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A technical review is performed to confirm that all of the required documentation has been submitted and to conduct a preliminary evaluation of the manuscript and supplementary files to assess suitability for the Journal. The manuscript will be returned to the Author in the event of any deficiency.

Pediatric Practice and Research Journal operates a blind review process. Contributions deemed suitable are then typically sent to a minimum of two independent expert reviewers in the field of study to assess the scientific quality of the paper.

The Editor/Editors are responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final. If necessary, author(s) may be invited to submit a revised version of the manuscript. This invitation does not imply that the manuscript will be accepted for publication. Revised manuscripts must be sent to the Editorial Office within 4 (four) weeks, otherwise they will be considered as a new application. The corresponding author will be notified of the decision to accept or reject the manuscript for publication.

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Language of the Journal

The official languages of the Journal are Turkish and English. The manuscripts that are written in Turkish have abstracts in English, which makes the abstracts available to a broader audience.

Authorship Criteria

After accepted for publication, all the authors will be asked to sign "Coyright Transfer Form" which states the following: " This work is not under active consideration for publication, has not been accepted for publication, nor has it been published, in full or in part (except in abstract form). I confirm that the study has been approved by the ethics committee. " All authors should agree to the conditions outlined in the form.

Pediatric Practice and Research Journal has agreed to use the standards of the International Committee of Medical Journal Editors. The author(s) should meet the criteria for authorship according to the "Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication. It is available at www.icmje.org.

Ethical Responsibility

The protocol of clinical research articles must be approved by the Ethics Committee.

In all studies conducted on humans, the "Material and Method" section was approved by the relevant committee or the Helsinki Declaration of Principles (https://www.wma.net/what-we-do/medical-ethics/declaration-of-helsinki/).

It should be stated in the text that all persons included in the study signed the am Informed Consent Form ".

The articles submitted to the Pediatric Practice and Research Journal will be deemed to have been conducted in accordance with the Helsinki Declaration of Principles, and have received ethical and legal permissions and will not be held responsible.

If the "Animal" item was used in the study, the authors stated that in the Material and Method section of the article, they protect the animal rights in their studies in accordance with the principles of Guide for the Care and Use of Laboratory Animals (www.nap.edu/catalog/5140.html) and that they have received approval from the ethics committees of their institutions. must specify.

In case reports, Informed Consent a should be obtained from patients regardless of the identity of the patient.

If the article includes the institution (directly or indirectly) providing financial support for the commercial connection or work, the authors; the commercial product used, the drug, the company has no commercial relationship with, or if there is any relationship (consultant, other agreements, etc.), the editor must inform the presentation page.

If Ethics Committee Approval is required in the article; the received document should be sent with the article.

The manuscript should be submitted to the Academic Plagiarism Prevention Program by the authors.

It is the authors' responsibility to ensure that the article complies with the ethical rules.

Policy of Screening for Plagiarism

The manuscripts are scanned by the Journal using the iThenticate program for determination of plagiarism and non-ethical situations. Pediatric Practice and Research Journal will immediately reject manuscripts leading to plagiarism.

TYPES OF MANUSCRIPT

Manuscripts should be submitted online via www.pprjournal.com

Original Articles should not exceed 3000 words and should be arranged under the headings of Abstract (not more than 300 words), Introduction, Materials and Methods, Results, Discussion, Conclusion and References.

Case Reports should not exceed 1000 words and 10 references, and should be arranged as follows: Abstract, Introduction, Case Report, Discussion and References. It may be accompanied by only one figure or table.

Letter to the Editor should not exceed 500 words. Short relevant comments on medical and scientific issues, particularly controversies, having no more than five references and one table or figure are encouraged. Where letters refer to an earlier published paper, authors will be offered right of reply.

Reviews are not accepted unless written on the invitation of the Editorial Board.

PREPARATION OF MANUSCRIPTS

All articles submitted to the Journal must comply with the following instructions:

a) Submissions should be doubled-spaced and typed in Arial 10 points.

b) All pages should be numbered consecutively in the top right-hand corner, beginning with the title page.

c) The title page should not include the names and institutions of the authors.

d) The manuscript should be presented in the following order: Title page, Abstract (English, Turkish), Keywords (English, Turkish), Introduction, Materials and Methods, Results, Discussion, Conclusion, Acknowledgements (if present), References, Figure Legends, Tables (each table, complete with title and foot-notes, on a separate page) and Appendices (if present) presented each on a separate page.

Title

The title should be short, easy to understand and must define the contents of the article.

Abstract

Abstract should be in both English and Turkish and should consist "Aim, Materials and Methods, Results and Conclusion". The purpose of the study, the setting for the study, the subjects, the treatment or intervention, principal outcomes measured, the type of statistical analysis and the outcome of the study should be stated in this section (up to 300 words). Abstract should not include reference. No abstract is required for the letters to the Editor.

Keywords

Not more than five keywords in order of importance for indexing purposes should be supplied below the abstract and should be selected from Index Medicus Medical Subject Headings (MeSH), available at www.nlm.nih.gov/meshhome.html.

Text

Authors should use subheadings to divide sections regarding the type of the manuscript as described above. Statistical methods used should be specified in the Materials and Methods section.

References

In the text, references should be cited using Arabic numerals in parenthesis in the order in which they appear. If cited only in tables or figure legends, they should be numbered according to the first identification of the table or figure in the text. Names of the journals should be abbreviated in the style used in Index Medicus. The names of all authors should be cited when there are six or fewer; when seven or more, the first three should be followed by et al. The issue and volume numbers of the referenced journal should be added.

References should be listed in the following form:

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Supplement

Solca M. Acute pain management: Unmet needs and new advances in pain management. Eur J Anaesthesiol 2002; 19(Suppl 25): 3-10.

Online article not yet published in an issue

Butterly SJ, Pillans P, Horn B, Miles R, Sturtevant J. Off-label use of rituximab in a tertiary Queensland hospital. Intern Med J doi: 10.1111/j.1445-5994.2009.01988.x

Book

Sample1: Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA. Medical microbiology. 4th ed. St. Louis: Mosby; 2002.

Sample 2: Sümbüloğlu K, Akdağ B. Regresyon Yöntemleri ve Korelasyon Analizi. Hatiboğlu Yayınevi: Ankara; 2007.

Chapter in a book

Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. I n: Vogelstein B, Kinzler KW, editors. The genetic basis of human cancer. New York: McGraw-Hill; 2002. p. 93113.

Journal article on the Internet

Abood S. Quality improvement initiative in nursing homes: The ANA acts in an advisory role. Am J Nurs [serial on the Internet] 2002 [cited 12 Aug 2002]; 102. Available from: www.nursingworld.org/AJN/2002/june/wawatch.htm

Website

Cancer-pain.org [homepage on the Internet]. New York: Association of Cancer Online Resources [updated 16 May 2002; cited 9 Jul 2002]. Available from: www.cancer-pain.org

An organization as an author

The Intensive Care Society of Australia and New Zealand. Mechanical ventilation strategy in ARDS: Guidelines. Int Care J Aust 1996;164:282-4.

Acknowledgements

The source of financial grants and the contribution of colleagues or institutions should be acknowledged.

Tables

Tables should be complementary, but not duplicate information contained in the text. Tables should be numbered consecutively in Arabic numbers, with a descriptive, self-explanatory title above the table. All abbreviations should be explained in a footnote. Footnotes should be designated by symbols in the following order: *,†, ‡, §, ¶.

Figures

All illustrations (including line drawings and photographs) are classified as figures. Figures must be added to the system as separate .jpg or .gif files (approximately 500x400 pixels, 8 cm in width and at least 300 dpi resolution). Figures should be numbered consecutively in Arabic numbers and should be cited in parenthesis in consecutive order in the text.

Figure Legends

Legends should be self-explanatory and positioned on a separate page. The legend should incorporate definitions of any symbols used and all abbreviations and units of measurements should be explained. A letter should be provided stating copyright authorization if figures have been reproduced from another source.

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All measurements must be given in metric system (Système International d'Unités, SI). Example: mg/kg, μg/kg, mL, mL/kg, mL/kg/h, mL/kg/min, L/min, mmHg, etc. Statistics and measurements should always be given in numerals, except where the number begins a sentence. When a number does not refer to a unit of measurement, it is spelt out, except where the number is greater than nine.

Abbreviations that are used should be defined in parenthesis where the full word is first mentioned. Some common abbreviations can be used, such as iv, im, po, and sc.

Drugs should be referred to by their generic names, rather than brand names.

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YAZARLARA BİLGİ

AMAÇ ve KAPSAM

Pediatric Practice and Research Dergisi, dört ayda bir yayımlanır ve üç sayı ile bir cilt tamamlanır. Dergi; pediatri ile ilgili tüm nitelikli klinik ve deneysel araştırmaları, olgu sunumlarını ve editöre mektupları yayımlar.

Pediatric Practice and Research Dergisi, bilimsel yayınlara açık erişim sağlar. Dergi basımından hemen sonra, makalelerin tam metinlerine ücretsiz ulaşılabilir.

Dergide yayımlanmak üzere gönderilen yazıların daha önce başka bir yerde yayımlanmamış veya yayımlanmak üzere gönderilmemiş olması gerekir. Daha önce kongrelerde sunulmuş çalışmalar, bu durum belirtilmek koşuluyla kabul edilir. Makale, yazar(lar) ın daha önce yayımlanmış bir yazısındaki konuların bir kısmını içeriyorsa bu durum belirtilmeli ve yeni yazı ile birlikte önceki makalenin bir kopyası da Yayın Bürosu'na gönderilmelidir.

Gerekli tüm belgelerin sunulduğunu teyit etmek ve dergiye uygunluğunu değerlendirmek için makale ve ek dosyaların ön değerlendirmesini yapmak üzere teknik bir inceleme yapılır. Herhangi bir eksiklik olması halinde makale yazara iade edilecektir. Pediatric Practice and Research Dergisi kör bir inceleme süreci yürütmektedir. Uygun görülen yazılar daha sonra makalenin bilimsel kalitesini değerlendirmek için çalışma alanında en az iki bağımsız uzmana gönderilir. Editör / Editörler makalelerin kabulü veya reddi ile ilgili nihai karardan sorumludur.

Editörün kararı kesindir. Gerekli olduğu durumlarda, yazar(lar) dan düzeltme istenebilir. Yazardan düzeltme istenmesi, yazının yayımlanacağı anlamına gelmez. Bu düzeltmelerin en geç 21 gün içinde tamamlanıp dergiye gönderilmesi gereklidir. Aksi halde yeni başvuru olarak değerlendirilir. Sorumlu yazara yazının kabul veya reddedildiğine dair bilgi verilir.

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Etik Sorumluluk / Kurallar: Klinik araştırma makalelerinin protokolü Etik Komitesi tarafından onaylanmış olmalıdır.

İnsanlar üzerinde yapılan tüm çalışmalarda "Gereç ve Yöntem" bölümünde çalışmanın ilgili komite tarafından onaylandığı veya çalışmanın Helsinki İlkeler Deklarasyonu'na (https://www.wma.net/what-we-do/medical-ethics/declaration-of-helsinki/) uyularak gerçekleştirildiğine dair bir cümle yer almalıdır.

Çalışmaya dahil edilen tüm kişilerin Bilgilendirilmiş Onam Formu'nu imzaladığı metin içinde belirtilmelidir.

Pediatric Practice and Research Dergisi'ne gönderilen makalelerdeki çalışmaların Helsinki İlkeler Deklarasyonu'na uygun olarak yapıldığı, kurumsal etik ve yasal izinlerin alındığı varsayılacak ve bu konuda sorumluluk kabul edilmeyecektir.

Çalışmada "Hayvan" öğesi kullanılmış ise yazarlar, makalenin Gereç ve Yöntem bölümünde hayvan haklarını Guide for the Care and Use of Laboratory Animals (www.nap.edu/catalog/5140.html) prensipleri doğrultusunda koruduklarını, çalışmalarında ve kurumlarının etik kurullarından onay aldıklarını belirtmek zorundadır.

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Makale yazarlar tarafından akademik intihal önleme programından geçirilmelidir.

Makalenin etik kurallara uygunluğu yazarların sorumluluğundadır.

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Makaleler, intihal ve etik olmayan durumların belirlenmesi için iThenticate programı kullanılarak Journal tarafından taranır. Pediatric Practice and Research Dergisi intihallere yol açan makaleleri derhal reddedecektir.

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Yazılar, elektronik ortamda www.pprjournal.com adresine gönderilir.

Orijinal makaleler, 3000 sözcük sayısını aşmamalı, "Öz (en fazla 300 kelime), Giriş, Gereç ve Yöntem, Bulgular, Tartışma, Sonuç, Kaynaklar" bölümlerinden oluşmalıdır.

Olgu Sunumu, "Öz, Giriş, Olgu Sunumu, Tartışma, Kaynaklar" şeklinde düzenlenmelidir. En fazla 1000 sözcük ile sınırlıdır. Sadece bir tablo veya şekil ile desteklenebilir.

Editöre Mektup, yayımlanan metinlerle veya mesleki konularla ilgili olarak 500 sözcüğü aşmayan ve beş kaynak ile bir tablo veya şekil içerecek şekilde yazılabilir. Ayrıca daha önce dergide yayınlanmış metinlerle ilişkili mektuplara cevap hakkı verilir.

Yayın Kurulu'nun daveti üzerine yazılanlar dışında derleme kabul edilmez.

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Dergide yayınlanması istenilen yazı için aşağıdaki kurallara uyulmalıdır.

a) Yazı; iki satır aralıklı olarak, Arial 10 punto ile yazılmalıdır.
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c) Online makale sistemine yüklenen word dosyasının başlık sayfasında (makalenin adını içeren başlık sayfası), yazarlara ait isim ve kurum bilgileri yer almamalıdır.
d) Makale, şu bölümleri içermelidir: Her biri ayrı sayfada yazılmak üzere; Türkçe ve İngilizce Başlık Sayfası, Öz, Abstract, Anahtar Sözcükler, Keywords, Giriş, Gereç ve Yöntem, Bulgular, Tartışma, Sonuç, Açıklamalar (varsa), Kaynaklar, Şekil Alt Yazıları, Tablolar (başlıkları ve açıklamalarıyla beraber), Ekler (varsa).

Yazının Başlığı

Kısa, kolay anlaşılır ve yazının içeriğini tanımlar özellikte olmalıdır.

Özetler

Türkçe (Öz) ve İngilizce (Abstract) olarak yazılmalı, Amaç, Gereç ve Yöntem, Bulgular ve Sonuç (Aim, Materials and Methods, Results, Conclusion) olmak üzere dört bölümden oluşmalı, en fazla 300 sözcük içermelidir. Araştırmanın amacı, yapılan işlemler, gözlemsel ve analitik yöntemler, temel bulgular ve ana sonuçlar belirtilmelidir. Özette kaynak kullanılmamalıdır. Editöre mektup için özet gerekmemektedir.

Anahtar Sözcükler

Türkçe Öz ve İngilizce Abstract bölümünün sonunda, Anahtar Sözcükler ve Keywords başlığı altında, bilimsel yazının ana başlıklarını yakalayan, Index Medicus Medical Subject Headings (MeSH)'e uygun olarak yazılmış en fazla beş anahtar sözcük olmalıdır. Anahtar sözcüklerin, Türkiye Bilim Terimleri'nden (www.bilimterimleri.com) seçilmesine özen gösterilmelidir.

Metin

Yazı metni, yazının türüne göre yukarıda tanımlanan bölümlerden oluşmalıdır. Uygulanan istatistiksel yöntem, Gereç ve Yöntem bölümünde belirtilmelidir.

Kaynaklar

Pediatric Practice and Research Dergisi, Türkçe kaynaklardan yararlanmaya özel önem verdiğini belirtir ve yazarların bu konuda duyarlı olmasını bekler.

