

# **GEORGIAN MEDICAL NEWS**

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**ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ**

Медицинские новости Грузии  
საქართველოს სამედიცინო სიახლენი

## GEORGIAN MEDICAL NEWS

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**GMN: Georgian Medical News** is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

**GMN: Медицинские новости Грузии** - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

**GMN: Georgian Medical News** – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებშიდან.

### WEBSITE

[www.geomednews.com](http://www.geomednews.com)

## К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman (Кириллица)**, для текста на грузинском языке следует использовать **AcadNusx**. Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - <http://www.spinesurgery.ru/files/publish.pdf> и [http://www.nlm.nih.gov/bsd/uniform\\_requirements.html](http://www.nlm.nih.gov/bsd/uniform_requirements.html) В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректур авторам не высылаются, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

**При нарушении указанных правил статьи не рассматриваются.**

## REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or computer-printed on a single side of standard typing paper, with the left margin of 3 centimeters width, and 1.5 spacing between the lines, typeface - **Times New Roman (Cyrillic)**, print size - 12 (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: [http://www.nlm.nih.gov/bsd/uniform\\_requirements.html](http://www.nlm.nih.gov/bsd/uniform_requirements.html)  
[http://www.icmje.org/urm\\_full.pdf](http://www.icmje.org/urm_full.pdf)

In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

**Articles that Fail to Meet the Aforementioned  
Requirements are not Assigned to be Reviewed.**

## ავტორთა საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx**. შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შედეგების ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფხიხლებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

