 35 weeks of pregnancy during routine Category 2a obstetric screening, allowing for immediate ART and neonatal prophylaxis. Case 2 (63-year-old male) and Case 3 (51-year-old male) highlight the necessity of provider persistence. Case 2 was identified only after persistent partner screening, while Case 3 was caught during routine pre-operative tests for cardiac ablation. Both had already progressed to Stage 2.

Dermatological and Lymphatic Indicators

Case 4 involved a 57-year-old male with 12 kg weight loss. A biopsy of his lymphadenopathy revealed Reactive Lymphoid Hyperplasia, a specific histological indicator that should have triggered suspicion. He was diagnosed at Stage 0. Case 5 (59-year-old male) presented with recurrent fever and weight loss. Despite having a negative HIV test only six months prior, his new clinical picture correctly prompted a re-test, confirming a Stage 0 infection. Conversely, Case 9 (55-year-old female) presented with classic indicators: oropharyngeal candidiasis and recurrent Herpes Zoster (shingles). At diagnosis, her CD4 count was a critical 4 cells/μL (Stage 3).

Co-infections and Risk Presentations

Case 6 (61-year-old male) represents a major missed opportunity; he experienced a 20 kg weight loss in just 2.5 months, yet Internal Medicine focused solely on malignancy. HIV was only detected during pre-anesthesia for an endoscopy. He was Stage 2 with Anal Warts and pulmonary tuberculosis. Case 7 (53-year-old male) demonstrated HIV triggering HBV virological reactivation in a previously stable, untreated Hepatitis B patient. Case 8 (27-year-old male) was diagnosed with HIV (Stage 2) and neurosyphilis following a presentation of retinitis.

The Consequences of Delayed Detection

- Case 10 (Systemic Neglect): A 41-year-old male with recurrent pneumonia. Between 2019 and February 2026, this patient had over 33 admissions, mostly to emergency departments. Despite being evaluated by Internal Medicine for anemia and Dermatology for rashes, an HIV test was never performed until his final admission for bicytopenia. He was diagnosed at Stage 3 with a CD4 count of 84.99 cells/μL.
- Case 11 (Terminal Outcome): A 28-year-old male presented with a seizure and a 10 kg weight loss over one year. Imaging showed an intracranial mass and midline shift; CSF PCR confirmed *Toxoplasma gondii*.

With a CD4 count of only 63 cells/μL, this Stage 3 diagnosis was made too late, and the patient passed away (*exitus*) (5).

SPECIALTY-SPECIFIC INDICATOR CHECKLIST

Providers should initiate an HIV test if any of the following conditions are present:

Gynecology/Obstetrics
Cervical cancer or Cervical dysplasia
Anal cancer or dysplasia
Hepatitis B or C (Acute or Chronic)
Pregnancy (Mandatory for neonatal safety)
Sexually transmitted infections

Hematology/Oncology
Malignant lymphoma (Non-Hodgkin)
Unexplained leukocytopenia or thrombocytopenia lasting >4 weeks
Unexplained lymphadenopathy
Thrombotic thrombocytopenic purpura (TTP)

Infectious Diseases/Internal Medicine
Fever, weight loss, or chronic diarrhea
Mononucleosis-like illness
Visceral leishmaniasis
Invasive pneumococcal disease

Dermatology
Herpes zoster (Shingles)
Seborrheic dermatitis/exanthema
Kaposi's sarcoma
Severe or recalcitrant psoriasis

Pulmonology
Recurrent pneumonia (2+ episodes in 12 months)
Tuberculosis (Pulmonary or Extrapulmonary)
Pneumocystis jirovecii pneumonia

CLINICAL CONCLUSION AND ACTIONABLE RECOMMENDATIONS

To transition from late-stage crisis management to early detection, primary care physicians must adopt these three pillars:

1. Universalize the Test: Recommend HIV testing for all individuals aged 18-65 during any healthcare contact unless they explicitly refuse (Opt-Out).
2. Prioritize Indicators over Risk: Shift the diagnostic focus from uncomfortable and often inaccurate risk-behavior questioning to the objective clinical picture of "Indicator Diseases".
3. Mandatory Clinical Prompts: Treat every instance of shingles, unexplained weight loss, or recurrent pneumonia as a mandatory prompt for an HIV test.