Kaynaklar metinde yer aldıkları sırayla, cümle içinde atıfta bulunulan ad veya özelliği belirten kelimenin hemen bittiği yerde ya da cümle bitiminde noktadan önce parantez içinde Arabik rakamlarla numaralandırılmalıdır. Metinde, tablolarda ve şekil alt yazılarında kaynaklar, parantez içinde Arabik numaralarla nitelendirilir. Sadece tablo veya şekil alt yazılarında kullanılan kaynaklar, tablo ya da şeklin metindeki ilk yer aldığı sıraya uygun olarak numaralandırılmalıdır. Dergi başlıkları, Index Medicus'ta kullanılan tarza uygun olarak kısaltılmalıdır. Kısaltılmış yazar ve dergi adlarından sonra nokta olmamalıdır. Yazar sayısı altı veya daha az olan kaynaklarda tüm yazarların adı yazılmalı, yedi veya daha fazla olan kaynaklarda ise üç yazar adından sonra et al. veya ve ark. yazılmalıdır. Kaynak gösterilen derginin sayı ve cilt numarası mutlaka yazılmalıdır.

Kaynaklar, yazının alındığı dilde ve aşağıdaki örneklerde görüldüğü şekilde düzenlenmelidir.

Dergilerdeki yazılar

Teke Z, Kabay B, Aytekin FO et al. Pyrrolidine dithiocarbamate prevents 60 minutes of warm mesenteric ischemia/reperfusion injury in rats. Am J Surg 2007;194(6):255-62.

Ek sayı (Supplement)

Solca M. Acute pain management: Unmet needs and new advances in pain management. Eur J Anaesthesiol 2002;19(Suppl 25):3-10.

Henüz yayınlanmamış online makale

Butterly SJ, Pillans P, Horn B, Miles R, Sturtevant J. Off-label use of rituximab in a tertiary Queensland hospital. Intern Med J doi: 10.1111/j.1445-5994.2009.01988.x

Kitap

Örnek 1: Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA. Medical microbiology. 4th ed. St. Louis: Mosby; 2002.
Örnek 2: Sümbüloğlu K, Akdağ B. Regresyon Yöntemleri ve Korelasyon Analizi. Hatiboğlu Yayınevi: Ankara; 2007.

Kitap bölümü

Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. I n: Vogelstein B, Kinzler KW, editors. The genetic basis of human cancer. New York: McGraw-Hill; 2002. p. 93113.

İnternet makalesi

Abood S. Quality improvement initiative in nursing homes: The ANA acts in an advisory role. Am J Nurs [serial on the Internet] 2002 [cited 12 Aug 2002]; 102. Available from: www.nursingworld.org/AJN/2002/june/wawatch.htm

Web Sitesi

Cancer-pain.org [homepage on the Internet]. New York: Association of Cancer Online Resources [updated 16 May 2002; cited 9 July 2002]. Available from: www.cancer-pain.org

Yazar olarak bir kuruluş

The Intensive Care Society of Australia and New Zealand. Mechanical ventilation strategy in ARDS: Guidelines. Int Care J Aust 1996;164:282-4.

Açıklamalar

Varsa finansal kaynaklar, katkı sağlayan kurum, kuruluş ve kişiler bu bölümde belirtilmelidir.

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Tablolar metni tamamlayıcı olmalı, metin içerisinde tekrarlanan bilgiler içermemelidir. Metinde yer alma sıralarına göre Arabik sayılarla numaralandırılıp tablonun üstüne kısa ve açıklayıcı bir başlık yazılmalıdır. Tabloda yer alan kısaltmalar, tablonun hemen altında açıklanmalıdır. Dipnotlarda sırasıyla şu semboller kullanılabilir: *, †, ‡, §, ¶.

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Şekil Alt Yazıları

Şekil alt yazıları, her biri ayrı bir sayfadan başlayarak, şekillere karşılık gelen Arabik rakamlarla çift aralıklı olarak yazılmalıdır. Şeklin belirli bölümlerini işaret eden sembol, ok veya harfler kullanıldığında bunlar alt yazıda açıklanmalıdır. Başka yerde yayınlanmış olan şekiller kullanıldığında, yazarın bu konuda izin almış olması ve bunu belgelemesi gerekir.

Ölçümler ve Kısaltmalar

Tüm ölçümler metrik sisteme (Uluslararası Birimler Sistemi, SI) göre yazılmalıdır. Örnek: mg/kg, µg/kg, mL, mL/kg, mL/kg/h, mL/kg/min, L/min, mmHg, vb. Ölçümler ve istatistiksel veriler, cümle başında olmadıkları sürece rakamla belirtilmelidir. Herhangi bir birimi ifade etmeyen ve dokuzdan küçük sayılar yazı ile yazılmalıdır.

Metin içindeki kısaltmalar, ilk kullanıldıkları yerde parantez içinde açıklanmalıdır. Bazı sık kullanılan kısaltmalar; iv, im, po ve sc şeklinde yazılabilir.

İlaçların yazımında jenerik isimleri kullanılmalıdır.

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CONTENTS

VOLUME 12   ISSUE 1   YEAR 2024

ORIGINAL ARTICLES

ORIGINAL ARTICLE
ORİJİNAL ARAŞTIRMA

Mothers' Knowledge of Neonatal Danger Signs: A Descriptive Study

Annelerin Yenidoğan Tehlike İşaretleri Hakkında Bilgisi: Tanımlayıcı Bir Çalışma

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ABSTRACT

Aim: This study was performed to investigate mothers' knowledge of neonatal danger signs.

Material and Method: The present research is a descriptive study. The study was carried out in a children's hospital in the southeast of Turkey. The study sample consisted of 214 mothers who had infants aged between 0-12 months, did not have communication barriers, and agreed to participate in the study. Data were collected by the face-to-face interview method using the Demographic Information Questionnaire and the Neonatal Danger Signs Information Form.

Results: The mean danger signs knowledge score of the mothers was found to be 9.78±3.41. The knowledge of 88.3% of the mothers was at a "good" level. The mothers reported cough and diarrhea as danger signs at the highest rate of 81.8%, fever at a rate of 80.4%, and vomiting and malnutrition at a rate of 79%. The factors affecting the mothers' knowledge of danger signs (high/low) were examined by binary logistic regression analysis, and it was found that income status affected their knowledge (p<0.05). Although the mothers' knowledge and experience of danger signs were high, they presented to health institutions at a low level.

Conclusion: This study found mothers' knowledge of neonatal danger signs to be quite high. It was recommended that mothers should be informed about the things that must be done regarding neonatal danger signs.

Keywords: Newborn, danger sign, mother, nursing

ÖZ

Amaç: Bu çalışma annelerin yenidoğan tehlike işaretleri hakkındaki bilgilerinin incelenmesi amacıyla yapılmıştır.

Gereç ve Yöntem: Tanımlayıcı tipte bir çalışmadır. Çalışma Türkiye'nin güneydoğusunda bir çocuk hastanesinde yapılmıştır. Çalışmanın örneklemini 0-12 ay arasında bebeği olan, iletişim engeli olmayan, çalışmaya katılmayı kabul eden 214 anne oluşturmuştur. Veriler Demografik Bilgiler Soru Formu ve Yenidoğan Tehlike İşaretleri Bilgi Formu kullanılarak yüzyüze görüşme yöntemiyle elde edilmiştir.

Bulgular: Annelerin tehlike işaretleri bilgi puan ortalaması 9.78±3.41 olarak bulunmuştur. Annelerin %88.3'ünün "iyi" bilgi düzeyindedir. Anneler en yüksek oranda %81.8'i öksürük ve ishali, %80.4'ü yüksek ateşi, %79'u kusma ve beslenememe durumunu tehlike işareti olarak bildirmiştir. Annelerin tehlike işaretleri bilgi durumunu (yüksek/düşük) etkileyen faktörler binary lojistik regresyon analizi ile incelenmiş, gelir durumunun etkilediği belirlenmiştir (p<0.05). Annelerin tehlike işaretlerini bilme ve deneyimleme oranı yüksek olmasına rağmen sağlık kurumuna başvuru düşük olarak tespit edilmiştir.

Sonuç: Bu çalışmada annelerin yenidoğan tehlike işaretlerine ilişkin bilgi düzeyleri oldukça yüksek bulunmuştur. Annelerin yenidoğan tehlike işaretleri konusunda yapılması gerekenlere yönelik bilgilendirilmesi önerilmiştir.

Anahtar Kelimeler: Yenidoğan, tehlike işareti, anne, hemşirelik

INTRODUCTION

Newborns are at high risk of developing disease since their immune system is immature and they experience physiological changes leading to severe life-threatening diseases. Therefore, constant monitoring and family care are required (1). The first 28 days of life, in other words, the neonatal period, is the most vulnerable period for a child's survival. UNICEF stated that children face the highest risk of dying in their first month of life. According to the United Nations International Children's Emergency Fund (UNICEF), 2.3 million newborns died in the first month of life in 2021 globally, with approximately 6400 neonatal deaths occurring each day (2). Most neonatal deaths in developing countries occur at home, and two-thirds of them can be prevented if timely and effective health measures are taken (3). Most of these deaths occur due to the late diagnosis of neonatal diseases, delays in the decision to seek care at the family level, and late intervention in health institutions (4-6). Especially delays at the family level are important because if parents fail to notice danger signs in the newborn, this can lead to delays in seeking health care, delayed initiation of appropriate treatment, and delays in referral to a better-resourced hospital. It is very important for mothers or caregivers to be aware of danger signs in the newborn to reduce these delays and preventable deaths (6, 7).

The early diagnosis of neonatal diseases is an important step toward improving neonatal survival. Therefore, mothers must be able to identify symptoms that exacerbate neonatal diseases postpartum. Neonatal danger signs are danger signs recognized by the World Health Organization (WHO) in case of severe illness or local infection (4). Neonatal danger signs for severe illness have been reported as the inability to feed from birth or stopping feeding, seizures, fast breathing, severe chest indrawing (difficulty breathing), fever, low fever, weakness or lethargy/drowsiness (moving only when stimulated or not moving even when stimulated), jaundice, and local infection signs (umbilical redness or pus drainage, pus drainage from the skin or eyes) (4, 6, 8-10). A study found that the knowledge and care-seeking behavior of postpartum mothers about neonatal danger signs were low (11). Another study performed with 414 postpartum mothers stated that 57.2% of the mothers were not informed by healthcare professionals about neonatal danger signs before birth. In this study, 84.5% of mothers knew fewer than three neonatal danger signs. Fever (74.9%) was determined as the most common danger sign accepted by mothers after birth, and neonatal danger signs were reported as difficulty breathing (46.6%), poor sucking (40.1%), jaundice (35.3%), convulsions (11.1%), hypothermia (9.7%), and lethargy/unconsciousness (5.8%), respectively (12). In their study, Ekwochive et al. (2015) found that the rate of mothers/caregivers who knew three and more

of the nine danger signs recognized by the WHO was low (0.0-30.3%). In this study, cough, diarrhea, and excessive crying were revealed as the most perceived and experienced symptoms, apart from the WHO danger signs (6). Similar studies in the literature have found that mothers' knowledge of neonatal danger signs is low and the possibility of having good knowledge is associated with the mother's and father's education level, receiving prenatal and postnatal care, access to mass media, income level, the place of birth, and the source of information (5, 9, 13-16). Therefore, prenatal care should be encouraged, postnatal care should be followed up, mothers should be educated on neonatal danger signs, and community-based health information should be disseminated (1). The causes and management of neonatal deaths have been extensively researched and defined in the literature (17-19). However, mothers' knowledge of neonatal danger signs and influencing factors with equal importance have not been adequately studied. The present study was carried out to examine mothers' knowledge of neonatal danger signs. The study also revealed the relationship between the level of knowledge and sociodemographic variables.

Research questıons

1. What is the level of mothers' knowledge of danger signs in the neonatal period?
2. What are the factors affecting mothers' knowledge of danger signs in the neonatal period?

MATERIAL AND METHOD

Ethical Consideration

Prior to the study, the researcher obtained written permission from the Ethics Committee of Harran University (Date: 16.10.2023, Decision No: 2023/19/31). Institutional permission was obtained for the study. Before the study, the researcher informed the parents and received their consent.

Research Type

This is a descriptive study.

Study Sample/Participants

The study was conducted in a province in the southeast of Turkey. According to the power analysis performed in line with a similar study in the literature (14), the minimum sample size was determined as 210 mothers at a medium effect size, with an 80% power and 0.05 type error. The study was carried out with 214 mothers in total.

The criteria for inclusion in the sample were determined as volunteering to participate in the study, the absence of a defined mental illness, being at least literate, and having an infant younger than 12 months. The sample of this study consisted of mothers with infants between 0-12 months (9, 13, 20, 21), in line with the literature. Considering the

possibility of not remembering the symptoms in the neonatal period, mothers with infants over 12 months old were not included in the study. Mothers not meeting the inclusion criteria were excluded from the study.

Instruments

Mother information form: The mother information form consists of a total of 23 open-ended and multiple-choice questions about the mother's age, education level, employment status, marital status, family type, income status, and the number of children.

Neonatal danger signs form: This form is a questionnaire consisting of open-ended and multiple-choice questions prepared by the researchers in line with the literature (4, 6, 8-10). The first question included the nine neonatal danger signs determined by the World Health Organization (WHO). In the first question, mothers with children younger than 12 months were asked to list the neonatal danger signs that they regarded as serious health problems and that could potentially endanger a newborn's life. In addition to these symptoms, the most frequently reported signs/symptoms in the literature, such as excessive crying, vomiting, diarrhea, and cough, were also asked (6, 9, 10). The mothers were asked whether they experienced these symptoms and whether they sought help from the health institution after these symptoms. This form also included questions about the reasons for not applying to health institutions when they did not want help, the status of receiving education on neonatal danger signs/infant care and information resources, using social media/the internet, and finding them reliable.

Neonatal danger signs are danger signs recognized by the World Health Organization (WHO) in case of a serious illness or local infection (4). The "neonatal danger signs" recognized by the WHO have been reported as follows (4, 6, 8-10):

- Not feeding or stopping feeding since birth
- Convulsion
- Respiratory rate of 60 or higher (fast breathing)
- Severe chest indrawing (difficulty breathing)
- Fever (Temperature ≥ 37.5 degrees Celsius)
- Hypothermia (Temperature ≤ 35.5 degrees Celsius)
- Weakness or lethargy/drowsiness (Moving only when stimulated or not moving even when stimulated)
- Signs of jaundice
- Signs of local infection (Umbilical redness or pus discharge, boils on the skin or pus drainage from the eyes)

Information: It refers to the awareness level of mothers of neonatal danger signs. There are 13 danger signs to assess the mother's knowledge of neonatal danger signs. The knowledge score was calculated by giving a score of "1" for the "correct" answer given by the mothers to the danger signs form and "0" for the "wrong or I have no idea" answer. In this study, 13 danger signs were created

in line with the literature on danger signs (4, 6, 8-10). The total score varies between 0 and 13. By taking similar studies in the literature as a reference (14), the mothers' knowledge score was evaluated as "good" in those with equal or above the average total knowledge and as "poor" in those below the average. In this study, mothers who knew 6 and more symptoms were evaluated as having "good" knowledge.

Research Variables

In the present study, the mother's and infant's demographic data (mother's age, education level, father's education level, income status, etc.) are the independent variables of the study, and the neonatal danger signs knowledge score is the dependent variable.

Data Collection

The research data were collected between April 2022 and January 2023 in the hospital with a neonatal intensive care unit, neonatal clinics, and infant clinics using the "Mother Information Form" and "Neonatal Danger Signs Form." Mothers who had infants under 12 months of age were asked whether they knew and experienced danger signs/symptoms in the neonatal period and whether they sought help from the health institution after these symptoms. The research data were collected by the face-to-face interview method, and data collection lasted about 10 minutes.

Data Analysis

The data were evaluated with descriptive statistics and logistic regression analysis in the IBM SPSS V23 program. Number, percentage, mean, and standard deviation were used for the descriptive characteristics of the study participants. Logistic regression was used to determine the relationship between the knowledge of danger signs and demographic variables. The statistical significance level was accepted as $p < .05$.

RESULTS

Sociodemographic Characteristics of the Participants

Table 1 contains the participants' demographic data. The mothers' mean age was 27.48±5.96 (min 17-max 43), 34.1% were in the 17-24 age range, and 30.8% were illiterate. It was revealed that the mothers' mean number of children was 3.4±2.16 (min 1-max 11), 25.7% had five and more children, and 82.2% lived in extended families. Of the mothers, 65.9% received prenatal care.