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Hua-ting Bi, Wen-Wen Hao. CORRELATION BETWEEN PREOPERATIVE MACULAR THICKNESS AND POSTOPERATIVE VISUAL PROGNOSIS IN PATIENTS WITH DIABETIC CATARACT.....	6-9
Melik-Andreasyan G.G, Tkhruni F.N, Karapetyan K.J, Atoyan S.A, Aleksanyan N.J, Kotsinyan N. Yu, Israyelyan A.L. COMPARATIVE SUSCEPTIBILITY PROFILES OF CLINICAL AND REFERENCE BACTERIAL STRAINS ACROSS MULTIPLE ANTIBIOTIC CLASSES.....	10-16
Khrantsov D.M, Chernyshov O.V, Stoyanov O.M, Gryb V.A, Vorokhta Y.M. COGNITIVE RESERVE IN PATIENTS AFTER CORONAVIRUS INFECTION.....	17-22
Egzon Daku, Leon B. Hajdari, Bese R. Morina. OPTIMIZING SPINAL ANESTHESIA IN URGENT CESAREAN DELIVERY: THE TAYLOR APPROACH IN A PARTURIENT WITH CORRECTED SEVERE SCOLIOSIS AND PULMONARY COMPLICATIONS: A CASE REPORT.....	23-28
Ana Maisuradze, Ketevan Kiguradze-Gogilashvili, Flavien Fettak, Ketevan Oghiashvili, Vaja Maisuradze. CORRELATION BETWEEN RADIATION SAFETY TRAINING AND COMPLIANCE WITH RADIATION PROTECTION PRACTICES: A CROSS-SECTIONAL STUDY.....	29-32
Sarmad S. Salih Al Qassar, Omar Hussein Alluazy, Ahmed Khalaf Ali. A NOVEL NON-INVASIVE MODULATION OF ORTHODONTIC RELAPSE: INSIGHTS FROM A RABBIT MODEL.....	33-44
Fitim Alidema, Lirim Mustafa, Egzona Papraniku, Arieta Hasani Alidema, Mirlinda Havolli. BIOCHEMICAL ABNORMALITIES OF HEPATIC AND RENAL FUNCTION IN HOSPITALIZED PATIENTS RECEIVING PHARMACOLOGICAL THERAPY: A THREE-YEAR RETROSPECTIVE ANALYSIS.....	45-49
Sion Jo. DOUBLE LUMEN TECHNIQUE (DLT) - ENDOTRACHEAL TUBE GUIDED LEVIN TUBE INSERTION TECHNIQUE.....	50-53
Ellen Safadi, Aparna Baburaj, Sara Musa Abdalla Elamin, Marwan Ismail. ASSOCIATION OF DEMOGRAPHIC AND SOCIOECONOMIC VARIABLES WITH PATIENTS' COMPREHENSION AND CONTENTMENT REGARDING INFORMED CONSENT IN A UNIVERSITY HOSPITAL SETTING: A CROSS-SECTIONAL STUDY.....	54-59
Ostemirkyzy Darika, Kapsalyamova Elmira, Daryono Hadi Tjahjono, Ustenova Gulbaram, Eva Susanty Simaremare. ISOLATION AND IDENTIFICATION OF $\beta$ -SITOSTEROL FROM <i>ZYGOPHYLLUM FABAGO</i> L. HERB USING SUBCRITICAL CO <sub>2</sub> EXTRACTION.....	60-66
Oleg Batiuk, Marharyta Shkabarina, Andrii Manko, Svitlana Cherneta, Iryna Bychuk. THE DYNAMICS OF PERCEPTIONS AND EVALUATION OF THE COMPONENTS OF THE IMAGE OF AN IDEAL TEACHER DURING THE COVID-19 PANDEMIC.....	67-75
Ghaith Wadhah Hamdoon, Aws Hazem Al-Numan, Nawar Yahya Ahmed, Rikan Sulaiman Jumaah, Mazin Mahmoud Fawzi, Banan Burhan Mohammed. UMBILICAL STUMP CARE IN NEWBORNS: IS BREAST MILK AS EFFECTIVE AS CONVENTIONAL METHODS.....	76-80
Sana Khamassi, Emna Bornaz, Nourhène Tayari, Amel Gamoudi, Kamilia Ounaissa, Haifa Abdesselem, Ichraf Ben Ammar, Bahija Riahi, Dorra Bousnina, Henda Jamoussi, Chiraz Amrouche. OVERWEIGHT AMONG TUNISIAN SCHOOL-AGED CHILDREN: PREVALENCE AND ASSOCIATED FACTORS.....	81-86
Tsisana Giorgadze, Tinatin Gognadze, Lasha Dolidze. CERTAIN PROPERTIES OF $\beta$ -GLUCOSIDASE FROM <i>YUCCA GLORIOSA</i> FLOWERS.....	87-92
Issenova Saule, Rakhimzhanova Adel, Shukirgaliyeva Marzhana. RISK MANAGEMENT AND HEALTH SUPPORT FOR PREGNANT WOMEN USING INOSITOLS.....	93-100
Lirim Isufi, Diellza Kelmendi, Adelina Ahmeti Pronaj. GENDER DIFFERENCES IN EMOTIONAL REGULATION AMONG ADOLESCENTS WITH ELEVATED ADHD SYMPTOMS: A SCHOOL-BASED STUDY.....	101-105
Ketevan Omiadze, Alikya Chipurupalli, Tea Abzhandadze. CHRONIC URTICARIA RELATED TO <i>HELICOBACTER PYLORI</i> INFECTION – A CASE REPORT.....	106-109
Dinara Aliyeva, Ildar Fakhradiyev, Marat Shoranov. IDEOLOGICAL FAULT LINES IN PHARMACEUTICAL POLICY OF KAZAKHSTAN: A Q-METHODOLOGICAL APPROACH.....	110-119
Ahmed Abdalla Jarelnape. ARTIFICIAL INTELLIGENCE UTILIZATION AND ITS ASSOCIATION WITH NURSING PRACTICE IN CARDIOLOGY AND INTENSIVE CARE UNITS: A CROSS-SECTIONAL STUDY.....	120-124
Jiaqi Liu, Yan Pan, Zuliang Yan, Hong Jiang, Hanglin Li, Ying Yu. GLOBAL, REGIONAL, AND NATIONAL BURDEN OF CHRONIC KIDNEY DISEASE DUE TO TYPE 2 DIABETES MELLITUS, 1990-2021, WITH FORECASTS TO 2035: A FORECASTING STUDY FOR THE GLOBAL BURDEN OF DISEASE STUDY 202.....	125-135

