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In memory of Prof. Dr. Nilda TURGUT and Dr. Emel ERSÖZ

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PROF. NİLDA TURGUT, MD, PhD

07.10.1969 - 11.10.2024

Prof. Dr. Nilda TURGUT was born in Bursa in 1969. She completed her primary and secondary education in Ankara and Istanbul, and after graduating from Ankara University Faculty of Medicine in 1992, she started working as a research assistant in the Department of Neurology at Istanbul University Cerrahpaşa Faculty of Medicine. Turgut, who started working as a specialist in the Department of Neurology at Trakya University Faculty of Medicine in 1999, became an Assistant Professor in 2000 and an Associate Professor in 2006.

She was assigned to the University of Chicago for 6 months in 2007 to conduct studies in the fields of Neuroimmunology and Neuropathology. Turgut, who also holds a Sub-branch Specialization in Clinical Neurophysiology and a Vascular Neurology Physician Certificate, started working in the fields of Neuromuscular Diseases, Multiple Sclerosis, and Cerebrovascular Diseases at Tekirdağ Namık Kemal University, Faculty of Medicine, Department of Neurology in 2010, and received the title of Professor in 2011.

In addition to her position as the Director of the Health Sciences Institute to which she was appointed in 2016, she also served as the Head of the Department of Internal Medicine and Head of the Department of Neurology at the Faculty of Medicine. Turgut, who is a member of the Turkish Neurology Association and the EEG-EMG Association, founded and served as the President of the Tekirdağ Neurology Research Association.

Prof. Dr. Nilda TURGUT, who has considered it her duty to conduct research for the benefit of her country and the world, to produce new values, and to raise self-confident and well-equipped scientists, has many articles published in international and national refereed journals in the field of neurology, translations of chapters in books, and presentations presented and published in international and national scientific events; There are many master's, specialization and doctoral theses that she has directed and completed.

Prof. Dr. Nilda TURGUT, who passed away on October 11, 2024 as a result of a tragic traffic accident, will always be remembered by the family she left behind, her daughter Lara TURGUT, the students she trained, the scientists and her colleagues, the works she left behind to the scientific world.

Prof. Dr. Nilda TURGUT, 1969 yılında Bursa'da doğmuştur. İlk ve orta öğrenimini Ankara ve İstanbul'da tamamlamış, 1992 yılında Ankara Üniversitesi Tıp Fakültesinden mezun olduktan sonra İstanbul Üniversitesi Cerrahpaşa Tıp Fakültesi Nöroloji Anabilim Dalında Araştırma Görevlisi olarak çalışmaya başlamıştır. 1999 yılında Trakya Üniversitesi Tıp Fakültesi Nöroloji Anabilim Dalında Uzman Doktor olarak çalışmaya başlayan Turgut, 2000 yılında Yardımcı Doçent, 2006 yılında da Doçent unvanını almıştır.

Nöroimmünoloji ve Nöropatoloji alanlarında çalışmalar yapmak üzere 2007 yılında 6 ay süreyle Şikago Üniversitesinde görevlendirilmiştir. Klinik Nörofizyoloji Yan Dal Uzmanlığı ve Vasküler Nöroloji Hekimliği Sertifikası da bulunan Turgut, 2010 yılında Tekirdağ Namık Kemal Üniversitesi Tıp Fakültesi Nöroloji Anabilim Dalında Nöromüsküler Hastalıklar, Multipl Skleroz, Beyin Damar Hastalıkları alanlarında çalışmaya başlamış, 2011 yılında da Profesör unvanını almıştır.

2016 yılında atandığı Sağlık Bilimleri Enstitüsü Müdürlüğü görevinin yanı sıra Tıp Fakültesi Dahili Tıp Bilimleri Bölümü Başkanlığı, Nöroloji Anabilim Dalı Başkanlığı görevlerini de yürütmüştür. Türk Nöroloji Derneği ve EEG-EMG Derneği üyesi olan Turgut, Tekirdağ Nöroloji Araştırmaları Derneğini kurmuş ve Başkanlığını yapmıştır.

Ülkesi ve dünya yararına araştırmalar yapmayı, yeni değerler üretmeyi, özgüvenli ve donanımlı bilim insanları yetiştirmeyi kendine görev addetmiş Prof. Dr. Nilda TURGUT'un uluslararası ve ulusal hakemli dergilerde nöroloji alanında yayınlanmış birçok makalesi, kitapta bölüm çevirisi; uluslararası ve ulusal bilimsel etkinliklerde sunulmuş ve yayınlanmış bildirileri; yönettiği ve tamamlanmış birçok yüksek lisans, uzmanlık ve doktora tezleri bulunmaktadır.

11 Ekim 2024 tarihinde geçirdiği elim bir trafik kazası sonucu aramızdan ayrılan Prof. Dr. Nilda TURGUT, ardında bıraktığı ailesi, kızı Lara TURGUT, yetiştirdiği öğrenciler, bilim insanları, çalışma arkadaşlarınca bilim dünyasına bıraktığı birçok eserle her daim anılacaktır.

EMEL ERSÖZ, MD, PhD

30.03.1971 - 11.10.2024

Emel ERSÖZ, MD, PhD was born on 30 March 1971 in Edirne. She completed her primary, secondary and high school education in Edirne and graduated from Trakya University Faculty of Medicine in 1994. After completing her compulsory service in Ortaköy district of Aksaray province, she started her speciality training in Ankara Numune Training and Research Hospital in 1995 and completed her speciality education in 2000 with her speciality thesis on 'Investigation of Whether Proteinuria in Stroke Patients is Different from Controls, Its Relationship with Other Risk Factors, Clinical Course and Prognosis'.

After her speciality training, she worked respectively, between 2000 - 2013 at Tekirdağ State Hospital, between 2013 - 2017 at Tekirdağ Private Yaşam Hospital, between 2017 - 2018 at Çorlu Private Vega Hospital and then in 2018 at Ismail Fehmi Cumalıoğlu City Hospital.

In 2018, Ersöz started her postgraduate education in Tekirdağ Namık Kemal University Institute of Health Sciences, Department of Neurology, Clinical Neurophysiology PhD programme and completed her thesis on 'Investigation of the Relationship Between the Development of Polyneuropathy and SARM1 and HIF-1 alpha Expression in Patients with Type 2 Diabetes Mellitus and Impaired Glucose Tolerance Test' and graduated on 03 June 2024.

She is a founding member of Women Physicians Education Support Foundation (KAHEV), a member of Turkish Neurological Association and also Tekirdağ Neurological Research Association. Ersöz has published articles in international and national refereed journals in the field of neurology, and has presented and published papers in international scientific events.

On 11 October 2024, she passed away as a result of a terrible traffic accident. Dr. Emel ERSÖZ will always be remembered by her family, husband, children and colleagues.

Uzm. Dr. Emel ERSÖZ, 30 Mart 1971 tarihinde Edirne'de doğmuştur. İlk, orta ve lise eğitimini Edirne'de tamamlamış, 1988 yılında girdiği Trakya Üniversitesi Tıp Fakültesinden 1994 yılında mezun olmuştur. Zorunlu hizmetini Aksaray ili Ortaköy ilçesinde tamamladıktan sonra, Ankara Numune Eğitim ve Araştırma Hastanesi'nde 1995 yılında başladığı Uzmanlık Eğitimini "Strok Hastalarında Proteinürinin Kontrollerle Farklı Olup Olmadığının, Diğer Risk Faktörleri ile İlişkisini, Klinik Gidiş ve Prognozla Bağlantısının Araştırılması" konulu uzmanlık teziyle 2000 yılında tamamlamıştır.

Uzmanlık eğitiminin ardından sırasıyla, 2000 – 2013 Tarihleri arasında Tekirdağ Devlet Hastanesinde, 2013 – 2017 tarihleri arasında Tekirdağ Özel Yaşam Hastanesinde, 2017 – 2018 tarihleri arasında Çorlu Özel Vega Hastanesinde, 2018 yılından sonra da İsmail Fehmi Cumalıoğlu Şehir Hastanesinde çalışmıştır.

2018 yılında Tekirdağ Namık Kemal Üniversitesi Sağlık Bilimleri Enstitüsü Nöroloji Anabilim Dalı Klinik Nörofizyoloji Doktora programında lisansüstü eğitimine başlayan Ersöz, "Tip 2 Diabetes Mellitus ve Bozulmuş Glukoz Tolerans Testi Olan Hastalarda Polinöropati Gelişimi ile SARM1 ve HIF-1 alfa Ekpresyonu Arasındaki İlişkinin Araştırılması" konulu tezini tamamlayarak 03 Haziran 2024 tarihinde mezun olmuştur.

Kadın Hekimler Eğitime Destek Vakfı (KAHEV) ile Tekirdağ Nöroloji Araştırmaları Derneği kurucu üyesi ve ayrıca Türk Nöroloji Derneği üyesidir. Ersöz, nöroloji alanında uluslararası ve ulusal hakemli dergilerde makaleler yayınlamış, uluslararası bilimsel etkinliklerde bildiriler sunmuş ve yayınlamıştır.

11 Ekim 2024 tarihinde geçirdiği elim bir trafik kazası sonucu aramızdan ayrılan Uzm. Dr. Emel ERSÖZ, ardında bıraktığı ailesi, eşi ve çocukları ile çalışma arkadaşlarınca her daim anılacaktır.

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AIR POLLUTION, CLIMATE CRISIS AND PUBLIC HEALTH IN THE STRUGGLE IN THRACE

Gamze VAROL[1]

The presented text aims to summarize the relationship between climate change, air pollution, and public health. In this context, key definitions are provided, and the causes, interactions, and health impacts of climate change and air pollution are discussed. Climate change scenarios and air quality measurements from both global and Turkish contexts are presented, while air quality data specific to the Tekirdağ region are examined in relation to key pollutants. Additionally, the summarizes scientific studies on air pollution specific to the Thrace region and, finally, presents recommendations. Human health is best understood as the result of the intricate interplay between genetic predispositions and environmental influences. Biological, physicochemical, and socio-environmental factors all contribute significantly to health deterioration, underscoring the complexity of public health challenges.

Definitions and Theoretical Concepts

Health:

Human health is the pattern of interaction between genetic structure and environment. Events related to biological, physicogeochemical and social components of the environment are important factors in the loss of health.

Climate Change:

Climate change is generally defined as significant alterations in climatic parameters—such as temperature, precipitation, and wind patterns—over an extended period (typically spanning 20–30 years).

As stipulated by the United Nations Framework Convention on Climate Change, the term encompasses not only natural climatic variations observed over comparable intervals but also those changes induced directly or indirectly by anthropogenic activities that modify the composition of the global atmosphere.

[1] Tekirdağ Namık Kemal University Institute of Health Science, Department of Public Health, Tekirdağ, Türkiye, gvarol@nku.edu.tr

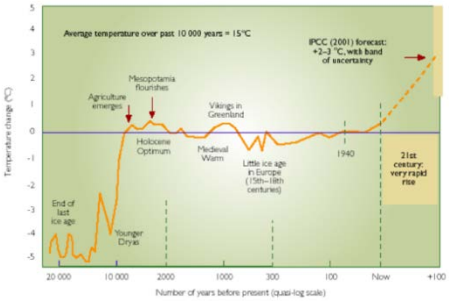


Figure 1.Variations in Earth's average surface temperature, over the past 20,000 years.[2]

Is the climate really changing? Evidence for Climate Change[3]

The evidence provided by the Intergovernmental Panel on Climate Change (IPCC) indicates that surface temperatures are projected to increase by between 1.4 and 5.8 °C by the end of the 21st century relative to 1990 levels.

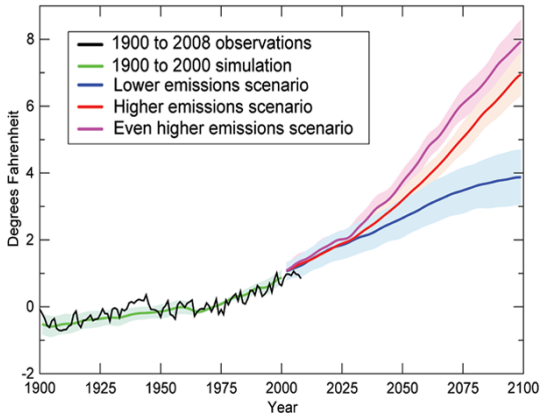


Figure 2. Variations in Earth's average surface temperature, over the past 20,000 years.[4]

Causative Factors of Climate Change

The Greenhouse Gas Effect: The principal contributors to the greenhouse effect include carbon dioxide (CO_2, 72%), methane (8%), nitrogen dioxide (NO_2, 6%), and chlorofluorocarbons (3%).[5]

Sources of CO_2 Emissions: The predominant sources are the combustion of fossil fuels—especially coal—and deforestation.[6]

[2] http://www.who.int/globalchange/climate/summary/en/

[3] https://www.ipcc.ch/site/assets/uploads/2018/02/WG1_TAR-FRONT.pdf

[4] http://www.earth-policy.org/indicators/C52/carbon_emissions_2004

[5] https://www.epa.gov/ghgemissions/global-greenhouse-gas-overview

[6] https://www.epa.gov/ghgemissions/global-greenhouse-gas-overview

According to IPCC data, in 2004, 56% of anthropogenic greenhouse gas emissions were attributable to fossil fuel consumption, with deforestation contributing approximately 17%.[7,8]

Climate Change in Turkey

Observational data in Turkey since 2000 reveal that approximately 50% of record high temperatures have been recorded, whereas record low temperatures have decreased by roughly 10%.[9]

Future Projections:

Temperature projections for the period 2016–2099 indicate an increase ranging from 1.0 to 4.4 °C (with an average of 2.5 °C), whereas alternative scenarios suggest increases between 0.9 and 7.1 °C (with an average of 3.6 °C). [10]

The Eastern Mediterranean and Southeastern Anatolia regions are identified as particularly vulnerable.

Regional Focus – Thrace and the Marmara Region:[11]

An increase of approximately +3.0 °C is expected in the Marmara Region, which includes the Thrace provinces.

Impacts of Climate Change[12,13,14]

Primary Impacts:

- Alterations in atmospheric conditions
- Degradation of ecosystems and loss of biodiversity
- Increased frequency of extreme events such as hurricanes, tornadoes, and wildfires
- Accelerated melting of glaciers and consequent sea-level rise
- Deterioration or depletion of freshwater resources

[7] https://www.bbc.com/turkce/haberler-dunya-45938984

[8] https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data

[9] https://www.mgm.gov.tr/iklim/iklim-degisikligi.aspx?s=bolgesel

[10] https://www.mgm.gov.tr/iklim/iklim-degisikligi.aspx?s=projeksiyonlar

[11] http://www.emcc.mgm.gov.tr/climate-change.aspx

[12] https://earlywarningsforall.org/site/early-warnings-all

[13] https://public.wmo.int/en/media/press-release/state-of-climate-2018-shows-accelerating-climate-change-impacts

[14] https://digital.library.unt.edu/ark:/67531/metadc1234386/

- Destruction of agricultural land
- Population displacement and demographic shifts
- Heightened risk of conflicts and social unrest

Climate Change and Public Health

Health Impacts:[15]

- Projections suggest that climate change could lead to approximately 250,000 additional premature deaths annually between 2030 and 2050.
- The health impacts include, but are not limited to, malnutrition, malaria, diarrhea, and direct costs associated with healthcare needs in agriculture, water supply, and sanitation. The estimated additional annual cost by 2030 ranges between 2–4 billion dollars.
- Developing countries are expected to bear the brunt of these adverse effects.

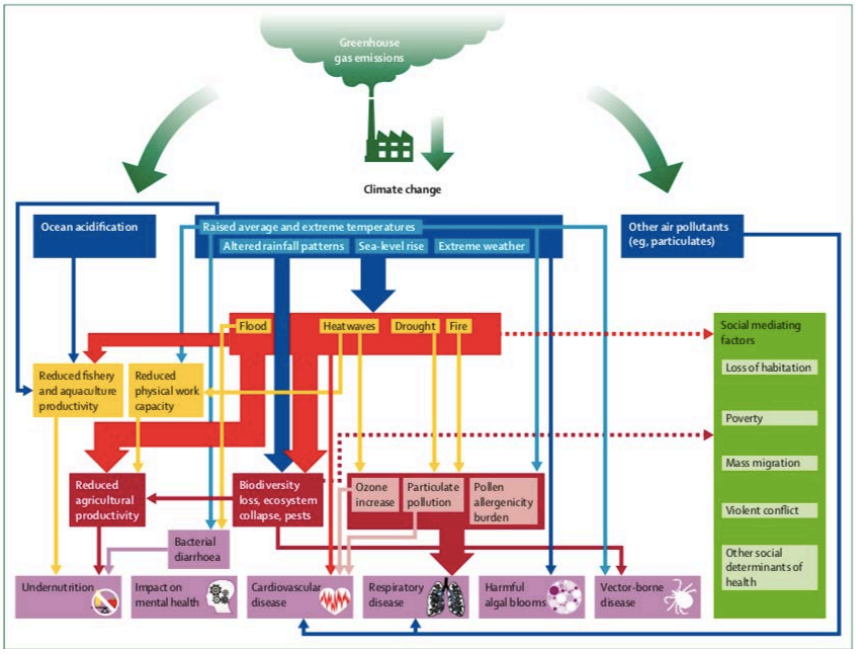


Figure 3. The pathways between climate change and human health[16]

In the direct and indirect health impacts of climate change, the resilience of health systems is also important. It is necessary to build inclusive and equitable health systems that respond to the increasing demand for health services.[17]

[15] https://www.cdc.gov/climate-health/php/effects/?CDC_AAref_Val=https://www.cdc.gov/climateandhealth/effects/default.htm

[16] https://digital.library.unt.edu/ark:/67531/metadc1234386/

[17] Varol G. İklim Krizinin Kadın Sağlığına Etkileri. https://www.ttb.org.tr/userfiles/files/yayin/VII_Kadin_Kongresi_Kitabi.pdf

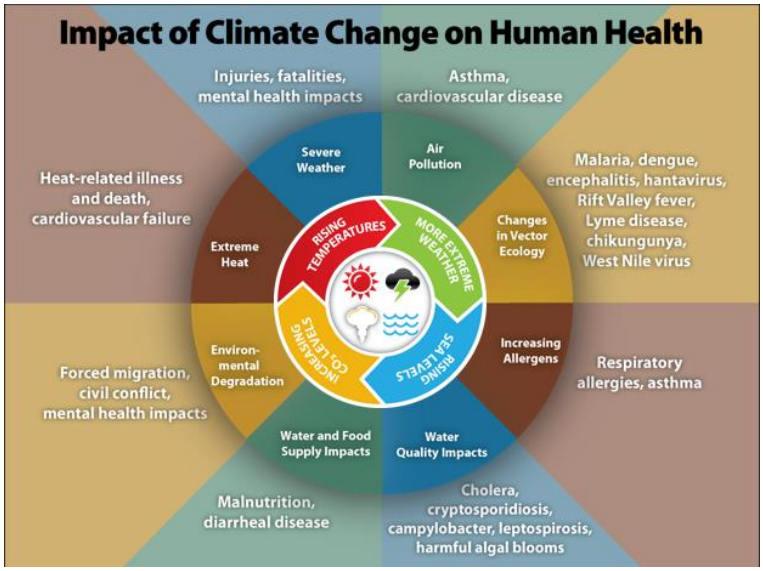


Figure 4. Climate change and impacts of human health[18]

Relation Between Climate and Air Pollution

Global Emissions: Approximately 60% of global CO_2 emissions are derived from energy production and industrial activities.

Principal Pollutants: Key pollutants include Particulate Matter (PM), Ozone (O_3), Nitrogen Dioxide (NO_2), and Sulfur Dioxide (SO_2).

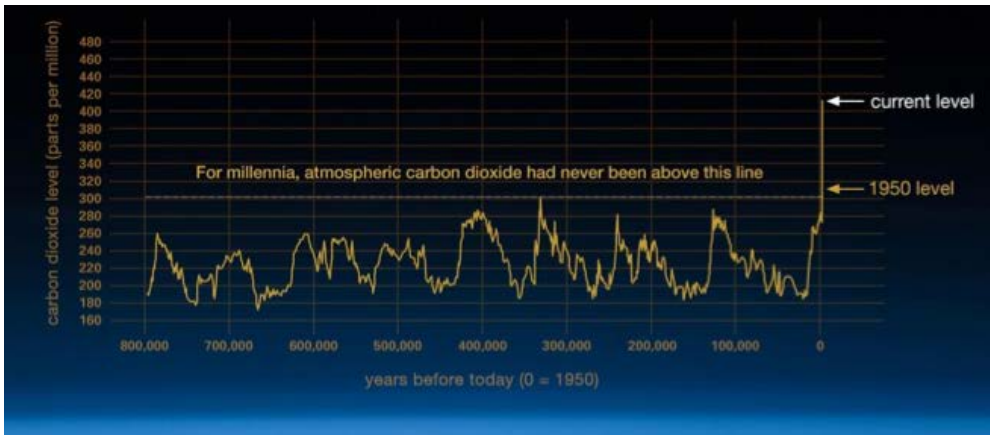


Figure 5. Climate change and human health[19]

[18] https://digital.library.unt.edu/ark:/67531/metadc1234386/

[19] www.climate.nasa.gov

Air Pollution: Definition and Causative Factors[20]

Air pollution is defined as the alteration or degradation of the atmosphere's natural characteristics due to the presence of chemical, physical, or biological agents, either indoors or outdoors.

Causative Factors:

Primarily, air pollution is driven by anthropogenic activities, including vehicular emissions (from cars, trucks, heavy-duty vehicles), combustion processes for heating and power generation (in oil and coal-fired plants), industrial operations (factories, mines, refineries), as well as urban, agricultural, and livestock practices, waste management and incineration, and domestic applications for cooking, heating, and lighting.

The Importance of Air Pollution and Its Health Consequences

The World Health Organization (WHO) has declared air pollution to be a public health emergency. Additionally, the United Nations Development Programme (UNDP) recognizes it as a global health priority.

Health Consequences:[21,22,23,24,25]

Exposure to pollutants such as PM, CO, O_3, NO_2, and SO_2 can result in respiratory diseases, various forms of cancer (including lung, bladder, and breast cancers), and premature mortality.

The WHO has characterized air pollution as an "invisible killer."[26]

Air Quality Assessment (Air Quality Maps)

Temporal Overview of Air Quality:

[20] https://temizhavahakki.org/wp-content/uploads/2020/09/Dark-Report-2020Vfinal.pdf

[21] https://temizhavahakki.org/wp-content/uploads/2018/12/150220_factsheet_air_and_health_turkey_tr_final.pdf

[22] http://www.iarc.fr/en/media-centre/iarcnews/pdf/pr221_E.pdf

[23] http://dx.doi.org/10.1787/9789264122246-en

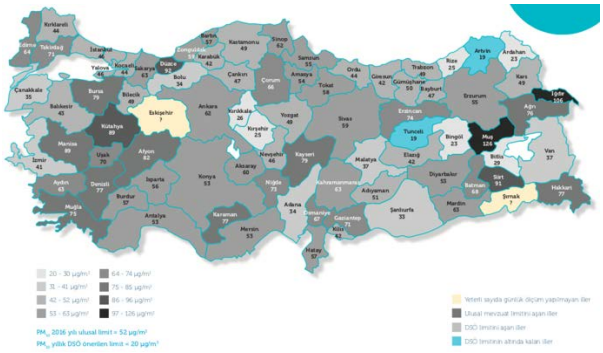
[24] http://www.euro.who.int/__data/assets/pdf_file/0005/112199/E79097.pdf

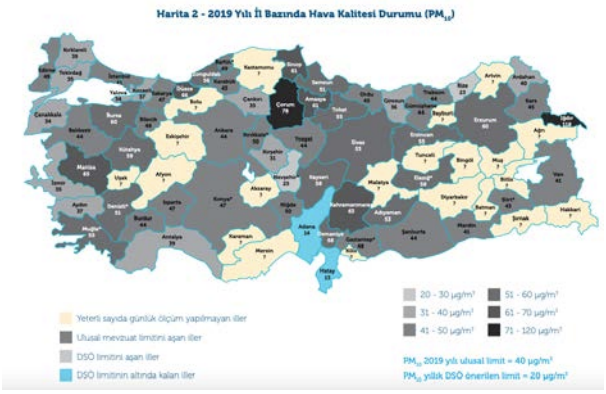
[25] https://temizhavahakki.org/en/dark-report/

[26] https://www.who.int/news-room/feature-stories/detail/air-pollution--the-invisible-health-threat

WAQI: https://waqi.info/tr/#/c/41.27/27.084/9z, Jan 20, 2025

Air quality is illustrated via PM10 concentration maps for the years 2016, 2017, 2018, 2019, and 2021.[27]





[27] https://temizhavahakki.org/en/news/

Scientific Studies on Air Pollution Specific to The Thrace Region and Provincial Data

Air Quality in Thrace[28]

Edirne ranks for SO_2 6th among the 10 most polluted cities in Turkiye.

Table 1. Annual averages and data acquisition rates of stations exceeding the national SO2 annual limit value in 2022.

Station	SO2 Yıllık Ortalama Değer (µg/m^3)	Veri Alımı (%)
Hakkâri	60,30	93,97
Kahramanmaraş - Dulkadiroğlu	58,20	98,36
Manisa - Soma	56,93	95,34
Adana - Yakapınar	53,30	95,34
Gaziantep - Beydilli	47,12	98,36
Edirne – Keşan (MTHM) (6. SIRADA)	40,33	95,34
Şanlıurfa	37,44	97,81
Muğla - Milas	29,34	90,96
Denizli - Çivril	28,76	95,89
Kahramanmaraş - Elbistan	26,74	98,63

Edirne ranks 9th among the 10 Provinces with the Highest Death Rates Attributed to Air Pollution in Turkiye.

[28] https://temizhavahakki.org/en/dark-report-2024/

Table 2. Top 10 Provinces with the Highest Death Rates Attributed to Air Pollution in Turkiye in 2022[29]

Proveince's Name	Annual PM2.5 average (µg/m3)	Limit value for PM2,5 5 µg/m^3			Limit value for PM2,5 değer 10 µg/m^3		
		Attributed death	Death Ratios Attributed (%)	Death Rates Attributed	Attributed death	Death Ratios Attributed (%)	Death Rates Attributed
Malatya	50,26	1294	29,41	286,48	1.172	26,64	259,51
Ardahan	35,50	143	20,92	271,56	122	17,82	231,3
Aydın	34,68	1.858	20,42	260,98	1.574	17,3	221,08
Erzincan	34,26	330	20,16	245,39	279	17,03	207,27
Manisa	33,63	2.152	19,78	245,21	1.810	16,63	206,19
Gümüşhane	32,40	200	19,01	243,74	166	15,84	203,01
Denizli	37,08	1.511	21,88	238,03	1.299	18,81	204,68
Kastamonu	27,38	566	15,82	230,85	448	12,52	182,66
Edirne	26,91	613	15,52	229,5	482	12,2	180,48
Balıkesir	28,23	1.874	16,37	228,54	1.499	13,09	182,74

Edirne:

- **PM10 annual averages**: 49.51 µg/m³ (Edirne) and 40.60 µg/m³ (Edirne – Keşan); no data were available for Karaağaç.
- **PM2.5 Levels:**

Table 3. PM 2.5 data, Edirne-2022

Station Name	**Number of days exceeding the WHO 24-hour PM2.5 guideline value (15 µg/m³)***
Edirne - Keşan (MTHM)	267

[29] https://temizhavahakki.org/en/dark-report-2024/

*According to WHO Air Quality Guidelines, it cannot be exceeded more than 3-4 times a year.

Table 4. SO_2 data, Edirne-2022.

Station	Number of days exceeding the National 24-hour SO_2 limit value (125 µg/m3 (day)*
Edirne – Keşan (MHTM)	29

*According to National limit, it cannot be exceeded more than 3 times a year.

Tekirdağ:

- PM10 measurement is not carried out in Tekirdağ and Tekirdağ Çorlu Organized Industrial Zone (both 2022-2023).
- PM10 levels: 39.11 µg/m³ in Tekirdağ (Center), 36.04 µg/m³ in Çorlu, and 36.72 µg/m³ in Çerkezköy.
- PM2.5 and SO_2 measurements were not conducted in any Air Quality Station (2022-2023).

Kırklareli:

- PM10 (2023): Recorded at 40.08 µg/m³, marginally exceeding the 40.00 µg/m³ threshold.
- PM2.5 was not measured in Kırklareli, Lüleburgaz ve Limanköy Station (2023).

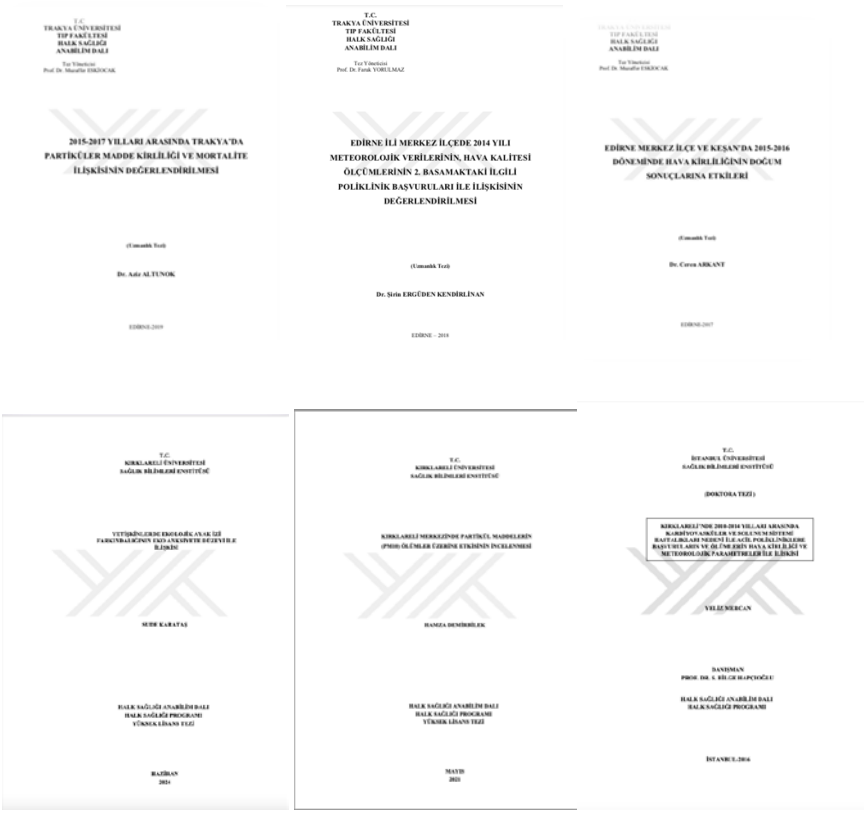
Table 5. Deaths attributed to air pollution among deaths from natural causes among people over 30 years of age - 2022 (5 µg/m3 limit for pm2.5)

Province	PM2.5 average	Attributed death	Death Ratios Attributed (%)	Death Rates Attributed
Edirne	26,91	613	15,52	229,5
Kırklareli	18,93	329	10,17	137,04
Tekirdağ	21,68	791	12,05	119,75

Literature Review and Comprehensive Assessment

When the current literature is examined, it is seen that many scientific researches, reports, theses and projects have been prepared by different institutions and organizations covering different disciplines and different study designs on climate change, air pollution and public health effects specific to the region. Each study touches upon its own and important problems, makes determinations and offers suggestions, especially for the protection of public health (Screenshot1-3). [30,31,32,33,34,35]

Screenshot 1. Examples of some theses



Screenshot 2. Examples of some original articles

[30] YORULMAZ, F., BERBEROĞLU, U., Sayhan, E. S., ESKİOCAK, M., VAROL, G., & Demirkan, C. B., (2012). *Endüstri Yoğun Bölgede Yaşayanlarda Ya da Birinci Derecede Yakınlarında Kanser Bildirenlerin Çevresel Risk Etmenlerine Göre Değerlendirilmesi: Çorlu Örneği.* . 15. Ulusal Halk Sağlığı Kongresi, Turkey

[31] S Özkaya, G Varol Saraçoğlu, Air quality in a shire of Turkey: Sulphur dioxide, particulate matter 10 and number of deaths, 2016: Gamze Varol Saraçoğlu, *European Journal of Public Health*, Volume 27, Issue suppl_3, November 2017, ckx189.020, https://doi.org/10.1093/eurpub/ckx189.020

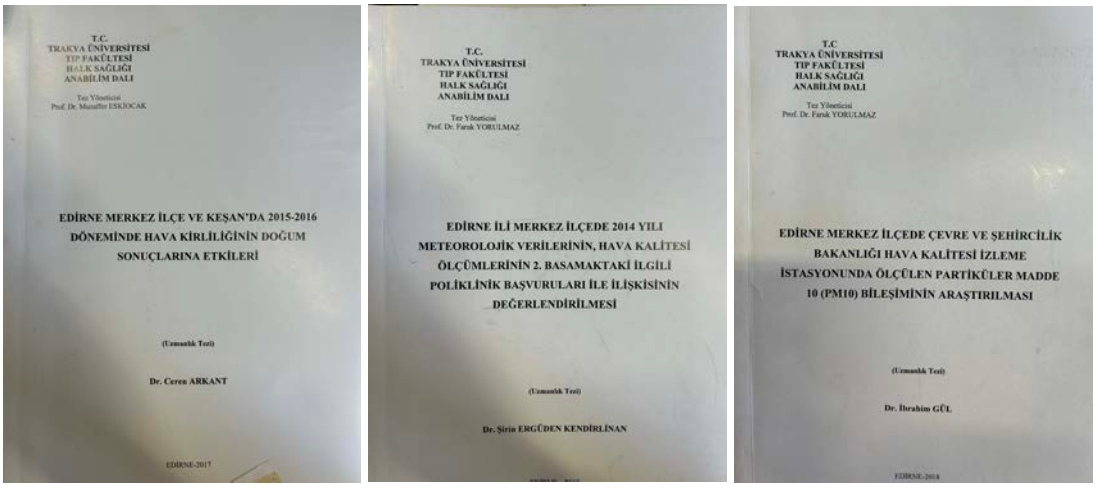
[32] **Varol, G., Tokuç, B., Özkaya, S., & Çağlayan, Ç. (2021).** Air quality and preventable deaths in Tekirdağ, Turkey. *Air Quality, Atmosphere & Health, 14*, 843–853. https://doi.org/10.1007/s11869-021-00983-2

[33] GV. Saraçoğlu, S. Özkaya, Y.Bulut, E. Salı Chairoulach, Kükürt dioksit ve partiküler madde 10 düzeyleri ile ölümlerin ilişkisi, Tekirdağ/ Süleymanpaşa- 2016

[34] https://env-health.org/IMG/pdf/03072015_heal_odenmeyensaglikfaturasi_tr_2015_final.pdf

[35] https://www.env-health.org/wp-content/uploads/2018/06/toolkit_turkey_coal_power_plants_health_izmir_canakkale_tekirdag.pdf

Screenshot 3. Examples of some theses

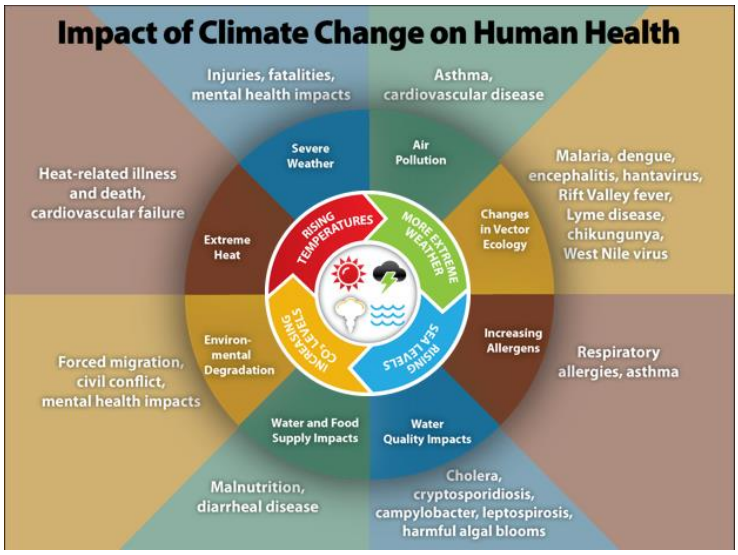


Screenshot 4. Examples of some original articles

Climate Change and Health:[36]

The literature robustly supports the assertion that climate change impacts public health both directly and indirectly, as demonstrated by WHO reports and a breadth of academic studies.

[36] https://www.ttb.org.tr/userfiles/files/yayin/VII_Kadin_Kongresi_Kitabi.pdf



Effective adaptation and mitigation strategies necessitate multidisciplinary collaboration that addresses the intertwined physical, social, and economic dimensions of these challenges.

Preventability of Air Pollution-Related Health Effects: The concept of "preventable death" underscores the potential to avert premature mortality if air pollution were eliminated. Modeling studies suggest that the number of premature deaths could be reduced to a range between 11,000 and 32,000.[37]

Policy Recommendations

Strategic Policy and Implementation Guidelines:

- **Clean Air Action Plans:** It is imperative that regional authorities develop and implement clean air action plans, incorporating academic expertise.
- **Elimination of Fossil Fuel Subsidies:** Remove subsidies that incentivize fossil fuel usage, and prioritize policies that support sustainable energy alternatives.
- **Urban Planning Initiatives:** Local governments should adopt urban planning strategies that emphasize public transportation, cycling infrastructure, and the creation of car-free zones.
- **Enhancement of Green Spaces:** There is a need for concerted efforts to protect and expand forested and green areas.
- **Regulatory Measures:** Implement legal regulations aimed at reducing vehicular emissions and promoting alternatives to coal for residential heating.

[37] https://www.greenpeace.org/static/planet4-turkey-stateless/2019/09/ecea34d3-sessiz-katil-raporu.pdf

- **Inter-Institutional Collaboration:** Strengthen cooperation between the Ministry of Health, the Ministry of Environment and Urbanization, professional organizations, and non-governmental organizations.

Finally, let's keep in mind the adage that "Prevention is always better than cure." It is essential to adopt proactive, preventive measures to reduce future public health challenges. Climate change and air pollution are causing vital problems that negatively impact the health of the planet. Preventing, reducing and combating the impacts of climate change and air pollution, while combating the policies that lead to them, must be a priority for public health.

SOIL AND WATER POLLUTION AND PUBLIC HEALTH IN THE STRUGGLE IN THRACE

Yeliz MERCAN[1]

ABSTRACT

This article aims to examine the current status of soil and water pollution in three provinces in Thrace and to present solution proposals based on the results. In Thrace, soil pollution is in second place in Kırklareli, fourth place in Tekirdağ; water pollution is in first place in Edirne and Kırklareli, and second place in Tekirdağ. Among the sources that cause soil pollution, domestic solid waste stored in the wild, livestock waste, and illegal waste dumping are in the first place. In all three provinces, the first places among the pollution caused by surface, underground, and swimming water are reported as agricultural pesticide and fertilizer use, wastewater, industrial waste, and wastewater. In studies conducted in Thrace, it was reported that heavy metals and pesticides were detected in soil, water, and/or plant samples; rapid industrialization, increasing industrial activities, fossil fuel use, vehicles, and population growth were effective in pollution levels. It was reported that the increase in some radionuclides and trace elements was due to tenorm activities. It has been reported that approximately half of the people living in the Ergene Basin have at least one chronic or systemic disease, the risk of cancer is high for adults and children, and pesticide levels are high in blood samples, the consequences of which may cause oxidative stress and genotoxic damage. Additionally, it has been found that high degradation occurs in impermeable soil surface areas, and most aquatic life is not supported due to high organic pollution and extreme hypoxic conditions. Reports from the International Agency for Research on Cancer and the Food and Agriculture Organization of the United Nations have reported that individual and/or cumulative effects of chemicals can lead to cancer and even death, from simple symptoms to advanced levels. Implementing the current regulations in force in Turkey, increasing the frequency of inspections, and ensuring that sanctions are of a deterrent nature are important stages in preventing soil and water pollution. To identify existing health problems, screening not only agricultural workers but also all people living in the immediate vicinity and at risk of exposure, and taking the necessary precautions are essential for the protection and development of public health.

Keywords: soil pollution, water pollution, public health, Thrace, Edirne, Kırklareli, Tekirdağ

According to the reports of the Provincial Directorates of Environment, Urbanization, and Climate Change, almost all of the agricultural lands in Edirne, Kırklareli, and Tekirdağ located

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in Thrace are used for wheat, rice, corn, sunflower, vegetables, and fruit production and the potential of underground and surface water resources in these cities is sufficient (EESR, 2024; KESR, 2024; TESR, 2024). In the Türkiye Environmental Problems and Priorities Assessment Report published with 2022 data, soil pollution is in second place in Kırklareli and fourth in Tekirdağ, and there is no soil pollution data for Edirne. It has been reported that among the sources causing soil pollution, wildly stored domestic solid waste, livestock waste, and illegal waste dumping are in the first places; zero waste practices have been expanded for the fight, and efforts are being made for fertilization, pesticide, and irrigation by the legislation. In the same report, water pollution is ranked first in Edirne and Kırklareli and second in Tekirdağ. For surface water resources, Edirne Meriç and Tunca were reported as second-class slightly polluted water, Ergene as third-class polluted water; in Tekirdağ, Hayrabolu Creek and Cevizlik Creek were reported as third-class polluted water, and five streams including Ergene River and Çorlu Creek were reported as fourth class heavily contaminated water. For groundwater, Edirne reported one of five groundwater resources as good and the other three as poor, while Tekirdağ reported the water quality of 11 groundwater resources as good. In terms of swimming water quality, except for Tekirdağ Süleymanpaşa Değirmenaltı Public Beach, Edirne, Kırklareli, and Tekirdağ were reported as A class-excellent and B class-good. In all three provinces, the first causes of pollution of groundwater, surface water, and swimming water were reported as agricultural pesticide and fertilizer use, wastewater, industrial waste, and wastewater. While the failure to establish treatment plants due to financial difficulties and the failure to operate treatment plants regularly are reported as the most important difficulties in combating water pollution; inspections within the framework of regulations, obtaining discharge permits for wastewater from industrial establishments, and construction or renewal of sewerage networks are among the measures taken in the recipient environments to prevent water pollution (RTMEUCC, 2023).

In studies investigating soil pollution in Thrace, it was found that the differences between the cleanest and most polluted regions in soil and lichen samples reached 10 times, and the highest levels of all heavy metals were found in regions where industrial activities, especially the leather and chemical industries, were concentrated (Hanedar, 2015). Again, in another study examining soil samples, it was shown that fossil fuels used for heating in residences and industrial facilities and vehicle traffic were effective in the increase in soil pollution (Turhan et al., 2021). In addition, it was reported that there was an increase in impermeable surfaces and high degradation in soil surface areas between 2000 and 2020 (Ozsahin & Ozdes, 2025). It was reported that the amount of pesticides in the blood samples of workers in agricultural activities was high, that they continued to carry chronic pesticide residues in the following process, and as a result, exposure to pesticides could cause genotoxic damage in humans through oxidative stress and direct toxic chemicals (Doğanlar et al., 2018).

Studies investigating water pollution in Thrace reported that the Ergene River's water quality had deteriorated considerably in the 28-year period between 1985 and 2013, and this situation was largely due to population growth and rapid industrialization (Orak et al., 2020). Heavy metal and pesticide pollution was detected in drinking water samples in the settlements located on the banks of the Ergene River, and it was found that almost half of the people living in these settlements had at least one chronic or systemic disease (Helvacı, 2023). It was stated that those living in the east of the Ergene Basin, which benefits from groundwater wells, are at risk, that the risk of cancer is high for adults and children, and that some chemicals are above the threshold value of the US EPA, and that the causes of this pollution are caused by anthropogenic activities such as pesticides used in agriculture and textile dyeing factories (Arkoç, 2023). It has been shown that some surface waters in the Meriç-Ergene Basin cannot support most aquatic life due to high organic pollution and extreme hypoxic conditions (Tokatlı et al., 2023). It has been reported that radionuclides and trace elements originate from tenorm (technologically developed natural radioactive materials) activities in the investigated areas due to industrial activities (Akakçe et al., 2024).

The International Agency for Research on Cancer has reported 122 agents such as beryllium, cadmium, chromium, dioxin, benzene, vinyl chloride, and arsenic as Group 1 carcinogenic to humans (IARC, 2025; 2025a). The United Nations Food and Agriculture Organization has shown in its 2021 Report that the individual or cumulative effects of chemicals on the brain, lymph nodes, thyroid, heart and cardiovascular system, lungs, stomach, pancreas, liver, kidneys, intestines, bladder, reproductive system, bones and joints, and skin have consequences ranging from simple symptoms to advanced cancers and even death. For example, it has been reported that cadmium has effects on the thyroid, lungs, kidneys, bones, and joints and affects different organs and systems. When the effect of lead on these organ systems is examined; It has been reported that it may have effects such as neurodevelopmental disorder in the brain, decreased intelligence quotient, behavioral disorder, Parkinson's type syndrome, headache, decreased immunity, decreased response to vaccines in children, hypertension, hemolysis, anemia, cardiovascular disease, high leukocyte count, leukemia, renal tubular dysfunction, kidney weight changes, progressive nephropathy, chronic inflammation, kidney cancer, nausea, vomiting, diarrhea, gastrointestinal system cancer, abdominal pain and cramps, bladder cancer, urinary changes, testicular atrophy, early menopause, decreased testosterone, reproductive disorders, decreased libido, impotence, sexual dysfunction, endometriosis, hormonal cancers (breast, prostate, testicles), infertility, ovarian cancer, impaired bone development, slow growth, changes in calcium metabolism and bone formation, osteomalacia, bone cancer (FAO & UNEP, 2021).

As a result, in the fight against soil and water pollution, it is necessary to prevent the discharge of industrial wastes without treatment, to prevent illegal waste dumping, to implement existing legal sanctions for enterprises that discharge wastewater and conduct inappropriate mining

activities, to increase the frequency of inspections in enterprises and to ensure that the sanctions are deterrent, to activate integrated waste management for domestic solid and liquid wastes stored in the wild and to make efforts to increase their capacities, to increase public awareness and to inspect pesticide applicators to reduce excessive and unconscious use of pesticides and fertilizers, to provide training to producers on the disposal of wastes generated by animal husbandry activities and to carry out inspections by relevant institutions. Reducing the use of fossil fuels, increasing the use of quality fuels reducing vehicle traffic, preventing unplanned urbanization, and utilizing renewable energy sources in energy use are also among the protective measures to prevent soil and water pollution. To determine current health problems, not only agricultural workers but also all people living in the immediate vicinity and at risk of exposure should be periodically screened for acute, chronic, and delayed effects, and necessary precautions should be taken to protect and improve public health. Supporting researchers for more up-to-date research and initiating necessary initiatives for results with projection studies for the short, medium, and long term is important in preventing soil and water pollution.

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WASTE CONTROL AND PUBLIC HEALTH IN THRACE

Ülfiye ÇELİKKALP[1]

According to the Environmental Law (Law No. 2872-1983), waste is defined as any material generated as a result of any activity and discarded or released into the environment. In the past, waste was commonly categorized under the concept of "garbage." However, today, waste has become a social concept that requires planned and systematic management, with dedicated institutions handling its disposal. Nature has a self-purifying capacity to eliminate waste and pollutants resulting from human activities. However, if the pollutants released into the environment exceed nature's ability to clean them, environmental pollution occurs. All health issues are directly related to the environment. Therefore, the environment is a key factor in determining human health and, in some cases, even survival. The rapid increase in population, economic growth, and urbanization, along with changing consumption habits, continue to put pressure on the environment and natural resources. One of the significant causes of this pollution is waste.

In 2022, Turkey's annual waste production amounted to 109.2 million tons, of which 29.3 million tons consisted of hazardous waste. In other words, 29.3 million tons of solid and hazardous waste pollute Turkey’s air, water, and soil every year. Turkey ranks as the third-largest contributor to Mediterranean pollution, following Egypt and Italy. The Thrace Region, located in the western part of Turkey, is not only an economically and culturally significant area but also faces severe environmental issues due to its rapidly increasing population and industrialization. Various types of waste, including industrial waste, household waste, agricultural waste, and construction materials, pose a significant threat to the environmental health of Thrace. Waste accumulation is particularly concentrated around major cities and industrial zones.

Thrace is an important region for both industry and agriculture in Turkey. Industrial activities in the region continue to expand, with approximately 4,000 factories operating across the region. However, only about 10% of these factories have liquid waste discharge facilities. Industrial waste, particularly those containing chemicals, pollutes underground water sources, seas, soil, and air, leading to significant health problems. One of the major waste-related challenges in Thrace is the inadequate disposal of household waste, as integrated solid waste management systems remain insufficient. The proportion of municipal populations served by wastewater treatment facilities is above the national average in Tekirdağ (89.3%) and Kırklareli (93.7%), but significantly lower in Edirne (38%). The region’s primary raw materials include

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wheat and sunflower residues, as well as manure from livestock and agricultural pesticides, which contribute to agricultural waste.

For the well-being of both society and the environment, waste management must prioritize activities such as waste prevention, reduction at the source, reuse, segregation by type, storage, collection, temporary storage, transportation, intermediate storage, recycling, energy recovery, final disposal, and post-disposal monitoring, control, and inspection. Local governments, the Ministry of Health, and the Ministry of Environment, Urbanization, and Climate Change must collaborate effectively with each other, as well as with relevant professional organizations and non-governmental organizations. Additionally, research on the impacts of waste on the concept of "One Health" should be expanded to ensure a comprehensive approach to environmental and public health challenges.

DIFFERENT WINDOWS OF HUMAN ANATOMY

RELATIONSHIP BETWEEN MALE INFERTILITY AND THE BLOOD-TESTIS BARRIER

Feriha ERCAN[1]

ABSTRACT

Aim: The blood testis barrier (BTB) is formed by Sertoli cells and has a role in the maintenance of spermatogenesis. The purpose of this presentation is to explain the relationship between male infertility and the blood-testis barrier (BTB) through experimental studies**.**

Methods: The testicular seminiferous tubule epithelium consists of spermatogenic series cells and Sertoli cells. The BTB is located between Sertoli cells on their basolateral surface and divides the seminiferous tubule epithelium into basal and adluminal compartments. While germinal cell renewal, differentiation and progression of cell cycle up to the preleptotene spermatocyte stage occur in the basal compartment, meiosis, spermiogenesis and spermiation occur in the adluminal compartment. BTB consists of tight junctions as well as ectoplasmic specializations, desmosomes, and gap junctions to create a specific microenvironment for the completion of spermatogenesis and the formation of spermatozoa. The BTB is not a static ultrastructure; the seminiferous tubule undergoes wide restructuring during the epithelial spermatogenesis cycle to permit the passage of preleptotene spermatocytes in the BTB from the basal compartment to the adluminal compartment. BTB has roles such as preventing the transport of biomolecules to the paracellular space, creating an immunological barrier, separating cellular events during the spermatogenic epithelial cycle, and establishing the cellular polarity of the seminiferous tubule. Genetic factors, inflammation due to infection, sperm extraction procedures, the formation of reactive oxygen species, heat stress, various environmental toxicants, and various regulatory factors affect the BTB (1).

Results: Various environmental conditions (radiation, hyperthermia, electromagnetic waves, etc.), chemotherapeutic agents (cisplatin, methotrexate, etc.), toxic substances (arsenic, cadmium chloride, etc.), vasectomy operation, sedentary life, consumption of high-calorie foods and various stress factors may alters the expression and/or localisation of proteins (zonula occludens, occludin, claudin, etc.) forming the BTB and as a result has negative effects on BTB (2-12).