The fathers' mean age was 32.78±9.57 (min 17-max 65), and 34.1% were 35 years old and older. The infants' mean age was 4.88±3.30 months, 58.9% were boys, 57% were born in the normal way, 58.9% were born as a result of a planned pregnancy, and 98.1% were born in a health institution. Of the infants, 24.8% were the mothers' first infants. **Table 1** contains other descriptive data.

Table 1. Distribution of the mother's and infant's demographic information (n=214).	Frequency (n)	Percentage (%)
Mother's Age		
17-24	73	34.1
25-29	53	24.8
30-34	46	21.5
35 and older	33	15.4
Mother's Education Level		
Illiterate	66	30.8
Primary education	124	57.9
High school and above	24	11.2
Mother's Employment Status		
Yes	15	7
No	199	93
Father's Age		
17-24	32	15
25-29	57	26.6
30-34	52	24.3
35 and older	73	34.1
Father's Education Level		
Illiterate	26	12.1
Primary education	135	63.1
High school	53	24.8
Income-Expense Status		
Good	27	12.6
Medium	146	68.2
Poor	41	19.2
Family Type		
Nuclear family	38	17.8
Extended family	176	82.2
Number of Children		
1	48	22.4
2	41	19.2
3	33	15.4
4	35	16.4
5 and more	55	25.7
Infant's sex		
Female	88	41.2
Male	126	58.9
Mode of delivery		
Vaginal delivery	122	57
Cesarean section	92	43
Infant's birth time		
Born preterm (preterm)	46	21.5
Born at term (term)	160	74.8
Born late (postterm)	8	3.7
Is the pregnancy planned?		
Yes	126	58.9
No	88	41.2
Is it the mother's first infant?		
Yes	53	24.8
No	161	75.2
Did the mother receive prenatal care?		
Yes	141	65.9
No	73	34.1
The presence of a person supporting the mother		
Yes	136	63.6
No	78	36.4
Did you receive education on danger signs?		
Yes	59	27.6
No	155	72.4
From whom did you receive the education?*		
Health worker	82	38.3
Family members	120	56.1
Social media	87	40.6
Others (neighbor, friend, etc.)	33	15.4

*More than one answer was given.

Mothers' Knowledge of Neonatal Danger Signs

Table 2 contains data on mothers' knowledge and experience of danger signs and taking their infants to the health institution. As danger signs, the mothers reported cough and diarrhea at the highest rate of 81.8%, high fever at 80.4%, vomiting and malnutrition at 79%. Excessive crying and low fever were reported at the lowest rate of 60.3%. Considering the danger signs experienced by the mothers in their infants, they experienced vomiting and high fever most frequently at 60.3%. High fever, cough, diarrhea, and vomiting were reported as the danger signs by the mothers at the highest rate as the reasons for applying to health institutions. **Table 2** contains results for other danger signs (**Table 2**).

The mean danger signs knowledge score of the mothers was found to be 9.78±3.41. It was evaluated that the knowledge of 88.3% was at a "good" level, while the knowledge of 11.7% was at a "low" level (**Table 3**).

Table 3. Mothers' knowledge of danger signs (n=214).		
Number of symptoms	n	%
2 symptoms	10	4.7
3 symptoms	8	3.7
4 symptoms	3	1.4
5 symptoms	4	1.9
6 and more symptoms	189	88.3
Total	214	100

Factors Associated with the Maternal Knowledge of Neonatal Danger Signs

In **Table 4**, the factors affecting the maternal knowledge of danger signs (high/low) were examined by binary logistic regression analysis. According to the analysis results, the variables of parental age, parental education level, family type, number of children, receiving education on danger signs, and the planned status of pregnancy did not affect maternal knowledge (p>0.05), but only the family's income status had a statistically significant effect (p<0.05).

DISCUSSION

This study determined that 81.3% of the mothers had a good level of knowledge of danger signs and their mean knowledge score was 9.78±3.41. The maternal knowledge level in the present research was found to be higher compared to some studies in the literature (5-7, 11, 12, 22). The meta-analysis by Demis et al. (2020) reported that there was no standard in the studies in the literature for determining the knowledge level of mothers and the knowledge level was evaluated according to the knowledge of at least 1-6 symptoms. In this study, the knowledge of 6 and more symptoms, which is the average of the total number of symptoms, was evaluated as "good." From this point of view, it

Table 2. Distribution of neonatal danger signs (n=214).

Danger Sign	Knowledge		Experience		Presenting to a health institution	
	n	%	n	%	n	%
The inability to feed since birth or stopping feeding	169	79.0	74	34.6	56	26.2
Seizures/Convulsion	160	74.8	28	13.1	26	12.1
Fast breathing (respiratory rate of 60 or higher)	160	74.8	68	31.8	59	27.6
Severe chest indrawing (difficulty breathing)	163	76.2	90	42,1	76	35.5
Fever (temperature ≥ 37.5 degrees)	172	80.4	129	60.3	115	53.7
Low fever (temperature ≤ 35.5 degrees)	129	60.3	35	16.4	24	11.2
Weakness/immobility or lethargy/drowsiness (Moving only when stimulated or not moving even when stimulated)	159	74.3	53	24.8	36	16.8
Jaundice	167	78.0	83	38.8	68	31.8
Umbilical redness or pus drainage, boils on the skin or pus drainage from the eyes	165	77.1	57	26.6	47	22
Diarrhea	175	81.8	125	58.4	107	50
Excessive crying	129	60.3	108	50.5	63	29.4
Vomiting	169	79.0	129	60.3	106	49.5
Cough	175	81.8	151	70.6	131	61.2

*More than 1 answer was given to this question by the mothers.

Table 4. Logistic regression results.

	Good	Poor	Multivariate (Enter)1	
	n (%)	n (%)	OR (95% CI)	p
Mother's age				
17-24 years	62 (32.8)	11 (44)	1	
25-29 years	47 (24.9)	6 (24)	0.218 (0.014 – 3.295)	0.271
30-34 years	39 (20.6)	7 (28)	0.234 (0.018 – 3.124)	0.272
35 years and older	32 (16.9)	1 (4)	0.128 (0.012 – 1.331)	0.085
Mother's education level				
Illiterate	57 (30.2)	9 (36.0)	1	
Primary education	110 (58.2)	14 (56.0)	1.964 (0.631- 6.110)	0.244
High school and above	22 (11.6)	2 (8.0)	3.734 (0.521- 26.764)	0.190
Father's age				
17-24 years	25 (13.2)	7 (28.0)	1	
25-29 years	50 (26.5)	7 (28.0)	2.578 (0.628 – 10.579)	0.189
30-34 years	47 (24.9)	5 (20.0)	2.469 (0.442 – 13.791)	0.303
35 years and more	67 (35.4)	6 (24.0)	2.154 (0.335 – 13.870)	0.419
Father's education level				
Illiterate	24 (12.7)	2 (8.0)	1	
Primary education	119 (63.0)	16 (64.0)	0.380 (0.61 – 2.350)	0.298
High school and above	46 (24.3)	7 (28.0)	0.301 (0.037 – 2.433)	0.260
Family type				
Nuclear family	31 (16.4)	7 (28.0)	1	
Extended family	158 (83.6)	18 (72.0)	2.596 (0.759 – 8.881)	0.129
Income status				
Good	20 (10.6)	6 (24.0)	1	
Medium	132 (69.8)	14 (56.0)	4.103 (1.200 – 14.034)	0.024*
Poor	36 (19.0)	5 (20.0)	2.357 (0.551 – 10.868)	0.272
Number of children				
1	40 (21.2)	8 (32.0)	1	
2	36 (19.0)	5 (20.0)	1.212 (0.302 – 4.859)	0.786
3	29 (15.3)	4 (16.0)	0.992 (0.200 – 4.917)	0.992
4	31 (16.4)	4 (16.0)	1.122 (0.184 – 6.832)	0.901
5 and more	52 (27.5)	3 (12.0)	1.553 (0.213 – 11.349)	0.664
Receiving education				
Yes	50 (26.5)	9 (36.0)	1	
No	139 (73.5)	16 (64.0)	1.224 (0.436 – 3.431)	0.701
Is the pregnancy planned?				
Yes	111 (58.7)	15 (60.0)	1	
No	77 (40.7)	10 (40.0)	1.22 (0.421 – 3.533)	0.714
Constant			3.082	0.535

Cox&Snell R2=0.78; Nagelkerke R2=0.151; Hosmer and Lemeshow Chi-Square=3.553, p=0.895; Accuracy= 88.1%, *p<0.05

can be said that the knowledge level of mothers was quite high (16). Similar to this study, a study evaluating the knowledge of mothers according to six and more danger signs reported that 11.7% of mothers had good knowledge (14). A study from Iraq determined that 81% of mothers (8) and another study reported that 15.5% of mothers (12) knew three and more danger signs. A study from Saudi Arabia indicated that 37% of mothers (4) knew three and more danger signs. This study found mothers' knowledge of neonatal danger signs to be quite high, unlike studies in the literature, which is thought to be associated with the health services provided in the place where the study was conducted and the countries' conditions.

As danger signs, the mothers reported cough and diarrhea at the highest rate of 81.8%, high fever at 80.4%, vomiting and malnutrition at 79%. Excessive crying and low fever were reported at the lowest rate of 60.3% (**Table 2**). The results of this study are similar to the findings of some studies in the literature. High fever is the danger sign known at the highest rate in most studies (5, 8, 11, 12, 14, 23). The study conducted by Berhane et al. (2018) with 422 mothers/caregivers in Ethiopia reported that mothers knew high fever (74.3%), diarrhea (68.3%), vomiting (60.5%), and feeding difficulty (49.8%) at the highest rate among the 13 symptoms asked and knew jaundice, local infection, altered state of consciousness and convulsions at the lowest rate, and 65.3% had insufficient knowledge (5). Another study by Bulto et al. (2019) revealed that only 20.3% of mothers had good knowledge and indicated fever, feeding difficulty, and respiratory distress at the highest rate among the danger signs (11). In the study by Abdulrida et al. (2018), fever, feeding difficulty, and jaundice were determined as symptoms known at the highest rate, while hypothermia and local infection symptoms were found at the lowest rate (8). The study by Degefa et al. (2019) indicated that 40.9% of mothers had good knowledge of the danger signs and fever (33%) was known at the highest rate (9). In the study by Awasti et al. (2006), more than 50% of mothers defined fever, irritability, abdominal distention, slow breathing, and diarrhea as danger signs at the highest rate (23). The meta-analysis by Demis et al. (2020) examining studies on danger signs reported that 40.7% of mothers had sufficient knowledge and this rate was quite low (16). A study from Nigeria indicated that mothers' knowledge of three and more neonatal danger signs was 30.3% and their knowledge was insufficient, and fever was known at the highest rate of 95.2% (6).

Influencing Factors

In this study, considering the effects of the variables related to the mother, father, and infant on mothers' knowledge score, no significant difference was found as a result of the analysis, except for the income status (**Table 4**). The study by Jemberia et al. reported that

maternal age, marital status, education level of parents, and receiving information about danger signs affected the status (14). The study by Kibaru et al. (2016) indicated that maternal education and receiving education on danger signs affected the condition significantly (12). The study by Bulto et al. (2019) stated that mothers' knowledge score was significantly affected by the mother's education level, status of receiving postpartum education/consultancy on neonatal care, and status of experiencing danger signs in the infant, but it was not affected by the mother's place of birth and place of residence (11). Upon examining the factors affecting the knowledge level of mothers about danger signs, it was reported that the education level of parents, their occupation, income status, and the follow-up status in the health center significantly affected the knowledge, while the mother's age, family size, and the marital status of the mother did not affect it (5). In their study, Ekwochi et al. (2015) reported that the mother's sociodemographic characteristics did not affect the knowledge status (6). Degefa et al. (2019) indicated that maternal education status and participation in postnatal care significantly affected the knowledge level. The education level of those with secondary school education was found to be 5.6 units higher than those without education, and 2.6 units higher in those who participated in postnatal care than those who did not (9). Another study revealed that the mother's knowledge was affected by her education level, occupation, and visits to the antenatal care unit, whereas it was not affected by the number of children and the presence of people supporting the mother (8). The study by Prajapati et al. (2016) stated that maternal age and obtaining information about danger signs did not affect the status (7). The meta-analysis examining 14 studies to determine danger signs and influencing factors of mothers reported that the high education level of parents, the access to the media, the number of receiving prenatal care, giving birth in health institutions, and the postnatal follow-up status significantly affected the knowledge of mothers (16).

What do Mothers do in Case of a Danger Sign?

The studies examined mothers' status of taking their infants to health institutions when they experienced danger signs. This study found the rate of presenting to a health institution as low despite the high rate of mothers experiencing symptoms. However, the study also found that mothers most commonly presented to health facilities with symptoms of umbilical redness or pus drainage, boils on the skin or pus discharge from the eyes, vomiting and fever (**Table 2**). Bulto et al. reported that 60.5% of mothers immediately took their infants to a health institution in case of a danger sign, whereas another study (23) indicated that traditional practices were applied. The study conducted by Ekwochi et al. in 2015 stated that 47.7% of mothers took their infants to

the hospital, but 23% preferred home care (6). A study from Iraq reported that 71.7% of mothers preferred to present to the hospital (8). Although mothers experience danger signs, the rate of presenting to health institutions is lower. This is thought to be related to mothers' insufficient knowledge about what to do in the face of danger signs. This study, it is thought that mothers consulted to health institutions more frequently with the symptom of fever compared to other danger signs due to the easy recognition of fever in children, its frequent occurrence and the knowledge of convulsions caused by fever.

CONCLUSION

This study found mothers' knowledge of neonatal danger signs to be quite high, unlike studies in the literature, which is thought to be associated with the health services provided in the place where the study was conducted and the countries' conditions. In most studies, high fever is the most easily recognized danger sign by mothers. This result may be related to the fact that fever is more common in children than other danger signs, the convulsion that will be caused by fever is known, or the presence of fever is easier to understand. Although mothers experience danger signs, the rate of presenting to health institutions is lower. This may explain the insufficient maternal knowledge of what to do in case of danger signs. Like most studies in the literature, this study found no relationship between maternal knowledge and variables such as parental age, education level, number of children, receiving prenatal care, family type, etc., but there was a relationship only with income status.

Based on the results of this study, it is recommended to inform mothers about neonatal danger signs and the practices to be done in every situation (monitoring, follow-up, treatment, control, etc.) encountered by mothers with childbirth. The mother's awareness and knowledge and the early diagnosis of problems and early intervention are important because they positively affect neonatal health.

ETHICAL DECLARATIONS

Ethics Committee Approval: Prior to the study, the researcher obtained written permission from the Ethics Committee of Harran University (Date: 16.10.2023, Decision No: 2023/19/31).

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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ORIGINAL ARTICLE
ORİJİNAL ARAŞTIRMA

Effects Of Magnesium Oxide Treatment On Serum Electrolyte Levels In Constipated Children

Konstipasyonlu Çocuklarda Magnezyum Oksit Tedavisinin Serum Elektrolit Düzeyleri Üzerine Etkileri

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ABSTRACT

Aim: Magnesium oxide (MgO) is a standard treatment for functional constipation. However, this medication has not been evaluated extensively for possible alterations of plasma magnesium (Mg) levels and other electrolytes. This retrospective study aimed to appraise the effects of serum magnesium with some other electrolyte levels after oral MgO treatment in children with functional constipation.

Material and Method: After the approval of the local ethical committee, archives of the patients who had been admitted to two different Pediatric Surgery outpatient clinics in different cities between 2014-2018 were evaluated. The demographic findings of the patients were recorded. For the diagnosis of chronic constipation, Rome-III classification criteria were used. After complete physical examinations, if there were no possible organic reasons other than chronic dietary problems, serum electrolyte levels were obtained and evaluated. Findings were evaluated statistically and discussed with the literature.