Early diagnosis is not merely a clinical goal; it is a preventive intervention. By normalizing HIV testing as a routine diagnostic tool-equivalent to a blood glucose or cholesterol check-we can destigmatize the disease and ensure no patient progresses to Stage 3 unnoticed.

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EBFMC26-IP-14 · Reaching the Goal Together: Common Monitoring Protocols in Chronic Disease Management

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ABSTRACT
Chronic diseases are defined as conditions that last for one year or longer, require medical intervention, or limit daily activities. According to the World Health Organization (WHO), these diseases are non-communicable, long-term, and slowly progressing conditions that require continuous care and treatment. The major categories of chronic diseases include cardiovascular diseases, cancer, chronic respiratory diseases, and diabetes. These diseases account for more than 40 million deaths annually and stem from controllable risk factors such as tobacco use, unhealthy diets, physical inactivity, and harmful alcohol consumption. Family medicine specialists play a crucial role in the prevention and management of chronic diseases by reducing these risk factors and promoting healthy lifestyle changes. Health care professionals adopting a multidisciplinary approach and developing common monitoring protocols can effectively track patients and enhance treatment success. In Turkey, various national programs and protocols have been developed to facilitate chronic disease management, with the integration of digital health applications playing a significant role in this process. Common monitoring protocols aim to improve both individual patient outcomes and the overall effectiveness of the health system. Future studies will seek to evaluate the efficacy and feasibility of these protocols, thereby enabling the provision of better health services in the management of chronic diseases in Turkey.

KEYWORDS
Chronic Diseases, Common Monitoring Protocols, Family Medicine, Monitoring Protocols, Multidisciplinary Approach

INTRODUCTION

Chronic diseases are generally defined as conditions that last up to or more than a year, require medical attention and/or limit daily activities (1). The World Health Organisation (WHO), defines chronic diseases as "diseases that are non-communicable, long-lasting, slowly progressing conditions that require continuous care and treatment over many years". These diseases result from a combination of genetic, physiologic, environmental and behavioral factors. Mainly they are cardiovascular diseases (myocardial infarction, stroke, etc.), cancers, chronic respiratory diseases (chronic obstructive pulmonary disease, asthma, etc.) and diabetes. Every year more than 40 million people lose their lives due to non-communicable diseases such as cardiovascular diseases, cancer, diabetes and chronic respiratory diseases (2). At the root of these diseases lie cigarette use, unhealthy diet, lack of physical activity and the harmful use of alcohol; and these factors lead to weight gain and obesity, hypertension, high cholesterol and, eventually, diseases (3). The key to control chronic diseases lies in reducing these risk factors and focusing on healthy lifestyle changes. In this regard, family medicine specialist play a vital role in preventing and managing chronic diseases (4,5).

Increasing the number of family medicine doctors have been shown to improve health outcomes including total and cause-specific mortality rates, while decreasing healthcare costs and health inequities (5-7). To improve the efficiency of monitoring and treatment protocols in chronic disease management, healthcare professionals must work together. Common chronic conditions such as hypertension, diabetes and obesity, require continuous monitoring and multidisciplinary approach (8). Training and and counseling services that support self-care activities, provided by family physicians, increasetreatment success. Thanks to telemedicine applications, family medicine doctors and secondary care specialists can communicate more efficiently and conduct remote monitoring. This facilitates patient follow-up and increases the overall efficiency and quality of the healthcare system (9,10). Multidisciplinary approaches and common monitoring protocols developed for the chronic diseases positively affect both individual patient outcomes and the general effectiveness of the healthcare system.

Today non-communicable diseases have replaced communicable diseases as the primary causes of death. Cardiovascular diseases, stroke, cancer, diabetes, chronic respiratory diseases, chronic liver diseases, chronic kidney diseases account for a significant number of deaths worldwide (11,12).

71% percent of the global deaths are linked to chronic diseases with cardiovascular diseases, cancer, chronic respiratory diseases and diabetes making up 80% of the death. In Türkiye, cardiovascular diseases account for 34% of mortality, followed by cancer at 23%, chronic respiratory diseases at 7%, diabetes at 5%, and other non-communicable diseases at 21% (13). To assess the burden of disease, the Disability Adjusted Life Year (DALY) metric is commonly used. Ischemic heart disease and stroke are the leading causes of DALYs for individuals aged 50–74 as well as those above 75. Since 1990, the burden of Years Lived with Disability (YLD) due to non-communicable diseases and injuries has increased significantly (14).