It has been shown that *in utero* radiation and postnatal hyperthermia exposure cause the disruption of seminiferous tubule epithelium and BTB with the alteration of zonula occludens

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(ZO)-1 and occludin protein levels in rats (2). In another study, it has been shown that electromagnetic waves emitted from mobile phones cause degeneration of the seminiferous tubule epithelium and disruption of the BTB in rats (3). It has been shown that bilateral vasectomy also disrupts the seminiferous tubule epithelium, reduces the level, and alters the localization of tight junction protein ZO-1 in rats (4). Chemotherapeutic agents such as cisplatin cause the disruption of the BTB, degeneration of seminiferous tubule epithelium, and increase of formation of reactive oxygen species (ROS) in rats (5, 6). However, antioxidant agents such as resveratrol and apocynin alleviate the cisplatin-induced-testicular damage in rats (5, 6). Consumption of a high-fat feed has been shown to cause changes in sperm parameters (concentration, motility and morphology), disruption of the seminiferous tubule epithelium, changes in the localization and expression of tight junction proteins ZO-1 and occludin and gap junction protein connexin 43, and ROS generation in rats (7,8). However, it has been shown that moderate swimming exercise ameliorates the high-fat diet-induced testicular damage and alterations of sperm parameters (7, 8). Moreover, treatments with antioxidative agents such as apocynin and *Myrtus communis* extract, rich in antioxidant compounds, have been shown to ameliorate high-fat diet-induced testis damage in rats (9, 10). Recently, it has been shown that chronic psychological stress-induced testicular damage and disruption of the integrity of BTB alleviated with Neuropeptide W treatment in rats (11, 12).

All these experimental testicular damage models show the degeneration of the seminiferous tubule epithelium with the disruption of BTB integrity. Depending on the severity of testicular damage, testicular damage might be reversible or irreversible. Therefore, experimental studies are precious in showing the therapeutic role of antioxidants and lifestyle changes, in improving male infertility caused by chemotherapeutic agents, environmental conditions, obesity, and different stress factors,

Conclusions: BTB has an important role in the maintenance of spermatogenesis. Adverse internal or external conditions cause disruption of the BTB and testicular damage, resulting in germinal cell loss, changes in sperm parameters, and ultimately male infertility.

Keywords: Blood-testis barrier, Sertoli cells, tight junctions, experimental testicular injury models

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DENSITIES USED IN BIOLOGICAL TISSUE RESEARCHES

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ABSTRACT

Volume density (Vv), Numerical density (Nv), Length density (Lv) and Surface density (Sv) are frequently used parameters at the cell level from organelle to tissue in biological researches. As densities are interpretable, they must combined with total reference volume to obtain the total quantity of the interested structures. Thus, the effects of any agent or factor on a biological tissue can be easily revealed quantitatively.

INTRODUCTION

Volume density (Vv), Numerical density (Nv), Length density (Lv) and Surface density (Sv) are frequently used in experimental studies on biological tissues. These parameters are preferred by researchers to quantitatively reveal the effects of an agent or factor on the organ (1-9).

Volume density (Vv): It refers to the volume of a relevant anatomical structure in a unit volume of any organ. For example: we can use this parameter to calculate the volume of yolk per unit volume of a boiled egg. Again, we can use Vv to calculate the volume of islets of Langerhans per unit volume of pancreas. The dimensions in this parameter are: Volume (L^3) / Volume (L^3), so it has no unit (L^0). Therefore, it expresses the proportion of the volume of one anatomical structure to the volume of another anatomical structure This parameter is also known as volume fraction. When calculating the Vv of related structures, instead of dividing their volumes by each other, it can also be calculated by dividing the number of points falling on the two related structures in the sections by each other using a point counting grid. In this way, for example, the ratio of granular layer to molecular layer in the cortex cerebelli can be easily calculated (3,7,9).

Numerical density (Nv): Refers to the number of particles per unit volume. Nv denotes for Number in volume. It is an ideal counting method to reveal the number of nuclei of the cells of interest in all biological tissues. In particular, in biopsy materials, the nuclei in the reference tissue rather than the organ can be counted. On the other hand, the number of apopitotic cells can be shown by this method in cases where the agent substance has an adverse effect and causes cell death. Of course, instead of counting all the relevant cells in the organ or reference tissue fragment, a 3D probe can be used to easily detect an increase or decrease in the number of cells. The dimensions in this parameter are: Number (L^0) / Volume (L^3), denoted as L^{-3}. Here, the area of the unbiased counting frame used for counting gives two dimensions, while the third dimension used is the section thickness (2,5,8).

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The following formula is used for numerical density calculations:

Nv = Na / $\bar{D}$ + t (10).

Where: Na = number of particles per unit area, $\bar{D}$ = mean particle diameter, t = section thickness. This measurement method is known as the Unfolding Method and the particles counted are assumed to be spherical (10).

On the other hand, the Disector Method a very effective Nv calculation method for all cell types, was described for the first time in 1984. With this method, which is one of the design-based methods, the Nvs of the relevant particles can be calculated without being affected by volumetric changes in the tissue and particle shape or configuration (11). For this purpose, serial sections of known thickness are taken from the blocks and two sections are compared. For example, the same microscopic field in the first section (reference section) is compared with the nuclei in the same microscopic field in the 4th section (look-up section). As a result, only nuclei that are present in one section but not in the other are counted and recorded. This prevents multiple counting of nuclei in any one tissue.The formula for this method is given below.

Nv = $\sum Q^-$ / ND. A. h (4,5,11).

Where: $\sum Q^-$ = Number of particles in the reference section but not in the look-up section, ND= Number of disectors, A= Frame area (calculated considering magnification), h= Disector height (distance between the reference section and the look-up section).

Length density (Lv): Refers to the length of the relevant particle per unit volume. Lv denotes for length in volume. With this method we can, for example, find the length of blood vessels in a unit volume of any tissue. The dimensions in this parameter are: Length (L1) / Volume (L3), so the unit is denoted as L^{-2}. Since we do not know the positions of structures with linear dimensions in a biological tissue, Isotropic Uniform Random (IUR) sections should be used to measure this parameter instead of thin vertical sections. The following formula is used for this:

Lv (Y, ref) = 2. Qi / a/f . Pi (12).

Where: 2 is a constant number. Qi = Number of relevant profiles, a/f = Actual counting frame area, Pi = Total number of counting frames counted.

Surface density (Sv): It refers to the surface area per unit volume. Sv denotes for surface in volume. This parameter can be used to calculate, for example, the surface area of neuron bodies per unit volume of tissue in the brain or medulla spinalis, the surface area of alveoli per unit volume of lungs, or the surface area of dermoepidermal surface per unit volume of skin. The

dimensions in this parameter are: Surface (L^2) /Volume (L^3), where the unit is L^{-1}. The following formula is used for this:

Sv (Y ref) = 2. Ii / l/p . Pi (13).

Where: 2 is a constant number. Ii = Number of intersections in the surface area of interest, l/p = Length of the test line used, Pi = Number of points on the reference tissue.

DISCUSSION

Volume density (Vv), Numerical density (Nv), Length density (Lv) and Surface density (Sv) are parameters frequently used in biological research at the cellular level from organelle to tissue. Since all densities need to be interpreted, they need to be combined with a reference tissue volume to determine the total amount of structures of interest. Thus, the effects of a agent factor on a biological tissue can be easily and quantitatively determined (1-9).

On the other hand, when calculating the total number of glomeruli in the kidney, which is an organ composed of different layers, the volume density (Vv) of the renal cortex to the whole kidney must be calculated and this value must be multiplied by the numerical density (Nv) of the glomeruli and the total renal volume. (3,7,9).

In numerical density (Nv) calculations, it is imperative to know the section thickness accurately. For this, semi-thin sections (0.5µm) should be preferred. Considering that we can obtain such a section from araldite and resin blocks; it is appropriate to prepare such blocks for tissue samples. On the other hand, we have to consider the shrinkage rate that will occur during the tissue preparation process. Because while the shrinkage rate is 50% in paraffin embedded and Hematoxylin-Eosin stained tissues, this rate is 2-5% in Araldite or Epon blocks (2).

Undoubtedly, since volume and Nv are inversely proportional, it is obvious that we will calculate Nv more in volume reduction, i.e. shrinkage. In the opposite case, we underestimate Nv. This will lead us to misinterpret the results. Sometimes, when the agent or the factor affects both the volume and the number of particles involved to the same extent (for example: 50%), we will find that Nv does not change at all. In reality, both the volume and the number of particles have decreased by 50% (14).

To avoid such misinterpretations in Nv calculations, it is imperative to give the total number of particles in the reference tissue or in the whole organ. To do this: we need to calculate the total volume of the organ or tissue we are working with and multiply it by Nv. The result: it will be clear how the total number of particles is affected. If the organ we are studying is large, we can easily find its volume by placing it in a container of water and measuring the amount of water it overflows. If we want to calculate the volume of an organ as small as a kidney of a rat embryo, then we need to use Cavalieri's volume estimate method. In this method, 6-8 slices of the organ

of approximately equal thickness are taken and the number of points falling on each of them is calculated with the help of a point counting grid (3,6,7). Then the total number of points is multiplied by the slice thickness and the volume of the organ can be easily calculated. Here, of course, it is imperative to consider the magnification factor. In this way, the volume of many anatomical structures such as cortex cerebri and ventricle volumes have been calculated from microscopic images of all kinds of biological tissues and intracellular organelles, or from CT and MR images taken directly from the living organism (15-17).

The following formula is used to calculate the volume with Cavalieri's volume estimate method.

$V = T. a/p . \sum Pi$ (7) .

Where T= section thickness, a/p = area associated with each point on the point counting grid, $\sum Pi$ = total number of points on each slice.

Isotropic line probe should be used for Length density (Lv) and Surface density (Sv) calculations under the microscope. For this, Vertical Uniform Random (VUR) or Isotropic Uniform Random (IUR) sections should be taken from the tissues. In isotropic organs such as the liver, the tissue pieces should be embedded randomly, whereas in anisotropic tissues such as striated muscles, IUR sections should be taken using the orientator.

To avoid misinterpretation of the length density (Lv) results, it is imperative to give the total length of the linear dimensional anatomical structure in the reference tissue or in the whole organ. For this: we need to calculate the total volume of the organ or tissue under study and multiply it by Lv. As a result: it will be clear whether the total length of the anatomical structure is increasing or decreasing. It is mandatory to take thin Isotropic Uniform Random (IUR) sections instead of thin vertical sections from the tissue pieces for length density (Lv) calculation (7).

For surface density (Sv) calculations, a cycloid grid (C2) or linear grid (L1) should be used on the microscopic image. In counting, the minor axes of cycloid grids should be parallel to the known vertical axis. Again, vertical sections from layered structures such as the cortex cerebri should be taken perpendicular to the layered structures and in isotropic orientation. The use of an orientator is a practical solution for this.

In conclusion, when performing density studies in biological tissues, systematic random sampling of the tissues, embedding the tissue pieces in appropriate media and taking the sections in the appropriate orientation are mandatory. On the other hand, other parameters should also be taken into consideration when evaluating the results obtained. In this type of studies, the volume of the organ or reference tissue should be determined first and this value combined with the data obtained from the densities will give us the total amount; the results of any agent or factor will be interpreted in a much healthier way.

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AESTHETIC ANATOMY OF THE FACIAL AREA

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What is Aesthetic Anatomy?

Anatomy is the field of science that studies and teaches the shape, size, internal and external structures of living beings. The word “anatomy”, which is of Ancient Greek origin, is formed by combining the words "ana" and "tome". It means "increasingly cutting, breaking into pieces". Anatomy, which reveals the structures in the human body by cutting them from the outside to the inside and examines the relationship between these structures, can be translated into Turkish as "structural science" or "body science".

While examining the human body in terms of shape is the subject of the science of "anthroposcopy", expressing the same body numerically in terms of size is considered within the scope of the science of "anthropometry".

Human Anatomy is divided into types according to the materials used in the examination, the vitality of the material, the teaching method, or the purposes of teaching. "Artistic Anatomy" provides the anatomy information needed by artists in visual arts such as painting and sculpture. The word “ars, artis” means art in Latin. The word "artistic", derived from this word, is used in the Turkish sense of "artistic". In countries such as Germany and Russia, branches of art such as painting and sculpture are called "plastic arts" with a reference to reshaping. The anatomy knowledge required in the field of plastic arts is called "Plastic Anatomy".

The first detailed research and the first written books in the field of Artistic Anatomy were given by the French. The book “Anatomie Artistique” was written by Mathias Duval in 1881. The book titled “Nouvelle Anatomie Artistique du Corps Humain” was written by Paul Richer in six volumes between 1906 and 1929. “Anatomie Artistique de l'Homme” is another French source written by Arnould Moreaux in 1957. The term "Artistic anatomy" was also used in English-speaking Western countries. Also in English, the term "Surface Anatomy" is used for atlases in which the human body is shown with photographs with its integrity preserved. Surface Anatomy atlases and books are used in classical medical education to show the superficial formations in the human body, important discovery points in physical examination, and the projections of internal structures on the skin. In this respect, classical medical education and artistic anatomy resources intersect.

The fact that the anatomy visuals to be used as the subject of art were obtained only in a static position did not provide sufficient information. The type of anatomy that deals with the

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movements of the joints, muscle bulges, and positions of skin folds while the human body is in motion is called "Dynamic Anatomy". B. Hogart's book "Dynamic Anatomy" was translated into Turkish with the title "Artistic Anatomy".

The first "Artistic Anatomy" book in Turkish was written by Nurettin Ali Berkol in 1940. Later, another book with the same name was written by Fahri Dere and Özkan Oğuz in 1996.

The concept of "Aesthetic Anatomy" appears as a side branch of Artistic Anatomy. The word “aesthesis” means sensation or feeling in Greek. Today, the word aesthetic is used in the sense of appealing to emotions and creating positive feelings. The word “aestetica” is used in the sense of the science of beauty. Aesthetic anatomy, in addition to being a subfield of anatomy, includes both artistic and philosophical concepts.

Artistic Anatomy, as a subject of art, includes the anatomy knowledge needed by artists and deals with the human body in all its attributes such as beautiful, ugly, young, old, etc. Aesthetic Anatomy, on the other hand, deals with the beautiful human body and examines the features of the ideal body. Beautiful or ideal physical features vary by community. Still, the concept of "aesthetics" includes the adjectives healthy, strong, and young at the same time. The human body, which has these common features, also appeals to sexual taste. For this reason, features that stimulate sexual instincts are considered aesthetic. In this respect, knowledge of aesthetic anatomy is necessary for artists, as well as physicians, beauticians, and even plastic surgeons.

Plastic methods and surgical techniques used to achieve the appearance of 'aesthetic anatomy' in which individuals feel happier are called "aesthetic surgery". The concept of aesthetic surgery today includes interventional treatment methods applied by specialties such as plastic and reconstructive surgery, ear nose and throat surgery, orthodontics, and orthopaedics. Minimally invasive and non-invasive methods are also used within the scope of aesthetic treatments.

Aesthetic anatomy examines the human body by dividing it into head, and neck and body. In the first section, which covers the anatomical regions of the head and neck in terms of topography, the aesthetics of the facial region are primarily at the forefront.

The facial region is the anatomical area in the front of the head that we can define by passing its boundaries through the chin, forehead, and ears. The details of the human face are very typical. Our face, which determines our personality, is very variable and has features that express emotions.

Anatomical structures in the facial area are as follows: bones that support superficial tissues, fat pads under the skin that provide volume, muscles that can contract and relax, and skin. The relationship between these four elements determines how our face looks when viewed from the front. While bone tissue cannot be easily changed due to its structure, the soft tissues located more superficial to the bone tissue are the primary target of beautification.

Body Proportions

In the historical process, the need to determine the proportions of the human body has emerged, primarily for use in art fields such as sculpture and painting. Greek artists called these ratios "canon" or "law". In each canon, there is a body part used as a criterion, and this criterion is called "module". The ancient Greek sculptor Polykleitos (480 BC), who used hand width as a module, also wrote a book called "Canon". For this reason, he is considered the father of aesthetic anatomy. According to Polykleitos' law, head height is 1/7 of height. Polykleitos defined head height as the distance between the planes passing the top of the head and under the chin. He defined the aesthetic face height as the distance between the planes passing between the hair border and the bottom of the chin. According to these definitions, face height is determined as 2 modules. Lysippos, another artist who lived in the fourth century BC, took the head and height ratio as 1/8 and calculated the face height as 1/10 of the height. Doryphoros and Diadumenos, sculptures of Polykleitos, are quite famous works. The statue named Apoxymenos, made by Lysippos with his own proportions, is physically thinner, taller and has a more physically impressive appearance than the works of Polykleitos.

When we come to the Roman period, we encounter the "Vitruvian square", which was created by the architect and engineer Marcus Vitruvius Pollio, who lived between 80 and 15 BC, with the equation "height = fathom". According to this equation, it is claimed that the human body, whose height is equal to its arms, will be pleasing to the eye and aesthetic.

During the Renaissance, we encounter Leonardo da Vinci (1452-1519), an important architect, engineer, anatomist, mathematician, versatile creator and researcher. Da Vinci both examined the canons put forward before him and was also influenced by the work "De Divina Proportione" (1509) by Pacioli, who lived in the same period. In this book, Pacioli argues that apart from ratios such as 1:1, 1:2, 1:3, the only ratio that is divine and essential is the "Golden Ratio" calculated as 1.618... According to the golden ratio, which also influenced Leonardo da Vinci, the ratio of the long line to the short line in a rectangle is equal to the ratio of the sum of the long and short lines to the long line. Notebook pages, books used in daily life, or artistic and historical buildings such as the Egyptian pyramids, the Notre-Dame cathedral, and the Parthenon temple, which are laid out according to this proportion, look beautiful to our eyes.

Leonardo da Vinci created the Vitruvian man by adding a circle passing through the central hub to the human drawing in the Vitruvian square. Vitruvian man has become the symbol of artistic anatomy. The equations put forward by Leonardo constitute the cornerstone of art history and artistic anatomy. According to Leonardo's equations, the height is divided into 4 equal parts, and the upper half of the body is divided into 4 equal parts again. Accordingly, the head height measured between the vertex and gnathion is one-eighth of the height. Leonardo defined the aesthetic facial height between the trichion and glabella points. The aesthetic face height is divided into 3 equal parts. The forehead height, which is the uppermost part, is between the

trichion and glabella points. The trichion is the point where the scalp border intersects the midline. The glabella is a median elevation between two superciliary arches. The midface is the section between the glabella and the pronasale. The pronasale point is the tip of the nose. The gnathion point is the tip of the chin. The lower face, measured between the pronasale and the gnathion, is divided into two equal parts by the mentolabial sulcus.

Nuremberg artist Albrecht Dürer (1471-1528) wrote 4 books on body proportions and determined 600 parameters. Dürer was the first artist to realize that portion sizes change depending on height. Taking the gender factor into consideration, Dürer compiled female proportions in a separate book. Throughout the historical process, there are many artists who determined their own proportions and ratios and produced artworks accordingly.

When it comes to today, in terms of both artistic and medical developments, we see that anesthesia safety has increased after the 20th century, and surgical and non-invasive opportunities in head and neck aesthetics have wide and efficient places. In our age, many invasive procedures such as nose reconstructions, neck lifts, face lifts, and ear interventions are frequently performed. According to Leonardo's thumb rule, the length of a person's thumb is equal to the length of the ear and each third of the aesthetic facial height, as well as the distance between the eye and the ear. Using Leonardo’s and older historical proportions primarily for these interventions is inadequate today. For this reason, it is necessary to examine the neoclassical canons determined by Farkas and Munro in their book "Anthropometric facial proportions in medicine" in 1986.

The neoclassical canons consist of eight equations:

1. Canon that divides the face into two equal parts (vertex-entocanthion-gnathion)
2. Canon that divides the face into three equal parts (trichion- nasion-subnasale- gnathion)
3. Canon that divides the face into four equal parts (vertex-trichion-glabella-subnasale-gnathion)
4. Nose-ear vertical equality (nasion-subnasale=superaurale-subaurale)
5. Nose-eye horizontal equality (alare-alare=entocanthion-entocanthion)
6. Horizontal equality of the eyes (exocanthion- entocantion=entocantion- entocantion)
7. Nose-mouth width ratio (chelion-chelion =1.5* alare-alare)
8. Nose-face width ratio (zygion-zygion=4* alare-alare)

During the process of orthodontic treatments, Ricketts (1982), who researched the ideal proportions between bones and soft tissues in the face due to their direct relationship with facial aesthetics, defined "craniofacial proportions" and formulated these proportions according to the golden ratio. Ideal facial beauty can be said for the human face, which has eight ratios calculated according to this formula.

Factors determining the aesthetic anatomy

Gender is one of the constant indicators that determine aesthetic anatomy. Sexual dimorphism is the main element that contributes to the perception of unchanging aesthetic anatomy for individuals. Differences in size and shape between genders are visible. It is not possible to use adjectives regardless of gender when defining aesthetics and beauty of individuals. Today, even if the gender determined in the womb with the help of ultrasound is later changed through medical and surgical treatments, the characteristics of the body regarding natal gender cannot be completely changed.

The other main factor affecting aesthetic perception is age. The age of the individual directly affects the anatomical structure and creates dynamic changes. The definitions of handsome man or beautiful woman are made for individuals who have completed physical growth and sexual maturation but have not yet entered the stagnation period where fatness, obesity, flexibility, and strength decrease begins. Completion of spiritual and social development corresponds to approximately 24 years of age for women and 28 years of age for men. The age period that is described as aesthetic and beautiful corresponds to the young adult age of people.

Heredity or ancestry is a very important factor for the face and body that are perceived as aesthetic and beautiful. The genetic inheritance received from the parents determines the anatomical structure, physiological indicators, and psychological characteristics of individuals. Genetic science has shown us that although dominant genes become visible in the next generation, recessive genes continue to exist and may become visible generations later. Therefore, it is necessary to consider that the facial features of individuals we perceive as aesthetic or beautiful may have been inherited not only from their parents, but also from their great-grandparents or distant ancestors. Hereditary diversity is rich in geographies that have been adopted by many societies throughout history. Hereditary characteristics are characteristics of individuals that cannot be changed.

It should not be ignored that the environment is another factor that affects aesthetics and beauty. Many environmental factors such as a person's eating habits, healthy growth, the geographical environment in which he lives, sports habits, and working conditions affect the beauty of the face and body.

Anatomical features of the beautiful face

It is very difficult to define facial beauty with numerical expressions. The perception of beauty is a subjective concept that varies according to race, country, and even person to person. Faces that are proportional according to metric measurements may not be considered beautiful if they are perceived as lifeless, expressionless, or dull.

Today, facial beauty attracts the attention of many scientific fields because it can be changed. The appearance and structure of the soft tissues of the face can be changed with filler or botulinum toxin applications, nose or ear operations, lenses used, orthodontic dental treatments

or dental implants and even cosmetic procedures. These changes are based on the basic principles put forward by Polykleitos, Leonardo da Vinci and even Dürer. According to these principles, the ratio of head height to height is 12.5%, while the ratio of aesthetic face height to height is 10%. These proportions form the basis for a perception of beauty that has spread socially throughout history.

Farkas' neoclassical canons and Ricketts' golden divine proportions which emerged when Leonardo da Vinci's thumb rule was not enough, are used during interventions today. However, one factor that should not be ignored is that the average height is gradually increasing. Studies have shown that height increase primarily affects the lower extremities, then the arms, then the trunk, and to a lesser extent, the height of the head and face. The average height is expected to be 185 cm for men and 175 cm for women. However, it is predicted that the ratio of head and face height to height will not be the same. Therefore, new aesthetic proportions will need to be determined over time.

After accepting the aesthetic face height as 10%, the table showing the percentage rates of some other parameters measured in the face area is given below (Table 1):

Table 1: Proportional distribution of aesthetically ideal dimensions of the face according to gender

Parameters	**Male**	**Female**
Upper face height (%)	29	30
Midface height (%)	33	34
Lower face height (%)	38	36
Bizygomatic width (%)	74	77
Nose height (%)	28	28,5
Nose width (%)	18,5	18
Mouth width (%)	27	27,5
Eye width (%)	17,5	18
Intercanthal distance (%)	15,5	16,5
Auricle height (%)	33	32

The ideal proportion of face width varies according to race. In European geography, it is considered more aesthetic if the facial width is 75% or less, whereas in the Mongoloid race if

the ratio of bizygomatic width to aesthetic facial height is around 80%, it is considered aesthetic. It is considered aesthetic and beautiful if the facial contours are more angular, the chewing muscles are prominent in men, and the facial features have a more oval geometry in women. Flat and round faces are generally not perceived as aesthetic. If the forehead height is more than 30%, a baby-like appearance or a pathologically hydrocephalic appearance occurs.

Nose types vary greatly. Narrower or medium-wide noses that appear smooth in profile, slightly sunken at the root, or noses that extend as a continuation of the forehead line are considered beautiful.

Mouths are considered aesthetic and beautiful if it is symmetrical, the lips are slightly protruding forward, the upper lip is a little more forward, the groove under the nose called the philtrum is prominent, the edges of the lips are carved, the lower lip is thicker and shorter, the mouth is convex, and the edges are curved outwards.

While larger eyes with a wider opening are perceived as aesthetic in women, relatively smaller eyes with a medium opening in men are considered aesthetic. Slanted eyes and epicanthus are not perceived as aesthetic in European geography. Compatibility of eye colour with skin and hair colour is generally perceived as aesthetic. However, in some cases, contrasting combinations are considered aesthetic because, for example, light hair colour and dark eyes, or coloured eyes with dark hair and skin become interesting.

Long and curled eyelashes with thin and curved dark eyebrows are perceived as aesthetic. In men, very thick and frowning eyebrows can create a harsher image. Eyebrow shapes can be adapted to facial geometry through various interventions to obtain the desired appearance.

The ear, which is an organ that grows and changes in size with age, is considered aesthetic if it is proportional to the face in young people (the ratio of ear height to aesthetic face height is 33%). The normal level of ear placement is expected to be between the eyebrow and the base of the nose. It looks aesthetically pleasing if the earlobe is one-fourth of the size of the ear and not adjacent to the head. Prominent ears are generally described as unpleasant.

For the skin on the face to be considered aesthetic and beautiful, it is expected to be smooth, soft, elastic, and wrinkle-free. The presence of prominent sulcus nasolabialis, sulcus mentolabialis appearance, dimple (foveola buccalis), the chin tip depression (foveola mentalis) can add a beautiful and aesthetic appearance.

Hair can be given a length, fullness, and colour that suits the facial appearance. In this way, the hair can be made more aesthetic and compatible with the face.

Thin and long necks, referred to as "swan necks", are described as aesthetic and beautiful in women. In men, thicker, cone-shaped necks with prominent neck muscles are perceived as more

aesthetic. Adam's apple is an anatomical structure that is prominent on the male neck, but the appearance of an overly large Adam's apple is not perceived as more aesthetic.

In conclusion;

The search for "ideal" proportions in the human body began centuries ago. As economic, social, and cultural opportunities increase, the effort to appear aesthetic also increases. As a result of the increasing demand to achieve an aesthetic appearance, developments in the field of health are accelerating. Studies in the fields of "aesthetic anatomy" and "facial aesthetics" will provide scientific contributions to form a basis for aesthetic applications.

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MICRATION FROM A MICROBIOLOGICAL PERSPECTIVE

MICRATION AND TUBERCULOSIS

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ABSTRACT

International migration poses a threat to the control of all infectious diseases, including tuberculosis. In high-income countries, foreign nationals constitute a large proportion of the overall tuberculosis case burden. Immigrants are at high risk of tuberculosis infection. The main reason for the tuberculosis burden in the immigrant population is the reactivation of latent tuberculosis infection following migration from low/middle-income, high tuberculosis burden countries to high-income, low tuberculosis burden countries.

Early detection of cases and prompt initiation of correct treatment in tuberculosis control is crucial, as well as personalized treatments for drug-resistant tuberculosis patients and contact tracing. The foundation of tuberculosis control programs for migrants is based on screening strategies before and after migration. There are two main purposes: identifying active tuberculosis (before/during/after arrival) and detecting latent tuberculosis in migrants with a high tuberculosis burden, who are at a high risk of developing tuberculosis in the future. Pre-migration screening aims to identify cases of tuberculosis infection and latent tuberculosis before migrants are accepted into the country or upon entry. Both active and latent tuberculosis cases should be monitored and included in screening programs after migration. However, screening programs vary from country to country and some countries do not have plans for tuberculosis screening in migrants. Nevertheless, migrants should be considered as a priority group in tuberculosis screening programs.

In countries with high migration threats, focusing only on national tuberculosis rates leads to overlooking significant differences in local infection trends and limiting awareness of tuberculosis. Therefore, continuous monitoring of migration and tuberculosis rates is essential for effective tuberculosis control programs.

Keywords: Tuberculosis,Migration,Tuberculosis screening tests

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MIGRATION AND ANTIMICROBIAL RESISTANCE

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ABSTRACT

Antibiotic resistance is a serious public health problem worldwide. Due to the scarcity of new antimicrobial drugs and the increasing prevalence of multiple antibiotic resistant (MDR) bacteria, antibiotic-resistant bacteria have become a major threat to healthcare. Studies on antibiotic resistance predict that 1 person will die every 3 seconds due to antibiotic resistance by 2050. This indicates an increase of almost 70% per year compared to 2021.

Inappropriate antibiotic use habits in migrant populations, the fact that refugees can be a reservoir-source for MDR bacteria, and the easier spread of these resistant bacteria due to lack of hygiene have contributed to and accelerated the increase in antibiotic resistance due to migration. In particular, the presence of war in the place of migration, the formation of war wounds, indirectly prolonged hospital stays, widespread use of antibiotics, and multiple surgical interventions have a negative effect on resistance.

It was reported that MRSA and ESBL strains were more common among refugees in refugee centers in Switzerland than in the Swiss population. In Germany, the rate of gram-negative MDR cases was found to be 60% among refugees in 2015, and this rate was 4 times higher than among resident patients in Germany. In swab samples taken from 48 Syrian refugees upon their arrival in Italy, many MDR gram-negative bacterial strains and methicillin-resistant gram-positive cocci were detected. In our country, in 2015, carbapenem-resistant Acinetobacter baumannii strains carrying the blaNDM-1 gene were isolated from 2 patients in Adana, one of whom was a Syrian refugee woman. Similarly, there are many articles in the literature reporting the spread of NDM-type carbapenemases resistant to many antibiotics among Syrian refugees and to many countries, including our country.

In summary, migration causes both unexpected antibiotic resistance profiles to emerge and increases resistance rates by contributing to the spread of MDR organisms.

Keywords: migration,antibiotic resistance,multi drug resistance

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VIRAL INFECTION AGENTS ASSOCIATED WITH MIGRATION

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ABSTRACT

Migration-related infections generally occur due to the living conditions of immigrants, difficulties in accessing health services, hygiene conditions, vaccination status and general health conditions. Migrants are individuals who often live in harsh conditions or have limited access to shelter, clean water, and basic healthcare, and they may be more prone to infectious diseases. In dense and crowded camps where immigrants are located, infectious diseases such as respiratory tract and gastrointestinal system infections can easily occur with the rapid spread of viruses.

The main viral infections associated with migration can be listed as follows: pneumonia (influenza A and B, SARS-CoV-2, RSV, Adenovirus, Human Metapneumovirus, Enteroviruses, Coronavirus etc.), hepatitis (Hepatitis A, B, C..), HIV/ AIDS, intestinal infections (norovirus, astrovirus, adenovirus, etc.), flu (inluenza virus, avian influenza, etc.), arthropod-borne infections (arboviruses, CCHF, TBEV, etc.) childhood viral infectious diseases (measles, rubella, chickenpox, polio, etc.).

Immigrants may be more prone to various infectious diseases, especially due to limited access to healthcare, malnutrition, unhygienic conditions and lack of vaccination. Therefore, it is important to develop specialized health services and preventive health strategies to meet the health needs of immigrants.

Measures that can be taken to prevent viral infections in immigrants are as follows: inclusion in vaccination programs, hygiene education and improved housing conditions, facilitating access to health services for immigrant families, nutrition programs for immigrants and especially children and strengthening their immune systems. In addition, support for the psychological health of immigrants can help improve their general health.

Keywords: Migration-related infection,Migration,Immigrant,Infection,Virus,Viral agent

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EFFECTS OF ENVIRONMENTAL POLLUTANTS ON HUMAN HEALTH

ACRYLAMIDE METABOLISM AND TOXIC EFFECTS

Eray Özgün[1]

ABSTRACT

Acrylamide is a colorless, odorless, crystalline compound with a molecular weight of 71.08 g/mol. It is mainly used industrially for the synthesis of polyacrylamide. Acrylamide also forms in foods during cooking. The amount of acrylamide depends on the cooking method, temperature and time, pH, surface area and moisture content, and the amount of free amino acids and carbohydrates in the food.

Acrylamide can be taken into the body through the digestive system, respiration and skin, and it passes to all tissues through systemic circulation. Acrylamide is metabolized primarily in the liver. Acrylamide can be converted to the toxic metabolite glycidamide by cytochrome P450 2E1 and then metabolized by epoxide hydrolase to glyceramide or by conjugation of acrylamide and glycidamide with glutathione to form mercapturic acids. Acrylamide and glycidamide form hemoglobin and DNA adducts.

The harmful effects of acrylamide and its toxic metabolite glycidamide have been demonstrated by epidemiologic and experimental studies. Acrylamide has toxicity to the nervous, reproductive, cardiovascular systems and liver, and it is a probable carcinogen.

Keywords: Acrylamide,Glycidamide,Acrylamide metabolism,Acrylamide toxicity

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BISPHENOLS METABOLISM AND TOXIC EFFECTS

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ABSTRACT

Aim: Bisphenol-A was first synthesized in 1891 and has been widely used in various industries. Bisphenol A (BPA) is an endocrine disrupting chemical and can cause many health problems.

Methods: Following absorption from the gastrointestinal tract in humans, orally ingested BPA is metabolized in the liver primarily by CYP2C18 and to a lesser extent by CYP2C19 and CYP2C9 enzymes. After undergoing first pass elimination in the liver, it is conjugated with glucuronic acid and sulfate to the major metabolite BPA glucuronide (BPAG) and minor metabolite BPA sulfate, respectively. The half-life is approximately 6 hours and it has been determined that almost all of it is excreted in the urine in approximately 42 hours.

Results: BPA exposure occurs through food, respiratory tract and skin. Various levels of BFA can be detected in serum, blood and urine samples of humans depending on the dose and duration of exposure. Bisphenols are associated with obesity, diabetes and different types of cancer, as well as effects on the endocrine system. In vitro studies have shown that BPA causes changes in chromosome number, radical-induced damage to DNA and mutagenic effects. Due to the many adverse effects of BPA, restrictions and limitations on its use have been considered by the scientific community and health authorities.

Conclusions: BPA exposure can cause serious health problems. In the absence of occupational exposure, human exposure to BFA is largely dependent on food, so it is important to avoid BPA-containing products and use BPA-free alternatives.

Keywords: Bisphenol A,metabolism,toxic effects

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PHTHALATES METABOLISM AND TOXIC EFFECTS

Aliye Çelikkol[1]

ABSTRACT

Aim: Phthalates (PAEs) are esters of phthalic acid that have been extensively utilized in the polymer industry since the 1930s as primary plasticizers and are prevalent in numerous industrial applications. Phthalates, environmental pollutants predominantly utilized to improve the flexibility and durability of plastics, are pervasive and subject to extensive human exposure. Understanding the pathways by which phthalates enter the body will elucidate their effects on various bodily systems and assess their potential hazards. Individuals may encounter phthalates through multiple avenues.

Methods: Phthalates and their metabolites are among the most extensively researched environmental compounds in human biological monitoring studies due to their prevalence and widespread exposure. Gas chromatography-mass spectrometry (GC-MS) and other analytical methods are used to measure the amount of phthalates in samples. GC-MS facilitates the accurate identification of various phthalate compounds. The acquired results are juxtaposed with legal thresholds and criteria.

Results: Research assessing phthalate exposure in people primarily relies on the levels of phthalate metabolites detected in urine. Numerous studies have investigated the levels of phthalate metabolites in paired urine samples of neonates and their mothers. One study in South Korea found that the levels of MEHHP (Mono-(2-ethyl-5-hydroxyhexyl) phthalate) and MEOHP (Mono-(2-ethyl-5-oxohexyl) phthalate) in mother's urine were 17.7 and 14.7 µg/L, respectively. These were two to three times higher than the levels found in newborns, which were 5.79 and 3.27 µg/L.

Conclusions: Everyday routines expose the general populace to significant quantities of plastics and plasticizers. To prevent exposure to plasticizers and phthalates, it is essential to routinely examine product labels. Select items devoid of endocrine-disrupting chemicals such as parabens and phthalates during your shopping. Scrutinize the ingredients of the cosmetics you utilize. The chosen garments must possess a high cotton composition, exhibit subdued colors, and include minimal prints. It is essential to scrutinize the composition of items for infants and children; glass bottles should be the preferred option. Avoid utilizing inferior plastic materials.

Keywords: endocrine disruptors, phthalates, plasticizers.

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TOBACCO AND HEALTH

TOBACCO AND ITS HEALTH HARMS

Levent Cem MUTLU[1]

The first known journey of tobacco was from America to Europe on ships belonging to Christopher Columbus and his friends. It is recorded that Columbus, who saw the natives smoking with sticks and chewing them in their mouths in San Salvador in 1492, gave the plant the name "tobacco", which is the name of the reed pipe with which they smoked tobacco. In 1559, Jean Nicot, the French ambassador in Portugal, presented tobacco to the French queen, saying that it was good for coughs, headaches, stomach diseases and gynecological diseases, and for this reason, tobacco was called 'Queen's herb' or 'ambassador herb'.

It is estimated that the first tobacco came to the Ottoman Empire in the 16th century. It is stated that the first coffeehouse in Istanbul was opened in Tahtakale in 1554 and the people became addicted to coffee and tobacco in a short time.

According to World Health Organization data, 1.8 billion people smoke worldwide. Transition to other addictions becomes easier. Six of the 8 diseases that cause the most deaths in the world are related to smoking.

Although the main harms of smoking are on the respiratory system, all systems are affected. It reduces mucociliary activity with its physical and chemical effects in the upper respiratory tract, causing inflammation, bacterial colonization and leukocyte dysfunction. The risk of otitis, rhinosinusitis, head and neck cancers, oral and pharyngeal cancer, and laryngeal cancer is increased. The main cause of COPD and lung cancer in particular is smoking.

It is directly related to atherosclerotic cardiovascular diseases. It is involved in the etiology of chronic coronary artery disease, acute coronary syndrome, sudden cardiac death, aortic aneurysm and peripheral vascular diseases. Smokers die from coronary (cardiovascular) diseases 70% more than non-smokers. Quitting smoking reduces the risk of coronary disease by 50% in one year. The risk decreases to normal in 5 years.

Renal cell carcinoma risk increased 2.3 times, urinary tract cancers increased 3.3 times.Increased risk of penile cancer. The risk of erectile dysfunction is increased by 2 times.

Nicotine passes through the placenta and is found in the fetal circulation and amniotic fluid. Carbon monoxide passes through the placenta and is found in the fetal circulation in amounts higher than in maternal blood.

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Women who smoke are twice as likely to have a heart attack than non-smokers. Early age of onset, length of smoking period, and number of drinks per day increase the risk. The risk of heart attack increases 40 times in those who use birth control pills and smoke.

Environmental cigarette smoke contains more nicotine than mainstream smoke. Carcinogens are in higher concentration. It can react with the surrounding air to form different compounds and radicals.

According to World Health Organization data, tobacco use causes millions of people to die or become ill every year. In 2019, 8 million people died due to smoking-related diseases.1.3 million people died due to passive smoking exposure.

SMOKING CESSATION METHODS

Meltem YILMAZ[1]

Smoking is a chronic disorder that constitutes one of the most important public health problems worldwide. In fact, it is considered the leading preventable cause of death and the worst epidemic since the 20th century(1).

Since smoking cessation requires treating the addiction and modifying the smoker's behavior, psychological and pharmacological interventions are needed. All health professionals must be knowledgeable about the harmful effects of tobacco and the treatment options available to support cessation (2). Patients should be asked if they smoke or live with smokers, accompanied by a thorough medical assessment (age at onset, use patterns, motivation to quit, and detecting obstacles to cessation), prescribing treatment, and doing follow-up until the goal of definitive cessation is reached (3).

Different models have been proposed to give brief advice on quitting. One of them is the 5A's model, which includes the following steps: ask (about tobacco use); Advise (strongly suggest quitting); Assess (the subject's willingness to modify her/his behavior); Assist (set a date to begin the process); and Arrange (follow-up) (4).

Clinical guidelines generally recommend dual treatment - medication plus counseling - because it doubles the probability of success. The aim of behavioral and cognitive methods is to make the person want to quit tobacco use and to provide them with skills on how to cope with possible problems they may encounter. Pharmacological treatment for smoking cessation is designed to block the reinforcing effects of nicotine and reduce withdrawal symptoms. Treatments for smoking cessation can include nicotine replacement therapies (NRT), bupropion, and varenicline (3).

NRT

NRT involves administering gradually decreasing controlled doses of nicotine. It maintains relatively low plasma nicotine levels that ease anxiety and withdrawal symptoms. Various modalities exist transdermal patches, chewing gum, nasal spray, and, inhalers, but the availability of these products varies from country to country. NRT does not increase the risk of adverse cardiovascular effects in smokers with a history of cardiovascular disease, although the exact therapeutic dose must be determined based on each patient's needs and tolerance, as well as the issues of cost and accessibility(5).

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Bupropion

An antidepressant that stimulates noradrenergic and dopaminergic functions, it has been shown to double abstinence rates even in the long term, which is why it is used as a first-line drug to treat smoking (3). Duration of treatment is 8 weeks. It is not, however, indicated in smokers with a history or risk of seizures, or in pregnant or breastfeeding women (2). Bupropion's effectiveness has been reported in populations with psychiatric disorders such as schizophrenia, depression, and post-traumatic stress disorder, while some observations suggest that it prevents the weight gain commonly associated with abstinence (6).

Nicotine Receptor Partial Agonists

Varenicline is a partial agonist of nicotinic α4β2 cholinergic receptors that exhibit 20 times greater affinity for these receptors than nicotine. On binding to those receptors, varenicline blocks their response and promotes the release of dopamine into the mesolimbic system, on which the positive reinforcement of smoking behavior depends on. Thus, it blocks the reinforcing effect of nicotine. In addition, it has been reported that varenicline has a nicotinic receptor blocking effect due to its role as a partial agonist. In this way, varenicline helps decrease the risk of relapse in smokers by producing anhedonia in relation to smoking. The duration of treatment is 12-24 weeks (7). This drug is well tolerated for up to 6 months and in prolonged treatments of up to 1 year reduces the likelihood of relapse (2).

Varenicline does not seem to be associated with an increased risk of depression or self-injurious behavior, compared to NRT(8). In fact, recent evidence suggests that it can be prescribed widely, even to disease-specific groups of patients (i.e., cardiovascular, chronic obstructive pulmonary disease, schizophrenia, and other psychiatric disorders, depression) to help more smokers achieve abstinence (9). However, careful checkup and follow-up are recommended (10).

The EAGLES study evaluated neuropsychiatric safety and efficacy of varenicline, bupropion, and nicotine patches in smokers with and without psychiatric disorders. It underscores that:

-In smokers with no history of psychiatric pathology, varenicline, bupropion, and nicotine patches have been shown to be more effective in achieving cessation than a placebo

- In the group of smokers with controlled neuropsychiatric disease or a history of such disease, a study data showed that varenicline, bupropion, and nicotine patches were all more effective in helping subjects quit smoking than a placebo.

-None of these treatments - varenicline, bupropion, or nicotine patches - increased the incidence of adverse neuropsychiatric effects in smokers without disorders of this nature, or in smokers with controlled neuropsychiatric disease or a history of neuropsychiatric disease. In this regard,

the EAGLES study showed that using varenicline, bupropion, or nicotine patches did not increase the occurrence of suicidal ideation or behavior in the group of smokers without neuropsychiatric disorders or in smokers with neuropathy, controlled neuropsychiatric disease, or a history of neuropsychiatric disease (11).

Cytisine has a molecular structure similar to varenicline . It is a good option for smokers who want to quit and live in socially or economically depressed areas because it is more affordable. Recent studies have confirmed its effectiveness, although the long-term cessation rates reported are only modest(9).

Today, more than ever, we know that these medications designed to stop smoking are effective and safe.

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NUTRITION AND HEALTH

THE ROLE OF GLUTEN-FREE DIET IN SKIN HEALTH

Sedat ARSLAN[1]

ABSTRACT

Aim:
This study aims to investigate the relationship between gluten intolerance and skin health, focusing on the role of antigliadin and its dermatological effects.

Methods:
A comprehensive literature review was conducted, analyzing clinical studies on gluten-related skin disorders. The mechanisms through which gluten affects skin conditions were examined, and the impact of a gluten-free diet (GFD) on dermatological symptoms was assessed.

Results:
The findings suggest that gluten intolerance is associated with various dermatological conditions, including dermatitis herpetiformis, psoriasis, urticaria, and rosacea. Patients diagnosed with non-celiac gluten sensitivity (NCGS) often exhibit dermatological symptoms that improve with a gluten-free diet. Furthermore, gluten cross-contamination and hydrolyzed wheat proteins in cosmetics may contribute to skin reactions.

Conclusions:
While gluten elimination is essential for individuals with celiac disease or gluten sensitivity, there is insufficient evidence to recommend a gluten-free diet for general skin health. Unnecessary gluten restriction may lead to nutritional deficiencies. Instead, a well-balanced diet rich in fruits and vegetables is recommended for optimal skin health. Further clinical trials are needed to establish the causative link between gluten consumption and skin disorders.

Keywords: Gluten intolerance, dermatological conditions, gluten-free diet, antigliadin, skin health.

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SUSTAINABLE NUTRITION AND HEALTH INTERACTION

Hatice BAYGUT[1]

ABSTRACT

Nutritional models and food preferences form an important link between human health and environmental sustainability at the global level. Today, increasing nutritional needs and the negative effects of climate change have made sustainable diet concepts more important. People's dietary choices affect elements such as health, the environment and global greenhouse gas emissions, shaping biodiversity and land use. Excessive consumption of animal-based foods in particular leads to environmental, economic and health problems. For this reason, sustainable nutrition models that contribute more to the environment have become increasingly important. The Mediterranean diet stands out as a sustainable diet model in terms of health and environment. While plant-based nutrition offers an environmentally friendly alternative, it contains some deficiencies in terms of protein quality and micronutrients. In addition, it is seen that plant-based foods do not always provide better results in terms of the environment. Models that include animal-based foods, such as the Mediterranean Diet, can produce similar results to the Vegan Diet in terms of environmental footprint. This suggests that excessive consumption of plant-based foods may increase environmental impacts. Studies on the environmental impacts of animal-based foods reveal that reducing meat consumption makes a positive contribution to the environment. This change should be carefully evaluated, as limiting meat consumption may have negative effects on diet quality. Alternative foods that can replace meat should be suggested considering their environmental impacts, nutritional adequacy and acceptability. As a result, the transition to a plant-based diet should be addressed in a multidimensional manner in terms of sustainability. The effects of this transition should be examined together with the effects on diet quality, cultural identity, health and the environment. In addition, considering that animal foods provide some essential nutrients, the negative effects of plant-based diets on health should be avoided.

Keywords: Sustainability, nutrition, health

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PSYCHOLOGICAL RESILINENCE AND COPING WITH STRESS

PERFECTIONISM

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ABSTRACT

Perfectionism, a multifaceted psychological construct, significantly impacts individuals' personal and professional lives. This presentation explores perfectionism's theoretical underpinnings, historical context, and implications, emphasizing its classification as a clinical phenomenon. Drawing upon foundational theories from Karen Horney's "tyranny of the shoulds" and Albert Ellis's irrational beliefs, perfectionism is conceptualized as a rigid adherence to unrealistic standards, often leading to emotional distress and maladaptive behaviors.

The framework of multidimensional perfectionism categorizes the phenomenon into three domains: self-oriented, other-oriented, and socially prescribed. Each dimension manifests unique challenges, such as self-criticism, intolerance toward others' mistakes, and societal pressures to meet unattainable expectations. These patterns correlate strongly with psychopathologies like obsessive-compulsive disorder, depression, and eating disorders, highlighting perfectionism's pervasive nature across various mental health diagnoses.

Perfectionistic individuals often exhibit behavioral traits such as chronic stress, difficulty tolerating uncertainty, and impaired emotional regulation. These traits may result in overachievement tendencies, procrastination, or avoidance, exacerbating their psychological burden. Despite the perception of perfectionism as a driver of success, its adverse effects—low self-esteem, interpersonal difficulties, and heightened anxiety—often outweigh its benefits.

The presentation also addresses the critical role of internal dialogues, contrasting the destructive impact of self-critical voices with the therapeutic potential of compassionate self-talk. Strategies for mitigating perfectionism include fostering cognitive flexibility, reframing rigid rules into adaptable guidelines, and adopting a balanced approach to personal and professional goals.

Ultimately, perfectionism's dual nature is underscored: while it can motivate high achievement, it frequently undermines well-being. Addressing perfectionism through therapeutic interventions and self-awareness is essential for cultivating a more sustainable and fulfilling life. This comprehensive exploration aims to inspire collective healing and promote realistic, compassionate self-expectations.

Keywords: Multidimensional Perfectionism,Cognitive Flexibility,Self- Criticism

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CONFRONTING CANCER AND POST-TRAUMATIC GROWTH

Gülşen TEKSİN[1]

ABSTRACT

Trauma is a state of emotional or physical injury resulting from stressful, frightening, and difficult-to-handle events or incidents beyond a person's control. Trauma can be categorized into two types: physical and emotional, both of which can leave deep and lasting effects on an individual. A person may have either experienced or witnessed such an event. It is known that the effects of trauma caused by human actions are more destructive. A person's response to this traumatic event can manifest as fear, helplessness, or terror. With the DSM-IV, cancer was first included in the list of traumatic events. Struggles with traumatic events have formed significant themes throughout human history. The concept of Post-Traumatic Growth (PTG) gained renewed interest from clinicians in the 1990s and 2000s and inspired systematic clinical research. Those who have developed through Post-Traumatic Growth have reported that these positive psychological changes either directly result from the event or occur as a form of learning while coping with the event.

It is possible to discuss 5 components of Post-Traumatic Growth:

1. Thinking about new possibilities.
2. Building deeper and more meaningful relationships.
3. Sensing and feeling an increase in the strength of the mental apparatus.
4. Appreciating life more.
5. Deepening and enriching the inner world.

Keywords: trauma,Post-Traumatic Growth,Cancer

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DENTISTRY AND SYSTEMIC DISEASES

IMPORTANCE OF ORAL AND DENTAL HEALTH IN CHILDREN WITH CONGENITAL HEART DISEASE

Zeynep ŞEYDA YAVŞAN[1]

ABSTRACT

Congenital Heart Disease (CHD) is a term that includes congenital structural or functional abnormalities of the cardiovascular system. Although the reported birth prevalence of CHD varies widely between studies worldwide, the accepted rate is 8 per 1000 live births. It is important to maintain optimal oral health in children with CHD. Odontogenic infections resulting from caries or periodontal diseases (periodontitis, gingivitis, abscess formation) can cause infective endocarditis, a life-threatening medical condition. Infective endocarditis (IE) is an infection of the lining of the heart (endocardium), including the heart valves. Untreated oral diseases that cause a risk of bacteraemia, such as periodontitis or untreated dental caries, are among the documented aetiological factors for IE. The outcome of oral sepsis in medically compromised children can be fatal. Despite this, not all parents of children with CHD were aware that poor oral health was associated with a risk of developing IE. Recent guidelines for the prevention of IE have limited the indications for antibiotic prophylaxis to certain types of CHD. Instead, the guidelines emphasise the importance of good oral health. Studies have emphasised that oral hygiene is not adequate and the amount of dental caries is high in children with CHD. Therefore, it is important to offer preventive oral health programmes with close follow-up to children with CHD from an early age. In conclusion, it is important for paediatric cardiologists to cooperate with dentists to ensure that these children have good oral and dental health from an early age and for their families to be informed about regular dental check-ups and preventive dentistry procedures.