Result: The magnesium value was significantly higher in the constipation group (p<0.05) compared to the control group. In generalized linear models (GLM) results, the effects of calcium, potassium, and sodium levels on serum magnesium levels were significant (p<0.05). The effect of calcium and potassium levels on serum magnesium was statistically significant in the constipation group (p<0.05). In the control group, only the effect of chlorine level on serum magnesium was statistically significant (p<0.05).

Conclusion: MgO is a valuable treatment for constipation. However, especially by taking into account the dose adjustment, close follow-up of the patients for side effects is necessary to prevent patients from electrolyte imbalance.

Keywords: Constipation, magnesium, magnesium oxide, electrolyte

ÖZ

Amaç: Magnezyum oksit (MgO) fonksiyonel kabızlık için standart bir tedavidir. Ancak bu ilaç, plazma magnezyum (Mg) düzeyleri ve diğer elektrolitlerdeki olası değişiklikler açısından kapsamlı bir şekilde değerlendirilmemiştir. Bu retrospektif çalışma, fonksiyonel kabızlığı olan çocuklarda oral MgO tedavisi sonrası serum magnezyumunun diğer bazı elektrolit düzeyleriyle birlikte etkilerini değerlendirmeyi amaçladık.

Gereç ve Yöntem: Yerel etik kurul onayı alındıktan sonra 2014-2018 yılları arasında farklı şehirlerdeki iki farklı Çocuk Cerrahisi polikliniğine başvuran hastaların arşivleri değerlendirildi. Hastaların demografik bulguları kaydedildi. Kronik kabızlığın tanısı için Roma-III sınıflandırma kriterleri kullanıldı. Tam fizik muayene sonrasında kronik beslenme sorunları dışında olası organik nedenler yoksa serum elektrolit düzeyleri elde edilerek değerlendirildi. Bulgular istatistiksel olarak değerlendirildi ve literatürle tartışıldı.

Bulgular: Konstipasyon grubunda magnezyum değeri kontrol grubuna göre anlamlı derecede yüksekti (p<0,05). Genelleştirilmiş doğrusal model (GLM) sonuçlarında kalsiyum, potasyum ve sodyum düzeylerinin serum magnezyum düzeylerine etkisi anlamlıydı (p<0,05). Kabızlık grubunda kalsiyum ve potasyum düzeylerinin serum magnezyumu üzerindeki etkisi istatistiksel olarak anlamlıydı (p<0,05). Kontrol grubunda ise sadece klor düzeyinin serum magnezyumu üzerindeki etkisi istatistiksel olarak anlamlıydı (p<0,05).

Sonuç: MgO kabızlık için değerli bir tedavi yöntemidir. Ancak özellikle doz ayarlaması dikkate alınarak hastaların elektrolit dengesizliğinin önlenmesi için yan etkiler açısından yakın takip edilmesi gerekmektedir.

Anahtar Kelimeler: Kabızlık, magnezyum, magnezyum oksit, elektrolit

INTRODUCTION

Constipation is a condition that can occur at any age, generally thought to be due to habitual dietary reasons. Ninety-five percent of constipations seen in childhood are functional (1-7). Functional constipation, occasionally, does not have distinctive signs and/or symptoms (8,9). Nevertheless, as defined in the literature, constipation was assumed to be an essential reason for magnesium deficiency in the body. As a result, magnesium-replaced treatments were installed in constipation treatments (10-12).

Magnesium Oxide (MgO) is one of the most used medications to treat constipation (8,13-17). The recommended dose for this purpose is 0.03 g MgO per kilogram daily (15).

In the stomach's acidic environment, MgO is converted to magnesium chloride $(MgCl2)$. After several subsequent reactions, it undergoes pancreatic secretion in the duodenum as magnesium carbonate $(MgCO3)$ (13). $MgCO3$ increases the osmotic pressure of the intestinal lumen fluid, which provides water diffusion to the intestinal lumen, increasing both the water content and volume of the stool. Increased volume stimulates the intestinal wall activating intestinal motility (18). When duodenal secretion in the duodenum interacts with MgO, side effects may be seen, especially in patients with intestinal disorders. In addition, since the use of MgO has consequences, such as effects on smooth muscle cells, it will be necessary to remember the effects of hypermagnesemia reflected in the clinic. Therefore, monitoring changes in serum Mg levels may be clinically necessary.

MgO studies encountered in the literature are mainly in the direction of the clinical effects of magnesium, especially its effects on kidney functions (14, 19). Although there are studies examining the severe side effects of magnesium, the effect of MgO treatment on serum magnesium correlation among magnesium and other electrolytes for constipation has been investigated insufficiently. This study aimed to evaluate the in vivo effects of magnesium oxide (MgO) treatment on serum magnesium and electrolyte levels in children with functional constipation.

MATERIAL AND METHOD

Ethics committee approval (2017-KAEK-189_2018.07.11_09) was obtained from Yozgat Bozok University Clinical Research Ethics Committee in accordance with the Declaration of Helsinki. The files of constipation patients who applied to Yozgat Bozok University Research and Practice Hospital Pediatric Surgery Clinic and Hitit University Pediatric Surgery Clinic between 2014-2018 were retrospectively analyzed. Patients with chronic constipation who received 1-2 g

of MgO per dose 3 times daily for one week or longer according to the Rome III classification were included in the study. Phosphorus (P), sodium (Na), potassium (K), chlorine (Cl) and magnesium (Mg), and calcium (Ca) were evaluated in all (n=128) patients.

The control group (n=74), aged between 0 and 18 years, was randomly selected among the patients who applied to the Pediatric Surgery outpatient clinics between July 2016 and January 2018 for inguinal hernia and hydrocele and had no history of constipation. The patients' files were reviewed retrospectively, and the data were transferred to SPSS 17.0. Those with chronic kidney diseases, congenital heart diseases, endocrine disease-related electrolyte balance, bowel resection, short bowel syndrome, and Hirschsprung's disease were excluded from the study.

Nominal and ordinal parameters of the research were described with frequency analysis, whereas scale parameters were described with means and standard deviations. Kolmogorov Smirnov Test was used for the normality of scale parameters. Mann Whitney U test was used for non-normally distributed parameters, whereas the Independent Samples T-Test was used for normally distributed parameters. Fischer's Exact Test was used for differences between categorical parameters. Spearman's rho correlation was used for relational analysis at the univariate level, and Generalized Linear Model (GLM) was used for the multivariate level. All analyses were performed at SPSS 17.0 for windows at a 95% Confidence Interval with a 0,05 alpha significance level.

RESULTS

Age, gender, phosphorus, calcium, chlorine, potassium, and sodium levels between constipation and control groups were not statistically significant (p>0.05). The magnesium value was significantly higher in the constipation group (p<0.05). These distributions are shown in **Table 1**.

Table 1. Age, gender and electrolyte levels of patient groups			
	Control (n=74)	**Constipation (n=128)**	**p**
Age	8.80±4.53	9.11±4.59	0.653a
Gender, n (%)			
Male	36 (48.6)	61 (47.7)	0.504b
Female	38 (51.4)	67 (52.3)	
Phosphorus	4.41±0.60	4.52±0.76	0.267c
Glucose	96.64±10.80	94.28±14.30	0.149a
Calcium	9.35±0.47	9.37±0.54	0.798c
Chlorine	105.93±2.87	105.98±3.11	0.906c
Creatinin	0.57±0.11	0.57±0.11	0.775c
Magnesium	1.92±0.17	2.00±0.22	0.010a
Potassium	4.19±0.37	4.20±0.42	0.972c
Sodium	137.86±1.34	137.52±2.02	0.291a
a. Mann Whitney U test, b. Fischer's Exact Test, c. Independent Samples T-Test.			

The mean value and the range of change of serum magnesium were higher in the constipation group (p<0.05). The serum magnesium level distribution in the constipation group was more scattered (**Figure 1**).
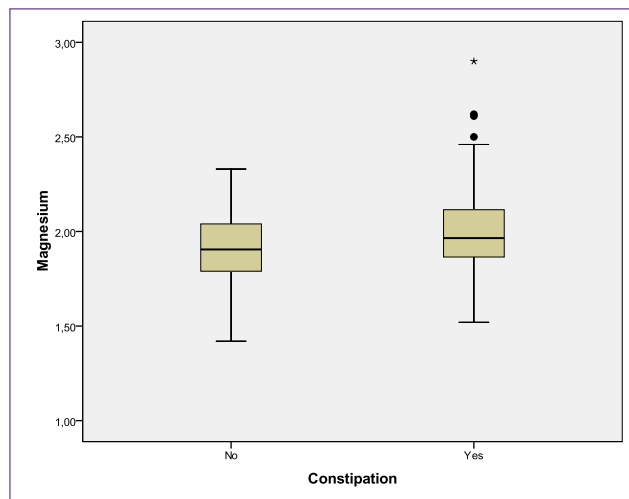

Figure 1. Serum magnesium level differences and ranges for patient groups

There was a statistical significance and positive correlation between serum magnesium and calcium (r=0.351; p<0.01) and potassium (r=0.224; p<0.05) in the constipation group. In the whole sample, serum magnesium (r=0.162; p<0.05), calcium (r=0.296; p<0.01), potassium (r=0.151; p<0.05), sodium (r=0.161; p<0.05), and There was a statistically significant and

positive correlation between constipation (r=0.182; p<0.05) (**Table 2**).

Table 2. Spearman's rho correlation between serum magnesium levels and research parameters			
	Control (n=74) (r)	Constipation (n=128) (r)	Total (n=202) (r)
Age	0.156	-0.098	-0.005
Gender	-0.091	-0.028	-0.049
Phosphorus	0.039	0.163	0.130
Glucose	-0.101	0.009	-0.049
Calcium	0.191	0.351**	0.296**
Chlorine	-0.282*	0.146	-0.001
Creatinin	-0.018	-0.009	-0.030
Potassium	0.052	0.224*	0.151*
Sodium	0.243*	0.162	0.161*
Constipation	-	-	0.182**
*p<0.05 **p<0.01			

According to the GLM results, the positive effects of constipation, calcium, potassium, and sodium levels on serum magnesium levels were statistically significant (p<0.05). This means that increased constipation, calcium, potassium, and sodium levels cause an increase in serum magnesium levels. In the constipation group, the contribution of calcium and potassium levels to serum magnesium was statistically significant (p<0.05). Only the contribution of chlorine level on serum magnesium was statistically significant in the control group (p<0.05) (**Table 3**).

Table 3. Generalized Linear Model for effects of significant factors on magnesium level						
Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test	p
			Lower	Upper	Wald Chi-Square	
All samples (n=202)						
(Intercept)	-1.487	1.0676	-3.579	0.606	1.940	0.164
[Constipation=No]	-0.087	0.0281	-0.142	-0.032	9.719	0.002
[Constipation=Yes]	0[a]	.	.	.	.	.
Calcium	0.085	0.0269	0.032	0.138	9.960	0.002
Potassium	0.073	0.0345	0.005	0.140	4.476	0.034
Sodium	0.017	0.0078	0.001	0.032	4.571	0.033
(Scale)	0.037[b]	0.0036	0.030	0.044		
Likelihood Ratio Chi-Square: 36.258; p<0.001						
Constipation (n=128)						
(Intercept)	0.603	0.3417	-0.067	1.272	3.112	0.078
Calcium	0.094	0.0348	0.026	0.162	7.331	0.007
Potassium	0.123	0.0446	0.036	0.211	7.668	0.006
(Scale)	0.043[a]	0.0054	0.034	0.055		
Likelihood Ratio Chi-Square: 17.559; p<0.001						
Control (n=74)						
(Intercept)	0.572	2.2526	-3.843	4.987	.065	0.799
Sodium	0.020	0.0145	-0.008	0.049	1.980	0.159
Chlorine	-0.014	0.0068	-0.027	0.000	4.191	0.041
(Scale)	0.026[a]	0.0043	0.019	0.036		
Likelihood Ratio Chi-Square: 7.279; p<0.05						
a. Reference category, b. Maximum likelihood ratio.						

DISCUSSION

Magnesium is the fourth most abundant mineral in the body, and it is a cofactor of over 300 enzymatic reactions (12). Clinically, approximately 0.3% of body magnesium level is found in plasma. Therefore, measuring the plasma magnesium level is insufficient to show the whole magnesium level in the body (20).

There are some clinical situations that magnesium-consisting treatments are performed, such as constipation. It is known that the therapeutic effect of MgO in constipation is to increase the osmotic pressure in the intestinal lumen and to ensure water transfer to the intestinal lumen. Consequently, the liquid content and the increased stool volume stimulate the intestinal wall and run the impulsive motor activity (13).

Although some studies have shown the side effects and negative aspects of magnesium treatment, MgO is still widely preferred in the treatment of constipation today. In addition, as Dupont and Hebert reported, compounds such as magnesium-rich mineral water are also used to treat constipation (21).

Mori et al. evaluated the use of traditionally-used magnesium oxide compounds for laxative purposes in Central Asia had severe side effects, especially in patients with kidney failure, in addition to its advantages in constipation (13). Therefore, there is a possibility of aggravation of renal or intestinal disorders with MgO as a side effect after constipation treatment.

Laxatives containing magnesium are widely used to treat constipation (16, 17). Although rare, iatrogenic hypermagnesemia with these laxatives has also been reported in the literature (22, 23). In addition, although MgO is generally used as a laxative, its effects on serum magnesium levels have yet to be adequately studied.

Tatsuki et al. reported the serum magnesium level as 2.4 mg/dL in MgO-treated constipation patients aged 1 to 14 years (19). In our study, the mean magnesium of the control group was 1.92 mg/dL, and the mean of the constipation group was 2.00 mg/dL. The difference between the groups was statistically significant. This result reveals the increase in magnesium levels after MgO usage for constipation. Secondly, our study shows that other electrolyte levels were not affected after MgO usage, even in various gender and age factors.

On the other hand, Generalized Linear Model (GLM) results showed that the effects of sodium, potassium, and calcium levels on serum magnesium levels significantly differ in all constipated patients. Calcium was the most influential factor in constipation among these electrolytes. These findings show that the relationship between serum magnesium level and calcium and potassium in the constipation group is significant compared to normal individuals.

Calcium (Ca), magnesium (Mg), phosphorus (P), and magnesium (Mg) are necessary nutrients for cellular energy metabolism and human bone growth. Ca, Mg, and P are essential for bone health and enhancing cardiac, pulmonary, and neurological function (24, 25). It has long been reported that in humans, hypomagnesemia frequently coexists with hypocalcemia and that calcium intake influences the retention of magnesium and vice versa. All living cells depend on complex interactions between magnesium and calcium, some of which are relatively primitive on the evolutionary scale (26).

In several experimental, clinical, and observational investigations, micronutrients like calcium, magnesium, and potassium have been studied for their individual effects on high blood pressure (27). There is minimal research on how dietary sodium in combination with calcium and magnesium consumption affects (28-30). However, there has yet to be research the relationship between calcium, magnesium, and potassium in constipation patients with a direct comparison nature research design. This increases the originality of our results.

This study retrospectively examined the relationship between the use of MgO and other electrolytes in treating functional constipation in children. Although using MgO as a laxative is common, it can disrupt the electrolyte balance in the body at both univariate and multivariate levels and cause unwanted complications. We thought that the research makes an essential contribution to the literature, and we firmly believe that expanded or repeated studies will support the findings in this study.

Study Limitations

One of the most critical limitations of the study is that it is not prospective. Results from the study can be generalized with multicenter and prospective studies on functional constipation.

CONCLUSION

Using MgO in treating constipation is beneficial, especially considering dose adjustment and other electrolyte balances. In addition, it would be appropriate to follow up with the patients closely regarding side effects.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of Yozgat Bozok University Clinical Researches Ethics Committee (Decision No: 2017-KAEK-189_2018.07.11_09).

Informed Consent: All patients signed the free and informed consent form.

