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Sağlık Bilimleri Dergisi

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Yüksek İhtisas Üniversitesi Sağlık Bilimleri Dergisi *(Yüksek İhtisas University Journal of Health Sciences)* yılda üç sayı (Nisan, Ağustos ve Aralık) olarak yayımlanan hakemli bir dergidir

Yüksek İhtisas University Journal of Health Sciences (Yüksek İhtisas Üniversitesi Sağlık Bilimleri Dergisi) is a peer-reviewed journal published three times a year (April, August and December).

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Yüksek İhtisas Üniversitesi
Sağlık Bilimleri Dergisi
Yüksek İhtisas University Journal of Health Sciences

Amaç ve Kapsam

2020 yılında yayın hayatına başlayan Yüksek İhtisas Üniversitesi Sağlık Bilimleri Dergisi (YIU Saglik Bil Derg), bağımsız, tarafsız ve çift-kör hakemlik ilkelerine uygun olarak yayınlanan bilimsel, açık erişimli, basılı ve aynı zamanda çevrimiçi yayınlanan süreli yayındır.

Yüksek İhtisas Üniversitesi Sağlık Bilimleri Dergisi, Yüksek İhtisas Üniversitesi'nin Nisan, Ağustos ve Aralık aylarında olmak üzere dört ayda bir yayımlanan bilimsel yayın organıdır.

Yüksek İhtisas Üniversitesi Sağlık Bilimleri Dergisi, ülkemizin ilk sağlık konseptli üniversite dergisi olma ayrıcalığı ile akademisyenlere hizmet vermek amacı yanı sıra hedef kitlesi ulusal ve uluslararası düzeyde klinik araştırmacılar, tıp/sağlık profesyonelleri, öğrenciler, hemşirelik profesyonelleri, ilgili mesleki ve akademik kurum ve kuruluşlarıdır.

Dergide sağlık bilimleri alanında orijinal makaleler, literatür gözden geçirmeleri, olgu sunumları, derleme, teknik bildiriler ve uzman görüşleri İngilizce ve Türkçe dillerinde yayımlanır. Yüksek Ihtisas Üniversitesi Sağlık Bilimleri Dergisi hakemli bir dergidir ve en yüksek etik ve editöryal standartlara uyar.

Yüksek İhtisas Üniversitesi Sağlık Bilimleri Dergisi EBSCOhost, Türkiye Atıf Dizini ve Türk Medline tarafından indekslenmektedir.

Editör

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Yazarlara Bilgiler

Yüksek İhtisas Üniversitesi Sağlık Bilimleri Dergisi *(Yüksek İhtisas University Journal of Health Sciences)* yılda üç kez (Nisan, Ağustos ve Aralık) yayınlanan açık erişimli ve hakemli bir dergidir. Dergide sağlık bilimleri alanında İngilizce ve Türkçe dillerinde özgün makaleler, derlemeler, olgu sunumları, teknik raporlar ve yorumlar yayımlanır.

Yüksek İhtisas Üniversitesi Sağlık Bilimleri Dergisi (Journal of Yüksek İhtisas University Health Sciences) en yüksek etik ve editörlük standartlarına uyar. Editörlük ve yayım süreci, International Committee of Medical Journal Editors (ICMJE), World Association of Medical Editors (WAME), Council of Science Editors (CSE), Committee on Publication Ethics (COPE), European Association of Science Editors (EASE) ve National Information Standards Organization (NISO) kılavuzlarına uygun olarak yapılır. Akademik Yayıncılıkta Şeffaflık ve En İyi Uygulama (doaj.org/bestpractice) ilkeleri gözetilir.

Derginin Editörleri WAME Yöneticiler Birliğinin onaylamış olduğu editörler politikasını destekler ve Uluslararası Tıp Dergisi Editörleri Komitesi'nin yayımlamış olduğu Biyomedikal Dergilere Gönderilen Makaleler İçin Gerekli Standartlar ile tam bir uyum gösterir (**http://www.icmje.org/icmjerecommendations**).

Makale Gönderme

Yazarlar makalelerini Ulakbim- DergiPark web sitesinde bulunan Yüksek İhtisas Üniversitesi Sağlık Bilimleri Dergisi alanından göndermelidir. Makaleler Word dokümanı (.doc) veya zengin metin biçimi (.rtf) olarak gönderilmelidir. Her makalenin başında yazı başlığı, öz ve "medline" kurallarına göre düzenlenmiş Türkçe ve İngilizce anahtar sözcükler yazılmalıdır. Makale için iletişim kuracak tüm yazarların gerekli iletişim bilgileri olmalıdır. Tüm şekil, tablo ve gerekli görülen ek dokümanlar da gönderilmelidir. Yazarlar aynı sistem üzerinden Telif Hakkı Devri ve Finansal Durumu belirten ve yazının orijinalliğinin beyan edildiği formu da gönderilere eklemelidir.

Editoryal Politika

Tüm makaleler bilimsel katkıları, orijinallikleri ve içerikleri açısından bilimsel kurul tarafından değerlendirilir. Yazarlar verilerin doğruluğundan sorumludur. Dergi gerekli gördüğü yerlerde dil ve yazım ile ilgili uygun düzeltmeleri yapma hakkını saklı tutar. Makaleler gerekli görüldüğünde revizyon yapılmak üzere sorumlu yazara geri gönderilebilir. Dergide basılan yazılar derginin malı haline gelir ve yazıların telif hakkı Yüksek İhtisas Üniversitesi Sağlık Bilimleri Dergisi *(Journal of Yuksek Ihtisas University Health Sciences)* adına alınır. Daha önce herhangi bir dilde basılmış olan yazılar dergide basılmak üzere değerlendirilmez. Yazarlar, Yüksek İhtisas Üniversitesi Sağlık Bilimleri Dergisi'ne *(Journal of Yuksek Ihtisas University Health Sciences)* gönderdikleri bir yazıyı başka bir dergiye gönderemezler.

Makaleler, ICMJE-Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals (http://www.icmje.org/icmjerecommendations) ile uyumlu olarak hazırlanmalıdır. Randomize çalışmalar CONSORT, gözlemsel çalışmalar STROBE, tanısal değerli çalışmalar STARD, sistematik derleme ve meta- analizler PRISMA, hayvan deneyli çalışmalar ARRIVE ve randomize olmayan davranış ve halk sağlığıyla ilgili çalışmalar TREND kılavuzlarına uyumlu olmalıdır.

Makalelerin Hazırlanması

Yüksek İhtisas Üniversitesi Sağlık Bilimleri Dergisi'ne (Journal of Yüksek Ihtisas University Health Science), gönderilen makaleler ICMJE'nin biyomedikal dergiler için belirlemiş olduğu standartlara göre hazırlanmış olmalıdır. Makalenin gönderilmesi sırasında yazarlar deney/araştırma tipini belirtmelidirler ve istatistik uygulamaların "Guidelines for statistical reporting in articlesfor medical journals: amplificationsand explanations" (Bailar JC III, Mosteller F, Ann InternMed 1988; 108:266 -73) kılavuzuna uygun olması gerekmektedir. Makale ile birlikte gönderilen üst yazıda makale içindeki bilgilerin herhangi bir kısmının daha önce elektronik ortam dâhil yayımlanıp yayımlanmadığı veya değerlendirilmek üzere gönderilip gönderilmediği bildirilmelidir. Çalışma için etik kurul kararı alınıp alınmadığı veya insan deneyleri ile ilgili 2018 yılında güncellenen Helsinki Bildirgesi'ne uyulup uyulmadığı belirtilmelidir, aksi durumlar açıklanmalıdır. Üst yazıda iletişim kurulacak yazarın adresi, telefonu, faks numarası ve e-posta adresi olmalıdır. Tüm başvurular benzerlik tespit yazılımı (iThenticate by CrossCheck) tarafından taranır. Yayın Kurulu, dergimize gönderilen çalışmalar hakkındaki intihal, atıf manipülasyonu ve veri sahteciliği iddia ve şüpheleri karşısında COPE kurallarına uygun olarak hareket etmektedir. Yazar olarak listelenen herkesin ICMJE (www.icmje.org) tarafından önerilen yazarlık kriterlerini karşılaması gerekir. ICMJE, yazarların aşağıdaki dört kriteri karşılamasını önermektedir:

1. Çalışmanın konseptine/tasarımına; ya da çalışma için verilerin toplanmasına, analiz edilmesine ve yorumlanmasına önemli katkı sağlamış olmak;
2. Yazı taslağını hazırlamış ya da önemli fikirsel içeriğin eleştirel incelemelerini yapmış olmak.
3. Yazının yayından önceki son halini gözden geçirmiş ve onaylamış olmak.
4. Çalışmanın herhangi bir bölümünün geçerliliği ve doğruluğuna ilişkin soruların uygun şekilde soruşturulduğunun ve çözümlendiğinin garantisini vermek amacıyla çalışmanın her yönünden sorumlu olmayı kabul etmek.

Bir yazar, çalışmada katkı sağladığı kısımların sorumluluğunu almasına ek olarak, diğer yazarların çalışmanın hangi kısımlarından sorumlu olduğunu da teşhis edebilmelidir. Ayrıca, yazarlar birbirlerinin katkılarının bütünlüğüne güven duymalıdırlar.

Makale Özellikleri

Araştırma Makalesi

Araştırma makalesi ana metni *"Öz", "Giriş", "Materyal ve Metot", "Bulgular" ,"Tartışma/ Sonuç" ve "Kaynaklar"* alt başlıklarını içermelidir. Araştırma makaleleri için sözcük sayısı sınırları Tablo 1'dedir.

Öz

Araştırma makalelerinin özü Giriş, Materyal ve Metotlar, Bulgular ve Sonuç bölümlerinden oluşmalıdır. Çalışma içeriğini ve çalışmanın dayandığı zemini aktarmalı, çalışmanın amaçlarını, ana bulguları ve ana sonuçları belirtmelidir. Ayrıca çalışma ve gözlemlerin yeni ve önemli yönlerini vurgulamalıdır.

Anahtar Sözcükler

Öz bölümünün altında verilmeli ve en fazla altı adet olmalıdır. Anahtar sözcüklerin Türkiye Bilim Terimleri'nden seçilmesine özen gösterilmelidir (http://www.bilimterimleri.com).

Giriş

Bu bölümde niçin bu çalışmayı yapmaya ihtiyaç duyulduğu ve yapılma amacı sadece önemli makalelere atıfta bulunularak belirtilmelidir.

Materyal ve Metotlar

Bu bölümde çalışma için yapılan plan, hastalar, deney hayvanları, materyal ve kontroller, kullanılan çalışma yöntemleri ve uygulanan istatistiksel yöntem açıklanmalıdır. Etik konularla ilgili izinler yukarıda açıklandığı gibi belirtilmeli; ilaçların jenerik isimleri ile birlikte üretici adı veüretildiği ülke ifade edilmelidir.

Bulgular

Bu bölümde istatistiksel metotlar ile desteklenen bulgular ayrıntılı olarak belirtilmelidir. Sadece en önemli bulgular vurgulanmalıdır. Şekil ve tablolar metin içinde verilen bulguları desteklemeli,tekrar etmemelidir; verinin metin, tablo veya şekil şeklindeki sunumların sadece birinde gösterilmesi yeterlidir.

Tablo 1. Makale türleri için kısıtlamalar

Makale türü	Sözcük sınırı	Öz sözcük sınırı	Kaynak sınırı	Tablo sınırı	Resim sınırı
Araştırma Makalesi	4000	250 (Yapılandırılmış)	30	6	15 resim
Derleme	5000	250	50	6	20 resim
Olgu Sunumu	1500	150	15	Tablo yok	20 resim
Editöre Mektup	1000	Öz yok	5	Tablo yok	Resim yok

Tartışma /Sonuç

Kaynakların ışığında bulguların önemi ve farkları vurgulanmalıdır; ancak sonuç bölümünde sunulan detaylar tekrarlanmamalıdır. Görüşler, çalışmada elde edilen gerçeklerle desteklenecek şekilde sınırlanmalıdır; araştırılmayan ya da gösterilmeyen varsayımlar tartışmaya eklenmemelidir. Bulgular başka araştırmalarla karşılaştırılmalıdır. Bu bölümde bulgular bölümünde belirtilmemiş yeni veri sunulmamalıdır.

Kaynaklar

Kaynaklar, "Uluslararası Tıp Dergisi Editörleri Komitesi (ICMJE)" tarafından geliştirilen "Biyomedikal Dergilere Gönderilen Makaleler İçin Gerekli Standartlar" kurallarına göre düzenlenmelidir. Sık kullanılan referans türleri için bazı örnekler verilmiştir. https://www.icmje.org/icmje-recommendations.pdf linki, burada sağlanmayan diğer referans türlerine ilişkin rehberlik amacıyla kullanılmalıdır. Her kaynak metindeki sırasına göre numaralandırılmalı ve listelenmelidir. Metin içerisinde cümle sonlarında parantez içinde "(....)" şeklinde belirtilmelidir. Kaynakların doğruluğundan yazar(lar) sorumludur. Dergi başlıkları Index Medicus'a uygun olarak kısaltılmalıdır. Dergi adlarının kısaltmaları için "Index Medicus'ta İndekslenen Dergilerin Listesi"ne bakınız (http://www.nlm.nih.gov/tsd/serials/lji.html). Index Medicus'ta yer almayan dergilerde kısaltma kullanılmaz. Kaynaklar'da yalnızca yayınlanmış makaleler veya "baskıda" olan makaleler kullanılabilir. Tüm yazarların isimleri yazılmalıdır, "et al" ifadesi kullanılmamalıdır.

Dergiler:

Halpern SD, Ubel PA, Caplan AL. Solid-organ transplantation in HIV- infected patients. N Engl J Med. 2002;347:284-7. PMID: 12140307 DOI: 10.1056/NEJMsb020632

Çevrimiçi yayınlanmış makale:

Yalçın Çakmaklı G, Ayhan Y, Yazıcı MK, Demirci M, Şahin G. Spectral analysis of lithium tremor. Arch Neuropsychiatry, 17 Ekim 2020. https://doi.org/10.29399/npa.27378. [E-pub ahead of print]

Kitaplar:

Breedlove GK, Schorfheide AM. Adolescent pregnancy. 2nd ed. Wieczorek RR, editor. White Plains (NY): March of Dimes Education Services; 2001.

Kitap Bölümleri:

Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. In: Vogelstein B, Kinzler KW, editors. The genetic basis of human cancer. New York: McGraw-Hill; 2002. 93-113.

Toplantı Sunumları:

Christensen S, Oppacher F. An analysis of Koza's computational effort statistic for genetic programming. In: Foster JA, Lutton E, Miller J, Ryan C, Tettamanzi AG, editors. Genetic programming. EuroGP 2002: Proceedings of the 5th European Conference on Genetic Programming; 2002 Apr 3-5; Kinsdale, Ireland. Berlin: Springer; 2002. p. 182-91.l

Tablolar ve Şekiller

Tüm tablo ve şekiller "Windows" altında açılabilmelidir. Online gönderilen resimlerin çözünürlük kalitesi minimum (10x10 cm boyutunda) 300 dpi ve jpg formatında olmalıdır. Her tablo ve şekil ayrı bir sayfada sunulmalıdır. Tüm tablo ve şekiller Arabik numaralar ile belirtilmelidir. Her tablonun başlığı tablonun içeriği ve amacını belirtmelidir. Her şeklin üzerindeki işaret ve sembolleri açıklayan bir alt yazısı olmalıdır.

Derleme Yazıları

Belirli bir alanda uzmanlık potansiyeli olan yazarlar tarafından hazırlanan derlemeler memnuniyetle karşılanmaktadır. Derlemeler, klinik uygulamada bir konunun mevcut bilgi seviyesini tanımlamalı, tartışmalı, değerlendirmeli ve gelecekteki çalışmalara rehberlik etmelidir. Derleme yazılarının alt başlıkları yazarlar tarafından planlanmalıdır. Ancak, her derleme makalesi bir "Giriş" ve bir "Sonuç" bölümü içermelidir. Derleme makalelerinin sınırlamaları için Tablo 1'e bakınız.

Olgu Sunumu

Nadir görülen, yeni bir bulgunun ya da yeni bir birlikteliğin tanımlandığı, tanıda ve tedavide güçlük gösteren veya yeni bir tedavi yönteminin uygulandığı ilgi çekici ve öğretici sunular yayınlanabilir. Bu yazılar, "Giriş", "Olgu Sunumu" ve "Tartışma" alt başlıklarını içermelidir. Olgu sunumlarının sözcük sayısı sınırları Tablo 1'de belirtilmiştir.

Editöre Mektup

Dergide yayımlanmış bir makale hakkında konunun uzmanı olan veya makalenin değerlendirmesini yapmış olan hakemler görüş veya yorumlarını Editöre Mektupla bildirebilirler. Kabul edilen Mektuplar, yayımlanmalarından önce konu aldıkları makalenin yazarına gönderilir ve ek görüş bildirmek, cevap vermek isteyip istemedikleri sorulur. Bu tür yazılar mümkün oldukça ilgili yazının yazarlarının yanıtlarıyla birlikte yayımlanır.

Düzeltmeler

Düzeltme talepleri ve eleştiriler iletişim adresi belirtilen yazara gönderilir. Basımın gecikmemesi için istenen düzeltmeler en kısa zamanda cevaplandırılmalıdır. Revizyonların cevapları ile geri gönderilmesi en geç 15 gün içinde olmalıdır. Editörler kurulu 15 günden sonraya kalan revizyonlarda makaleyi reddetme hakkını saklı tutar. Tüm hakemlerin görüşlerine cevap yazılmalıdır ve yapılan düzeltmelerin sayfa numarası ile satır sırası belirtilmelidir. Yapılan tüm değişikliklerin metin üstünde koyu olarak belirtildiği bir kopya ile düzeltmeler yapıldıktan sonraki son halinin temiz bir kopyası birlikte gönderilmelidir. Sunulan kaynakların ve verilerin doğruluğundan yazarlar sorumludur. Hatalı, aldatıcı veya yanlış yönlendirici bilgilerin varlığı fark edildiğinde Baş-Editör makaleyi bilimsel literatürden çekme ve bunu duyurma hakkına sahiptir.

İletişim

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Aims and Scope

Yüksek İhtisas University Journal of Health Sciences (YIU J Health Sci), which started its publication life in 2020, is a scientific, open access, both printed and online periodical published in accordance with the principles of independent, impartial and double-blind refereeing.

Yüksek İhtisas University Journal of Health Sciences is the scientific publication of Yüksek İhtisas University, published quarterly in April, August and December.

With the privilege of being the first university journal with a health concept in our country, Yüksek İhtisas University Journal of Health Sciences aims to serve academics, and its target audience is clinical researchers, medical/health professionals, students, nursing professionals, related professional, and academic institutions and organizations at the national/international level.

In the journal; original articles, literature reviews, case reports, reviews, technical papers and expert opinions in the field of health sciences are published in English and Turkish. Yüksek İhtisas University Journal of Health Sciences is a peer-reviewed journal, and adheres to the highest ethical and editorial standards.

Yüksek İhtisas University Journal of Health Sciences is indexed by EBSCOhost, the Turkish Citation Index, and Turkish Medline.