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PERIODONTITIS AND ITS RELATIONSHIP WITH SYSTEMIC DISEASES

Tuğçe DÖNMEZER[1]

ABSTRACT

Periodontitis is a chronic, multifactorial inflammatory disease associated with a dysbiotic biofilm. It is characterized by the progressive destruction of the bone that supports the teeth and can lead to tooth loss. Over the last two decades, several large-scale epidemiological and experimental studies have demonstrated how periodontitis can negatively impact both healthy patients and those with systemic disease. In particular, periodontitis has been independently associated with a number of chronic noncommunicable diseases associated with aging, premature death and poor quality of life. Periodontitis has been studied in association with a variety of systemic conditions, including cardiovascular disease, diabetes, premature birth and low birth weight, chronic lung disease, chronic inflammatory bowel disease, liver disease, colorectal cancer, Parkinson's and Alzheimer's disease, chronic kidney disease, bone disease, and metabolic syndrome. The term Periodontal Medicine has emerged to describe how periodontal infection can impact extraoral health.

Keywords: periodontitis, systemic disease, biofilm, periodontal medicine

Introduction

Periodontal diseases are chronic inflammatory conditions of infectious origin affecting the supporting tissues of the tooth. They are classified as gingivitis and periodontitis. Although initially caused by microbial biofilm, environmental and genetic factors contribute to the development of the diseases. Gingivitis is an inflammation of the gums resulting from bacterial biofilm on the tooth surface. However, periodontitis occurs due to untreated gingivitis, leading to periodontal tissue loss, loss of periodontal attachment, and alveolar bone loss assessed radiographically. There have been an increasing number of studies attempting to evaluate periodontitis as a risk factor for the development of different diseases, including metabolic syndromes, obesity, rheumatoid arthritis, autoimmune diseases, cognitive disorders (e.g. Alzheimer's disease), and even some types of cancer, all of which are independently associated with or worsened by the presence of periodontitis (1). The aim of this review is to update the knowledge on the link between periodontitis and systemic diseases and to try to improve the understanding of possible common etiopathogenetic pathways between periodontal disease and systemic diseases according to the evidence emerging in recent years.

Periodontitis- Cardiovascular Diseases

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The association between periodontitis and cardiovascular diseases has been confirmed by epidemiological studies. A meta-analysis based on 22 case-control and cross-sectional studies concluded that the risk of developing cardiovascular diseases was significantly higher in patients with periodontitis. In another study, severe periodontitis was associated as a causative agent of myocardial infarction only in women, especially in women under the age of 65. A prospective study showed an association between periodontitis and mortality in a homogeneous male population aged 60 to 70 years in Western Europe (1).

There is substantial evidence from epidemiological studies that there is a positive association between periodontitis and coronary heart disease. A systematic review updated in preparation for this workshop identified a total of six epidemiological studies, case-control and cohort studies, published in the last five years, that demonstrated an increased risk of a first coronary event in patients with clinically diagnosed periodontitis or more severe periodontitis compared with patients without periodontitis or with less severe periodontitis (2).

Periodontal treatment may reduce CRP levels in the low cardiovascular risk category. These findings are important because high CRP levels play a role in the development of atherosclerosis, acute myocardial infarction, and death. Another strong risk marker for cardiovascular disease is fibrinogen, which is associated with the development or presence of atherothrombosis. Fibrinogen levels are significantly reduced after periodontal treatment. A study conducted showed a significant reduction in fibrinogen levels in patients with periodontitis and refractory arterial hypertension after periodontal treatment (1).

Periodontitis- Diabetes

As observed in large population studies, the risk of periodontitis is higher in diabetic individuals, especially those whose diabetes is not under control, than in non-diabetic individuals. On the other hand, observational studies have shown the effect of periodontitis treatment on glycemic control of diabetes. Therefore, the relationship between diabetes and periodontitis works in two directions. As an infectious process, high levels of inflammatory mediators expressed during the periodontal destruction process in diabetic individuals with periodontitis may negatively affect glycemic control.(1).

Periodontitis- Liver Diseases

A recent study reported a more diverse subgingival microbiota in patients with periodontitis and liver cirrhosis compared to patients with periodontitis without liver disease or healthy controls. The study hypothesized that periodontitis in liver cirrhosis may be a result of dysbiosis due to a weakened immune system that renders commensal bacteria pathogenic. Oral infections in liver disease should be managed appropriately. There is consensus that all active oral diseases should be eliminated before liver transplantation to prevent infectious complications. Since almost all oral diseases can be prevented with good oral hygiene, a dental treatment plan is made according to the severity of liver disease, with attention to preventive measures (3).

Periodontitis- Adverse Pregnancy

Depending on the pregnancy period and the severity of the disease, periodontitis causes adverse pregnancy outcomes. Premature birth may occur when the pregnant woman is exposed to less severe forms of periodontitis. Growth restriction and extremely premature birth may occur with more severe periodontitis and in early pregnancy. More severe periodontitis may cause spontaneous abortion, late abortion and stillbirth. (1).

Periodontitis- Respiratory System Diseases

It has been known for some time that poor oral health and the resulting oral microbiome play an important role in the pathogenesis of oral inflammation, various respiratory diseases, especially pneumonia, as well as chronic obstructive pulmonary disease and asthma. Based on this knowledge, multiple treatment options have been investigated to prevent respiratory infections in high-risk patients. Poor oral health status has been associated with the etiology of pneumonia (1).

Periodontitis- Inflammatory Bowel Disease

Despite limited epidemiological evidence suggesting that periodontitis is a possible risk factor for inflammatory bowel disease, significant work in animal models has begun to demonstrate possible biological mechanisms by which periodontal disease and oral pathogens cause inflammatory bowel disease. Oral bacteria have been shown to colonize and persist in the gut, activating the immune system and causing chronic inflammation in a susceptible host. (1).

Periodontitis- Cancer

F. nucleatum is a bacterium that is effective in the formation of periodontitis, inhibits the cytotoxicity of natural killer (NK) cells and the activities of lymphocytes infiltrating the tumor tissue through the interaction of the bacterial protein Fap2 with the TIGIT receptor. In this way, it has been shown that it may be related to other types of cancer such as lung and pancreatic cancer (1).

Periodontitis- Alzheimer's Disease

Another aspect of periodontal medicine that has received much attention in the last decade is its relationship to neurodegenerative diseases, particularly Alzheimer's disease, where evidence suggests that periodontal disease can cause systemic inflammation, disruption of the blood-brain barrier, degeneration, and cognitive impairment. Epidemiological studies suggest an association between periodontitis and Alzheimer's disease (1).

Periodontitis- Rheumatic Diseases

Rheumatoid arthritis (RA), one of the most common autoimmune diseases, is characterized by chronic inflammation and destruction of synovial joints. The causes of RA are not fully understood. However, emerging evidence suggests that infection-induced inflammation in

mucosal areas, or periodontitis, may trigger or exacerbate autoimmunity and joint disease in susceptible individuals (4).

Periodontitis- Osteoporosis/Osteopenia

Osteoporosis and osteopenia are very common conditions in postmenopausal women (with a prevalence of up to 50%) and the postmenopausal condition is associated with an increase in the severity of periodontitis, with a prevalence of up to 30%. The increased alveolar bone resorption and hence the severity of periodontal disease in affected women is related to the role of the hormone estrogen (5).

Conclusion

In conclusion, although periodontitis has been linked to approximately 60 systemic diseases, there are still many aspects that are unknown or poorly understood. To better address the oral and systemic health and needs of our patients, comprehensive examination of systemic and oral diseases, conditions, and other mechanical, predisposing, and precipitating factors is essential.

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BREAST MILK AND BREASTFEEDING

EVIDENCE-BASED PRACTICES FOR BREASTFEEDING

Serap ÖZDEMİR[1], Serap BALCI[2]

ABSTRACT

Breast milk is the most important nutrient required for the growth and development of term and preterm infants and for them to reach cellular and structural maturity. Produced according to the individual needs of each newborn, the differences in structure and content indicate the strength of the biological and emotional bond between mother and baby. This nutrient, which has numerous benefits in protecting and maintaining health and preventing diseases, is so unique that it cannot be produced naturally or synthetically from any living creature, plant, laboratory environment in the world. Breast milk is a food that can be sufficient alone for the first six months due to its content, bioavailability, sterility, easy applicability, creating a sense of satisfaction in both mother and baby and contributing to the family economy. In recent years, breast milk has been reported to be beneficial in situations such as pain, stress, hemodynamic balance and crying during minimally invasive interventions in newborn babies. These interventions have taken their place among important nonpharmacologic nursing practices with the level of evidence they have generated. The applicability of these interventions separately, together or in combination with different interventions that activate multiple warning systems such as taste, hearing and smell in term and preterm infants is being investigated scientifically. Moreover, there are many reports on the topical application of breast milk for atopic dermatitis, diaper dermatitis, eye infection care, umbilical cord separation and nipple cracks.

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BREASTFEEDING APPROACHES IN SPECIAL SITUTATIONS

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ABSTRACT

This study examines breastfeeding processes in special circumstances and the challenges encountered. Although breastfeeding is known to be vital for infant health, certain conditions may interrupt or complicate this process. Factors such as maternal or infant illnesses, medication use, nutritional deficiencies, environmental and chemical exposures, social and psychological barriers, as well as emergencies and disasters, can negatively affect breastfeeding. Particularly in disaster and humanitarian crisis situations, poor hygiene conditions and uncontrolled formula milk distribution pose risks to infant health. The stress experienced after disasters, shelter problems, and misconceptions about insufficient milk production are major threats to continued breastfeeding. Therefore, it is crucial to establish breastfeeding-friendly spaces, provide psychosocial support to mothers, and ensure that healthcare personnel are trained in breastfeeding counseling during emergencies. Breast milk remains the safest and most reliable source of nutrition, emphasizing the importance of establishing sustainable breastfeeding policies. Nurses and healthcare professionals should provide physical, psychological, and social support to mothers, ensuring the continuity of breastfeeding and facilitating proper breastfeeding environments during emergencies.

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BREASTFEEDING CONSULTANCY PRACTIVE EXAMPLES

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ABSTRACT

This study examines the importance, methods, and global approaches to breastfeeding counseling. Counselors support mothers in overcoming challenges, with a focus on international developments and Turkey's current situation. Breastfeeding counseling requires knowledge of breast anatomy and lactation physiology while promoting positive attitudes and addressing difficulties. Policies in Canada, the UK, and Turkey highlight the role of individual, social, and technological support systems. Innovative approaches, including telehealth and mobile applications, enhance accessibility and sustainability. In conclusion, breastfeeding counseling is vital in global health policies, and nurses should adopt effective strategies to optimize its impact.

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INNOVATIVE APPROCAHES IN HEALTH SCIENCES EDUCATION

FLIPPED LEARNING AS AN INNOVATIVE METHOD IN HEALTH SCIENCES EDUCATION

Emine Seda KOÇ[1]

ABSTRACT

The rapid and dizzying change experienced in the world creates new needs in every aspect of life. It highlights flexible and innovative applications in different fields so that individuals and institutions can keep up with these changes. The need for innovative learning in the field of education is indispensable for students to take an active role in the learning process and acquire 21st century skills. This situation paves the way for the emergence of different models that will support innovative learning environments.

Flipped learning is an innovative model developed as an alternative to the traditional understanding of education and methods based on this understanding. In this model, while students learn course materials at home through multi-media tools such as online videos, presentations and learning management systems, the focus is on activities such as practical work and problem solving in the classroom. With this model, students are offered the flexibility to learn at their own pace. The model enables them to use classroom time more efficiently and support active learning. Students are offered a personalized learning experience, so their individual needs are better addressed. Also, they are given the opportunity to take on their learning responsibilities.

In recent years, flipped learning applications have become widespread, especially in fields such as medicine, nursing and dentistry. Flipped learning in health education enables the study of theoretical knowledge at home and the application of active learning methods such as clinical case analyzes and simulations in the classroom.

The flipped learning method also has some limitations. Factors such as problems accessing technology and students' lack of self-discipline can negatively affect the effectiveness of flipped learning. Additionally, educators' experience in preparing digital content and managing in-class activities directly affects the efficiency of the model. Therefore, it is of great importance for both students and educators to adapt to the learning processes and to support the necessary infrastructure of the processes for the successful implementation of the model.

Keywords: Health Education, Flipped Learning, Innovative Learning

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DIGITALIZATION AND ARTIFICIAL INTELLIGENCE IN HEALTH SCIENCES EDUCATION

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ABSTRACT

Aim: The use of digitalization and artificial intelligence in health sciences education; transforms learning processes, facilitates students' access to information and increases the quality of education. Artificial intelligence-supported learning platforms, adaptive education systems and virtual patient simulations improve students' clinical experiences and minimize the risk of making errors. The aim of this study is to evaluate the use of digitalization and artificial intelligence in health sciences education using a systematic literature review method.

Methods: In this study, the systematic literature review method was used to examine the effects of digitalization and AI on health sciences education. In the study, peer-reviewed articles published after 2020 in Google Scholar, Web of Science, and Scopus academic databases were scanned and 43 studies that met the specified inclusion criteria were evaluated.

Results: The findings show that artificial intelligence-based learning systems and virtual reality applications significantly increase students academic success and clinical skills.

Conclusions: Institutions such as Hacettepe University and Koç University offer significant innovations in health sciences education with virtual patient simulators and artificial intelligence-supported education platforms. Challenges such as inequalities in access to technology, data privacy issues and lack of digital literacy among academics and students limit the integration of artificial intelligence and digitalization into health sciences education. Therefore, it is recommended to invest in technological infrastructure, increase the digital education skills of academics and students, and strengthen ethical and legal rules regarding data security. When the digitalization process of health sciences education is supported by inclusive and sustainable policies, the impact of artificial intelligence and digital tools in education will increase even more.

Keywords: Digitalization, Artificial Intelligence, Health Sciences Education, Educational Technologies

1. Introduction and Aim

Digitalization is causing radical changes in health sciences education, increasing access to information, transforming teaching methods, and making the student experience more

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interactive. Artificial intelligence (AI)-supported technologies, in particular, offer individualized learning experiences; provide adaptable educational opportunities according to students' knowledge and skill levels (Bilgic et al., 2022; 12. Encarnação et al., 2024). The increasing use of AI in health sciences education manifests itself in a wide range from clinical decision support systems to virtual patient simulations. These technologies allow students to experience complex clinical situations more safely and effectively compared to traditional education methods (Farrelly and Baker, 2023).

Another important dimension of digital transformation in health education is simulation-based learning environments and virtual reality (VR) applications. These systems, which can replace real-world patient cases, increase patient safety by minimizing medical errors (Gülhan et al., 2024). However, the proliferation of digital technologies brings with it new problems such as ethics, data privacy, and inequality of access. Especially in developing countries, differences in access to AI and digital health education create significant inequalities in terms of learning opportunities (Lazarus et al., 2024; Lewis et al., 2024; Ejaz et al., 2022; Derakhshanian et al., 2024; Tolentino et al., 2023).

The aim of this study is to examine the role of AI and digitalization in health sciences education, to evaluate the integration process of existing technologies into education, and to assess the ethical and infrastructural challenges encountered. The effects of AI-based applications on health education in Türkiye and globally will be discussed, and the advantages and limitations of digital transformation in education will be revealed.

2. Method

2.1. Research Design

In this study, the systematic literature review (SLR) method was used to examine the effects of digitalization and AI on health sciences education. SLR is a method that involves systematically scanning, selecting, analyzing and synthesizing scientific studies that meet certain criteria (Yavuz, 2022; Yıldız, 2022; Mengist et al., 2020). The method allows the findings of previous studies on the subject to be evaluated in a holistic way.

2.2. Research Question

The main research question of this study is; "How does digitalization and AI use in health sciences education affect learning processes and what are the main findings of academic studies in this field?"

2.3. Population and Sample of the Research

The universe of the study is academic studies on digitalization and the use of AI in health sciences education. The sample consists of 43 studies that meet the inclusion criteria. The inclusion criteria include having a full text published in peer-reviewed journals and accessible in 2020 and later on digitalization and AI in health sciences education. Studies that do not meet these criteria were excluded.

2.4. Data Collection Tools

The data collection process was carried out through systematic searches in Google Scholar, Web of Science and Scopus academic databases. The keywords used in the search were "Health Sciences Education and Artificial Intelligence" and "Health Sciences Education and Digitalization". Studies meeting the specified criteria were selected and evaluated in accordance with the PRISMA (preferred checklist for systematic reviews and meta-analyses) guidelines (Şalvarlı and Griffiths, 2021).

2.5. Data Analysis

The selected studies were examined using the descriptive analysis method and the findings were categorized using the thematic coding approach (Yıldırım and Şimşek, 2021). A systematic synthesis was made on the effects of digitalization in education by determining the main themes emphasized in the examined studies. The findings were classified in terms of the types of digital tools used, AI-based learning systems and ethical and educational challenges.

2.6. Ethical Aspects of the Research

This study does not involve human participants and is based solely on the review of open access academic studies. Therefore, ethics committee approval is not required.

2.7. Limitations of the Research

This study has data sources and time limitations. The study is based on searches conducted only in identified academic databases published after 2020.

3. Result

A total of 43 studies that met the specified criteria were examined in the study. The main trends, opportunities and challenges regarding the use of digitalization and AI in health sciences education were classified under four main themes: "Contributions of Artificial Intelligence and Digitalization to Health Sciences Education", "Clinical Simulations and Virtual Reality Applications", "AI-Based Adaptive Learning Models" and "Ethical and Infrastructural Challenges of Digitalization in Health Sciences Education".

3.1. Contributions of AI and Digitalization to Health Sciences Education

According to the studies reviewed; digitalization and AI accelerate learning processes in health sciences education, ensure individualization of education, and offer students more flexible learning opportunities (Yiğit et al., 2024; Veras et al., 2024; Cornwall et al., 2024; Almansour and Alfhaid, 2024). In particular, online education platforms, virtual laboratories, and medical simulations offer students more practice opportunities compared to traditional education models (Ellaway and Tolsgaard, 2023; Fawaz et al., 2025).

The use of AI-supported teaching tools enables the creation of individualized educational environments by presenting content according to the learning speed and level of students (Issa et al., 2024; Liv et al., 2024). For example, thanks to adaptive learning algorithms, students' weaknesses are determined and customized content is offered to address deficiencies.

3.2. Clinical Simulations and Virtual Reality Applications

Studies show that virtualized patient simulations improve students' clinical decision-making skills (Saghiri et al., 2022). Simulations allow students to interact with high-risk scenarios without endangering patient safety (Charow et al., 2021).

In particular, virtual reality (VR) and augmented reality (AR) applications facilitate hands-on learning of medical interventions and provide students with more realistic clinical experiences (Frehywot and Vovides, 2023). In this context, Koç University and Hacettepe University have developed applications to improve students' clinical skills by integrating virtual patient simulators (Erdem et al., 2022).

3.3. AI-Based Adaptive Learning Models

Reviewed studies reveal that AI-supported educational platforms play an important role in improving the academic success of health sciences students (Kedar and Khazanchi, 2023). For example, deep learning algorithms analyze how students interact with course materials and provide customized educational content (Fern, 2024).

Some universities have developed AI-supported assessment systems that provide automatic feedback. These systems analyze students' errors and provide feedback at an individual level, making education more efficient (Crotty et al., 2024).

3.4. Ethical and Infrastructural Challenges of Digitalization in Health Sciences Education

Although digitalization and the use of AI technologies in health sciences education provide many advantages, ethical and infrastructural challenges in this area are frequently emphasized in the literature (Cornwall et al., 2024). In this regard, inequality in access to technology, data

privacy and ethical concerns and digital competence of educators and students are seen as the main problems.

Access to digital learning tools is limited in developing countries (Mathrani et al., 2022). There are uncertainties about how student data used in AI-supported systems will be stored and processed (Katznelson and Gerke, 2021). In order to use AI-supported educational tools effectively, the digital skills of educators and students need to be increased (Pang et al., 2023).

4. Conclusion

In this study, the current status, advantages and challenges of digitalization and AI in health sciences education were evaluated through a systematic literature review method. The findings show that AI-supported educational tools and digitalization significantly improve the learning processes of health sciences students. In particular, virtual patient simulations, AI-based decision support systems and adaptive learning models increase student success and help reduce medical errors. Institutions such as Hacettepe University and Koç University in Türkiye have taken important steps in this field by integrating AI-supported simulations into health sciences education. However, there are some ethical and infrastructural challenges in integrating AI and digital technologies into health sciences education. Among these challenges, inequalities in access to technology, data privacy issues and the need to develop the digital competencies of educators and students stand out.

The digital transformation of health sciences education continues, and structural reforms and comprehensive policies are required for the effective use of AI and digital platforms.

Accordingly, various strategies are proposed to increase the effectiveness of digitalization and AI in health sciences education. Access to digital education tools should be increased, investments in digital infrastructure at universities should be made, and the sharing of common resources such as virtual simulation laboratories should be encouraged. Digital literacy training should be organized for academics and students and effective use of AI and digital learning platforms should be ensured. Regulations on ethics and data privacy should be strengthened, student data protection and compliance with international standards (e.g. GDPR - General Data Protection Regulation) should be ensured. The dissemination of AI-supported education platforms will help monitor student performance and improve feedback mechanisms by providing personalized learning opportunities. Finally, cooperation between health ministries, universities, and technology companies should be increased, and WHO recommendations on AI and digital education should be integrated into national health sciences education policies.

These recommendations are critical to ensure the effective integration of digitalization and AI into health sciences education. Establishing sustainable digitalization policies in the field of health education will contribute to better training of health professionals in the future.

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THE ROLE OF WEARABLE TECHNOLOGY IN PREVENTING SPORTS INJURIES

USE OF WEARABLE TECHNOLOGY IN DETERMINING HEART RATE VARIABILITY

İsa SAĞIROĞLU[1]

ABSTRACT

Heart rate variability (HRV) is a well-established physiological marker that reflects autonomic nervous system (ANS) modulation and cardiovascular function. It is widely utilized in sports science for assessing training adaptation, recovery status, and athlete readiness. HRV analysis provides critical insights into the balance between sympathetic and parasympathetic activity, aiding in the optimization of individualized training programs. The emergence of wearable technology has facilitated real-time, non-invasive HRV monitoring, enabling continuous assessment of an athlete's physiological responses to training stimuli. Wearable devices, including chest strap monitors, smartwatches, and photoplethysmography (PPG)-based sensors, offer an accessible alternative to traditional electrocardiography (ECG), although their accuracy and reliability remain subjects of ongoing research. **Scientific research critically examines** the validity and reliability of wearable HRV measurement tools in sports settings, comparing them to gold-standard ECG methods. Additionally, it explores the practical implications of HRV monitoring for performance optimization, overtraining prevention, and recovery management. While wearable technology holds significant potential for athlete monitoring, further studies are required to enhance measurement precision, standardize protocols, and determine the applicability of these devices across diverse athletic populations and training environments.

Keywords: Heart rate variability, wearable technology, athlete monitoring, sports performance, training adaptation.

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USE OF GPS TECHNOLOGY IN DETERMINING NEUROMUSCULAR FATIGUE

Zeki AKYILDIZ[1]

ABSTRACT

Aim: Neuromuscular fatigue (NMF) is a critical factor affecting athletic performance, particularly in team sports where high-intensity activities and congested match schedules increase fatigue. Traditional methods for assessing NMF, such as Countermovement Jump (CMJ) tests, present practical challenges in team settings. This study aims to explore the use of GPS-based monitoring systems to assess NMF in athletes, providing a more accessible and game-specific approach to fatigue detection.

Methods: The study utilizes GPS units with a 3D accelerometer, 3D gyroscope, and magnetometer to capture movement data. A submaximal running test (SRT) consisting of three 60-meter runs in 30-second cycles was employed to measure neuromuscular load. Player Load 3D, which aggregates movement data across three axes (vertical, mediolateral, and anteroposterior), was used to evaluate fatigue-related changes. Using the Spring Mass Model framework, the study also examined the relationship between match demands and NMF indicators derived from GPS data.

Results: Preliminary findings suggest that GPS-based metrics, mainly Player Load 3D, provide reliable indicators of NMF. A strong correlation was observed between match intensity and fatigue markers, supporting the validity of GPS-derived data in fatigue monitoring. Additionally, differences between jogging and sprinting data emphasized the importance of movement intensity in assessing fatigue accumulation.

Conclusions: GPS-based monitoring systems offer a practical alternative to traditional NMF assessment methods in team sports. Collecting real-time movement data allows for individualized fatigue management strategies, potentially reducing injury risks and optimizing athlete performance. Future research should focus on refining GPS-derived fatigue markers for improved accuracy.

Keywords: Neuromuscular Fatigue, GPS Technology, Player Load, Fatigue Monitoring, Submaximal Running Test, Athlete Performance, Injury Prevention.

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PROCEEDINGS

NUTRITION AND DIETETICS

_O5707

THE EFFECT OF NUTRITION EDUCATION ON MALNUTRITION AND QUALITY OF LIFE IN CHRONIC KIDNEY DISEASE PATIENTS UNDERGOING HEMODIALYSIS IN TEKIRDAĞ

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Introduction and Objective: Chronic kidney disease (CKD) is an important public health problem both nationally and globally with an increasing prevalence that seriously affects the family and social lives. productivity. and quality of life of individuals (1). Prevention of fluid-electrolyte imbalances by providing appropriate nutrition. prevention of complications during hemodialysis (HD) treatment. correction of appetite problems. and prevention of malnutrition are crucial in CKD. Since chronic renal patients are prone to malnutrition and complications worsen their quality of life. proper and appropriate nutrition is important in improving quality of life (2, 3). This study aimed to evaluate the effect of nutrition education on nutritional knowledge, malnutrition risk and quality of life in chronic renal patients receiving hemodialysis treatment in two centers in Süleymanpaşa, Tekirdağ.

Materials and methods: This study planned as intervention research was conducted between November 4, 2023 and July 4, 2024. The study population consisted of chronic kidney patients receiving treatment in the hemodialysis units of Tekirdağ Namık Kemal University (TNKU) Training and Research Hospital and Private Tekirdağ Ege Dialysis Center. The study included patients who were mentally competent demonstrated the ability to communicate effectively, and willingly provided their informed consent to participate (n=32). The study was completed with 25 patients due to death, change of dialysis center and discontinuation of follow-up due to kidney transplantation. Ethical approval was granted on 27th September 2022 (Approval number: 2022.154.09.01). A nutritional knowledge assessment questionnaire questioning disease-specific nutritional knowledge, a personal information questionnaire questioning demographic characteristics, knowledge about the disease, and nutritional attitudes and behaviors, and the “Nutritional Risk Index (NRI)” and “SF-36 Quality of Life Scale (SF-36)” were used for data collection. The nutritional knowledge assessment questionnaire was prepared in line with the literature on nutrition and dietetics and consisted of 13 closed-ended questions and was evaluated over 20 points.

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We have applied to compare the level of disease-specific nutritional knowledge before, immediately after, and three months after the training by scoring the correct answers. The NRI was developed to assess nutritional status with objective parameters. It is calculated using the ratio of body weight to continuous body weight and serum albumin level. A score of 100 was classified as “no malnutrition, ” 97.5-100 as “mild malnutrition, ” 83.5-97.5 as “moderate malnutrition”, and 83.5 or less as “severe malnutrition” (4). SF-36 is a scale that examines 8 dimensions of health, including physical function, role limitations, social function, mental health, vitality, pain. and general perception of health in 36 items (5). Data were obtained by face-to-face administration of the questionnaire to the participants and by recording biochemical parameters from the medical records in the patient file.

Participants' nutritional knowledge levels, NRI scores, and SF-36 responses before nutrition education were recorded. Proper nutrition education was given immediately after the first interview using standardized education brochures prepared by the researcher for CKD. Immediately after the first interview, nutritional knowledge levels were recorded again with the nutritional knowledge assessment questionnaire. Follow-up assessments were conducted three months after the nutrition education intervention, with no reminders of past nutrition information during dialysis sessions. Changes in nutritional knowledge, risk of malnutrition, biochemical parameters, and quality of life were analyzed. In the study, dependent variables such as nutritional knowledge, NRI, biochemical parameters and SF-36 scores were compared with independent variables such as age, gender, previous nutrition education, presence of additional chronic diseases, and changes before and after education.

Data were analyzed using IBM SPSS 25.0. with a 95% confidence interval, as $p<0.05$ significance threshold, and two-way analysis. After calculating descriptive statistics. Chi-square and Friedman tests were employed to compare categorical variables on dependent groups. Nonparametric variables were analyzed using Wilcoxon and Kruskal-Wallis tests.

Results: A total of 32 hemodialysis patients. 40.63% (n=13) female and 59.37% (n=19) male. participated in the study. The mean age of the patients participating in the study was 59.34±12.12 (28-75) years. The mean age of female patients was 57.15±11.24 years (40-72), while the mean age of male patients was 60.84±12.76 years (28-75). The mean weight of the participants was 71.15± 12.76 kg. The mean weight of female patients was 70.05±9.88 (52-87%). while the mean weight of male patients was 71.91±14.62 kg (50-98%). When their educational status was analyzed. 46.88% (n=15%) were primary school graduates. 71.87% (n=23%) declared that they were at the middle-income level. In addition to chronic kidney disease. 87.50% (n=28) of the patients had comorbidities. The most common comorbidities were hypertension (65.6%) and diabetes (28.1%). The mean NRI score at baseline was 101.3±4.49 and 104.1±4.73 three months after nutrition education (p=0.157).

The nutritional risk index score was above 100 (no malnutrition%) in 62.5% of the patients before nutrition education and 84.0% after nutrition education. The changes in blood biochemical parameters (e.g. serum phosphorus, potassium, and sodium levels) were not statistically significant (p>0.05). The participants' nutritional knowledge scores were 15.93±2.14 at baseline, increased immediately after, the intervention to 18.38±1.70 and remained high at the three-month follow-up as 17.16±1.63 after 3 months. There was a significant difference in the mean nutritional knowledge level of the participants before, immediately after and 3 months after the training (p=0.001). The mean values of the SF-36 scale subheadings before and 3 months after the training were 56.88±23.48 at baseline and 52.18±23.04 3 months later in the 'Physical Function' subheading and a significant difference was found (p=0.037).

In response to the questions about disease-specific attitudes and behaviors, all the patients (n=32) stated that they were informed about their disease-specific nutrition, 50% (n=16) had an existing written nutrition program and 56.25% (n=18) desired regular discussions with a healthcare professional about their disease-specific nutrition. When asked to assess their compliance with the dietary information presented to them, 56.25% rated their compliance as moderate.

Table 1: Distribution of Nutritional Risk Index Scores of Chronic Kidney Disease Patients by Gender Before and After Education

NRI Score	Before Education			After Education		
	Woman (n=13)	**Man (n=19)**	**Total (n=32)**	**Woman (n=10)**	**Man (n=15)**	**Total (n=25)**
>100 (No Malnutrition)	8 (61,5%)	12 (63,2%)	20 (62,5%)	9 (90,0%)	12 (80,0%)	21 (84,0%)
100-97.5 Mild Risk (Borderline Malnutrition)	1 (7,7%)	4 (21,1%)	5 (15,6%)	0 (0%)	2 (13,3%)	2 (8,0%)
97.5-83.5 Moderate Risk (Malnutrition)	4 (30,8%)	3 (15,8%)	7 (21,9%)	1 (10,0%)	1 (6,7%)	2 (8,0%)
< 83.5 Severe Risk (Serious Malnutrition)	0	0	0	0	0	0

Table 2: Evaluation of the Effect of Nutrition Education on SF-36 Score of Chronic Kidney Disease Patients

SF-36 Scale and Subheadings	Before Education			3 Months After Education			p*
	Woman (n=13)	**Man (n=19)**	**Total (n=32)**	**Woman (n=10)**	**Man (n=15)**	**Total (n=25)**	
Physical functioning	53,08±22,78	59,48±24,20	56,88±23,48	49,75±24,22	53,80±22,93	52,18±23,04	**0,037**
Role limitations due to physical health	26,90±37,45	65,79±41,00	49,99±43,53	20,0±22,98	78,35±36,45	55,01±42,70	0,276
Role limitations due to emotional problems	64,09±37,18	66,84±41,60	65,72±39,25	70,0±36,75	71,23±35,34	70,73±35,12	0,608

Vitality/Energy	38,08±18,65	47,89±17,66	43,90±18,44	42,50±21,38	46,33±9,90	44,79±15,24	0,753
Emotional well-being	67,38±11,87	67,37±15,28	67,37±13,79	62,40±7,82	69,07±12,60	66,40±11,25	0,375
Social functioning	69,23±20,80	83,16±25,76	77,50±24,52	60,0±27,51	77,50±25,96	70,50±27,45	0,225
Pain	44,80±24,90	72,24±25,72	61,09±28,49	33,0±31,35	73,5±25,30	57,30±33,94	0,189
General Health	23,85±14,60	36,63±14,55	31,44±15,69	23,0±16,86	40,33±17,16	33,39±18,80	0,791

Wilcoxon Analyses $p<0.05$

Conclusion: Hemodialysis patients are sensitive to deterioration of their nutritional status and factors that may affect dietary compliance should be regularly questioned. In our study, NRI values were frequently positive (>100), and blood biochemical indicators were normal. Although the level of knowledge of proper nutrition decreased slightly after three months of education, it was still significantly higher compared to the patient's baseline levels. According to these findings, regular, structured nutrition education tailored to the needs of patients with kidney disease significantly increases nutritional knowledge. Nutrition education must be updated and repeated at regular intervals in appropriate materials, methods, and learning environments to improve treatment success and quality of life. Our study emphasizes the importance of ongoing educational interventions to improve clinical outcomes and quality of life in hemodialysis patients. Struggling with complications that hemodialysis patients may encounter can negatively affect their quality of life by making daily life physically, economically, socially, and emotionally challenging. To enhance CKD patients' quality of life, adopting multidisciplinary approach that includes dietitians, nephrologists, and psychologists is crucial for providing holistic care.

Keywords: Nutrition education, Nutritional Risk Index, Malnutrition, Hemodialysis, Chronic Kidney Disease, Quality of life, Tekirdağ.

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NUTRITION AND DIETETICS

_O5730

HOW ACCURATE ARE AI-GENERATED DIET PLANS IN MEETING IRON REQUIREMENTS?

Hüsna Kaya Kaçar[1]*

ABSTRACT

Aim: This study aimed to assess the adequacy of iron content in weight loss diet plans generated by artificial intelligence chatbots, ChatGPT, Gemini, and Microsoft Copilot, with a focus on their compliance with dietary recommendations.

Methods: A total of 30 weight loss diets were generated by the three chatbots, with 10 plans from each chatbot. The diets were tailored for five caloric levels (ranging from 1400 to 1800 kcal) and were designed separately for females and males. The iron content of each diet was calculated using the USDA's Food Data Central, and the percentage of the Recommended Dietary Allowance (RDA) fulfilled was determined based on the United States' dietary guidelines.

Results: Eighty-seven percent (n=26) of the diets met or exceeded the daily RDA for iron. All diets generated by ChatGPT and Microsoft Copilot met the iron requirements, whereas the majority of diets created by Gemini for females failed to meet the RDA. The mean iron content of diets for females (n=15) was 18.32 mg (SD=3.90), closely matching the RDA of 18 mg. In contrast, the mean iron content of diets for males (n=15) was 15.70 mg (SD=4.40), exceeding the male RDA of 8 mg.

Conclusions: The findings emphasise significant variability in chatbots' ability to generate weight loss diets that are nutritionally adequate in terms of iron content. While ChatGPT and Microsoft Copilot consistently produced diets meeting iron requirements, Gemini exhibited deficiencies in creating iron-adequate diets for females. This highlights the importance of careful evaluation chatbot-generated dietary recommendations to ensure their nutritional adequacy and reliability.

Keywords: artificial intelligence,chatbots,dietary adequacy,iron intake,weight loss diets

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NUTRITION AND DIETETICS

_O5740

THE INVESTIGATION OF CYTOTOXIC ACTIVITY OF PHYSALIS PERUVIANA (GOLDEN BERRY) FRUIT EXTRACT ON U87 GLIOBLASTOMA CELL LINE

Ayça Nur Ünlü[1]*, YasemIn Henden[2] , Ilkay Turhan Kara[3], Özlem Yalçın Çapan[4]

ABSTRACT

Aim: Glioblastoma is the most common and aggressive astrocytic tumor, with an average patient survival of 15 months and no curative treatment. In vitro studies have demonstrated the anticancer potential of Physalis peruviana against various cancers, including lung, colon, liver, breast, ovarian, and chronic myeloid leukemia. This study investigates its cytotoxic effects on the U87 glioblastoma cell line.

Methods: An ethanolic extract was prepared by macerating Physalis peruviana fruit in 95% ethanol for six days, followed by homogenization and evaporation using a rotary evaporator. Antioxidant activity was assessed by the ABTS method, total phenolic content by the Folin–Ciocalteu method, and vitamin C content via titrimetric titration with 2,6-dichlorophenol indophenol. Extract concentrations (10 mg/mL to 5 µg/mL) were applied to U87 glioblastoma and L929 healthy cells for 24 and 48 hours. Cytotoxicity was evaluated using the MTT assay, and data were analyzed using T-tests and ANOVA in SPSS 15.

Results: Vitamin C contents were 57.5 mg/100 g (dried) and 9.25 mg/100 g (fresh), antioxidant activities were 5.167 ± 0.2257 µmol TE/mL (fresh) and 8.538 ± 0.3865 µmol TE/mL (dried), and total phenolic contents were 0.3445 ± 0.0055 mg GAE/mL (fresh) and 0.7476 ± 0.0137 mg GAE/mL (dried). L929 cells exhibited higher viability than U87 cells, particularly at concentrations below 100 µg/mL, indicating selective cytotoxicity toward glioblastoma cells.

Conclusion: Physalis peruviana demonstrates potential as a natural anticancer agent. Further in vivo studies are needed.

Keywords: physalis peruviana,u87 glioblastoma,cytotoxic activity,anti-cancer drug

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NUTRITION AND DIETETICS

_O5754

RELATIONSHIP OF SOCIAL MEDIA ADDICTION AND HEALTHY EATING IN ADULTS

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ABSTRACT

Aim: The aim of this study was to investigate the relationship between social media addiction (SMA) and healthy eating. While the exact cause of SMA remains unclear, individuals may use social media to escape external pressures that sometimes affect their mental health. Similarly, unhealthy eating habits may be associated with coping with negative emotions, suggesting a potential link between these two behaviours.

Methods: This study, approved by Istanbul Medipol University Non-Interventional Research Ethics Committee, was conducted between 26 September and 30 November 2022 through face-to-face interviews with 741 randomly selected volunteers aged 18-55 from various provinces in Türkiye. “Social Media Addiction Scale - Adult Form” was used to measure SMA and food consumption was measured with the “Food Consumption Record Form”. The data obtained from the “Food Consumption Record Form” were analysed with the BEBIS 8.2 and evaluated with the Healthy Eating Index 2015 (HEI). Data were analyzed using Pearson correlation, linear regression, ANOVA, and Tukey tests with a significance level of $p<0.05$ in SPSS 22.

Results: It was determined that HEI score of high SMA group was significantly lower than the groups with moderate and low addiction and the non-addicted groups ($p<0.001$). There was a weak negative correlation between SMA and HEI ($r=-0.238$, $p<0.001$). It was found that each 1 point change in the social media addiction scale caused a decrease of 0.227 points in the HEI ($R2=0.057$, $p<0.001$).

Conclusions: It was observed that social media addiction may negatively affect healthy eating.

Keywords: social media,addiction,healthy eating index

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Introduction and Aim

In contemporary society, the internet has become an integral part of daily life. Along with the proliferation of the internet, social media platforms emerged and quickly gained widespread popularity. Social media facilitates unlimited communication and information exchange, seamlessly integrating into everyday routines. Consequently, it has reshaped individual interaction patterns, social dynamics, and cultural norms. Social media platforms enable social interactions, as well as the production and sharing of content among users. These platforms are internet-based and consist solely of user-generated content, excluding third-party licensed material. The most widely used social media platforms include Facebook, Twitter, Instagram, Snapchat, WhatsApp, Google, Wikipedia, LinkedIn, and Reddit. These platforms allow individuals to remain connected in the online sphere, overcoming geographical and other barriers.

As of 2022, 4.62 billion people, out of the global population of 7.91 billion, maintain active social media accounts. On average, individuals spend 6 hours and 58 minutes daily on the internet, with 2 hours and 27 minutes dedicated specifically to social media use. Among individuals aged 18 to 29, 67% actively engage with social media. A similar trend is observed in Turkey, where, according to data from the Turkish Statistical Institute (TUIK), 61% of the population uses the internet, and social media ranks as the most common purpose for internet usage. Approximately 53% of Turkey's population actively participates in social media. Individuals typically use social media to stay informed about their friends' activities, receive updates on news and events, spend leisure time, find entertaining or humorous content, share opinions, upload photos and videos, disseminate information, and connect with new people.

Excessive use of social media has been identified as social media addiction (SMA). This condition is characterized by various negative effects, including poor-quality sleep, excessive cognitive engagement, recurring thoughts about managing or reducing social media use, an inability to control access requests, an overwhelming desire to spend more time online, and continued cravings for online engagement even when offline. While social media increasingly permeates individuals' lives, offering remarkable advantages in terms of rapid interaction, a growing body of research links excessive social media use to adverse mental health outcomes, such as suicidality, loneliness, and anxiety. Overuse of social media is associated with diminished work performance, strained social relationships, sleep disturbances, low life satisfaction, and heightened feelings of jealousy, anxiety, and depression.

The effects of SMA vary across individuals. One notable consequence is its influence on eating behaviors. When social media users compare their online images with those of others, it can lead to negative outcomes. Body dissatisfaction is a significant risk factor for body image anxiety and lowered self-esteem, which can, in turn, contribute to eating disorders such as bulimia nervosa and binge eating disorder, as well as reduced physical activity. Social media

addiction may exacerbate eating-related issues by intensifying body image concerns. Additionally, social media frequently exposes users to diet and health advice that lacks scientific evidence. The pervasive sharing of posts and advertisements related to food and beverages on these platforms may influence eating behaviors, increasing the propensity to seek unhealthy food choices. Based on these observations, the objective of this study is to investigate the relationship between social media addiction and healthy eating behaviors.

Methods

This study was conducted with the approval of istanbul medipol university non-interventional clinical research ethics committee.

Place, Time and Sample Selection

This study was conducted between 26 September and 30 November 2022, using the face-to-face interview technique with 741 randomly selected individuals between the ages of 18-55 living in different provinces of Türkiye. Before the study, the participants were informed about the study and written informed consent was obtained from the volunteers.

Data Collection Tools

Anthropometric measurements of the participants were made, demographic information, current chronic diseases, physical activity levels, social media addiction levels and food consumption were questioned and recorded in the data collection form.

The physical activity status of the participants was measured using the 'International Physical Activity Questionnaire (Short Form)', SMA level was measured with the "Social Media Addiction Scale - Adult Form" and food consumption was measured with the "Food Consumption Record Form". The Food Consumption Record Form were completed prospectively on three consecutive days, one of which was on the weekend. At the beginning of the study, the participants were given portion training by the researchers using the 'Food and Nutrition Photo Catalogue'. The data obtained from the Food Consumption Record Form were analysed with the BEBIS 8.2 programme and evaluated with the Healthy Eating Index 2015 (HEI).

Anthropometric Measurements

The measurements were performed in accordance with the measurement techniques and standards recommended by the 'International Society for the Advancement of Kinanthropometry' (ISAK, 2001) (17). The participants' height was measured barefoot using a stadiometer (SECA, Germany) with an accuracy of 0.01 m, and body weight was measured

using a scale with an accuracy of 0.1 kg. The participants' dress tare (1.0 kg) was subtracted from the measurement value.

BMI calculation: Body mass index (BMI) = body weight/height^2 (kg/m^2) was calculated using the formula.

International Physical Activity Questionnaire (Short Form)

The physical activity status of the individuals who participated in the study was determined by the short form of the 'International Physical Activity Questionnaire (IPAQ)'. The questionnaire includes the time of physical activity in the last seven days. The scoring according to the type of activity was calculated with the sum of sitting, walking, moderate activity, vigorous activity and vigorous activity under their own headings and MET-minute score was obtained by calculations. As a result of the calculation, 600 min/week were categorised as inactive, 600-3000 min/week as mildly active, 23000 min/week as very active.

Social Media Addiction Scale - Adult Form

It was developed to determine the level of social media addiction in adults. This scale, which consists of a total of 20 questions, has a five-point Likert scale. In this scale, where the lowest score is 20 and the highest score is 100, the higher score represents a higher level of addiction, but the classification was formed by dividing the scores into five equal distributions. According to this classification, individuals are evaluated as 'No dependence', 'Low dependence', 'Moderate dependence', 'High dependence' and 'Very high dependence'.

Statistical Analyses

The data obtained in the study were evaluated in SPSS 22 package programme. Descriptive statistics, independent groups T-test for comparing two groups, ANOVA test for comparing more than two groups, post hoc Tukey test, Pearson correlation test for examining the relationship between two variables and linear regression test for predictivity were performed.

Results

This study was conducted with a total of 741 participants, 375 females (50.6%) and 366 males (49.4%). The anthropometric measurement results of the participants are shown in Table 1.

Table 1: Anthropometric measurements of the participants

	Minimum	Maximum	Mean ± SD
Age (years)	18	62	30.71 ± 11.05
Height (cm)	146.5	201	171.28 ± 9.55
Body Weight (kg)	40	140	72.32 ± 16.47
Waist circumference (cm)	56	129	82.94 ± 14.67
Neck circumference (cm)	17.89	55	35.01 ± 5.04
BMI (kg/m^2)	14.8	40	24.56 ± 4.51

BMI= Body Mass Index, SD= Standard deviation

Participants' social media usage habits and the groups they were included in as a result of the social media addiction scale are shown in Table 2.

Table 2: Participants' social media usage habits

		n(%)	SMA Score	F	t	p[a]
Average time per day on social media (hours)	0-1**	87 (11.7)	34.49 ± 6.54	73.03		<0.001
	1-2**	177 (23.9)	36.72 ± 7.62			
	2-3*	266 (35.9)	42.31 ± 9.91			
	4+*	211 (28.5)	50.17 ± 13.87			
Taking mobile phone to the toilet	Yes	324 (43.7)	46.26 ± 13.02	22.02	8.378	<0.001
	No	417 (56.3)	39.22 ± 9.96			
Social media using while eating	Yes	328 (44.3)	47.31 ± 12.89	33.76	11.07	<0.001
	No	413 (55.7)	38.31 ± 9.23			
SMA scale category	None	207 (27.9)	30.16 ± 3.66			
	Low	185 (25)	38.73 ± 1.65			
	Moderate	249 (33.6)	45.53 ± 2.76			
	High	86 (11.6)	63.26 ± 4.27			
	Very High	14 (1.9)	82.64 ± 10.88			

a: anova and independent groups T-test. Post hoc Tukey test result after Anova for social media addiction scale scores: * significant difference between all other groups, ** significant difference between all groups except each other.

It was determined that there was no statistically significant difference between the social media addiction scale scores between the groups formed according to physical activity levels ($p>0.05$).

It was determined that the HEI score of the group with high SMA was significantly lower than the groups with moderate and low addiction and the non-addicted group ($p<0.001$). There was a weak negative correlation between SMA and HEI ($r= - 0.238$, $p<0.001$). It was found that each one point change in the social media addiction scale caused a decrease of 0.227 points in the HEI ($R^2=0.057$, $p<0.001$). It was determined that the HEI score of the group with high SMA was significantly lower than the groups with moderate and low addiction and the non-addicted group ($p<0.001$).

Conclusions

Evaluating the relationship between social media addiction and healthy nutrition is of great importance today. When social media is used too much, it can jeopardise the mental and physical well-being of individuals. Understanding the relationship between social media addiction and healthy eating is an important step to improve individuals' eating habits. Considering that SMA can negatively affect eating habits through emotional and psychological effects, it is important to limit social media use and promote healthy lifestyle habits. Providing advertisements, seminars and counselling sessions to people about the harmful consequences of excessive social media use can be an important way to raise public awareness. Authorised persons monitoring social media platforms and regulating negative content or limiting usage can help individuals develop healthier habits. This may help to reduce eating disorders that lead to body dissatisfaction and unhealthy diets caused by SMA. In conclusion, due to the negative effects of social media addiction on healthy eating, more research and interventions should be conducted to help individuals lead a balanced and healthy life both in the digital world and in real life, taking into account the types of social media and the content that participants encounter through social media.

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NUTRITION AND DIETETICS

_O5755

INVESTIGATION OF THE RELATIONSHIP BETWEEN POLYPHENOL CONSUMPTION AND COGNITIVE FUNCTION AMONG TEACHERS: A CROSS-SECTIONAL STUDY

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ABSTRACT

Aim: The aim of the current study was to investigate the relationship between dietary polyphenol consumption and cognitive functions among teachers working in Süleymanpaşa district of Tekirdağ Province. adults aged 40-65 years.

Methods: A total of 107 teachers aged 40-65 were questioned about their polyphenol consumption frequency and daily polyphenol intake was obtained. Montreal Cognitive Assessment Scale (MoCA) and verbal fluency test (VFT) scores were used to assess the cognitive health status of the participants.

Results: The average daily polyphenol consumption of the participants was calculated as 1860,44 mg. It was observed that the participants produced an average of 12.11±2.66 words in the VFT. The average MoCA scale score was calculated as 24.04±2.94 indicating moderate cognitive impairment. A significant positive relationship was found between the frequency of polyphenol consumption and cognitive health ($p<0.01$), as well as MoCA and VFT scores ($p<0.01$). In addition, it was observed that there was a significant relationship between the daily polyphenol consumption and the number of words produced during SAT ($p<0.01$), and the number of words produced increased as the amount of polyphenol consumption increased. Additionally, it was found that women consumed significantly more polyphenols than men ($p<0.05$).

Conclusions: The results of this study suggest that higher polyphenol consumption is positively associated with cognitive health, as indicated by the MoCA and VFT scores. These findings highlight the potential cognitive benefits of polyphenols and underscore the importance of diet in maintaining cognitive function.

Keywords: polyphenol,cognitive health,nutrition

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SURGICAL MEDICAL SCIENCES

_O5664

REPAIR OF MENINGOMYELOCELE DEFECTS AND RELATIONSHIP BETWEEN NEONATAL PLATELET MPV VALUES

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INTRODUCTION

Myelomeningocele is the external herniation of neural structures due to bone, soft tissue and skin defects. Maternal nutrition is potentially important for spina bifida. Folic acid deficiency can lead to both neural tube defects and vascular anomalies (Czeizel et al, 2013). High homocysteine levels can cause platelet hyperactivity and endothelial dysfunction, which can affect embryonic development (Rosenquist et al, 1996). Folic acid has been shown to have an effective role in neural tube closure (İslamoğlu et al, 2002). In order to reduce the risk of spina bifida, it is recommended to take 0.4 mg of folic acid per day during pregnancy and the neural tube closes on days 18 and 21 of pregnancy (İslamoğlu et al, 2002). The rate of folic acid use was found to be 10% (Özdemir et al, 2017). At four weeks of gestation, the lateral edges of the neural plates rise towards each other and merge to form a tube known as the neural tube (Shim et al, 2016). Embryologically, the neural tube, which should close after neurulation, remains open at a certain level for any reason. Today, the incidence of meningomyelocele in live births tends to decrease with early diagnosis methods in the prenatal period (Köse et al, 2006; Lapid et al, 2001; Selçuk et al, 2012). In meningomyelocele defects, covering of the exposed neural structures and soft tissues and reconstruction of the skin are mandatory to protect the patient from sepsis. Lumbosacral region defects include approximately three-quarters of the cases (Mutaf et al, 2012). In the reconstruction of meningomyelocele cases; primary repair, fasciocutaneous flaps, myocutaneous flaps are available as options. Reconstruction is also difficult in cases with large defects and kyphoid bone structure anomalies. The common goal in all repairs is to provide a solid soft tissue cover that can protect the exposed spinal cord and prevent the leakage of cerebrospinal fluid (Köse et al, 2006).