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ORIGINAL ARTICLE
ORİJİNAL ARAŞTIRMA

The Relationship Between Newly Derived Inflammatory Biomarkers from Hemogram and Serum Vitamin D Concentration in Pediatric Intensive Care Patients

Çocuk Yoğun Bakım Hastalarında Serum D Vitamini Konsantrasyonu ile Hemogramdan Türetilmiş Yeni İnflamatuar Biyobelirteçler Arasındaki İlişki

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ABSTRACT

Aim: Besides classical disorders of bone metabolism, vitamin D may explain the pathogenesis of many diseases associated with inflammation and vitamin D deficiency. Novel Hemogram-Derived Inflammatory Biomarkers are new and inexpensive markers of inflammation that can be tested in all centers. The aim of this study is to investigate the relationship between 25-hydroxyvitamin D (25(OH)D) and new inflammatory markers and inflammation.

Material and Method: This study was conducted prospectively and data from 77 patients treated in the Pediatric Intensive Care Unit were included. Simultaneous 25(OH)D3, calcium, phosphorus and complete blood count results were recorded. Novel hemogram-derived inflammatory biomarkers, systemic inflammatory response index (SIRI) and systemic immune inflammatory index (SII), were calculated.

Results: New inflammatory biomarkers derived from hemogram, SII [627552.63 (6000-13572000)-999304.35 (21432.43-18600000)] and SIRI [2013.51 (35-22789.37)-1671.75 (39.25-36000)], did not show statistically significant differences between groups with and without vitamin D deficiency (p>0.05 for all).

Conclusion: Our study did not reveal a statistical association between these inexpensive and universally available biomarkers and vitamin D levels and inflammation. The validity of the findings should be confirmed with a larger number of subjects.

Keywords: Vitamin D, inflammation, pediatric intensive care, systemic inflammatory index, systemic inflammatory response index

ÖZ

Amaç: Klasik kemik metabolizması bozukluklarının yanı sıra D vitamini, inflamasyon ve D vitamini eksikliği ile ilişkili birçok hastalığın patogenezini açıklayabilir. Hemogramdan Türetilmiş Yeni İnflamatuar Biyobelirteçler, tüm merkezlerde çalışılabilecek yeni ve ucuz inflamasyon belirteçleridir. Bu çalışmanın amacı, 25-hidroksi D vitamini (25(OH)D) ile yeni inflamatuar belirteçler ile inflamasyon arasındaki ilişkiyi araştırmaktır.

Gereç ve Yöntem: Bu çalışma prospektif olarak yürütüldü ve Çocuk Yoğun bakım Ünitesinde tedavi gören 77 hastanın verileri dahil edildi. Eş zamanlı çalışılan 25(OH)D3, kalsiyum, fosfor ve tam kan sayımı sonuçları kaydedildi. Hemogramdan türetilmiş yeni inflamatuar biyobelirteçler, sistemik inflamatuar yanıt indeksi (SIRI) ve sistemik immün inflamatuar indeks (SII) hesaplandı.

Bulgular: D vitamini eksikliği olan ve olmayan gruplar arasında hemogramdan türetilmiş yeni inflamatuar biyobelirteçler SII [627552,63 (6000-13572000)-999304,35 (21432,43-18600000) ve SIRI [2013,51 35-22789,37)-1671,75 (39,25-36000)] açısından istatistiksel olarak anlamlı fark bulunmadı (tümü için p>0,05).

Sonuç: Çalışmamız, bu ucuz ve evrensel olarak bulunabilen biyobelirteçler ile D vitamini düzeyleri ve inflamasyon arasında istatistiksel bir ilişki varlığını ortaya koymamıştır. Daha fazla sayıda denek ile bulguların geçerliği doğrulanmalıdır.

Anahtar Kelimeler: D vitamini, inflamasyon, çocuk yoğun bakım, sistemik inflamatuar indeks, sistemik inflamatuar yanıt indeksi

INTRODUCTION

The prevalence of vitamin D deficiency is increasingly becoming a significant public health issue. (1) The effects of vitamin D on bone and calcium metabolism are well-known by everyone. However, numerous studies have indicated that vitamin D deficiency contributes to the development, increased risks, and worsening of various diseases. (2-5) Some clinical trials have revealed that vitamin D plays a crucial role in modulating innate immune responses against various pathogens. (6) Furthermore, recent research has associated vitamin D with a range of diseases such as inflammation, depression (7), cardiovascular disease (8), diabetes (9), autoimmune diseases (10), and cancer (11). It has also been demonstrated that vitamin D may regulate adaptive immune responses. (12)

Inflammation is characterized by the detection of high concentrations of inflammatory biomarkers in circulation and plays a role in the pathophysiology of many chronic diseases and various infections. (13) During inflammation, the activation of toll-like receptors and various cytokines such as IFN-γ can upregulate vitamin D binding receptors in macrophages, thereby promoting a rapid conversion from 25(OH)D to 1,25(OH)2D. Other cytokines like IL-4, on the other hand, can induce the catabolism of 25(OH)D into the inactive metabolite 24,25-dihydroxycholecalciferol (24,25(OH)2D) (13). Furthermore, some studies also suggest that chronic inflammation and chronic infections may alter the concentration of 25(OH)D. (13)

The relationship between vitamin D and proinflammatory markers such as soluble tumor necrosis factor-alpha (TNF-a), C-reactive protein (CRP), interleukin (IL)-6, IL-10, has been demonstrated. (14-17) Due to the high cost of these tests, they are not routinely performed in many centers and are not even available in developing countries. In this situation, researchers find it more accessible to investigate the relationship between vitamin D levels and inflammation using inflammatory markers derived from easily measurable, repeatable, and inexpensive hematologic parameters such as neutrophil-to-lymphocyte ratio (NLR) (17,18), platelet-to-lymphocyte ratio (PLR) (17,18), platelet distribution width (PDW) (19), and red cell distribution width (RDW). (18,21,22)

The statistical relationship between neutrophil-to-lymphocyte ratio and infectious diseases, malignancies, cardiovascular diseases, metabolic syndrome, end-stage kidney disease, and other various inflammatory conditions has been demonstrated (5, 22-24) [28-38]. Additionally, similar relationships have been observed for platelet-neutrophil ratio (18, 25).

New biomarkers derived from hemogram, such as the systemic inflammatory response index (SIRI) and systemic immune-inflammation index (SII), which utilize three cell lines (neutrophil, lymphocyte, and platelet), have been investigated not only in determining the outcomes of neoplastic diseases but also in cardiological diseases, autoimmune neurological diseases, and some correlations have been identified (26-29).

Therefore, we aimed to investigate the relationship between vitamin D levels and parameters such as NLR, PLR, LMR, SII, and SIRI, which are considered inexpensive and easily accessible systemic inflammation markers, in individuals under 18 years of age receiving treatment in the pediatric intensive care unit.

MATERIAL AND METHOD

Our study was a prospective study conducted between November 1, 2018, and September 30, 2019, at the Department of Pediatrics, Selçuk University Faculty of Medicine, Pediatric Intensive care Unit (PICU), involving 80 patients aged between 1 month and 18 years. The patient group consisted of children admitted to the PICU who were planned for diagnosis, treatment, and follow-up for at least 1 day, with no diagnosis of rickets or any known pathology in calcium/phosphorus metabolism. Patients with multiple admissions during the study period were included as separate cases.

Demographic data of patients, admission diagnosis, presence of underlying diseases, duration of stay in the PICU and hospital, need for mechanical ventilation (MV) and vasopressors, PRISM-III and PELOD scores, 25(OH) Vit-D3, Ca, ionized Ca, P, ALP, magnesium (Mg), and albumin values were recorded.

Patient demographic and clinical data, including age, gender, body mass index (BMI) (kg/m2), underlying disease, reason for admission, season, and history of vitamin D supplementation, were recorded at the time of admission to the PICU. Laboratory variables obtained within the first 24 hours of hospitalization, including total calcium, ionized calcium, phosphate, magnesium, and 25(OH)D serum levels, were analyzed.

Patients with blood 25(OH)Vitamin D3 level ≤20 ng/mL were defined as having vitamin D deficiency (30). Patients were divided into two groups based on their 25(OH)Vitamin D3 levels. Forty patients with 25(OH) Vitamin D3 levels ≤20 ng/mL were labeled as "Group-1," while 37 patients with 25(OH)Vitamin D3 levels >20 ng/mL were labeled as "Group-2."

To calculate patients' mortality and morbidity, the Pediatric Risk of Mortality III (PRISM-III) scoring system, which is the most used scoring system for patients in pediatric intensive care, was utilized. Variables used to measure disease severity include the Pediatric Risk of Mortality III (PRISM III) score, catecholamine requirements, mechanical ventilation, length of stay (LOS) in the PICU, and mortality.

In our study, clinical and laboratory investigations were used to diagnose sepsis. The diagnosis of sepsis was made based on clinical evidence of systemic inflammatory response syndrome (SIRS) and/or the presence of microorganisms demonstrated microbiologically.

The NLR was simply calculated by dividing the neutrophil count by the lymphocyte count. Complete blood count analyses were performed on the Beckman Coulter LH 780 model automatic analyzer (Beckman Coulter Inc.; Brea, CA). The manufacturer's original kits were used for hemogram tests.

Blood samples were collected via cephalic venipuncture and analyzed in the hospital laboratory within two hours of collection. SII, defined as (neutrophil count) × (platelet count)/(lymphocyte count), and SIRI, defined as (neutrophil count) × (monocyte count)/(lymphocyte count), were calculated with data obtained from complete blood count reports measured using an automated system .

Serum vitamin D concentrations (1 ng/mL = 2.5 nmol/L) were assessed with the DiaSorin LIAISON® 25 OH Vitamin D TOTAL Assay (Stillwater, MN, USA). This chemiluminescence immunoassay (detection range 4-150 ng/mL, sensitivity 5.0% CV, SD of sensitivity 1.2% [67]) compares well with the Elecsys vitamin D Total Assay, which was previously approved for clinical use by Endocrine. It has the power of harmony.

The study protocol was submitted to Selçuk University Faculty of Medicine, Local Ethics Committee and approval was obtained (decision number: 2018/286).

Statistical analyzes of the study were evaluated as descriptive, univariate, and multivariate analysis methods. In these subsections, mean and standard deviation were used to present numerical data, and percentage values were used to present categorical data. Normal distribution criteria for numerical data were evaluated with the Kolmogorov-Smirnov test. For numerical variables with normal distribution, t-test was used, for numerical variables with non-normal distribution, Mann-Whitney U was used for two-group comparisons, and in the presence of more than two groups, Kruskall-Wallis non-parametric analysis of variance was applied. A two-way hypothesis structure and a 5% Type-1 error level were used in all statistical evaluations of the study. Analyzes were performed in SPSS 21 (IBM Corp. in Armonk, NY, USA) software.

RESULTS

A total of 77 children, 48 boys and 29 girls, were included in the study. The mean age of the patients was 54 ±64 months (median 16 months). We divided the patients into two groups according to 25(OH)D serum levels. 25 OH) D level was <=20 ng/ml in 40 (52%) patients and >20 ng/ml in 37 (48%) patients. Demographic characteristics and

laboratory results of these groups are given in Table 1 and 2. Ages were found to be significantly higher in vitamin D <=20 ng/ml groups (p < 0.001). There was no significant difference between vitamin D groups in terms of laboratory results (except calcium and vitamin D) (p>0.05 for all).

Table 1. Demographic characteristics of PICU patients

	Vitamin D insufficient	Vit D sufficient	p value
Age(months)	63.5 (2-207)	9 (1-216)	0.000
Gender			
Male	23	25	0.481
Female	17	12	
Weight (kilograms)	17.5 (4-90)	5.5 (2.6-60)	0.000
Height (cm)	99 (54-192)	62 (51-170)	0.000
PRISM III Score	16.51±7.24	16.26±8.53	0.886

PRISM III Score: Pediatric Risk of Mortality III score

Table 2. Vitamin D status, laboratory, and indices values in PICU patients

	Vitamin D insufficient	Vit D sufficient	p value
Calcium (mg/dL)	8.95 (6.1-10.8)	9.7 (7.1-10.7)	**0.005**
Hemoglobin (g/dL)	10.95 (5.5-16.7)	10.4 (7.1-16.6)	0.251
Platelet (cells/µL)	291500 (6000-645000)	356000 (39000-906000)	0.061
Neutrophil (cells/µL)	7750 (420-73630)	6500 (1300-22650)	0.939
Lymphocyte (cells/µL)	2400 (240-15950)	2900 (200-11100)	0.763
Monocyte (cells/µL)	790 (20-3500)	800 (80-2440)	0.951
CRP (mg/L)	9.34 (0.51-684)	5.05 (0.05-502)	0.126
Procalcitonin (ng/mL)	0.37 (0.03-47.52)	0.32 (0-100)	0.425
PLR	98.73 (6-538.57)	148.62 (3.51-1550)	0.078
NLR	2.37 (0.13-36)	2.39 (0.18-60)	0.980
MLR	0.27 (0.04-1.01)	0.3 (0.02-3)	0.541
LMR	3.75 (0.99-27.03)	3.3 (0.33-55.5)	0.541
SII	627552.63 (6000-13572000)	999304.35 (21432.43-18600000)	0.343
SIRI	2013.51 (35-22789.37)	1671.75 (39.25-36000)	0.911
Vitamin D (ng/mL)	10.67 (3-19.69)	34.36 (21.73-61.53)	**0.000**

NLR: neutrophil-to-lymphocyte ratio, PLR: platelet-to-lymphocyte ratio, LMR: lymphocyte -to- monocyte ratio, PDW: platelet distribution width, CRP: C reactive protein SII: systemic immune-inflammation index SIRI: systemic inflammatory response index

DISCUSSION

In our study, no significant relationship was found between 25(OH)D3 deficiency and CRP, NLR, PLR, MLR, LMR, SII and SIRI values. Although many publications in the literature show a relationship between 25(OH)D3 deficiency and inflammation, there is no definitive association (19, 32-34). Alrefai et al. reported that 25(OH)D3 levels decreased, and hs-CRP levels increased as disease activity increased

in 201 patients with Crohn's disease (32). Mathur et al. They revealed that CRP levels decreased in response to vitamin D supplementation in ulcerative colitis patients with vitamin D deficiency (33). In the study by Akbaş et al., which retrospectively examined 4120 patients with 25(OH)D3 deficiency, it was reported that there was a negative correlation between 25(OH)D3 deficiency and CRP, NLR and PLR values (19). They also stated that NLR and PLR, which are easily calculated, practical, reproducible, and affordable parameters, can be used as biomarkers for endothelial dysfunction as well as inflammation (19). In a study where hs-CRP and NRL levels were evaluated before and after vitamin D supplementation in 580 healthy adolescents in Iran, it was reported that hs-CRP and NRL levels decreased after vitamin D supplementation (35). According to the study, they said that NLR could be an inexpensive marker to reveal inflammatory processes in evaluating the relationship with vitamin D supplementation. In a study conducted on hemodialysis patients, it was reported that there was a significant relationship between 25(OH)D3 and NLR (36). In a study that included patients who applied to physical medicine and rehabilitation outpatient clinics with complaints of non-specific muscle or joint pain, a negative relationship was found between CRP and 25(OH)D3 levels, but no relationship was found between 25(OH)D3 and NLR and PLR values (18).

There are also studies reporting that there is no relationship between CRP and 25(OH)D3 deficiency (37, 38). In a study conducted on patients with and without chronic kidney disease, it was reported that there was no relationship between 25(OH)D3 and CRP, ESR and hemogram values (37). In their study investigating the relationship between factors underlying cardiovascular disease and 25(OH)D3, Kim et al. (38) reported that there was no connection between 25(OH)D3 and CRP and interleukin-6 (38). In our study, there was no relationship between both CRP and hemogram-derived inflammatory markers and vitamin D deficiency.

Thrombosis may develop due to platelet activation in response to the inflammatory condition. Chemokines secreted when platelets are activated play a role in the immune response by acting as acute phase reactants (39). It has been reported that platelets with higher MPV values are found in inflamed tissues. High MPV level has been found to be associated with various infections, cardiovascular and cerebrovascular diseases, thrombosis and diseases with low levels of inflammation (40, 41). Sobolewska et al. (8) evaluated MPV in the evaluation of subclinical inflammation and response to biological treatment in Crohn's patients, and stated that high MPV was a good marker predicting a good response to infliximab treatment (42).