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Instructions for Authors

Yüksek İhtisas University Journal of Health Sciences *(Yüksek İhtisas Üniversitesi Sağlık Bilimleri Dergisi)* is an open access journal, and published three times a year (April, August and December). The journal publishes original articles, reviews, case reports, technical reports and commentaries in the fields of health science in English and Turkish languages.

Journal of Yuksek İhtisas University Health Sciences is a peer- reviewed journal and adheres to the highest ethical and editorial standards. Editorial and publishing processes of the journal are in accordance with the guidelines of International Committee of Medical Journal Editors (ICMJE), World Association of Medical Editors (WAME), Council of Science Editors (CSE), Committee on Publication Ethics (COPE), European Association of Science Editors (EASE), and National Information Standards Organization (NISO). Editorial and publishing processes of the Journal of Yüksek İhtisas University Health Science, comply with the principles of Transparency and Best Practice in Academic Publishing (doaj.org/bestpractice).

The Editorial Board of the Journal of Yüksek Ihtisas University Health Sciences endorses the editorial policy statements approved by the WAME Board of Directors. The journal is following the uniform requirements for manuscripts submitted to biomedical journals published by the International Committee of Medical Journal Editors (**http://www.icmje.org/icmjerecommendations**).

Submission of Manuscripts

Authors should submit their articles from the Journal of Yüksek İhtisas University Health Sciences on the Ulakbim- DergiPark website. Articles should be submitted as Word document (.doc) or rich text format (.rtf). At the beginning of each article, the title, abstract and Turkish and English keywords arranged according to the "medline" rules should be written. All authors who will contact for the article should have the necessary contact information. All figures, tables and additional documents deemed necessary should also be sent. Authors should also attach the form stating the Copyright Transfer and Financial Status and declaring the originality of the article to the submissions through the same system.

Editorial Policies

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In the cover letter sent with the article, it should be reported whether any part of the information in the article has been previously published, including electronic media, or has been sent for evaluation. It should be stated whether an ethical committee decision has been given for the study, or whether the Helsinki Declaration, which was updated in 2018 regarding human experiments, has been followed, or any other conflict. The cover letter must include the author's address, phone number, fax number and e-mail address.

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In the event of alleged or suspected research misconduct, e.g., plagiarism, citation manipulation, and data falsification/fabrication, the Editorial Board will follow and act in accordance with COPE guidelines.

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1 Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; and
2 Drafting the work or revising it critically for important intellectual content; and
3 Final approval of the version to be published; and
4 Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Research Articles

The main text of the research article should include "Introduction", "Material and Method", "Results" and "Discussion/ Conclusion" subheadings. Word count limits for research articles are in Table 1.

Abstract

The summary of the research articles should consist of Introduction, Material and Methods, Results and Conclusion sections. It should convey the content of the study and the background on which the study is based, and state the aims, main findings and results of the study. It should also highlight new and important aspects of the study and observations.

Keywords

Keywords should be given under the summary section and should not exceed six. They must be selected from MeSH (Medical Subject Headings) (https://www.nlm.nih.gov/mesh/meshhome.html).

Introduction

State concisely the purpose and rationale for the study and cite only the most pertinent references as background.

Material and Methods

Describe the plan, the patients, experimental animals, material and controls, the methods and procedures utilized, and the statistical method(s) employed. Address "Institutional Review Board" issues as stated above. State the generic names of the drugs with the name and country of the manufactures

Table 1. Limitations for each manuscript type

Type of manuscript	Word limit	Abstract word limit	Reference limit	Table limit	Figure limit
Original Article	4000	250 (Structured)	30	6	15 images
Review Article	5000	250	50	6	20 images
Case Report	1500	150	15	No tables	20 images
Letter to the Editor	1000	No abstract	5	No tables	No image

Results

Present the detailed findings supported with statistical methods. Emphasize only your Important observations; do not compare your observations with those of others. Such comparisons and comments are reserved for the discussion section. Figures and tables should supplement, not duplicate the text; presentation of data in either one or the other will suffice.

Discussion/ Conclusion

State the importance and significance of your findings but do not repeat the details given the results section. Limit your opinions to those strictly indicated by the facts in your report. Compare your findings with those of others'. No new data are to be presented in this section.

References

References should be arranged according to the "Uniform Requirements for Manuscripts Submitted to Biomedical Journals" rules developed by "International Committee of Medical Journal Editors (ICMJE)". Some examples have been provided for frequently used reference types. The http://www.nlm.nih.gov/bsd/ uniform_requirements.html site should be used for guidance on other types of references not provided here. Each reference should be numbered and listed according to their order in the text. They should be referred to in parentheses as "(....)" at the end of sentences within the text. The author(s) are responsible for the accuracy of the references. Journal titles should be abbreviated according to Index Medicus. Refer to the "List of Journals Indexed in Index Medicus" for abbreviations of journal names, or access the list at http://www.nlm.nih.gov/tsd/serials/ lji.html. Abbreviations are not used for journals that are not listed in the Index Medicus. Only published articles or articles "in press" can be used in references. All authors names must be written, do not use "et al".

For Journals

Halpern SD, Ubel PA, Caplan AL. Solid-organ transplantation in HIV- infected patients. N Engl J Med. 2002;347:284-7. PMID: 12140307 DOI: 10.1056/NEJMsb020632

For Epub Ahead of Print Articles:

Yalçın Çakmaklı G, Ayhan Y, Yazıcı MK, Demirci M, Şahin G. Spectral analysis of lithium tremor. Arch Neuropsychiatry, 17 Ekim2020. https://doi.org/10.29399/npa.27378. [E -pub ahead of print]

Books:

Breedlove GK, Schorfheide AM. Adolescent pregnancy. 2nd ed. Wieczorek RR, editor. White Plains (NY): March of Dimes Education Services; 2001.

Book chapters:

Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. In: Vogelstein B, Kinzler KW, editors. The genetic basis of human cancer. New York: McGraw-Hill; 2002. 93-113.

Meeting announcements:

Christensen S, Oppacher F. An analysis of Koza's computational effort statistic for genetic programming. In: Foster JA, Lutton E, Miller J, Ryan C, Tettamanzi AG, editors. Genetic programming. EuroGP 2002: Proceedings of the 5th European Conference on Genetic Programming; 2002 Apr 3-5; Kinsdale, Ireland. Berlin: Springer; 2002. p. 182-91.

Tables and Figures

Tables and figures should work under "Windows". Color figures or grayscale images must be at least 300 dpi. Figures using ".jpg" or ".pdf" should be saved separate from the text. All tables and figures should be prepared on separate pages. They should be numbered in Arabic numerals. Each table must have a title indicating the purpose or content of each table. Each figure must have an accompanying legend defining abbreviations or symbols found in the figure.

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Review articles by authors with potential expertise in a particular field are welcomed. Reviews should describe, discuss and evaluate the current level of knowledge of a topic in clinical practice, and be a guide for future studies. Subtitles of review articles should be planned by the authors. However, each review article must contain an "Introduction" and a "Conclusion" section. Please refer to Table1 for the limitations of the review articles.

Case Reports

There is limited space for case reports in the journal. Reports on rare cases or conditions that constitute challenges in diagnosis and treatment, those offering new therapies or revealing knowledge not included in the literature, and interesting and educative case reports are accepted for review. The text should include the subheadings Introduction, Case Presentation, and Discussion. Please check Table1 below for wordcount specifications.

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These manuscripts include evaluation and criticisms submitted by the experts in the field or the reviewers of a manuscript regarding manuscripts previously published in the journal. The authors of manuscripts that become to pics of letters to the editor are provided with the opportunity to responds to the comments that are raised. Letters are published together with the responses of the author(s) of the manuscript concerned where possible.

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Revisions will be sent to the corresponding author. Revisions must be returned as quick as possible in order not to delay publication. Deadline for the return of revisions is 15 days. The editorial board retains the right to decline manuscripts from review if authors' response delay beyond 15 days All reviewers' comments should be addressed and revisions made should be started with page and line of the text. Send a highlighted copy indicating the revisions made and a clear copy of the revised manuscript. Authors are responsible for the truth of presented data and references. Editor-In-Chief has the right to with draw or retract the paper from the scientific literature in case of proven allegations of misconduct.

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ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

Parent Experiences About in-Vehicle Passenger Safety for Children Aged 0-12: A Qualitative Study

0-12 Yaş Arası Çocuklar İçin Araç İçi Yolcu Güvenliğine İlişkin Ebeveyn Deneyimleri: Nitel Bir Çalışma

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ABSTRACT

Introduction: In this study, which was carried out in Turkey, we aimed to determine the experiences of parents of children aged 0-12 regarding in-vehicle child passenger safety and identify their opinions.

Material and Methods: The study was carried out by conducting in-depth interviews with 15 parents who met the inclusion criteria between 1 June 2023 and 15 August 2023. The content analysis method was used to analyze the collected data.

Results: Based on the results of the content analysis, five themes were identified. These themes were reasons for failure to ensure child passenger safety, in-vehicle safety precautions taken for child passengers, legal responsibility for child passengers, barriers to child passenger safety, and precautions to be taken to ensure child passenger safety.

Conclusion: It was determined that parents partly knew about in-vehicle safety practices for their children, but they were inadequate in implementing these practices. Regarding in-vehicle safety practices, deterrent legal penalties and training programs should be implementable and inspectable. The implementation of the necessary penalties would be expected to ensure in-vehicle child passenger safety and reduce the number of injuries and deaths caused by traffic accidents.

Keywords: Child passenger, in-vehicle precautions, safety, barriers, traffic accidents

ÖZ

Giriş: Türkiye'de gerçekleştirilen bu çalışmada, 0-12 yaş arası çocukların ebeveynlerinin araç içi çocuk yolcu güvenliğine ilişkin deneyimlerinin belirlenmesi ve görüşlerinin tespit edilmesi amaçlanmıştır.

Materyal ve Metotlar: Çalışma, 1 Haziran 2023 ve 15 Ağustos 2023 tarihleri arasında dahil edilme kriterlerini karşılayan 15 ebeveyn ile derinlemesine görüşmeler yapılarak gerçekleştirilmiştir. Toplanan verilerin analizinde içerik analizi yöntemi kullanılmıştır.

Bulgular: İçerik analizi sonuçlarına göre beş tema belirlenmiştir. Bu temalar; çocuk yolcu güvenliğini sağlayamama nedenleri, çocuk yolcular için alınan araç içi güvenlik önlemleri, çocuk yolcular için yasal sorumluluk, çocuk yolcu güvenliğinin önündeki engeller ve çocuk yolcu güvenliğini sağlamak için alınması gereken önlemlerdir.

Sonuç: Ebeveynlerin çocuklarına yönelik araç içi güvenlik uygulamalarını kısmen bildikleri, ancak bu uygulamaları hayata geçirme konusunda yetersiz kaldıkları tespit edilmiştir. Araç içi güvenlik uygulamaları ile ilgili olarak caydırıcı yasal cezalar ve eğitim programları uygulanabilir ve denetlenebilir olmalıdır. Gerekli cezaların uygulanmasıyla araç içi çocuk yolcu güvenliğinin sağlanması ve trafik kazalarından kaynaklanan yaralanma ve ölümlerin azalması beklenmektedir.

Anahtar Sözcükler: Çocuk yolcu, araç içi önlemler, güvenlik, bariyerler, trafik kazaları

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Introduction

Traffic accidents happening on land routes are a global problem and constitute a serious threat to public health (1). Worldwide, more than a million deaths are caused by traffic accidents annually, and more than 20 people are injured. Traffic accidents rank first among the causes of death of children and young people aged 5-25 (2). The United States Centers for Disease Control and Prevention (CDC) report that motorized vehicle accidents continue to be a leading cause of death in children aged between 1 and 17 (3). Accidents rank high also in Turkey among the causes of death in children in the age group of 5-14 (4). According to the Turkish Statistical Institute (TURKSTAT), in Turkey in 2021, 864 children died in traffic accidents. Among the children who died, 44.8% were 0-9 years old, and 21.5% were 10-14 years old (5).

Children in the 0-12 age group are not physically, cognitively, and psychosocially mature enough. This is why these children are under the supervision of their parents in vehicles that are used for transportation and travel. These vehicles, which are driven by parents or other adults, also pose a risk to children. Thus, all necessary precautions must be taken by these adults. High mortality rates despite the systems in place regarding this issue implicate neglect, lack of knowledge, and failure to take the necessary precautions as the causes (6).

As safety measures for child passengers, age-appropriate car seats should be available, the child should sit in a suitable position in the vehicle, it should be ensured that they wear their seatbelt, practices such as child locks should be adopted, and such practices should be supported (7). One of the most effective ways to protect children from accidents during transportation is the use of car seats for children. Children shorter than 145 cm should sit in the backseat equipped with a car seat that is appropriate for their height and weight. In the Global Status Report on Road Safety by the World Health Organization (WHO), it is stated that seating children in the age group of 0-12 in the backseat by using an appropriate car seat reduces the rates of mortality caused by traffic accidents by approximately 70% in infants and 54-80% in children (2, 8).

Specialized legal policies and penalties should be developed to create incentivizing strategies for the adoption of safety measures for child passengers (9). Furthermore, making safety measures for child passengers mandatory and providing continued education and training in schools and primary healthcare institutions led by healthcare personnel/nurses based on their counseling roles will make it possible to avoid preventable deaths and injuries (10).

It is important to thwart preventable attitudes and behaviors regarding the issue and contribute to the reduction of child mortalities caused by traffic accidents. There are very few studies on the factors that are effective, informative, preventive, predictive, and incentivizing for precautions in the context of child passenger safety. Therefore, the purpose of this study is to determine the experiences and views of parents of children aged 0-12 about child passenger safety.

Material and Methods

Design

Qualitative studies are based on the philosophy that human experiences are complex, and they aim to uncover subjective experiences and points of view by employing a holistic perspective and broad-scoped research questions (11). These studies follow a process in which phenomena are investigated and presented in a realistic and comprehensive manner in actual settings where events are experienced by individuals (12, 13).

In the phenomenological approach, which is among qualitative research designs, the purpose is to define the common meaning of the experiences of individuals and groups regarding a phenomenon or concept. In this sense, in phenomenological studies, researchers first explain the phenomenon in question, then collect data from persons who experience this phenomenon, and "provide a comprehensive description that defines the essence of the experiences of all included individuals" (14).

In this study, a descriptive qualitative research design was employed (15). In this phenomenological analysis approach, the main areas of interest are the experiences, comprehension, perceptions, and views of participants (16). The COREQ checklist was followed in this study.

Sample

The sample of the study consisted of parents (mother or father) living in the provincial center of Zonguldak, Turkey who had children in the age group of 0-12. It is accepted that there is no restriction in sample sizes for qualitative studies, and the sample size can be determined based on the objectives and research questions of a study. In such studies, it is important to analyze the phenomenon that is examined in depth, rather than generalize the results. In the data collection process, the criterion to be followed is "reaching theoretical saturation". Theoretical saturation is achieved when the data collected by the researcher start to repeat, and thus, no new information can be obtained (17, 18).

The data were collected between 1 June 2023 and 15 August 2023 from parents who were included by using the maximum variation sampling method (19, 20). The inclusion criteria for parents were as follows:

(1) Having a child aged 0-12,
(2) Having experience driving a vehicle and traveling,
(3) Having traveled with children,
(4) Being able to read, speak, and understand Turkish.

Table 1. Demographic characteristics of the participants

Participant	Child's age	Child's gender	Parent	Mother's age	Mother's occupation	Mother's education level	Father's age	Father's occupation	Father's education level
P1	10	M	Mother	39	Homemaker	Secondary school	50	Laborer	Secondary school
P2	5	F	Mother	21	Homemaker	High school	28	Driver	High school
P3	6	F	Mother	34	Homemaker	Secondary school	36	Laborer	Secondary school
P4	5	M	Mother	43	Nurse	Undergraduate	45	Police officer	High school
P5	5	F	Mother	39	Academician	Postgraduate	42	Academician	Postgraduate
P6	7	F	Mother	35	Laborer	Secondary school	36	Laborer	Secondary school
P7	5	F	Father	32	Teacher	Undergraduate	33	Soldier	Undergraduate
P8	8	M	Mother	29	Laborer	High school	38	Laborer	High school
P9	7	M	Mother	31	Civil servant	Undergraduate	33	Civil servant	Undergraduate
P10	6	F	Father	31	Homemaker	Secondary school	29	Laborer	Secondary school
P11	5	F	Mother	31	Teacher	Undergraduate	33	Soldier	Undergraduate
P12	14	F	Mother	42	Homemaker	Secondary school	47	Laborer	Secondary school
P13	7	F	Mother	38	Homemaker	Undergraduate	38	Civil servant	Undergraduate
P14	8	M	Mother	25	Homemaker	High school	26	Freelancer	High school
P15	10	M	Mother	34	Homemaker	High school	42	Laborer	High school

The sample consisted of 15 parents who met the inclusion criteria (Table 1). The participants were informed about the objective and methodology of the study and ensured that their confidentiality would be guaranteed. The participants were voluntary. The researchers had not met the participants before.

The prospective participants were given a detailed explanation about the data collection procedures of the study and their rights as participants before they provided informed consent. The date and time of the interview were set based on the availability of each participant.

Data Collection

An information form was used to collect data about the sociodemographic characteristics of the participants and their children, whereas a "Semi-Structured Interview Form" consisting of six open- and closed-ended questions was used to collect the views of the participants regarding in-vehicle child passenger safety. The questions on the Semi-Structured Interview Form" were "What could be the reason for the high non-medical mortality rates in children aged 0-12? What are the passenger safety precautions taken in the vehicle that your child uses to go to school or those taken by you in your own vehicle? What could be the tools that should be available in vehicles for the safety of child passengers? Do you think such tools are sufficient? What do you think about the legal aspects of ensuring in-vehicle passenger safety? Which topics should be focused on for an education program to be planned about in-vehicle child passenger safety? What are the barriers you face in taking precautions about in-vehicle child passenger safety?"

Using the form, individual face-to-face interviews were held with all participants. The in-depth interview technique was used in the interviews. The interviews were held at dates and times suitable for the participants and in an intervention room at the clinic where no person other than the researcher and the interviewee was present. The qualitative data were collected by using an audio recorder with the verbal and written permission of the interviewee. Each interview lasted for about 40-60 minutes. The audio recording of each interview was transcribed by the researcher who conducted the interview. This practice aimed to minimize the chances of misinterpretation and prejudice (21). The data collection and data analysis procedures were carried out simultaneously.

Data Analysis

The content analysis method was used to analyze the data. After all recordings were listened to by the researchers and transferred to a document in written form in the computer environment, based on the interview data, themes were identified first, and then, categories were determined. The stages of the analysis in this study were as follows: (1) transcription of data, (2) coding, (3) category and theme formation, (4) category and theme revision, and (5) recording and interpretations of findings. After the identified categories and themes were examined, and the researchers reached an agreement on these categories and themes, the resulting set of these units was presented to three experts for their review. After obtaining expert opinions, the final versions of the categories and themes were created (17, 22). The Consolidated Criteria for Reporting Qualitative Research (COREQ) (23) checklist was used to report the findings of the study.