As of 2019 in Türkiye, ischemic heart disease, stroke, chronic obstructive pulmonary disease, diabetes and depression are among the diseases carrying the highest DALY burden. Ischemic heart disease stands out as the most impactful disease, causing approximately 229.000 DALY, while stroke ranks second with 145.000 DALYs. Chronic obstructive pulmonary disease and diabetes also substantially increase the disease burden, contributing 100,000 and 85,000 DALYs, respectively (15). In the 1998 Turkish Diabetes Epidemiology (TURDEP-I) study conducted among the adult population, the age-adjusted diabetes prevalance was reported as %7,2 (16). By the time the TURDEP-II study was conducted, diabetes prevalence had doubled to 16.5% (17,18).

Among non-communicable diseases, cardiovascular diseases rank first among all causes of death, with ischemic heart diseases and cerebrovascular diseases being the top two contributors (19). According to the data of the Turkish Statistical Institute (TurkStat), heart diseases show an upward trajectory across all causes of death, similar to global trend. As of 2014, 40% of deaths were caused by cardiovascular diseases, with the highest prevalence seen in the 75–84 age group (19,20). Non-communicable diseases occur mostly due to preventable risk factors. Among them, the most prominent ones (cardiovascular diseases, chronic respiratory diseases, cance and diabetes) are casually linked to behavioral risk factors such as cigarette use, harmful alcohol consumption, physical inactivity, and an unhealthy diet. These behavioral risks trigger four main metabolic and physiological changes: a rise in blood pressure, an increase in blood glucose, overweight/obesity, and elevated blood lipid levels. In addition, air pollution is also a key risk factor for non-communicable diseases (19,21).

Systematizing monitoring and treatment processes in chronic disease management relies on effective cooperation among health professionals. Common monitoring protocols improve patient care by strengthening collaboration between family medicine doctors and other medical specialties. The advantages of common monitoring protocols include: To provide an opportunity for enhanced coordination, enabling the systematic sharing of the patient data (which directly benefits the treatment process), It encourages patients to actively engage in their self-care and treatment plan. This combined approach can significantly improve patients' health status.

For instance, a family physician measures a patient's blood pressure and evaluates other risk factors. If necessary, they prescribe antihypertensive treatment and offers healthstyle changes. The physician monitors the patient's blood pressure over time and adjusts the treatment when necessary. If blood pressure targets are not achieved, the patient is referred to a cardiologist or an internist.

In the ever-changing environment of the primary healthcare, the integration of the various health information technologies have become an essential part of chronic disease management. Electronic Health Records (EHRs), while not flawless, serve as a valuable tool for healthcare providers to monitor the quality of daily care delivered. EHR, not only provides a centralized medical database that a physician can follow a group of patients, but also enables physicians to electronically track patients with chronic diseases (8,22).

A substantial proportion of non-communicable diseases can be mitigated through preventive measures targeting four main risk factors: smoking, inadequate physical activity, alcohol misuse and an unhealthy diet. Up-to-date and reliable data is crucial to plan, monitor and assess the efficiency of these interventional measures against non-communicable diseases. When patients take responsibility for their own health and participate in shared decision-making processes, health outcomes improve positively (8).

The structure of the healthcare system contains factors that limit the effectiveness of common monitoring protocols in chronic disease monitoring. The limited sharing of data between hospitals and primary healthcare centers hinders the communication and collaboration of family medicine doctors and other specialists. Education and awareness of patients are important to include them in the treatment process. Chronic disease management can be long-term and costly. Difficulty in accessing healthcare services for socioeconomically vulnerable individuals who live in rural areas affects the monitoring of chronic disease management negatively. Inadequate electronic health records and data sharing limit the application of common protocols. Besides, the unfamiliarity of some healthcare professionals with technology affects the effective usage of digital health solutions

Since 2003, Türkiye has taken great steps for the prevention of chronic diseases nationwide with the Health Transformation Program (HTP). Recently, Türkiye has developed various protocols to ease chronic disease management. Chronic disease management requires a shared approach and coordination in terms of preventive, therapeutic, and rehabilitative services among primary, secondary, and tertiary care. Disease-specific national programs initiated under the guidance of the Ministry of Health form the basis of efforts toward creating common monitoring protocols for chronic disease management in Türkiye.