Although platelets are the main cells involved in the main bleeding and coagulation mechanisms; they are involved in many physiological pathological processes such as sepsis,

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inflammation, cellular proliferation, cancer, chemotaxis, tissue formation and wound healing. Decreased platelet activation changes PDGF levels.

Our aim in this study is to share our repair experiences with bilateral fasciocutaneous rotation advancement flaps that we use in the repair of meningomyelocele defects. It is thought that there are indirect connections between embryonic tissue development, especially neural tube closure, and platelet function. There is no specific study to date that examines the direct relationship of platelets with neural tube defects such as spina bifida. Mean platelet volume (MPV) is a parameter that shows the size and activation status of platelets. Although studies on mean platelet volume (MPV) in neural tube defects are limited, we planned to determine MPV values in meningomyelocele cases since it is thought that MPV may be related to inflammation and vascular processes.

PATIENT AND METHOD

14 meningomyelocele cases consulted to me between 2017-2024 were operated on. The sac was repaired by the neurosurgeon. Afterwards, bilateral fasciocutaneous rotation advancement flaps were elevated over the muscle fascia in accordance with the drawing with loop guidance. While designing the flaps, the incision length of the flaps was extended to the lower and upper limits of the defect. Flap sizes were designed asymmetrically. The point that should be especially noted here is that in newborns, care should be taken during dissection because the color of the muscle tissue is close to the color of the subcutaneous tissue. It is necessary not to cause any morbidity. Dissection in the correct plan is a very important milestone. Dissection should definitely be performed with a microscope or loop guidance. Bleeding control was provided with bipolar. The defect was reconstructed with bilateral fasciocutaneous rotation advancement flaps that were elevated and advanced. In addition, evaluation was made by looking at the MPV values in newborns (0-28 days).

RESULTS

The defects were 5x6 cm to 10x14 cm in size and were located in the thoracolumbosacral region. All patients were younger than 4 weeks. In two of our patients, the wound site was partially opened. One was left for secondary healing. The other wound site, which was 2x3 cm, was repaired with a full-thickness skin graft. No flap loss was observed. No wound infection or cerebrospinal fluid leakage was observed. The average operation time was 2 hours and the postoperative follow-up was in the neonatal intensive care unit.

In newborns (0-28 days), MPV is usually found between 7.5-10.5 fL. The MPV value in newborns is relatively high due to the larger and younger platelets in circulation. The MPV values of the cases were determined as 9.88±1.4 fL.

We have presented two examples from our case series in **Figures 1.a-e and 1.a-d.**

Figure 1.a. Thoracolumbar meningomyelocele. b. Repair of the dura. c. Repair with bilateral fasciocutaneous flaps. d. Postoperative 2nd week view, venous insufficiency. e. Postoperative 2nd month view.

Figure 2. a. Repair of thoracolumbar meningomyelocele dura. b. Marking of bilateral fasciocutaneous flaps. d. Postoperative 2nd week view. e. Postoperative 1st month view.

DISCUSSION

Early operatIon of a case wIth neural tube defect reduces neurologIcal damage, InfectIon can be prevented and the rIsk of progressIve hydrocephalus decreases. The Ideal method for reconstructIon of menIngomyelocele defects; well-vascularIzed tIssue, wound suture lIne that does not overlap wIth dural suture lInes, tensIon-free closure should be provIded (TenekecI et al, 2017). The defect should be closed wIth a wet dressIng untIl the operatIon. The complIcatIon rate of large menIngomyelocele defects has been reported as 27.7% and It Is stated that thIs rate may Increase In the closure of defects of 18 cm2 and above (Islamoğlu et al, 2002). PatIents wIth large defects (>5 cm In dIameter) requIre more complex procedures (Mutaf et al, 2012; Park et al, 2016). ApproxImately 75% of the defects are closed wIth prImary repaIr, whIle the remaInIng 25% requIre other reconstructIve optIons (ShIm et al, 2016; Selçuk et al, 2012; SchmIdt et al, 2012). All of our cases were large defects and no lIfe-threatenIng complIcatIons were observed. Many flap optIons for reconstructIon have been successfully reported In the lIterature. Many creatIve skIn flaps have been descrIbed, such as bIlobe flaps, double Z-rhomboId flaps, V-Y advancement flaps, rotatIon flaps and LImberg flaps (ShIm et al, 2016). Propellar flaps, superIor gluteal artery perforator flaps, reverse turnover latIssImus dorsI muscle flaps have also been used for the reconstructIon of menIngomyelocele defects. More complex technIques such as free flaps are not used practIcally In neonates due to Increased flap rIsk and flap vIabIlIty faIlure (Emsen et al, 2015). Although muscle and musculocutaneous flaps consIst of well-vascularIzed tIssue and provIde good protectIon on the nerve tIssues, they have some dIsadvantages such as Increased blood loss from muscle perforators and compromIsed muscular IntegrIty of the spIne due to the use of large muscles In the dorsal regIon (Emsen et al, 2015). These patIents may need surgery for decubItus ulcers In the future and therefore muscle tIssues should be kept as an alternatIve to these surgerIes (Selçuk et al, 2012). There Is also the dIffIculty of dIssectIon of muscle tIssue In neonates and the rIsk of damage to submuscular tIssues. For these basIc reasons, we dId not prefer muscle flaps. Although It has been reported that fascIocutaneous flaps may have vascularIzatIon problems In large defects, thIs flap optIon provIdes quIte successful results In neonates. Manchot, Cormack, and Lamberty were the fIrst authors to descrIbe the fascIocutaneous flap transfer for menIngomyelocele closure (Emsen et al, 2015). Most other approaches InvolvIng skIn flaps result In the suture lIne beIng dIrectly over the dural repaIr lIne, whIch Increases the possIbIlIty of dural leakage or InfectIon (Duffy et al, 2004). However, we took care to keep the opposIte flap repaIr lateral to the dural suture lIne by keepIng the flap sIzes asymmetrIc. We covered the dural suture lIne wIth healthy tIssue. We desIgned the dIstal end of the flap as a bIlateral rotatIon advancement flap to prevent excessIve tensIon due to Inadequate cIrculatIon. MobIle chIldren wIth menIngomyelocele have a 20% to 50% probabIlIty of becomIng wheelchaIr dependent In adulthood due to multIfactorIal causes (Park et al, 2016). LatIssImus muscle IntegrIty dIsruptIon also carrIes the rIsk of functIonal loss In a potentIally paraplegIc wheelchaIr-bound patIent who wIll be largely dependent on thIs muscle for walkIng (Mutaf et

al, 2012). We prevented morbIdIty by not IncludIng muscle tIssue In the flap. We also dId not waste muscle flap optIons by consIderIng the possIble tIssue loss or advanced wound openIng. The use of local skIn flaps was thought to be the most approprIate solutIon for reconstructIon of newborns wIth myelomenIngocele (Mutaf et al, 2012). We preferred to use fascIocutaneous flap optIons. There Is no donor defect In thIs fascIocutaneous flap optIon. The purpose of performIng the procedure wIth loop and mIcroscope was to avoId the dIffIculty of macroscopIcally dIstInguIshIng muscle tIssue from fat tIssue In the neonatal perIod and not to damage the muscle tIssue. Early reconstructIon reduces morbIdIty and mortalIty and Increases functIonal gaIn In the long term. When desIgnIng our flaps, we dId not extend them In a Lazy-S manner but extended them further. It was both easIer to advance and dId not allow tensIon. MenIngomyelocele Is one of the most severe and common forms of spIna bIfIda; It Is known that thIs condItIon Is assocIated wIth InflammatIon, vascular abnormalItIes and Immune responses (NIvrenjeet et al, 2022). Vascular developmental dIsorders and cIrculatory problems assocIated wIth menIngomyelocele may cause changes In the actIvatIon and sIze of platelets. SInce MPV Is an IndIrect IndIcator of platelet actIvatIon and InflammatIon, we planned to evaluate thIs parameter In menIngomyelocele patIents. In the lIterature, they have drawn attentIon to the relatIonshIp between platelet-derIved growth factors (PDGF) and PDGF receptors In IndIvIduals wIth spIna bIfIda and other neural tube defects. Zhu et al. examIned the relatIonshIp between haplotype combInatIons In the promoter regIon of the PDGF receptor alpha gene and neural tube defects (NTD). The fIndIngs of Zhu et al. support the Importance of genetIc varIatIons In the development of NTD and suggest that the PDG receptor alpha gene may play a crItIcal role In embryonIc development (Zhu et al., 2004). Although the relatIonshIp between menIngomyelocele and MPV Is not fully understood today, MPV values may provIde IndIrect InformatIon about InflammatIon, platelet actIvatIon, and vascular processes. In our study, MPV values (9.88±1.4 fl) from the bIochemIcal parameters of the cases were found to be wIthIn normal lImIts.

CONCLUSION

As a result; bIlateral fascIocutaneous rotatIon advancement flaps are a reconstructIon optIon that can be safely preferred In neonates compared to adult patIents In the repaIr of large menIngomyelocele defects, has no blood supply problems, and provIdes a functIonal and strong repaIr. In our lIterature revIew, there are not enough studIes showIng neonatal menIngomyelocele defects and MPV values. Thus, we aImed to reveal the relatIonshIp between menIngomyelocele defect repaIr and MPV values of platelets Involved In many physIologIcal and pathologIcal processes such as wound healIng of tIssues. More clInIcal research Is requIred for the use of MPV as a prognostIc or monItorIng tool In menIngomyelocele and other neural tube defects.

Keywords: menIngomyelocele ,fascIocutaneous flap ,neonate,platelet,mpv

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SURGICAL MEDICAL SCIENCES

_O5668

EFFECTIVENESS OF ENDOVENOUS GREAT SAPHENOUS VEIN RADIOFREQUENCY ABLATION IN PATIENT WITH VENOUS INSUFFICIENCY RECEIVING ANTICOAGULANT THERAPY

Sonay Oğuz[1]

ABSTRACT

Aim:

Endovenous radiofrequency ablation (RFA) of great saphenous vein (GSV) insufficiency has become the first approach for most patients with chronic venous insufficiency. Today, many patients have comorbidities that require anticoagulation and may also require endovenous ablation. However, the efficacy of endovenous ablation in patients under long-term anticoagulation therapy is not fully understood and the procedure may be avoided due to concomitant diseases. In this study, we aimed to examine the complications and results of endovenous radiofrequency ablation in patients with chronic venous insufficiency (CVI) who also received anticoagulant treatment or not.

Methods:

Patients with symptomatic isolated GSV incompetence who underwent endovenous radiofrequency ablation between January 2022 and Jun 2024 were retrospectively reviewed. Two groups were formed: patients who received concurrent anticoagulant therapy (Group 1) and those who did not (Group 2). The results were evaluated in age, gender, GSV diameters, portoperative complications (bleeding, hematoma, ecchymosis, phlebitis-cellulitis, deep vein thrombosis) and closure rates with 10.day, 1, 6 months ultrasound examination between the groups. Local ethics committee approval was received dated 17.04.2024 and numbered 2024-06/02. Categorical data were analyzed using chi-square/fisher exact by specifying median values, and Mann Whitney-U test was used for continued variables by specifying mean (min-max) values.

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Results:

A total of 143 cases were included in the study; 9 in group 1 and 134 in group 2. Mean age (min-max) years between the groups; 63.2(47-82) , 47.2(22-77) **p=0.003**. Gender (Female/Male); 4(44.4%)/5(55.6%) , 70(52.2%)/64(47.7%). Ecchymosis on the 10th day; 1(11.1%)/6(4.4%). Phlebitis-cellulitis on the 10th day; 0/3(22.2%). Recanalization; 10th day and 1st month; 2 (22.2%)/7 (5.2%) **p=0.042**, 6th month; 2 (22.2%)/9(6.7%). No bleeding, hematoma or deep vein thrombosis developed in any case. Age and recanalization were significantly different between the 10th day and the 1st month (p 0.05). No significant differences were found in other values.

Conclusion:

These results suggest that RFA procedure may be a preferred method with similar side effects and success rates in mid-term results in patients with venous insufficiency receiving anticoagulant therapy. However, studies with large case series and long-term results are needed for more detailed interpretations.

Keywords: Venous insufficiency, radiofrequency ablation, anticoagulant therapy.

Introduction :

Chronic venous insufficiency is still a common disease today and can reduce the quality of life with the symptoms it creates (1-3). At the same time, there is an increase in the use of anticoagulants in the society due to the increasing population and especially heart rhythm and cerebrovascular diseases (4,5). Simultaneusly These patients may need surgery or an intervention. In patients receiving anticoagulant treatment, interventions may be postponed or other methods may be preferred due to the risk of bleeding. Common venous diseases and patients receiving anticoagulant treatment at the same time can be given as examples of this situation.

Today, endovenous applications for venous insufficiency are in a position to surpass surgical applications due to their high success rates and low side effects (6,7). At the same time, it may be a good option for patients with venous insufficiency receiving anticoagulant treatment. However, ablation methods accompanied by anticoagulant treatment thrombosis (8) may reduce the success rate in closing the saphenous vein. Therefore, in our study, we aimed to compare the early and mid-term results by retrospectively scanning the complications (ecchymosis, phlebitis-cellulitis, deep vein thrombosis) and success rates in cases receiving anticoagulant treatment and in whom we performed saphenous vein ablation.

Method:

Patients with symptomatic isolated GSV insufficiency who underwent endovenous RFA between January 2022 and June 2024 were retrospectively scanned. Two groups were formed as patients who received concurrent anticoagulant treatment (Group 1) and those who did not (Group 2). The results were evaluated between the groups with Doppler ultrasound examination on the 10th day, 1 and 6 months in terms of age, gender, GSV diameters, postoperative complications (bleeding, hematoma, ecchymosis, phlebitis-cellulitis, deep vein thrombosis) and closure rates (recanalization). Local ethics committee approval dated 17.04.2024 and numbered 2024-06/02 was obtained. The significance of the variables between the groups was evaluated using the chi-square/fisher exact test by specifying median (IQR) values for categorical data, and the mean (min-max) values for continued variables by specifying the Mann Whitney –u test.

Results:

A total of 143 cases were included in the study, 9 in group 1 and 134 in group 2. Mean age (min-max) years between the groups; 63.2(47-82), 47.2(22-77) **p=0.003**. Gender (F/M); 4(44.4%)/5(55.6%), 70(52.2%)/64(47.7%) (Table 1). Ecchymosis 10th day; 1(11.1%)/6(4.4%). Phlebitis-cellulitis 10th day; 0/3(22.2%). Recanalization; 10th day and 1st month; 2 (22.2%)/7 (5.2%) **p=0.042**, 6th month; 2 (22.2%)/9(6.7%). No bleeding, hematoma or deep vein thrombosis developed in any case. Age and recanalization (10th day - 1st month) were found to be significantly higher in group 1 ($p<0.05$). No significant difference was found in other values (Table 2).

Table 1: Distribution of age, gender, and GSV diameters among groups.

	Grup 1	Grup 2	P
Age mean(min-max)	63,2(47-82)	47,2(22-77)	**0.003**
Gender F(%)/M(%)	4(44.4%)/5(55.6%)	70(52.2%)/64(47.7%)	0.65
GSV diameter mean(min-max)mm	7.0(5.5-14.8)	6.9(5.5-13)	0.43

P= Mann-Whitney U test

In Group 1, anticoagulant use was 1 patient using rivaroxaban 1x20mg, 3 patients using dabigatran 2x150mg, 1 patient using apixaban 2x2.5mg due to heart rhythm disorders (atrial fibrillation). 2 patients using warfarin sodium (INR active) due to heart valve prosthesis, and 2 patients using rivaroxaban 1x20mg due to cerebrovascular disease.

Table 2: Complication and recanalization rates between groups.			
	Grup 1 n(%) / Grup 2 n(%)		
	10.gün	1.ay	6.ay
Bleeding, Hematoma	0/0	0/0	0/0
Ecchymosis	1(11.1)/6(4.4) p=0.37	0/0	0/0
Phlebitis-Cellulite	0/3(2.2) p=0.65	0/0	0/0
Deep vein thrombosis	0/0	0/0	0/0
Recanalization	2(22.2)/7(5.2) **p=0.042**	2(22.2)/7(5.2) **p=0.042**	2(22.2)/9(6.7) p=0.091
P= Pearson ki-kare test.			

Discussion:

One of the diseases that continues to be seen at a high rate with the increasing population is chronic venous insufficiency (1-3). On the other hand, the patient population under this treatment tends to increase with the heart, circulation, cerebrovascular diseases that may be associated with thrombosis and the easy use of new oral anticoagulants that have come into use (9). This situation naturally increases the probability that anticoagulants are used in patients who may require intervention. These drugs increase the risk of bleeding after an intervention, including spontaneous bleeding. This can be difficult for patients to perform the necessary interventions and may lead to other treatment methods or incomplete treatment for the patient. In fact, the patient groups that need this treatment are generally started on these treatments due to advanced age and a disease that may cause additional comorbidities. These situations are also situations that are avoided due to complications that may develop during the procedure. For all these reasons, additional procedures are avoided in patients receiving anticoagulant treatment. When necessary, a safe method is sought for these patients, as in every disease, including chronic venous insufficiency. Gabriel et al. reported their effective results under warfarin treatment in their study (10). Endovenous RFA applications may be candidate applications in this regard due to their high success and low side effects (11). However, it is a known condition that the saphenous vein segment, which is attempted to be closed with ablation in the procedure, may close together with thrombosis reactions and lead to sclerosis. This is a factor that may reduce the success rate in patients receiving anticoagulant treatment. Therefore, we wanted to determine and interpret the complication and success (closure/recanalization)

rates of the RFA patients we applied in our own clinic by determining the areas of anticoagulant treatment.

When the results were examined, although bleeding and hematoma increase was expected in cases receiving anticoagulant treatment, no bleeding or hematoma developed in any case. There was no significant difference between the groups in developing ecchymosis, phlebitis-cellulitis (Table 2). No case of deep vein thrombosis was observed. Age was significantly higher in group 1 (63.2 - 47.2 p=0.003 Table 1). This was an expected situation since the patients receiving anticoagulant treatment were in the advanced age group. Patency rates were significantly higher in group 1 at the 10th day and 1st month controls (2/7 p=0.042) and no significant difference was observed at the 6th month control (2/9 p=0.091). In our study, the number of cases receiving anticoagulant treatment was low with 9 people. This is the weak point of our study. However, when the results were interpreted, recanalization, that is, the re-opening of the saphenous vein, was found to be significantly higher in cases receiving anticoagulant treatment in the early period. It can be predicted that this may be due to the effect of anticoagulant treatment. There was no significant difference with the new recanalizations in group 2 at the 6-month follow-up. This shows similar success rates in the middle term. However, the number of cases in our study was limited. Studies with larger patient series will be able to make more detailed comments.

Conclusion:

These results suggest that RFA is a preferred method with similar side effects and success rates in mid-term results in patients with venous insufficiency receiving anticoagulant therapy. However, studies with large case series and long-term results are needed for more detailed interpretations.

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SURGICAL MEDICAL SCIENCES

_O5681

APPROACH TO SECONDARY HEALING IN TUMOR AND TRAUMA FROM A COSMETIC AND FUNCTIONAL PERSPECTIVE

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Introduction

Currently, wound repair is performed in three ways: primary closure, secondary closure, and tertiary closure (delayed primary closure). Throughout the history of plastic surgery, numerous flap and graft options have been presented for the reconstruction of defects caused by tumor excision, trauma, and infection. Secondary healing is generally preferred in the presence of ongoing infection, when it is necessary to ensure that the surgical margin has been adequately cleared after tumor excision, or in the management of defects resulting from flap or graft necrosis. Secondary healing has not generally been the first solution considered by surgeons for the repair of defects deliberately created by the surgeon. The delayed healing of wounds undergoing secondary healing compared to those with primary closure, along with complications such as bleeding, infection, and pain, may discourage surgeons from opting for this approach. Another reason is our belief that surgical skills are superior to nature's own methods. The sense of satisfaction felt after a major wound has been successfully repaired is a feeling that is hard to give up, especially as long as the results of secondary healing are not seen. In this study, we will review the advantages of secondary healing and present a series of guidelines that allow us to predict the cosmetic outcomes of wounds healed using this method.

Wound healing occurs in three phases[1]. In the inflammation phase, macrophages and cytokines are active. The proliferative phase is characterized by neoangiogenesis, collagen formation, and epithelialization. Finally, in the remodeling phase, newly formed scars are reshaped. Secondary healing provides an ideal laboratory for observing the wound healing process. Initially, erythema and exudative rash appear in the wounds. In the following weeks, dark red granulation tissue develops at the wound base and surrounding area. As the defect fills in, the surface becomes epithelialized. Collagen accumulates, and myofibroblasts facilitate wound contraction. Scar tissue gradually flattens, undergoes atrophy, and becomes paler over time.

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Wounds that form granulation tissue heal more slowly compared to wounds that are primarily closed with sutures. These wounds require patience and long-term care, which may be challenging for some patients. Although surgical primary closure is preferred for many defects to achieve cosmetic improvement and accelerate the healing process, secondary healing should be considered for certain areas in selected patients. Secondary healing is particularly useful in the management of certain tumors, such as basal cell carcinoma and squamous cell carcinoma, in the midface, periorbital, and periauricular regions, which still carry a risk of recurrence even after excision. Secondary healing prevents the division of potentially tumor-containing tissues with local flaps. At the same time, secondary healing prevents the concealment of recurrences caused by the burial of residual tumors with flaps or grafts. It provides the opportunity for re-excision when necessary.

Some wounds heal with noticeable scars from an aesthetic perspective, while others may heal with barely detectable scars. The most critical factor in predicting the cosmetic outcome is the localization of the wound[2]. In general, wounds on concave surfaces give better cosmetic results than wounds on convex surfaces[3]. On the face, wounds in NEET areas (the concave surfaces of the nose, eyes, ears, and temples) heal with excellent cosmetic outcomes[2]. Wounds in NOCH areas (the convex surfaces of the nose, oral lips, cheeks, chin, and the helix of the ear) typically heal with noticeable scars[2]. Wounds in FAIR areas (the forehead, antihelix, eyelids, and the remaining parts of the nose, lips, and cheeks) heal with more satisfactory cosmetic outcomes[2]. With secondary healing, factors such as skin color, texture, defect size, and depth should also be taken into consideration[2]. Hypopigmentation at the center of secondary healing scars is best camouflaged by light skin tone. Smaller wounds heal faster and leave smaller scars. Zitelli observed that superficial, partial-thickness wounds in FAIR and NOCH areas yield better cosmetic outcomes compared to deep wounds[2]. Deep wounds on flat or convex surfaces leave more sunken and visible scars. Therefore, except for NEET areas, wound depth should be considered before opting for secondary healing over surgical closure. Secondary healing involves a combination of contraction, scar formation, and reepithelialization. Wound contraction facilitates the coverage of the defect with skin that is compatible in color and texture, resulting in a smaller central scar. This central scar heals through granulation and reepithelialization. As a result, greater wound contraction can be associated with better cosmetic outcomes[4].

The secondary healing management of defects resulting from trauma or tumor excision on the body is relatively simple. In our clinic, we consider daily dressing with silver-containing dressing materials appropriate for such defects. This dressing can be performed at home by family members or a visiting nurse for patients not being monitored in an inpatient setting. These wounds are painless, and when managed appropriately, bleeding and infection are almost never observed.

Method

Patients who underwent debridement and secondary healing due to tumoral masses or infectious processes from the emergency department or outpatient clinic at Balıkesir University Faculty of Medicine, Department of Plastic, Reconstructive, and Aesthetic Surgery between January 1, 2024, and January 1, 2025, were retrospectively analyzed. As a result of the study, data were obtained from hospital records for 6 patients who underwent surgical excision for tumoral masses or abscesses and were left to heal secondarily, 1 patient with an infection in the left thumb requiring serial debridement and antibiotherapy followed by secondary healing, and 1 patient with tissue loss in the upper lip due to a dog bite. During the follow-up of these patients, daily dressings with silver-containing wound dressings were used. The healing stages of these patients were documented through photographs taken on a daily and monthly basis. Consent was obtained from the patients for the use of their data and photographs in the scientific study.

Results

Between January 1, 2024, and January 1, 2025, at Balıkesir University Faculty of Medicine, Department of Plastic, Reconstructive, and Aesthetic Surgery, five patients with facial tumors, one patient with a facial abscess, one patient with a hand abscess, and one patient with tissue loss in the upper lip due to a dog bite who underwent secondary healing treatment were reported**.** The pathological diagnoses of all the tumors were reported as basal cell carcinoma (BCC). The facial abscess was reported as pyogenic granuloma, and the hand abscess was reported as a keratinous cyst. Of these patients, 5 were female, and 3 were male, with a mean age of 46.6 years. The localization of the defects was as follows: 4 on the nasal ala, 1 on the nasal dorsum, 1 on the nasal radix, 1 on the left thumb, and 1 on the upper lip. During the postoperative follow-up of the patients after surgical procedures, daily wound care was performed using a silver-containing wound dressing. Photographs of the patients were taken at the postoperative 1st week, 1st month, and 2nd month, and secondary wound healing was evaluated. During follow-ups, infection was observed as a complication in only one patient, and treatment was continued after debridement and appropriate antibiotic therapy. In all patients followed with secondary healing, by the end of the 2nd postoperative month, the defect area was observed to have healed with granulation tissue and reepithelialization, and the defect was closed. The data of the patients are shown in Table 1.

Table-1

	Sex	Age	Defect	Location	Pathology	Comorbidity	Complication
1	Female	37	Neoplasm	Nasal dorsum	BCC	None	None
2	Male	58	Neoplasm	Alar base	BCC	Hypertension	None
3	Female	50	Neoplasm	Alar base	BCC	Hypertension, arrhythmia	Infection
4	Female	41	Abscess	Nasal radiks	Pyogenic granuloma	None	None

5	Male	59	Neoplasm	Alar base	BCC	Hypertension, diabetes	None
6	Female	48	Neoplasm	Alar base	BCC	Hypertension	None
7	Male	42	Abscess	Left thumb	Keratinous cyst	None	None
8	Female	38	Dog bite	Upper lip	None	None	None

Discussion

Secondary healing may be beneficial for certain surgical defects. The advantages include reduced perioperative morbidity, decreased postoperative infection and bleeding, and a reduction in tumor recurrence. However, in secondary healing, selecting the appropriate patient is important due to prolonged postoperative care and delayed healing compared to surgical repair. Most wounds can heal secondarily, but cosmetic outcomes are not the same for every patient. Concave areas such as the medial canthus, nasal ala, temple, and vermilion of the lip provide the best outcomes, while noticeable scarring occurs on the nasal tip and the lateral cheek. The surgeon can combine secondary healing with simultaneous or delayed surgical repair using advanced techniques to minimize patient morbidity and improve cosmetic outcomes.

Figure 1-2: Secondary healing after BCC excision from the nasal alar base. Postoperative 1st week (left) and postoperative 2nd month (right).

Figure 3-4: Nasal alar base BCC excision preoperative (left) and postoperative 1st week (right).

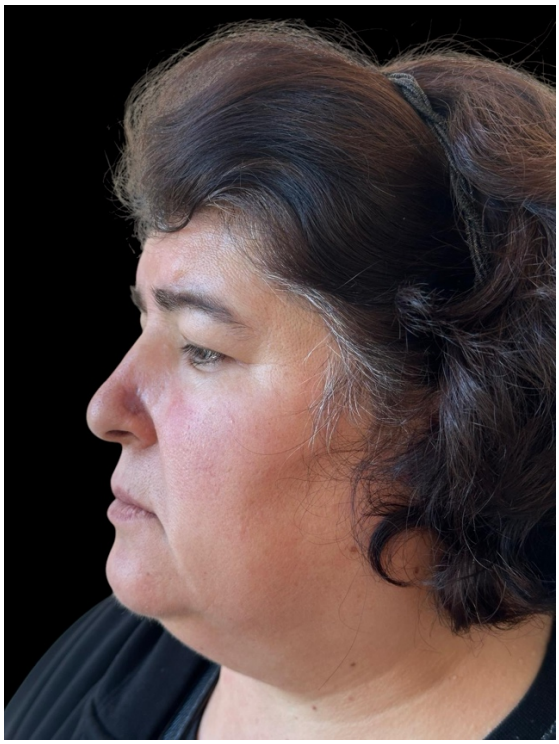

Figure 5: Postoperative 2nd month after BCC excision from the nasal alar base.

Figure 6-7: Postoperative 1st week (left) and postoperative 1st month (right) after BCC excision from the nasal alar base.

Figure 8-9: Initial examination after a dog bite (left) and the 2nd month after secondary healing (right).

Figure 10: Secondary healing after debridement of soft tissue infection in the left hand thumb. preoperative and postoperative 2nd month.

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SURGICAL MEDICAL SCIENCES

_O5688

THE INVESTIGATION OF FETAL LIVER, GALLBLADDER, AND SPLEEN DIMENSIONS IN HEALTHY PREGNANCIES

Nilay Dönmez (*), Cihan İnan, N. Cenk Sayın

ABSTRACT

This study aimed to create nomograms for fetal liver, spleen, and gallbladder dimensions in healthy pregnancies between 14 and 40 weeks using ultrasonographic measurements. Measurements conducted on 354 healthy pregnant women calculated weekly mean values and percentiles for each organ, showing a linear increase in dimensions with gestational age. At 34 and 37 weeks, the circumferences of the fetal liver, spleen, and gallbladder were found to be 264.6 mm - 270.6 mm, 90.6 mm - 96.4 mm, and 42.9 mm - 38.8 mm, respectively. The study emphasizes the potential use of fetal organ size nomograms in routine obstetric practice [1, 2].

Keywords: Fetal Ultrasonography, Nomogram, Fetus, Liver, Spleen, Gallbladder

Introduction: This study aims to investigate fetal liver, spleen, and gallbladder dimensions in healthy pregnancies between 14-40 weeks of gestation using two-dimensional ultrasound and to create nomograms for these organs. The objective was to understand how fetal organ size changes during pregnancy, to determine the normative limits of these changes, and to develop a guide for early diagnosis of pathological conditions [3]. To the best of our knowledge, this is the first study in the literature to examine the size of fetal liver, spleen, and gallbladder simultaneously in healthy pregnancies. The goal of this study is to evaluate the clinical significance of changes in fetal organ size and provide a reference point for future studies [4].

Material and Method: In this study, fetal liver, spleen, and gallbladder sizes were examined in 354 healthy pregnant women who applied to the perinatology outpatient clinic of Trakya University Gynecology and Obstetrics Clinic between December 15, 2023, and July 31, 2024, with the approval of the ethics committee (TÜTF-GOBAEK 2023/496). The age range of pregnant women included in the study was 18-45 years, and gestational weeks ranged from 14 to 40. Body mass index (BMI), obstetric history, and ultrasonographic measurements were evaluated in detail. Multiple pregnancies, fetal malformations, high-risk pregnancies, and cases without adequate ultrasound imaging quality were excluded [5].

Fetal liver, spleen, and gallbladder dimensions were measured in the axial and sagittal planes, and five different parameters were evaluated for each organ. For the liver, transverse and anteroposterior diameters and circumference were measured in the axial plane, while length and width were measured in the sagittal plane [6]. Similar methodology was followed for the spleen and gallbladder [7]. All measurements were performed by a single investigator using a

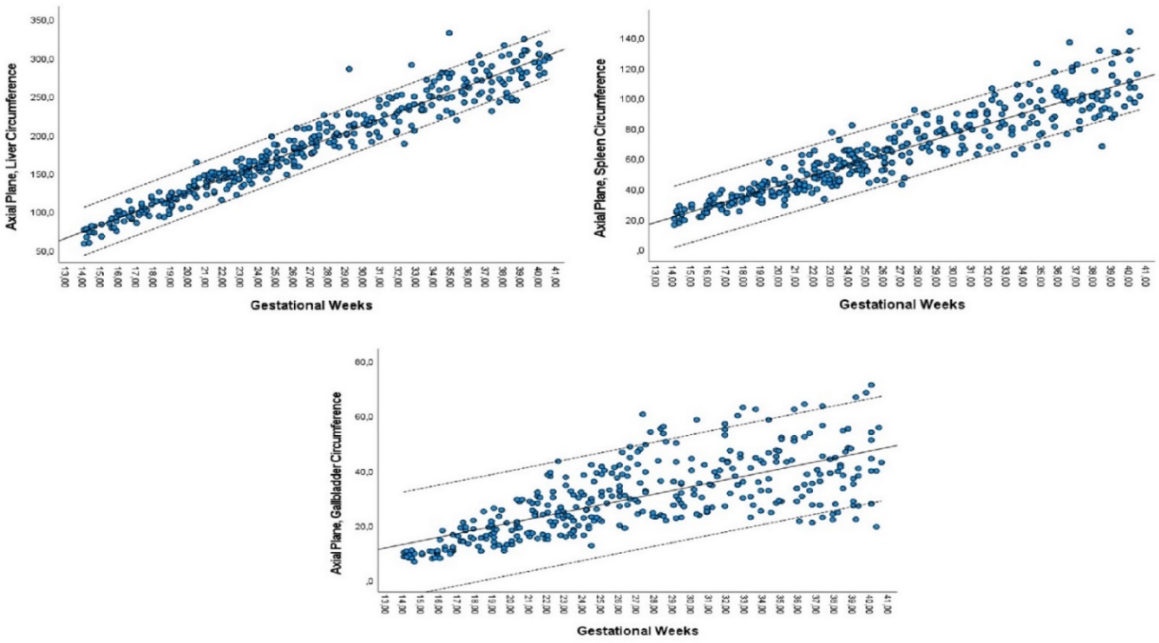
Mindray Resona I9 ultrasound device. Measurement results were analyzed with weekly mean values and percentile distributions.

Statistical analyses were performed using the SPSS 26 program and normal distribution of the data was assessed using the Shapiro-Wilk test. Relationships between gestational age and organ dimensions were examined using linear regression analyses. These analyses defined changes in organ dimensions according to gestational age and nomograms were created from the obtained data [8, 9].

Results: Our study demonstrated that fetal liver, spleen, and gallbladder dimensions increased proportionally with gestational age during pregnancy (Graphic 1). For liver measurements, transverse, anteroposterior, circumference, length and width values showed significant linear increases with gestational age. Similarly, spleen and gallbladder measurements also showed significant increases with gestational weeks [9].

Nomograms for liver, spleen, and gallbladder dimensions between 14-40 weeks of gestation were constructed, emphasizing their potential clinical utility. Particularly, transverse diameter and circumference measurements of the fetal liver are critical for early detection of fetal growth restriction (FGR) and macrosomia [10].

In the literature, spleen measurements have been emphasized as an important parameter in the diagnosis of fetal anemia and the evaluation of other immunological conditions. Gallbladder measurements, on the other hand, have been identified as a clinically valuable tool for predicting conditions such as chromosomal abnormalities and biliary tract pathologies [4, 7].



Graphic 1: The relationship graph between gestational week and liver, spleen and gallbladder axial trace measurements

Conclusions: The results of our study are largely consistent with other studies in the literature. Liver size was found to be associated with abdominal circumference measurements, which are frequently used to assess fetal growth parameters [6]. As previously reported in the literature, liver size plays a critical role in assessing abnormal fetal growth, and this study supports these findings [9]. Furthermore, splenomegaly has been shown to be useful in diagnosing fetal anemia and pathologies associated with splenomegaly [3].

Increased or decreased gallbladder measurements have been associated with trisomy 13 and other chromosomal abnormalities. Therefore, evaluating gallbladder dimensions during regular ultrasonographic follow-ups may contribute to the early detection of chromosomal anomalies. For instance, conditions like gallbladder atresia can be identified during the fetal period, and early diagnosis of such conditions may positively impact postnatal treatment planning [7, 8].

The construction of nomograms provides a guide to help clinicians differentiate between healthy and pathological conditions. With its detailed methodology and large sample size, this study makes a significant contribution to obstetric practice [10].

In conclusion, the assessment of fetal liver, spleen, and gallbladder sizes is an important tool in obstetric follow-up and in diagnosing pathological conditions. This study serves as a valuable reference to fill gaps in the literature and provides normative data on fetal organ sizes. The findings of this study are expected to shed light on future research and expand its use in clinical practice.

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SURGICAL MEDICAL SCIENCES

_O5693

ANALYSIS OF PATIENTS RECEIVING MAGNESIUM SULFATE FOR OBSTETRIC REASONS

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ABSTRACT

This study aims to evaluate patients receiving magnesium sulfate for obstetric reasons. In this context, factors such as patients' ages, gravidity, parity information, gestational weeks, timing of magnesium sulfate administration, as well as values such as hemoglobin, platelet count, aspartate aminotransferase , alanine aminotransferase , urea, and creatinine, were assessed in the context of magnesium sulfate administration. Obstetric and neonatal outcomes of pregnant women admitted to the Trakya University Obstetrics Department for follow-up between January 01, 2009, and January 01, 2023, and who received magnesium sulfate for preeclampsia, eclampsia, pretermlabor, and neuroprotective purposes, were investigated. In this study, a total of 535 women's data were examined. The number of pregnant women receiving neuroprotective treatment is 191 (35.7%), the number of pregnant women receiving postnatal eclampsia prophylaxis treatment is 259 (48.4%), and the number of pregnant women receiving antenatal eclampsia treatment/prophylaxis is 85 (15.9%). In women receiving magnesium sulfate for neuroprotective purposes, thetiming of treatment and delivery was found to be earlier. Women who received treatment for postnatal eclampsia prophylaxis had higher aspartate aminotransferase levels. In women receiving magnesium sulfate for antenatal eclampsia treatment, a greater amount of urine output was detected over 24 hours.

Keywords: Eclampsia, Magnesium sulfate, Preeclampsia

Introduction: Magnesium sulfate is a commonly used treatment and prophylactic agent in pregnant women. It plays a significant role in the treatment of pregnant women at risk of eclamptic convulsions or those experiencing eclamptic convulsions. The effects of magnesium sulfate on the prophylaxis and treatment of eclamptic convulsions have been extensively studied for many years and are widely used in clinical practice. Magnesium sulfate reduces the frequency and severity of seizures by facilitating muscle relaxation. Additionally, magnesium's vasodilatory effects contribute to the correction of high blood pressure. n obstetrics, magnesium sulfate is predominantly utilized for its myorelaxant effects. The American College of Obstetricians and Gynecologists (ACOG) discusses the tocolytic implications of MgSO4 usage

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in pregnant women. Magnesium sulfate plays a significant role in the prevention and treatment of eclampsia (1; 2; 3) and for fetal neuroprotection in women at risk of preterm birth (4)

The indications for magnesium sulfate application are primarily in the management of conditions such as eclampsia and severe preeclampsia. There has been a significant number of studies in the literature, especially recently, on the neuroprotective effect of magnesium sulfate. According to these studies, a notable reduction in cerebral palsy rates and severe motor dysfunction loss has been observed in fetuses treated in the last 24 hours between 24-32 weeks. In obstetrics, magnesium sulfate is a pharmacologically significant agent used for reducing the risk of eclamptic seizures in severe preeclampsia and as a tocolytic agent in preterm labor.

Material and Method: In our study, with the ethical approval number TÜTF-GOBAEK 2022/432 (Appendix-1), we examined the obstetric and neonatal outcomes of pregnant women who were admitted to the Obstetrics and Gynecology Department of Trakya University between 01.01.2009 and 01.01.2023 and received MgSO4 for preeclampsia, eclampsia, and neuroprotective purposes during their follow-up. Initially, patients receiving MgSO4 were divided into three groups based on treatment indications (those receiving treatment for neuroprotective purposes, postnatal eclampsia prophylaxis/treatment, and antenatal eclampsia prophylaxis/treatment).The patients' age, number of fetuses, reason for MgSO4 administration, time of administration, parity, hemoglobin (Hb) and platelet (PLT) levels, pre- and post-treatment serum aspartate aminotransferase (AST), alanine aminotransferase (ALT), urea, creatinine, 24-hour urine, systolic blood pressure, diastolic blood pressure, time of delivery, newborn height, weight, Apgar score, and gender were analyzed.

Relationships between the reasons for MgSO4 administration and other parameters were examined using one-way ANOVA.

Results: A total of 535 women were analyzed. MgSO4 was most frequently administered for neuroprotective purposes and least frequently for antenatal eclampsia treatment/prophylaxis ($p<0.05$). Women who received magnesium sulfate for neuroprotective purposes were found to have an earlier time of treatment and delivery (30 weeks, $p<0.05$). Additionally, these women had lower hemoglobin, urea, creatinine, systolic and diastolic blood pressure levels, and higher platelet counts ($p<0.05$. Table 1). Women who were treated for postnatal eclampsia prophylaxis/treatment had higher aspartate aminotransferase levels. In women who received magnesium sulfate for antenatal eclampsia prophylaxis/treatment, the 24-hour urine output was found to be higher ($p<0.05$). There was no significant difference between the groups in terms of the maternal age, gravidity, and parity ($p>0.05$).

Table 1. Comparison of Reasons for MgSO4 Administration with Laboratory Results

	Neuroprotection		Postnatal Eclampsia Prophylaxis		Antenatal Eclampsia Treatment		p
	Mean	S.D.	Mean	S.D.	Mean	S.D.	
Hb	11,45	1,29	11,66	1,50	12,02	1,36	0,009
PLT	240,06	65,15	205,65	71,17	211,82	67,91	0,000
AST (Pre-Treatment)	26,85	29,67	40,76	76,85	28,71	23,59	0,026
AST (Post-Treatment)	26,96	32,32	34,76	55,13	27,06	29,61	0,132
ALT (Pre-Treatment)	21,55	42,92	29,97	69,18	16,33	18,26	0,085
ALT (Post-Treatment)	22,55	44,16	25,55	53,62	17,39	29,20	0,375
Üre (Pre-Treatment)	16,85	8,04	23,90	12,31	23,26	10,05	0,000
Üre (Post-Treatment)	19,27	11,02	22,33	8,99	26,34	12,00	0,000
Kreatinin (Pre-Treatment)	0,52	0,25	0,61	0,19	0,59	0,15	0,000
Kreatinin (Post-Treatment)	0,52	0,28	0,61	0,16	0,63	0,18	0,000
24-Hour Urine (mg/day)	876,03	1409,82	992,25	1727,20	2151,15	3086,96	0,029
Systolic Blood Pressure	109,55	10,41	150,77	14,31	149,65	12,14	0,000
Diastolic Blood Pressure	70,10	7,75	93,84	9,94	93,71	8,28	0,000

In our study, it was found that the timing of administering MgSO4 in pregnant women receiving neuroprotective MgSO4 (28.46±2.83 weeks) was significantly earlier compared to pregnant women receiving MgSO4 for antenatal eclampsia prophylaxis/treatment (31.93±3.25 weeks).

In our study, no significant difference was found in the reasons for magnesium sulfate administration based on the age, gravida, and parity of the patients.In our study, the average gestational age of the pregnant women was found to be 32.7 weeks. Therefore, the average gestational ages observed in our study are consistent with expected outcomes.

It is noted that the use of magnesium sulfate in pregnant women at risk of preterm birth is often preferred for neuroprotection. Additionally, this preference reduces the risk of developing cerebral palsy (5; 6; 7; 8).

Since the rate of cerebral palsy in born fetuses was not calculated in our study, no comments can be made on this issue, but it was found to be effective in preventing and treating antenatal seizures in all patients.

The 1 and the 5-minute Apgar score of pregnant women receiving neuroprotective MgSO4 was significantly lower compared to the scores of pregnant women receiving MgSO4 for postnatal eclampsia prophylaxis/treatment and antenatal eclampsia prophylaxis/treatment. It has been shown that MgSO4 treatment in pregnant women with preterm labor reduces the risk of cerebral palsy and motor dysfunction

We observed significantly lower PLT levels in pregnant women receiving MgSO4 for neuroprotection compared to those receiving it for postnatal and antenatal eclampsia prophylaxis/treatment.

Regarding the AST levels, pregnant women receiving MgSO4 for postnatal eclampsia prophylaxis/treatment had significantly higher levels of AST before infusion compared to those receiving MgSO4 for neuroprotection.

In our study, the systolic and diastolic blood pressure values in pregnant women receiving antenatal eclampsia prophylaxis/treatment or in the postnatal eclampsia group were significantly higher than those in pregnant women receiving MgSO4 for neuroprotection.

Conclusion: In our study, pregnant women who received MgSO4 in the most frequent and earliest weeks due to obstetric indications were in the fetal neuroprotection group. In pregnant women receiving MgSO4, both the timing of MgSO4 administration and various laboratory parameter values were found to be different between the groups.

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SURGICAL MEDICAL SCIENCES

_O5697

OUR RETROSPECTIVE STUDY OF COLONOSCOPIC CANCER SCREENING OF NATIVE THRACIAN PEOPLE

Oğuzhan Alp Öztürk

ABSTRACT

Aim: Our aim in this study is to underline prevalance of colorectal cancers in our region by reporting our endoscopic findings and furthermore to inform our colleagues about the colorectal screening procedures in our region.

Methods: We examined the colonoscopy reports of 594 patients between 2023 and and 2025. All our patients agreed and signed to an informed consent and waiver. All patients had their first colonoscopies and had no history of prior colorectal disease and were referred or recommended by their family medicine doctors.

Results: The median age was 60. The gender percentages of the patients sought medical assistance were %55.05(n=299) percent female and %44.95(n=267) male. %11.95(n=71) of all the procedures uncovered malignant pathologies.

Conclusions: Colorectal cancers are endemic in our region and as the WHO(World Health Organisation) suggests we can and must inform and advise our patients about colorectal cancer screening especially about colonoscopies.

Keywords: Endoscopy, Colorectal Cancer, Prevalence

INTRODUCTION

Colorectal cancers are the third most common cancer worldwide . With colonoscopy becaming more and more accesible, earlier diagnoses become more common but there is still a significant number of mortality. Also there is an increasing prevalence in young adults in more recent studies.

Colon cancer screening is recommended with various guidelines all over the World. But still the gold standard of colorectal cancer diagnosis is colonoscopic biopsy.

Risk factors for the colorectal cancers are well defined. Median age of the people affected by colorectal cancers is 65 in the World. Also a positive family history increases the risk of colorectal cancers. History of inflammatory bowel disease increases colorectal cancer risk and this risk increases cumulatively over time from first time it was diagnosed. Also alcohol and nicotine consumption, obesity, diet rich of red meat and immunosuppression inreases a persons risk of colorectal cancer.

Main treatment of the early colorectal cancers are still surgical resection. Depth of ınvasion, lymph node metastases and dissemination can give more information about the prognosis of the patient.

Colonoscopy still is the best tool of diagnosis and also sometimes treatment of precancerous lesions like polyps but still underused.

Colorectal cancers show difference in prevalence in the race, region and dietary preferences. We aim to take a look at colorectal cancer prevalence in our region's folk and to encourage our clinicians to recommend more screening procedures.

METHODOLOGY

We examined our patients colonoscopy reports from 2023 to 2025. All our patients signed informed consent fort he procedure. Follow up patients, known colorectal cancer patients, emergency department referrals, patients with pelvic radiotherapy and patients with history of prior colorectal surgery is excluded from the study. Strictly first colonoscopy patients are included in the study which were 594 patients many.

RESULTS

Total of 594 patients were included in study.

The median age is 60 years. Benign pathologies were 88.05% (n=523) and malignpathologies were 11.95% (n=71). 55.05% (n=327) of the patients were female and 44.95(n=267 were male. 49.50%(n=294) of the procedure were normal findings. 19.03%(n=113) of the procedures revealed polyps and led to polypectomies which were not malignant. 17.00%(n=101) of the procedures revealed colonic diverticules. 11.95%(n=71) of the procedures revealed malignant lesions and further evaluation of the patients. 1.52%(n=9) of the procedures had both diverticules and polyps which were benign. 1.01%(n:6) of the patients were diagnosed with inflammatory bowel disease with the biopsies taken during the procedure.

Colorectal cancer incidences increase with age predominantly over 50 years old. In our study we found the median age for the colonoscopic screening were 60 years old. This information shows we need to get our screening procedures earlier in our patients.

Prevalence of colorectal cancers around 7-9% in the World. In our study patient group prevalence was 11.95% which was higher than World statisctics but that can be explained with our slightly older patient group.

Prevalence of colon polyps vary by influenced by factors like age, sex, and geographic region. In our study 113 patients underwent polypectomies. While most of them were tubuler adenomas, 28 of the patients were diagnosed with premalignant polyps like sesil serrated and villous polyps.

101 patients had diverticules with 13 of them had diverticulosis with pancolonic affection. In Western countries, diverticulosis predominantly affects the left side of the colon, while in Asian countries, it's

more common on the right. A study from Turkey's Black Sea region found a diverticulosis prevalence of approximately 9.3%

Inflammatory bowel disease was recognized and diagnosed via biopsy in 6 of the patients. The incidence of IBD varies globally, with increasing trends observed in newly industrialized countries. In Turkey, studies report an incidence of ulcerative colitis at 2.6 per 100,000 and Crohn's disease at 1.4 per 100,000.

CONCLUSION

The Thracian colonoscopy data aligns with global trends in several aspects, such as median age and the predominance of benign diagnoses. However, the rates of diverticulosis and inflammatory bowel disease show regional differences, highlighting the importance of localized studies to address these variations effectively. Understanding these discrepancies can help improve targeted screening and treatment strategies in the region which can improve overall survival of our patients.

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SURGICAL MEDICAL SCIENCES

_O5720

A CASE OF CERVICAL CANCER DIAGNOSED DURING PREGNANCY, ACCOMPANIED BY FETAL ABNORMALITY

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ABSTRACT

The most common gynecological cancer detected during pregnancy is cervical cancer. Cervical cancer is observed in approximately 1.2% of 10,000 pregnant women. In this case, we present a cervical cancer accompanied by fetal anomaly, diagnosed late, in gestation and treated with Wertheim hysterectomy and cesarean section.

Case: A 29-year-old G1P0 pregnant woman applied with vaginal bleeding at 28+3 weeks. The placenta was intact and unrelated to the internal cervical os with the presence of polyhydramnios. The patient, did not have any speculum examination in the last year and also during pregnancy, had an irregular cervix, appeared to bleed to the touch, and a mass image fixed to the posterior fornix in the external cervical os. Transvaginal ultrasonographic examination revealed a 3x2.8 cm mass lesion with irregular borders in the cervix. Since there were contractions in 10 minutes on the tocogram, she was interned and given betamethasone and magnesium treatment for neuroprotective purposes. A cervical biopsy was performed with colposcopy.

In the evaluation of the fetus, polyhydramnios, single umbilical artery and a right ectopic pelvic dysmorphic rotated kidney were observed. Amniocentesis was performed in an external center at the 19th week of pregnancy and no chromosomal or genetic pathology was detected due to the culture and array results. In the fetal abdominal view, a stomach pocket was shown by ultrasonography (USG). Cervical biopsy resulted as keratinizing large cell squamous cell carcinoma and a magnetic resonance (MR) was performed. In the MR, a mass was detected in the postero-inferior wall of the cervix with polypoid extension into the lumen, measuring 33x22 mm in the sagittal plane and extending to the posterior fornix at the level of the superior 1/3 of the vagina. The lesion was interpreted as suspicious for parametrial invasion on the left lateral side. However, parametrial involvement was not considered in the rectovaginal examination. The patient did not accept the neoadjuvant chemotherapy option before delivery by the oncology and perinatology council. Then, cesarean section was planned at 32+ weeks of gestation, as Wertheim hysterectomy and staging surgery. Since the patient had effective contractions on tocogram at the 31+6 weeks, she underwent a 3 days of tocolytic therapy and a

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betamethasone *rescue* dose, and underwent a cesarean section with a median incision at 32+2 weeks of gestation. A male baby, measuring 1760 gr/44 cm/31 cm, with respective Apgar scores of 6 and 7, at the 1st and 5th minutes, was delivered, followed by Wertheim type 3 hysterectomy **(**Figure 1), bilateral pelvic, paraaortic lymph node dissection and double J catheters were inserted into bilateral ureters for a possible adjuvant radiotherapy. In the postpartum evaluation, additional findings in the newborn was anal atresia, duodenal atresia and tracheoesophageal fistula. He was operated by the Pediatric Surgery for these malformations.