Ethical Aspects of the Study

Before starting the study, approval was obtained from the Clinical Studies Ethics Committee at Zonguldak Bulent Ecevit University Human Research (Date: 26.05.2023, No: 222). The research protocol complied with the principles of the Declaration

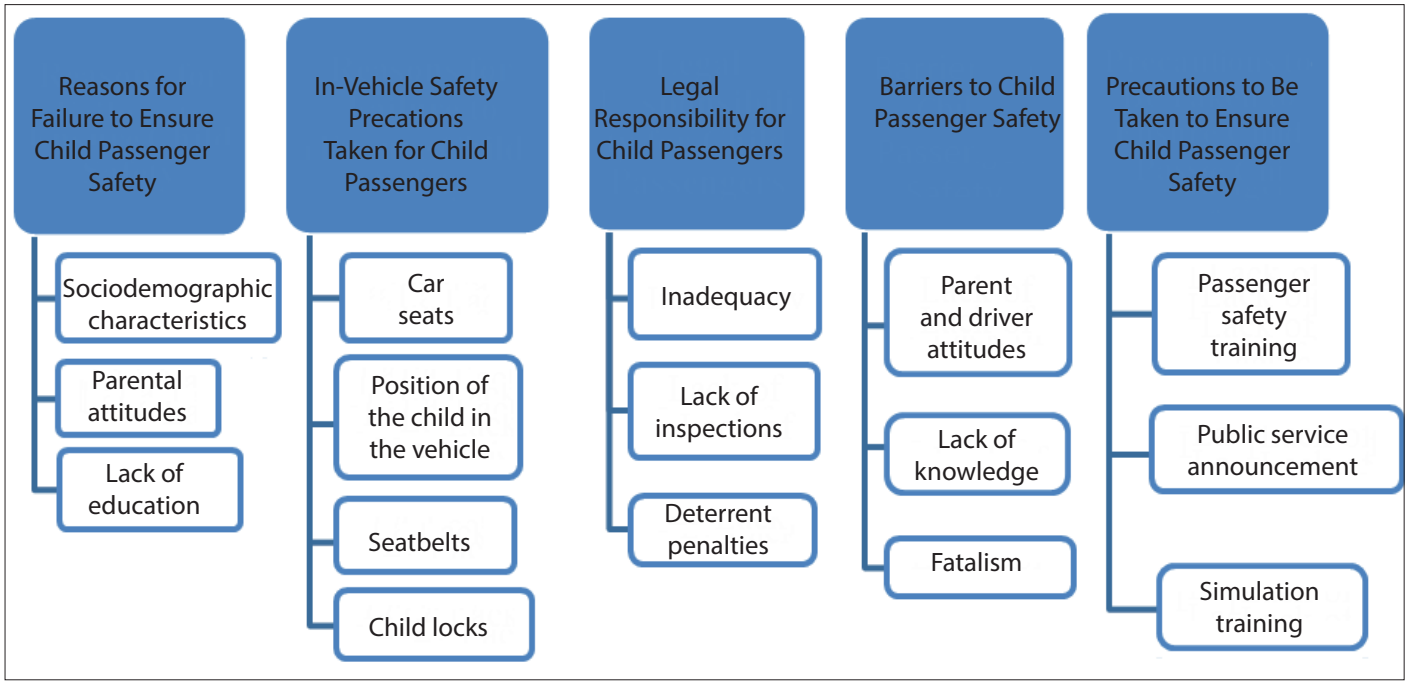

Figure 1. Themes and categories

of Helsinki. Participation was entirely voluntary, and the participants were informed that they could leave the study at any stage if they wished to do so. They were informed that the collected data would be used only for the purposes of this study, and the confidentiality of their information was protected.

Reliability

To achieve the reliability of the study, measures were taken to ensure credibility, trustworthiness, transferability, and confirmability. The researcher who would hold the interviews received training in qualitative interviews. A pilot implementation was made to test the applicability of the interview form. For trustworthiness purposes, all documents used in data collection and analysis can be made accessible if needed (24). A journal was kept by the researcher to keep their personal views in check after each interview (25). To achieve confirmability (i.e., to prevent the views of the researcher from affecting the results and avoid bias), the analysis results were repeatedly re-evaluated by the other members of the research team (26). When differences were encountered, discussions were held to reach a consensus. Transferability was ensured by reaching data saturation. Two researchers independently coded the data to provide consistency. When differences were encountered, the third researcher determined the final code. It was confirmed that all methods were implemented in compliance with relevant instructions and recommendations.

Results

According to the analyses of the data collected in the individual in-depth interviews held with the participants, five themes were identified as follows: (1) Reasons for failure to ensure child passenger safety, (2) In-vehicle safety precautions taken for child passengers, (3) Legal responsibility for child passengers, (4) Barriers to child passenger safety (5), and Precautions to be taken to ensure child passenger safety. The results showed that the participants were knowledgeable about in-vehicle child passenger safety. However, they were inadequate in practice, and the reasons for this were the lack of deterrent penalties and the insufficiency of education regarding the importance of child passenger safety. The view that legal consequences about child passenger safety should be a deterrent and the lack of sufficient education were emphasized. The themes identified based on the collected data are shown in Figure 1.

Theme 1: Reasons for Failure to Ensure Child Passenger Safety

According to the responses of the participants in the interviews, it was seen that age, gender, education level, and occupation were sociodemographic characteristics that affected in-vehicle child passenger safety.

"*Female drivers, especially those who are mothers like me, behave more sensitively about the safety of their children in their vehicles.*" **(P13)**

"*Male drivers are more experienced compared to female drivers, and they can protect their children better while driving on the road.*" **(P10)**

"*Education is not that important. I have witnessed several academician friends of mine not showing the same sensibility regarding child passenger safety.*" **(P5)**

"*The rigor in the safety measures we take for our children comes from the fact that my husband is a police officer. He encounters accidents frequently due to his job."* **(P4)**

The interviews showed the significant role of authoritarian, authoritative, or neglectful parental attitudes in the context of child passenger safety. The participants stated that parental attitudes are important in terms of in-vehicle child passenger safety.

"*My husband is a good driver. It is not that important to take precautions."* **(P15- Neglectful Attitude)**

"*If everything complies with the rules, no one would be sorry. My husband and I both try to take all precautions for ourselves and our children*." **(P9-Democratic Attitude)**

The responses of the participants showed that although they had sufficient knowledge about the importance of education and about child passenger safety, they had problems in putting this knowledge into practice. It was also learned that people in the immediate environment of the participants failed to take safety precautions due to a lack of knowledge.

"*Many families in our village have no idea what a car seat is. These are new-generation things now. So, not many safety precautions are taken. They leave it to God."* **(P1)**

"*Despite all the education we have had and all the information we hear about from around us, we have difficulty in practice. The children sometimes object to it, and this makes it convenient for us as parents."* **(P13)**

Theme 2: In-Vehicle Safety Precautions Taken for Child Passengers

Among precautions regarding the in-vehicle safety of child passengers, it was seen that car seats were a topic about which the participants were knowledgeable. Based on the statements of the participants, on the other hand, it was found that car seats were not actively being used due to the negative behaviors of the children and parental attitudes.

"*Because I have a child with a chronic illness, we have to leave the city once every month. As my daughter gets uneasy on long journeys, she wants to travel on my lap despite having a car seat in the back, and I cannot prevent it."* **(P2)**

"*My son feels uncomfortable in the car seat and does not want to use it."* **(P14)**

The statements of the participants showed that they thought children should ride in a car seat in the back, while they also knew that children over the age of 12 could ride in the front seat wearing their seatbelt.

"*I have three children. The oldest is 12 years old. …likes riding in the front seat but does not want to wear a seatbelt."* **(P5)**

Seatbelts are among the safety measures taken by traveling individuals to survive and protect themselves. When the participants shared their views about safety measures, seatbelts were the first thing they thought of. While the participants with high education levels had high rates of using seatbelts, those with low education levels did not wear them despite knowing that they are important as a safety precaution.

"*Wearing our seatbelts is at the top of our precautions, especially in our own vehicle and school vehicles. It is lifesaving even in the smallest accidents."* **(P5)**

"*Being educated or uneducated should not mean we have not heard of seatbelts, but when the child does not want to wear it, you cannot put it on by force."* **(P12)**

Most participants did not have any opinion about in-vehicle child locks and similar safety measures.

"*I did not know that locking the doors or windows was among safety measures."* **(P14)**

"*My husband usually thinks it is wrong to automatically lock [doors/windows]. He thinks it would not be possible to respond to emergency situations. This is why we tell our son to not play with the locks."* **(P11)**

Theme 3: Legal Responsibility for Child Passengers

Traffic rules, which are relevant to public health, are a set of practices under the individual responsibility of citizens that should be mandatory. There is a need for some legal basis to maintain order and health. More than half of the participants stated that legal repercussions regarding safety precautions for child passengers or lack thereof are inadequate.

"*Our children are precious to us. This is why safety precautions to protect children in vehicles while on the road should be mandatory."* **(P9)**

"*Inspecting compliance with traffic rules is the responsibility of the police, but these inspections are currently insufficient."* **(P8)**

"As parents, it is our responsibility to self-check and self-evaluate in the family during our drive in and outside the city, but we have difficulties in paying the utmost attention." ***(P5)***

The high rates of non-medical deaths among 5-14-year-old children, especially in cases of accidents, indicate that in-vehicle child passenger safety precautions are not adequately taken. Children should be supervised by their parents before their journey starts, and their safety should be checked at certain points by traffic officers. The participants complained about the inadequacy of inspections and wanted to see strict inspections. Their statements also indicated a lack of oversight.

"*We frequently leave the city due to the chronic illness of our daughter. We have never been asked about safety precautions for our child at any police traffic stop.*" **(P2)**

"*People frequently talk about precautions taken by the driver in general, but there is a substantial lack of inspections about the safety of children or other passengers in the vehicle. The news of accidents on the TV is the proof of this problem.*" **(P6)**

There are certain repercussions in society, and they are functional in the physical or emotional sense. This makes it possible to achieve behavioral change by dissuasive penalties. All participants agreed that current penalties for failing to comply with traffic rules are not deterrent enough.

"*People do not understand when they are warned politely. They understand the importance of the issue when they are punished. When they have to pay a fine, they do not repeat that mistake, while they should not have made it in the first place.*" **(P12)**

"*Paying substantial fines will activate the self-checking mechanisms of drivers. Of course, such penalties should not be considered more dissuasive than the threat to our children's lives.*" **(P5)**

Theme 4: Barriers to Child Passenger Safety

Motorized vehicles are used for transportation to schools, shopping locations, or holiday destinations, which are parts of social life. While on the road to the school, the driver of the school bus is responsible for the safety of the child, and the parents of the child are the ones responsible for their safety in their private vehicles. During journeys where a child is present, important considerations include a sense of responsibility, alertness, and compliance with rules. The responses of the participants also demonstrated the importance of the attitudes and behaviors of parents.

"*There was no such thing in the past, but the attitudes of the driver and the attendant of the shuttle are highly important when I send my child to school. If the attendant has the children wear their seatbelts and if the driver is watchful of this issue, this means it is a safe trip. This comforts me.*" **(P5)**

"*Although my husband is a good driver, it concerns me to see his overconfidence or potentially distracting behaviors like speaking on the phone or smoking.*" **(P2)**

New times bring new information and practices. It is inevitable to experience problems in keeping up with new information in the process of adaptation. As also demonstrated by the statements of the participants, parents should resolve their incomplete information and keep their knowledge up to date to ensure the safety of their children in their vehicles.

"*We did not have car seats in the past, or attendants in school buses… Now, everyone has to abide by rules.*" **(P12)**

"*My nephew flew out of the window after a crash in an accident. We lost him. He could be still with us if he had his seatbelt on. We sometimes find it difficult to put important knowledge into practice, and we realize its importance when something [bad] happens to us.*" **(P3)**

Fatalism is prevalently encountered in societies that have strongly held beliefs. This is a defense mechanism that is quickly adopted by helpless or negligent individuals. It may be seen based on the responses of the participants that one of the barriers to the adoption of safety precautions for child passengers in vehicles is fatalism.

"*Death is predestined. Regardless of how many precautions we take, angels will protect [the child]. The child wears it [the seatbelt] if he wants to and does not wear it if he does not want to. …but I still tell him to wear it.*" **(P1)**

"*Death is inevitable, and everyone will die someday. My husband is very careful, but this is not that important.*" **(P15)**

Theme 5. Precautions to be Taken to Ensure Child Passenger Safety

For the policies and development of countries, it is important to protect and improve the health of children. Education programs about in-vehicle child passenger safety should be organized along with counseling to be provided by professional health workers in the field of pediatrics. The participants also emphasized the need for education about child passenger safety and thought that safety would be ensured with the help of a professional team.

"*Like other families, we would like to be educated by qualified professionals.*" **(P13)**

"*I would very much like to obtain information from people who are qualified about these issues, especially about first aid training and what to do in the case of an accident.*" **(P7)**

"Although passenger safety in traffic is considered to be the responsibility of police officers, in other countries, education about issues such as using car seats is provided by doctors or other healthcare professionals. This could also be done in our country." **(P5)**

The media is a highly influential tool today. Public service announcements that would address all age groups during advertisement breaks or infomercials would be a strong method to change ill-advised behaviors or attitudes. With public service announcements, the child realizes the importance of their safety, while the family can develop behavioral changes. The participants shared the following views to highlight the importance of public service announcements.

"*Nowadays, children learn everything on a screen. For example, the harmful effects of smoking are shown on TV, and the child understands that smoking is harmful. If a similar thing is done for child passenger safety, it could attract the attention of everyone."* **(P11)**

"*An effective way to address children and parents in the age of technology is to use the media. Preparing public service announcements about legal regulations and practices may be helpful.*" **(P4)**

In the age of technology, the usage of simulation training methods is constantly becoming more prevalent. Providing such an educational opportunity to people about situations that they cannot predict could lead to permanent behavioral changes. It would be an effective practice to support the knowledge of individuals about the importance of in-vehicle child passenger safety and situations they could encounter if safety precautions are inadequate with simulation training opportunities. Only one participant argued that such an education program could be useful.

"*Simulations can now be used for educational purposes in the field of health. For instance, a surgeon can gain more experience by practicing in a simulation environment. They can see their mistakes and shortcomings via simulation training. Both parents and children can be provided with such training to ensure the safety of child passengers in vehicles."* **(P4)**

Discussion

This study was conducted to determine the experiences and views of parents of children aged 0-12 regarding in-vehicle child passenger safety. The results of individual in-depth interviews presented five themes, which were reasons for failure to ensure child passenger safety, in-vehicle safety precautions taken for child passengers, legal responsibility for child passengers, barriers to child passenger safety, and precautions to be taken to ensure child passenger safety. The categories under these themes were sociodemographic characteristics, parental attitudes, lack of education, car seats, position of the child in the vehicle, seatbelts, child locks, inadequacy, lack of inspections, deterrent penalties, parent and driver attitudes, lack of knowledge, fatalism, passenger safety training, public service announcements, and simulation training. As a result of the detailed review of the literature, no qualitative study on this topic was encountered. Kolunsağ and Nahcivan (2021) conducted an experimental study on the same topic. The authors provided child passenger safety training to mothers of children in the 0-12 age group. They examined whether the mothers used car seats for their children, their perceived risk of accidents-injuries, and their knowledge levels about car seats. About half of the mothers always used seatbelts. The usage rates of car seats for children increased significantly in the experimental group 3 and 6 months after the intervention. In terms of behavioral change stages, after 3 months, at least one level of "advancement" was observed in car seat usage for children's safety in 50% of the experimental group and 21.7% of the control group. In comparison to the mothers in the control group, those in the experimental group had a significantly higher mean perceived accident-injury risk score and significantly higher levels of knowledge about car seats for children's safety (27). The themes that were identified in this study and the results of previous studies demonstrated the importance of child passenger safety. Improving the risk perceptions of parents, using car seats for children, taking in-vehicle safety precautions, and enforcing legal penalty systems are effective methods to prevent potential accidents.

In this study, the participants were found to have insufficient knowledge about car seats, seatbelts, child locks, and the correct position of children in the vehicle as measures for in-vehicle child passenger safety. Although they frequently mentioned car seats and seatbelts, they did not list the correct position of children in the vehicle or child locks among safety measures, indicating their partial lack of knowledge about the topic. Moradi et al. (2019) reported that the usage of car seats for children in Tehran was very rare, most parents were unaware of the importance of car seats, and the reasons for not using car seats for children included the discomfort of children in these seats and the high cost of car seats (28). In terms of the discomfort of children among reasons for not using car seats, the result of their study was similar to the result of this study.

In the literature, it has been argued that effective approaches for increasing the usage rates of car seats for children's safety include legal regulations, information efforts for the general public via mass communication tools, education programs for healthcare personnel, security forces, children, and their parents, campaigns for promoting the usage of car seats, and programs designed to loan, rent, or gift car seats (29, 30, 31). Activities such as increasing the knowledge levels of parents, information support by the media, and the popularization of the issue by healthcare personnel in appropriate settings have also been proposed as approaches that could increase the usage rates of car seats for children (8, 9, 28, 32, 33).

Seatbelts were among the safety measures that were known and used by the participants of this study. In the study carried out by Kuğuluoğlu et al. (2006), 64.8% of parents stated that seatbelts should be available and used in school buses (34). Considering their result and ours together, it is seen that most parents support the implementation of safety measures for their children in their vehicles, but they have shortcomings in practice.

In the scope of the Directive on Traffic on Highways, there is legislation about compliance with traffic rules and each specific safety measure to be taken. Detailed information about penalties is also provided in traffic law for those who display behaviors violating the rules stated in the law (Directive on Traffic on Highways). These financial penalties can reach substantial sums

(35). It is observed that the implementation of deterrent penalties may be effective in ensuring child passenger safety.

Parent and driver attitudes are highly important in the achievement of in-vehicle child passenger safety. The careless behaviors of drivers who have negligent attitudes in vehicles threaten the health and safety of children. Moradi et al. (2019) stated that 38% of parents were unaware of child passenger safety and devices used for child safety, less than 20% used car seats for their children's safety as their spouses did not support it, and 29% thought using car seats do not affect the safety of children (28). Considering the results of our study and those of similar studies, it is understood that parents who have negligent attitudes risk the health and safety of their children.

One of the most prevalent and fundamental interventions in the development of health-promoting behaviors is raising awareness in society. Researchers have stated that informative efforts about car seats for children by healthcare professionals via mass communication tools can increase the usage of car seats (29, 30, 31). It has been demonstrated in various studies that following developments in education and technology has an important role in the achievement of child passenger safety. Gülada et al. (2023) showed that public service announcements utilizing the metaphor of death for traffic rules and passenger safety were highly prevalent. To prevent deaths and injuries caused by accidents, visuals promoting the usage of seatbelts by creating fear were emphasized (37). Like the results of our study, the result of their study also showed that public service announcements were effective although they were not appropriate for the age group or psychological state of children.

Conclusion

It was determined that parents partly knew about in-vehicle safety practices for their children, but they were inadequate in implementing these practices. Regarding in-vehicle safety practices, deterrent legal penalties and training programs should be implementable and inspectable. The implementation of the necessary penalties would be expected to ensure in-vehicle child passenger safety and reduce the number of injuries and deaths caused by traffic accidents. Child passenger safety is influenced by several factors. The rates of deaths and injuries in children caused by accidents are increasing today. The reason for this is the failure to understand the importance of passenger safety. Social education starts in the family environment. Children adopt the behaviors and attitudes they see in their parents as role models. The gap in the knowledge necessary for being a responsible passenger should be filled, and this should be supported with public service announcements that can also be understood by children. In terms of child passenger safety, the importance of increasing inspections for drivers, positive behavior changes, and deterrent penalties should be emphasized. Pediatric nurses should provide counseling and evidence-based education in school and family settings. It is expected that these interventions could substantially reduce the rates of mortalities and injuries in children caused by accidents.