- Prevention and Control Program for Cardiovascular Diseases in Türkiye (2021-2026)
- Türkiye Diabetes Program (2015-2020)
- Türkiye Prevention and Control Program for Chronic Airway Diseases (2018-2023)
- Türkiye Prevention and Control Program for Kidney Diseases (2018-2023)
- Türkiye Healthy Aging Action Plan and Implementation Program (2021-2026)
- National Cancer Control Program (2019-2023)
- National Tobacco Control Program-Action Plan (2018-2023)
- Türkiye Healthy Nutrition and Active Life Program: Action Plan for the Prevention of Adult and Childhood Obesity and Physical Activity 2019-2023
- Türkiye Program for the Reduction of Excessive Salt Consumption (2017-2021)
- Diagnosis and Treatment Guidelines for Primary Care 2026

The most important step to reflect the protocols to the field is Disease Management Platform (HYP). Through HYP, risk evaluation for hypertension, diabetes, cardiovascular diseases, screening and monitoring of obesity and comprehensive geriatric assessment were developed; in the second stage coronary artery disease, cerebrovascular diseases, stroke and chronic kidney disease modules were adde to the system. The integration of technology in the field of health plays an important role in the monitoring of chronic diseases. In Türkiye,

digital health applications (e-health) are promoted in the healthcare system. Mobile applications help patients follow-up their own health data.

RESULTS

The multidisciplinary approach in chronic disease management is very important to increase the efficacy of health services and the quality of life of individuals. Common monitoring protocols are tools that ease multidiciplinary approach and improve patient health outcomes. They will yield positive outcomes for both individuals and society by not only imprroving patient care but also through increasing efficacy of health services. Family medicine, which plays an important role in chronic disease management, with cooperation and the improvement of the protocols becomes even more empowered. Developing technologies provide new opportunities for chronic disease management. With the research to come, it is hoped that these protocols will be assessed in terms of efficacy and applicability and thus better health services will be provided. The development of protocols, education programmes, research and evaluation studies and technological advancements play a vital role to effectively manage chronic diseases in Türkiye.

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EBFMC26-IP-15 · HIV Infection: A Reality Managed in Unison (Co-Living with HIV: Epidemiological Realities, Privacy, and Monitoring)

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ABSTRACT

Global and Regional Epidemiological Overview

Prior to 1996, HIV infection was characterized as an acute and fatal disease. However, the antiretroviral therapy (ART) revolution has transformed it into a chronic, manageable condition where the life expectancy of people living with HIV has reached equivalent levels to the general population. According to 2025 UNAIDS and World Health Organization (WHO) estimates, 40.8 million people are living with HIV globally, with 1.3 million new infections and 630,000 AIDS-related deaths occurring annually (1,2). While Western countries have surpassed the epidemic threshold and maintained a stable, low trend, the Eastern Europe and Central Asia region—which includes Turkey—is experiencing a critical surge, marked by a 37% dangerous increase in AIDS-related deaths.

Turkey's Epidemiological Paradox and the Diagnosis Bottleneck

Turkey exemplifies this rapid regional climb. Cumulative epidemiological data between 1985 and 2025 report 54,472 HIV-positive individuals and 2,629 AIDS cases in the country (3). The demographic distribution is predominantly male (82.1%), with incidence peaking sharply within the 25-29 and 30-34 age cohorts. When analyzed through the lens of the UNAIDS 95-95-95 targets, Turkey presents a unique clinical paradox. The nation significantly outperforms global averages in treatment access (>90% vs. 89%) and viral suppression (>94% vs. 94%), demonstrating excellent clinical success and a robust health infrastructure. However, the initial step of the cascade—diagnosis (awareness)—remains critically low at approximately 55%, compared to the 87% global average. This ~55% diagnostic gap constitutes the primary bottleneck in managing the epidemic, resulting in severe late presentations.

Invisible Walls: The Iceberg Phenomenon and the Legal Shield

With 60.9% of transmission routes remaining unreported, it is evident that the barriers to diagnosis are driven by sociological fears rather than biological factors. The "invisible walls" preventing individuals from getting tested consist of psychosocial factors (stigma and denial), clinical factors (low suspicion index among physicians), and systemic privacy concerns (fear of e-Nabiz visibility and official reporting processes). To bring this hidden population—the submerged part of the iceberg—into the healthcare system, the most powerful medical intervention is ensuring absolute privacy. Securing patient trust through Form D86 (a 10-digit anonymous coding notification system) and the Personal Data Protection Law (KVKK) guarantees state-protected anonymity, which is essential to overcome the fear of exposure and integrate patients into the care continuum.