Pathology revealed HPV-related poorly differentiated (tumor size 5.5x5x2 cm) squamous cell carcinoma. Surgical margin was 5 mm. Metastasis was found in 2 internal and obturator lymph nodes out of 68 left pelvic lymph nodes. No metastasis was detected in 11 paraaortic lymph nodes. Chemotherapy and radiotherapy were planned with pathological stage T1 b3 N1 and Stage III C1 cervical cancer diagnosis.

Discussion: Cervical cancer during pregnancy is probably one of the most challenging medical conditions, with the dual sake of treating the cancer without compromising its chances for cure, while preserving the pregnancy and the health of the fetus and child. Management of cervical cancer or precancerous lesions during pregnancy is complex and can compromise both pregnancy and maternal prognosis. The presence of HPV lesions appears to promote obstetric complications, even if the exact pathophysiology is not well known. Therefore, primary prevention is essential. The real-world effectiveness of HPV vaccination programs has been demonstrated in several national studies, with significant reductions in the risk of invasive cervical cancer. Improvements in cervical cancer in general may also benefit patients diagnosed during pregnancy. Recent data on the safety of MRI at all times and laparoscopic lymph node staging have made it possible to improve staging and offer active surveillance more easily. Cervical cancer occurring during pregnancy requires management by a multidisciplinary team and in specialized centers. Therapeutic advances over the past decades have made it possible to improve both fetal and infant prognosis by reducing the rate of pregnancy termination and improving neonatology techniques. Data from large cancer networks show that pregnant patients are more likely to develop early-stage cervical cancer, with only 26% developing stage II-IV cancer compared to 52% in non-pregnant women. In our case, we think that the birth was carried out with the best timing by taking into account the health of the mother and the fetus with a multidisciplinary approach. Our case has been married for one year and did not have cervical screening tests before or during pregnancy. The importance of cervical smear and HPV screening in the early diagnosis and treatment of cervical cancer should be emphasized by this case.

The presence of a stomach pocket in the ultrasonographic examination of the fetus does not exclude a tracheoesophageal fistula, and in our case, a tracheoesophageal fistula and duodenal atresia were seen together, so we did not detect ‘double-bubble sign’ but only ‘a smaller than a normal sized stomach’ view in the USG examination (Figure 2). It is necessary to emphasize

the possibility of gastrointestinal anomalies in cases accompanied by polyhydramnios, and if the stomach is smaller than usual the presence of stomach view does not exclude a tracheoesophageal fistula in cases having duodenal atresia simultaneously.

Keywords: Cervical Cancer During pregnancy, Fetal Abnormality, HPV screening

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Figure 1: Uterus and bilateral parametrium after Caesarean section, Wertheim type 3 hysterectomy and staging surgery.
star: cervical tumor, arrow: parametrium-cardinal ligaments, yellow arrow: vagına.

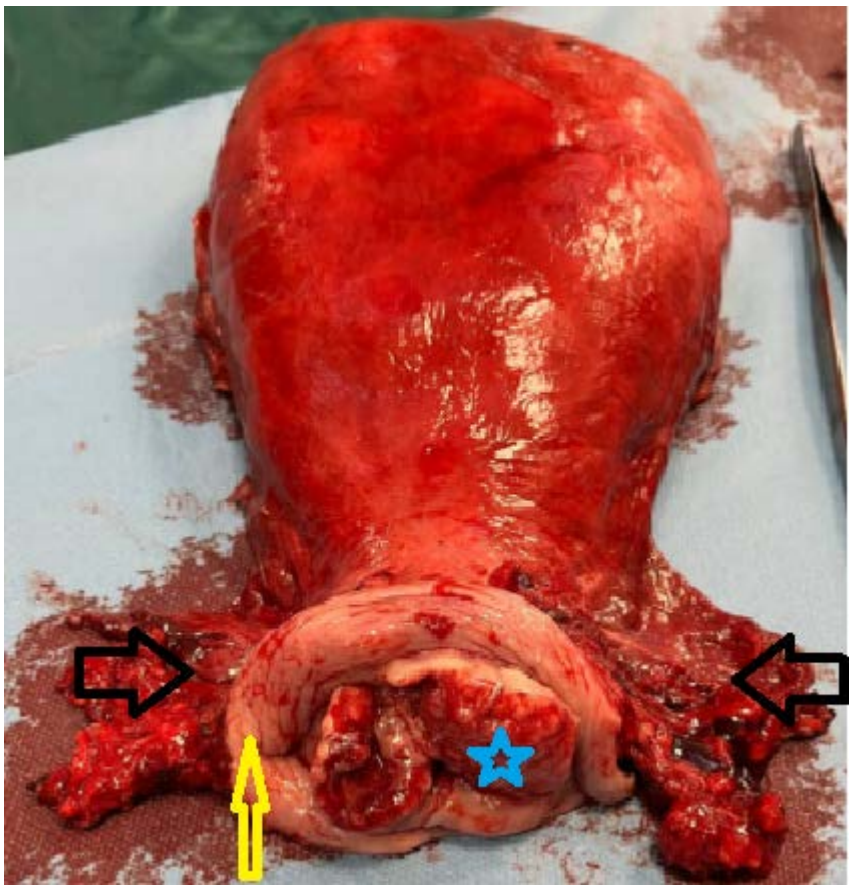
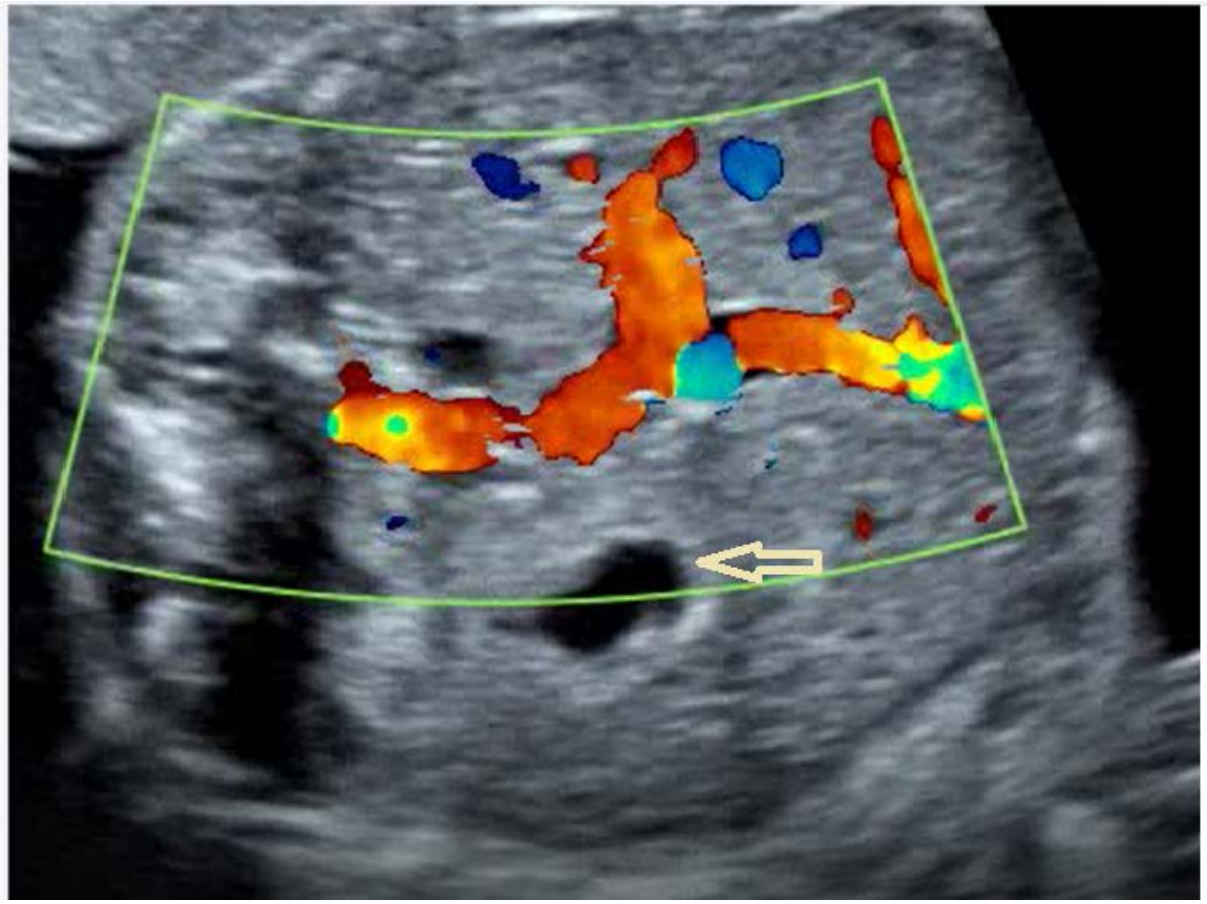


Figure 2: Transverse section of fetal abdomen on ultrasound: umbilical vein trace and stomach pocket. (Note the stomach size is smaller according to a normal sized stomach, arrow)



SURGICAL MEDICAL SCIENCES

_O5722

AN ANTENATALLY DIAGNOSED INIENCEPHALY CASE

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ABSTRACT

Iniencephaly is a rare neuronal tube defect that occurs in 0.1-10 out of 10,000 pregnancies. Iniencephaly is characterized by an occipital bone defect in the foramen magnum, hyper-retroflexion of the head, lordosis and rachis of the cervicothoracic vertebrae. We present our early diagnosed case of iniencephaly accompanied by encephalocele and spina bifida.

Case: A 20-year-old G1P0 pregnant woman was referred to our clinic at 16 weeks of gestation with suspicion of fetal anomaly. In obstetric ultrasonographic (USG) examination, an occipital bone defect and an encephalocele sac containing cerebral and cerebellar neuronal structures measuring 27x22 mm were seen in the fetus (Figure 1). The fetal head was observed in hyperextension from the neck. Scalp edema and cystic appearance were observed around the head. The vertebrae were irregular, severe kyphosis/lordosis and sacral agenesis were detected. Umbilical herniation was seen at the insertion site of the umbilical cord into the fetal abdomen. The patient, who received genetic counseling, underwent amniocentesis. The pregnant perinatology was evaluated in the council and pregnancy termination was recommended. In our case, posterior occipital bone defect, encephalocele, cervico-thoracic vertebral posterior rachischisis, vertebral irregularity, and hyperextension of the head were observed in the abortion material (Figure 2).

Discussion: Iniencephaly represents a neural tube defect involving a defect of the occipital bone and retroflexion of the head with rachischiosis of the cervical and thoracic spine. It occurs primarily as an anomaly involving the craniovertebral junction formed by the articulations of the occipital condyle, atlas, and axis vertebrae, resulting in a widened foramen magnum. The exact cause and pathogenesis of iniencephaly are not fully understood, but both genetics and environment may play a role. Factors that increase the risk of iniencephaly include: low socioeconomic status, folic acid deficiency, smoking, diabetes, obesity, and chromosomal disorders (chromosomal abnormalities such as trisomy 18, trisomy 13, and monosomy X). A family history of neural tube defects has been found to be associated with a 5% recurrence rate of iniencephaly. Folic acid is recommended three months before pregnancy.

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Iniencephaly is associated with high perinatal mortality. Only a few cases with long-term survival have been described in the literature. Iniencephaly can be diagnosed prenatally by USG, the fetus typically shows a ‘star-gazing’ appearance. It occurs before the closure of the cephalic neural fold on the 24th day of pregnancy. In our case, smoking was a risk factor, and folic acid use was used during pregnancy. Iniencephaly is a type of severe neuronal tube defect (NTD) associated with widespread systemic involvement and poor prognosis. In our case, encephalocele, cervico-thoracic vertebral rachischisis, severe vertebral deformity, and umbilical hernia were observed, and this condition was evaluated as a lethal anomaly.

Keywords: Fetal abnormality, iniencephaly, neuronal tube defect, central nervous system, rachischisis.

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Figure 1: Ultrasound image of posterior occipital bone defect (yellow arrow) and encephalocele (green arrow) at 16 weeks of gestation.

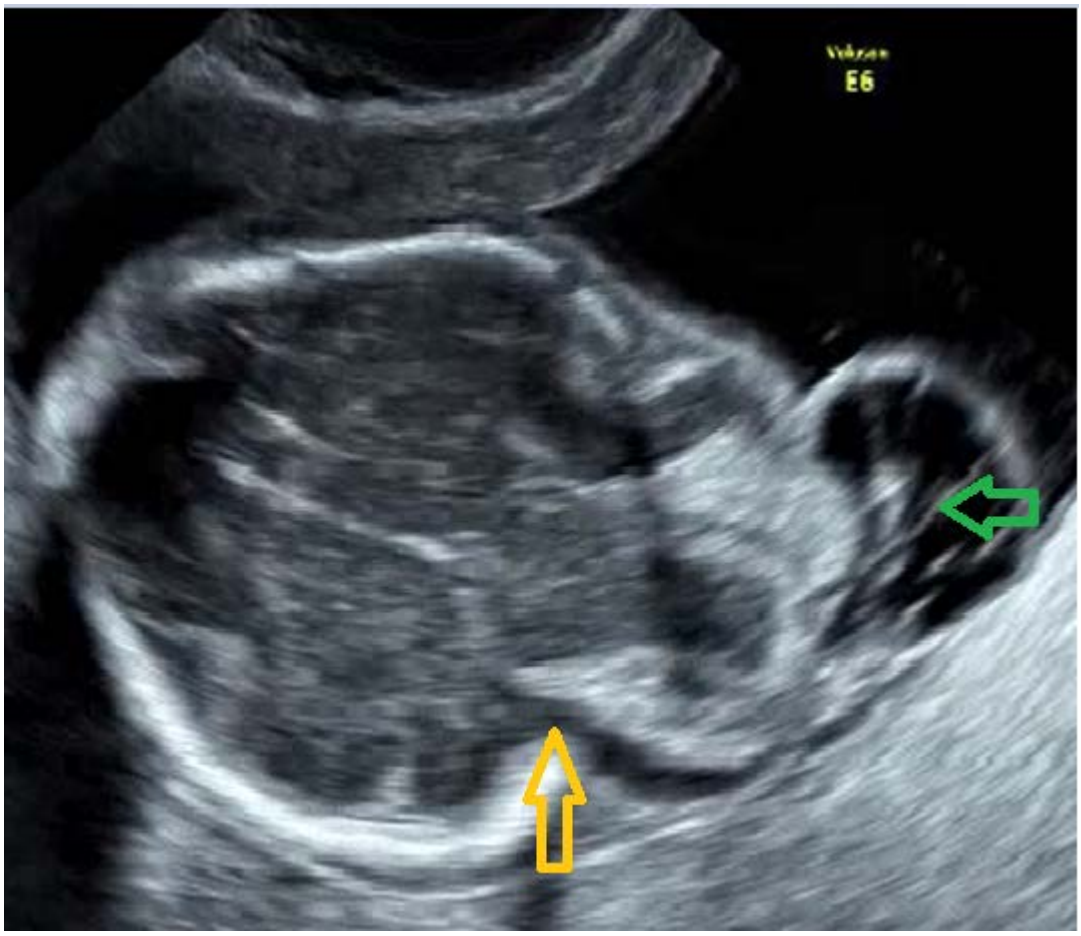

Figure 2: Autopsy images of the fetus showing an open neural tube defect (yellow arrow) and marked cephalic retroflexion (star).

SURGICAL MEDICAL SCIENCES

_O5727

ANALYSIS OF PATIENTS UNDERGOING BREAST RECONSTRUCTION IN 2024 WITH CURRENT TRENDS

Bilgen Can[1] Salih Kılıç[2]*

INTRODUCTION

Breast cancer is the most common malignancy in women[1].

The approach to breast cancer has shifted from aggressive anatomical excision to minimally invasive biological ablation.

Recent advencements in medical oncology and radiation oncology have laid the foundation for a growing emphasis on breast-conserving therapies in the treatment of breast cancer.

This shift has been made possible by advancements in breast-conserving surgeries and reconstruction techniques, which play a critical role in preserving the breast as a secondary sexual characteristic with significant psychological importance for women.

In our clinic, breast reconstruction cases are managed collaboratively with oncological surgery, medical oncology, and radiation oncology teams, with a strong emphasis on immediate reconstruction performed simultaneously with cancer excision. In this study, we will evaluate the breast reconstructions performed in 2024 in terms of their compliance with the current guidelines applied in breast cancer treatment.

PATIENTS AND METHODS

In 2024,patients who underwent breast reconstruction in our clinic were retrospectively analyzed in terms of reconstruction timing,reconstruction techniques, and complications.

RESULTS

A total of 12 patients underwent breast reconstruction. The age range of the patients was 34–64 years

- Immediate reconstruction was performed in 8 patients in conjunction with the oncologic surgery department

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- Delayed reconstruction was performed in 4 patients following mastectomy

All immediate reconstructions were implant-based.

For delayed reconstructions:

- Two patients underwent combined implant and autologous tissue reconstruction
- One patient received only autologous reconstruction
- One patient underwent a two-stage reconstruction with the placement of a tissue expander

The complication rate among patients who underwent implant-based reconstruction was 43%. The most common complication was wound dehiscence, followed by circulatory disorders of the nipple

DISCUSSION

In our clinic, the proportion of immediate breast reconstructions performed simultaneously with oncologic is 66% and delayed breast reconstruction ratio is %34.

As seen in global trends, every patient is now considered a candidate for immediate reconstruction.

Immediate breast reconstruction should be assessed collaboratively by the plastic surgery and general surgery teams as soon as a diagnosis of breast cancer is established.

Immediate breast reconstruction can be performed using an autologous transfer of tissue from the patient's body, with a synthetic prosthesis, or a combination of both.

The patients who underwent breast reconstruction at our medical center were treated as follows:

In 66% (8) of cases, immediate implant-based reconstruction was performed in conjunction with oncological surgery.

In 16% (2) of cases, combined reconstruction using implants and autologous tissue was applied.

In 8% (1) of cases, reconstruction was performed using autologous tissue alone.

In 8% (1) of cases, a two-stage reconstruction plan was implemented with the placement of an expander.

Patients undergoing autologous tissue transfer are more satisfied with their breasts, have higher esthetic satisfaction with their breasts, and have greater psychosocial and sexual well-being than those reported by patients who undergo implant reconstruction[2,3].

While autologous reconstruction offers significant benefits, contemporary trends in post-mastectomy breast reconstruction reveal an increasing preference for implant-based approaches, which have overtaken autologous techniques as the predominant modality since 2002 [4]. The advantages of implant-based reconstruction include its surgical simplicity, the utilization of cosmetically compatible adjacent tissues for implant coverage, the absence of donor site morbidity, reduced operative durations, and expedited postoperative recovery compared to exclusively autologous methods [5,6]. In alignment with these trends, we implemented an implant-based approach for all simultaneous reconstructions in our clinic. This choice made the procedures more straightforward and helped us manage the postoperative follow-up more effectively, ultimately leading to a shorter hospital stay for our patients.

Numerous factors have contributed to the increasing prevalence of implant-based breast reconstructions in the United States. One significant factor is the lifting of the moratorium on silicone implant use for reconstruction by the US Food and Drug Administration in 2006, supported by robust long-term safety data [11]. Another important reason is the rising number of bilateral mastectomies (BM). Women undergoing BM, compared to unilateral mastectomy (UM), not only have higher reconstruction rates but also show a greater preference for implant-based techniques. According to a longitudinal trend analysis of the NIS database from 1998 to 2008, implant reconstruction rates rose by 11% annually, with a more pronounced increase following BM compared to UM (22% vs. 6%). By 2002, implant-based reconstruction surpassed autologous techniques as the most commonly utilized method for breast reconstruction in the US [12].

Additional factors have likely played a role in the expanded use of implants. Innovations in mastectomy techniques, such as nipple-sparing procedures, have enabled improved aesthetic outcomes. Moreover, silicone implants now come in a wider range of sizes and shapes (e.g., anatomical or teardrop designs), allowing for more customized results.

The introduction of acellular dermal matrices, while not yet proven to improve long-term outcomes or patient satisfaction, has facilitated the creation of a more natural-looking lower pole of the reconstructed breast mound [13]. Nevertheless, these products have fallen out of favor and their use has declined due to reported high rates of seroma and infection. In our clinic, we have not used ADM or synthetic mesh in any patient[14].

According to a retrospective study involving 266 immediate breast reconstructions conducted by V. Pinsolle et al. The overall complication rate was 49% (128), and there were 10 reconstruction failures. The most frequent complications were dorsal seroma 26% (70), capsular contracture 10% (27), skin necrosis 8.3% (22), and haematoma 5.6% (15). The complication rate for immediate breast reconstruction with implant alone (39%) was lower than that associated with latissimus dorsi with or without implant (51%), but the difference was not significant[7]. Within our clinical practice, the complication rate for immediate breast

reconstruction with implants is 43%, which is consistent with the rates reported in the literature. The most common complication is wound dehiscence, followed by circulation disorders of the nipple as the second most frequent complication.

In certain situations, immediate breast reconstruction may not be feasible. Delayed reconstruction is recommended when the skin flaps have compromised perfusion following mastectomy or when postmastectomy radiation therapy is anticipated [9,10]. Additional factors supporting delayed reconstruction include patient-related comorbidities such as obesity, poorly controlled diabetes mellitus, or tobacco use, which elevate the risk of complications. For women diagnosed with inflammatory breast cancer, delayed reconstruction is typically advised due to the elevated risk of local recurrence and the necessity for postoperative radiation therapy. At our institution, the oncoplastic surgery team has evaluated such cases and determined that delayed breast reconstruction is the most appropriate approach for specific patients. It is essential to personalize reconstruction strategies to align with each patient's individual needs and preferences.

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SURGICAL MEDICAL SCIENCES

_O5744

THE IMPORTANCE OF HEART TEAM FOR COMBINED CARDIAC SURGERY TO MINIMALLY INVASIVE RE-DO OPERATIONS AND HYBRID PROCEDURES

Özgür Barış[1]*

ABSTRACT

Aim: Currently, in many operations, the operative time and cross-clamping time should be carefully examined in patients with concomitant valve surgery and CABG. The selection of a prosthetic valve is crucial. When advanced age, combined surgery, and surgical risk are considered, early planning and heart team decision-making for redo operations in addition to prosthetic valve selection should be considered as a rational approach.

Methods: A 75-years-old male patient was diagnosed with symptomatic severe aortic stenosis and coronary artery disease (very critical proximal LAD and RCA stenosis). Normal sinus rhythm was observed. EF: 60%, LV diameters were normal. AVA:0.9 cm^2. The aortic gradient was 80/58 (max/mean) with 4.6 a jet velocity. No thoracic aortic aneurysms were observed. According to Euroscore II, the risk of “in-hospital mortality” was 8%. Sutureless AVR (PERCEVAL L-size+ CABGx2 has done.

Results: Implanting a well-functioned sutureless-aortic valve for < 25 minutes of aortic cross-clamping may have an excellent positive impact on the postoperative outcomes of high-risk patients undergoing CABG+AVR procedures.

Conclusions: In the past 4-5 years, early degeneration of bioprosthetic aortic valves has been frequently observed. Given the high risk of re-do surgery, advanced age, and absence of anticoagulant use in non-AF cases, valve-in-valve TAVI may complicate previous bioprosthetic valve selection protocols. The heart team’s decision is crucial and the joint council decisions on selecting prosthetic valves and grafts are also important.

Keywords: aortic valve ,cabg,heart team,hybrid procedures,sutureless aortic valve

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SURGICAL MEDICAL SCIENCES

_O5749

OUR RETROSPECTIVE ANALYSIS OF OUR SCREENING GASTROSCOPY RESULTS OF THRACIAN NATIVES

Oğuzhan Alp Öztürk

ABSTRACT

Aim: Our aim in this study is to report our gastroscopic screening procedures' pathological findings and prevalence.

Methods: 221 patients were found suitable between years of 2023-2025 and their gastroscopic and pathological findings were analyzed. Patients had no prior malignant diagnosis, upper GI endoscopy, upper GI operations and were asymptomatic except intermittant dyspeptic episodes. Patients with anemia, dysphagia or severe dyspepsia were excluded.

Results: Chronic gastritis were the most common diagnosis 55.2%(n=122). 3.3%(n=7) of the patients were diagnosed with malignant disease. Helicobacter Pylori infection rate was 70.1%(n=155). Patients with H.Pylori infection showed significantly higher inflammation and activation scores($p<0.001$). Age was a significant predictor($p<0.001$), with older patients more likely to have metaplasia and dysplasia.

Conclusions: Helicobacter Pylori positivity strongly impacts inflammation and activation but has a weaker or non-significant effect on atrophy, metaplasia, and dysplasia. Age is a consistent and significant predictor for atrophy, metaplasia, and dysplasia, highlighting its role in disease progression. Showing high prevalence of pylori infection it is important to remind patients of their screening endoscopies.

Keywords: Gastroscopy, Cancer Screening, Gastritis

INTRODUCTION

Gastrointestinal disorders are a significant public health problem. Mainly morbidity and healthcare costs are increasing more and more due to this problem. In Turkish patients many studies shown a high prevalence of GI symptoms and diseases. Because of this we need effective and accurate early screening procedures.

Gastroscopy remains to be the gold standard procedure in upper gastrointestinal diseases. Also when it can help diagnose of ulcer, inflammation, malignant diseases and many times you can treat the actual pathology with gastroscope. As shown in many stuidies gastroscopy reduces

mortality rates due to gastric cancer management, especially in Asian countries where there is strict upper gastrointestinal screening.

The Thracian region is home to many distinctive dietary habits, genetic backgrouds and environmental exposures that can afffect gastrointestinal health. There are many studies in Turkey reported gastrointestinal symptoms and diseases with variations observed througout the regions.

This retrospective analysis aims to fill this knowledge gap by evaluating the gastroscopy screening results of Thracian natives. By identifying common pathological findings and assessing their prevalence, we seek to provide insights that could inform region-specific prevention and treatment strategies, ultimately enhancing GI health outcomes in this distinctive population.

METHODOLOGY

We examined our endoscopy appointment papers through 2023 to 2025. Symptomatic and anemic paitients were excluded. Patients who were referred by other doctors were excluded. Patients who had prior surgery involving upper gastrointestinal system or prior gastroscopies due to a benign or malignant pathology were excluded. We only included asymptomatic or only dyspeptic patients who had their first gastroscopies.. 221 patients were found suitable to include in our study. Their gastroscopy reports and antral biopsy reports are examined and analyze using ANOVA and post-hoc tests.

RESULTS

51.1%(n=113) of the patients are male and 48.9%(n=108). Males had slightly higher averages for inflammation, activation, and atrophy. Metaplasia and dysplasia were more frequent in males.

Pathologic diagnoses shown following percentages; 55.2%(n=122) chronic gastritis, 29.4%(n=65) active gastritis, 12.2%(n=27) atrophic gastritis, 2.3%(n=5) adenocarcinoma, 0.5%(n=1) MALToma, 0.5%(n=1) neuroendocrine tumor.

Helicobacter pylori was positive in 70.1%(n=155) and was negative in 29.9%(n=66) of the patients. Helicobacter-positive cases showed higher averages for inflammation, activation, and atrophy compared to Helicobacter-negative cases. Metaplasia and dysplasia were more prevalent in Helicobacter-positive cases.

Chronic gastritis was common across all age groups. Active gastritis was more frequent in younger and middle-aged patients. Inflammation and activation scores peaked in the 50-70 age group. Atrophy increased consistently with age, with the highest scores in the 70+ group.

Atrophic gastritis and malignancies (adenocarcinoma, MALToma) were more prevalent in older age groups.

When comparing our results with the worldwide reported prevalences we found out most of our results are similar of some regions. Like in our male patients, helicobacter pylori positivity was slightly higher than female patients in correlation with the World. Helicobacter positivity is around 50% in USA but in our local results shown it was more prevalent than 70%. This result was similar to African countries' helicobacter positivity scores, Chronic atrophic gastritis and malignancies were significantly lower than some Asian countries.

3.3%(n=7) of the patients were diagnosed with malignant disease. Patient history did not indicate any prior symptoms before gastroscopies. Even when we exclude patients with high risk of cancers. Which shows the importance of screening procedures since early stage gastric cancers' five year prognosis are 95-99% and late stage gastric cancers' 5 year prognosis are 5-30%.

CONCLUSION

Helicobacter pylori is endemic with a high prevalence in our region. Due to this microorganism many gastrointestinal ailments occur in our regions' folk. Even though the healthcare we provide to our region is improving more and more every day there is still more room to improve. Screening procedures are done by many healthcare centers in our region but still not enough since high helicobacter pylori results are showing the deficiency. We need more accesible screening procedures and we need to inform our patients about these procedures so we can improve the length and quality of our people's lives.

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SURGICAL MEDICAL SCIENCES

_O5750

CERVICAL PROSTHESIS MIGRATING INTO THE SPINAL CANAL: A CASE REPORT

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Introduction and Aim

Cervical disc arthroplasty (CDA) is a motion-sparing surgical alternative to anterior cervical discectomy and fusion (ACDF), often indicated for cervical radiculopathy and myelopathy in younger patients. This procedure aims to preserve intervertebral mobility while minimizing the risk of adjacent segment degeneration. However, complications such as implant migration, fracture, or failure of osseous integration have been reported in the literature, raising concerns about its long-term efficacy and safety (1-12).

This case report discusses a rare instance of cervical prosthesis migration into the spinal canal, emphasizing the clinical presentation, imaging findings, surgical intervention, and postoperative outcomes. The report aims to highlight the importance of timely diagnosis and effective surgical management in addressing such complications.

Case Report

A 41-year-old female presented with progressive weakness in the right upper and lower extremities and impaired gait. The patient's medical history revealed anterior cervical discectomy and prosthesis implantation at the C5-6 level five years prior. Symptoms began with numbness in both arms a year earlier, evolving into significant weakness and balance issues over the past month.

On physical examination, the patient exhibited muscle strength graded 4/5 in the right upper and lower extremities, ataxic gait, a positive Hoffman's sign on the right, and hyperactive deep tendon reflexes in all extremities.

Imaging studies with cervical CT and MRI revealed a migrated cervical prosthesis encroaching into the spinal canal, causing spinal cord compression (Figure 1).

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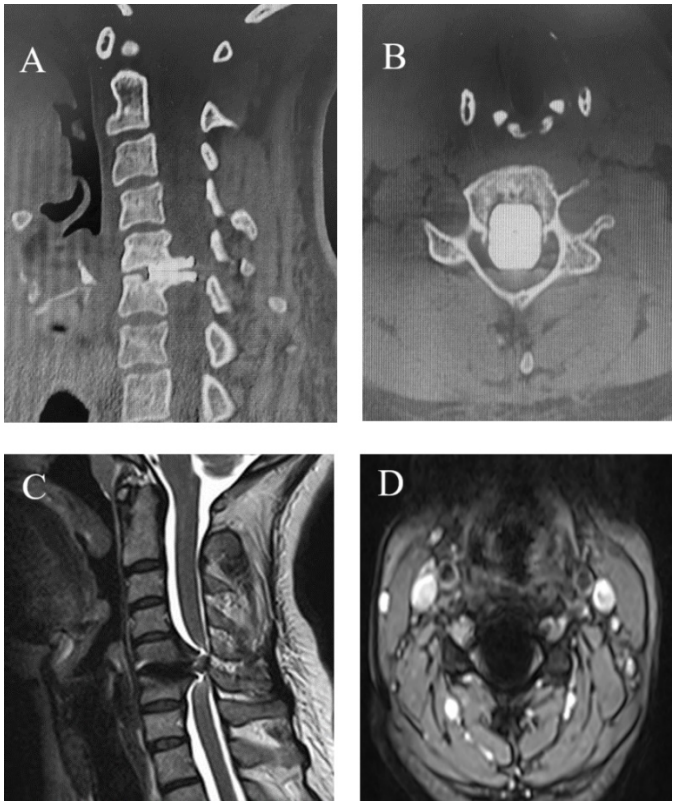
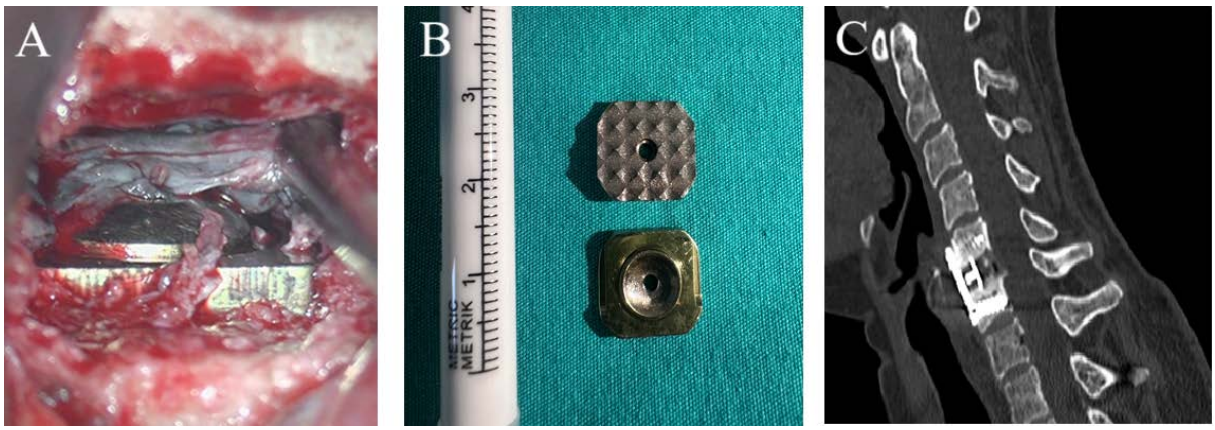
Figure 1 Cervical spine CT and MRI images of the migrated cervical prosthesis



Sagittal (A) and axial (B) CT images, sagittal T2 (C) and axial T2 (D) MRI images. The migrated cervical prosthesis narrows the spinal canal and compresses the spinal cord.

Surgical intervention was performed using an anterior cervical approach. The fractured prosthesis was successfully removed, and stabilization was achieved with a cage and plate. Intraoperative findings revealed a fracture at the central screw retention point of the prosthesis (Figure 2).

Figure 2 Intraoperative images of the broken prosthesis and postoperative CT



The broken superior part (A) of the prostesis, the broken cervical prosthetic parts (B), The postoperative sagittal CT images of the cervical spine (C)

Results

The patient demonstrated significant neurological recovery, with improved muscle strength and gait on the first postoperative day. She was discharged on the second postoperative day without complications.

Discussion

Cervical prosthesis migration is an uncommon but serious complication of CDA, potentially leading to spinal cord compression and significant neurological deficits. The literature documents a variety of factors contributing to such events, including insufficient osseous integration, trauma, and implant design issues (1-9,10,12).

Neurological symptoms such as weakness, numbness, and gait instability are hallmark features. Hoffman's sign and hyperreflexia further corroborate upper motor neuron involvement. Advanced imaging techniques like CT and MRI are crucial in identifying implant position, spinal canal encroachment, and the extent of cord compression (11). Surgical removal of the migrated prosthesis and stabilization with alternative constructs, such as cages and plates, is the mainstay treatment.

Early intervention often leads to favorable neurological outcomes. Previous reports highlight various migration patterns, including anterior, posterior, and lateral displacements. Factors such as implant design, surgical technique, and patient activity levels postoperatively are critical in determining outcomes (1, 5, 7, 10, 11, 12). The fractured prosthesis in this case underscores the need for robust designs capable of enduring biomechanical stresses. Advances in materials and fixation mechanisms could mitigate such risks (2, 6, 12).

Conclusions

This case underline the significance of early recognizing and managing rare complications of CDA. The successful surgical intervention highlights the importance of accurate diagnosis, timely surgical correction, and appropriate postoperative care. Further research is warranted to enhance prosthesis design and optimize patient selection criteria to minimize such complications.

Keywords: Myelopathy, Disk herniation, Cervical prosthesis

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SURGICAL MEDICAL SCIENCES

_O5752

STELLATE GANGLION BLOCK IN THE TREATMENT OF CEREBRAL VASOSPASM: A CASE REPORT

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Introduction and Aim

Cerebral vasospasm, a severe and potentially fatal complication following aneurysmal subarachnoid hemorrhage (aSAH), poses significant therapeutic challenges. This condition contributes significantly to delayed cerebral ischemia (DCI), which remains a major cause of morbidity and mortality despite advancements in surgical and medical management. The stellate ganglion block (SGB) has emerged as a promising intervention due to its effects on sympathetic nerve activity and cerebral hemodynamics. By attenuating sympathetic tone, SGB may alleviate vasospasm and improve neurological outcomes (1, 2, 3).

This report highlights the case of a 46-year-old female who experienced cerebral vasospasm after aSAH, successfully treated with SGB. The aim is to elucidate the clinical application and potential mechanisms of SGB in this context.

Case Report

A 46-year-old female patient was admitted with a history of sudden-onset severe headache, loss of consciousness, and subsequent collapse. On admission, her Glasgow Coma Scale (GCS) score was 3, and she required intubation. A computed tomography (CT) scan revealed extensive subarachnoid hemorrhage secondary to a ruptured left middle cerebral artery aneurysm. The patient underwent emergency aneurysm clipping surgery.

Postoperatively, the patient regained partial consciousness, with a GCS score of E1M5V1 on the second day. However, on the seventh postoperative day, she developed symptoms of cerebral vasospasm, including decreased responsiveness and hemiparesis. Transcranial Doppler (TCD) imaging confirmed elevated mean cerebral blood flow velocities (CBFV) exceeding 180 cm/s in the left middle cerebral artery, indicating severe vasospasm.

Given the refractory nature of her vasospasm to standard therapies, including nimodipine and hypervolemia, an SGB was performed under fluoroscopic guidance. A 22-gauge needle was used to deliver 10 mL of 0.5% bupivacaine at the C6 level on the left side (Figure 1).

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Figure 1

The procedure's success was confirmed by the development of Horner's syndrome and increased ipsilateral skin temperature (Figure 2).

Figure 2

Within 30 minutes post-procedure, the patient showed marked clinical improvement, with a GCS score improving to E2M6V1. Repeat TCD imaging demonstrated a significant reduction in CBFV. However, the patient's clinical condition deteriorated over the following two weeks despite supportive care. She developed worsening neurological symptoms and eventually succumbed to complications related to severe vasospasm, delayed cerebral ischemia and pneumonia.

Discussion

Cerebral vasospasm following aSAH is associated with a complex pathophysiology, including inflammatory cascades, sympathetic overactivity, and endothelial dysfunction. These mechanisms contribute to sustained cerebral arterial constriction and reduced perfusion, leading to delayed ischemia (4, 5, 6).

The stellate ganglion is a critical component of the sympathetic nervous system, providing adrenergic innervation to cerebral vessels. Blocking this ganglion interrupts sympathetic outflow, reduces vascular resistance, and enhances cerebral blood flow. Additionally, SGB may exert anti-inflammatory effects, further mitigating vasospasm (7, 8). Studies have demonstrated the efficacy of SGB in reducing TCD-confirmed CBFV and improving neurological outcomes in vasospasm patients. The case described here aligns with prior findings, showcasing rapid symptom resolution and hemodynamic improvement post-SGB (2, 3, 9).

SGB is a minimally invasive procedure with a favorable safety profile. Complications, including vascular puncture and local anesthetic toxicity, are rare when performed under imaging guidance. The immediate neurological and hemodynamic benefits observed in this case support its inclusion as a therapeutic option for refractory vasospasm (6, 7). Despite promising outcomes, further research is needed to optimize SGB protocols, evaluate long-term benefits, and establish its role within multimodal vasospasm management strategies (9).

Conclusion

This case report underlines the potential of SGB as an effective intervention for cerebral vasospasm. The rapid neurological recovery and reduction in CBFV point up its utility in improving patient outcomes. As an adjunct to traditional therapies, SGB offers a novel approach for managing refractory vasospasm in aSAH patients.

Keywords: Stellate ganglion block, subarachnoid hemorrhage, cerebral vasospasm

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INTERNAL MEDICAL SCIENCES

_O5666

MUTATION SCREENING OF THE SLC2A2 GENE AND ITS ASSOCIATION WITH TYPE 2 DIABETES

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ABSTRACT

Aim: Explores the impact of the SLC2A2 gene, encoding the GLUT2 glucose transporter, on Type 2 diabetes.

Methods: Laboratory analyses were performed on 75 blood samples at NABİLTEM. DNA extraction was followed by Agarose Gel Electrophoresis (AGE) to confirm extraction success. Primers targeting the 6th and 7th exons and 6th intron of the SLC2A2 gene were designed using NCBI Primer-BLAST. Gradient PCR was used to determine the optimal amplification temperature, set at 60°C. PCR was conducted at this temperature, and the products were purified for DNA sequencing. The sequence analysis was conducted using Bioedit and Chromas V 2.6.6 software, and single nucleotide polymorphisms (SNPs) were displayed through chromatograms. The data were analyzed using SPSS Windows 18.0 software, with descriptive statistics presented in tables and graphs. Yates' Corrected Chi-Square test was applied to compare categorical variables, and statistical significance was considered for p-values <0.05.

Results: Three single nucleotide polymorphisms (SNPs) in the SLC2A2 gene ‘rs2292621, rs2292622, and rs5406’ were identified. The chi-square test was used to compare the patient and control groups, and the calculated p-values were as follows: p = 0.720 for rs2292621, p = 0.720 for rs2292622, and p = 0.714 for rs5406. These results indicate no statistically significant differences between the patient and control groups.

Conclusions: No statistically significant difference was found between the groups. However, SNPs were more prevalent in the patient groups compared to the control groups, suggesting a potential impact on the disease. Further research is needed.

Keywords: type 2 diabetes,slc2a2 ,glut-2,mutation,genetics

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INTERNAL MEDICAL SCIENCES

_O5670

THE RELATIONSHIP BETWEEN IMPAIRED GLUCOSE TOLERANCE AND SUBJECTIVE SLEEP QUALITY

Elif Ezgi Gürel[1]*

ABSTRACT

Aim: Sleep deprivation and poor sleep quality are associated with impaired glucose tolerance (IGT). The purpose of this study is to evaluate sleep quality in individuals with IGT.

Methods: The study, conducted using face-to-face survey technique, involved 62 patients with IGT (46 female/16 male), after ethics committee approval. Epworth sleepiness scale was used to determine daytime sleepiness levels, and Pittsburg sleep quality index was used to evaluate sleep quality. For restless legs syndrome (RLS), the diagnostic criteria and the RLS Severity Scale were applied. The fasting blood glucose (FBG) and HbA1C levels were obtained from the analysis results conducted at the outpatient clinic. Correlation analysis was performed to test the relationship between variables. T-test and correlation analysis were used to determine differences between genders. Rates by gender were determined by cross-comparisons. $p< 0.05$ was considered significant.

Results: The relationship between RLS and increase in daytime sleepiness ($p<0.05$) and decrease in sleep quality ($p<0.01$) was significant. FBG was found to be 116.5±7.1 mg/dl in women and 117.6±6.5 mg/dl in men. RLS was observed in 22.5% of all participants. This rate was determined as 23.9% for women and 18.75% for men. A significant relationship was found between FBG and RLS ($r= 0.259$; $p<0.05$). In comparisons between genders, the relationship between RLS and FBG in women was significant ($r= 0.319$; $p<0.05$).

Conclusions: FBG levels and RLS was relationship. It was observed that this relationship was significantly higher in women. We believe that evaluating sleep quality in diabetic patients will contribute to treatment.

Keywords: sleep quality ,sleep disorders,glucose tolerance,restless legs syndrome,prediabetes

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INTERNAL MEDICAL SCIENCES

_O5685

THE EFFECTS OF CHRONIC SLEEP RESTRICTION AND EXERCISE IN ADOLESCENCE ON ANXIETY BEHAVIOR IN ADULTHOOD: AN EXPERIMENTAL STUDY

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Fulya Öz Puyan[5] Gülnur Öztürk[6] Levent Öztürk[7]

ABSTRACT

Aim: The aim was to determine the possible effects of aerobic exercise on anxiety-like behaviors that may develop due to chronic sleep restriction during adolescence and to assess whether these effects persist into adulthood.

Methods: A total of 40 adolescent male rats were divided into four groups: control (C), sleep restriction (SR), exercise (E), and exercise+sleep restriction (E+SR). Swimming exercise and/or 20-hour sleep restriction were applied four days a week for four weeks. At the end of the fourth week, anxiety-like behavior tests were conducted. Following this, the rats were kept without any further intervention for eight weeks to allow them to reach adulthood, after which they were sacrificed. Monoamine levels in the prefrontal cortex and hippocampus were measured using LC-MS/MS. Collybistin was assessed via ELISA, neuroligin-2 was evaluated using immunohistochemistry.

Results: In Group E, anxiety-like behaviors decreased compared to Group C and SR (E, 45.6±6.9; C, 20.3±4.1; SR, 22.5±4.8 sırasıyla p=0.018 ve p=0.042). The relative hippocampal weight was lower in the SR group compared to the C and E groups (C,130.5±10.6; E,134.8±7.6; SR,96.6±4.8(mg/kg)×1000, p=0.030 and p=0.011, respectively). Collybistin levels in the prefrontal cortex were significantly decreased in the SR and E+SR groups compared to the C group (C,3.05±0.22; SR,2.47±0.42; E+SR,2.50±0.42ng/ml; p=0.017 and p=0.026, respectively), whereas neuroligin-2 levels were comparable.

Conclusion: Swimming exercise reduced anxiety-like behaviors during adolescence. Sleep restriction reduced hippocampal weight, while exercise partially prevented this effect. The decrease in prefrontal cortex collybistin levels in adulthood suggests that sleep restriction may have long-term effects on GABAergic neurotransmission.

Keywords: rem sleep restriction ,exercise, anxiety,collybistin,neuroligin-2

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INTERNAL MEDICAL SCIENCES

_O5696

GENDER-SPECIFIC PSYCHOLOGICAL EFFECTS OF MISOPHONIA

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ABSTRACT

Aim: This study aimed to explore the severity of misophonia in a sample of medical students and to examine its associations with depression, anxiety, stress, and cognitive emotion regulation strategies. Additionally, potential gender differences in these relationships were investigated.

Methods: A total of 200 medical students (41.5% male, 58.5% female) participated voluntarily between October 1 and December 31, 2023. Participants completed the Amsterdam Misophonia Scale (A-MISO-S), the Depression Anxiety Stress Scale-21 (DASS-21), and the Cognitive Emotion Regulation Questionnaire (CERQ) Short Form. The collected data were analyzed using descriptive statistics, t-tests or Mann-Whitney U tests (depending on normality), correlation analyses (Pearson or Spearman), and multiple linear regression with a backward conditional method.

Results: Based on the A-MISO-S cutoff of 10 points, 22.2% of males and 24.4% of females were classified as misophonic, showing no significant difference by gender. Misophonic individuals of both genders had markedly higher depression, anxiety, and stress scores than their non-misophonic peers. Catastrophizing was significantly higher among misophonic participants, and acceptance was significantly lower only in misophonic men. Correlation analyses indicated that higher A-MISO-S scores were positively associated with DASS-21 subscales and catastrophizing, while negatively associated with acceptance.

Conclusions: The findings suggest that misophonia is linked to elevated psychological distress and certain maladaptive cognitive emotion regulation strategies. Although men and women showed similar levels of psychological distress, misophonic men reported lower acceptance compared to non-misophonic men. These results highlight the need for gender-informed interventions focusing on adaptive coping strategies to alleviate misophonia-related distress.

Keywords: misophonia ,depression,anxiety,stress,emotion regulation,gender

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Introduction and Aim

Misophonia is an exaggerated emotional response to everyday sounds from people, animals, or repetitive actions like keyboard typing or pen clicking. Over the past two decades, interest in defining and classifying misophonia has grown, with eight diagnostic criteria proposed and calls to recognize it as a distinct disorder. The prevalence of misophonia is estimated to be approximately 20% and the most commonly reported triggers for misophonia include mouth smacking, eating, throat clearing, pen clicking, sighing, and nose-blowing [1].

Recent research indicates that misophonia is linked to depression, anxiety, and stress, with affected individuals often experiencing intense discomfort, anger, or anxiety in response to trigger sounds [1]. These reactions can disrupt daily activities, heighten stress, and contribute to social isolation, insecurity, and a greater risk of depression. Anger outbursts related to misophonia may also cause functional and social difficulties, exacerbating symptoms of depression and anxiety. Previous studies have connected misophonia to elevated anxiety in psychiatric populations, suggesting a mediating role in anger [2]. Additionally, people with misophonia show higher anxiety sensitivity, emphasizing the importance of emotion regulation skills [3]. However, empirical evidence on how misophonic triggers affect cognitive control remains limited.

Findings on gender differences in misophonia are inconsistent. Some studies report that women are more often affected, while others find no gender disparity [1]. There is also evidence that women with misophonia may experience higher depression and anxiety, whereas men show more alcohol and substance use [4, 5].

This study's primary aim is to assess misophonia severity in a healthy sample and explore its associations with depression, anxiety, stress, and cognitive emotion regulation, including any gender-specific differences. We hypothesize that misophonia severity will not differ by gender, but depression, anxiety, stress, and emotion regulation strategies may vary according to misophonia severity and gender.

Methods

This study was conducted from October 1 to December 31, 2023, with 200 medical students who participated voluntarily. All procedures adhered to the Declaration of Helsinki. Written and oral informed consent was obtained from each participant after they were informed about the study's goals, procedures, and their right to withdraw.

Participants first completed a researcher-designed socio-demographic questionnaire, covering age, gender, school status, and any physical or mental illnesses. They then filled out three scales:

Amsterdam Misophonia Scale (A-MISO-S) created by Schröder et al. (2013) based on the Yale-Brown Obsessive-Compulsive Scale, this six-item self-report measure rates misophonia

severity on a 0–24 scale. Higher scores indicate more severe misophonia: 0–4 (subclinical), 5–9 (mild), 10–14 (moderate), 15–19 (severe), and 20–24 (extreme). Its Turkish validity and reliability have been confirmed [6].

Depression Anxiety Stress Scale (DASS-21) adapted from the original 42-item scale by Lovibond and Lovibond (1995), this 21-item version was validated in Turkish by Yılmaz et al. [7]. It comprises three subscales—depression, anxiety, and stress—each containing seven items rated on a 4-point Likert scale. Internal consistency coefficients range from .84 (anxiety) to .91 (depression) and .90 (stress).

Cognitive Emotion Regulation Questionnaire (CERQ) Short Form derived from the 36-item original, this 18-item scale uses a 5-point Likert format (1 = almost never, 5 = almost always). It assesses nine cognitive emotion regulation strategies, including self-blame, other-blame, catastrophizing, positive refocusing, and acceptance. Turkish validity and reliability have been established [8].

All statistical analyses were performed using IBM SPSS Statistics 26.0. Descriptive statistics (mean, standard deviation, counts, and percentages) were calculated. Normality was tested with the Kolmogorov-Smirnov test. Depending on distribution, between-group comparisons used either independent samples t-tests or Mann-Whitney U tests. Correlations were examined via Pearson's or Spearman's coefficients. Significance was set at $p < 0.05$.

Results

Of the 200 participants, 41.5% (n=81) were male and 58.5% (n=119) were female. Based on the Amsterdam Misophonia Scale, 44.4% of men (n=36) and 38.7% of women (n=46) scored subclinical (0–4). Using the cutoff of 10 for A-MISO-S, 22.2% of men (n=18) and 24.4% of women (n=29) were classified as misophonic. There was no significant gender difference between misophonic and non-misophonic individuals (p>0.05).