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ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

"Parent School" Evaluation of the Program: A Qualitative Study

"Ebeveyn Okulu" Programının Değerlendirmesi: Nitel Bir Çalışma

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ABSTRACT

Introduction: Implementation of systematic education programs for the healthy development of children can contribute to learning the basic building blocks for the cognitive, social, emotional, motor, and language development of children while improving the knowledge and behaviors of parent. This study was conducted to evaluate the contributions of the "Parent School" program to parents.

Material and Methods: The study was conducted on July 1-15, 2023, using the focus group technique using the phenomenology study design, one of the qualitative research models. A total of 23 parent actively participated in the "Parent School" program. Among the parent, 11 parent who agreed to do post-program evaluation constituted the sample of this study. A descriptive data form consisting of 5 questions and a semi-structured interview form consisting of 3 questions were used to collect data. Three nurses analyzed participants' opinions, and thematic coding was performed.

Results: In the interviews conducted with the parent, four themes (Emotional change in the parent, behavioral change in the parent, change in the child, and difficulty in transition) and 14 sub-themes (Awareness, consistency in discipline, self-confidence, self-compassion, self-efficacy, playing, effective communication, spending time together, behavioral change, contribution to growth and development, emotional state, comparison with others, family elders and feeding behavior) were determined.

Conclusion: In the interviews with the parents at the end of the program, it was determined that there were changes in themselves and their children and that they had difficulty with some changes. In particular, they stated that they had difficulties with comparison, conflicts with family elders or feeding.

Keywords: Parent, parenting education, qualitative research, nursing.

ÖZ

Giriş: Çocukların sağlıklı gelişimi için sistematik eğitim programlarının uygulanması, çocukların bilişsel, sosyal, duygusal, motor ve dil gelişimi için temel yapı taşlarının öğrenilmesine katkı sağlarken, ebeveynlerin bilgi ve davranışlarını da geliştirebilir. Bu çalışma "Ebeveyn Okulu" programının ebeveynlere katkılarını değerlendirmek amacıyla yapılmıştır.

Materyal ve Metotlar: Çalışma 1-15 Temmuz 2023 tarihleri arasında nitel araştırma modellerinden fenomenoloji çalışma deseni kullanılarak odak grup tekniği ile gerçekleştirilmiştir. "Ebeveyn Okulu" programına toplam 23 ebeveyn aktif olarak katılmıştır. Ebeveyn arasından program sonrası değerlendirme yapmayı kabul eden 11 ebeveyn bu çalışmanın örneklemini oluşturmuştur. Veri toplamak için 5 sorudan oluşan tanımlayıcı veri formu ve 3 sorudan oluşan yarı yapılandırılmış görüşme formu kullanılmıştır. Katılımcıların görüşleri üç hemşire tarafından analiz edilmiş ve tematik kodlama yapılmıştır.

Bulgular: Ebeveynle yapılan görüşmelerde dört tema (Ebeveynde duygusal değişim, ebeveynde davranışsal değişim, çocukta değişim ve geçiş zorluğu) ve 14 alt tema (Farkındalık, disiplinde tutarlılık, öz güven, öz şefkat, öz yeterlilik, oyun, etkili iletişim, birlikte zaman geçirme, davranışsal değişim, büyüme ve gelişime katkı, duygu durumu, başkalarıyla kıyaslama, aile büyükleri ve beslenme davranışı) belirlenmiştir.

Sonuç: Program sonunda ebeveynlerle yapılan görüşmelerde kendilerinde ve çocuklarında değişimler olduğu ve bazı değişimlerde zorlandıkları tespit edilmiştir. Özellikle kıyaslama, aile büyükleri ile çatışma ya da beslenme konusunda zorlandıklarını belirtmişlerdir.

Anahtar Sözcükler: Ebeveyn, ebeveynlik eğitimi, nitel araştırma, hemşirelik.

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Introduction

The typical path to enhancing the well-being of parents and their children is to improve parenting. Secure and positive parent-child interactions lay the foundations for healthy child development (1-3). Especially during the early years of life, how children are raised will significantly influence their later physical, cognitive, linguistic, and socio-emotional development. Therefore, it is crucial to guide parents towards appropriate resources such as education and counseling services for their development and awareness (1-3).

Implementation of systematic education programs for the healthy development of children can contribute to learning the basic building blocks for the cognitive, social, emotional, motor, and language development of children while improving the knowledge and behaviors of parents (3, 4-7).

Studies conducted with parents generally show that a single dimension of development, such as language development, social-emotional development, or cognitive development, is addressed (8-10). However, no training programs include healthy children's cognitive, behavioral, motor skills, language development, and social-emotional dimensions and guide parents in raising children.

In Turkiye, there is a lack of established routine child rearing programs under health policies. Therefore, parents are contribute to their children's development with social learning skills or traditional methods during routine checks performed by pediatricians in hospitals providing social pediatrics services. However, during these routine check-ups, nurses do not evaluate children's cognitive, language, and social-emotional development. In order to contribute to child development, there is a need for a parent school where evidence-based information can be transferred using technology, experiences can be shared, and interaction can be found. In this direction, within the scope of a doctoral thesis in the field of nursing (11), "Parent School" (www.ebeveynokulu.org) was developed for parents with children aged 1-3 years. A website was created within the scope of this program. Through such programmes, nurses play a critical role in increasing the level of knowledge of parents and guiding them in proper care practices. This website incorporated five modules comprising written messages, dialogues, and videos offering insights into children's physical, cognitive, social-emotional, and language development. Parents were encouraged to read one module per week and engage in online discussions regarding the content they had reviewed during the same week. In the subsequent week, parents received one-on-one counseling sessions. This approach reinforces the role of nurses in health education and helps parents to provide more informed and effective care for their children.

As parenting programs represent effective methods for enhancing parenting skills, program evaluations are crucial in assessing parental satisfaction levels and identifying areas for improvement (12). A review of studies conducted to evaluate parenting programs indicates that parents consistently reported a notably high level of satisfaction with these programs, often finding practical solutions to their parenting challenges (13-15). This study was conducted to evaluate the contributions of the "Parent School" program to parents.

Material and Methods

Study Design

The study was conducted on July 1-15, 2023, using the focus group technique using the phenomenology study design, one of the qualitative research models.

Participants

The study used the homogeneous sampling method to conduct focus group interviews. Twenty-three parents participated in the "Parent School" program. The sample of this study consisted of 11 parents who agreed to be evaluated after the program. The inclusion criteria were determined as follows: a) to have participated in the parent school program, b) acceptance of the parents to be recorded on the Zoom platform. Exclusion criteria were as follows: a) parents leave without finishing the interview.

Data Collection Tool

In order to determine the descriptive characteristics of the parents, a form containing questions regarding age, education level, child's age, child gender, and number of children, and a semi-structured interview form consisting of three questions created by the researchers was used to collect qualitative data. The questions included what changed in the parents' lives after the program, what changed in their children's lives, and what were the difficulties between their previous and current knowledge about raising children.

Data Collection

Before starting the study, the parents who participated in the "Parent School" program were informed that their opinions would be taken to evaluate the program. They were informed that the interviews would be online (zoom), scheduled at times convenient for them, and recorded. In order to obtain qualitative data, the periods when the parents who agreed to participate in the program evaluation were planned, and they were invited to be interviewed on the online (zoom) platform on the determined dates and times. The researcher created a link for the parents to enter the training on the online (zoom) platform, and all interviews were recorded.

The purpose of the study and the confidentiality of the information were explained to the parents. During the interview, after the

warm-up questions, the parents were asked their opinions about what changed in their lives with the information they gained from the program, what changed in their children's lives, and whether there were any difficulties between their previous knowledge about child rearing and their current knowledge. After each interview, the answers given by the participants were summarized, and their accuracy was confirmed. They were also asked to add any comments they would like to add.

A moderator researcher conducted the interview. The focus group interview was conducted in two sessions. Five people participated in the first session, and six participated in the second session held the following day. The interviews lasted an average of 57 minutes 08 seconds (Min=52 minutes 49 seconds, Max=63 minutes 06 seconds).

The study was reported under the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines (16).

Data Analysis

In the qualitative data analysis phase, the recordings of the participants' opinions were listened to, and all statements were transferred to a Word file without comment. Each parent participating in the study was assigned a code number (M1, M2, M3...). Thematic content analysis was then conducted. Data analysis was conducted manually by three experts without using any program.

The coding was done independently by two experts with qualitative research knowledge and a doctorate in pediatric health and disease nursing, working as a clinician and an academic nurse. The experts analyzed the responses of the parents who participated in the study. First, the data were coded, and thematic coding was performed by determining the similarities and differences of the resulting codes. Then, themes were formed by combining the related codes in the same category. The principle of internal and external consistency was considered during thematic coding. The thematic coding obtained by two experts was evaluated by an academician working in pediatric health and disease nursing and having qualitative research knowledge, and a consensus was reached.

Ethical Aspects of the Research

The research was conducted under the principles of the Declaration of Helsinki (17). In order to decide on the ethical appropriateness of the research, approval was obtained by applying to the ethics committee commission of a university (Research Code: 2023-816). Before the data collection process, the parents were informed about the research. After the purpose of the research was explained, written consent was obtained from the participants that they agreed to participate in the research.

Results

Results on the descriptive Characteristics of Parents

A total of 23 parents participated in the parent school program. The program evaluation was conducted with 11 mothers who agreed to be interviewed. The descriptive characteristics of the participants are given in Table 1.

Table 1. Descriptive characteristics of parents and their children

Participant	Age (Years)	Education Status	Number of Children	Gender of children	Child age (Months)
M1	39	Primary or high school	≥Two	Girl	26
M2	27	Primary or high school	One	Boy	29
M3	35	Undergradute or graduate	One	Girl	27
M4	31	Undergradute or graduate	One	Boy	26
M5	44	Undergradute or graduate	One	Boy	25
M6	42	Undergradute or graduate	≥Two	Girl	24
M7	38	Undergradute or graduate	One	Boy	23
M8	36	Undergradute or graduate	One	Boy	26
M9	28	Undergradute or graduate	One	Boy	23
M10	32	Undergradute or graduate	One	Girl	24
M11	35	Undergradute or graduate	≥Two	Boy	29

Four themes and 14 sub-themes were identified in the interviews with parents about program evaluation.

Emotional change in the parent
Awareness
Consistency in discipline
Self-confidence

- Self-compassion
- Self-efficacy
- Behavioral change in the parent
- Playing
- Effective communication
- Spending time together
- Change in the child
- Behavior change
- Contribution to growth and development
- Emotion state
- Difficulty in change
- Comparison with others
- Family elders
- Feeding behavior

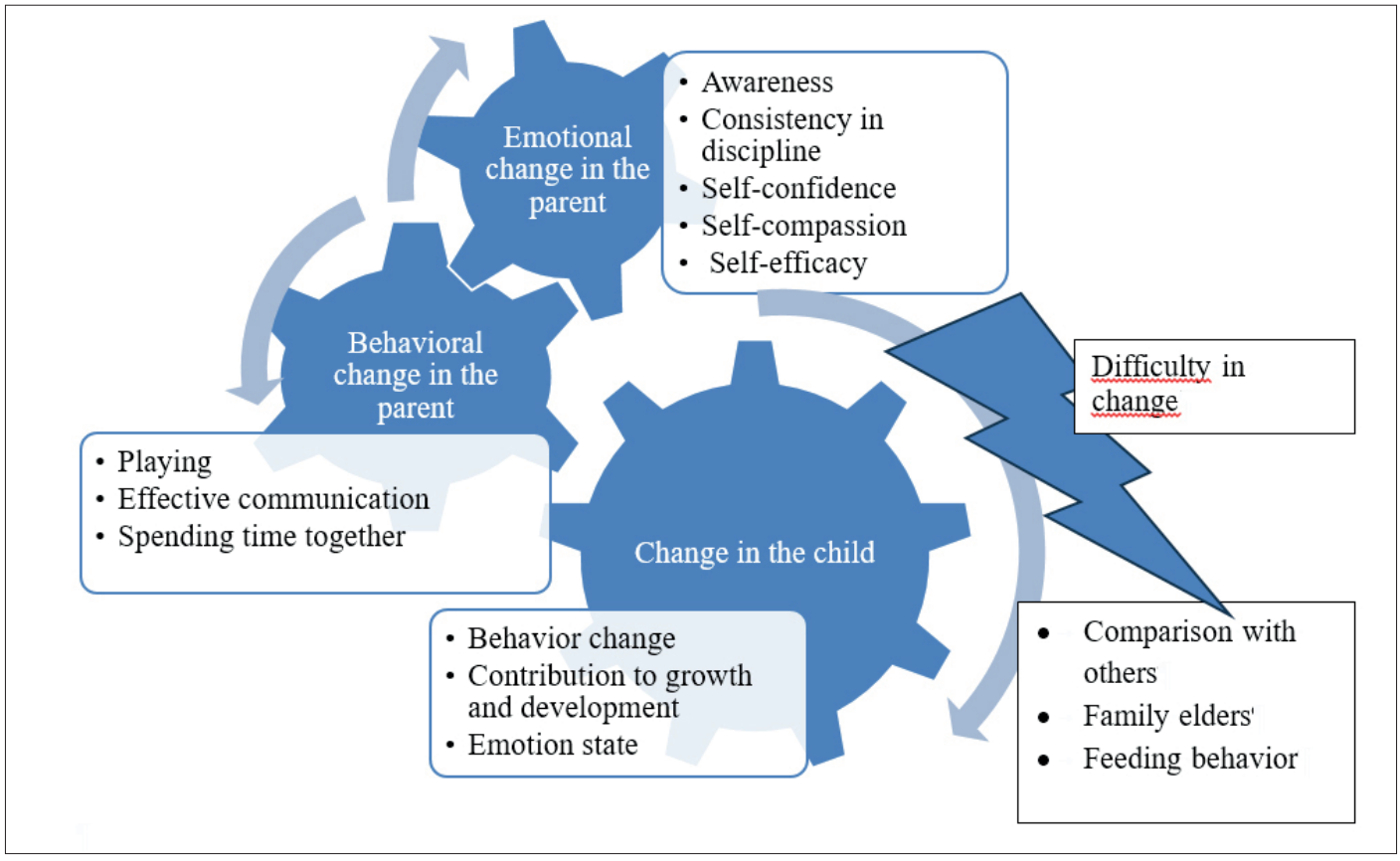

Figure 1. The themes and sub-themes

The themes and sub-themes are given in Figure 1.

a) Emotional Change in Parents

Five sub-themes were identified under the theme of emotional change in parents. These sub-themes are awareness, consistency in discipline, self-confidence, self-compassion, and self-efficacy.

The sub-theme is awareness: Parents mentioned that their children's behaviors were normal and realized there was no problem as they listened to other parents' stories. Some of the statements related to this situation are given below;

M2: ...I realized that I was not alone, because it was psychologically exhausting for me. It was as if he was the only one like this and I was the only one experiencing these problems.

The sub-theme is consistency in discipline: Parents emphasized the importance of acting consistently with spouses when setting limits for their children. Below are the parent statements related to this sub-theme;

M11: I better understood being consistent, that is, parents should be consistent. We even talked about it with my husband because he can't stand it. I seem to be a little bit harsher, but I understood much better how important it is to be positive without being harsh, not only for the child but also for my own life.

Sub-theme self-confidence: Parents stated that their self-confidence increased thanks to the information they learned. A sample sentence expressing this is given below;

M3: ...I used to be in such a hurry before; how will I get her to use the toilet? How am I going to get her to stop breastfeeding? Now that it has been broken, I am calmer. Whenever I feel like it, I do not feel ready; if I feel ready, I will do it; I believe I will do it. We are moving forward with more confident and secure steps.

Sub-theme self-efficacy: As parents put what they learn into practice, their skills improve, and their self-efficacy increases. The parent statement for this sub-theme is given below;

M4: I learned that I should be more patient. I realized he resorted to those ways in these tantrums because he could not express himself. Just the other day, he scratched the middle of my eyebrow. I immediately stayed calm during the crisis.

The sub-theme is self-compassion: During the interviews, parents (mothers) mentioned that they forgot about themselves, evaluated themselves as inadequate, and ignored the importance of their work while caring for their children. Parents' statements regarding this sub-theme are given below;

M5: You have always said you should love yourself in front of the mirror every morning. This affected me greatly, so my only wish for the new year was to love myself. Because I always say

the same thing to my wife: If I am happy, you are happy. If I am happy, you are all happy. That is what you gave me the most.

M6: ...Sometimes we may not be able to see the child, we may not be able to see their emotions. This does not make us incomplete, and we may not see it at that moment. Honestly, I learned that this is very humanitarian and that we should show compassion to ourselves in that sense. I was a self-torturing mother at that point, but now I treat myself more compassionately.

b) Behavioral Change in Parents

Three sub-themes were formed under the theme of behavioral change in parents. These sub-themes are play, effective communication, and spending time together.

The sub-theme is playing: The program emphasizes the importance of play in interacting with children. Therefore, parents stated in the interview that they develop playing skills with their children at every opportunity. Below are the parent expressions related to this sub-theme;

M3: I mean, I can give the game as an example. So with the information you gave me about this game, our games have become more fun...

M8: The most beautiful development in our son... he loves to play with me and his father. He usually wants to play with us. He wants to play games. He wants to play not only one-on-one with his father, but he also wants to call me to play with him. He loves it when the three of us play.

Sub-theme effective communication: Parents stated in the interviews that they could communicate more efficiently with their children, learn how to develop behaviors specific to their age group, and increase their vocabulary. Sample statements for this sub-theme are given below;

M5: For us, I should say reading books, poking books more... Our vocabulary has become more apparent and more frequent. He repeats what we say more. The most beneficial thing for me is that when I explain something, instead of just saying that it is a tree, I explain it in a very detailed way, such as its branches are green, it has pink flowers, look, birds have landed on its trunk and branches, and I see the benefit of this very much.

The sub-theme is spending time together: Parents learned the importance of spending quality time with their children in the program and stated that they increased this by playing games and doing activities together. A sample statement for this sub-theme is given below;

M9: ... I take them outside, we have birds, we feed our birds. We make play dough. ...I hide the tablet; we have a tablet, and I never take it out anymore. I usually turn off the TV. There is only one phone left; I usually hide it so no one can watch it anymore.

c) Change in the Child

Three sub-themes were identified under the theme of change in the child. These sub-themes are behavioral change, contribution to growth and development, and emotional state. The statements of the mothers regarding these sub-themes are given below.

The sub-theme is behavior change: Parents struggled to cope with their children's autonomy, especially in the two-year-old syndrome. The program taught them to understand their children's emotional state and set limits. In the interviews, they stated that they could now overcome this situation and manage the change in their children. Examples of these statements are given below;

M1: I mean, we have started solving all our problems now. For example, I could not calm my daughter down; now, I divert her attention when she cries. Her fights with her brother have decreased. They became calmer. They gained speaking skills. For example, we had food problems with my son, but I gradually overcame them. He ate, and my daughter started to eat well. They used to choose food, but now neither of them chooses.