In a study conducted on newborns, NLR values were found to be significantly higher in patients with vitamin D deficiency. A positive correlation was also found between the vitamin D status of the mother and the newborn. Neonatal NLR was negatively correlated with newborn vitamin D status, this neonatal study revealed an inverse relationship between non-invasive, easy and inexpensive markers of inflammation and vitamin D status. It has been inferred that vitamin D deficiency may increase susceptibility to infection (43).

Another study conducted in Turkey on adults without acute inflammation, infection or chronic disease showed that both NLR and MPV could be markers of the inflammatory burden in vitamin D deficiency (44).

In a study evaluating hematological parameters and inflammatory markers in children with COVID-19, LMR was significantly higher in hospitalized patients; However, NLR, PLR, d-NLR and MPVLR were found to be significantly low, and no statistically significant difference was found in terms of SII between hospitalized and outpatient patient groups (45).

In a study evaluating the relationship between serum vitamin D concentrations and new inflammatory markers (SIRI and SII) in patients who underwent coronary angiography due to suspicion of acute coronary syndrome, it was shown that patients diagnosed with ACS had lower serum vitamin D levels. In addition, SIRI (but not SII) was significantly correlated with serum vitamin D concentration in the entire analyzed group, with SIRI and SII both negatively associated with vitamin D levels in patients with ACS (29).

In a study of children without any acute infection and/or chronic disease, it was found that vitamin D levels had a significant negative correlation with NLR, PLR and PDW, and a positive correlation with LMR and RDW. They stated that, despite this statistical significance, the difference between the median values of the vitamin D groups is very small and the degree of correlation is very weak, so the clinically expected significant difference in laboratory results between the vitamin D groups should also be questioned (46).

The main limitation of the study is that the inflammatory parameters we examined cannot be compared with more specific inflammatory parameters such as procalcitonin, IL-6, IL-10. Since our study was conducted on patients in intensive care and was not conducted on healthy children who applied for routine check-ups, a control group was not created. We believe that it would be useful to simultaneously evaluate the relationship between vitamin D and hemogram-derived inflammatory parameters and specific biomarkers in prospective studies. Secondly, since it is a single-center study, its generalizability is limited, and it would be appropriate to increase the number of samples. Third, although the study was a prospective study, we could not evaluate whether vitamin D supplementation

changed inflammatory markers in those with vitamin D deficiency, as there was no study examining the effect of treatment.

CONCLUSION

Although many studies show that vitamin D deficiency is associated with hemogram-derived inflammatory markers, we cannot say that there is a statistically significant relationship. These inflammatory markers are advantageous because they are simple, inexpensive, and readily available. However, we think that the validity of the findings should be confirmed with a larger number of subjects.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of Selçuk University Non-interventional Clinical Researches Ethics Committee (Date: 25/07/2018, Decision No: 2018/15).

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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ORIGINAL ARTICLE
ORİJİNAL ARAŞTIRMA

Clinical, Radiological, and Epidemiological Evaluation of Lower Respiratory Tract Infections of Children

Çocukluk Çağı Alt Solunum Yolu Enfeksiyonlarının Klinik, Radyolojik ve Epidemiyolojik Değerlendirmesi

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Abstract

Aim: In this study, we aimed to determine the etiology of lower respiratory tract infection in patients aged 1 month to 5 years with a clinical, radiological, and epidemiological study.

Material and Method: We investigated 150 patients between 1 month to 5 years of age who required hospitalization and those who were admitted to pediatrics clinics and pediatric emergency services of our center who had the clinical diagnosis of lower respiratory tract infection. Blood samples for acute phase reactants and nasopharyngeal swap samples for detection of bacterial etiologies were taken. Initial posteroanterior chest X-rays of all patients were checked.

Results: The most common pathogens were *Streptococcus pneumoniae* in 77 (51.3%) and *Haemophilus influenzae* in 71 (47.3%) patients. Three groups of patients compared with C-reactive protein values; patients with alveolar pneumonia were statistically higher than interstitial infiltrates (P=0.008). Erythrocyte sedimentation rates in patients with alveolar pneumonia were statistically significantly higher than the patients with interstitial infiltrates pneumonia (P=0.016).

Conclusion: In patients suspected of lower respiratory tract infection, the beginning of appropriate antibiotic treatment should be supported with clinical, radiological, and laboratory tests. We think laboratory tests of acute phase reactants should be used with multiplex PCR to detect viral and bacterial agents. Still, to deal with this issue, advanced studies are needed.

Keywords: Pneumonia, pediatrics, polymerase chain reaction

Öz

Amaç: Bu çalışmada alt solunum yolu enfeksiyonu klinik tanısıyla hastaneye yatırılan 1 ay-5 yaş arası hastalarda klinik, radyolojik ve epidemiyolojik çalışma ile etiyolojinin belirlenmesi amaçlandı.

Gereç ve Yöntem: Merkezimizin poliklinikleri ve çocuk acil servislerine başvuran, 1 ay-5 yaş arası, ASYE tanısı alan 150 hastayı inceledik. Akut faz reaktanları için kan örnekleri ve bakteriyel etiyolojilerin tespiti için nazofarengeal swap örnekleri alındı. Tüm hastaların ilk postero-anterior akciğer grafileri kontrol edildi.

Bulgular: En sık görülen patojenler 77 (51,3%) hastada *Streptococcus pneumoniae* ve 71 (47,3%) hastada *Haemophilus influenzae* idi. İki grup hasta C-reaktif protein değerleri açısından karşılaştırıldı; alveolar pnömonili hastalar interstisyel infiltrasyonu olan hasta grubundan istatistiksel olarak daha fazla idi (P=0.008). Alveoler pnömonili hastalarda eritrosit sedimantasyon hızı, interstisyel infiltrasyonu olan hastalara göre istatistiksel olarak anlamlı derecede yüksekti (P=0.016).

Sonuç: Alt solunum yolu enfeksiyonu şüphesi olan hastalarda uygun antibiyotik tedavisine başlanması klinik, radyolojik ve laboratuvar tetkikleriyle desteklenmelidir. Viral ve bakteriyel etkenlerin saptanmasında laboratuvar testlerinin multipleks polimeraz zincir reaksiyonu yöntemiyle birlikte kullanılabileceğini ancak bu konuyla ilgili ileri çalışmalara ihtiyaç olduğunu düşünüyoruz.

Anahtar Kelimeler: Pnömoni, çocuk sağlığı, polimeraz zincir reaksiyonu

INTRODUCTION

Lower respiratory tract infection (LRTI) is the most critical disease and mortality caused in infancy, especially in developing countries. According to the World Health Organization, LRTI is responsible for about 20% of annual 10 million deaths under the age of 5 (1,2). According to the Turkey Disease Load Study carried out by the Ministry of Health of Turkey between the years 2002 and 2004, LRTI is the second most frequent cause of death in the age group of 0-4 years (13.4%) and those of 5-14 years (6.5%). The same study also shows LRTI is solely responsible for 14% of total deaths in the 0-14 (3,4).

Determination of the agent in a patient with the community–acquired LRTI leads to the administration of correct antibiotics. This is important because it will allow the selection of narrower-spectrum antibiotics, ultimately leading to fewer side effects and less development of resistance. This study aimed to determine the etiology in patients aged 1 month-5 years hospitalized with the clinical diagnosis of LRTI with clinical, radiological, acute phase reactants, blood cultures, and nasopharyngeal swaps with polymerase chain reaction (PCR).

MATERIAL AND METHOD

Study Groups

A group of 150 patients between the ages of 1 month and 5 years with clinical LRTI diagnosis were addmission to the Pediatrics Department of our center. They did not use any antibiotics at least 48 hours before admission.

The informed consent of the families was also obtained. The study then carried on for six months between 1 February 2011 and 1 August 2011.

To exclude hospital-acquired pneumonia, the patients who had stayed in the hospital previously were excluded if at least two weeks had not passed since their discharge. Moreover, lower respiratory tract infection patients with chronic diseases like asthma, congenital heart disease, and malnutrition were also excluded from the study.

The lower respiratory tract infection was diagnosed upon clinical signs and symptoms and/or upon detection of infiltrations in chest x-rays. Clinically, fever and acute respiratory symptoms were sought in patients. For diagnosing pneumonia, the tachypnea criteria defined by WHO by age were used (5).

The information of children included in the study on the date of their application, age, gender, place of residence, status of immunization, any previous hospitalization due to lower respiratory tract infection, exposure to smoking habits and all symptoms of them were questioned and recorded. Also, vital findings of the patients at the time of application, their respiratory rates per minute and other physical examination findings like chest wall retraction,

rales, and rhonchus were recorded. Blood samples were collected from all patients for complete blood count, C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), procalcitonin (PKT) tests and blood culture. All blood samples were analyzed in the laboratory of our center.

Samples

Collection and conservation of samples: The nasopharyngeal swab samples for PCR analysis for *Streptococcus pneumonia*, *Mycoplasma pneumonia*, *Haemophilus influenzae*, *Chlamydia pneumonia*, *Bordetella pertussis*, *Legionella pneumophilia* were collected from patients by averages of nasopharyngeal swabs. The samples were preserved at -70 C until the PCR was applied.

Isolation of DNA from samples: For isolating nucleic acids from nasal swap, a QIAamp DNA Mini Kit (Cat. No. 51304, QIAGEN, Germany) was used.

Interpretation of radiologic inspections: All the patients included in the study were subjected to postero-anterior chest radiography at their admission to the hospital. The radiological findings were classified as interstitial infiltration, peribronchial thickening, hilar enlargement, atelectasis, increased aeration, pleural effusion and alveolar consolidation. The localization of each finding on the lungs was recorded. The same radiology specialist interpreted all the graphs.

Statistical Analysis

For analyzing the data, the SPSS 17.0 statistics package program was used. Average, standard deviation, median, lower limits and upper limit criteria were defined for constant variables like age, respiratory rate and laboratory work values. According to the distribution of these variables by their comparison with the groups, if the distribution is normal, a t-test or one–way analysis of variance in independent groups, and if the distribution is not normal, Mann Whitney U test or Kruskal Wallis test was used. For categorical variables like gender or physical examination findings, counts and percentage criteria were given. The chi-square test was utilized for comparing these in groups. In all analyses, the level of statistical significance was taken as $p < 0.05$.

The study protocol was approved by the Clinical Research Ethics Committee of our center (Decision dated 26th January 2011, numbered 402/3357).

RESULTS

Demographic and Clinical Characteristics of Patients

In this study, 150 children patients with LRTI diagnosis were included. The demographic characteristics of the patients are shown in **Table 1**.

Table 1: Demographical characteristics of patients	
Demographical characteristics	
Age (mounth)	
Mean (± SD)	18,78 ±15,71
Sex (%)	
Male	92 (61,3)
Female	58 (38.7)
Immunization (%)	
Fully immunized by age	148(98.7)
Previus hospitalization for LRTI	46(30)
Smoking in the family	63 (42)

The most frequent symptom of patients was cough 122 (98.9%); then nasal discharge 88 (58.7%), wheezing 84 (56%), nasal congestion 81 (54%), respiratory distress 77 (51%), fever 71 (47.3%), irritability 64 (42.7%), lack of appetite 73 (49%), vomiting 53 (35.3%), cyanosis 40 (26.7%), chest pain 5 (3.3%) and abdominal pain 13 (8.7%).

The most common findings on physical examination was tachypnea 123 (82%), rhonchus 109 (72.7%), retraction 103 (68.7%) and rales 99 (66%).

Microbiological findings detected in patients are listed in **Table 2**.

Table 2: Microbiological findings of patients.	
Agent	**Patient n(%)**
Bacteria detected in nasopharyngeal swap	
M. pneumonia	2 (1.3)
L. pneumophilia	0 (0)
S. pneumonia	77 (51)
H. influenzae	71 (47)
B. pertussis	6 (4.0)
C. pneumonia	8 (5.3)
Detection of several bacteria in nasopharyngeal swap	
M. pneumonia+S. pneumonia	1 (0.7)
M. pneumonia+H. influenzae	1 (0.7)
S. pneumonia +H. influenzae	39 (26)
S. pneumonia+B. pertussis	1 (0.7)
S. pneumonia+C. pneumonia	1 (0.7)
H. influenzae +B. pertussis	4 (2.7)
H. influenzae +C. pneumonia	5 (3.3)
B. pertussis+C. pneumonia	3 (2)

Radiological Characteristics of Patients

When the PA lung radiographs taken at the time of admission of the patients included in the study were evaluated, pneumonia was not detected in 38 patients (25.3%), alveolar pneumonia was detected in 7 patients (7%), and interstitial pneumonia was detected in 105 patients. There were signs of interstitial pneumonia (70%), hilar enlargement in 8 patients (5.3%), and hyperinflation in 11 patients (7.3%). Neither atelectasis nor pleural effusion were determined in any of the patients.

Clinical Characteristics of Patients According to Etiologic Agents

Among symptoms, lack of appetite (P=0.05) was more frequent in the patient group that showed *Streptococcus pneumonia*, while fever (P=0.03), chest pain (P=0.02), and respiratory distress (P=0.01) were a more frequent patient group of *Haemophilus influenzae*; and cyanosis (P=0.04) and irritability (P=0.05) were most frequent in *Bordetella pertussis* group.

Among physical examination findings, the rhonchus was more frequent in the *Streptococcus pneumonia* patient group (P=0.04), while fever was more frequent (P=0.03) in the patient group of *Haemophilus influenzae* was detected.

Among acute phase reactants, CRP (P=0.053) and PCT (P=0.042) were detected highest in the *Haemophilus influenzae* patient group. No significant difference was detected between white blood cell count, absolute neutrophil count and ESR levels. (**Table 3**).

Among radiologic findings, interstitial infiltration and hyper aeration were more frequent in patients with *Haemophilus influenzae* (P=0.03, P=0.02).

Clinical and radiological characteristics of patient groups of no pneumonia, alveolar pneumonia and interstitial pneumonia

Among symptoms, fever was detected as significantly higher in the patient group of interstitial infiltration than in the patient group with normal radiography results (P=0.031). On the other hand, abdominal pain (P=0.017, P=0.035), lack of appetite (P=0.005, P=0.029) and vomiting (P=0.01, P=0.001) in the patient group of alveolar pneumonia were determined to be significantly higher as compared to both the patient group with normal radiography results and to the patient group in which interstitial infiltration was detected.

When physical examination findings are compared, the fever was significantly higher in the alveolar pneumonia group compared to both the patient group with normal radiography results and to the patient group in which interstitial infiltration was detected (P=0.039, P=0.022).

A comparison of acute phase reactants of three patient groups is listed in **Table 4**.

Table 3: Acute phase reactants according to the agent.