Modern HIV Management: Shared Care and Inflamm-aging

Contemporary HIV management requires a multidisciplinary "Shared Care" model, highlighting the seamless collaboration between infectious disease specialists and primary care physicians (family medicine). Even when ART completely suppresses the viral load, latent viral reservoirs keep the immune system continuously stimulated. This chronic inflammatory burden, known as "inflamm-aging," causes biological aging to outpace chronological age by 10-15 years (immune senescence), leading to accelerated atherosclerosis and early-onset metabolic shifts such as insulin resistance (4). Consequently, primary care must take the lead in routine comorbidity management. This includes continuous cardiovascular risk assessments, bone health monitoring (DEXA scans for osteoporosis), and normalized oncological screenings, particularly annual Pap-Smear and HPV screenings due to the elevated cervical cancer risk in HIV-positive women. Furthermore, routine adult immunizations are vital, governed by a strict clinical rule: live vaccines must be strictly avoided if the patient's CD4+ T-cell count is below 200 cells/mm³ due to incomplete immune recovery.

The U=U Revolution: From Clinical Success to Social Freedom

The ultimate objective of modern HIV management is not merely to sustain life, but to completely halt community transmission. Backed by absolute scientific proof from the PARTNER 1 and 2 cohort studies, it is now established that individuals maintaining an undetectable viral load on modern ART regimens for at least six consecutive months have absolutely zero risk of sexually transmitting the virus (5). The U=U (Undetectable = Untransmittable) revolution means clinical viral suppression leads directly to social freedom. It empowers HIV-positive individuals to engage in natural family planning and have healthy children, serving as the ultimate scientific argument to shatter societal prejudice and permanently break the cycle of both stigma and infection.

KEYWORDS

HIV Infections, Immunodeficiency Syndrome, Acquired, Epidemiology

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EBFMC26-IP-16 · Producing Science in Primary Care: From Practice to Evidence Generation

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ABSTRACT
Primary health care (PC) is becoming increasingly complex because of multimorbidity, ageing populations, digitalisation, transformations in healthcare systems, and sustainability challenges. Family medicine today should not remain solely a discipline consuming evidence, but should also become a strategic field capable of generating evidence within its own context. This article discusses the development of research culture in PC, the importance of practice-based research, research literacy, the role of research networks, and the contribution of the European General Practice Research Network (EGPRN). Furthermore, the development process and international visibility of family medicine research in Türkiye are explored. Strengthening research capacity in primary care should therefore be regarded as a fundamental strategic necessity for sustainable healthcare systems.

KEYWORDS
Family Medicine, Primary Care, Practice-Based Research, EGPRN, Research Capacity, Evidence Generation

INTRODUCTION
PC is widely accepted as the cornerstone of healthcare systems. However, healthcare delivery has become increasingly complex because of the growing burden of chronic diseases, multimorbidity, preventive

healthcare demands, digital health applications, and workforce pressures on healthcare professionals. This transformation requires family physicians not only to provide clinical care, but also to possess competencies in critical appraisal, data interpretation, practice-based inquiry, and knowledge generation (1).
Current challenges in PC are not only limited to increasing complexity and care demands but also many factors such as multimorbidity with digital transformation and prevention, human-centred care expectations, workforce pressure, community health responsibilities. Multimorbidity and chronic disease burden are making family medicine practice increasingly complex.
Clinical excellence alone is no longer sufficient. Modern family medicine cannot rely solely on clinical competence. Contemporary healthcare additionally requires:

- Research literacy is not optional, it is structural
- Critical reasoning
- We need adaptation and leadership
- Capacity for knowledge generation
- Interdisciplinary collaboration, expanded professional competencies

Research is not only an academic preference, but a fundamental professional necessity.
Family medicine evolved for many years as a discipline primarily consuming guidelines and evidence. However, differences between healthcare systems, local societal needs, and real-life conditions limit the direct applicability of evidence generated elsewhere. So that may be time to move from being consumers of evidence to evidence generators especially in PC settings. For this reason, practice-based research has gained increasing importance. This approach generates questions arising from daily practice; produces local solutions as populations differ, needs, values, and priorities vary across communities; reduces the gap between evidence care and improves healthcare system performance (2).
Research is now one of the main core competencies of FD/GP and it includes four major domains:

1. Critical appraisal
2. Practice-based inquiry
3. Data interpretation
4. Translation of evidence into practice

These competencies are directly related to quality of care and patient outcomes (1,2).
Empowering the next generation is necessary. Research capacity cannot be improved only by training expert researchers. The real need is to increase the number of research-literate family physicians. Early exposure to primary care research during undergraduate education, mentorship, small but achievable, and practical projects, early participation in international collaborations, early involvement in research networks are known to be effective and essential factors.

The Role of Research Networks

The European General Practice Research Network (EGPRN) is one of the most important international primary care research networks in Europe (3). In addition, several countries such as the United Kingdom and the Netherlands have established strong local primary care research networks. In Türkiye, scientific meetings similar to EGPRN meetings are organised under academic structures; however, sustainable research networking and dedicated funding systems remain limited. Further efforts are needed in network development and project funding. Research networks such as EGPRN contribute through research education, mentorship, feedback mechanisms, international visibility, and multicentre collaborations. Unlike many other networks, the EGPRN online archive (1993–2026), easily accessible through the web, represents an important scientific repository documenting the evolution of primary care research (3).
Practice-Based Research Networks (PBRN) were built and functioning well in North America for many years. It is now known that primary care PBRNs are feasible and that they represent useful infrastructure for scientific discoveries not otherwise possible. PBRNs, particularly those with enduring, core financial support and the ability to collaborate, have demonstrated a capacity to use multiple methods to answer very important questions that matter to millions of people (4). These networks are now both a place and a concept. As a place, they are laboratories for surveillance and research. As a concept, they express the still unmet need for practicing primary care clinicians to accept responsibility to improve frontline clinical care by understanding

what is happening in their practices. Successes to date have been sufficient to incite the prestigious institutions to recommend support to stabilize and expand practice-based primary care research networks. There is hard work ahead; work likely to transform frontline medical practice to turn it into an evidence generator.

Türkiye's EGPRN Journey

Türkiye's institutional journey with EGPRN research network started in 1998. Mehmet Ungan became the first Turkish family physician to participate in the EGPRN meeting held in Crete. For many years, he represented Türkiye through personal efforts and maintained continuity in participation. Subsequently, Hakan Yaman, Pinar Topsever, Pemra Unalan, Ayse Caylan, and other academics became regularly involved. Following the transformation of EGPRW into EGPRN in Ankara in 2003, participation from Türkiye increased significantly. This meeting was the first international meeting in Turkey in GP/FM. Since 2003, Mehmet Ungan served within the executive of the network and completed two presidential terms. Through the establishment of funding mechanisms, strengthening of the secretariat office after moving it in Türkiye, development of web-based research courses, and educational infrastructure initiatives, he contributed substantially to increasing both Türkiye's and EGPRN's visibility within WONCA Europe where he served as President (2019-2021).

The Ankara (2003), Antalya (2008), Kusadasi (2013), Edirne (2015), and Istanbul (2022) meetings significantly contributed to the visibility of Türkiye within international research networks. Today, Türkiye is among the most active and respected countries within EGPRN and has one of the largest memberships (more than 115) in the network (3).

Research Trends and Thematic Diversity

Primary care research has demonstrated increasing diversity over time, like cross-sectional studies, qualitative research, mixed-method studies, intervention studies, healthcare evaluation research.

Contributions from Türkiye in EGPRN have particularly focused on chronic diseases and cardiometabolic risk, prevention and screening, smoking and addiction, educational research, digital health and telemedicine, patient-centred care and continuity.

Physician Wellbeing and Patient-Centred Care

Following the COVID-19 pandemic, the following themes became increasingly visible; Burnout, workload, psychosocial stress, sustainable medical practice, patient safety (5,6). Research consistently demonstrates that physician wellbeing is directly associated with quality of care and patient safety, and without a healthy GP/FD the PC will not be sustainable (5).

Research Strategy and Education

Accessible educational models are essential for sustainable research capacity development. EGPRN Research Strategy document is a good reference for the GPs/FDs in Europe (7).