Sub-theme contribution to growth and development: During the interviews, parents discussed their children's cognitive, language, and social-emotional development. Sample statements for this sub-theme are given below;

M7: ...Words do not come out, but he can explain everything with his movements; he takes the materials, he brings them, we are going to do this, we are going to do that, he takes them away from our hands, he can explain what he wants. He started to spend more time with us.

Sub-theme emotional state: Parents stated that they controlled their tantrums the most among the changes in their children. They stated they felt helpless and inadequate when they could not control their tantrums before the program. Statements related to this sub-theme are given below;

M2: My son was a much more angry child. We have discussed this with you before. Because his language development was weak, he used to get very angry when he could not express himself. Now that he can express himself a little more, we have overcome our tantrums, those crying tantrums. This was one of the things that made me the happiest.

d) Difficulty in Change

Three sub-themes were identified under the theme of difficulty in change. These sub-themes are comparing with others, family elders, and feeding behavior. The statements of the mothers regarding these sub-themes are given below.

Sub-theme comparison with others: In the interviews, parents stated that their children were compared between spouses, that there were conflicts between them, and that they saw

improvement in this situation thanks to the program. Below are parent statements related to this sub-theme;

M4: This happened to me; my wife is usually affected by the environment very quickly now. I would not say I like these comparisons either; we were slightly at odds. Someone said, "Oh, my child was like this, do this, do that, should we do that, look, his child is like that... I never liked these things, either. However, in this process, for example, when I shared these with him in our meetings with you and the articles I read, I feel he closed his ears to the outside at least a little bit.

Sub-theme family elders: In the interview, parents stated that although the parents showed consistent behavior towards the child, family elders such as grandmother or grandfather disrupted the consistency, and the child was affected by this situation. Statements related to this sub-theme are given below;

M7:...He has now moved to a crying position when we say no to something that would harm him. He cries; he tries to make me do it by crying. I have grandparents at home; there is his grandmother. She makes him do it when I am not there.

M10: ...Not with my husband, but conflicts with my grandparents. It is challenging to break traditional taboos. Whether it is eating all kinds of time, we spend together. For example, while we prefer to offer options, they approach it in a way that they only say that she should not cry. I have been fighting a lot on this issue, and I am still fighting. Unfortunately, I have not solved it. Nevertheless, I will overcome them.

The sub-theme is feeding behavior: Although parents considered themselves competent in many areas, they stated that they could only progress a little in feeding behavior. The statement for this sub-theme is given below;

M8: I have not progressed much in eating, but I am trying; it is about eating habits. I have difficulty offering alternatives, but I am gradually improving that as much as I can. You know, I try to offer different things; I try patiently. I was offering things that had a high chance of being eaten. I said, "He does not eat eggs. I could make fried potatoes. He might eat them.

M11: I am having trouble feeding him. I have tried everything – leaving him alone, but he does not eat. If you do not feed him for three days, he still will not eat. At night, he wakes up like crazy and attacks the breast milk. He takes a spoonful and says he is full. I know I am doing it wrong, but I feed him by playing games. Sometimes, I say to myself, 'I hope we do not choke the child while playing a soccer game.' He eats when we play soccer but will not eat any other way.

Discussion

In this study, opinions were taken to evaluate the "Parent School" program created for parents with children aged 1-3 years. Participants were expected to evaluate the program and express what changed in their lives after the program. As a result of the analysis, the changes that the program created for parents and their children and the issues that they had difficulty changing were determined.

Healthy parenting positively affects children's developmental outcomes in the following years. In order to develop and strengthen healthy parenting, it is essential to recognize the importance of supporting parents' knowledge and skills in child rearing (18-20). Within the program's scope that forms the basis of our study, parents were trained to increase their knowledge and skills regarding children's physical, cognitive, social-emotional, and language development. For this reason, participants in the study mentioned emotional and behavioral changes in themselves and their children. These are short-term effects. The impact of programs for parents should also be monitored in the long term. In their systematic review of parenting programs' acceptability and perceived benefits, Butler et al. (2020) reported that programs cause changes in children and parents (21). Changes such as establishing relationships with the child, spending time together, communicating, developing empathy skills, making parents feel empowered, gaining confidence in parenting skills, and increasing self-awareness were reported. In a study conducted by Benzies et al. (2023) to determine what parents who participated in various parenting programs learned from the programs and what they applied differently, they reported that the participants experienced positive changes in their relationships with their children, better understood their children's point of view, improved communication between them, felt more connected to their children and changed their parenting behaviors (22). In our study, similar to the literature, parents reported that their awareness improved, their practical communication skills increased, and they were able to spend quality time with their children. In our study, the positive changes experienced by the parents were due to the voluntary participation of the parents in the programs, their desire to improve their parenting skills, and peer interaction.

Although the "Parent School" program was not directly aimed at correcting children's behaviors, parents were provided with information to improve their boundary-setting skills to support their children's social-emotional development. In this direction, parents mentioned that they developed self-confidence and self-efficacy skills at the end of the program and that there was consistency among parents in disciplining their children. Day & Sanders (2018) examined the effectiveness of the Triple P Online program developed on child behaviors and parenting styles and reported that improvements were observed in negative parenting behaviors and children's challenging behaviors after the program and that the program led to an increase in parental confidence (23). Spencer et al. (2020), in a meta-analysis study examining the effectiveness of online training programs for parents, reported that online parenting programs have a substantial effect on increasing positive parenting and have significant effects on

reducing negative parent-child interactions, child problematic behaviors, negative discipline strategies, parenting conflicts, parental stress, child anxiety, parental anger, and parental depression, and increase in parental confidence and positive child behaviors (24). One of the most challenging issues for parents in raising children is developing the ability to set limits. Within the scope of our study, parents mentioned behavioral changes in their children within the program and stated that they managed their children's tantrums better. When they prevented their children's tantrums, it was seen that their skills, such as self-confidence, self-efficacy, and self-compassion, also improved.

Parenting education programs are known to impact child health and development positively. These training programs provide parents with knowledge and awareness to strengthen parent-child relationships, increase parent and family well-being, and promote healthy child development (2, 22). However, even though parents are provided with education, raising children is influenced by different cultures and beliefs, affecting expectations and behaviors in parent-child relationships. As parents observe how other parents treat their children in society, they reappropriate culturally shaped behavior patterns in their relationships. In addition to beliefs in the cultural context, the influence of the environment can also affect parents' child-rearing practices and parent-child relationships (25-27). In this study, parents also mentioned difficulties in change. In particular, they stated that they had difficulties with comparison, conflicts with family elders or feeding. Parents' difficulties in these areas after the program can be interpreted as being influenced by family elders and exposed to social and cultural impositions.

Strengths and Limitations

Although 23 parents participated in the parenting school program, only 11 parents evaluated the program, which does not reflect the views of all parents. In addition, the study focused on parent school, a program for parents with children aged 1-3 years, so the research includes the views of parents in this age group. The aim of the study was to assess the contributions of the parent school program to parents and their children. For this reason, the research questions were designed to focus on the contributions of the program. However, the limited scope of the questions is among the limitations of the study.

Conclusion

In order to contribute to child development in the best way possible, a parent school was established where evidence-based information could be transferred, experiences could be shared, and interaction could occur. At the end of the program, interviews with parents revealed that there were changes in themselves and their children and that they had difficulties with some changes.

The Parent School is a guide that will guide individuals, especially first-time parents, in the healthier development and upbringing of their children within the age group. It is also a social environment where experiences are shared by interacting with other parents. It is essential to evaluate the effectiveness of parenting programs, to develop programs, and to evaluate their applicability.

Ethics Committee Approval: Ethical approval was obtained from Gazi University Ethics Committee (dated 26.06.2023 and numbered 12).

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - AC, EK; Design - AC, EK; Supervision - AC, EK; Data Collection and/ or Processing - AC, EK; Analysis and/or Interpretation - AC, EK; Literature Search - AC, EK; Writing - AC, EK; Critical Reviews - AC, EK.

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ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

Gender-Dependent Cholinergic System Alterations in a Phenylketonuria Model

Fenilketonüri Modelinde Cinsiyete Bağlı Kolinerjik Sistem Değişiklikleri

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ABSTRACT

Introduction: Phenylketonuria (PKU) is a rare inherited metabolic disorder characterized by a deficiency of the enzyme phenylalanine hydroxylase. The absence of this enzyme leads to elevated levels of phenylalanine in the blood, causing accumulation in the brain and resulting in permanent brain damage. To investigate the neurological effects of PKU, an experimental PKU model was developed, and cholinergic parameters were analyzed in brain tissue and serum from both female and male rats. Serum AChE, BChE, and total ChE activities were examined, while AChE activity was specifically analyzed in hippocampal tissue.

Material and Methods: Brain tissue and serum samples were collected from female and male rats from an induced phenylketonuria model for analysis. AChE, BChE, and total ChE activities were measured in serum samples, while AChE activity was examined in hippocampal tissue. Enzyme activities were measured according to Ellman assay. The data analysis and graphical presentations were done by GraphPad prism.

Results: Hippocampal AChE activity was significantly increased in both PKU groups compared to the control groups (Male ***p=0.0001; female *p=0.046). Serum analysis revealed decreased total serum cholinergic activity in both the female and male PKU groups compared with the control groups (**p≤0.002 and ***p≤0.0003, respectively). These results were consistent with findings from total serum cholinergic activity analysis. Additionally, the AChE activity in both the female and male PKU groups was decreased compared to their respective control groups (***p≤0.002 and ***p≤0.0006, respectively). It was also found that BChE activity in the serum of male rats in the PKU group was decreased compared to male rats in the control group (*p=0.038).

Conclusion: These findings indicate that the cholinergic system in the phenylketonuria model may vary according to gender. The observed changes in both brain tissue and serum provide new insights into the gender-dependent neurological effects of PKU.

Keywords: Phenylketonuria, cholinergic system, enzyme activity, hippocampal tissue, gender differences

ÖZ

Giriş: Fenilketonüri (PKU), fenilalanin hidroksilaz enziminin eksikliği ile karakterize nadir bir kalıtsal metabolik bozukluktur. Bu enzimin yokluğu, kandaki fenilalanin düzeyinin artmasına ve beyinde birikmesine neden olarak kalıcı beyin hasarına yol açar. PKU'nun nörolojik etkilerini incelemek amacıyla geliştirilen deneysel PKU modeli, hem dişi hem de erkek sıçanlarda kolinerjik parametrelerin beyin dokusu ve serumda analiz edilmesini sağlamıştır. Bu çalışmada serumda AChE, BChE ve toplam ChE aktiviteleri ile birlikte, hipokampal dokuda AChE enzim aktivitesi incelenmiştir.

Materyal ve Metotlar: Fenilketonüri modeli oluşturulan dişi ve erkek sıçanlardan beyin dokusu ve serum örnekleri alınarak analizler gerçekleştirilmiştir. Serum örneklerinde BChE, AChE ve toplam ChE aktiviteleri ölçülürken, hipokampal dokuda yalnızca AChE aktivitesi incelenmiştir. Enzim aktiviteleri Ellman yöntemine göre ölçülmüştür. Tüm verilerin istatistiksel incelenmesi ve grafiklenmesi GraphPad prism programı kullanılarak gerçekleştirilmiştir.

Bulgular: PKU gruplarında hipokampal AChE aktivitesi, kontrol gruplarına kıyasla anlamlı derecede artış göstermiştir (Erkek ***p=0.0001; dişi *p=0.046). Serum analizlerinde ise dişi ve erkek PKU gruplarında toplam serum kolinerjik aktivitesinin kontrol gruplarına göre azaldığı belirlenmiştir (**p≤0.002 ve ***p≤0.0003, sırasıyla). Toplam serum kolinerjik aktivitesi bulguları, bu sonuçlarla uyumlu olarak değerlendirilmiştir. Dişi ve erkek PKU gruplarının AChE e aktivitesi, kontrol gruplarına göre azalmış (**p≤0.002 ve ***p≤0.0006, sırasıyla) olup, erkek sıçanlarda BChE aktivitesinin de PKU grubunda kontrol grubuna göre azaldığı bulunmuştur (*p=0.038).

Sonuç: Bu bulgular, fenilketonüri modelinde kolinerjik sistem unsurlarının cinsiyete göre farklılık gösterebileceğini göstermektedir. Hem beyin dokusunda hem de serumda gözlemlenen bu değişiklikler, PKU'nun cinsiyete bağlı nörolojik etkileri üzerine yeni bakış açıları sunmaktadır.

Anahtar Sözcükler: Fenilketonüri, kolinerjik sistem, enzim aktivitesi, hipokampal doku, cinsiyet farklılıkları

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Introduction

Phenylketonuria (PKU) is a disorder of amino acid metabolism caused by an inherited deficiency of the enzyme phenylalanine hydroxylase (PAH) and dihydropteridine reductase deficiency (1, 2). Phenylketonuria is a disease caused by a congenital mutation in amino acid metabolism that, if left untreated, leads to severe mental retardation, microcephaly, seizures, and behavioral problems (2). The impaired metabolism leads to accumulation of phenylalanine (Phe) in the blood and toxic concentrations in the brain. Most studies of early-treated adult patients with PKU reported rapid deterioration of motor functions and learning and memory mechanisms, but only a very limited number of cognitive functions were examined in each study (3-6).

Acetylcholinesterase enzyme (AChE) (EC 3.1.1.7) hydrolyzes the neurotransmitter acetylcholine (ACh) and is found in high concentrations mainly in red blood cells, as well as at neuromuscular junctions and cholinergic brain synapses in the brain. Butyrylcholinesterase (BChE), also known as "pseudo" cholinesterase (EC 3.1.1.8) is a non-specific cholinesterase enzyme that hydrolyzes different types of choline esters, ubiquitous in the body it is especially found in human liver, blood serum, pancreas and central nervous system. In the brain, BChE is primarily associated with glial cells and endothelial cells (7, 8). In the brain, AChE activity is higher than BChE activity (9).

Disruption of the cholinergic system directly affects the metabolism of ACh, thereby impairing neurotransmission in the brain. As a result, emotion, behavior, learning and memory can inevitably be impaired. Therefore, identifying these changes in cholinergic activity is necessary to better understand the molecular mechanism underlying PKU. However, it remains unclear how changes in AChE activity and acetylcholine dynamics involved in PKU are affected. To solve this puzzle, this study aimed to investigate changes in AChE and BChE in both serum and hippocampus tissue samples in an in vivo model of PKU in male and female rats. Our results display a preference of Cholinergic expression with bias to gender.

Material and Methods

Creating a Phenylketonuria Model

For the animal model of PKU, 16 female and 16 male Sprague-Dawley rats, 6 days old and weighing 5 ± 2 grams, were included in the study. The animals were supplied from the Kobay Ltd laboratory and housed in the animal room of the laboratory of the Institute of Neurological Sciences and Psychiatry, Hacettepe University. Water and food intake were allowed before, during and after the experiment as ad libitum. Experimental studies began after approval by the Experimental Animal Ethics Committee (Ethics Approval: 2022 / 07-16).

4-Cl-phenylalanine (PCP) (Sigma catalog number: C8655), inhibitor of phenylalanine hydroxylase enzyme, was used to create a phenylketonuria model. 26 µmol/ml PCP stock solution and 152 µmol/ml phenylalanine stock solution were prepared by heating in 0.9% pH:7.2 saline. Rat pups were injected subcutaneously with 0.9 mg/g PCP twice a day and 5.2 mg/g Phe every day (10, 11). The control groups received an injection of saline.

All injections were initiated subcutaneously on the 6th day postnatal and terminated on the 25th day postnatal. The animals were sacrificed with guillotine scissors on the same day by anesthetizing the animals with subcutaneous injection of ketamine/xylazine (90/10 mg/kg. The brain was quickly removed and the hippocampal tissue was harvested. Blood sample was collected to serum tubes. Samples were stored at -80°C until analyzed.

Sample Preparation for Enzyme Activity in the Hippocampus and Serum

Rat hippocampus was weighed and stored at -80°C until use. Hippocampal tissue was homogenized in 50 mM Tris pH 7.4 buffer containing 2 mM EDTA, 0.5% Triton X-100, and protease inhibitor cocktail for 3 x 10 seconds on ice using a model Pro-200 homogenizer (PRO scientific, CT, USA). To avoid protein denaturation, all treatments and solutions were performed on ice. The homogenates were centrifuged at 13,000g for 15 min at +4°C. The supernatant was separated and aliquoted after centrifugation. Subsequently, the aliquots were used to determine enzyme activity and protein levels by BCA Protein Assay Kit (Thermo Fisher catalog number 23225)

The blood collection procedure involved the use of serum tubes, which contain silica for promoting clot formation. This process was administered by a trained phlebotomist. Following collection, the samples were left to clot in a dark environment at room temperature for a duration of 1 hour. Subsequently, the tubes underwent centrifugation at 1300× g for 10 minutes. The resulting serum was carefully extracted and divided into polypropylene 0.5 ml tubes. Within 50 minutes post-centrifugation, the serum samples were promptly stored at -80°C to maintain their integrity for subsequent analysis.

Activity Measurement of Cholinesterase in Hippocampus and Serum

To determine the activity of AChE in hippocampus and serum, the activity medium was prepared with a final concentration of 50 mM MOPS pH 7.4 buffer, 0.25 mM DTNB (ΔA_{412}, DTNB=14.2 mM^{-1} cm^{-1}), 1.0 mM ACh, and 50 mM iso-OMPA, a selective BChE inhibitor (12). The reaction was started by adding the sample and the activity was continuously monitored at 412 nm for five minutes at 37°C using a UV-visible spectrophotometer (SpectraMax M2 microplate reader; Molecular Devices, CA, USA). The same enzyme activity

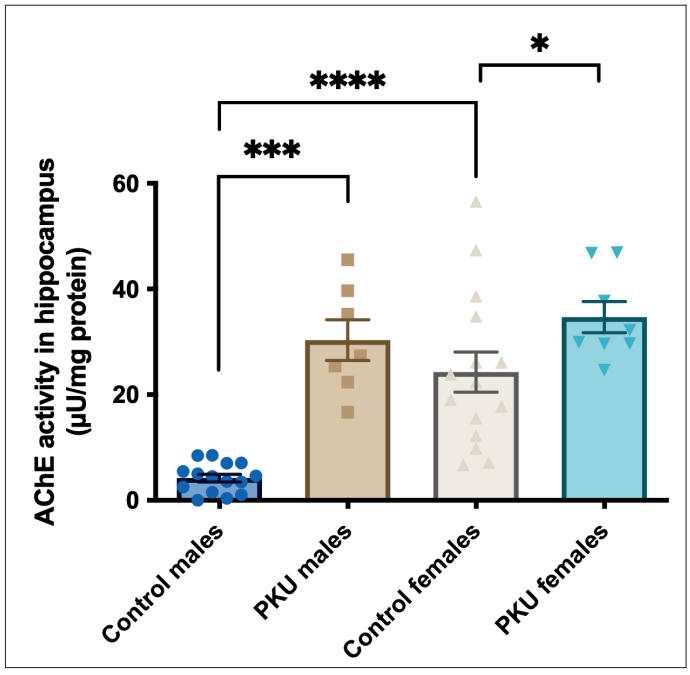

Figure 1. AChE activity in hippocampus. Statistical significance was determined by Mann Whitney-U. The data were expressed as the median and interquartile ranges (Min to max, n=8). * p≤0.05, *** p≤ 0.001, **** p≤ 0.0001.

experiment was done in the absence of iso-OMPA to measure total cholinesterase activity. Under these conditions, one unit of AChE or total cholinesterase is defined as the amount of enzyme that catalyzes the formation of 1.0 µmole of thiocholine per minute (U=µmol/min). Results were presented as the microunits per milligram of protein (µU/mg).