	Streptococcus pneumonia	P	*Haemophilus influenzae*	P	*Bordetella pertussis*	P	*Chlamydia pneumonia*	P
White blood cell count (×10⁹/L) (average±SD)	13.4±4.7	0.110	13.4±5.4	0.264	12.9±4.5	0.867	14.6±6.1	0.389
Median	13.1		12.1		12.7		12.9	
Lower-upper limit	4.8-28.5		3.8-31.3		8-18.4		8-26.9	
Absolute neutrophile count (×10⁹/L) (average±SD)	11.2±4.5	0.084	12.3±4.4	0.346	11.1±51.2	0.726	14.3±4	0.123
Median	11		12		11.2		13.1	
Lower-upper limit	2.3-20.5		3.4-21.5		3.7- 18.9		9.3-18.9	
C-reactive protein (mg/L) (average±SD)	2.55±5.68	0.062	2.83±5.7	0.053	1.83±2.97	0.536	2.91±4.42	0.880
Median	1.36		1.31		0.34		0.74	
Lower-upper limit	0.10-46.7		0.1-46.7		0.20-7.73		0.20-11.9	
Procalcitonin (ng/ml) (average±SD)	0.30±0.67	0.729	0.42±0.82	0.042	0.15±0.12	0.430	0.21±0.13	0.455
Median	0.10		0.10		0.10		0.10	
Lower-upper limit	0.07-4.43		0.10-4.43		0.1-0.41		0.10-0.41	
Erythrocyte sedimentation rate (mm/h) (average±SD)	26.45±5.6	0.630	29.43±26	0.147	32± 22	0.645	30± 17	0.513
Median	21		23		21		25	
Lower-upper limit	2-120		2-120		11-75		12-58	

Table 4: Acute phase reactants of those patient groups of non-radiologically pneumonia detection, with alveolar pneumonia and with interstitial pneumonia

	With normal radiology	Alveolar pneumonia	Interstitial pneumonia	P
White blood cell count (×10⁹/L)				0.359
(Average±SD)	12.6± 4.7	14±6.7	12.8±4	
median (lower-upper limit)	11.9 (6.1-28.5)	17.2(3.3-22.9)	12.3(3.8-31.3)	
Absolute neutrophile count (×10⁹/L)				0.517
(Average±SD)	11.7±5	13.8±3.7	11.9±4.6	
median (lower-upper limit)	11.1 (3-21.3)	13.4 (9.5-18.8)	11.5	
C-reactive protein (mg/L)				0.028
(Average±SD)	1.91± 2.66	6.16± 5.09	2.17± 4.74	
median (lower-upper limit)	0.77 (0.1-11.9)	6.41 (1.04–14.2)	1.07 (0.1-46.7)	
Procalcitonin (ng/ml)				0.452
(Average±SD)	0.38±0.63	0.23± 0.15	0.30± 0.60	
median (lower-upper limit)	0.10 (0.10-4.43)	0.14 (0.10-0.45)	0.10 (0.44-3.95)	
Erythrocyte sedimentation rate (mm/h)				0.049
(Average±SD)	21.8± 17.1	45.8± 29.8	26.1± 23.2	
median (lower-upper limit)	21 (2-64)	35 (22-95)	20.5 (2-120)	

DISCUSSION

In developing countries, a total of 23% of pediatric age group patients are treated as outpatients and a total of 29-38% hospitalized pediatric age group patients are diagnosed with pneumonia (5). According to 2002 data from Turkish Toraks Association, the LRTI frequency in Turkey in between 0-1 ages is 30-35% (5). In our study, a large part of our patients was constituted of patients under the age of 12 months. In parallel to previous publications, our research found a relation between the underage, especially under the age of 12 months, and the higher hospitalization rates (6).

In our study, the most frequent complaints, in descending order by frequency, were cough (81.3%), respiratory distress (63.7%), and nasal congestion (58.7%). The most frequent symptom detected in our study was fever (which is in parallel with the literature). However, the frequency of tachypnea in our study was higher than in the literature (7-9).

In our study, among a total of 150 patients, rales was detected in 99 patients (66%); tachypnea in 123 patients (82%); rhonchus in 109 patients (72.7%), and chest wall retraction in 103 of patients (68.7%). According to previous studies, abnormal listening was detected in most of our study (8, 9, 10).

In previous publications, tachypnoea has been reported in 50-80% of radiologically confirmed cases of childhood LRTI (11). The sensitivity of tachypnea existence in indicating pneumonia is 50-81%, while its selectivity is 54-70% (12,13). On the other hand, the sensitivity of rales existence for diagnosing pneumonia is 43-76% (14,15). In a study conducted by Bilkis et al. (16) in 2010, it is

reported that their sensitivity in indicating pneumonia for children with both fevers, localized rales, decreased respiratory sounds, and tachypnea is 93.8%. Similarly, in our study, the frequency of tachypnea was by the literature, while the frequency of the rales was higher than those reported in the literature.

Different methods for determining etiological factors are employed in such studies in which children hospitalized with a diagnosis of lower respiratory tract infections are included. For this reason, the frequency of etiological factors is reported with different rates. In prospective studies in which standard diagnostic methods are used, the factor detection rate of children with LRTI varies between 42% and 85% (17).

In our study, among 150 patients, at least one bacteria was found in a nasopharyngeal swap of 106 patients (70%) and several bacterial factors were found in 55 patients (36.6%) via multiplex PCR method. No factor was detected in 44 patients (29%) through the multiplex PCR method. In descending order by frequency, *Haemophilus influenzae* in 77 patients (51.3%), *Streptococcus pneumonia* in 71 patients (47.3%), and *Chlamydia pneumonia* in 8 patients (5.3%) were detected. In our study, *Streptococcus pneumonia* is the most frequent bacterial factor, also in line with many previous publications (7, 18-24)

No interstitial pneumonia was observed on radiological examination in 105 patients (70 %), while 38 patients (25.3 %) had no evidence of pneumonia. However, in 7 patients (4.7%), alveolar pneumonia was detected radiological. When radiologic findings are analyzed, in 11 patients (7.3%), hyper aeration in 8 patients (5.3%), hilar enlargement is detected. No pleural effusion and atelectasis are detected in any patient. In our study, radiological pneumonia detection rates are higher than Hazır et al. (25) reported. Virkki et al. (24) determined 22% alveolar changes, 39% interstitial changes, and 39% combinations of alveolar interstitial changes in their study. Our study's most consistent radiological finding in previous publications is interstitial infiltration (24, 26).

When radiological findings of our study are compared with the factors, interstitial infiltration and hyper aeration are observed more frequently in patients in which *Haemophilus influenzae* is detected. In the past, in many studies, no finding that proves the existence of bacterial pneumonia through radiological averages was determined (24). When Turner et al. (27) radiologically assessed 37 patients with pneumonia the alveolar infiltration was observed in 38% of patients with bacterial pneumonia, while it was kept in 67% of those with viral pneumonia. Courtoy et al. (28) observed alveolar infiltration in 67% of 24 patients with viral pneumonia and 42% of 12 patients with bacterial pneumonia. There was no difference in the distribution of etiologic factors between the radiologically confirmed cases of

pneumonia and the groups for which pneumonia was not detected radiologically (29).

In our study, the procalcitonin and C-reactive proteins are found in high levels in patients with *Haemophilus influenzae*. Madhi et al. (20) also determined that a high C-reactive protein level alone is more beneficial than a clinical diagnosis in differentiating bacterial cases of pneumonia. However, Korppi et al. (29) could not prove the efficiency of any clinical or radiological data in determining LRTI etiology.

In our study, *Haemophilus influenzae*, as a factor of pneumonia, was detected in 51% of children vaccinated (98.3%) against type b *Haemophilus influenzae*. However, separation of the *Haemophilus influenzae* serotype could not be performed. In the study conducted by Campos et al. (30), it is stated that the number of type b *Haemophilus influenzae* invasive infections is reduced upon effective vaccination yet that the frequency of diseases of non–type b serotypes of *Haemophilus influenzae* is increased as a factor in otitis media and LRTI.

CONCLUSION

As a result, our study assessed the epidemiological, clinical, and radiological characteristics and bacterial factors in children with LRTI diagnosis at the age of 1 month to 5 years. The most frequent bacterial factor was *Streptococcus pneumonia*. For patients suspected of LRTI to start appropriate antibiotic treatment, the diagnosis must be supported with clinical, laboratory tests and/or radiological. In our opinion, the multiplex PCR method must be used in conjunction with acute phase reactants for laboratory tests. We believe that, regarding this issue, more advanced-level studies examining both viral and bacterial factors together are required.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study protocol was approved by the Clinical Research Ethics Committee of the Ankara Training and Research Hospital (Decision dated 26th January 2011, numbered 402/3357)

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Postpartum Dönemde COVID-19 Korkusunun Maternal Bağlanmaya Etkisi

The Effect Of COVID-19 Fear on Maternal Attachment in the Postpartum Period

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ÖZ

Amaç: Bu çalışma pandemi sürecinde annelerin yaşadığı COVID-19 korkusunun maternal bağlanmaya etkilerini belirlemek amacıyla yapılmıştır.

Gereç ve Yöntem: Tanımlayıcı ve kesitsel tipteki bu araştırma 15.03.2022-15.04.2022 tarihleri arasında bir devlet hastanesinin kadın doğum servisinde yatan 170 lohusa ile yürütülmüştür. Veriler, araştırmacılar tarafından oluşturulan Kişisel Bilgi Formu, COVID-19 Korku Ölçeği ve Maternal Bağlanma Ölçeği (MBÖ) kullanılarak toplanmıştır.

Bulgular: Araştırma kapsamına alınan lohusaların %62,4'ü 26-35 yaş arası, %51,8'i lise mezunu, %68,8'i çalışmıyor, %47,6'sı asgari ücretle geçinmektedir. Çok değişkenli doğrusal regresyon analizine göre; MBÖ toplam puanının, yaş, meslek, gelir durumu ve sosyal güvence durumunu etkilediği ve COVID-19 korkusu üzerinde anlamlı bir yordayıcısı olduğu saptanmıştır (p<0.05). MBÖ'i toplam puanı ile COVID-19 korkusu ölçeği toplam puanı arasında çok zayıf düzeyde, negatif yönlü, anlamlı ilişki olduğu belirlenmiştir (p<0.05).

Sonuç: COVID-19'un lohusalarda korku ve anksiyeteyi artırdığı ve maternal bağlanmayı negatif yönde etkilediği görülmektedir. Özellikle bakımdan primer sorumlu ebe ve hemşirelerin anksiyeteyi gidermeye yönelik iletişim becerilerini kullanması, maternal bağlanmayı güçlendirecek önerilerde bulunması önemlidir.

Anahtar Kelimeler: COVID-19 Korkusu, Maternal Bağlanma, Lohusa

ABSTRACT

Aim: This study was conducted to determine the effects of COVID-19 fear experienced by mothers during the pandemic on maternal attachment.

Material and Method: This descriptive and cross-sectional study was conducted between 15.03.2022-15.04.2022 with 170 puerperium hospitalized in the obstetrics and gynecology department of a state hospital. Data were collected using the Personal Information Form, COVID-19 Fear Scale and Maternal Attachment Scale (MATS) created by the researchers.

Results: Among the puerperas included in the study, 62.4% were between 26-35 years of age, 51.8% were high school graduates, 68.8% were unemployed, and 47.6% lived on minimum wage. According to multivariate linear regression analysis, it was found that the total score of the MATS affected age, occupation, income status and social security status and was a significant predictor of fear of COVID-19 (p<0.05). It was determined that there was a very weak, negative, significant relationship between the total score of the MATS and the total score of the fear of COVID-19 scale (p<0.05).

Conclusion: COVID-19 increased fear and anxiety and negatively affected maternal attachment in puerperium. It is especially important for midwives and nurses who are primarily responsible for care to use communication skills to relieve anxiety and make suggestions to strengthen maternal attachment

Keywords: Fear of COVID-19, Maternal Attachment, Postpartum

GİRİŞ

Postpartum dönem ebeveynler için yeni rollerin ortaya çıktığı ve birçok değişikliğin aynı anda yaşandığı karmaşık ve farklı bir süreçtir. Bu süreçte önemli unsurlardan biri olan anne ile bebeğin bağlanması birçok sorunla karşılaşabilmektedir (1). Bağlanma türlerinden biri olan maternal bağlanma intrauterin dönemden başlayıp, doğum sonuna kadar süren, anne ile bebeği arasında etkileşimi sağlayan bağlanma çeşididir. Bu dönem yüksek haz ve benzersiz duyguların yaşandığı bir süreçtir (2). Maternal bağlanma hayat boyu devam eden kişilik gelişimini ve sosyal ilişkileri etkileyebilen bir kavramdır (3). Maternal bağlanmanın güvenli ve etkin olabilmesi için sadece bebeğin güven duygusunun artırılması değil, annenin annelik rolüne uyumu da önemlidir2. Bağlanmayı artırmak için doğum sonu ten tene temas, kanguru bakımı ve doğum sonu aynı odanın paylaşılması gibi uygulamalar gereklidir (4). COVID-19 gibi hızlı bulaşan bir hastalığın olması bu süreci olumsuz etkilemektedir. Bulaşı önlemek amacıyla COVID-19 döneminde hastalığa yakalanmış, temaslı ya da şüpheli anneler ile bebeklerinin farklı odalarda kalması sağlanmıştır (5). Böylece anne ile bebeği arasında olması beklenen maternal bağlanma sekteye uğramış ve emzirme de bu durumdan olumsuz olarak etkilenmiştir (6). İzolasyon, mesafe ve rutin işlerdeki değişiklikler de kadınların destek sistemlerini azaltmış ve paniğe neden olmuştur. Bu sebeple salgının psikolojik boyutunun belirlenmesi ve değerlendirilmesi önemlidir.7 Bebeğinden ayrı kalan annede anksiyete oluşması ve bunu bebeğe yansıması da beklenen bir durum olarak ortaya çıkmıştır (6). Anne ile bebek bağlanması kırılgan bir süreçtir ve bu süreçte olduğu için bu süreçte meydana gelen ayrılıklarda özellikle bebekte nörogelişimsel bozukluklara neden olabilmektedir (7). Bu sürecin nasıl yönetileceğine dair çalışmaların azlığı nedeniyle kanıta dayalı bilgiler yetersiz kalmaktadır (5).

Maternal bağlanmanın gerçekleşmesi için önemli sorumlulukları sağlık gruplarından biri olan ebeler, bu süreçte meydana gelebilecek sorunları tanımlamalı ve bireyselleştirilmiş ebelik bakımı ile danışmanlık sağlamalıdır (8). Maternal bağlanmanın etkin olarak sağlanabilmesi için anne ile bebeğin aynı odayı paylaşması, bebeğin emzirilmesi, ten tene temas gibi uygulamaların sürdürülmesi gereklidir (9). Bu araştırma postpartum dönemde COVID-19 korkusunun anne-bebek bağlanmasına etkisini belirlemek amacıyla tasarlanmıştır.

GEREÇ VE YÖNTEM

Araştırmanın Tipi

Bu çalışma COVID-19 pandemisinde annelerin yaşadığı korkuların maternal bağlanmaya etkilerini belirlemek amacıyla tanımlayıcı ve hastane tabanlı kesitsel olarak yapılmıştır.

Araştırmanın Evreni ve Örneklemi

Araştırmanın evrenini 15.03.2022-15.04.2022 tarihleri arasında bir Devlet Hastanesinin Kadın Doğum Polikliniğine başvuran ve Kadın Doğum Servisinde yatan lohusalar (N=560) oluşturmaktadır. Araştırmanın örneklemini ise çalışmaya katılmayı kabul eden 170 lohusa dahil edilmiştir. Araştırmanın örnekleminin belirlenmesinde G*Power 3.1.9.7 programı kullanılmıştır (10). Cohen (1988)'nin orta etki büyüklüğü önerisi dikkate alınarak araştırmanın örneklemi hesaplanmıştır (11,12). Varyans analizi kullanılarak yapılan hesaplamada orta etki büyüklüğünde, güven aralığı %80 ve hata payı %5 ile 170 lohusaya ulaşılmıştır. Araştırma sonunda yapılan post-hoc analize göre etki büyüklüğü orta etki büyüklüğünde ($f2=0,057$) %80 güce ulaşılmıştır. Araştırmanın verileri yüz-yüze görüşülerek elde edilmiştir.

Araştırmanın bağımlı değişkenleri; maternal bağlanma ölçeği puanları ve koronavirüs korku ölçeği puanlarıdır. Araştırmanın bağımsız değişkenleri; lohusaların sosyodemografik özellikleri, yaş, eğitim durumu, çalışma durumu vb.

Veri Toplama Araçları

Araştırmacılar tarafından literatür taranarak oluşturulmuştur (5,13). Formda sosyodemografik özellikleri belirlemeye yönelik toplam 12 soru yer almaktadır.

Maternal Bağlanma Ölçeği (MBÖ): Kavlak ve Şirin tarafından 2009 yılında yapılmıştır. Ölçek 26 maddelik dörtlü likert tipi olup; Her Zaman "4", Hiçbir Zaman "1" olacak şekilde puanlanmaktadır (14). Maternal duygu ve davranışları ölçen ölçekten elde edilecek en yüksek puan 104, en düşük puan ise 26'dır. Ölçek puanlarının yüksek olması maternal bağlanmanın yüksek olduğunu göstermektedir Ölçeğin Cronbach's Alpha Değeri bir aylık bebeği olan lohusalarda 0,77, dört aylık bebeği olanlarda 0,82 olarak belirtilmiştir. Araştırmamızda ölçek Cronbach's Alpha Değeri 0,81 olarak bulunmuştur.