Table. Psychological testing of participants with and without misophonia

Variables		DASS-21			CERQ	
		Anxiety	Depression	Stress	Accep.	Catas.
Male	A-MISO-S<10 (n=63)	4.6±3.1	6.7±3.9	6.4±3.7	6.4±2.2	4.7±1.8
	A-MISO-S≥10 (n=18)	8.6±4.1	10.5±5.7	11.4±6.1	5.2±2.0	5.8±2.1
	p	***<0.001***	***0.015***	***0.003***	***0.029***	***0.019***
Female	A-MISO-S<10 (n=90)	5.5±4.2	6.6 ±4.4	7.6±4.4	6.0±1.9	4.6±2.0
	A-MISO-S≥10 (n=29)	7.8±4.2	9.1±4.2	11.1±4.2	6.0±1.4	5.7±1.7
	p	***0.010***	***0.006***	***<.001***	*.835*	***.008***
Total	A-MISO-S<10 (n=153)	5.1±3.8	6.6±4.2	7.1±4.2	6.2±2.0	4.6±1.9
	A-MISO-S≥10 (n=47)	8.1±4.1	9.7±4.8	11.2±4.9	5.7±1.7	5.8±1.9
	p	***<0.001***	***<0.001***	***<0.001***	*.090*	***<0.001***

A-MISO-S: Amsterdam Misophonia Scale, DASS-21: Depression Anxiety Stress Scale-21, CERQ: Cognitive Emotion Regulation Questionnaire, S.D.: Standart Deviation, Accep.: Acceptance, Catas.: Catastrophizing

The table compares the A-MISO-S, DASS-21, and CERQ scores. Overall, anxiety, depression, stress, and catastrophizing were significantly higher in misophonic participants compared to non-misophonic participants ($p<.001$), and this pattern remained for both men and women. Only misophonic men showed significantly lower acceptance scores compared to non-misophonic men ($p=0.029$). There was no significant difference in DASS-21 or CERQ scores between men and women.

A-MISO-S positively correlated with all DASS-21 subscales (r-values ranged from moderate to strong; $p<0.001$). A-MISO-S correlated negatively with acceptance ($p<0.05$), suggesting individuals with higher misophonia severity struggle with accepting their feelings. A-MISO-S positively correlated with catastrophizing and other-blame ($p<0.05$), indicating a tendency toward magnifying the negative aspects of trigger sounds or blaming others for their distress. DASS-Anxiety correlated positively with self-blame, rumination, and catastrophizing ($p<0.001$). Similar patterns emerged for DASS-Depression and DASS-Stress with these subscales, highlighting a broader link between emotional distress and maladaptive cognitive strategies.

Conclusion

This study examined the associations between misophonia, depression, anxiety, and stress in university students, while also exploring cognitive emotion regulation skills and gender differences. Individuals with misophonia showed significantly higher anxiety, depression, and stress levels than those without misophonia, corroborating previous findings. The strong correlation between A-MISO-S scores and all DASS-21 subscales indicates that misophonia can intensify psychological distress.

Both men and women with misophonia had higher anxiety, depression, and stress than their non-misophonic peers, although they employed different cognitive emotion regulation strategies. Misophonic men reported significantly lower acceptance scores, while both men and women scored higher on catastrophizing. These findings suggest that misophonia's effects may be similar in magnitude for men and women but involve distinct coping mechanisms [1].

Our results point to acceptance being negatively associated with A-MISO-S scores, indicating that lower acceptance relates to more severe misophonia. Conversely, catastrophizing and other-blame were positively linked to A-MISO-S, suggesting that these maladaptive strategies may worsen emotional reactions to trigger sounds [3].

Treating misophonia requires addressing both psychological distress and maladaptive thought patterns. Mindfulness and acceptance-based therapies can help reduce anxiety, depression, and stress, while cognitive-behavioral interventions targeting catastrophizing and other-blame may further improve outcomes [9]. Because this study was cross-sectional and limited to university students, future research should use longitudinal designs, include more diverse samples, and

incorporate objective measures of emotional and physiological responses. Additionally, gender-specific strategies—such as increasing acceptance in men and minimizing catastrophic thinking in women—may enhance treatment effectiveness.

This study highlights the substantial psychological distress associated with misophonia, underscoring the importance of cognitive emotion regulation skills. The results suggest that interventions should address both mental health symptoms and maladaptive coping styles, with particular attention to gender-specific differences. Further research is needed to develop and refine effective therapeutic strategies for individuals with misophonia.

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INTERNAL MEDICAL SCIENCES

_O5706

A CASE OF PULMONARY ARTERIOVENOUS MALFORMATION

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ABSTRACT

Pulmonary arteriovenous malformations (PAVM) are rare vascular anomalies characterized by the lack of capillary structures between the pulmonary arteries and veins. This creates a right-to-left shunt that allows blood to bypass gas exchange, leading to hypoxemia and increased ventilation. A 28-year-old male patient presented with cough and sputum but no additional respiratory symptoms. Physical examination revealed normal breath sounds and a room air oxygen saturation of 97%. Chest radiography revealed a localized hyperlucent area in the right upper zone with nodular opacities. Contrast-enhanced thoracic computed tomography (CT) revealed a cystic lesion in the right upper lobe, unrelated to the bronchial tree but connected to the pulmonary vein through a dilated vascular structure. The arterial components of the lesions were not visible. This finding suggests a complex AVM associated with congenital airway malformations. Pulmonary angiography revealed an AVM linked to the descending thoracic aorta at T5 via the right bronchial artery, draining into the pulmonary vein. The malformation was supplied by the right internal mammary artery and the branch of the right main pulmonary artery to the upper lobe was absent. Interventional radiology performed coil embolization of feeding arteries, followed by wedge resection of the AVM and emphysematous area by the thoracic surgery team.PAVMs in adults are often asymptomatic and discovered incidentally during imaging for other reasons. Owing to their potential for severe complications, they require a multidisciplinary approach. This case highlights a rare case of PAVM in a 28-year-old male with isolated symptoms, emphasizing its clinical significance.

Keywords: pulmonary arteriovenous malformation,coil embolization,vascular anomaly

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INTERNAL MEDICAL SCIENCES

_O5728

EFFECT OF MELATONIN ON ASPROSIN LEVELS IN MYOCARDIAL ISCHEMIA REPERFUSION INJURY

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ABSTRACT

Aim: Ischemic heart disease is the most common cause of cardiovascular death. The aim is to provide rapid reperfusion to limit ischemic damage, but the damage is further exacerbated by reperfusion, resulting in myocardial ischemia reperfusion (IR) damage. This damage is the basis of the pathophysiology of interventional and thrombolytic treatments such as myocardial infarction, stroke, and coronary angioplasty. Melatonin, an important circadian hormone, has a cardioprotective effect in myocardial IR damage. It provides this effect through mechanisms such as reducing oxidative stress and inflammation, and improving mitochondrial dynamics. Asprosin is a glucogenic hormone secreted by white tissue and has been shown to be protective in cardiovascular diseases. However, the relationship between melatonin, which is known to have a protective role in myocardial IR damage, and asprosin is unknown. The aim of this study was to determine the relationship between melatonin and asprosin in myocardial IR damage.

Methods: In the study, 35 male Sprague Dawley rats, weighing 300-320 g, 7 in each group were used. The rats were divided into 5 groups as control (sham), sham+melatonin, sham+melatonin vehicle, IR and IR+melatonin applied rats. Myocardial IR was applied to the left coronary artery as 30 minutes ischemia and 120 minutes

reperfusion. Melatonin was applied at a dose of 10 mg/kg. Asprosin level was determined from serum by Enzyme-Linked ImmunoSorbent Assay. The obtained data were evaluated statistically and $p<0.05$ was accepted as significant.

Results: Asprosin level in the IR group (13.3±1.7 ng/ml) decreased significantly compared to the sham group (25.4±2.5), and increased significantly in the IR+melatonin (16.7±1.7 ng/ml) group compared to the IR group ($p<0.05$).

Conclusions: Decreased asprosin levels may play a role in the pathophysiology of myocardial IR injury. Asprosin may accompany the protection of melatonin against myocardial IR injury.

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Keywords: myocardial ischemia reperfusion, melatonin,asprosin

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INTERNAL MEDICAL SCIENCES

_O5747

EXPLORING THE RELATIONSHIP BETWEEN FORCE STEADINESS AND IMPULSIVITY

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Introduction and aim

Force steadiness, defined as the ability to maintain a constant force during voluntary contractions, is critical for various motor tasks, ranging from daily activities to athletic performance. It reflects the interplay between motor unit activation, neural control mechanisms, and the contractile properties of muscles. Research has shown that fluctuations in force steadiness during isometric contractions are associated with performance in activities requiring precision and stability, such as walking, manual dexterity tasks, and posture maintenance. However, its relationship with cognitive and psychological traits, particularly impulsivity, remains underexplored [1].

Impulsivity, a multifaceted trait encompassing tendencies for rapid, unplanned reactions without consideration of consequences, is commonly measured using the Barratt Impulsivity Scale [2]. Impulsivity has been linked to various motor behaviors, but its potential association with force steadiness has not been systematically studied. Understanding this relationship could shed light on the cognitive and motor integration processes underlying impulsive behavior and offer insights into how impulsivity impacts motor control and stability [3].

This study aims to investigate the relationship between force steadiness and impulsivity in university students. By examining correlations between specific force-related measures, such as maximal voluntary isometric contraction (MVIC) and force steadiness variability (force steadiness-covariance: FS-CV), and impulsivity dimensions (non-planning, motor impulsivity, and attention impulsivity), the study seeks to elucidate whether and how impulsivity influences motor control. It is hypothesized that higher levels of impulsivity will be associated with greater variability and reduced stability in force control during submaximal isometric contractions.

Methods

The target sample of the study was composed of students who were located on the Sakarya University campus and volunteered to participate in the study. Approval for the study was

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obtained from the local ethics committee. Voluntary consent forms were obtained from the participants. Participants first filled out the Barratt Impulsivity Scale Short Form. Then, they completed the Muscle Force Test.

Barratt Impulsivity Scale Short Form (BIS-11-SF): The scale was first developed by Barratt to measure the level of impulsivity. The Turkish validity and reliability studies of the scale were conducted by Tamam et al. [4]. The scale consists of 15 items, three sub-factors (non-planning, motor impulsivity, attention impulsivity) and a total score. The lowest total score that can be obtained from the developed short form was determined as 15, and the highest score was determined as 60. An increase in the score obtained from the scale indicates an increase in the level of impulsivity.

Muscle Force Test Setup: The tests for maximal force and force steadiness utilized a setup including a preacher curl bench, a load cell (Kobastar ST S Type, 200kg), a signal amplifier (Baykon TX20), an analog-to-digital converter (NI USB-6210), and custom MATLAB-based software (The MathWorks Inc., 2023). The load cell measured force through changes in electrical resistance in its strain gauges, which were amplified and converted to a digital signal at 400 Hz. Participants viewed real-time feedback of the applied force and target values on a 19-inch monitor positioned 85 cm away and 100 cm high. Force-time data was recorded for analysis using MATLAB's interface and software developed for the study.

Muscle Force Tests: The biceps muscle group was targeted for the tests, with participants performing an isometric preacher curl at a fixed 90-degree elbow angle. After a standard warm-up, participants completed two trial runs to familiarize themselves with the setup. The tests began with the maximal voluntary isometric contraction (MVIC), where the highest force recorded over 5 seconds was taken as the maximal force (MF). Relative maximal force (RMF) was calculated by dividing this value by body weight. Following the MVIC test, the force steadiness (FS) test required participants to maintain 50% of their individual maximal force for 30 seconds. During this period, peak values occur both upward and downward (Peak numbers). In addition, the percentage of MVIC remaining within 1 standard deviation of 50% (MVIC%50±1SD) and the percentage of remaining within 2 standard deviations (MVIC%50±2SD) during the total test duration were calculated.

All statistical analyses were performed using MATLAB R2023a (The MathWorks Inc., 2023). Descriptive statistics (mean, standard deviation, counts, and percentages) were calculated. Normality was tested with the Kolmogorov-Smirnov test. Correlations were examined via Pearson’s coefficients. Significance was set at $p<0.05$.

Results

The study included 212 volunteer university students. 69.3% (n=147) of the participants were male and 30.7% (n=65) were female. The mean age of the participants was 22.7±4.4 years, the

mean height was 168.5±32.0 cm, the mean weight was 70.4±18.3 kg and the mean BMI was 23.5±4.5 kg/m^2.

The table presents correlations between force-related measures and impulsivity subscores. Additionally, correlations between MVIC50%±1SD and MVIC50%±2SD values and Barrat impulsivity scale subscores are given in the table. The participants' mean of force-related values are as follows: peak numbers were 30.5±4.0, MF was 85.1±24.6, RMF was 1.16±0.25, FS-CV was 7.01±5.19.

Non-planning impulsivity subscore was significantly correlated with peak numbers, MF, RMF, FS-CV, MVIC50%±1SD and MVIC50%±2SD scores. Motor impulsivity subscore was significantly correlated with peak numbers and RMF. Attention impulsivity subscore was significantly correlated with FS-CV, MVIC50%±1SD and MVIC50%±2SD scores. Impulsivity total scores were significantly correlated with peak numbers, RMF, FS-CV MVIC50%±1SD and MVIC50%±2SD scores.

Table. Correlations between force-related measures and impulsivity subscores

Variables		**BIS-11-SF**			
		Non-planning	**Motor impulsivity**	**Attention impulsivity**	**Total**
Peak numbers	**p**	**<0.001**	**0.007**	0.107	**<0.001**
	r	-0.243	-0.187	-0.111	-0.257
MF	**p**	**<0.001**	0.855	0.139	**0.007**
	r	-0.275	-0.013	-0.102	-0.185
RMF	**p**	**0.021**	**0.047**	0.084	**0.004**
	r	-0.159	-0.137	-0.119	-0.196
FS-CV	**p**	**0.008**	0.064	**0.027**	**0.001**
	r	0.182	0.127	-0.152	-0.218
MVIC%50±1SD	**p**	**<0.001**	0.509	**0.006**	**<0.001**
	r	-0.249	-0.046	-0.186	-0.227
MVIC%50±2SD	**p**	**<0.001**	0.245	**0.009**	**<0.001**
	r	-0.257	-0.080	-0.179	-0.244

BIS-11-SF: Barratt Impulsivity Scale Short Form; MF: Maximal force; RMF: Relative maximal force; FS-CV: Force steadiness-covariance; MVIC: Maximal voluntary isometric contraction.

Conclusion

This study explored the relationship between force steadiness and impulsivity, providing valuable insights into the intersection of cognitive traits and motor control. The findings demonstrate significant associations between various dimensions of impulsivity, as measured by the Barratt Impulsivity Scale Short Form (BIS-11-SF), and metrics of force control, including maximal voluntary isometric contraction (MVIC), force steadiness, and variability measures.

The results revealed that non-planning impulsivity was significantly correlated with a broad range of force-related measures, including maximal force (MF), relative maximal force (RMF), and force steadiness variability (FS-CV). These findings suggest that impulsivity traits related to forethought and planning may influence the consistency of force application, potentially through reduced ability to maintain focused and controlled motor output. This aligns with previous research indicating that cognitive planning deficits can impact motor precision in both static and dynamic tasks [5].

Motor impulsivity demonstrated a narrower range of correlations, significantly associated with peak numbers and RMF but not with steadiness measures such as FS-CV. This finding suggests that motor impulsivity may impact force generation more than its consistency, likely reflecting the tendency for impulsive individuals to generate quick and less controlled motor responses [6]. Attention impulsivity, on the other hand, showed significant correlations with FS-CV and steadiness metrics within specific ranges of force (e.g., MVIC%50±1SD and MVIC%50±2SD). This indicates that lapses in sustained attention may contribute to variability in maintaining steady force outputs during isometric contractions, highlighting the role of cognitive attention in motor stability [7].

Interestingly, the total impulsivity score correlated with multiple force-related measures, supporting the hypothesis that impulsivity, as a global trait, negatively influences motor steadiness and control. These results underscore the interplay between cognitive and motor domains, suggesting that impulsive tendencies may manifest in less precise and more variable motor outputs.

The findings have practical implications for understanding motor control in populations characterized by high impulsivity, such as individuals with ADHD or neurological disorders [8]. Interventions targeting cognitive traits like attention and planning may enhance motor steadiness in these groups. Future research should explore the underlying neural mechanisms linking impulsivity and motor control, such as the role of shared neural circuits involving the prefrontal cortex and motor areas.

In conclusion, the current study highlights a nuanced relationship between dimensions of impulsivity and strength constancy. Furthermore, the study findings provide a foundation for further investigation of cognitive-motor interactions and their implications in clinical and performance contexts.

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BEHAVIORAL NEUROSCIENCE

_O5674

TIME PERCEPTION UNDER PRESSURE: 3-DAY SLEEP RESTRICTION CHALLENGE

Gülhan Cansu Şen[1]* Nurcan Erdoğan Kurtaran[2] Levent Öztürk[3]

ABSTRACT

Aim: The role of sleep in regulating critical physiological processes and ensuring overall well-being is indisputable. Adequate sleep is vital for cognition, as insufficient sleep impairs memory, attention, decision-making, and time perception. This study aims to investigate the impact of short-term sleep restriction on subjective time perception in healthy adults.

Methods: The research used retrospective and prospective tasks to explore how reduced sleep duration affects temporal cognition. After ethical approval, 30 healthy volunteers aged between 18 and 35 were included in this study. Time perception assessments were conducted after four consecutive nights of habitual sleep and repeated following three nights of sleep restriction (2 hours less than regular). The time perception evaluations included retrospective time estimation tasks (RTP), such as book reading and star-drawing activities, alongside prospective time generation tasks (PTP), which involved temporal estimation using a reaction time apparatus. Cognitive functions were assessed using the Stroop Test, designed to evaluate selective attention, and the Wechsler Memory Scale-III (WMS-III), a comprehensive tool for measuring short-term and working memory performance.

Results: The RTP after sleep restriction showed a significant prolongation compared to habitual sleep duration (20.2±8.8 vs 26.6±12.3 sec, respectively; ANOVA p=0.01). Performance in short-term and working memory tasks, as measured by the WMS-III, showed significant delays following sleep restriction (10.8±1.9 vs 10.0±2.1 sec and 8.7±1.9 vs 7.9±2.2 sec and 12.3±2.1 vs 11.4±2.3 sec respectively; ANOVA p£0.01).

Conclusions: Even mild losses in sleep duration (i.e. 2-hours) may impair cognitive performance parameters such as subjective time perception and short-term memory.

Keywords: sleep curtailment,time estimation,cognitive performance

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DENTISTRY

_O5745

IMPLANT TREATMENT FOLLOWING HORIZONTAL BONE AUGMENTATION: A CASE REPORT

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ABSTRACT

Introduction and aim: Dental implants, which are preferred to replace missing teeth, cannot be properly placed in cases where bone loss has occurred. Autogenous bone blocks are considered the gold standard for bone reconstruction in such cases. This case report presents bone augmentation procedures using intraoral autogenous block grafts, followed by implant treatment.

Methods: A systemically healthy 54-year-old woman presented to our clinic with a complaint of edentulous space in the lower right posterior region. Following the examination, it was planned to restore the area with an implant-supported prosthesis. Due to the localized horizontal bone defect in the edentulous area, autogenous bone graft augmentation was planned to achieve adequate bone volume prior to implant placement. For ridge augmentation, a block graft harvested during the surgical extraction of an impacted root piece from the left lower posterior region was used. The taken block graft was fixed and augmented to the defect area in the right lower posterior region with the help of a miniscrew. A collagen membrane was then placed over the graft, completing the ridge augmentation procedure. Five months after augmentation, two implants were successfully placed in the area.

Results: There were no complications during the surgical procedures. The healing process was uneventful, and no complications were observed in either the recipient or donor areas throughout the healing period.

Conclusion: Autogenous bone grafts can provide osteoconduction, osteoinduction, and osteogenesis among graft materials. In the presented case, it is demonstrated that autogenous block grafts can effectively be used for alveolar ridge reconstruction prior to implant treatment.

Keywords: augmentation,block graft,dental implant,horizontal bone deficiency

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NURSING

_O5676

THE EFFECT OF MINDFULNESS PRACTICE FOR COPING WITH PRIMARY DYSMENORRHEA ON PAIN, ANXIETY AND QUALITY OF LIFE: A RANDOMIZED CONTROLLED TRIAL

Simge Öztürk[1] Beyza Beyaz[2] Duygu Akyol[3]*

ABSTRACT

Aim: This study aimed to determine effects of mindfulness used for coping with Primary dysmennorea on pain, anxiety and quality of life. Methods: The study was conducted as a randomized controlled trial model with pretest-midtest-posttest design and included 185 students, with 94 in mindfulness group, and 91 in control group. Data were collected using “Personal Information Form”, “Visual Analog Scale (VAS)”, “State-Trait Anxiety Inventory (STAI TX-I)”, “Mindfulness Scale (MBS)” and “World Health Organization Quality of Life-Brief Form (WHOQOL-BREF)”. Evaluation of the data Kolmogorov-Smirnov, descriptive statistics, Independent Samples t-test, chi-square, Mann Whitney U test, Mauchly test, Cohen\'s d were used. The mindfulness group performed mindfulness for 3 cycles. Results: Mean scores VAS, STAI TX-I, MBS and all sub-scales of the WHOQOL-BREF were found to be higher in the mindfulness than in the control group ($p< 0.05$). Conclusions: These results suggest that mindfulness are effective methods in reducing pain, anxiety and improving quality of life. Preregistration This trial was preregistered in the Clinical Trials database (NCT06293313).

Keywords: anxiety,mindfulness,pain,primary dysmenorrhea,quality of life

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NURSING

_O5677

DETERMINATION OF ATTITUDES OF NURSES WORKING IN INTERNAL MEDICINE CLINICS TOWARDS PATIENTS WITH CHRONIC PAIN

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ABSTRACT

Aim: This study aimed to determine the attitudes of nurses working in internal medicine clinics towards patients with chronic pain and the affecting factors.

Methods: It was descriptive cross-sectional study. The study was conducted with 125 nurses working in internal medicine units. A questionnaire form and the Attitude of Healthcare Professionals towards Patients with Chronic Pain Scale were used to collect data. Ethics committee approval was obtained. Descriptive statistics, Mann Whitney-U, Kruskal Wallis-H and Pearson Correlation tests were used in the analysis of data.

Results: The mean age of the nurses was 32.70±6.53. The mean total score of the "Attitude of Healthcare Professionals towards Patients with Chronic Pain Scale was 3.91±0.49, the mean score of the Sensitivity Orientation Subscale was 3.27±0.66 and the mean score of the Misperception Orientation Subscale was 3.07±0.66. There was no statistically significant difference between the Subscales and total score averages of the Nurses' Attitude Scale of Healthcare Professionals towards Patients with Chronic Pain scale and gender, marital status, clinic they worked in and whether they received any training on pain ($p>0.05$). A statistically significant difference was found between the total score average of the Nurses' Attitude Scale towards Patients with Chronic Pain and their educational status ($p<0.05$).

Conclution: The Nurses' Attitude Towards Patients with Chronic Pain was at a moderate level. The nurses with a high school education had a lower attitude towards patients with chronic Pain. Education programs should be developed to increase the positive attitudes of nurses towards chronic patients.

Keywords: attitude ,chronic, pain,nurse

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NURSING

_O5690

INVESTIGATION OF POSTOPERATIVE THIRST DISCOMFORT IN SURGICAL PATIENTS

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ABSTRACT

Aim: It is known that thirsty has negative effects on surgical experience. Evaluating the discomfort of surgical patients due to thirsty is important in terms of preventing the problems that may develop due to thirsty, increasing the quality of patient care and ensuring patient comfort. The aim of this study was to determine the level of discomfort experienced by surgical patients due to the feeling of thirst in the postoperative period.

Methods: This study was conducted between September 2023 and September 2024 at the General Surgery Clinic of Trakya University Hospital with 62 patients who had undergone surgery and were on the 1st-3rd postoperative day. “Data Collection Form” and the “Thirst Discomfort Scale” were used for data collection. Descriptive statistics, Mann Whitney U test and Kruskal Wallis-H test a were used in the analysis of data. The results were evaluated at a confidence interval of 95% and significance at $p<0.05$.

Results: The levels of thirst discomfort in patients who underwent surgery were associated with gender ($p=0.009$), surgical experience ($p=0.013$), oral intake status ($p=0.005$) and thirst severity ($p=0.000$), while the thirst severity reported by patients varied according to gender ($p=0.009$).

Conclusions: Women, first-time surgical patients, and those who had started oral intake were more bothered by thirst. Increasing thirst severity increased thirst discomfort. In order to reduce thirst-related discomfort, it is recommended to follow preoperative and postoperative liquid and solid food intake protocols, and to provide care that will reduce thirst and relax patients.

Keywords: discomfort ,nursing care ,surgical patients ,postoperative period ,thirst

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NURSING

_O5711

DETERMINING THE ATTITUDES OF NURSING STUDENTS TOWARDS CLINICAL PRACTICES

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ABSTRACT

Aim: This study aimed to determine the attitudes of nursing students towards clinical practices.

Methods: This descriptive, cross-sectional study was conducted with 319 students attending the Department of Nursing at the Faculty of Health Sciences of a university between May 6 and June 30, 2024. The data were collected using the "Student Information Form" and the "Attitude Scale Towards Clinical Practices for Nursing Students." Ethics committee approval was obtained Statistical significance was accepted at $p<0.05$.

Results: The average age of the students was 21.32±1.90 years, and their overall Grade Point Average (GPA) was 2.84±0.49 of the students, 30.7% were first-year students, and 80.9% had chosen the nursing department willingly. The mean total score of the Nursing Students' Attitudes Towards Clinical Practices Scale was 95.15±17.07. A statistically significant difference was found between students who chose the department willingly and the total score on the Nursing Students' Attitudes Towards Clinical Practices Scale, the Positive Approach Subscale, and the Personal Development Subscale ($p<0.05$). A significant difference was also found between students who were not afraid to interact with patients and the mean scores of the Positive Approach and Personal Development subscales ($p<0.05$).

Conclusions: The attitudes of students towards clinical practices were positive. Students who willingly chose the nursing department had higher attitudes towards clinical practices. Those who were not afraid to interact with patients had higher personal development scores and displayed a more positive approach to clinical practices.

Keywords: attitude,clinic,nurse,student

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NURSING

_O5723

DETERMINATION OF NURSING STUDENTS' ECOLOGICAL FOOTPRINT AND SUSTAINABLE CONSUMPTION BEHAVIORS

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ABSTRACT

Aim: In this study, it was aimed to determine the sustainable consumption behaviors and ecological footprint awareness of nursing students and to evaluate them in terms of various sociodemographic variables.

Methods: The population of this descriptive cross-sectional study consisted of nursing students (N=484) studying at the Faculty of Health Sciences. As a result of the research, 414 nursing students were reached. Sociodemographic questionnaire form, Sustainable Consumption Behaviors Scale (SCBS) and Awareness Scale for Reducing Ecological Footprint (AASF) were used in the study. Descriptive statistics, t test / Mann Whitney U test, ANOVA (Posthoc: Bonferroni) / Kruskal Wallis test, correlation analysis were used to analyze the data.

Results: In the study, it was determined that %71.5 of the participants were female, %30.7 of them were in the fourth grade, %41.5 of them stayed in KYK dormitory, % 65.5 of the nursing students didn't receive any environmental education, %70.0 of them didn't participate in the activities of any environmental organization, %51.2 of them occasionally reacted to individuals who pollute the environment, %35.5 of them sometimes talked about environmental issues in the family. Ecological footprint awareness survey score (28.13±8.26) and sustainable consumption behaviors survey score (8.78±2.84) were found.

Conclusions: According to the study, living with the family, being interested in environmental issues, discussing environmental issues in the family, hearing the concept of ecological footprint before, and throwing wastes such as paper, plastic, and glass into the recycling bin are situations that increase sustainable consumption behavior and ecological footprint awareness. In order to increase consumption and environmental awareness for a sustainable world, the knowledge and skills of future nurses should be improved by increasing their education on environmental health.

Keywords: Awareness, ecological footprint, environmental awareness, nursing students, sustainable consumption.

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INTRODUCTION

Increasing population in the world, increasing needs of individuals and unconscious consumption have led to unlimited consumption of natural resources and exceeding biological and ecological capacity. With global warming and climate changes, soil, air and water pollution, chemicals used in agricultural lands, natural resources have deteriorated and biodiversity has begun to decrease, many problems that threaten the world have occurred and continue to occur. Concerns about the future of the world are increasing and necessary precautions must be taken regarding these concerns (Özsoy ve Şimşek, 2018). In order to highlight concerns and problems about our future, the concept of ecological footprint, which makes environmental sustainability measurable, has come to the fore. This concept brings to light the quantity of people's demands on natural resources and the factors that result from them (Şahin ve ark., 2016).For a healthy, safe and sustainable world today and in the future, every individual needs to evaluate their personal consumption behavior. Ecological footprint calculations emphasize various aspects of ecological destruction in order to create environmental awareness in society and individuals and to pass it on to future generations.(Eraslan ve Seçme,2021).Nurses have professional responsibilities in the field of environmental health (Özkaya ve Çınar-Özen,2024). The position of a healthy environment in human life makes it important for future nurses to be aware of environmental awareness and sustainable consumption behaviors during their education process. In this study, it was aimed to determine the sustainable consumption behaviors and ecological footprint awareness of Balıkesir University Faculty of Health Sciences Nursing students and to evaluate them in terms of various sociodemographic variables.

MATERIALS AND METHODS

The population of the descriptive and cross-sectional study consisted of all nursing students studying at Balıkesir University Faculty of Health Sciences in the 2023-2024 academic year (N = 489), and the sample consisted of 414 nursing students attending the course (%84.6 of the population was reached).In collecting data, the Sociodemographic information form created by the researchers, Sustainable Consumption Behavior Scale, and Ecological Footprint Awareness Scale were used. The study was started by obtaining ethics committee (date: 15/12/2023-E., number: 2023/123), scale permissions and institutional permission. Data were collected by face-to-face interviews with students who agreed to participate in the research.

FINDINGS

In the study, the average age of the participants was 20.97±1.71, %71.5 were women, %30.7 were in the fourth year, %41.5 lived in the KYK dormitory, %65.5 of the nursing students didn’t receive environmental education, %70.0 didn’t participate in the activities of any environmental organization, %51.2 occasionally reacted against individuals who polluted the environment, %35.5 sometimes had problems with the environment in the family. It was determined that

related topics were discussed. EAIFÖ survey score (28.13±8.26) and STDÖ survey score (8.78±2.84) were found. It was determined that the female students participating in the study, second grade students, those who stayed with their families, those who were interested in the environment and participated in activities, those who talked about environmental issues in the family, those who reacted against individuals polluting the environment, those who had heard of the concept of ecological footprint before, and those who threw waste such as paper, plastic and glass into the recycling bin, had higher sustainable consumption behaviors and ecological footprint awareness (Table1, Table 2).

Table 1: Comparison of Sociodemographic Characteristics with Ecological Footprint Awareness and Sustainable Consumption Behavior Scales

		n	%	EAİFÖ ort±Ss*	STDÖ ort±Ss*
Cinsiyet					
Female		296	71,5	110,57±22,47	54,78±9,59
Male		118	28,5	104,48±26,27	54,79±8,50
P*				**0,021***	-0,174
Z				-2,309	0,862
Class					
First		101	24,4	107,53±24,20	54,65±7,63
Second		91	22,0	118,50±20,52	56,72±11,15
Third		95	22,9	106,31±21,55	54,28±8,57
Dördüncü		127	30,7	104,84±25,43	53,85±9,41
P**				**0,000***	0,143
KW				18,973	5,423
Bonferroni				1,3,4<2	
Place of residence					
KYK		172	41,5	109,51±24,70	53,58±9,87
Private Dormitory		66	15,9	108,86±23,07	55,51±8,65
with family		102	24,7	112,47±20,99	56,54±9,26
With friends or alone at home		74	17,9	102,25±24,78	54,72±8,08
P**				**0,027***	**0,026***
KW				9,140	9,281
Bonferroni				4<3	1<3
Attention to environmental issues					
Yes		147	35,5	111,72±28,55	58,00±10,32
Sometimes		125	30,2	106,53±19,05	52,28±7,45
No		36	8,7	103,41±19,98	51,16±8,21
Varies Depending on the Subject		106	25,6	109,39±22,22	54,49±8,72
P**				**0,004***	**0,000***
KW				13,483	33,826
Bonferroni					2,3,4<1
Participation in the activities of any environmental organization					
Yes		124	30,0	111,01±26,53	56,17±9,22
No		290	70,0	107,91±22,43	54,18±9,28
P**				**0,013***	0,073
Z				-2,123	-1,790
Ort; Mean SS;Standard deviation, Student-t, Kruskal Wallis, Bonferroni test was used.					

Table 2: Comparison of Sociodemographic Characteristics with Ecological Footprint Awareness and Sustainable Consumption Behavior Scales (continued).

		n	%	EAİFÖ ort±Ss*	STDÖ ort±Ss*
Discussion of environmental issues in the family					
Yes		97	23,4	110,00±28,37	58,05±9,54
Sometimes		147	35,5	111,81±20,39	54,87±9,22
No		79	19,1	104,36±24,95	51,12±9,67
Varies Depending on the Subject		91	22,0	106,68±21,84	54,30±7,44
P**				**0,013***	**0,000***
KW				10,779	21,364
Bonferroni				3<1,2	2,3<1
Reaction against individuals polluting the environment					
Always		130	31,4	112,65±25,21	57,84±9,28
Sometimes		212	51,2	107,83±22,40	53,60±8,99
Rarely		58	14,0	103,08±25,41	52,65±8,93
I Don't React At All		14	3,4	112,57±17,59	52,92±8,74
P**				**0,014***	**0,000***
KW				10,636	24,630
Bonferroni				3<1	2,3<1
Having heard of the concept of ecological footprint before					
Yes		326	78,7	110,97±23,46	55,34±9,47
No		88	21,3	100,92±23,24	52,69±8,22
P**				**0,000***	**0,032***
Z				-3,730	-2,145
Throwing waste such as paper, plastic and glass into the recycling bin					
Yes		311	75,1	111,18±23,74	55,45±9,33
No		103	24,9	101,77±22,43	52,72±8,84
P**				**0,000***	**0,019***
Z				-4,159	-2,349
Ort; Mean SS;Standard deviation, Student-t, Kruskal Wallis, Bonferroni test was used.					

DISCUSSION

As a result of our research, it was determined that the average EAIFÖ score of female nursing students was higher than that of male students. In a similar study conducted to determine the EAIFÖ levels of university students from different departments, it was reported that the average EAIFÖ scores of female students were higher than male students (Eraslan ve Seçme, 2021). In our study, it was determined that students who were interested in environmental issues had high EAİFÖ and STDÖ score averages. In a study examining the environmentally friendly behavior of university students, it was reported that the students showed more environmentally friendly behavior as they were more interested in environmental issues (Atik ve Doğan, 2019). In our study, the EAIFÖ scores of nurses who participated in the activities of any environmental organization were found to be higher than those who did not participate in the activities.

In the study examining the attitudes of nursing and medical students towards environmental problems, it was reported that although their level of participation in the activities of environmental organizations was limited, the environmental awareness of the students who

participated in the activities was higher than the students who did not participate (Çelik ve ark., 2016). It was determined that the group that was always reactive towards individuals polluting the environment had a higher STDS score than the other groups ($p<0,05$) (Table 2). In a study examining the environmental awareness and environmental sensitivity of nursing students in the literature, it was reported that the general scores of the nursing student group that always reacted against individuals polluting the environment were higher and more positive than the student group that did not react at all (Gök, 2017).

LIMITATIONS OF THE RESEARCH

The results of the research are limited to the answers given by the students of the nursing faculty of the University where the research was conducted, so they cannot be generalized.

CONCLUSION

According to the findings of our study, it was determined that %71.5 of the nursing students were women, %65.5 didn't receive environmental education, %70.0 didn't participate in the activities of any environmental organization, and %51.2of the students occasionally reacted against individuals who pollute the environment.

Nursing students should be encouraged to evaluate the individual, family and social risks of environmental health and develop sustainable consumption behaviors, and their knowledge and skills should be improved by increasing their education on environmental health. Environmental events should be organized to raise environmental awareness.

APPRECIATION

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"Determining the Ecological Footprint and Sustainable Consumption Behaviors of Nursing Students" this is an excerpt from her master's thesis titled.

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NURSING

_O5726

PREVALENCE OF OBESITY AND NUTRITIONAL CHARACTERISTICS AMONG HIGH SCHOOL STUDENTS IN A PROVINCIAL CENTER: A DESCRIPTIVE CROSS-SECTIONAL STUDY

Selma Durmuş Sarıkahya[1]

ABSTRACT

Aim: This study aimed to evaluate the nutritional habits and obesity prevalence among high school students.

Methods: This descriptive cross-sectional study included 929 high school students from a city. Data were collected through face-to-face interviews between March and May 2023 and analyzed using frequencies and percentages.

Results: The mean age of the students was 15.84±1.21 years. Body Mass Index (BMI) analysis revealed that 12.7% of students were overweight and 5.6% were obese. Gender-specific differences were identified in meal consumption and dietary behaviors. Female students were more likely to skip meals (70.7% vs. 64.2%, p=0.035), particularly breakfast, due to reasons such as lack of appetite (56.5%) and waking up late (19.7%). Male students consumed higher amounts of milk, water, red meat, and white meat but also had greater fast-food and sugary drink consumption. While both genders cited "liking the taste" as a common reason for fast-food consumption, male students were more likely to cite "being with friends" (14.7%). Despite these differences, breakfast skipping and inadequate fruit and vegetable intake were common issues for both groups. Additionally, only 54.4% of students reported receiving formal nutrition education.

Conclusions: The findings highlight the urgent need for school-based interventions tailored to male and female students. These should focus on promoting balanced meals, addressing barriers to breakfast consumption, and reducing unhealthy eating practices. School nutrition programs, family involvement, and targeted health education campaigns are essential to establish lifelong healthy eating habits among adolescents.

Keywords: obesity prevalence, nutritional habits, high school students, descriptive cross-sectional study

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INTRODUCTION

Nutrition plays a fundamental role in protecting, maintaining, and improving individual health while also preventing diseases. However, during adolescence—a period marked by rapid growth and development coupled with increased energy and nutrient needs—nutrition is often shaped by unhealthy choices. The rise in the consumption of fast food, processed foods, and high-sugar products, along with insufficient intake of fruits and vegetables, not only adversely affects adolescents' growth and development but also predisposes them to chronic diseases.

According to the World Health Organization (WHO), adolescence, which encompasses individuals aged 10-19 years, is classified as a critical stage where personal independence and behavior patterns are formed. During this period, adolescents go through a process where individual differences emerge, and they begin making their own dietary choices. Due to changes in lifestyle and the influence of social factors, unhealthy eating behaviors are common during adolescence. Poor nutritional habits in this age group increase the risk of obesity, which negatively impacts not only physical health but also psychological and social well-being.

Obesity has been identified by the WHO as a global public health issue, and it is reported that this problem is rapidly increasing during adolescence. Globally, it is estimated that over 340 million individuals aged 5-19 years are overweight or obese. In Turkey, research on the prevalence of nutrition-related behaviors and obesity among adolescents is limited, highlighting the need for broader studies in this field.

This study aims to contribute to the development of programs promoting healthy eating behaviors among adolescents and seeks to identify the prevalence of obesity and nutritional habits in this age group. By doing so, the research intends to provide a scientific foundation for the development of effective prevention strategies targeting unhealthy eating habits and obesity-related issues.

The findings of this study are expected to contribute to the planning of interventions aimed at preventing obesity and addressing nutritional challenges among high school students. Within the scope of this research, the following questions were addressed:

1. What is the prevalence of obesity among high school students?
2. What are the factors influencing the nutritional habits of students?

MATERIALS AND METHODS

Study Design

This study is a descriptive cross-sectional research designed to determine the nutritional characteristics and obesity prevalence among adolescents.

Study Location, Population, and Sample

The research was conducted in high schools affiliated with the Directorate of National Education in Artvin city center. The study population consisted of students enrolled in high schools in the city center during the 2022–2023 academic year. Instead of sampling, the study aimed to include the entire population. In total, there were 1,216 high school students in the city center during the 2022–2023 academic year. Among these, 929 students who agreed to participate were included in the study, resulting in a participation rate of 81.5%.

Study Period and Data Collection Process

The data collection process was carried out between March and May 2023 using face-to-face interviews. Initially, height and weight measurements were taken, followed by the distribution of data collection forms. Height measurements were conducted using a fixed tape measure, while weight was measured using a digital scale with a precision of 100 grams. During the measurements, students were asked to remove excess clothing and shoes. Before filling out the forms, participants were provided with instructions on how to answer the questions. Completing the forms took approximately 7–8 minutes. Data collection was initiated after obtaining ethical approval and institutional permissions.

Data Collection Form

The study utilized a two-part data collection form. The first section included sociodemographic characteristics of participants, such as age, grade, and parental education levels. The second section comprised 15 questions aimed at assessing nutritional habits, such as the number of meals consumed, daily water intake, fruit and vegetable consumption, dairy consumption, meal skipping, and fast-food consumption.

Data Analysis

The data were transferred to a computer and analyzed using the SPSS 23 statistical software. Sociodemographic characteristics of the participants were presented as frequencies and percentages, while the number of meals and water intake amounts were presented as means. The chi-square test was applied to evaluate the effect of obesity on dietary habits. For calculating the Body Mass Index (BMI) of the students, the WHO 2007 standards were used, with BMI calculated as follows: BMI = Weight (kg) / Height (m^2). BMI categories were defined as follows: BMI <18.5 (underweight), 18.5 ≤ BMI ≤ 24.9 (normal weight), 25.0 ≤ BMI ≤ 29.9 (overweight), and BMI ≥ 30.0 (obese). A significance level of 0.05 was used, where a p-value < 0.05 indicated a significant difference, and a p-value > 0.05 indicated no significant difference.

Ethics

Ethical approval for this study was obtained from the Artvin Çoruh University Ethics Committee (E-18457941-050.99-73008, 15.12.2022), and institutional permission was granted by the Artvin Provincial Directorate of National Education. Prior to the study, face-to-face

meetings were held with the school management to discuss the study's purpose and content, and information was provided to parents along with announcements. Parental consent was obtained. During the study, students were also informed about the study's purpose and content, and their consent was obtained. This study was conducted in accordance with the principles of the Helsinki Declaration.

RESULTS

The average age of the participants was 15.84±1.21 (ranging from 13 to 19), and the average BMI was 21.97±4.02 (ranging from 15.01 to 36.89). The average height was 167.3±8.9 cm (minimum: 144 cm, maximum: 190 cm).

Table 1. Sociodemographic Characteristics of the Students (n=929)

Variable	n	%
Gender		
Female	488	52.5
Male	441	47.5
Family Type		
Nuclear family	773	83.2
Extended family	99	10.7
Single-parent family	57	6.1
Mother's Education Level		
Primary school	235	25.3
Secondary school	250	26.9
High school	295	31.8
University or higher	149	16.0
Father's Education Level		
Primary school	127	13.7
Secondary school	198	21.3
High school	384	41.3
University or higher	220	23.7
Mother's Employment Status		
Working	315	33.9
Not working	614	66.1
Father's Employment Status		
Working	785	84.5
Not working	144	15.5
Chronic Disease		
None	837	90.1
Present	92	9.9

Among the high school students who made up the participant group of this study, 52.5% were female and 47.5% were male. Regarding family type, the majority of the students (83.2%) live in nuclear families. When examining the educational level of the parents, it was found that 31.8% of mothers and 41.3% of fathers were high school graduates. Additionally, 66.1% of the

mothers were not employed, while the vast majority of fathers (84.5%) were employed. It was also reported that 90.1% of the participants did not have any chronic diseases.

Table 2. Comparison of Some Dietary Habits Based on Gender (n=929)

	Female (n=488)	**Male (n=441)**		
	Ort.±ss	**Ort.±ss**	**t**	**p**
Daily meal frequency	2.96±0.66	3.12±0.79	-3.514	**0.001**
Daily water intake (glasses/day)	5.40±2.60	6.09±2.77	-3.914	**0.000**
Daily fruit intake (servings/day)	1.20±0.76	1.26±0.87	-1.118	0.264
Daily vegetable intake (servings/day)	1.20±0.94	1.26±0.99	-1.012	0.312
Daily milk intake (cups/day)	1.18±0.98	1.58±1.52	-4.276	**0.000**
Weekly white meat intake (servings/week)	1.42±1.05	1.78±1.33	-4.949	**0.000**
Weekly red meat intake (servings/week)	1.42±1.05	1.78±1.33	-4.613	**0.000**

When examining certain dietary habits by gender, it was found that males consumed more daily meals compared to females (Female: 2.96±0.66, Male: 3.12±0.79; p=0.001). Similarly, the daily water consumption of males was significantly higher than that of females (Female: 5.40±2.60 cups, Male: 6.09±2.77 cups; p=0.000). The daily milk consumption was also higher in males (Female: 1.18±0.98 cups, Male: 1.58±1.52 cups; p=0.000). Weekly consumption of both white and red meat was significantly higher in males compared to females (For both types of consumption, p=0.000).

When the distribution of students based on BMI was examined, it was found that 65.2% had a normal weight (n=606), 16.5% were underweight (n=153), 12.7% were overweight (n=118), and 5.6% were obese (n=52) (Figure 1).

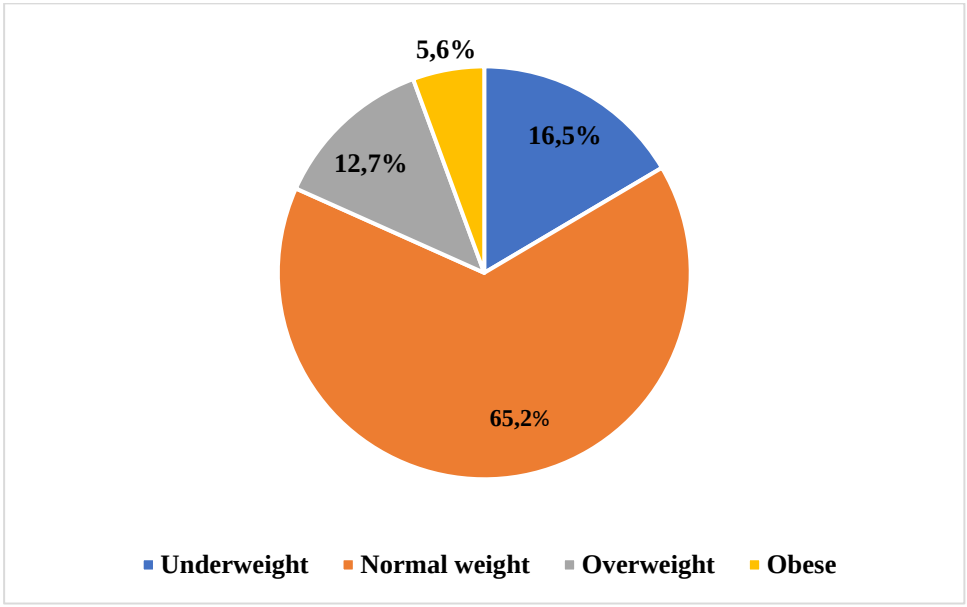

Figure 1. Distribution of Students Based on Body Mass Index (BMI) (n=929)

Table 3. Comparison of Certain Nutritional Habits by Gender Among Participants (n=929)

	Female		Male			
Variable	**n**	**%**	**n**	**%**	**Chi-Square**	**p**
Eating after 7 PM						
Yes	386	79.1	359	81.4		
No	102	20.9	82	18.6	0.378	0.212
Nutrition education						
Yes	266	54.5	239	54.2		
No	222	45.5	202	45.8	0.009	0.924
Consumption of cola, fruit juice, and sugary drinks						
Do not consume	9	1.8	16	3.6		
Once a month	79	16.2	53	12.0		
Once a week	153	31.4	118	26.8		
2-3 times a week	184	37.7	196	44.4		
Every day	63	12.9	58	13.2	9.834	**0.043**
Fast food consumption frequency						
Do not consume	9	1.8	14	3.2		
Once a month	83	17.0	83	18.8		
Once a week	189	38.7	151	34.2		
2-3 times a week	168	34.4	151	34.2		
Every day	39	8.0	42	9.5	3.983	0.408
Reason for fast food consumption						
During meal time at school	113	23.2	87	19.7		
Because they like it	213	43.6	167	37.9		
No ready food at home	17	3.5	36	8.2		
They don't like the food at home	41	8.4	33	7.5		
Because it is cheaper	1	0.2	4	0.9		
To hang out with friends	55	11.3	65	14.7		
Other	48	9.8	49	11.1	16.934	**0.010**
Daily milk/ ayran/ yogurt consumption						
Yes	313	64.1	288	65.3		
No	175	35.9	153	34.7	0.138	0.710

In the study, the frequency of cola and sugary beverage consumption was found to be higher among male students compared to female students. Specifically, the consumption rate of "2-3 times per week" was recorded as 44.4% for males and 37.7% for females (p=0.043). There was no statistically significant difference between genders regarding fast food consumption (p>0.05). However, among male students, the reason for consuming fast food was more commonly "to be with friends" (14.7%), while for female students, the reason "being at school during meal time" was more frequently mentioned.

Table 4. Comparison of Meal Skipping by Gender (n=929)

	Female		Male			
	n	%	n	%	Chi-Square	p
Meal Skipping						
Yes	345	70.7	283	64.2		
No	143	29.3	158	35.8	4.502	**0.035**
Most Skipped Meal						
Breakfast	249	72.1	193	68.2		
Lunch	64	18.6	69	24.4		
Dinner	32	9.3	21	7.4	3.544	0.315
Reason for Skipping Meals						
Can't wake up in the morning	68	19.7	91	32.2		
No time	49	14.2	54	19.1		
No appetite	195	56.5	114	40.3		
Other	33	9.6	24	8.5	24.346	**0.000**

The rate of meal skipping is higher among females compared to males (70.7% vs. 64.2%; p=0.035). In both groups, the most commonly skipped meal is breakfast (Female: 72.1%, Male: 68.2%). Among the reasons for meal skipping, "lack of appetite" was the most common reason among females (56.5%), while "difficulty waking up in the morning" was the prominent reason for males (32.2%; p=0.000).

CONCLUSION

In this study, significant findings were obtained regarding the dietary habits and obesity prevalence of high school students. While the majority of participants had a normal weight, the proportions of overweight (12.7%) and obese (5.6%) individuals were strikingly high. Gender differences were notably observed in dietary habits. Male students consumed more meals, water, and milk, and had a higher intake of both white and red meats, which reflects a more positive dietary pattern. However, they also exhibited higher consumption of sugary drinks and cola compared to females, which could negatively affect healthy eating habits. The higher rate of meal skipping among female students, especially skipping breakfast, indicates a need for improvement in their dietary habits. Among the reasons for meal skipping, anorexia was more common in females, while late awakening was the prominent reason among males (p=0.000). Furthermore, sociodemographic factors such as parental education and employment status may have an influence on students' eating habits.

Based on the findings, school-based nutrition programs should be implemented to promote healthy eating habits and reduce the risk of obesity among students. These programs should

emphasize the importance of breakfast, introduce healthy snack alternatives, and aim to discourage sugary drink consumption. In addition, physical activity programs should be encouraged to increase students' activity levels. Awareness-raising activities targeting parents could also help families play an active role in supporting their children's healthy eating habits. Expanding and implementing healthy eating education programs would help students more effectively adopt behavioral changes. Future studies could focus on tracking changes in students' eating habits over time with a larger sample and longitudinal design to obtain more comprehensive results.

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NURSING

_O5737

THE RELATIONSHIP BETWEEN TREATMENT ADHERENCE, HEALTH LITERACY, AND FAMILY SUPPORT IN TYPE 2 DIABETES PATIENTS

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ABSTRACT

Aim: This study was designed to determine the relationship between treatment adherence of type 2 diabetes patients and health literacy and family support.