Data Analysis

All measurements were repeated at least twice. Results are presented as mean standard error of the mean (SEM) (standard error of the mean). Mann Whitney-U test was used for statistical analysis enzyme activity. GraphPad Prism 9.0 was used for statistical analysis and graphical plots. Normality and conformance check of the data were performed using the GraphPad Prism 9.0 program prior to statistical analysis.

Results

Cholinergic Activity in the Hippocampus

Hippocampus AChE activity in PKU male group was 30.32± 3.85 µU/mg; while the AChE activity in the male control group was 4.21±0.72 µU/mg (p***≤0.0001). (Figure 1A). Analysis of the basal hippocampal AChE activity revealed a significant difference with bias to gender. In the female PKU group and the male PKU group was statistically higher than the control groups (Figure 1A). Likewise, AChE activity was 34.67±2.94 µU/mg in the PKU female group; while it was 24.28± 3.78 µU/mg in the female control group (*p≤ 0.046) (Figure 1).

Cholinergic Activity in the Serum

Utilizing the BChE inhibitor iso-ompa, we directly measured AChE activity in serum. We found that the PKU groups had lower AChE activity than the control groups (Figure 1B) according to gender. In female groups, AChE activity was decreased in the PKU group compared to the control group; (p***≤0.002; 7.69±0.10 µU/mg , 10.86±0.53 µU/mg). As in the female groups, a corresponding trend was observed in male groups; AChE activity was decreased in the PKU group compared to the control group (p***≤0.0006; 8.40± 0.39 µU/mg, 11.21± 0.40 µU/mg) (Figure 2A).

BChE activity was also effected through this intervention and displayed gender based difference. BChE activity was found to be statistically lower only in the male PKU group than in the male control group (Figure 2A). BChE activity in the male PKU group; 4.36±0.31 µU/mg, male control BChE activity 5.29±0.21 µU/mg (*p≤0.038). Such a difference could not be observed in female groups. BChE activity in female groups was not statistically significant (p= 0.130; female PKU: 4.49±0.14 µU/mg; female control: 5.29±0.49 µU/mg) (Figure 2B).

Evaluation of total serum cholinesterase activity revealed that, serum cholinesterase activity in both genders in the PKU group was statistically lower than the control groups. (Figure 2C) Total cholinesterase activity in the female PKU group was 12.18±0.20 µU/mg whereas in the female control group it was 16.16±0.77 µU/mg. Hence, total cholinesterase activity of the female PKU group was statistically lower than the control group (p**≤0.002). Similarly, while the total cholinesterase activity of the male PKU group was 12.75±0.66 µU/mg, it was 16.50±0.49 µU/mg in the male control group. There was a statistically significant decrease in total cholinesterase activity among the male groups (p***≤ 0.0003) (Figure 2C).

Discussion

Phenylketonuria is a congenital disorder of phenylalanine metabolism caused by a deficiency of phenylalanine hydroxylase. It is a rare disease that occurs in about 1 in 10,000 people. A mutation of the phenylalanine hydroxylase enzyme and a mutation of the dihydrobiopterin enzyme cause an accumulation of Phe and its metabolites in the tissues and body fluids of PKU patients. The main signs and symptoms are found in the brain, but the pathophysiology of this disease is not well understood. (2).

Although intellectual retardation can be prevented by lowering blood phenylalanine concentrations, the neurocognitive and psychosocial outcomes of patients with phenylketonuria still remain below those of healthy individuals. (2, 13).

Cholinergic neurotransmission plays an important role in the normal human central nervous system and has been associated with cognitive function (14-16). One of the main enzymes

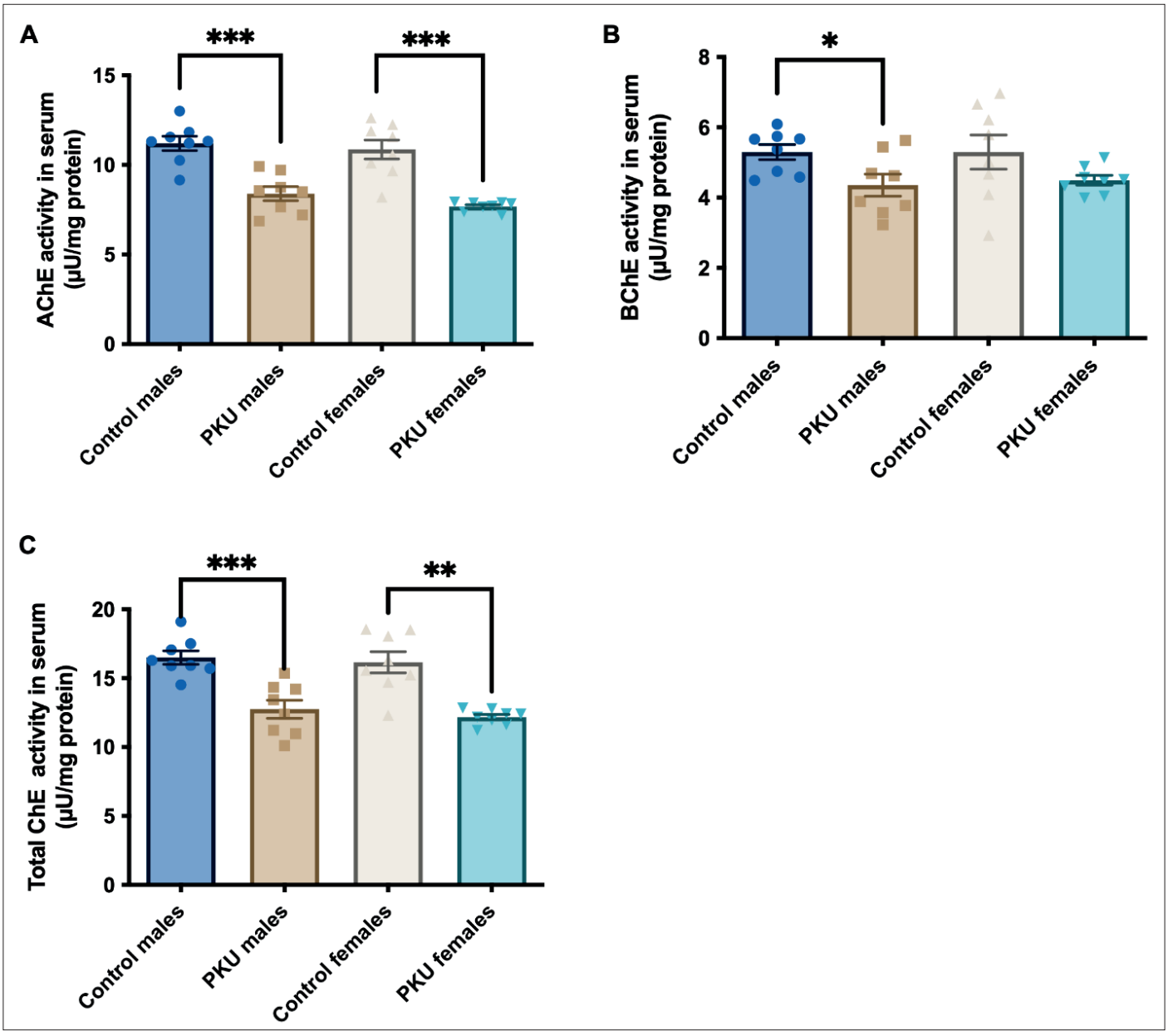

Figure 2. AChE, BChE and total serum cholinesterase activity in serum. A) AChE activity in serum. B) BChE activity in serum. C) Total serum cholinesterase in serum. Statistical significance was determined by Mann Whitney-U. The data were expressed as the median and interquartile ranges (Min to max, n=8). * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$.

regulating cholinergic neurotransmission is AChE, which catalyzes the hydrolysis of the neurotransmitter acetylcholine (17). AChE also has non-classical effects (18-22), which suggests that it has a wide range of activity in the nervous system. Interestingly, there is evidence that the related enzyme BChE also plays an important role in the nervous system, as a co-regulator of the action of acetylcholine and as an enzyme with AChE-independent functions. (23-27).

In a reported study, the AChE activity in the erythrocyte membrane of PKU patients was measured. Although it was reported that AChE activity in the PKU group decreased compared to the control group, the gender distribution in the PKU group was not specified (28). Untreated PKU patients often exhibit psychomotor problems, memory deficits, and epileptic seizures (29)

Due to the involvement of cholinergic and adrenergic interactions in controlling memory processes (17). the low AChE activities associated with low dopamine levels, as detected by Stylianos Tsakiris and colleagues, may explain some of the clinical symptoms mentioned above. Additionally, the observed decrease in Phe AChE activity may lead to an increase in acetylcholine concentration in the synaptic cleft, which could explain the tremors commonly observed in PKU patients "off-diet." The detection of AChE in erythrocyte membranes of PKU patients may serve as a useful marker for the neurotoxic effects of Phe (28). Parallel to the results of this study, our findings also

show that serum AChE activity levels decreased in the PKU group. Along with AChE activity, BChE and total cholinesterase activities also decreased.

In PKU groups, AChE activity increased in the hippocampus depending on gender. It was shown that BChE enzyme activity in the brain is much lower compared to AChE enzyme activity (9). Therefore, BChE activity could not be detected in the hippocampus in this study. It is known that there is counter-regulation between AChE and BChE activities (30). A homeostatic level of ChE activity is necessary to appropriately regulate ACh levels in both neural and non-neural tissues. Consistent with our findings, the balance of AChE and BChE regulation continues in the PKU model.

In another study reported by Tsakiris and colleagues, AChE activity decreased by up to 18% in adult rat brain homogenates following preincubation with 0.48-1.8 mM Phe (31). This suggests that high doses of Phe reduce AChE activity. However, the question arises whether this study reflects a true PKU model. In our study, inhibitors from the literature were used to create an animal model of PKU. Compared to the control groups, both male and female PKU groups had higher AChE activity in the rat hippocampus. There are no studies in the literature on phenylketonuria and BChE enzyme activity. While this makes it difficult to discuss our results, it also makes these results unique in the literature. In the PKU groups, serum BChE, ChE, and AChE activities decreased. However, only the male group was affected by the changes in BChE findings. In a reported study (11) it was found that the PKU male group performed worse in behavioral tests compared to the female group. Additionally, negative changes were observed in the cAMP/CREB/BDNF pathway in the male group. In another reported study (32) lipid peroxidation and IL1β levels increased in the PKU male group. Based on all this evidence, the oxidative damage observed in the PKU group may have led to cholinergic alterations. Measuring serum ChE and BChE activity in phenylketonuria patients is the first study in the literature. When evaluating the results obtained, PKU and cholinergic parameters vary according to gender. In addition to the limited number of studies on this topic in the literature, there are no gender-based studies available. Hence as a first report of its kind we hope that these findings will lead the way to more detailed studies.

Ethics Committee Approval: Ethical approval was obtained from Hacettepe University Animal Experiments Local Ethics Committee (numbered 2022/07-16).

Peer-Review: Externally peer-reviewed.

Author Contributions: Concept - ÇÇ, MG, EB; Design - ÇÇ, MG, EB; Supervision - ÇÇ, MG, EB; Data Collection and/ or Processing - ÇÇ, MG, EB; Analysis and/or Interpretation - ÇÇ, MG, EB; Literature Search - ÇÇ, MG, EB; Writing - ÇÇ, MG, EB; Critical Reviews - ÇÇ, MG, EB.

Conflict of Interest: The authors declared that there is no conflict of interest.

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DERLEME / REVIEW

Brain-Gut Network in Inflammatory Bowel Diseases and the Role of Vagal Nerve in Neuroinflammation

İnflamatuvar Bağırsak Hastalıklarında Beyin-Bağırsak Ağı ve Nöroinflamasyonda Vagal Sinirin Rolü

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SUMMARY

In both normal and pathological situations, the brain and gut communicate. Intestinal inflammation is crucial in the progression of systemic inflammation and neuroinflammation. Inflammatory Bowel Diseases, neurodegeneration, and neuroinflammation all benefit from elucidating the molecular relationships between the gut and the brain. Crohn's disease, ulcerative colitis, and indeterminate colitis are chronic disorders characterized by recurring episodes of gastrointestinal inflammation. Inflammatory bowel disease has evolved into a global disease in the 21st century, affecting around 6.8 million individuals and increasing in prevalence. According to growing evidence using clinical, epidemiological, and experimental data, Inflammatory Bowel Disease predisposes people to central nervous system disorders. The goal of this review is to address current knowledge in inflammatory bowel disorders, to analyze the interconnections between Inflammatory Bowel Diseases and neurodegenerative and neuroinflammatory diseases all along the gut-brain axis, and to emphasize the role of neuroinflammation in Inflammatory Bowel Diseases. Finally, we address vagal nerve stimulation as a potential treatment because it is a critical component of brain-gut interactions and exerts a dual anti-inflammatory role via its afferent and efferent fibers.

Keywords: Inflammatory bowel diseases, brain-gut axis, microbiota, neuroinflammation, neurodegeneration, vagal nerve stimulation

ÖZ

Hem normal hem de patolojik durumlarda beyin ve bağırsak iletişim kurar. Bağırsak iltihabı, sistemik iltihaplanma ve nöroinflamasyonun ilerlemesinde çok önemlidir. İnflamatuar Bağırsak Hastalıkları, nörodejenerasyon ve nöroinflamasyonun tümü, bağırsak ve beyin arasındaki moleküler ilişkilerin aydınlatılmasından yararlanır. Crohn hastalığı, ülseratif kolit ve nedeni belli tam olmayan kolit, tekrarlayan gastrointestinal inflamasyon atakları ile karakterize edilen kronik bozukluklardır. İnflamatuar bağırsak hastalığı, 21. yüzyılda yaklaşık 6,8 milyon kişiyi etkileyen ve prevalansı giderek artan küresel bir hastalığa dönüştü. Klinik, epidemiyolojik ve deneysel veriler kullanılarak artan kanıtlara göre İnflamatuar Bağırsak Hastalığı, insanlarda merkezi sinir sistemi bozukluklarına yatkınlık yaratıyor. Bu derlemenin amacı inflamatuar barsak bozukluklarındaki güncel bilgileri ele almak, İnflamatuar Bağırsak Hastalıkları ile bağırsak-beyin ekseni boyunca nörodejeneratif ve nöroinflamatuar hastalıklar arasındaki bağlantıları analiz etmek ve İnflamatuar Bağırsak Hastalıklarında nöroinflamasyonun rolünü vurgulamaktır. Son olarak, vagal sinir stimülasyonunu potansiyel bir tedavi olarak ele alıyoruz çünkü bu, beyin-bağırsak etkileşimlerinin kritik bir bileşenidir ve afferent ve efferent lifleri yoluyla ikili bir anti-inflamatuar rol oynar.

Anahtar Sözcükler: İnflamatuar bağırsak hastalıkları, beyin-bağırsak ekseni, mikrobiyota, nöroinflamasyon, nörodejenerasyon, vagal sinir stimülasyonu

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Introduction

The brain and the gastrointestinal tract are the primary sensory organs in charge of functions such as perception, integration, and transmission of data from the internal and external environments (1), and they communicate in two directions. The brain-gut axis is a regular information loop critical in controlling homeostasis. Maintaining this two-way communication appears to result from a complicated system involving endocrine systems, immunological systems, neurological systems, metabolic systems, and the vagus nerve (2,3), (Figure 1). In addition, the gut is a vital control center for the immune system, and the

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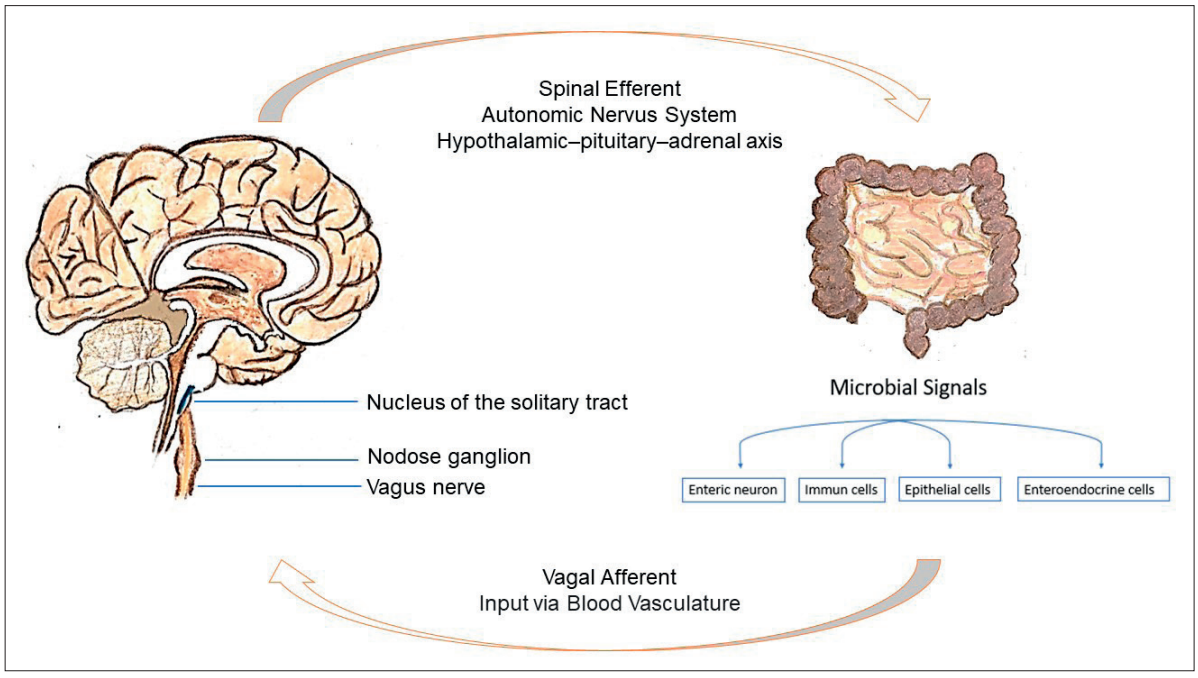

Figure 1. Gut-Brain Axis. The gut-brain axis has a two-way communication system driven by neural, immunological, hormonal, metabolic, and microbial signals.