Ahmed Dallal Bashi, Noor Abdulmonim, Noor Salem, Saleh Nayf, Teba Ammar, Yosif Ismaeel. THE MOST COMMONLY PRESCRIBED MEDICATIONS BY PEDIATRICIANS IN MOSUL CITY .....	136-142
Lukina Veronika V, Katibgadzhiev Magomed A, Solovyov Andrey A, Kovalenko Polina S, Kuzmich Vitaliy V, Eremeeva Mariia V, Gaevskaya Rinata R, Kuznetsova Anna A, Aleksandrova Iuliia S, Bulia Mariam Z, Sadrutdinov Tatam D, Saitova Atikat S. COMPARATIVE EFFECTIVENESS OF CONSERVATIVE METHODS FOR ACCELERATING EPITHELIALIZATION IN ACUTE ANAL FISSURE.....	143-147
Yerzhan Sharapatov, Maida Tusupbekova, Yermek Turgunov, Yuriy Pak, Yersaiyn Zhiyenbayev, Kuandyk Beisenov. COMPARATIVE EXPERIMENTAL STUDY OF MORPHOLOGICAL CHANGES IN THE KIDNEY IN ACUTE OBSTRUCTIVE PYELONEPHRITIS MODEL: INFLUENCE OF INFECTION ROUTE.....	148-155
Aymar Kassa Boukat, Massine El Hamoummi, Yassine Sarboute, Beouiss Mohamed, Andemey Leyoubou Emilie, Edderai Meryem, El Hassane Kabiri. POST-CT-GUIDED BIOPSY PNEUMOTHORAX, ACCORDING TO THE COAXIAL TECHNIQUE WITH AN 18-GAUGE NEEDLE: EPIDEMIOLOGICAL, DIAGNOSTIC AND THERAPEUTIC ASPECTS.....	156-161
Azamat K. Kairgali, Raisa A. Aringazina, Murat K. Jakanov, Abdolreza Haghpanah, Marat N. Sarkulov. THE EFFECT OF TRIVALENT CHROMIUM ON METABOLIC SYNDROME: A NARRATIVE REVIEW.....	162-169
Mohammed K.M Madi, Hannan Awad, Marwan Ismail, Maxmudjon Butaboyev, Jamoliddin Bobokalonzoda, Gaybiev Akmaljon Axmadjonovich, Elryah I Ali, Husham O. Elzein, Rasha Babiker, Amin SI Banaga, Salah Eldin Omar Hussein, Ayman H. Alfeel, Ahmed L. Osman, Asaad Babker. RETICULOCYTE SUBPOPULATION ANALYSIS AND ITS CORRELATION WITH IRON DEFICIENCY ANEMIA: A RETROSPECTIVE STUDY IN A PREDOMINANTLY FEMALE POPULATION.....	170-176
Zena S. Tawffiq, Inas H. Ahmed, Luma M. Al-Obaidy. PHYTOCHEMICAL SCREENING AND LIPID LOWERING EFFECTS OF <i>TERMINALIA CHEBULA</i> FRUIT EXTRACTS IN ALBINO WISTAR RATS.....	177-181
Azamat Shamsiev, Abdiqodir Shakhriev, Botir Yuldashev, Leyla Khakimova, Fariza Khalimova, Sagirayev Nodir Zhumakulovich. CLINICAL EFFECTIVENESS OF TRADITIONAL TREATMENT METHODS FOR GRADE III CHEMICAL ESOPHAGEAL BURNS IN CHILDREN.....	182-186
Plaurat Krasniqi, Leon B. Hajdari, Fatos Sada, Egzon Daku. POSTOPERATIVE MORPHINE USE IN ABDOMINAL SURGERY: CLINICAL INSIGHTS FROM A ONE-YEAR SINGLE-CENTER RETROSPECTIVESTUDY.....	187-193
Bashayr Z. Alamri, Reem F. Alnemari, Abduljawad S. Alharbi. UNDERSTANDING FACTORS CONTRIBUTING TO PATIENTS' NON-ADHERENCE TO A LIFESTYLE MODIFICATION PLAN: A CROSS-SECTIONAL STUDY AMONG VISITORS OF LIFESTYLE CLINICS IN KING ABDUL-AZIZ MEDICAL CITY, JEDDAH.....	194-201