Method: Our study is descriptive and correlational in nature. A total of 205 type 2 diabetes patients presenting to Silivri State Hospital between December 2022 and July 2023 participated in the study. Data were collected and analyzed using the Type 2 Diabetes Patient Identification Form, Type 2 Diabetes Mellitus Treatment Adherence Scale, Health Literacy Scale, and Hensarling Diabetes Family Support Scale through face-to-face interviews.

Results: In our study, the mean total score of Type 2 Diabetes Mellitus Treatment Adherence Scale for type 2 diabetes patients was found to be 91.361±7.142, the mean total score of Health Literacy Scale was 78.766±9.113, and the mean total score of Hensarling's Diabetes Family Support Scale was 69.971±8.026. It was observed in our research that the patient's adherence to treatment was weakly influenced by the subdimensions of health literacy and family support.

Conclusion: Educational and support programs aimed at improving the health literacy levels of diabetes patients and strengthening family support need to be designed and implemented more effectively. These programs can help increase patients' treatment adherence and improve health outcomes. It is recommended to increase community-level awareness campaigns for the prevention and effective management of diabetes.

Keywords: health literacy,diabetes management,family support, family support in diabetes,treatment adherence

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NURSING

_O5742

DETERMINATION OF ANHEDONIA AND EATING ATTITUDE LEVEL OF NURSING STUDENTS

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ABSTRACT

Aim: This study was conducted to determine the level of anhedonia and eating attitude of nursing students.

Methods: In this descriptive study, 187 nursing students studying at Tekirdag Namik Kemal University were included. Information form, Snaith-Hamilton Satisfaction Rating Scale (SHRAS) and Eating Attitude Test 26 (EAT-26) were used to collect the data. Descriptive statistical methods (frequency, percentage, mean, standard deviation) were used in the evaluation of the data; Kruskal Wallis H-Test, Mann Whitney-U test, Pearson correlation analysis, Cronbach's Alpha coefficient were used in the analysis.

Results: The anhedonia level was higher in men than in women, the risk of eating attitude disorder was higher in those with low income perception and those who were married, and both the risk of eating attitude disorder and the anhedonia level were significantly higher in those with mental disorders than in those with and without physical illness ($p<0.05$). In addition, a statistically weak positive correlation was found between the total score of SHHDÖ and the total score of YTT-26 ($r=0.163$; $p=0.025$).

Conclusions: It is important to evaluate young people and different age groups in terms of anhedonia and eating attitudes.

Keywords: anhedonia, eating attitude, nursing student

INTRODUCTION

Anhedonia is defined as a depressed mood or a loss of interest and desire in social or behavioral experiences and activities and thus a decrease in the ability to enjoy them. Loss of pleasure (anhedonia) impairs quality of life and may thus affect social functioning. Anhedonia can lead to binge eating spectrum disorders (BESDs), in which the pleasure derived from daily activities

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is replaced by delicious food. Individuals prefer food over social interactions and hobbies as a source of pleasure and motivation, and this can create a vicious cycle with a persistent addiction.

In addition to causing obesity, eating addiction or addiction-like eating has been shown in various studies to be associated with psychological/psychiatric disorders such as depression, anxiety disorder, post-traumatic stress disorder or eating disorders. Therefore, a finding such as anhedonia will be inevitable.

The majority of cases with eating disorders occur in individuals under the age of 25. Youth is a period of contradictions in which the individual experiences social and physical changes, emotional, behavioral, sexual, economic, academic and social conflicts, and efforts to find identity increase with psychosocial and sexual maturity. Therefore, university students have a high tendency to develop eating disorders in relation to their nutritional status due to psychosocial reasons. In addition, university students are also in the risky group in terms of developing mental health problems due to eating disorders. Some studies on eating addiction and/or addiction-like eating have found that body dissatisfaction and food addiction have a positive relationship.

Therefore, it is important to investigate anhedonia, which may be caused by psychological factors arising from eating attitude disorders, since impaired eating behaviors may prevent university students from enjoying life. This study was designed to make a new interpretation of eating attitude disorder in nursing students and mental health problems that may arise from these eating disorders and to examine its relationship with anhedonia, one of the psychological problems. In this subject, it was aimed to examine the relationship between eating attitude disorders in health care providers and anhedonia, which is a psychological problem that may occur due to this, by selecting a sample of nursing students who will be role models for the society as future health professionals and raise awareness of the society.

Research Questions

1. What is the anhedonia level of nursing students?

2. What is the level of eating attitude of nursing students?

3. Is there a relationship between anhedonia level and eating attitude of nursing students?

METHOD

Research Type: Descriptive type.

Research Population and Sample: The population of the study consisted of 480 students enrolled in Tekirdağ Namik Kemal University, Faculty of Health Sciences, Department of Nursing in the 2023-2024 academic year. The sample of the study was calculated by utilizing

the standard deviation value (SD=8.93) of the 'Eating Attitude Scale-26' found in the study conducted by Cevizci and Akyunus (2022) and the formula n= N x σ 2 x Z 2 / (N-1) x d 2+ (σ 2 x Z 2) used in cases where the population is known. In the formula, 95% confidence level and deviation d=1 were accepted (Karasar 2005; Esin 2014). The study was completed with 187 students.

Data Collection Technique and Tools: Data will be collected by the researchers through questionnaire method.

Information Form: It is an 11-question form.

Snaith-Hamilton Satisfaction Rating Scale (SHRAS): The validity and reliability of the form developed by Snaith et al. (1995), which determines the anhedonia levels of individuals according to their level of contentment, was carried out by Kesebir et al. (2015). The scale consists of 14 Likert-type questions. The scale is scored between 0-14. The higher the total score, the higher the level of anhedonia. The Cronbach's Alpha value of the scale is 0.92 and 0.83 for this study.

Eating Attitude Test 26 (EAT-26): The scale was developed by Garner and Garfinkel (1979) and a 26-item short form of the scale was created by Garner et al. (1982) , and the validity and reliability study in Turkey was conducted by Ergüney-Okumuş and Sertel-Berk (2019). The scale is a 6-point Likert scale type. The Cronbach's Alpha Cronbach's Alpha value of the scale is 0.83. In this study, the internal consistency score was 0.88.

Data analysis: The data obtained in the study were analyzed using the SPSS package program and the findings were evaluated at 95% confidence interval and $p<0.05$ significance level. Descriptive statistical methods (frequency, percentage, mean, standard deviation) were used in the evaluation of the data; Kruskal Wallis H-Test, Mann Whitney-U test, Pearson correlation analysis, Cronbach's Alpha coefficient were used in the analysis.

Ethical issues: Before the study, permission was obtained from the research institution and Tekirdağ Namık Kemal University Non-Interventional Clinical Research Ethics Committee (No: 441706). At the same time, scale permission was obtained from the researchers for the scales to be used in the data analysis in the study and a consent form was filled out from each student before the study.

RESULTS

Of the students participating in the study, 28.9% were first-year students and the mean age was 21.86±3.7 years. Female students accounted for 67.4%, 84.7% of the students were unemployed, 75.8% had a medium-high income perception, 91.1% were single, 47.9% lived in

dormitories, 9.5% had a physical and 7.4% a mental chronic disease, 52.1% had never used alcohol and 64.7% had never smoked, and 73.1% had a normal BMI.

Table 1. Distribution of SHHDÖ and YTT-26 according to students' descriptive characteristics

			SHRAS		EAT-26	
	(Min Max) Mean±Std Deviation		**Test Significance**		**Test Significance**	
Age	(18-51) 21.86±3.70		r=0.56; p=0.445		r=0.67; p=0.358	
Class	**Number**	**%**	**Mean±Std Deviation**	**Test Significance**	**Mean±Std Deviation**	**Test Significance**
1	55	28.9	1.27±2.45	KW=4.497, p=0.213	10.07±11.50	KW=5.963, p=0.113
2	48	25.3	1.23±1.88		8.17±9.13	
3	42	22.1	0.67±1.10		6.88±8.29	
4	45	23.7	0.87±2.27		11.16±11.49	
Gender						
Woman	128	67.4	0.74±1.74	**U=2767.000,p<0.001**	9.73±11.10	U=3588.000,p=0284
Man	62	32.6	1.63±2.44		7.94±8.50	
Working Status						
Working	29	15.3	1.45±2.21	U=1987.000,p=0.145	11.66±11.61	U=2011,000,p=0.234
Not working	161	84.7	0.96±2.00		8.69±10.06	
Income perception						
Low	46	24.2	1.83±3.20	U=2755.000,p=0.051	11.35±10.36	**U=2540.000,p=0.017**
Medium and High	144	75.8	0.78±1.40		8.44±10.26	
Marital status						
Single	173	91.1	1.08±2.10	**U=1931.500,p=0.033**	8.85±10.42	U=239.000,p=0.220
Married	17	8.9	0.53±1.07		12.12±9.15	
Place of living						
Dormitory	91	47.9	0.81±1.83	KW=3.336, p=0.189	9.08±11.25	KW=3.503, p=0.173
Student house	57	30.0	1.25±2.02		8.40±9.96	
Family/Relatives	42	22.1	1.21±2.44		10.29±8.77	
Presence of chronic illness.						
[a]Yes (Physical)	18	9.5	1.44±1.98	**KW=6.641, p=0.036 b>a>c**	12.11±14.34	**KW=17.106, p<0.001 b>a>c**
[b]Yes (Mental)	14	7.4	2.14±3.59		19.00±11.16	
[c]No	158	83.1	0.89±1.82		7.93±29.21	
Alcohol use						
Yes	91	47.9	1.13±2.20	U=4683.000,p=0.637	8.62±9.26	U=4413.000,p=0.783
No	99	52.1	0.94±1.87		9,63±11.26	
Smoking						
Yes	67	35.3	1.31±2.43	U=4683.000,p=0.094	8.81±11.85	U=3745.000,p=0.235
No	123	64.7	0.88±1.77		9.33±9.45	
BMI Level						
Under 18.5 is weak	21	11.1	0.62±1.24	KW=3.431, p=0.180	9.76±11.05	KW=0.443, p=0.801
18.5-24.9 is normal weight	139	73.1	0.95±1.89		9.22±10.92	
25 and over is overweight and obese	30	15.8	1.70±2.88		8.33±6.58	

The anhedonia level was higher in men than in women, the risk of eating attitude disorder was higher in those with low income perception and those who were married, and both the risk of eating attitude disorder and the anhedonia level were significantly higher in those with mental disorders than in those with and without physical illness ($p<0.05$) (Table 1). In addition, a

statistically weak positive correlation was found between the total score of SHHDÖ and the total score of YTT-26 (r=0.163; p=0.025).

CONCLUSION

According to the descriptive characteristics of the students, the level of anhedonia was higher in females, and the risk of eating attitude disorder was higher in those with low income perception and those who were married. In addition, both the risk of eating attitude disorder and the level of anhedonia were significantly higher in those with mental disorders than in those with and without physical illness. A positive correlation was found between anhedonia and eating attitude. In line with these results, it is important to repeat the study in different groups in order to identify risk groups and to conduct preventive studies.

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NURSING

_O5751

EVALUATION OF THE FACTORS AFFECTING THE PERIOD OF HOSPITAL ADMISSION IN ACUTE ISCHEMIC STROKE

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Introduction: Early recognition of acute ischemic stroke cases and early receipt of appropriate treatment affect the prognosis of stroke. Door-to-needle time is a critical consideration in emergency management of acute ischemic stroke. earlier thrombolytic treatment, compared with later administration, is associated with a lower risk of in-hospital mortality and hemorrhagic transformation and better functional outcomes at discharge and long term. To improve the results the door-to-needle time should be determined regionally and precautions should be taken.

Aim: The aim of this study was to determine the time from the onset of the first complaints to hospital admission and the factors affecting this time in patients hospitalized with the diagnosis of acute ischemic stroke.

Methods: The research data were collected using face-to-face interviews with patients and their relatives who were hospitalized in the neurology clinic between June 2019 and October 2019, who met the research criteria and agreed to participate in the study. The patients were evaluated within the first 24 hours to ensure that there was no difficulty in remembering. Questions were asked about the patient's socio-demographic characteristics, which symptom they first noticed, whether they associated the symptom they noticed with stroke, and how long after noticing the symptom they started seeking help. The National Institutes of Health Stroke Scale (NIHSS) was then applied. If the person seeking help was not the patient, the person seeking help was asked 15 questions about their socio-demographic characteristics, whether they lived in the same house as the patient, which symptom they first noticed, and how long after noticing the symptom they decided to seek help.

To conduct the study institutional permission and ethics committee approval were obtained before starting the study. Informed Consent Form was obtained from patients and their relatives who met the inclusion criteria. The principles of the Declaration of Helsinki were adhered to throughout the study.

Results: Of the cases included in the study, 50.5% were female and 49.5% were male. The ages of the cases ranged from 35 to 91, with an average of 68.24±11.15 years; 9.9% were under 55

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years of age, 27.9% were between 55-64 years of age, 36.1% were between 65-74 years of age, and 26.1% were 75 years of age or older (Table 1). The mean NIHSS score was calculated as 5.57±4.79.

Table 1. Distribution of Socio-Demographic Characteristics of Patients (N=111)

Characteristic		n (%)
Age (years)	*Min-Max (Median)*	35-91 (67)
	Mean±SD	68.24±11.15
	< 55 years	11 (9.9)
	55-64 years	31 (27.9)
	65-74 years	40 (36.1)
	≥ 75 years	29 (26.1)
Gender	Female	56 (50.5)
	Male	55 (49.5)
Marital status	Married	98 (88.2)
	Single	13 (11.7)
Education status	Illiterate	23 (20.7)
	Literate and primary school	57 (51.4)
	Secondary school	13 (11.7)
	High school	18 (16.2)
Living alone	Yes	17 (15.3)
	No	94 (84.7)
Employment status	Yes	12 (10.8)
	No	99 (89.2)
Income status	Low	38 (34.2)
	Medium	73 (65.8)

When the distribution of features related to help-seeking behaviors is evaluated, it is seen that 57.7% of the patients came to the hospital by ambulance, 90.1% remembered the time when their symptoms started, 50% of the patients experienced their first symptoms in the morning, the median time to decide to come to the hospital/call for help after noticing the symptoms was 45 minutes, the average time to reach the hospital after deciding to come to the hospital was 16.85±6.87 minutes, the average distance to the first hospital applied after complaints was 5.16±5.98 km, the median time to apply to the hospital/emergency room after the onset of the first symptoms was 60 minutes, and 72.1% of the patients applied in the first two hours.

While 6.3% of the cases participating in the study knew at least two of the stroke risk factors; 21.6% knew at least two of the stroke symptoms (Fig. 1). 29.2% of the cases learned about the stroke symptoms before the stroke, and 70.8% learned about them after the stroke.

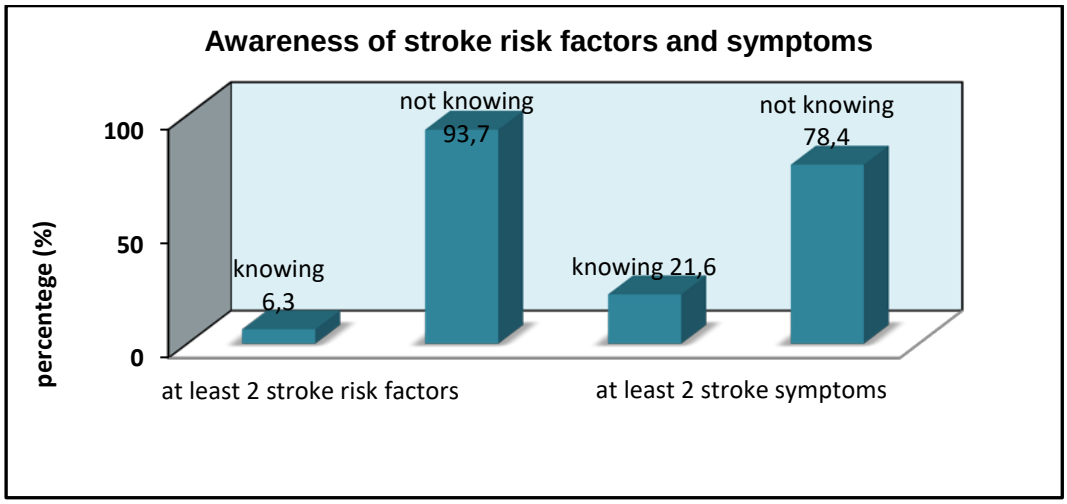

Fig 1. Awareness of stroke risk factors and symptoms

The time from the onset of complaints to thrombolytic treatment in patients diagnosed with ischemic stroke varies between 55 and 260 minutes, with an average of 124.38±47.37 minutes and a median of 120 minutes. When thrombolytic treatment application locations were evaluated; 20% received treatment in the emergency room, 54% in the neurology clinic, and 26% in the intensive care unit.

Conclusions: Based on our study findings, further efforts are needed to accelerate the time to initiation of thrombolytic therapy because of the positive effect of early thrombolytic administration on survival and prognosis. The importance of early hospital admission should be emphasized and public awareness should be raised to reduce mortality and prevent permanent disabilities. Public awareness should be raised about stroke symptoms since significant time is lost in the decision to seek help.

Information obtained through face-to-face interviews with patients and their relatives is reliable to the extent that the patients and their relatives declare it. Additionally, the study results are limited to a single center and cannot be generalized.

Keywords: Ischemic stroke, pre-hospital, delay, thrombolytic treatment, door-to-needle time

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NURSING

_O5759

STRESS AND CARE BURDEN OF INDIVIDUAL CAREGIVERS FOR AMYOTROPHIC LATERAL SCLEROSIS PATIENTS

Selda Polat[1]

ABSTRACT

Aim: The aim of this study is to determine the factors associated with caregiver burden and stress symptoms of individuals caring for Amyotrophic Lateral Sclerosis (ALS) patients.

Methods: 112 people who cared for a patient with ALS participated in the study. Data; The personal information form was collected by applying the Stres Self-Assesment Checklist (SSAC) and the Zarit Care Burden Scale (ZCS).

Results: When the mean scores of the participants on the scales were examined, ZCBS 42.34±14.23 and SSAC the total was found to be 76.13±14.79. A significant relationship was found between the inability of the patients to speak, eat alone, and to go to the toilet, and the care burden of informal caregivers and bed dependency of the patients and the stress symptoms of caregivers.

Conclusions: There is a positive relationship between the care burden of individuals caring for ALS patients and their stress symptoms. As the functional functionality of the patients decreases, the care burden and stress symptoms of the caregivers are affected.

Keywords: Amyotrophic lateral sclerosis, caregiver, caregiver burden, stress, care

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Introduction and Purpose

Amyotrophic lateral sclerosis (ALS) is a severe, progressive neurodegenerative disease affecting motor neurons in the cortex, brainstem, and spinal cord. It involves upper and lower motor neuron degeneration, often leading to respiratory failure. Upper motor neuron involvement causes stiffness, hyperreflexia, and emotional lability, while lower motor neuron degeneration results in muscle atrophy, fasciculations, speech and swallowing difficulties, and limb weakness. Recent studies report an ALS incidence of 0.6–3.8 per 100,000 and a

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prevalence of 4.1–8.4 per 100,000. While about 10% of patients experience slow progression and survive 10 years or more, most face a shorter life expectancy. ALS leads to severe, progressive disabilities affecting movement, communication, speech, swallowing, and breathing, ultimately resulting in loss of independence and death. Its profound impact on both patients and caregivers has earned it the label of a "family disease'. The caregiver is often a family member with no prior caregiving experience most commonly the patient's spouse. Among ALS patients, the feeling of being a burden is a prevalent concern, particularly as the disease progresses.

Patients progressively experience difficulties in performing daily living activities, which necessitates continuous care. The progressive nature of the disease, the absence of curative treatments, its unfavorable prognosis, the patient's physical disabilities, and cognitive or behavioral changes expose caregivers to significant stress. Therefore, ALS affects not only the patient but also the family members providing care.

Caregivers often assume their role unexpectedly, leading to maladjustment and negative impacts on their physical and psychological health. While ALS progression significantly contributes to caregiver distress, limited studies have explored the factors behind this burden. Caregiver burden, depression, and anxiety are closely linked to the physical disabilities of ALS patients. Lillo et al. (2012) found that 48% of ALS caregivers report a high burden. Identifying this burden is essential for addressing caregiver and patient needs, enhancing their quality of life, and guiding healthcare institutions in resource allocation and support services. This study evaluates stress and caregiving burden among ALS caregivers.

Methods

Study Design: This study is a descriptive cross-sectional study.

Population and Sample: The study population consisted of informal caregivers of patients who are members of the ALS-MNH (Amyotrophic Lateral Scleross–Motor Neuron Disease) Association in Istanbul. The association has 543 registered patients. The study sample was calculated using the standard deviation (SD = 9.83) of the Zarit Caregiver Burden Scale from a previous study by Tayaz and Koç (2018) and the formula $n= N x \alpha^2 x Z^2 /(N-1) x d^2$, which is used when the population size is known. A 95% confidence level and a margin of error (ddd) of 2 were adopted. Based on this formula, the study was completed with 112 participants.

Inclusion Criteria:

- Being a relative of a patient diagnosed with ALS-MNH,
- Being literate,
- Providing informed consent to participate in the study.

Paid caregivers were excluded from the study.

Data Collection Tools: This study utilized the following tools to collect data: a 13-item personal information form regarding caregivers' demographic characteristics and information about the patient's illness, the Zarit Caregiver Burden Scale to assess caregiving burden, and the Stress Symptoms Scale to identify stress symptoms.

Zarit Caregiver Burden Scale (ZCBS): Developed by Zarit et al. (1980) and adapted into Turkish by İnci and Erdem (2008), the ZCBS has a total score range of 0-88, with higher scores indicating greater burden. For this study, the Cronbach's alpha was 0.88. Caregiver burden is categorized as severe (61-88), moderate to severe (41-60), mild to moderate (21-40), and little or none (<21).

Stres Self-Assesment Checklist (SSAC): The SSAC, developed by Das Gupta (1992) and adapted into Turkish by Hovardaoğlu (1997), identifies symptoms arising from stress. Scores range from 38 to 152, with higher scores indicating more frequent symptoms. Factor analysis revealed three components: cognitive-emotional, physiological, and pain complaints. The Cronbach's alpha for this study was 0.91.

Data Collection: The data collection tools were distributed as an online survey via a questionnaire form prepared using Google Forms. The survey announcement and link were shared with participants through the social networks of the ALS-MNH Association. Data collection took place between January and February 2021.

Data Analysis

The data obtained from the study were transferred from Google Forms to Excel and subsequently to SPSS 20 software for analysis. A significance level of $\alpha=0.05$ was adopted for all results. The normality of the data was assessed using the Kolmogorov–Smirnov and Shapiro–Wilk tests, confirming a normal distribution with 95% confidence. Participants' sociodemographic characteristics were analyzed using descriptive statistics (frequency, percentage, mean, and standard deviation). Differences between sociodemographic characteristics and total scale scores were examined using independent group t-tests and analysis of variance (ANOVA). A significance level of $p\leq0.05$ was considered for data interpretation.

Ethical approval for the study was granted by the Bahçeşehir University Scientific Research and Publication Ethics Committee (17.07.2020; No: 20021704-604.01.01-), followed by email permission from the ALS-MNH Association.

Findings

Among the participants, 73 (65.2%) were university graduates, 58% were unemployed, and 77.7% had social security coverage. The majority of caregivers were the patients' children (55.4%). Most ALS patients were male (55.4%), had a disease duration of 3–5 years (48.25%),

and required caregiving for 3–5 years (48.2%). A majority of caregivers provided care 24 hours a day (59.8%).

Regarding the functional status of ALS patients, it was found that most patients could not speak (55.4%), could not eat independently (77.7%), were unable to use the toilet independently (81.2%), could not dress independently (96.4%), were bedridden (55.4%), and were not dependent on a ventilator (53.6%) (Table 1).

ZCBS scores of caregivers were analyzed, revealing a total mean score of 42.34 ± 14.23. Scores ranged from 11 to 76, indicating that the caregivers experienced a moderate to heavy burden (Table 2).

A negative significant relationship was found between the patients' ability to speak and use the toilet independently and the caregivers' burden ($p<0.05$). Patients' inability to speak and use the toilet independently increased the caregivers' burden. A highly significant negative relationship was also found between patients' inability to eat independently and caregivers' burden ($p<0.001$) (Table 3).

When examining the SSAC scores of caregivers, the mean total SSAC score was 76.13 ± 14.79. For the subscales, the mean scores were as follows: SSAC Physiological Symptoms 17.61 ± 4.04, SSAC Cognitive-Sensory Symptoms 33.19 ± 6.85, and SSAC Pain Symptoms 17.02 ± 4.09 (Table 2). The SSAC scores range from 38 to 152. In this study, caregivers' stress levels were found to be moderate.

A significant relationship was identified between patients being bedridden and caregivers' stress symptoms ($p<0.05$). However, the presence of other caregivers did not have a significant impact on caregiver burden or stress symptoms ($p>0.05$) (Table 3).

Table 4 illustrates the correlation between caregiver burden and stress symptoms total scores as well as SSAC subscale scores. A positive and significant correlation was found between caregiver burden and total stress symptoms score ($r=0.560$), as well as between caregiver burden and SSAC subscales: Cognitive-Sensory Symptoms ($r=0.522$), Physiological Symptoms ($r=0.516$), and Pain Symptoms ($r=0.410$) ($p<0.001$). It was determined that as caregiver burden scores increased, total stress symptom scores and SSAC subscale scores also increased.

Conclusion and Recommendations

As the caregiving burden for ALS patients increases, caregivers experience heightened stress symptoms, primarily cognitive and sensory. Declining patient functionality and daily activity capacity exacerbate this burden. Addressing these factors, enhancing stress-specific coping strategies, and improving access to social support are crucial. Healthcare professionals should

recognize caregivers' needs, offer guidance, and receive better ALS training. Expanding home care services and establishing ALS clinics are also recommended.

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Table1. Characteristics of caregivers and patients

Variable	N=112
Age (years)	**Mean(Sd)** 40.21(12.30)
Gender	
Female	81(72.3 %)
Male	31(27.7%)
Education level	
Literate	2(1.8%)
Primary education	13(11.6)
High school	24(21.4%)
University	73(65.2%)
Employment status	
Full time	43(38.4)
Half day	4(3.6%)
Unemployed	65(58%)
Social security	
Yes	87(77.7%)
No	25(22.3%)
Patienst's gender	
Female	50(44.6%)
Male	62(55.4%)
Relationship to patient	
Spouse/Partner	36(32.1%)
Child	62(55.4%)
Mother/father	6(5.4%)

Sibling	7(6.3%)
Other family member	1(0.9%)
Another caregiver	
Yes	76(67.9%)
No	36(32.1%)
Disease duration	
<1 year	10(8.9%)
1-2 years	22 (19.6%)
3-5 years	54(48.2%)
6-10 years	20(17.9%)
>10 years	6(5.4%)
Caregiver duration	
<1 year	27(24.1%)
1-3 years	34(30.4%)
3-5 years	36(32.1%)
6-10 years	14(12.5%)
>10 years	1(0.9%)
Giving daily care	
3 hours a day	23(20.5%)
4-6 hours / day	10(8.9%)
7-12 hours / day	10(8.9%)
12 hours night	2 (1.8)
24 hours (all day)	67(59.8)
Patients' self-care ability	
Can speak	50(44.6%)
Can he/she eat without help?	25(22.3%)
Can he/she go to the toilet without help?	21(18.8%)
Can he/she dress without help?	
Can he/she take a bath without help?	4(%3.6)
Addicted to bed	3(2.7%)
Does it depend on respirator?	62(55.4%)
	52(%46.4)

Table 2. The mean scores of caregivers from the caregiver burden scale and stress symptoms scales

	Scoring range of points	Scoring Range	Mean(Sd)	p
ZCBS	0-88	11-76	42.34(14.23)	p<0001
SSAC physiological			17.61(4.04)	p<0001
SSAC cognitive-affective			33.19(6.85)	p<0001
SSAC pain-complaint			17.02(4.09)	p<0001
SSAC Total			76.13(14.79)	p<0001

Table 3. Findings regarding the effects of patient's activities on care burden and stress symptoms

	ZCBS			SSAC Total		
Variable	**Mean(Sd)**	**t/z***	**p**	**Mean(Sd)**	**t/z***	**p**
Patienst's gender						
Female	42.54(14.20)	0.134	p > 0.05	76.48(15.08)	0.221	p > 0.05
	42.17(14.37)			75.85(14.68)		

Male						
Another caregiver **Yes** **No**	42.88(15.11) 41.19(12.30)	0.628	p > 0.05	76.39(14.50) 75.58(15.59)	0.263	p > 0.05
Patients' self-care ability **Can speak** **Yes** **No**	38.28(13.45) 45.61(14.11)	-2.791	**p<0.05**	73.68(13.95) 78.11(15.27)	0.263	p > 0.05
Can he/she eat without help? **Yes** **No**	31.56(12.42) 45.43(13.23)	-4.061*	**p<0001**	71.76(14.16) 77.39(14.81)	-1.587*	p > 0.05
Can he/she go to the toilet without help? **Yes** **No**	33.52(12.76) 44.37(13.83)	-2.991*	**p<0.05**	73.00(13.21) 76.85(15.11)	-1.149*	p > 0.05
Can he/she dress without help? **Yes** **No**	35.75(9.06) 42.58(14.36)	-1.137*	p > 0.05	67.50(15.26) 76.45(14.75)	-1.302*	p > 0.05
Can he/she take a bath without help? **Yes** **No**	38.66(8.50) 42.44(14.37) 43.96(14.21) 40.32(13.88)	-0.613* 1.353	p > 0.05 p > 0.05	70.66(17.00) 76.28(14.79) 78.64(15.16) 73.02(13.85)	-0.712* 2.047	p > 0.05 **p<0.05**
Addicted to bed **Yes** **No**	44.46(13.78) 40.50(14.47)	1.482	p > 0.05	77.90(15.52) 74.60(14.09)	1.180	p > 0.05
Does it depend on respirator? **Yes** **No**						

Table 4. The relationship between caregiver burden of caregivers and stress symptoms (N=112)

SSAC	ZCBS	
	r	**p**
SSAC cognitive-affective	0.522	p<0001
SSAC physiological	0.516	p<0001
SSAC pain-complaint	0.410	p<0001
SSAC Total	0.560	p<0001

*p<0.001

HEALTH MANAGEMENT

_O5683

USE OF ARTIFICIAL INTELLIGENCE IN HEALTH SERVICES MANAGEMENT: A BIBLIOMETRIC ANALYSIS STUDY

Özlem Aladağ Bayrak[1]

Introduction

In the field of healthcare management, AI has the potential to impact the production of healthcare services or even replace healthcare workers (Maleki, 2024). Artificial intelligence, which integrates computers and machines into tasks traditionally done by humans, offers significant opportunities for economic growth, social progress, and research (Sorkhi, A., & Pourasghar, 2024). Effective health management involves planning, organizing and controlling institutions based on the following elements: Human resources, Data systems, Service delivery, Access to medicines, Finance Leadership, Artificial intelligence and these elements can be used to improve the production of health services and reduce the workload of health workers (WHO, 2021). However, caution should be exercised in the event that AI replaces healthcare professionals. Effective healthcare management should also consider the human factor and evaluate how AI technologies can be used to improve healthcare (Al Salmi, 2024). According to the World Health Organization, effective health management requires balancing human resources, data systems, service delivery, access to medicines, finance and leadership (WHO, 2010). Big data generated from healthcare organizations, especially health records and genomic data, are vital for intelligent personnel, decision-making, risk management, and patient engagement. Proper organization and analysis of this data is essential. Machine learning, a subfield of artificial intelligence, can improve overall healthcare management by optimizing these processes. Machine learning can be used in areas such as analyzing healthcare data, identifying patterns, and developing decision support systems (Arueyingho, 2024).

Healthcare organizations use key performance indicators to evaluate management effectiveness. These indicators aim to improve the quality of life for end users (Al-Habib N. M.,2020). Key performance indicators include: Access to essential medicines, Patient satisfaction, Treatment outcomes, Hospitalization rates, Mortality rates, Management of chronic diseases, healthcare organizations evaluate management effectiveness by regularly monitoring these indicators (Çınaroğlu, 2016). The aim is to improve the quality of healthcare services and patient outcomes. For example, increasing access to essential medicines can improve patient compliance with treatment and quality of life. Similarly, high patient satisfaction indicates that healthcare services are provided more effectively (Bilgin, & Göral,

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2017). The effective use of artificial intelligence in these areas will contribute positively to the efficiency of healthcare services.

As a result, effective healthcare management requires a harmonious balance of human factors, data management and artificial intelligence technologies. In this way, the quality and efficiency of healthcare services can be increased.

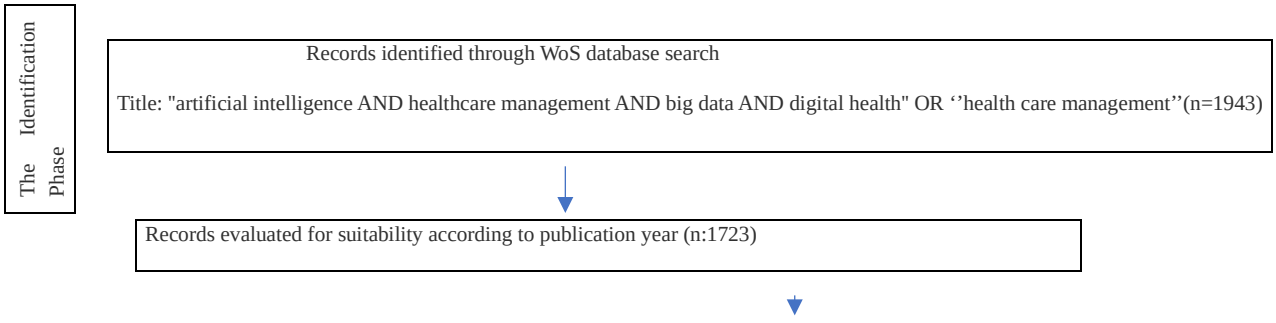
Aim

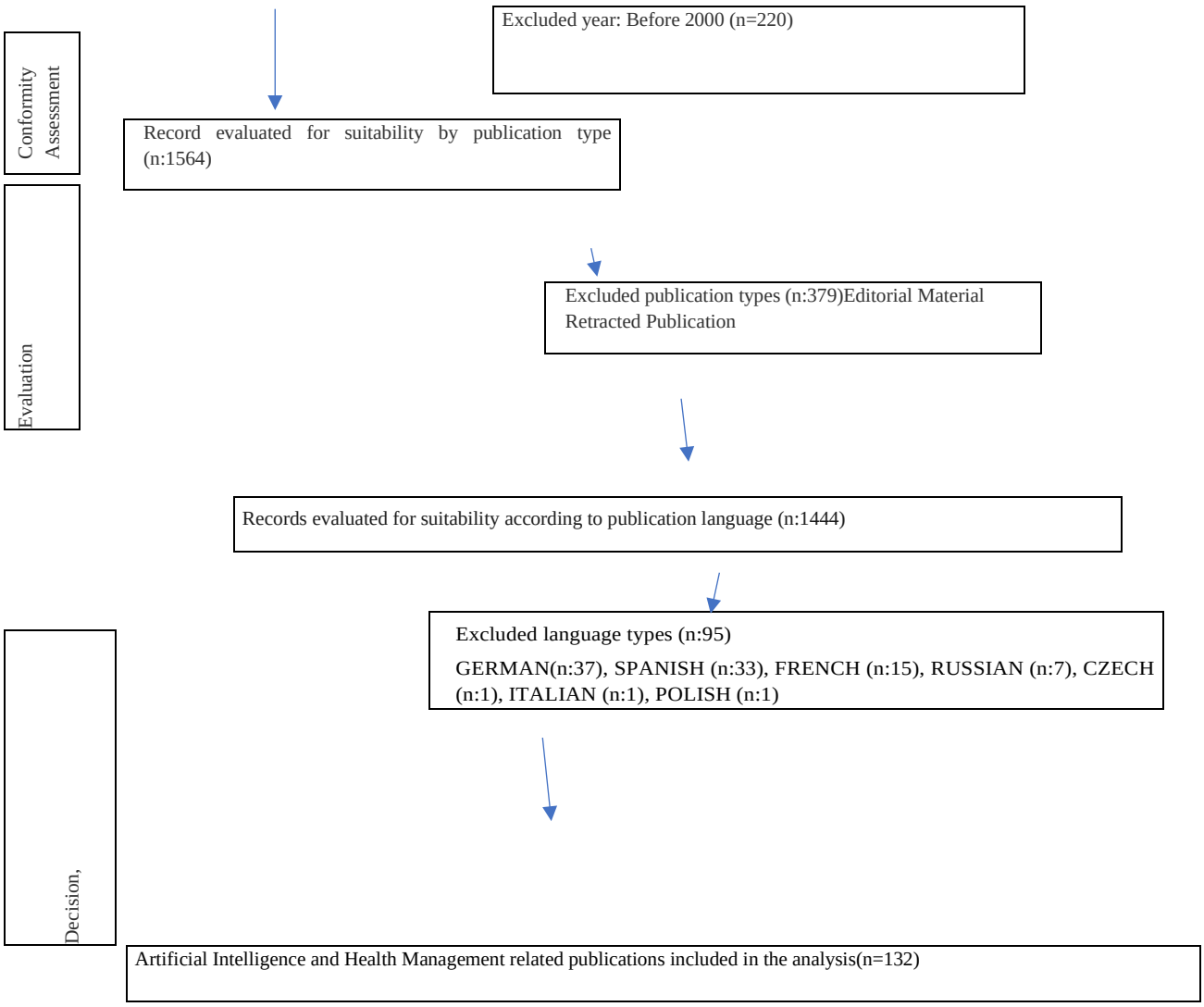
This study aims to understand the trends in scientific publications on Artificial Intelligence (AI) in health services and management in the world and to reveal the countries with the most publications in the field of health services management, the order of the studies conducted by year, the keywords used in the studies, the years the studies were cited, the authors and their interactions with other authors, and the most researched topics.

Metod

The Web of Science (WoS) Core Collection database was searched on January 7, 2025 with the following search strategy and initially 1943 publications were accessed. WoS is preferred by academics because it is one of the most widespread databases and has a large number of journals. Since WoS is a publicly available resource, no additional ethics committee permission is required for this research. Data and filtering regarding articles eliminated due to publication year, publication type, and publication language are shown in Table 1The studies were filtered and 132 publications were reached. The data was downloaded as "Tab Delimited File". Bibliometric analysis defined as the research method was used in the study. Following PRISMA guidelines, the Web of Science database was searched for appropriate studies such as book chapters, review articles, and proceeding papers published between 2000 and 2025. The articles had to be in English, peer-reviewed, and contain the keywords "artificial intelligence and health management and big data and digital health management". A total of 132 international scientific publications were reached as a result of the search. The VOS viewer software program was used to examine these publications.

Table 1. Data collection and filtering stages



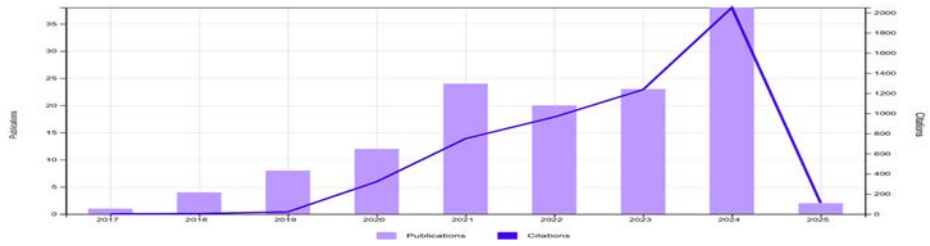


Findings

In this context, the algorithms defined in 132 international articles published between 2000-2025 include the countries with the most publications, the order of the studies by year, the keywords used in the studies, the years of citation to the studies, the interactions with the authors and other authors, and the most searched topics. The publication years and citation table of the analyzed publications are given in Figure 1. When the WoS categories of the publications are examined, it is seen that the most studies are in the Health Care Sciences Services category with 21 studies (15,909%) and Medical Informatics with 21 studies (15,909%), the second is Computer Science Information Systems with 17 studies (12,879%), the third is Public Environmental Occupational Health with 15 studies (11,364%). When the publication years and citation table of the analyzed publications are examined, it is seen that after 1 article was published in 2017 and 4 in 2018, only 20 publications were published until 202. It increased from year to year after 2021, reaching a maximum of 38 publications and 2051 citations as of

2024. The total number of citations in all years is 5,461 (excluding self-citations). The average citation per publication was 41.37 (Figure 1).

Figure 1: Number of publications and citations by year



When the fields of study are examined, Health Services Sciences and Medical Information Systems have the highest share with 21 records each (15.91%). This emphasizes the importance of health services and information systems. Subfields such as Information Systems (17 records, 12.87%) and Artificial Intelligence (13 records, 9.85%) show the applications of computer science in health and other fields. This distribution shows the diversity and importance of research in health services and related fields (Table 2).

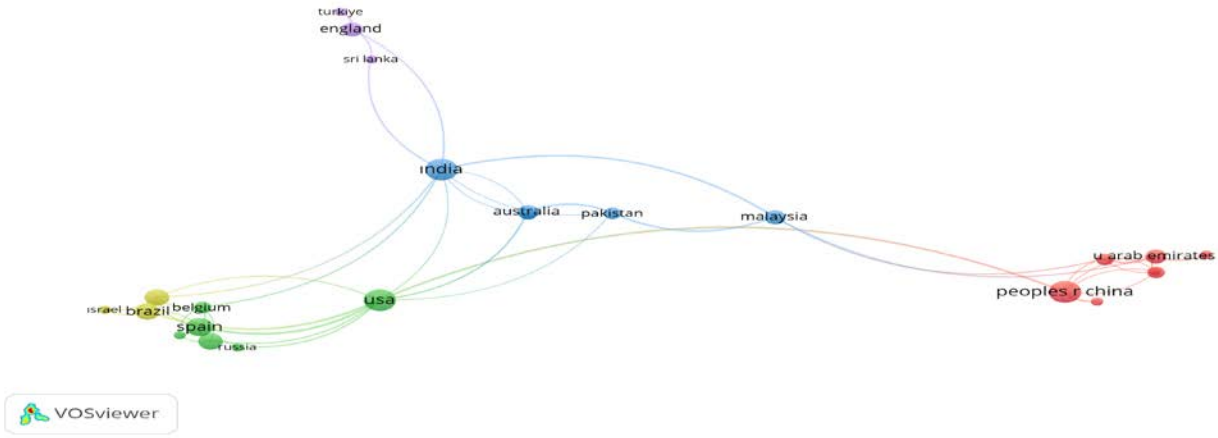
Table 2. Areas where studies were conducted

Field:	Web of Science Categories	Record Count	% of 132
Health Care Sciences Services	21		15.909%
Medical Informatics	21		15.909%
Computer Science Information Systems	17		12.879%
Public Environmental Occupational Health	15		11.364%
Computer Science Artificial Intelligence	13		9.848%
Computer Science Theory Methods	11		8.333%
Medicine General Internal	11		8.333%
Computer Science Interdisciplinary Applications	9		6.818%
Health Policy Services	9		6.818%
Environmental Sciences	7		5.303%
Engineering Electrical Electronic	5		3.788%
Management	5		3.788%

Co-Authorship and Countries

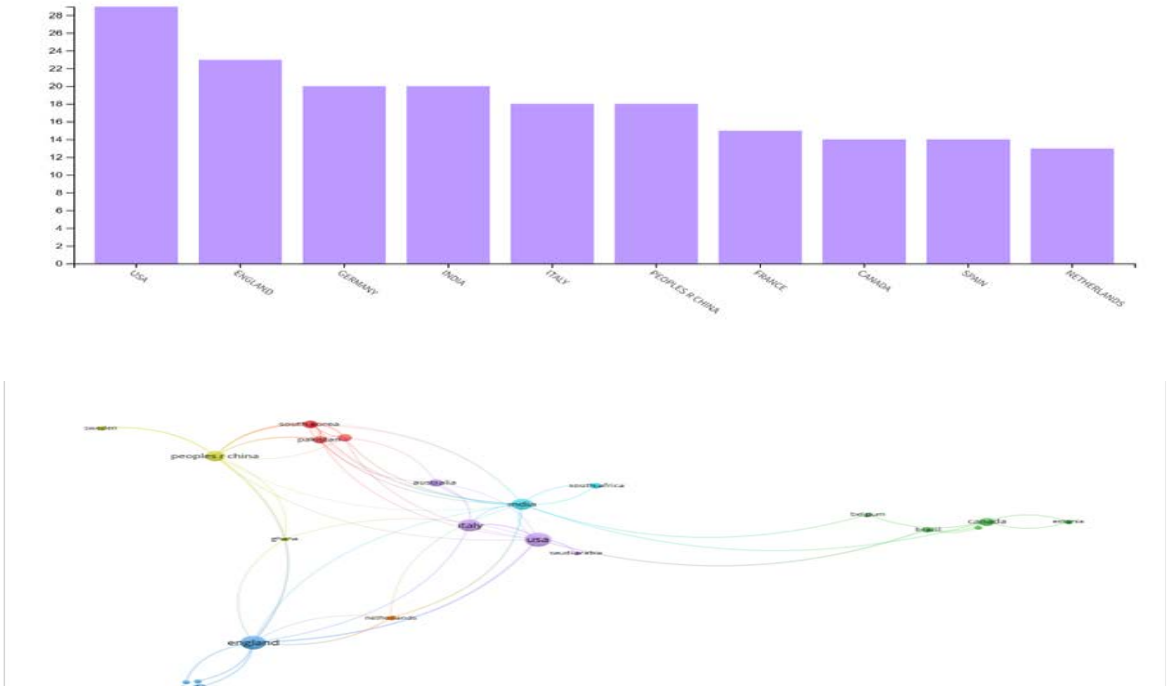
Figure 2 shows the cooperation and interaction network between countries. The highest interaction value belongs to the USA (28.0), the lowest value belongs to the Netherlands (11.7). The values of Italy, China and France are at a medium level of interaction. Turkey is at a low level of interaction.

Figure 2. Co-Authorship and Countries



It was determined that the most international publications on the use of AI in health services and management between 2000 and 2025 were made in the USA, England, Germany and India (Figure 3).

Figure 3. List of broadcasting countries

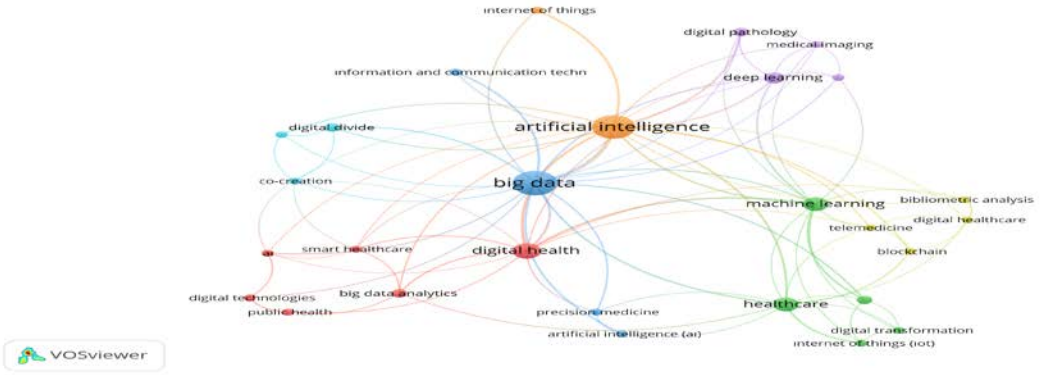


When Table 3 is examined, it is seen that the user has selected various keywords such as artificial intelligence, big data, digital health, machine learning, health care, deep learning. In this context, the keywords with the highest frequency are seen as "big data" (24 records) and "artificial intelligence" (23 records). This shows that big data and artificial intelligence are

important research areas. "digital health" (10 records), "machine learning" (8 records) and "healthcare" (8 records) are also among the frequently used keywords. The interaction between health services and digital technologies is prominent. In general, big data, artificial intelligence, digital health and related technologies stand out as important research topics in the field of health services.

Table 3. Most frequently used keywords in studies

Selected	Keyword	Occurrences	Total link strength
☑	artificial intelligence	23	21.00
☑	big data	24	20.00
☑	digital health	10	9.00
☑	machine learning	8	8.00
☑	healthcare	8	7.00
☑	deep learning	5	5.00
☑	artificial intelligence	3	3.00
☑	big data analytics	3	3.00
☑	digital divide	3	3.00
☑	digital pathology	3	3.00
☑	artificial intelligence (ai)	2	2.00
☑	bibliometric analysis	2	2.00
☑	blockchain	2	2.00
☑	decision support systems	2	2.00
☑	digital healthcare	2	2.00
☑	digital technologies	2	2.00
☑	medical imaging	2	2.00
☑	precision medicine	2	2.00
☑	public health	2	2.00



Conclusion

The study determined that the most studies on the use of Artificial Intelligence in health management belonged to 2024 and the most citations were made in 2024. It is seen that the studies are in the article type and the English language is used the most in the publications. It was concluded that the most frequently used keywords in the studies are the concepts of "Artificial Intelligence", "Big Data" and "Health Management". The countries that published the most in this field, the USA, England and India, have contributed to the development of the current literature. In addition, it was determined that the studies on the use of Artificial Intelligence in the field of health management are mostly conducted to examine the applications of Artificial Intelligence technology and Artificial Intelligence, telehealth and other related digital health solutions in the health service business environment. In this context, a general assessment of the use of Artificial Intelligence in health management within the scope of

international literature was made in the study and a perspective was presented for the new studies planned to be conducted.

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HEALTH MANAGEMENT

_O5714

COMPARATIVE ANALYSIS OF THE SOCIAL SECURITY AND HEALTH SYSTEM OF THE UNITED STATES OF AMERICA (USA)

Ömer Taşkın[1]

Aim: Health has always been a subject of interest and research in all countries, as it concerns all segments of society. In addition, one of the reasons why health is so important is that there is a one-to-one relationship between the development levels of countries and indicators related to health data. In other words, the development level of a country can be evaluated by looking at health data (1). In today's world, countries have developed different health service systems for financial purposes such as protecting people's health, providing treatment, and controlling health costs. The main driving forces of these systems are the resources of health services, the management, organization, presentation, and financing of these resources (2). Health systems are basically established to improve health indicators, meet the health needs of individuals, and provide financial security against costs that may arise due to illness/health (3). This study was conducted to determine the effect of the social security system on the distribution of health expenditures in the USA and how health expenditures are reflected in health level criteria.

Methods: Within the scope of the study, firstly the general economic structure, social characteristics, social security and health services infrastructure of the USA were examined. Statistical data were obtained from the OECD Health Statistics 2023(4) database. The obtained data and statistical indicators were compared with the data of Turkey and the average of OECD countries in order to be better understood. Because evaluating the health status of a country alone does not mean much.