Koronavirüs (COVID-19) Korkusu Ölçeği: Bakioğlu ve ark. (2020) tarafından Türkçe geçerlilik güvenilirlik çalışması yapılan ölçek, tek boyut ve 7 maddeden oluşmaktadır (15). "Kesinlikle katılmıyorum" ifadesi "Bir" puan, "Kesinlikle Katılıyorum" ifadesi ise "Beş" puandır. Elde edilebilecek en düşük puan 7, en yüksek puan ise 35'tir. Puan yükseldikçe Koronavirüs korku düzeyinin arttığı kabul edilmektedir. Ölçeğin Cronbach's Alpha Değeri 0.88'dir (16). Araştırmamızda Cronbach's Alpha Değeri 0.90 olarak bulunmuştur.

Araştırmanın Etik Boyutu

Bu çalışma için Tokat Gaziosmanpaşa Üniversitesi Sosyal ve Beşeri Bilimler Etik Kurulu'ndan izni alınmıştır (Karar No: 05-24, Karar Tarihi: 27.01.2022). Araştırma Helsinki Deklerasyonu kurallarına bağlı kalınarak yürütülmüştür ve araştırmaya katılmayı kabul eden lohusalardan bilgilendirilmiş onam alınmıştır.

İstatistiksel Analizler

Verilerin değerlendirilmesinde SPSS 25.0 istatistik paket programı kullanılmıştır. Verilerin normallik analizi değerlendirilirken araştırmada kullanılan ölçeklere ait verilerin hangi dağılımdan geldiğini belirlemek için; Kolmogorov-smirnov testi istatistik değeri, p değeri, çarpıklık ve basıklık katsayıları incelenmiş, Tabachnick ve Fidell'in, (2013) önerisi doğrultusunda p değerinin 0,05'ten büyük olması veya çarpıklık ve basıklık katsayılarının ±2 sınırları içinde bulunması durumunda verilerin dağılımının normal sınırlar içerisinde olduğu kabul edilmiştir. Normal dağılım gösteren verilerin tanımlayıcı istatistikleri, ortalama, standart sapma ve yüzde ile hesaplanmış, ortalama farkları ise tek yönlü varyans analizi (ANOVA), iki ortalama arasındaki farkın önemlilik testi (Independent Sample t test) ile hesaplanmıştır. Ölçekler arası ilişkiyi belirlemek için korelasyon analizi yapılmıştır. Ölçeklerin değişkenler üzerindeki etkisini belirlemek için çoklu regresyon uygulanmıştır.

BULGULAR

Araştırma toplam n:170 lohusa ile gerçekleştirilmiştir. Araştırma kapsamında alınan lohusaların %62,4'ü 26-35 yaş arası, %51,8'i lise mezunu, %68,8'i çalışmıyor, %47,6'sı asgari ücret almakta ve %87,6'sının sosyal güvencesi bulunmaktadır. Lohusaların %82,9'unun herhangi bir kronik hastalığı bulunmamaktadır (**Tablo 1**).

Lohusaların yaş ve sosyal güvence durumlarına göre COVID-19 korkusu ölçeği puanları arasında anlamlı fark saptanmıştır (p<0,005) (**Tablo 1**). Lohusaların sigara kullanma ve kronik bir hastalığa sahip olma durumlarına göre MBÖ ölçeği puanları arasında anlamlı bir fark saptanmıştır (p<0,05) (**Tablo 1**).

Tablo 1. Lohusaların Kişisel Özellikleri ile COVID-19 Korkusu Ölçeği ile Maternal Bağlanma Ölçeği Toplam Puanlarının Karşılaştırılması (N=170)

Özellikler	n	%	COVID-19 Korkusu Ölçeği $\bar{x} \pm SS$	Maternal Bağlanma Ölçeği $\bar{x} \pm SS$
Yaş				
18-25 yaş	55	32,4	13,38±6,12	97,38±5,28
26-35 yaş	106	62,3	14,60±5,35	97,62±3,45
36 yaş ve üzeri	9	5,3	18,77±7,64	95,66±3,74
			p<0,05*	p>0,05*
Eğitim durumu				
İlköğretim	39	22,9	14,51±5,71	96,12±5,98
Lise	88	51,8	14,36±6,34	97,75±3,75
Lisans ve üzeri	43	25,3	14,48±4,87	98,00±2,32
			p>0,05*	p>0,05*
Çalışma durumu				
Çalışıyor	53	31,2	13,96±5,83	97,33±4,72
Çalışmıyor	117	68,8	15,45±5,73	97,67±2,44
			p>0,05**	p>0,05**
Gelir Durumu				
Asgari ücretten az	9	5,3	16,44±4,97	96,88±3,14
Asgari ücret	81	47,6	14,85±6,32	97,24±5,40
Asgari ücretten fazla	80	47,1	13,77±5,35	97,70±2,45
			p>0,05*	p>0,05*
Sosyal güvence				
Var	149	87,6	14,42±5,49	97,48±4,21
Yok	21	12,4	14,47±7,96	97,09±3,72
			p<0,05**	p>0,05**
Sigara kullanımı				
Evet	17	10,0	14,52±7,35	97,05±7,28
Hayır	153	90,0	14,41±5,66	97,48±3,67
			p>0,05**	p<0,05**
Alkol kullanımı				
Evet	3	1,8	11,66±8,08	96,33±6,35
Hayır	167	98,2	14,47±5,80	97,46±4,12
			p>0,05**	p>0,05**
Herhangi bir kronik hastalık varlığı				
Evet	29	17,1	14,37±5,70	97,13±6,51
Hayır	141	82,9	14,43±5,87	97,50±3,49
			p>0,05**	p<0,05**
TOPLAM	**170**	**100,0**		

*One Way ANOVA, *Independent Sample t Testi,

Araştırmada kullanılan ölçeklerin toplam puanı ile ölçekler arasındaki ilişkinin değerlendirildiği **Tablo 2**'ye göre MBÖ'i toplam puanı ile COVID-19 korkusu ölçeği toplam puanı arasında çok zayıf düzeyde, negatif yönlü, anlamlı ilişki olduğu saptanmıştır. Bir birim MBÖ puanı arttıkça COVID-19 korkusu puanının azaldığı tespit edilmiştir.

Tablo 2. Maternal Bağlanma Ölçeği Toplam, COVID-19 Korkusu Ölçeği Toplam Puan Korelasyonu

	$\bar{x}$	SS	1	2
1-MBÖ toplam	97,44	4,14	1	
2-COVID-19 korkusu ölçeği toplam	14,42	5,82	-0,240*	1

Not: p<0,01*, Pearson Korelasyon Analizi kullanılmıştır, MBÖ: Maternal Bağlanma Ölçeği

Maternal bağlanma ölçeği ile COVID-19 Korkusu ölçeği puanları arasında çok zayıf düzeyde, negatif yönlü, anlamlı ilişki olduğu saptanmıştır.

Maternal bağlanma ölçeği üzerinde etkisi olduğu düşünülen değişkenlerin maternal bağlanma ölçeğini ne şekilde yordadığını ortaya koymak için yapılan çoklu doğrusal regresyon analizi sonucunda, bu yordayıcı değişkenlerin maternal bağlanma ile anlamlı bir ilişki (R2=0,109) sergiledikleri görülmüştür (F=3,297, p <0,05). Regresyon katsayılarının anlamlılık testleri göz önüne alındığında COVID-19 korkusu ölçeğinin maternal bağlanma üzerinde anlamlı bir yordayıcı olduğu saptanmıştır (p <0,05) (**Tablo 3**).

Tablo 3. Maternal Bağlanma Ölçeği Toplam Puanı Regresyon Analizi

Bağımsız Değişkenler	β	S.E.	p*	95% CL	
				Lower	Upper
COVID-19 ölçeği toplam	-0,181	0,057	0,002	-0,293	-0,069
Yaş	0,127	0,608	0,835	-1,074	1,327
Eğitim durumu	0,981	0,531	0,066	-0,067	2,029
Meslek	0,193	0,830	0,816	-1,446	1,832
Gelir durumu	-0,335	0,647	0,606	-1,612	0,943
Sosyal güvence varlığı	-0,033	1,000	0,974	-2,008	1,943
Sigara kullanma durumu	0,152	1,161	0,896	-2,140	2,445
Alkol kullanma durumu	1,806	2,628	0,493	-3,385	6,996
Kronik hastalık varlığı	0,156	0,870	0,858	-1,562	1,874
R2=0,109 F=3,297 p=0,000*					

Not: Çoklu doğrusal regresyon analizi kullanılmıştır.

COVID-19 korkusu ölçeği üzerinde etkisi olduğu düşünülen değişkenlerin COVID-19 korkusu ölçeğini ne şekilde yordadığını ortaya koymak için yapılan çoklu doğrusal regresyon analizi sonucunda, bu yordayıcı değişkenlerin COVID-19 korkusu ile anlamlı bir ilişki (R2=0,036) sergiledikleri görülmüştür (F=1,693, p<0,05). Regresyon katsayılarının anlamlılık testleri göz önüne alındığında ise, maternal bağlanma ölçeği toplam puanını, yaş, meslek ve gelir durumunun, COVID-19 korkusu üzerinde anlamlı bir yordayıcı olduğu saptanmıştır (p <0,05) (**Tablo 4**).

Tablo 4. COVID-19 Korkusu Ölçeği Toplam Puanı Regresyon Analizi

Bağımsız Değişkenler	β	S.E.	p*	95% CL	
				Lower	Upper
Maternal bağlanma ölçeği toplam	-0,331	0,104	0,002	-0,536	-0,127
Yaş	2,175	0,804	0,008	0,588	3,762
Eğitim durumu	0,334	0,724	0,646	-1,097	1,764
Meslek	2,569	1,103	0,021	0,390	4,748
Gelir durumu	-2,541	0,851	0,003	-4,222	-0,860
Sosyal güvence varlığı	0,136	1,352	0,920	-2,533	2,806
Sigara kullanma durumu	-1,096	1,566	0,485	-4,189	1,997
Alkol kullanma durumu	5,010	3,535	0,158	-1,970	11,991
Kronik hastalık varlığı	0,913	1,173	0,437	-1,404	3,231
R2=0,036 F=1,693 p=0,000*					

Not: Çoklu doğrusal regresyon analizi kullanılmıştır.

TARTIŞMA

Pandemi döneminde COVID-19 korkusunun maternal bağlanmaya etkisini ortaya koymak amacıyla yapılan araştırmada, korkunun postpartum dönemde maternal bağlanmayı etkilediği belirlenmiştir. Bilinmezlik korkusu her bireyde endişenin artmasına sebep olan bir durumdur (17). Pandemi döneminde bilinmezlikle birlikte özellikle lohusalar ciddi anksiyete ve stres yaşamışdır (18,19). Çalışmamızda COVID-19 ölçeği toplam puan $\bar{X}$=14,42±5,82 olarak bulunmuştur. COVID-19 Korkusu Ölçeğini kullanan çalışmalarda annelerin COVID-19 Korkusu Ölçeği puan ortalamalarının 16,90±4,80 ile 22,72±7,07 değerleri arasında olduğu görülmüştür (20,21). Boz (2022) yaptığı tez çalışmasında COVID-19 korkusu ölçeği toplam puanını $\bar{X}$=18,97±8,68 olarak hesaplamıştır (22). Çalışmamızda COVID-19 korkusu ölçeği toplam puanının literatürdeki çalışmalardan farklı olarak daha düşük olduğu görülmektedir. Çalışmanın yapıldığı tarihlerin pandeminin son zamanlarına denk gelmesi böyle bir sonucun elde edilmesine neden olabilir.

Çalışmamızda lohusaların yaş, meslek ve gelir durumuna göre COVID-19 korkusu arasında anlamlı bir fark saptanmıştır (Tablo 4). Literatürdeki çalışmalarda geliri iyi, yüksek eğitim düzeyine sahip, annenin çalışması, aile tipi gibi sosyo-demografik değişkenlerine göre COVID-19 Korkusu Ölçeği puanları arasında anlamlı fark olduğu görülmüştür (20,21,23). Boz (2022) sosyo-demografik özellikler ile COVID-19 korkusu arasında anlamlı bir fark saptanmadığını belirtmiştir (22). Çalışmamızın sonucu literatürle benzer olup özellikle yaş, ekonomik durum ve gelir durumu gibi faktörlerin anlamlı bir biçimde COVID-19 korkusunu arttırdığı görülmüştür. Çalışma sonucumuza göre yaş arttıkça ve sosyal güvencesi olmadığında COVID-19 korkusunun arttığı görülmektedir. Bu sonuç yaşlanma ve sosyal güvencenin olmamasının hastalığın seyrini etkileyeceği ve tedavi kaygısını arttırdığını düşündürmektedir.

Çalışma grubunda Maternal Bağlanma Ölçeği puanı $\bar{X}=97,44\pm4$ olarak düşük bulunmuştur. Pandemi öncesi maternal bağlanmayı inceleyen bir araştırmada bu oran $\bar{X}=97,92\pm65,93$ olarak yüksek olduğu görülmüştür (22). Pandemide yapılan bir araştırmada Maternal Bağlanma Ölçeği puanı $\bar{X}=102,47\pm4,12$ olarak hesaplanmıştır (23). Yine pandemide yapılan başka bir çalışmada doğum sonu annelerin toplam Maternal Bağlanma Ölçeği puanı ($\bar{X}=98.78\pm7.46$) düşük bulunmuş ve COVID-19 korkusu ile anlamlı bir ilişki olduğu belirlenmiştir (24). Bu sonuç bize pandeminin maternal bağlanmaya olumsuz bir etkisi olduğunu göstermektedir.

Çalışmada COVID-19 korkusu ile maternal bağlanma arasında negatif yönlü, anlamlı ilişki olduğu saptanmıştır. Sabancı Baransel ve ark (2021) çalışmalarında maternal bağlanmanın pandemi ile birlikte arttığını belirtmişlerdir (1). Kurt ve Çelikay Söyler (2022) çalışmalarında pandemide anksiyeteninmaternal bağlanmayı etkilediğini belirtmiştir (26). Mirzaki ve ark. (2022) gebelikte COVID-19 kaygısının anne-bebek bağlanmasını negatif yönde etkilediğini belirlemiştir (25). Literatür COVID-19 korkusunun anne-bebek bağlanması üzerinde negatif etkisinin olduğuna dikkat çekmektedir (25,26). Çalışmamız literatürle benzer olup; bu duruma pandemi sürecindeki belirsizliklerin ve bebeği korumaya çabasının bağlanmayı olumsuz etkilediği düşünülmektedir.

Mevcut sonuçlarla birlikte çalışmanın bazı sınırlılıkları bulunmaktadır. İlk olarak bu çalışmanın kesitsel olması, nedensellik, etki bakımından herhangi bir sonucun belirlenmesini engellediği gibi prospektif bir kohort çalışması yapılması etki ile nedenlerin ortaya konmasında daha güvenilir sonuçlar sunabilirdi. İkinci olarak, araştırma sadece tek bir ilde yapıldığı ve küçük bir grubu kapsadığı için sonuçların genelleştirilmesi olası olmayabilir. Daha geniş alanı kapsayan çalışmalara ihtiyaç vardır.

SONUÇ

COVID-19 korkusu anne-bebek bağlanmasını negatif yönde etkilemektedir. Maternal bağlanma ölçeği toplam puanı, yaş, meslek ve gelir durumunun COVID-19 korkusu üzerinde anlamlı bir yordayıcısı olduğu saptanmıştır. COVID-19 lohusalarda korku ve anksiyete düzeyini artırmaktadır.

COVID-19 gibi pandemilerde maternal bağlanma düzeyini artırmaya yönelik önleyici müdahalelerin uygulanması önemlidir. Özellikle bakımdan primer sorumlu ebe ve hemşirelerin nitelikli doğum öncesi bakım hizmetlerini gerçekleştirmesi, doğum sonu tene teması sağlaması, bebeğin bakımına ilişkin danışmanlık ve sosyal destek bu sürecin en iyi şekilde atlatılabilmesi için önemli uygulamalardır.

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