The EGPRN web-based research course is a good model not only for GPs/FDs but for all PC professionals and provides (8):

- Theoretical modules
- Practical examples
- Practice-oriented content
- Mentorship support

CONCLUSION

The future of family practice and primary care will more and more depend not only on GPS/FDs capable of using evidence, but also on professionals capable of generating knowledge within their own contexts. Small research initiatives may create major system-level impacts over time. Practice-based research represents one of the strongest approaches for closing the gap between evidence and care.

Family medicine is increasingly evolving into a discipline that:

- Interprets evidence
- Generates knowledge
- Transforms practice

- Contributes strategically to healthcare systems

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EBFMC26-IP-17 · Low Back Pain: Risk Factors and Preventive Strategies

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ABSTRACT

Low back pain (LBP) represents a pervasive global health challenge, with roughly eight out of ten people experiencing it at some point in their lives, making it a leading cause of work disability worldwide. The most common clinical presentation is non-specific low back pain, which accounts for approximately 90% of cases encountered in primary care settings. In contrast, serious spinal pathology requiring urgent medical or surgical management is relatively uncommon and is estimated to occur in fewer than 2% of patients presenting with low back pain.

Epidemiological evidence indicates that between 49% and 90% of individuals in developed countries will experience at least one episode of low back pain during their lifetime. The condition predominantly affects the working-age population, with peak incidence observed between 25 and 64 years of age and a higher reported prevalence among men in occupational settings. Although the natural course is generally favorable, with most episodes resolving within the first two weeks, symptoms may persist for up to two months in some individuals, and recurrence remains common.

Rather than being merely an orthopedic issue, chronic LBP functions as a complex biopsychosocial public health problem closely associated with depression, inactivity, reduced quality of life and substantial socioeconomic burden. As one of the most common reasons for visits in family medicine, its management heavily influences healthcare utilization; however, premature diagnostic imaging and early therapeutic interventions for these typically self-limiting episodes have driven a critical rise in overmedicalization. Consequently, contemporary preventive frameworks must emphasize quaternary prevention, positioning family medicine clinicians as vital gatekeepers who can address the holistic biopsychosocial needs of the patient while shielding them from redundant diagnostic cascades and iatrogenic harm.

At this session of the congress an updated overview of risk factors associated with low back pain and discusses preventive strategies across the continuum of care, with particular emphasis on the role of primary care and quaternary prevention is presented. Current evidence highlights that low back pain results from a complex interaction of biological, occupational, behavioral, and psychosocial determinants. Modifiable risk factors such as physical inactivity, obesity, smoking, prolonged sitting, poor ergonomics, repetitive loading,

insufficient physical conditioning, and psychosocial stress contribute significantly to disease onset and persistence.
Crucial to this early intervention is the systematic evaluation of psychosocial risk factors, like depression, anxiety, job dissatisfaction, fear of pain, and catastrophizing, which are collectively termed "Yellow Flags." These indicators underscore that structural anomalies often play a secondary role; indeed, the strongest predictor of chronic low back pain is frequently not the objective data on an MRI, but rather the patient's overall stress level. Identifying these flags early allows clinicians to treat the patient holistically rather than pathologizing standard age-related changes.
Contemporary management paradigms emphasize that robust prevention strategies in LBP must transcend traditional risk-factor modification and lifestyle optimization; they must actively mitigate the clinical footprint of low-value, unnecessary care. Special attention is given to the recognition and appropriate interpretation of red flags in patients presenting with low back pain. While serious spinal pathology is uncommon, identifying warning signs age younger than 10 years, trauma, use of corticosteroids, fever, bladder or bowel dysfunction, motor or sensory disturbances of the extremities, and inflammatory signs of disease remains essential. At the same time, clinicians are encouraged to interpret red flags within the broader clinical context to minimize false-positive assessments and prevent unnecessary escalation of care.
Evidence-based preventive strategies discussed in the session include patient education, encouragement of physical activity, exercise-based interventions, ergonomic optimization, self-management approaches, risk stratification, and shared decision-making. Strengthening the gatekeeping and continuity functions of primary care may support more rational resource utilization and improve patient-centered outcomes.
In conclusion, addressing the global burden of LBP requires a paradigm shift that extends beyond traditional risk-factor modification to embrace the core principles of quaternary prevention. As the primary point of contact for the vast majority of patients, primary care and family medicine occupy the optimal therapeutic window to intervene early, identify risks for chronicity, and actively de-escalate low-value care. By empowering primary care physicians to act as definitive gatekeepers against overmedicalization, healthcare systems can successfully reduce overall disease burden, recurrence, and chronicity, while safeguarding patients' holistic well-being and long-term functional capacity.