Results: The US economy, which holds the title of being the world's largest economy, accounts for more than 25% of the world's gross domestic product. It is among the top 10 countries in the world in terms of national income per capita (5). The US has a competitive economic structure. This structure is also reflected in social security and health services. Health services are mostly provided in treatment centers established for profit. The financing of health services also largely comes from private and non-profit insurances. This structure of health services creates significant problems in both standardization and service quality and unnecessarily increases costs. The federal government's participation in the production and financing of health services is so low that the basic principle is for the state to intervene in public services as little as possible. One of the difficulties of a fragmented system is that laws vary from state to state, so the laws governing payment methods and the scope of insurance systems are quite complex. Unlike developed countries, the US is the country with the least regulation in health services. Only preventive health services are provided entirely by the state. On the other hand, it is the country that allocates the largest share of the gross national product to health expenditures (6). Unlike Turkey, there is no general health insurance in the USA and everyone, including

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employees, purchases many insurance packages from private insurance companies. The premium amount may vary depending on the current illness of the person who wants to get insurance (7). In the USA health system, which is a combination of many different models, health services are provided by both the state (federal, state and local levels) and the regional, private sector (8). The USA Health System; National health insurance model in terms of services provided to the elderly, Beveridge model in terms of health services provided to veterans and their children, Bismark model in terms of services provided to employees, and out-of-pocket payment model in terms of services provided to those without social security (2). There is no nationally standardized primary health care model in the USA. A large part of the population cannot access comprehensive primary health care services. The most important reason for this lack of coverage is the lack of a public service approach in the provision of primary health care services (9). According to the findings obtained from statistical data, health expenditures made from public resources were found to be 66% in the USA, 79% in Turkey and 73% in the OECD average. In the provision of health services, hospital expenditures (33% in the USA, 53% in Turkey, and 39% in the OECD average) were calculated as the highest expense group. While the largest source financing health insurance was compulsory payments with 53% in the USA, social security premiums were calculated as the largest source with 74% in Turkey and 62% in the OECD average. When health expenditures per capita and their shares in GDP were examined; the USA had the highest value with 12,555 $ (16.6%), while the OECD average was 4,986 $ (9.2%), and in Turkey it was 1,827 $ (4.3%). While there were 2.2 doctors and 2.8 nurses per 1000 people in Turkey, there were 2.7 doctors and 12.0 nurses in the USA. The OECD average was 3.7 doctors and 9.2 nurses. The number of hospital beds per 1000 people is calculated as 2.8 in the USA, 3.0 in Turkey, and 4.3 in the OECD average. Life expectancy at birth for females is 81.2 in Turkey, 80.1 in the USA, and 83.2 in the OECD average, and for males it is 77.6 in Turkey, 75.2 in the USA, and 78.2 in the OECD average. Infant mortality rate per 1,000 live births is 5.4 in the USA, 9.1 in Turkey, and 4.0 in the OECD average. Maternal mortality rate per 100,000 births is 21.1 in the USA, 17.3 in Turkey, and 10.9 in the OECD average (4).

Conclusions: The USA is one of the most important countries that implement capitalism. Therefore, healthcare services in the USA are mainly provided by private health insurance companies. Health services in the USA are provided in a uniquely complex structure without a referral chain. From the beginning of the treatment process, the patient can apply to any doctor or hospital they want according to their insurance and budget possibilities. The largest share of healthcare expenditures in the USA belongs to hospital expenditures with 33%. All expenditures made by private health insurance companies are covered by compulsory health insurance. The largest share of healthcare expenditures according to the type of financing is compulsory health insurance with 53%. An average of $12,555 is spent on healthcare per person per year in the USA. This figure is the highest valued healthcare expenditure expense among OECD countries and even in the world with 16.6% of GDP. The study found that the social security system has an effect on the distribution of healthcare expenditures in the USA. The lack of a comprehensive healthcare insurance system in the USA and the capitalist and competitive structure of the USA are also reflected in the structure of healthcare insurance and the healthcare system. Although the US is the country that spends the most on health per capita in the world, it is not in a better position than Turkey and the OECD average, which spend less

in health indicators. Health indicators do not follow a course directly proportional to the amount of spending. Health indicators are generally low compared to the health expenditures made. It is evaluated that the following reasons are effective in this;

- Social security and health services are also affected by the adoption of capitalism in the US,
- Health services and social security insurances are mainly produced and provided under market conditions,
- Health service and social security insurance expenses are very high,
- There is no social security policy and system that covers everyone in the country,
- Each state has different health and social security policies,
- The fact that the low-income group cannot access health and social security and therefore cannot receive examination and treatment, and health indicators decrease relatively accordingly.

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HEALTH MANAGEMENT

_O5715

EVALUATION OF PATIENT RIGHTS APPLICATIONS IN KIRKLARELI PROVINCE IN 2023-2024

Halit Emin Alıcılar[1] Çiğdem Cerit [2*]

ABSTRACT

Aim: Patient rights refer to the fundamental rights of individuals who benefit from health services. The aim of this study was to evaluate the applications made to patient rights units.

Methods: The study was cross-sectional. It was conducted with 934 applications made to patient rights units in Kırklareli Province in 2023-2024. In the study conducted with the data of the Provincial Patient Rights Coordinatorship, descriptive information was presented as numbers and percentages. Chi-Square tests were used in statistical analysis were evaluated with Microsoft Excel 2021 and $p<0.05$ values were considered significant.

Results: Of the total 934 applications, 493 were made in 2023 and 441 in 2024. While 86.83% of the applications were in the category of “let my problem be solved”, 9.31% were “complaint”, 2.68% were “appreciation”, and 1.18% were “opinion/suggestion”. It was observed that complaints increased slightly in 2024 (11.11%) compared to 2023 (7.71%), while appreciations decreased slightly in 2024 (1.59%) compared to 2023 (3.65%) ($p=0.07$).

It is observed that 89.94% of the applications were related to outpatient clinic services. It was determined that 82.42% of the applications were related to healthcare personnel (55.57% physicians/dentists) and 17.58% were related to information systems. System-related applications were 3.98% in 2023 and 32.78% in 2024 ($p<0.001$).

Conclusions: Most of the applications to patient rights units were still made on issues related to outpatient services and physicians/dentists, although they have decreased slightly. Compared to 2023, it was determined that in 2024, the number of information system-related applications increased significantly.

Keywords: patient rights,health services,ethics

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HEALTH MANAGEMENT

_O5718

EVALUATION OF KIRKLARELI AND TURKEY DATA BASED HEALTH STATISTICS YEARBOOKS 2018-2022

Esra Çelik[1] Çiğdem Cerit [2*]

ABSTRACT

Aim: Health statistics are a guide to assess population health. In this study, Kırklareli-Turkey data from the Ministry of Health 2018 and 2022 Health Statistics Yearbooks were compared.

Methods: This is a descriptive study. In the 2018 and 2022 Yearbooks, Kırklareli and Turkey data in the areas of demographic indicators, health institutions, infrastructures, utilization of health services, human resources were evaluated with Microsoft Excel 2021 program.

Results: In 2022, 15.2% of Kırklareli's population was aged 0-14, and 15.3% was aged 65 and older, compared to 22.0% and 9.9% in Turkey, respectively. The number of beds per 10.000 people in Kırklareli was 25.1 in 2018 and 27.4 in 2022. In Turkey, it is 28.3 and 30.7, respectively. While the number of physician visits per capita in Kırklareli was 9.9 in 2018 and 10.7 in 2022, it was 9.5 and 10.0 in Turkey, respectively. The total number of physicians and nurses-midwives per 100.000 people in Kırklareli was 139-293 in 2018 and 171-337 in 2022, respectively. In Turkey, it was 187-301 and 228-356, respectively.

Conclusions: Kırklareli has an older population structure than Turkey in general. Over the five-year period, although the number of beds per 10.000 people and the total number of physicians, nurses, and midwives per 100,000 people increased, Kırklareli remains below the national average in Turkey. The number of physician visits per capita has increased, which may indicate improved accessibility to health services.

Keywords: health care,demography,statistics

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HEALTH MANAGEMENT

_O5734

APPLICATION OF DATA MINING METHODS FOR PROACTIVE TREATMENT MANAGEMENT IN PRIVATE HEALTH INSURANCE

Hakan Yücelten[1], Ilker Köse[2]

ABSTRACT

Aim: A reactive behavior of health insurers by simply paying expenses is insufficient to effectively manage their costs and the treatment of the insured. Proactive insurance approaches that provide guidance in diagnosis and treatment are becoming more common. One of these approaches is to predict possible subsequent costly treatment processes (major surgeries, etc.) just after the first hospital visit. The aim of our study is to predict which diagnostic, and therapeutic procedures will be performed in the subsequent visits of the insured after the hospital visit.

Methods: The electronic provisioning system (Claimer) database used by fifteen private health insurance companies in Turkey was conducted. Patient identity information was anonymized. Assuming that “similar” insured patients will show similar behavior in hospital visits, the insured patients in the database are clustered according to seven attributes with the DBSCAN algorithm. The related hospital visits of the insured were merged with the help of expert doctors to ensure case integrity as a single treatment package when necessary. Then, by performing association rule analysis within each cluster separately, the consequent costly processes were predicted and presented in a table consisting of thirteen attributes. Doctors evaluated the accuracy of the model's association rule prediction for costly procedures.

Results: The confusion matrix showed that the model has 80% accuracy.

Conclusions: This result shows data mining methods can produce promising results and that it is possible for health insurance companies to proactively engage in treatment management for large and costly procedures.

Keywords: medical informatics,data mining,health insurance,treatment prediction

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BASIC MEDICAL SCIENCES

_O5669

EFFECTS OF COVID-19 AND VACCINES ON PLATELET COUNT AND MEAN PLATELET VOLUME

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ABSTRACT

Aim: Various studies are reporting an association between COVID-19 infection, vaccines, and thromboembolic complications. However, it remains unclear whether these complications are related to COVID-19 itself or the vaccines. We aim to investigate whether there is a relationship between platelet count and volume in vaccinated and unvaccinated individuals who have had COVID-19, as well as vaccinated individuals who have not had COVID-19, by comparing their laboratory findings during the vaccination period with current data.

Methods: The study is retrospective and designed as a case-control study. An ethical committee approval was obtained for the study. Data from 101 individuals between January 2021 and February 2022 were analyzed. SPSS 18.0 software was used for the analyses, and a significance threshold of $p<0.05$ was considered.

Results: 101 individuals participated in the study, including 61 women and 40 men. The study included 57 individuals with a history of COVID-19 and were vaccinated, 23 individuals who had no history of COVID-19 but were vaccinated, and 21 individuals with a history of COVID-19 but were not vaccinated. Among vaccinated individuals, regardless of COVID-19(+) or COVID-19(-) status, there was no difference in mean platelet volüme (MPV) values before and after vaccination. However, in the COVID-19(+), vaccinated group, platelet count (PLT) was observed to increase after vaccination($p=0.031$). In COVID-19(+) groups, no differences were observed in MPV and PLT values over the past six months when compared based on vaccination status. Similarly, no significant difference was observed in the comparison of pre- and post-vaccination MPV and PLT values among COVID-19(+) and COVID-19(-) vaccinated individuals.

Conclusions: While hypercoagulation mechanisms related to COVID-19 and its link to platelets have been described, changes in platelets following vaccination remain unclear. This study suggests that the increase in PLT observed in the COVID-19(+), vaccinated group is likely due to the effects of COVID-19 rather than the vaccine.

Keywords: covid-19 ,vaccines,platelet,mean platelet volüme,mpv,plt

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BASIC MEDICAL SCIENCES

_O5672

FILGRASTIM SHOWED ANXIOLYTIC EFFECTS ON MALE RATS

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ABSTRACT

Aim: Filgrastim, a recombinant form of granulocyte colony-stimulating factor (G-CSF), is used for neutropenia. Filgrastim crosses the blood-brain barrier and has a neuroprotective effect, which has been demonstrated in neurological models. The aim of the present study was to investigate the possible anxiolytic effect of filgrastim in rats.

Methods: 24 adult male Wistar albino rats were used. The subjects were divided into three groups as control, 20, and 5o μg filgrastim groups (n=8). Filgrastim doses were administered intraperitoneally once daily for a total of 5 days. The control group received physiologic saline with a similar treatment protocol. After the end of the treatment protocol, open field test, elevated plus maze, and light dark box test were performed for 5 minutes each as anxiety tests and recorded by camera. Anova and Tukey tests were performed as statistical tests.

Results: Both dose groups did not affect locomotor activity ($p>0.05$). In the open field test and the elevated plus maze test, the 50-microgram group showed an anxiolytic effect. The time spent in the open arm ($p<0.001$), the number of entries in the open arm ($p<0.001$), the head dipping number ($p<0.01$), the time spent in the central zone ($p<0.05$) and the number of entries in the central zone ($p<0.0001$) increased significantly in the 50 microgram group compared to the control group. The 20 microgram group showed data close to the control. The light-dark box test showed no significant difference between all groups ($p>0.05$).

Conclusions: Filgrastim showed a dose-dependent anxiolytic effect. 50 micrograms of Filgrastim reduced anxiety-like behaviors in the open field test and the elevated plus maze test. In the light-dark box test, the anxiogenic stimulus was different from the other two tests, and no positive effect was observed. There is a need for more studies.

Keywords: anxiety-like behaviors,elevated plus maze,filgrastim,light-dark box,open field test

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BASIC MEDICAL SCIENCES

_O5684

THE EFFECT OF ISCHEMIC POSTCONDITIONING ON ORGAN FUNCTIONS IN RATS ADMINISTERED LPS INJECTION

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ABSTRACT

Aim: Remote ischaemic postconditioning, involving short, repeated cycles of ischaemia during reperfusion, has shown protective effects in several systems.We aimed to investigate the impact of ischaemic postconditioning on LPS-induced organ dysfunction and its potential transfer via serum.

Methods: After ethical approval, serum samples obtained from the study titled "Effect of ischemic postconditioning on lipopolysaccharide-induced acute lung injury in rats" were used. Forty rats were divided into five groups. Group1(Control) and Group3(RIPostC) rats were administered physiological serum intraperitoneally. Group2(LPS), Group4(LPS+RIPostC), and Group5(LPS+RIPostCserum) rats were administered 10 mg/kg LPS. Group3 and Group4 rats underwent ischemic postconditioning 4 hours after the injection. Group5 rats were administered serum obtained from animals that underwent ischemic postconditioning intravenously. For ischemic conditioning, the rats' legs were subjected to 10 minutes of ischemia, followed by 10 minutes of reperfusion. The levels of AST, ALT, GGT, bilirubin, urea, creatinine, CRP, ceruloplasmin, troponin I and procalcitonin were analyzed in serum samples. The results are presented as mean±standard deviation. One-way analysis of variance(ANOVA) and Tukey test were used for comparisons between groups. Statistical significance was considered at $p<0.05$.

Results: The bilirubin, GGT, urea, and creatinine levels in Group2 and Group5 were significantly higher compared to Group1 ($p<0.05$). The bilirubin and creatinine levels in Group4 were also significantly higher compared to Group1 ($p<0.05$).

Our results suggest that ischaemic postconditioning may protect against LPS-induced liver and kidney injury, but these effects were not mediated by conditioned serum transfusions. Further studies investigating the protective effects of ischaemic postconditioning are needed.

Keywords: ischaemic postconditioning ,lps,organ dysfunction

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BASIC MEDICAL SCIENCES

_O5699

DO MASTICATORY MUSCLES EXERT AN INFLUENCE ON THE MORPHOMETRIC CHARACTERISTICS OF THE MANDIBLE?

Hilal Gören[1]* Nilgün Tuncel Çini[2]

ABSTRACT

Aim: Chewing involves the masticatory muscles, teeth and the temporomandibular joint(TMJ). A significant portion of the population, ranging from 45% to 97%, exhibits a preference for chewing predominantly on one side, which may lead to structural changes in the TMJ. This evidence suggests that masticatory muscles play a role in shaping bone structures. In the present study we aimed to investigate the impact of masticatory muscles on the mandible and assess potential asymmetries between sides through morphometric analysis.

Methods: The study was carried out on dry mandibles from the osteological collection of the Anatomy Department at Bilecik Şeyh Edebali University Faculty of Medicine. A total of 10 dry mandibles of unidentified gender and age were analyzed. Linear and angular measurements were conducted with reference to the mandibular foramen(MF), coronion(Kr), condylion(Kd), gonion(G), and masseter anterior(Ma), and these measurements were analyzed independently for the right and left sides. The measurements were performed digitally using the ImageJ software. Statistical analyses of the obtained data were conducted using SPSS version 25.0.

Results: Descriptive statistical analysis revealed no significant side differences in the linear parameters, with no notable variations observed between the right and left sides for any of the evaluated measurements. According to the correlation analysis, a correlation coefficient was observed between the distance from the mandibular foramen to the gonion and the masseter anterior.

Conclusions: The correlation observed between the bilateral distances from the mandibular foramen to the gonion and the masseter anterior suggests that mechanical forces during mastication and the loading exerted by the masticatory muscles may have a similar effect on these regions. Although it is well established that unilateral chewing can result in asymmetrical changes in the mandible, the limited sample size and the lack of consideration for different age groups and chewing habits in our study present certain limitations

Keywords: masticatory muscles,mandible,morphometric analysis,unilateral chewing

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BASIC MEDICAL SCIENCES

_O5700

THE EFFECT OF HIGH DOSE VITAMIN C APPLICATION TO CHRONOLOGICALLY AGED EXPERIMENTAL ANIMALS ON THE ASPECT OF COGNITIVE FUNCTIONS

Abdullah Pehlivan[1], Eylül Beyza Koral[2], Mustafa Erinç Sitar[3]

Introduction and Aim

Aging is the sum of structural, functional and psychological changes that occur in the organism under the influence of environmental factors and are regulated by a genetic program. It can be classified into chronological (based on birth date), biological (anatomical and physiological changes), economic, social (the role of the elderly in life), and psychological aging subtypes. Biological aging is the process through which the body loses its vitality, its ability to carry out essential tasks, and ultimately leads to death [1]. According to the World Health Organization (WHO), individuals aged 65 and over are classified as elderly, while those aged 85 and above are classified as very elderly. Advances in healthcare systems, access to healthcare, improved nutrition, vaccination programs, and rising education levels have significantly increased life expectancy worldwide [2]. Even though Turkiye's elderly population rates are lower than those of EU members, recent low neonatal mortality rates and abortion rates have an impact on these figures and indicate that our nation is moving toward an older population [3]. In 1937, Albert Von Szent-Györgyi received the Nobel Prize in Physiology or Medicine for his work on the efficacy of vitamin C, a compound crucial in defense against reactive oxygen species [4]. Ascorbic acid (vitamin C), a six-carbon lactone, cannot be synthesized by humans, non-human primates, and guinea pigs [5]. Vitamin C, with its reducing agent and antioxidant properties, acts as a cofactor in reactions catalyzed by copper-dependent monooxygenases and iron-dependent dioxygenases. According to Denham Harman's free radical theory, oxidative stress triggered by free radical reactions initiates the aging process [6]. In this study, systemic vitamin C was administered intraperitoneally, and its effects on cognitive status were evaluated.

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Material and Methods

Homogeneous experimental group consisting of eight naturally aged rats (male, Spraque Dawley) older than 24 months was formed. Then, Philips scoring [7] was performed to determine the morphological and biological aging of the animals; in addition to their calendar age, morphological appearance, posture, mobility and muscle tone were examined and recorded in all animals for scoring. Body weights were also regularly documented. A higher score in this scoring indicates that the animal is older. The Philips scoring is intended to show the biological age of the animals used in the study in addition to their chronological age.

Cognitive Scoring in the Naturally Aged Experimental Group [8,9]

1. "Novel Object Recognition Test" (NOR)

Test area for NOR test made from acrylic material, 50cmx50cm in size, suitable for rodents' nature, closed on the sides and open on the top. This test consists of 3 phases; "habitutation, recognition and test". In the first phase (habituation period), the animals were placed one by one in the area where the test would be performed and were expected to explore the area for 10 minutes. Then, they were taken to their routine cages and waited for 1 hour. In the second phase (recognition period), two identical objects (cubes) were placed on the same side of the area in a way that would not be squeezed into the edges so that the animals could examine the objects without difficulty. The animal taken to the test area was expected to recognize the objects for 5 minutes and was taken from the test area at the end of the period. Five minutes were waited after the second phase was completed. In the third phase (test period), one of the identical objects was replaced with a different object (red capped container) and the objects were placed in the same positions again and the animals were taken to the test area and observed for 5 minutes. The entire test process was recorded with a camera. During transitions between all phases, the test area was cleaned with 70% ethanol and ventilated to eliminate the odor effect each time. The duration of interest shown by the animals to the objects used in the habituation and test phases was measured using the camera recordings. The duration of interest shown to the novel object used in the test phase was divided by the total time shown to both objects to calculate the animal's "novel object recognition score".

2. "8-Arm Radial Maze" (8-ARM)

First of all, a maze suitable for rodents was created to perform this test. This test was applied in 2 phases to examine the animals' "working memory" and "reference memory" memory abilities. The main test area consisted of 8 identical arms. At the end of each arm, containers with high sides were placed so that the animals could not see the baits (foods that rodents like) inside.

Working memory phase: In this phase, baits were placed in containers in all arms of the maze. Then, the animals were placed in the center of the maze and their movements were observed for 10 minutes or until they ate all the baits, and this process was recorded with a camera. At

the end of the observation period, the animal was taken from the test area and the maze was cleaned with 70% ethanol. Taking the previously applied tests as a reference, the animals were expected to eat the bait in the arm they entered and move on to the other arms for a new bait. Re-entering an arm that was entered (bait was eaten) was evaluated as an “error of working memory”.

Reference memory phase: In the first part of this phase, 4 arms in the maze were closed with an obstacle and food was placed in the 4 open arms. Animals taken into the test area were observed for 5 minutes or until they ate all the food. At the end of the period, animals taken out of the maze were put back into their cages, the test area was updated by removing the obstacles. After the change, animals were taken back into the maze and their movements were observed again for 5 minutes. In the second part of this phase, it was considered an error for animals to re-entering the arms that were open and baited in the previous phase. The “performance index“ (PI) were used for this test was obtained by dividing the total number of errors by the total number of arms they entered.

The high level of this index shows us that the animal preferred the full (correct) arms, therefore, its reference memory performance was high. This phase was also recorded with a camera like the working memory phase.

Administeration of High Dose Vitamin C

The highest dose investigated and determined in the literature review, 20 mg/kg/day of vitamin C, dissolved in 0.9% NaCl, was administered to experimental animals intraperitoneally every day for three weeks (21 days) [10, 11]. Since it is a water-soluble vitamin and is excreted from the body through urinary excretion, the risk of toxicity of the application was assessed as low. Philips scoring (Table 1), NOR and 8-ARM tests were repeated every 5 days (Day 1-6-11-16-21) to monitor changes in the animals. The animals' body weights were also monitored from the beginning to the end of the study (Table 2).

Ethics Committee Approval

The study has received ethics committee approval from Maltepe University Experimental Animals Local Ethics Committee (MÜHADYEK 2020.12.03).

Acknowledgement

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BASIC MEDICAL SCIENCES

_O5701

THE BICEPS BRACHII MUSCLE: TYPICAL MORPHOLOGY, ACCESSORY FORMS, AND THE ISSUES WITH TERMINOLOGY

Mazhar ÖZKAN[1], Ali ZEYBEK[1], Ayşe Zeynep YILMAZER KAYATEKIN[1], Meltem ALPAY[2]

ABSTRACT

Introduction and Aim: The biceps brachii muscle starts proximally from two different points of the scapula and ends distally with two terminations, an aponeurosis that inserts into the deep fascia of the forearm and a tendon that inserts into the radial tuberosity of the radius. The belly of the muscle, where the two heads of the muscle are joined, is located in the anterior compartment of the arm, and as a result of its contraction, it causes flexion of the arm and forearm and supination movements of the forearm. The incidence of variations of the biceps brachii muscle is high and they have an effect on the function of the muscle and compression of the peripheral structures.

Material-Methods: Based on a biceps brachii variation we encountered during routine dissection of a male cadaver in his sixties, we evaluated other variations in the literature and their role in upper extremity function.

Results: The most common variation of the biceps brachii is a third head originating from the body of the humerus, while variations such as fourth, fifth and sixth heads can also be seen, although rarely. Three-headed variations may have various origins. It has been reported that these variations may cause clinical conditions such as nerve compression as well as functional effects.

Conclusion: Knowledge of the normal and variational anatomy of the biceps brachii muscle is of great importance for studies on upper extremity biomechanics, clinical situations and athletes.

Keywords: Biceps brachii muscle, anatomical variation, biomechanics

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Introduction

The biceps brachii muscle is a two-headed muscle located in the anterior compartment of the arm. Of the proximal attachment points from which it derives its name, the shorter one starts from the coracoid process of the scapula and the longer one from the supraglenoid tubercle above the glenoid cavity. The longer head travels in the capsule of the shoulder joint and then in the synovial sheath in the intertubercular sulcus in the proximal part of the humerus. These two tendons form a common elongated belly and run down the forearm. Then, as it approaches the elbow joint, a large flat piece separates medially and fuses with the deep fascia of the forearm above the brachial artery. Continuing laterally, the main tendon attaches to the radial tuberosity. The biceps brachii muscle is innervated by axons from the fifth and sixth cervical spinal nerves, which innervate the musculocutaneous nerve with separate branches to each head. Arterial supply to the muscle is provided by branches arising from the brachial artery in the middle third of the arm. The biceps brachii muscle is the strong supinator of the forearm. It flexes the elbow joint more effectively when the forearm is supinated and also flexes the shoulder joint to a lesser extent (Standring, 2020).

Biceps brachii muscle variations are clinically significant due to their potential impact on neurovascular structures and joint biomechanics. Studies have reported an incidence of variations ranging from 15% to 16.6% (Bharambe et al., 2015; Agarwal & Gopal, 2020). The most common variation is the presence of a third head, which can originate from the shoulder joint capsule, humerus, or brachialis muscle (Bharambe et al., 2015). These additional heads may cause neurovascular compression, alter elbow joint kinematics, and be misinterpreted as muscle tears on imaging (Bharambe et al., 2015). Other reported variations include extra-articular origin of the long head tendon, non-fusion of muscle bellies, and accessory bicipital tendons (Shalini et al., 2022). In rare cases, the accessory head may enfold the median nerve and brachial artery, potentially leading to entrapment syndrome and upper limb hypoperfusion (Yershov & Hudák, 2015). Knowledge of these variations is crucial for surgeons and orthopedicians to prevent iatrogenic injuries during shoulder, arm, and elbow surgeries (Agarwal & Gopal, 2020; Shalini et al., 2022).

The aim of this study is to review the variations of the biceps brachii muscle and to evaluate their functional effects with the information in the literature.

Material and Method

In a 56-year-old male cadaver, a biceps brachii variation encountered during routine dissection for training purposes was analysed and the biceps brachii variations in the literature and the biomechanical effects of these variations were investigated. The variation types detected and the findings obtained from the cadaver are reported.

Results

During routine dissection for educational purposes, a third head with a thickness of 25 mm and a length of 70 mm was observed in the anterior compartment of the left arm of a 56-year-old male cadaver, starting from the middle third of the humeral body and joining the main abdominal part. It was observed that the musculocutaneous nerve passes through the lateral part of this part and branches into the muscle, and the median nerve and brachial artery pass through the medial part. It was observed that the vessels that play a role in the blood supply of the muscle enter and exit the muscle while passing close to it (Figure 1).

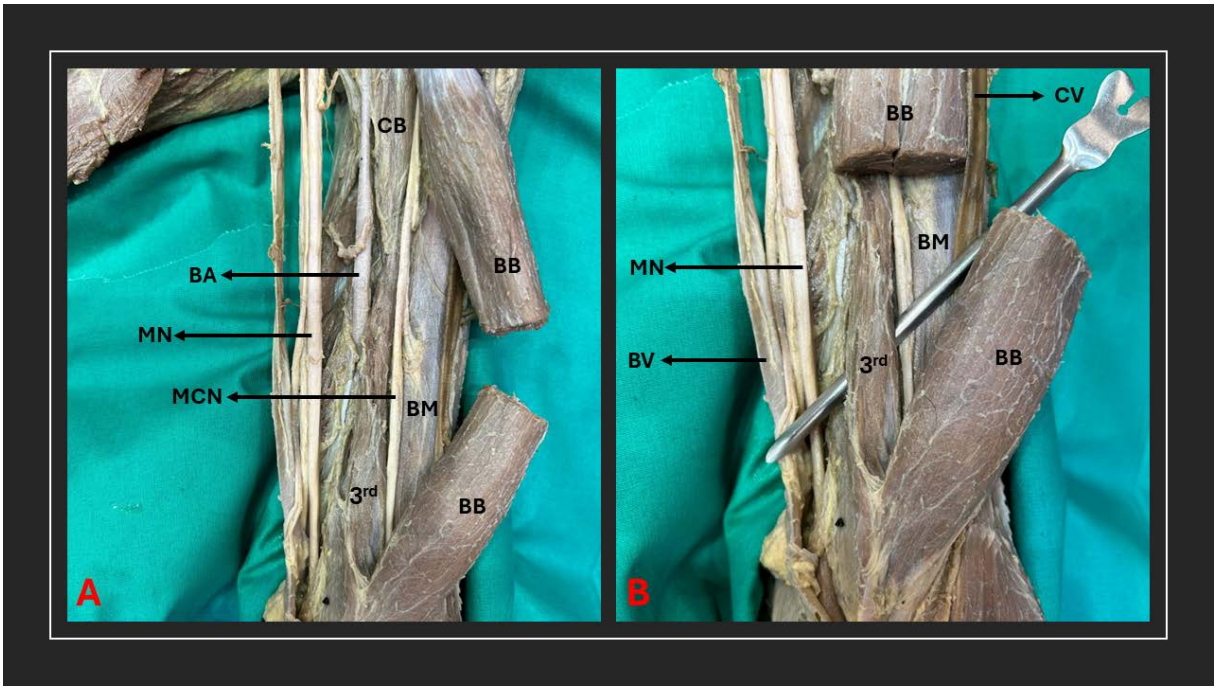

Figure 2 Three headed biceps brachii muscle on the left arm of the cadaver (A, natürel position; B, the variative head elevated with a probe). BA, brachial artery; BB, biceps brachii muscle; BM, brachialis muscle; BV, basilic vein; CB, coracobrachialis muscle; CV, cephalic vein; MCN, musculocutaneus nerve; MN, median nerve; 3rd, the third head of the biceps brachii muscle.

Discussion and Conclusion

Biceps brachii variations are common and clinically significant. Additional heads of origin are frequently observed, including a third head originating from the coracoid process (Yershov & Hudák, 2015) or inferomedially (Agarwal & Gopal, 2020). Variations in insertion, such as musculotendinous slips extending towards the pronator teres, have been reported (Agarwal & Gopal, 2020). Non-fusion of the two bellies and accessory bicipital tendons have also been documented (Shalini et al., 2022). These variations can affect muscle function and potentially cause neurovascular compression, including median nerve entrapment and brachial artery compression (Yershov & Hudák, 2015). Variations in nerve supply have been observed, including absent musculocutaneous nerves with median nerve compensation (Sultana et al., 2022). Understanding these variations is crucial for surgeons and orthopedicians to prevent

iatrogenic injuries during procedures involving the shoulder, arm, and elbow regions (Shalini et al., 2022; Agarwal & Gopal, 2020).

Variations in the biceps brachii muscle are common and can affect its function. Studies have reported additional heads of origin, with incidence rates ranging from 10.8% to 15% (Elezy, 2012; Agarwal & Gopal, 2020; Bharambe et al., 2015). These variations are more frequent in males and on the left side (Elezy, 2012). Extra heads may originate from the shoulder joint capsule, humerus, or brachialis muscle (Bharambe et al., 2015). Variations in insertion and nerve supply have also been observed (Sultana et al., 2022). These anatomical variations can impact muscle function, potentially causing neurovascular compression and altering elbow joint kinematics (Bharambe et al., 2015). They may also be misinterpreted as muscle tears on imaging studies (Bharambe et al., 2015). Knowledge of these variations is crucial for surgeons to prevent iatrogenic injuries during procedures involving the shoulder or elbow (Agarwal & Gopal, 2020; Sultana et al., 2022). The prevalence of these variations may reflect the muscle's late phylogenetic development in humans (Bharambe et al., 2015).

Variations in the biceps brachii muscle can significantly affect nearby structures and have clinical implications. Studies have reported supernumerary heads, with the most common being a third head, though up to seven heads have been observed (Poudel et al., 2009). These variations can originate from various locations, including the medial border of the humerus or near the deltoid insertion (Enix et al., 2021; Poudel et al., 2009). Additional heads may enhance forearm flexion and supination but can also lead to neurovascular compression, particularly of the median nerve, musculocutaneous nerve, or brachial artery (Enix et al., 2021). Such variations have been found in 12.5% of studied arms, with both three- and four-headed biceps brachii observed (Poudel et al., 2009). Anatomical variations in the biceps brachii can pose challenges for surgeons, potentially resulting in iatrogenic injuries if not properly identified (Agarwal & Gopal, 2020; Sultana et al., 2022). Therefore, a thorough understanding of these variations is crucial for preventing surgical complications.

The biceps brachii muscle exhibits significant anatomical variations across different populations. Studies have reported supernumerary heads in 10-15% of cases, with the inferomedial humeral type being predominant (Ravi et al., 2020; Smith et al., 2013). These variations can occur unilaterally or bilaterally, with some populations showing a right-side dominance (Smith et al., 2013; Emeka, 2009). Anomalies in origin have been observed, including the short head originating from the acromion and supraglenoid tubercle (Emeka, 2009). Variations in insertion, such as musculotendinous slips extending towards the pronator teres, have also been noted (Agarwal & Gopal, 2020). Interestingly, some supernumerary heads receive innervation from the median nerve instead of the musculocutaneous nerve (Smith et al., 2013). These anatomical variations are clinically significant, potentially affecting muscle function, causing neurovascular compression, and presenting challenges during surgical procedures (Ravi et al., 2020; Agarwal & Gopal, 2020).

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BASIC MEDICAL SCIENCES

_O5708

EFFECT OF D-CARVONE ON ACRYLAMIDE-INDUCED CELLULAR HEPATOTOXICITY

Tzansel Kara Kechagia[1]* Gülben Sayılan Özgün[2]

ABSTRACT

Aim: This study aimed to investigate the effects of D-carvone on cytotoxicity, apoptosis, autophagy and cellular stress in AML-12 cells treated with acrylamide. We could not find any study in the literature investigating the effect of D-carvone on acrylamide-induced hepatotoxicity.

Methods: The effect of D-carvone alone and with 10 mM acrylamide on cell viability in AML12 cells was evaluated by MTT test. Then, 10 and 25 µM D-carvone together with 10 mM acrylamide was applied to AML12 cells for 24 hours, and its effects on procaspase 3, active caspase 3, BAX, LC3B-II, ATF4 and HSP70 levels were shown by western blot method.

Results: D-carvone significantly decreased cell viability at 250 µM and above when applied alone. 10, 25 and 50 µM D-carvone significantly increased cell viability in cells treated with 10 mM acrylamide, and the concentrations of D-carvone that most prevented the decrease in cell viability, 10 and 25 µM, were selected and used in subsequent experiments. 10 mM acrylamide application significantly increased the levels of procaspase 3, BAX, LC3B-II, ATF4 and HSP70 and led to the formation of active caspase 3 formed. In cells treated with 10 mM acrylamide, 25 µM D-carvone significantly decreased the levels of active caspase 3, BAX, LC3B-II, ATF4 and HSP70, and 10 µM D-carvone significantly decreased the levels of active caspase 3 and ATF4.

Conclusion: Our study shows that D-carvone reduces cytotoxicity, apoptosis, autophagy and cellular stress in acrylamide-treated AML-12 cells.

Keywords: Acrylamide, D-carvone, AML12 cells, Apoptosis, Autophagy.

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BASIC MEDICAL SCIENCES

_O5712

EFFECT OF EUGENOL ON CELL VIABILITY, OXIDATIVE STRESS AND HEAT SHOCK PROTEIN RESPONSE IN ACRYLAMIDE-TREATED HEPG2 CELLS

Özge Posta[1]* Eray Özgün[2]

ABSTRACT

Aim: To investigate the effect of eugenol on cell viability, oxidative stress and heat shock protein response in acrylamide-treated HepG2 cells.

Methods: HepG2 cells were treated with eugenol alone and in combination with 10 mM acrylamide for 24 hours. Cell viability was measured by the 3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyl-2H-tetrazolium bromide test. Protein carbonyl, heme oxygenase 1 and heat shock protein 70 levels were measured by western blot method.

Results: 10 µM, 25 µM and 50 µM eugenol significantly reduced 10 mM acrylamide-induced cytotoxicity in HepG2 cells. In subsequent experiments, eugenol concentrations of 10 µM and 50 µM were used, which were shown to be effective on acrylamide-induced cytotoxicity. 10 µM and 50 µM eugenol did not significantly change protein carbonyl and heat shock protein 70 levels, but both increased oxygenase 1 levels significantly in HepG2 cells. 10 mM acrylamide significantly increased protein carbonyl, heme oxygenase 1 and heat shock protein 70 levels. 50 µM eugenol caused a significant decrease in protein carbonyl and heat shock protein 70 levels and a significant increase in heme oxygenase 1 levels in 10 mM acrylamide-treated cells. On the other hand, 10 µM eugenol had no significant effect on protein carbonyl, heme oxygenase 1 and heat shock protein 70 levels in 10 mM acrylamide-treated cells.

Conclusions: Our study showed that eugenol, especially at 50 µM concentration, increased cell viability while reducing oxidative stress and heat shock protein response in acrylamide-treated HepG2 cells.

Keywords: Acrylamide, eugenol, HepG2, oxidative stress, heat shock protein 70.

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BASIC MEDICAL SCIENCES

_O5758

EFFECT OF MARESIN-1 ON THE NRF2-KEAP-1 PATHWAY IN THE LIVER TISSUE OF RATS WITH EXPERIMENTAL OBSTRUCTIVE JAUNDICE

Bayram Ahrazoğlu[1]*, Ahmet Demez[2], HIkmet Zeytun[3], SeyIthan Taysı[1]

ABSTRACT

Aim: Obstructive jaundice is a condition that develops as a result of the blockage of bile flow from the liver to the gallbladder and intestines. This study aims to determine the effects of Maresin-1 on the NRF2-KEAP1 pathway and evaluate its contribution to the recovery of liver damage caused by obstructive jaundice through the activation of this pathway.

Methods: The study included 21 male Sprague Dawley rats (6-8 weeks old). The rats were randomly divided into three groups: control group (n=7), obstructive jaundice group (n=7), and Maresin-1 treatment group (n=7). After the obstructive jaundice model was established, Maresin-1 was administered intraperitoneally (i.p.). Biochemical parameters such as serum ALT, AST, ALP, TOS, TAS, and OSI levels were measured, along with NRF2 and KEAP1 levels. Statistical analyses were performed using SPSS 22 with ANOVA and post-hoc LSD tests.

Results: In the obstructive jaundice group, TAS levels decreased while TOS and OSI levels increased. Maresin-1 treatment increased TAS levels and decreased TOS and OSI levels. Maresin-1 significantly enhanced NRF2 activation and reduced KEAP1 levels, alleviating oxidative stress. ALT, AST, and ALP levels, which increased in the obstructive jaundice group, were brought closer to normal levels by Maresin-1 treatment.

Conclusions: Maresin-1 reduced oxidative stress and inflammation via the NRF2-KEAP1 pathway and significantly improved liver tissue damage. These findings suggest that Maresin-1 has therapeutic potential in the treatment of liver diseases.

Keywords: Obstructive jaundice, Maresin-1, Nrf2-Keap-1 pathway, Oxidative stress

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TUMOR BIOLOGY AND IMMUNOLOGY

_O5671

IN VITRO INVESTIGATION OF THE USE OF LACTOBACILLUS PARACASEI SUBSP. PARACASEI CELL-FREE SUPERNATANTS IN THE TREATMENT OF INFECTIOUS DISEASES AND BREAST CANCER

Berna Erdal[1], Bahar YIlmaz [2,*]

ABSTRACT

Aim: Probiotics are defined as living microorganisms that benefit human health. In recent years, “Cell-Free Supernatants” (CFS) containing biomolecules produced by probiotics have been the subject of research. The aim of this study was to investigate the antibacterial activity of *Lactobacillus paracasei* subsp. *paracasei* CFSs against *Klebsiella pneumoniae* ATCC 13883, *Micrococcus luteus* ATCC 10240, *Escherichia coli* ATCC 25922 and *Bacillus cereus* ATCC 11778 and anticancer activity in MDA-MB-231 cells.

Methods: The antibacterial activity of live and inactive CFS of *L. paracasei* isolate on the studied bacteria was determined by microdilution method. The lowest concentration at which no growth was observed was determined as the minimum inhibitory concentration (MIC) value. The anticancer activity of probiotic isolates, live and inactivated CFS on MDA-MB-231 cells was investigated by MTT test and inhibitory concentration (IC_{50}) values were determined.

Results: The MIC values of the live supernatants of *L. paracasei* isolate were found to be 50% for *B. cereus*, 25% for *M. luteus*, *E. coli* and *K. pneumoniae*, while the MIC values of the inactive supernatants were 12.5% for *B. cereus* and *M. luteus*, *E. coli* and *K. pneumoniae*. IC_{50} values were 16.43±0.18% and 13.60±0.60% for live and inactive CFSs, respectively.

Conclusions: The results of the study showed that the live and inactive cell-free supernatants of *L. paracasei* isolate had antibacterial activity against Gram-positive and Gram-negative bacteria and anticancer activity against MDA-MB-231 cells. Especially inactive CFSs of this bacterium were found to be more effective. The results suggest that the identification of biomolecules in the composition of cell-free supernatants that provide antibacterial and/or anticancer effects will bring a different perspective to the treatment of infectious diseases and cancer.

Keywords: Lactobacillus paracasei subsp. paracasei, Cell-Free supernatant, Antibacterial, Anticancer

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TUMOR BIOLOGY AND IMMUNOLOGY

_O5703

THE ROLE OF SYSTEMIC IMMUNE INFLAMMATION INDEX IN PREDICTING PATHOLOGICAL COMPLETE RESPONSE OF HER2-POSITIVE BREAST CANCER AFTER NEOADJUVANT THERAPY

Burcu Gülbağcı[1]

Introduction

Human epithelial growth factor receptor 2 (HER-2) positivity accounts for 20% of all breast cancers. HER2-positivity is associated with more aggressive tumors, earlier recurrence, and shorter survival (1). With the success of anti-HER-2 therapies in neoadjuvant treatment, pathological complete response rates reach 57-66 % and achieved with neoadjuvant treatment is associated with survival (2,3).

Previous studies have shown that the immune system plays an important role in the treatment response and prognosis of cancer (4,5). As a key part of the host immune system, peripheral blood inflammation indicators, including neutrophil to lymphocyte ratio (NLR), platelet to lymphocyte ratio (PLR), lymphocyte to monocyte ratio (LMR) and systemic immune inflammation index (SII), can reflect the efficacy and prognosis of breast cancer patients receiving neoadjuvant therapy (4,6-7).

We aimed this study to examine the relationship between immune system parameters and neoadjuvant treatment response in HER2-positive breast cancer.

Methods

A total of 87 patients diagnosed with locally advanced HER2-positive breast cancer and treated with neoadjuvant anti-HER2 monoclonal antibody therapy between January 1, 2015, and January 1, 2023, at Sakarya University Training and Research Hospital were included in the study.

Patients were over 18years of age, hormone receptor-positive/negative and HER2-positive, radiologically early stage and receiving neoadjuvant treatment. Patients with estrogen receptors ≥1% were considered hormone positive. HER2 positivity was defined as an

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immunohistochemical (IHC) score of 3 or 2 and being positive by fluorescence in situ hybridization *(FISH)*.

Patient data (demographics, clinicopathological, outcome data, pathological response evaluation, and laboratory parameters) were collected from medical oncology outpatient clinic records, medical records and computer records.

All analyses were performed using SPSS Version 23 (SPSS Inc., Chicago, IL, USA). 3An analysis of continuous variables between groups was performed using the independent samples t-test or Mann-Whitney U test, depending on the normality of distribution. Age, gender, clinical characteristics, laboratory results, and treatment modalities were analyzed using univariate logistic regression. Then, the variables that were found significant were analyzed using the stepwise multivariate LR method (enter method). The mean was employed to determine cut-off values for age. $p<0.05$ values were considered statistically significant.

Results

A total of 87 patients were included in the study. The median age of the patients were 48 years, and their characteristics are summarized in Table 1. All patients received trastuzumab in neoadjuvant treatment, 50 (57.5%) patients received trastuzumab + pertuzumab with chemotherapy. After neoadjuvant treatment, pathological complete response was observed in 34 (39.1%) patients.

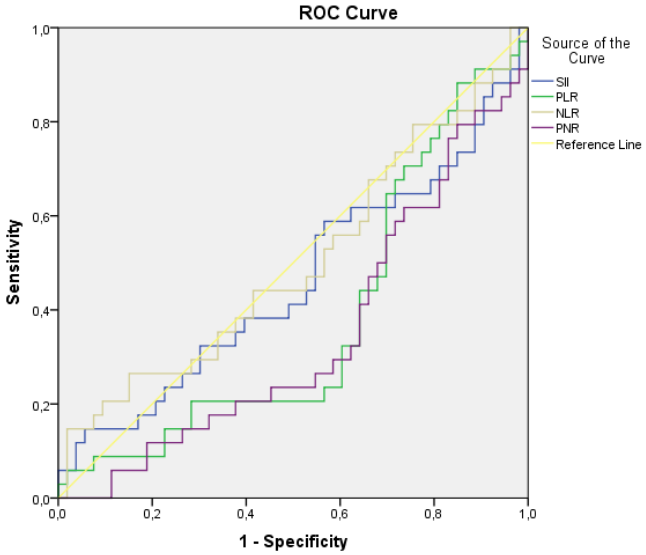
Table1. Demographic and clinical characteristics of the study population.

Parameters	All patients (n=87)
Age, years	
Median (min-max)	48 (29-73)
Menopausal status, n (%)	
Premenopausal	46 (52.9)
Postmenopausal	41 (47.1)
Tumor location, n (%)	
Right	51 (58.6)
Left	36 (41.4)
Tumor grade, n (%)	
Grade 1	0 (0)
Grade 2	45 (51.7)
Grade 3	17 (19.5)
Unknown	25 (28.7)
Tumor histology, n (%)	
Invasive ductal carcinoma	77 (88.5)
Others	10 (11.5)

Parameters	All patients (n=87)
Hormone receptor status, n (%)	
Negative	24 (27.6)
Positive	63 (72.4)
Ki-67 n (%)	
≤27.5	37 (43.5)
>27.5	38 (43.7)
Unknown	12 (13.8)
Clinical stage, n (%)	
Stage 1	4 (4.6)
Stage 2	47 (54)
Stage 3	36 (41.4)
Neoadjuvant Pertuzumab treatment, n (%)	
No	37 (43.5)
Yes	50 (57.5)

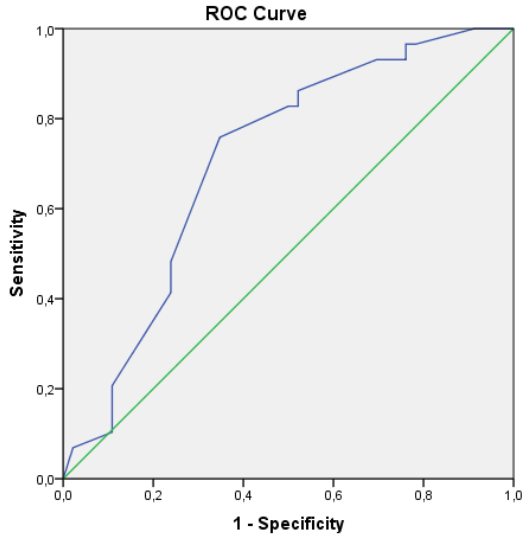
ROC-AUC analysis was performed to determine the optimal cut-off for laboratory parameters. In the analysis, it was found as 55.60 for PNR (AUC: 0.345, 95% CI: 0.227-0.465, p=0.015) and 116.3 for PLR (AUC: 0.379, 95% CI: 0.257-0.501, p=0.05) (Figure 1). Median value was used for parameters for which optimal cut-off could not be determined with ROC-AUC. It was accepted as 594.0 for SII and 2.16 for NLR.

Figure 1. ROC-curve of laboratory parameter



In the ROC-AUC analysis for Ki-67, the optimal cut-off was found to be 27.5 (AUC: 0.708, 95% CI: 0.590-0.825, p=0.003) (Figure 2).

Figure2. ROC-curve of ki-67% index



Factors predicting neoadjuvant treatment response were hormone receptor status, ki67, PLR and PNR in univariate analysis (p=0.026, p=0.001, p=0.020, p=0.037 resceptively). These factors were evaluated in multivariate analysis and ki 67% predicted neoadjuvant response (p=0.002) (Table 2).

Table 2. Univariate analysis of clinical and laboratory parameters predicting response to neoadjuvant chemotherapy

Variables	Categories	OR (%95 CI)	P value
Age	<40y vs ≥40y	0.86 (0.33-2.25)	0.760
Hormone receptor status	Negative vs positive	0.33 (0.13-0.88)	**0.026**
Menopause status	Pre vs postmenopause	0.82 (0.35-1.95)	0.653
Ki 67%	<27.5 vs ≥27.5	5.89 (2.07-16.75)	**0.001**
Tumor dimension	<2cm vs ≥2cm	0.89 (0.31-2.539	0.821
Clinical lymh node involvement	Negative vs positive	0.61 (0.23-1.61)	0.318
Neoadjuvant pertuzumab treatment	no vs yes	1.10 (0.46-2.62)	0.838
Ca15-3	Continuous	1.0 (0.99-1.02)	0.464

CRP	Continuous	1.06 (0.96-1.16)	0.262
NLR	<2.16 vs ≥2.16	0.79 (0.34-1.88)	0.600
PLR	<116.3 vs ≥116.3	0.35 (0.14-0.84)	**0.020**
SII	<594 vs ≥594	0.71 (0.30-1.68)	0.428
PNR	<55.6 vs ≥55.6	0.39 (0.16-0.95)	**0.037**

Abbreviations: NLR: neutrophil to lymphocyte ratio, PLR: platelet to lymphocyte ratio, PNR. Platelet to neutrophil ratio, SII: systemic immune inflammation index

Conclusion

Hemogram parameters are evaluated for prognostic and predictive purposes in many types of cancer because they are easy and accessible. The systemic inflammatory immune index was developed for this aim and has been shown to be a predictive marker in different subgroups of breast cancer (8). We aimed this study to examine the relationship between immune system parameters and neoadjuvant treatment response in HER2-positive breast cancer. We did not find a correlation between pathological complete response and hemogram parameters including SII, however Ki-67% was a predictor of neoadjuvant treatment response (p=0.002).

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TUMOR BIOLOGY AND IMMUNOLOGY

_O5704

INVESTIGATION OF SERUM CD47/ SIRPA, PD-1/PD-L1 AND CALRETICULIN LEVELS IN BREAST CANCER PATIENTS

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ABSTRACT

Aim: Breast cancer is one of the most common and common causes of death among women worldwide. The search for potential biomarkers to be used in the diagnosis of breast cancer continues. Our aim in this study is; It is investigated as a potential biomarker in breast cancer by examining serum CD47, SIRPα, PD-1, PD-L1 and calreticulin levels.

Methods: The study consisted of 52 breast cancer patients and 30 control groups. Serum CD47, SIRPα, PD-1 and PD-L1 levels were assayed ELISA methods.

Results: Serum CD47, SIRPα, PD-1 and PD-L1 levels were found to be significantly higher in breast cancer patients than in the control group (p=0,001, p=0,018, p=0,102, p=0,001). Serum calreticulin level in the control group was found to be significantly higher than the patient group (p=0,224). In stepwise regression analysis, a significant relationship was found between SIRP α and CD47 (p = 0.001) and PD-L1 (p = 0.000) in breast cancer patient groups. However, a negative correlation was detected between CD47 and calreticulin in the patient group. A positive correlation was found between CD47 and SIRPα, PD-1 and PD-L1 parameters (r=-0,108, r=0,963 p<0.01, r=0,569 p<0.01, 0,909 p<0.01). In the ROC analysis of serum CD47 and PD-L1 levels, the area under the curve (AUC) was found to be 0,826 and 0,704.

Conclutisions: The results obtained show that these parameters are suitable biomarkers at serum level in breast cancer. Additionally, this study demonstrated the correlation of CD47 with SIRPα, PD-1 and PD-L1 immune checkpoint blockades.

Keywords: Breast cancer, CD47, SIRPα, PD-1, PD-L1,

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