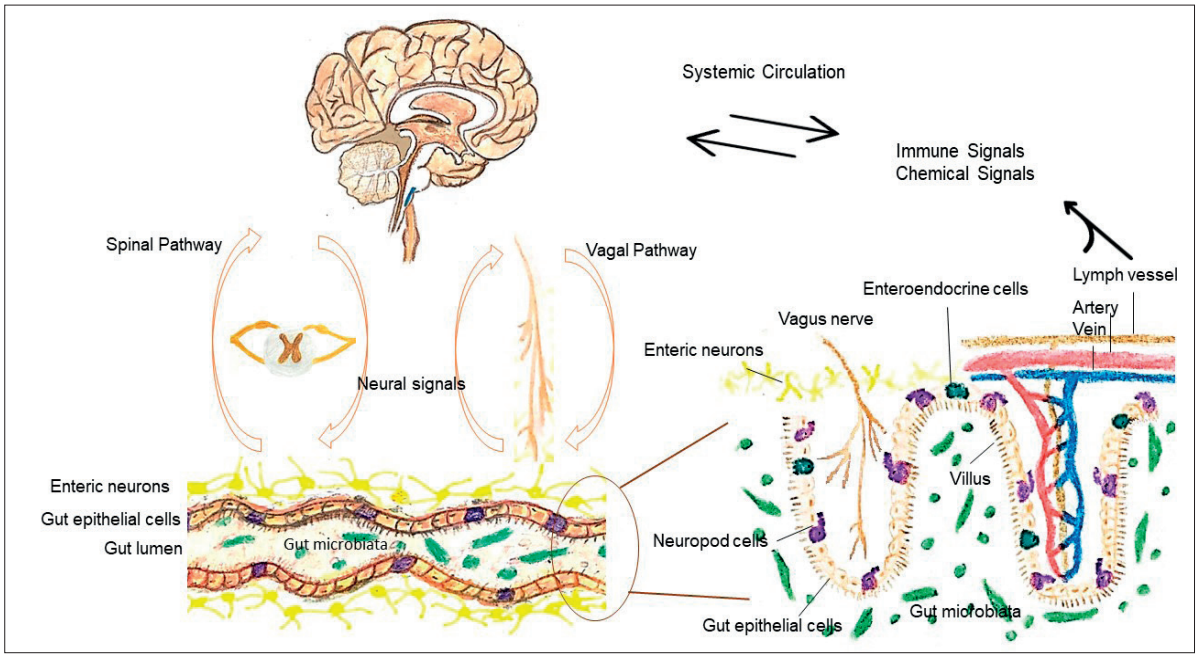

Figure 2. Intestinal innervation components

vagus nerve is essential in immune modulation (3). According to current studies, bidirectional communication along the gut-brain axis is crucial in modulating inflammatory pain perception, responses, and immunological homeostasis (1).

The enteric nervous system (ENS) is a crucial modulator of gut barrier function and an essential component of enteric homeostasis. (2). The ENS produces around 30 neurotransmitters and has a large number of neurons. Hormones and peptides produced into the bloodstream by the ENS (for example, ghrelin) can cross the blood-brain barrier and function with the vagus nerve to regulate different activities (3), (Figure 2). In vagus-related investigations (e.g., vagotomy), there is growing evidence that alterations in the microbiota content send enteric nervous system messages via the vagus (4).

The afferent spinal and vagal sensory nerves convey feedback from the intestines to the spinal cord and the solitary nucleus from the viscera. They achieve this by activating polysynaptic inputs to higher brain regions such as the hypothalamus and

limbic forebrain. This communication involves brain pathways, hormones, and immunological signals (5).

The composition of the human microbiome is unique in each individual. Accumulating evidence suggests that the gut microbiome has a critical role in brain health, regulating the normal functioning of this axis and homeostasis (2,6).

Inhibitory and excitatory neurotransmitters are primary in brain function, including learning and memory, movement, affect, and communication. Intestinal bacteria produce several neurotransmitters and neuromodulators, including GABA, serotonin, norepinephrine, dopamine, histamine, and acetylcholine, which can have direct effects on the brain (2). Glutamate, GABA, Acetylcholine, and serotonin (except the precursor tryptophan) cannot cross the blood-brain barrier. Still, it can act on the enteric nervous system and vagus nerve (7). Short-chain fatty acids (SCFAs), long-chain fatty acids (LCFAs), propionate, and conjugated linoleic acid are neuroactive metabolites produced by the microbiome; these metabolites indirectly affect the brain by modulating immune function, inflammation, and neurogenesis (2). A breach in the gastrointestinal barrier may raise the risk of infection and inflammation (8).

Neurodegenerative diseases and neurodevelopmental disorders frequently exhibit ENS dysfunction (3). The data gathered from experiments conducted without microbes, with antibiotics in the diet, and with microbiota transplantation offers us indications that intestinal diseases and changes in the microbiome (change due to probiotics, bacteria, pathogen or another factor) are not only limited to the intestine, but also affect the basis and variables of many neurological and psychiatric diseases such as metabolic disorders, schizophrenia (9), autism spectrum disorders (10), allergies and asthma (11), depression, and IBD (12).

In particular, it significantly affects tryptophan metabolism, the serotonergic system, stress, mood regulation, and immunity. Serotonin is an important neurotransmitter in both components of the brain-gut network. Compared to serotonin levels in the brain, serotonin levels in the gut are high. The enterochromaffin subtype of enteroendocrine cells and serotonergic neurons of the myenteric plexus are involved in serotonin secretion. Tryptophan (TRP) is an essential amino acid mainly metabolized in the liver. TRP metabolism is involved in pathways linked to the gut-brain axis and associated with the severity of irritable bowel disease. Approximately 90% of TRP is converted to kynurenine for the kynurenine pathway (KP), with the remaining being metabolized to serotonin and indole. The immunological response to IBD significantly impacts KP metabolism (2,6).

Inflammatory Bowel Diseases

Inflammatory bowel disease (IBD) is a chronic idiopathic disorder that leads to inflammation of the gastrointestinal tract, and it has emerged as a global disease in the 21st century. Recent epidemiological studies have indicated that the illness burden of IBD is increasing in developing countries (13).

The frequency of IBD is rapidly increasing in Western countries, causing a significant workload and difficulty for gastroenterology professionals. For instance, the prevalence of IBD in the U.S. was 0.5% in 2015, and it is anticipated that 2.2 million Americans will have the condition by 2025 if the current trend continues. Although people of European heritage are more likely to have IBD, newly industrialized areas such as Asia, the Middle East, and Africa have seen substantial rises in incidence (14).

The financial and resource burden from IBD on healthcare systems is significant. As the global prevalence of these diseases rises, it is critical to forecast future loads to prepare healthcare systems for the challenges of increased numbers of patients, comorbid disorders, prolonged disease course, and aging populations (15).

Etiopathogenesis of Inflammatory Bowel Diseases

Dietary changes from the Western diet, such as the consumption of refined, high-fat foods and nutritional additives, as a result of the co-evolution of humans and their gut microbiota from a high-fiber ancestral diet, may play a role in the increasing incidences of IBD in countries that are industrializing and westernizing (16). Physical activity, obesity, stress, antibiotic use in childhood, low levels of vitamin D, sleep, and smoking are all risk factors for developing IBD. Diet, which might have a pro-inflammatory effect, is one of the critical components in IBD pathogenesis and prognosis (14,17).

Inflammatory bowel disease pathophysiology is complex and only partially understood (18). The causes of these disorders have been linked to interactions between genetic, host, dysbiosis, immunological, and environmental factors. IBD's genetic components have long been known. Twin studies have revealed more excellent concordance for Crohn's disease (CD) and ulcerative colitis (UC), with CD having up to 58% concordance among monozygotic twins. Furthermore, the underlying causes of IBD also include diversity of the host microbiome, changes identified in the host microbiome, an increase in mucolytic bacteria that cause a deterioration in the epithelial barrier, as well as an increase in bacteria that adhere to the intestinal epithelium such as Proteobacteria, the effect of some pharmaceuticals on the microbiota and nutrition (17).

Clinical Features and Diagnosis of Inflammatory Bowel Diseases

Inflammatory Bowel Diseases are classified as chronic inflammatory autoimmune diseases (6).

Ulcerative colitis (UC) originates in the rectum and extends proximally. Abdominal pain, rectal bleeding, and diarrhea are common symptoms. Cramps characterize IBD. This type of IBD is characterized by cramps, a decrease in red blood cells, weight loss, as well as a high fever. One out of every ten pediatric patients develops a severe illness. Serious complications, such as bleeding, an enlarged colon, or perforation, may occur in these patients. Crohn's disease (CD) is a chronic condition that can occur anywhere in the gastrointestinal tract and can potentially regress and reoccur. Symptoms of CD include growth retardation, weight loss, and abdominal pain. An indeterminate colitis diagnosis is also used for patients who cannot be classified as CD or UK. It is more common in children. (19).

Inflammatory bowel disease (IBD) represents a group of idiopathic, chronic, inflammatory bowel disorders. The 2 main disease categories are Crohn's disease (CD) and ulcerative colitis (UC). Both of these diseases have overlapping and distinct clinical and pathological features. IBD is a chronic as well as intermittent (involving periods of exacerbation and remission) disease. Symptoms range from mild to severe during relapse and may disappear or decrease in remission (20).

For the correct diagnosis of IBD; It should be based on a combination of patient history, comprehensive physical examination and laboratory findings (blood and stool samples), esophagogastroduodenoscopy (EGD), ileocolonoscopy samples taken from at least 2 sites covering the inflamed area, and imaging of the small intestine. It is important to exclude enteric infections. For example, diarrhea lasting longer than 6 weeks generally distinguishes IBD-associated colitis from most cases of infectious diarrhea (20-22).

Detailed history is critical for diagnosis. It is important to question the patient in detail about the presence of diarrhea, weight loss, vomiting, fistula, fever, the time and duration of symptoms (relapse or remission), whether they affect daily life activities, mood disorders, and additional diseases and infections, travel, smoking, and family history. Mucus or blood in the stool, pain or bleeding during bowel motility, and abdominal pain or cramping may occur. In CD, moderate to severe cramps occur around the navel, often in the right lower quadrant of the abdomen, while in UK they occur in the left lower quadrant. In addition, if bloody diarrhea is often present, or constipation is present, rectal UK may be considered. Nausea and vomiting are more common in CD than in UK (20-22).

Price first used the term indeterminate colitis (IC) in 1978. Indeterminate colitis arises in cases that cannot be assigned to other types of IBD. This condition is more common in pediatrics than in adults (19,23).

In patients with inflammatory bowel diseases, it is usual to experience both relapses and periods of remission. Since the clinical signs, such as diarrhea, abdominal pain, or rectal bleeding, are not diagnostic in and of themselves, the differential diagnosis can be pretty difficult. To properly diagnose inflammatory bowel diseases, it is essential to consider a broad range of inflammatory and viral conditions that share common characteristics with IBD (24).

Anti-inflammatory and immunomodulatory treatments (5-Aminosalicylates, corticosteroids, thiopurines, methotrexate, etc.), microbiome modulators (antibiotics, probiotics, prebiotics, enteral nutrition, Anti-TNF agent and fecal transplantation can be used. If no response is received, surgery can be planned. In 70-75% of CD and UC patients In 20-25% of patients, reduction surgery can be performed, especially segmental resection, bowel-sparing stricturoplasty, ileorectal or ileocolonic anastomosis, temporary ileostomy/colostomy in severe perianal fistula, temporary ileostomy, total proctocolectomy plus permanent ileostomy (20).

Chronic neurodegenerative illnesses all have inflammation in common. Some neurodegenerative disorders are thought to be associated with intestinal dysbiotic conditions (25). During dysbiosis, the signals of bidirectional communication between the brain and the gut become disorganized. This process is associated with altered blood-brain barrier permeability and neuroinflammation (26). Systemic inflammation linked with pathogenic gut microbiota (due to elevated lipopolysaccharide, pro-inflammatory cytokines, and barrier dysfunction) can induce neuroinflammation that exacerbates dysfunctional brain regions, such as the hippocampus and cerebellum. Cognitive impairment may be exacerbated by a dysfunctional vagal-gut-brain axis (8). Dysbiosis (an imbalance between the microbiota and that of the host) contributes to the development of IBD (27).

Accumulating evidence suggests that IBD and Parkinson's share closely connected pathogenic risk factors. Studies indicate that a patient affected by one of these disorders is also susceptible to the other (28). Likewise, there is a two-way link between Multiple Sclerosis and IBD. The cumulative risk ratio for Inflammatory Bowel Disease/ Multiple Sclerosis comorbidities is 1.54, according to meta-analyses of 10 studies involving over a million patients (0.08 percent of whom had both İnflammatory Bowel Disease and Multiple Sclerosis) (29).

Studies indicate that IBD patients are at risk for developing dementia in the future (30). Existing meta-analyses have demonstrated a substantial correlation between CD or UC and the incidence of Alzheimer's Disease in the adult population (31).

Multifactorial pathophysiology underlies both Autism Spectrum Disorders and IBD. Most investigations have shown gut-brain connections with these illnesses (32). According to meta-analyses, those with Autism Spectrum Disorders are more prone to have inflammatory bowel diseases. Children with Autism Spectrum Disorders had a higher prevalence of CD and UC compared to controls (33). Additional causal relationships were with parental, particularly maternal IBD, and autism in offspring (34).

Inflammatory Bowel Disease patients are more susceptible to depression than the general population. It is hypothesized that central nervous system inflammation is responsible for causing depression symptoms (35).

Although these researches provide light on the connections between IBD, neurodegeneration, and neuroinflammation, there are still numerous ambiguities in this field.

Vagal Nerve Stimulation

The autonomic nervous system affects the function of numerous body organs, glands, and involuntary muscles through its sympathetic and parasympathetic divisions (36). The vagus nerve contains sensory and motor components and is an essential part of the autonomic nervous system (37). This nerve, which provides communication between the stomach, intestines, and brain, is the tenth and longest of the cranial nerves (36). The vagus nerve is a critical first-line natural defense against infection/inflammation (38).

The vagal system can modulate inflammation via the afferent pathways of the hypothalamic-pituitary-adrenal axis as well as the efferent pathways of the cholinergic CAIP complex (39-41).

Vagal nerve stimulation (VNS) is a therapeutic treatment approach approved by the European Medicines Agency and the US Food and Drug Administration (FDA) for the treatment of drug-resistant epilepsy and depression (41,48). Vagal nerve stimulation lowers cytokine production. An afferent mechanism inhibits inflammation of the hypothalamic-pituitary tract, while the anti-inflammatory cholinergic vagal pathway is efficient in the efferent component. Activating vagus nerve efferent fibers has an immunomodulatory effect, modulating cytokine production. The neuro-immune communication CAIP allows the host to regulate the immune response and prevent excessive inflammation (38,39).

The vagal nerve can be stimulated both invasively and noninvasively.

In The Invasive Technique, the electrode is surgically opened in the carotid vascular nerve package, which includes the jugular vein, carotid artery and vagus nerve, located under the collarbone, and electrodes are implanted in the cervical vagus nerve. Since the right-sided vagus innervates the cardiac atrium and negative cardiac problems are predicted for the left cervical vagus, implantation is generally performed in the left cervical vagus. In case of cardiac problems (heart failure, etc.), placement on the right side may be preferred (42-44). However, surgical placement of VNS may cause various complications. Cardiac side effects such as hoarseness, cough, bradycardia or asystole, infection, dyspnea and dysphagia can lead to jugular vein injury (42, 45). Researchers think non-invasive VNS, which is easier and cheaper to perform, could be used to minimize surgery-related complications.

In non-invasive applications, the stimulation can be applied to two different locations: neck skin (transcutaneous) and ear (transauricular) (46).

Transcutaneous Vagal Nerve Stimulation

It is transcutaneous vagal nerve stimulation targeting the cervical vagus through the cervical skin. It can be applied unilaterally or bilaterally (43). However, it is thought that the anatomical pathway may limit the speed of vagal stimulation because it contains too many components, or may reduce its effectiveness because it contains both afferent and efferent fibers (46).

Transauricular Vagal Nerve Stimulation

In another non-invasive technique, transauricular vagal nerve Stimulation (tVNS) targets the branch of the vagus nerve (Arnold's nerve) that provides innervation of the cymba concha area located around the auricle (Figure 3). Recent human studies have revealed that tVNS is as effective and safe as VNS but has fewer side effects. Noninvasive approaches seem promising in gastrointestinal system diseases (44).

Vagal Nerve Stimulation in Inflammatory Bowel Diseases

Studies conducted in the last 30 years have contributed to the elucidation of the relationship between Inflammatory Bowel Diseases, the autonomic nervous system, and, in addition to the ENS, the brain-intestinal axis in addition to ENS. It is known that the autonomic nervous system primarily affects intestinal function and is, therefore, effective in diseases such as irritable bowel syndrome. Considering diarrhea and constipation in IBD patients compared to control groups, Differences in vagal cholinergic measurements have been reported in constipation, and abnormalities in sympathetic adrenergic measurements have been reported in diarrhea (47). Inflammatory Bowel Diseases, CD, and UC revealed that some patients exhibited low vagal tone during remission. It has been shown recently that patients with CD with low vagal tone at rest exhibit higher plasma TNF-α levels than patients with high vagal tone. (48). Vagal hypotonia may result from the systemic inflammation seen in IBD or other chronic inflammatory diseases (39).

The modulation of the vagus nerve influences numerous physiological processes and bodily states connected with transmitting information from the brain to the body (49). In animal models of inflammation, such as Colitis, it has been demonstrated that vagal nerve stimulation (VNS) has anti-inflammatory activity (37).

The vagus nerve presents a valuable possibility for bioelectric neuromodulation therapy. The current treatments for IBD include anti-inflammatory and immunosuppressive medicines, anti-

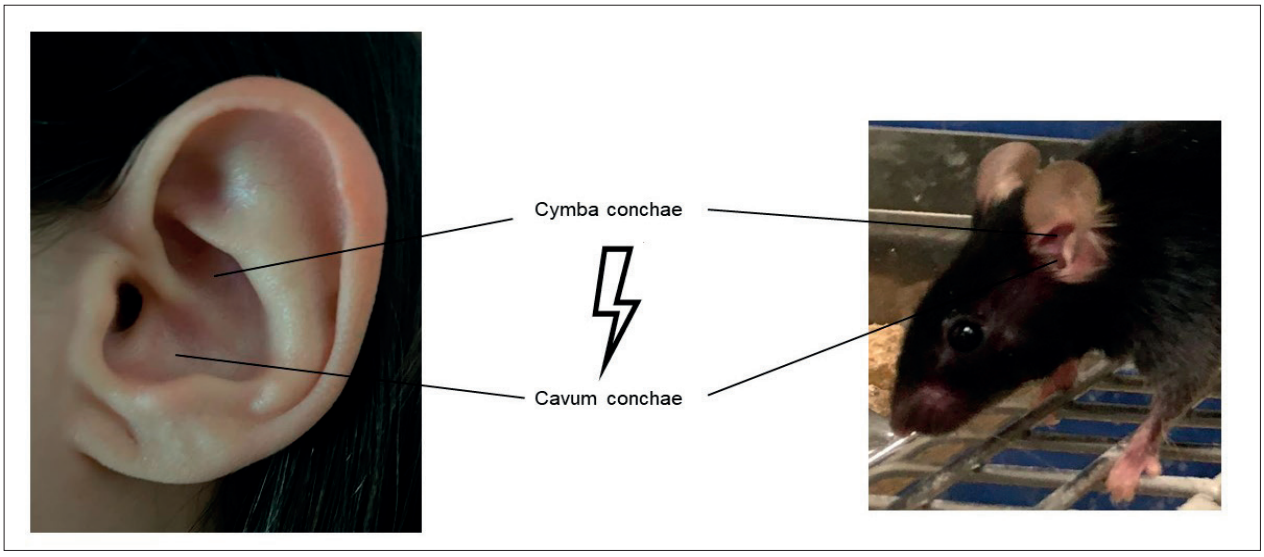

Figure 3. Transauricular vagal stimulation, displayed in human and mice ears

inflammatory medications, and biologic therapy. Antibiotics are administered to reduce the bacterial load in the digestive tract. Among the most significant disadvantages of these treatments are systemic immunosuppression, insufficient impact in some patients, and the development of resistant disease due to long-term drug use. In inflammatory bowel disease, the condition returns after medical treatment has been discontinued. Hence, novel therapies are required (50). Therefore, vagal nerve stimulation under regulated conditions is a possible therapy for Inflammatory Bowel Diseases (39-41).