KEYWORDS
Low Back Pain, Prevention, Quaternary Prevention, Primary Care, Red Flags, Holistic Approach

COI ***& Other Declarations:*** *The authors declare no commercial, financial, or personal* ***conflict of interest****. No artificial intelligence tools were used in the preparation, writing, or revision of this study. This study does not require ethics committee approval.*

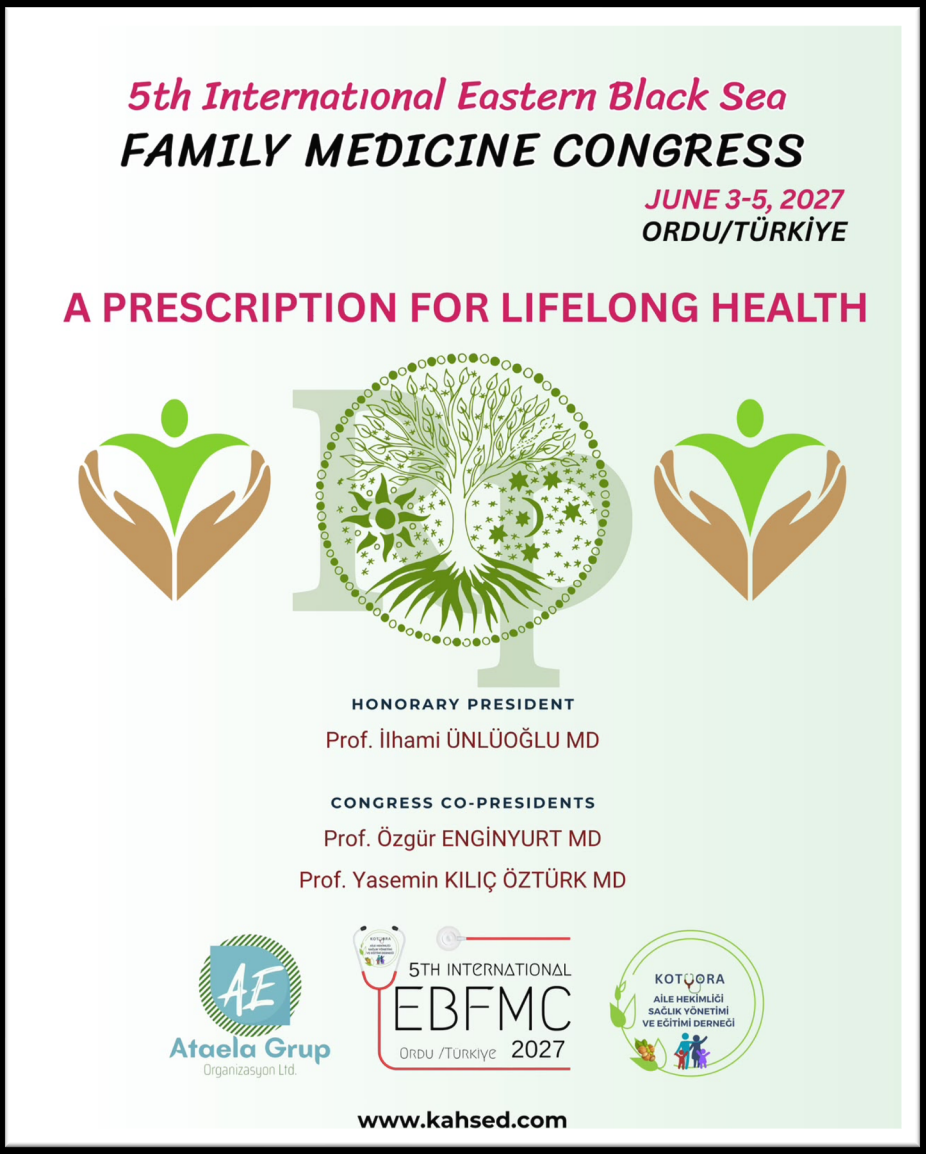
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