Conclusion

The incidence of inflammatory bowel diseases is increasing worldwide. Mounting evidence points to the relationships between IBD, neuroinflammation, and neurodegenerative diseases, and brain and gut communication has an essential place in explaining these relationships. The vagus nerve is an essential part of brain-gut communication in both normal and pathological conditions, and stimulation of this nerve is promising for IBD patients.

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Alçılı Hastanın Roy Adaptasyon Modeline Göre Hemşirelik Bakımı

Nursing Care According to the Roy Adaptation Model of the Plastered Patient

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ÖZET

Kas iskelet sistemi hastalıkları içinde kırıklar önemli yer tutmakta ve 1850'lerden beri kırık tedavisinde alçılardan faydalanılmaktadır. Ancak doğru teknik kullanılmadan uygulanan alçılar veya alçılı hasta bakımında yetersiz hemşirelik uygulamaları hasta güvenliğini tehdit etmekte, kırıkların iyileşmesini engelleyebilmektedir. Alçı uygulaması sonrası taburculuğu planlanan ve tedavisi evde devam eden bireyler, yatarak tedavi gören hastalar gibi hemşirelik bakımı alamadıkları için evde bakımda sorunlar yaşayabilmektedir. Hemşirelik profesyonelleri hastanın güvenli ve kaliteli bakımı ve rehabilitasyonu için olası durumlara hakim olmalı, eğitici rolleriyle hastaların duruma adaptasyonlarını geliştirerek süreci daha kolay geçirmelerini sağlamalıdır. Alçı, hastaların hareketlerini kısıtlayan, günlük yaşam aktivitelerinde bağımsızlık düzeyini etkileyen ve bireyin yaşama uyumunu bozan önemli bir uyarıcıdır. Bu makalede alçılı hastaların Roy Adaptasyon Modeline temellendirilmiş hemşirelik bakımına yer verilmiştir. Hastaların uyum ve adaptasyon süreçlerine odaklanan Roy Adaptasyon Modeli, hastanın bütüncül değerlendirilmesini ve bakımını sağlarken baş etme mekanizmalarının tanınmasına da yardımcı olmaktadır.

Anahtar Sözcükler: Alçı, hemşirelik teorisi, ortopedi hemşireliği

SUMMARY

Fractures have an important place in musculoskeletal diseases and plasters have been used in the treatment of fractures since the 1850s. However, plasters applied without using the correct technique or inadequate nursing practices in patient care with plasters threaten patient safety and can prevent the healing of fractures. Individuals who are planned to be discharged after plaster application and whose treatment continues at home may experience problems in home care because they cannot receive nursing care like inpatients. Nursing professionals should be aware of possible situations for safe and quality care and rehabilitation of the patient, and with their educational roles, they should ensure that patients go through the process more easily by improving their adaptation to the situation. Plaster is an important stimulant that impairs the adaptation of the individual to life, while restricting the movements and activities of daily living of the patients. In this article, nursing care based on the Roy Adaptation Model of patients with plaster is included. Focusing on patients' orientation and adaptation processes, the Roy Adaptation Model provides holistic evaluation and care of the patient, while also helping to recognize the patient's coping mechanisms.

Keywords: Plaster of paris, nursing theory, orthopedic nursing

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Giriş

Kas iskelet sistemi hastalıkları içinde kırıklar önemli yer tutmakta ve 1850'lerden beri kırık tedavisinde alçılardan faydalanılmaktadır (1,2). Alçılar, düzeltilmiş kemik dizilimini sınırlı hareketlilikle koruyarak redüksiyonun devamlılığını sağlamaktadır (3). Ancak doğru teknik kullanılmadan uygulanan alçılar veya alçılı hasta bakımında yetersiz hemşirelik uygulamaları hasta güvenliğini tehdit etmekte, kırıkların iyileşmesini engelleyebilmektedir. Uygun bakım sağlanamaması hastalarda ağrı, ödem, kompartman sendromu, kırık iyileşme sürecinde gecikmelere ya da yeniden şekillenme sürecinde sorunlar, basınç yaralanması gibi acil ya da gecikmiş komplikasyonlara neden olabilmektedir (4,5). Olası komplikasyonların önüne geçmek ya da yönetmek için bilgilendirme ve kaliteli bakım gerekmektedir (3). Hastanın bilgilendirilmesinde, olası alçı komplikasyonlarının önlenmesi ya da erken teşhisinde, hemşireler önemli rol oynamaktadır (5,6). Alçı uygulaması sonrası taburculuğu planlanan ve tedavisi evde devam eden bireyler, yatarak tedavi gören hastalar gibi hemşirelik bakımı alamadıkları için evde bakımda

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sorunlar yaşayabilmektedir (3,6,7). Hareketlerinin kısıtlanması, beslenme alışkanlıklarında değişiklikler, uyku sorunları, öz yetersizlik, rol kaybı, anksiyete, cinsel hayatta bozulma, korku bu sorunlardan bazılarıdır (2,5,6). Bireyin bakımını evde de kaliteli bir şekilde sürdürebilmesi, olası komplikasyonları fark edebilmesi ve önleyebilmesi için hasta eğitimi önemli bir yer tutmaktadır (3,6,7). Hastanın uyum, adaptasyon sürecine odaklanan Roy Adaptasyon Modeli (RAM), bireyin fizyolojik, psikolojik ve sosyal yönleri ile ele alınmasını ve bütüncül bakımını sağlar. Bu derlemenin amacı, alçılı hastanın Roy Adaptasyon Modeline temellendirilmiş hemşirelik bakımını açıklamaktır.

Alçılı Hastanın Hemşirelik Bakımı

Hemşireler, değişen bilgi ve bakım gereksinimlerini belirleyerek hastaların günlük yaşama uyum sağlamlarında kilit rol oynamaktadırlar. Bakım gereksinimlerinin giderilmesinde sürekli bakım oldukça önemlidir. Sürekli bakım; taburculuk sonrası bakım sorunlarıyla karşılaşan hastalara yardımcı olmak için, hastalar ve bakım vericiler arasında sürekli ve tutarlı etkileşimin ve iletişimin sağlanmasını ifade eder. Hemşirelik bakımında sürekli bakımın devamlılığı için, hasta, hasta yakınları ve diğer sağlık profesyonelleri ile iletişim ve etkileşim sağlanmalıdır (2,8).

Alçı uygulaması sonrası, tedavi sürecinin her aşamasında hastaların bütüncül olarak değerlendirilmesi gerekir (9). Hemşirelik profesyonelleri hastanın güvenli ve kaliteli bakımı ve rehabilitasyonu için olası durumlara hakim olmalı, verdiği hasta eğitici rolleriyle hastaların duruma adaptasyonlarını geliştirerek süreci daha kolay geçirmelerini sağlamalıdır (6,7,10).

Hemşirelik model ve kuramları, bakım alan kişinin sağlığının değerlendirilmesi, bakım sürecinde elde edilen verileri düzenleyip analiz etme ve bu bilgileri kanıta dayalı açıklama olanağı sağlar. Bireyselleştirilmiş bakımda model ve kuramların kullanımı uygulamadaki sorunların ortaya çıkarılarak çözümlenmesini, hemşirenin bakıma yönlenip tıbbi modelden uzaklaşmasını, hemşirelik bakımının sistematik olmasını, hasta ve yakınlarına bütüncül bakım verilmesini ve yaşam kalitesinin artmasını sağlamaktadır (11-14).

Roy Adaptasyon Modeli

Sister Callista Roy tarafından 1970 yılında ortaya konulan RAM; hemşireliğin bütün alanlarında, hemşireliğin kavramsal çerçevesinin belirlenmesinde sıklıkla kullanılan bir modeldir (8,15). İnsan, çevre, sağlık ve hemşirelik kavramlarını birbirinin bütünleyicisi nitelikte gören modelin ana kavramı adaptasyon, uyumdur (12,16).

İnsan ve çevre arasındaki etkileşimde çeşitli uyaranlar mevcuttur ve bu uyaranlar çevreyi farklılaştırarak açık bir sistem olan insanı etkilemektedir (15,17). Bu etkiler bireyin davranışları üzerinedir ve bireyin davranışlarını biçimlendirir. Roy 3 tip uyarandan söz etmektedir. Bunlar; odak (focal) uyaran, bağlamsal (contextual) uyaran ve olası (residual) uyaran olarak ayrılmaktadırlar (12,18).

Uyaranlara karşı uyum sağlamaya çalışan insan bazı başa çıkma mekanizmaları kullanmaktadır. Model bireyin sahip olduğu başa çıkma mekanizmalarını, düzenleyici (regülator) ve bilişsel-duygusal (kognatör) olarak iki şekilde tanımlanmıştır. Bu mekanizmaların görevi, uyumu sürdürmektir (15,18).

Olası etkisiz başa çıkma durumlarında modelde tanılanmış olan 4 uyum alanı etkilenmektedir (12,19). Bunlar; fizyolojik (physiological) alan, benlik kavramı (self-concept) alanı, rol fonksiyon (role function) alanı, karşılıklı bağlılık (interdependence) alanıdır (15,18).

Modelde en önemli amaç uyumlu yanıtlar geliştirmektir. Eğer çevreden gelen uyaranlar bireyin başa çıkabileceğinden büyük ise; sistemde aksaklık olur, görevini yapamaz hale gelir ve sağlıkta sapma meydana gelir. RAM, uygun hemşirelik girişimleri ile bireylerin uyumunun kolaylaştığını savunur (16,18,19).

Roy, hastanın adaptasyon sürecini hızlandırmak için hemşirelik sürecinden yararlanır. Bu süreç; veri toplama, tanılama, amacı belirleme, hemşirelik girişimlerini planlama ve uygulama ve değerlendirme aşamalarından oluşur (12,16,20). Kişiyi tüm yönleri ile ele alan RAM, bireyin uyumunu sağlamayı amaçlayan hemşirelere yol göstermektedir (21).

Roy Adaptasyon Modeline Temellendirilmiş Hemşirelik Girişimleri

Alçılı hastaların yaşamları, kırık iyileşme sürecinde oldukça yoğun etkilenmektedir (3,9,11). Alçı, hastaların hareketlerini, günlük yaşam aktivitelerini kısıtlarken, bireyin yaşama uyumunu bozan önemli bir uyarıcıdır. Alçılı hastalara yönelik RAM'a temellendirilmiş hemşirelik girişimleri Tablo 1'de yer aldığı şekilde gerçekleştirilebilir.

Sonuç

Hastaların uyum ve adaptasyon süreçlerine odaklanan RAM, hastayı bütüncül değerlendirme fırsatı sağlarken, hastanın baş etme mekanizmalarının tanınmasına da yardımcı olmaktadır. Bireyi fizyolojik, psikolojik ve sosyal yönleri ile ele alan RAM, hemşirelik bakımında bireye odaklanmaktadır. Ayrıca hasta ve hasta yakınlarına holistik ve yaşam kalitesini artırıcı bakım verilmesini de sağlamaktadır. Bu nedenle alçı uygulanan hastalarda bütüncül hemşirelik bakımın sağlanması, bakımın etkinliğinin arttırılması, hasta eğitiminin planlanması ve uygulanmasında Roy Adaptasyon Modeli rehber alınabilir.

Tablo 1. Alçılı hastaya yönelik Roy Adaptasyon Modeline temellendirilmiş hemşirelik girişimleri

Uyum alanları	Uyaranların değerlendirilmesi	Hemşirelik girişimleri	Değerlendirme
Fizyolojik alan	**Odak uyaran** • Alçı **Bağlamsal uyaranlar** • Ağrı • Fiziksel güçsüzlük • Fiziksel harekette azalma • Yorgunluk • Beslenmede bozulma • Uyku problemi • Kaşıntı • Korku (düşme, yaralanma) • Yanma- karıncalanma **Olası uyaranlar** • Egzersiz yapamama • Ödem belirlenmesi Bilgi eksikliği	**Yönetimsel** • Hastanın hastalığı ile ilgili ayrıntılı bilgi edinme • Ağrı kontrolünün (farmakolojik ve nonfarmakolojik yöntemlerle) sağlaması • Sağlık disiplinleri ile ortak bir bakım programı oluşturulması • Hastanın gereksinimlerinin belirlenmesi • Fiziksel harekette azalmaya neden olan etmenlerin belirlenmesi ve kontrol altına alınması • Uyku örüntüsünün değerlendirilmesi, • Hastanın fonksiyonel durumunun belirlenmesi • Beden imajındaki değişimle baş etme stratejilerinin geliştirilmesi • Hastanın egzersizlerini yapması konusunda desteklenmesi • Bozulan uyku örüntüsünün düzenlenmesi • Hastanın anksiyetesini ifade etmesinin sağlanması • Anksiyete düzeyinin ve nedenlerinin belirlenmesi • Hastanın anksiyetesinin giderilmesi • Hastanın başa çıkma stratejilerinin belirlenmesi • Etkili başa çıkma yöntemleri geliştirmesinin desteklenmesi • Hastanın rol değişiminden nasıl etkilendiğinin belirlenmesi • Hastanın benlik saygısının değerlendirilmesi • Günlük yaşam aktivitelerini yerine getirebilme kapasitesinin değerlendirilmesi • Günlük yaşam aktivitelerini gerçekleştirmesinin sağlanması • Hasta ve yakınlarının korku ve endişelerinin giderilmesi • Ev koşullarının alçılı hastaya uygun, ergonomik şekilde düzenlenmesi • Sosyal izolasyon açısından risk faktörlerinin belirlenmesi • Enfeksiyonun önlenmesi • Beden gereksinimlerine uygun beslenmesinin sağlanması • Dehidratasyonun önlenmesi • Konstipasyonu önleme • Hareket kısıtlılığına bağlı gereksinimlerini belirleme ve yönetme • Aktivite toleransını geliştirme • Hastanın bakım veren yakınlarına destek olunması • Güçsüzlük, anksiyete, benlik saygısında azalma, yük olma, korku, ümitsizlik ve bağımlılık ile ilgili duygularını ifade etmesinin sağlanması • Bu duygular ile etkili baş etmesinin sağlanması • Öz bakım aktivitelerinin desteklenmesi ve yeniden kazandırılması • Bilgilendirme ve danışmanlığın sürdürülmesi • Konstipasyonların önlenmesi • Enfeksiyonun önlenmesi • Olası komplikasyon belirtilerinin değerlendirilmesi **Bilgiye dayalı** • Hastadan elde edilen bilgileri diğer sağlık profesyonelleri (doktor, fizyoterapist, diyetisyen) ile paylaşma **Bağlantısal** • Önerilen uygun egzersizleri, hastanın kendisinin yapmasını sağlama • Hastanın psikolojik destek gereksinimi olduğunda, psikoloğa yönlendirme • Hastanın gereksinim duyduğunda sağlık profesyonellerine ulaşabilmesini sağlama	**Etkili uyum davranışları** • Ağrısını etkin kontrol etmesi • Hastanın yorgun olmadığını ifade etmesi • Yeterli uyuduğunu ifade etmesi • Öz bakımını yerine getirebilmesi • Diyetine dikkat etmesi • Ekstremiteleri güçlendirmek amacıyla verilen egzersizleri uygulaması • Olumlu beden imajına sahip olması • Beden imajındaki değişimi kabul etmesi • Sorunlarını çözmede/Anksiyetesini gidermede etkili baş etme stratejilerini kullanması • Bağımsızlığını giderek kazanması ve yaşamını sürdürmede güçlü olması • Bakımıyla ilgili sorumluluk almak istemesi • Yeni durumuna göre evde gerekli düzenlemeleri yapması • Günlük yaşam aktivitelerini gerçekleştirmek için çaba göstermesi ve yaparken bağımlılık düzeyinin giderek azalması • Hastanın mevcut durumuna uygun şekilde sosyalleşmesi ve aktivitelere katılması • Kendini güvende hissederek/düşme korkusu yaşamadan hareket edebilmesi • Korku ve endişe duymadan yaşantısını sürdürmesi • Hastanın iyileşme sürecinde başkalarının desteğine ihtiyacının olduğunu fark edip, kabullenmesi ve bu desteğin kullanımını giderek azaltması • Kesintiye uğrayan rollerini yerine getirmesi • Yaşamındaki rollerini gerçekleştirme konusunda istekli olması • Sosyal aktivitelerini yapmaya istekli olması • Rol değişimiyle birlikte etkili rol entegrasyonu gösterebilmesi **Etkisiz uyum davranışları** • Hareket etmekten kaçınması • Ağrı yaşaması • Öz bakım eksikliği • Benlik saygısında azalma/Olumsuz benlik saygısı • Fonksiyonel kısıtlılığın/zorlanmanın giderek artması • Egzersizlerini düzenli uygulamaması/ egzersiz yapmaktan kaçınması • Uyku sorunlarının olması/devam etmesi • Düşme ya da sakat kalma korkusu yaşama • Hastanın kendini güçsüz hissetmesi • Anksiyete yaşaması • Ailenin rutinlerinin bozulması • Başkasına olan bağımlılığın giderek artması • Aile içi ilişkilerde bozulma • Bağımlılık sürecinin uzaması • Cinsiyet ve yetişkin rollerini yerine getirememe • Bakım verenlerin sorumluluklarının artması • Günlük yaşam aktivitelerini yerine getirmede isteksizlik • Yüksek beklentiler geliştirmesi • Yapabileceği aktiviteleri başkasının yapmasını beklemesi ya da istemesi • Destek sistemlerinde yetersizlik • Kendini yük olarak algılama • Sosyal izolasyon yaşaması • İşe dönememe • Başkalarına bağımlı olması/ Pasif ya da bağımlı hasta rolünü sürdürmesi • Sorun yaşadığında ilgili sağlık profesyoneline danışmaması
Benlik kavramı alanı	**Odak uyaran** • Alçı **Bağlamsal uyaranlar** • Öz yetersizlik • Hijyen eksikliği • Fiziksel güçsüzlük • Yorgunluk • Sorunları, duyguları ifade edememe **Olası uyaranlar** • Bakım verenlere yük olma kaygısı • Yaşam tarzı değişikliği • Finansal sorunlar		
Rol fonksiyon alanı	**Odak uyaran** • Alçı **Bağlamsal uyaranlar** • Günlük yaşam aktivitelerini yerine getirememe • Fiziksel harekette azalma • Öz bakım davranışlarını yerine getirmede başkasına bağımlı hale gelme • Geçmişteki faaliyetlerini gerçekleştirememe • Başka birine bağımlı olma • Cinsel işlev bozukluğu • İş kaybı **Olası uyaranlar** • Yaşam kararları üzerinde kontrol kaybı		
Karşılıklı bağlılık alanı	**Odak uyaran** • Alçı **Bağlamsal uyaranlar** • Sosyal etkileşimde bozulma • Sosyal izolasyon • Finansal sorunlar • Başka birine bağımlı olma **Olası uyaranlar** • Yaşam kararları üzerinde kontrol kaybı • Bakım verenlere yük olma kaygısı		

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Kaynaklar

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