## UMBILICAL STUMP CARE IN NEWBORNS: IS BREAST MILK AS EFFECTIVE AS CONVENTIONAL METHODS

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### Abstract.

**Background:** The umbilical cord is a natural site for bacterial colonization, and insufficient care could lead to omphalitis, sepsis, or delayed separation. While antiseptics and dry care are broadly used, breast milk utilization remains common in many cultures due to its antimicrobial and anti-inflammatory properties.

**Objective:** To compare the effect of breast milk utilization, open dry care, soap-and-water cleansing, and alcohol application in terms of cord separation time and omphalitis incidence.

**Methods:** A prospective randomized trial of 200 healthy newborns (1–7 days old) was assigned to one of four cord care methods (n=50 each). Infants were observed until cord separation, and omphalitis was identified based on clinical findings. Mean and median separation times and infection rates were compared using ANOVA, Chi-square, and non-parametric tests.

**Results:** The Baseline demographics variables did not differ significantly among groups. Omphalitis rate was similar in all groups: breast milk (4.25%), open dry care (6.6%), soap and water (4.5%), and alcohol (2.17%) ( $P = 0.931$ ). Mean separation times ranged from  $11.8 \pm 3.2$  days (soap and water) to  $14.5 \pm 5.8$  days (open dry care). ANOVA showed a borderline group difference ( $F(3,178) = 2.67, p = 0.049$ ). Post-hoc testing showed a significantly shorter cord separation time in the soap-and-water group, in contrast with open dry care; all other comparisons were non-significant.

**Conclusion:** No statistically significant differences in omphalitis incidence were identified among breast milk utilization, soap-and-water cleansing, alcohol application, and open dry care. Soap-and-water cleansing leads to faster and more consistent umbilical cord separation than open dry care.

**Key words.** Umbilical cord care, breast milk, omphalitis, newborn, cord separation time.

### Introduction.

Umbilical cord care practices exhibit worldwide differences, often determined by traditional beliefs and cultural background [1]. The topical application of different materials has a major role in umbilical cord care, possibly preventing infection until cord separation or, conversely, carrying potential hazard, as seen with the use of mustard oil in Pakistan [1].

The application of breast milk in umbilical care has been studied due to its probable antibacterial properties, assumed to facilitate cord separation and decrease infection rates in some Middle Eastern regions [2]. Breast milk is an energetic substance capable of modifying its composition to meet an infant's developing immune needs, providing specialized defense with each feeding [2]. It contains leukocytes that can propagate in response to maternal and infant infections, a distinguishing

point absent in formula, highlighting breast milk's role in basic immune defense for newborns. Its anti-inflammatory characteristics and sustained benefits have established its status as an amazing component of infant nutrition [3,4]. Methods for treating the umbilical cord differ markedly, varying from breast milk application or alcohol to the dry method. The optimal care method remains a subject of ongoing global debate [5].

According to the WHO, chlorhexidine is the sole authorized antiseptic for umbilical cord care, mostly in areas with high infant mortality rates [6]. The majority of studies on chlorhexidine have revealed a reduction in infection rates, but often with a significant delay in umbilical cord separation [7]. However, the dry method has been developed and encouraged by WHO, exhibiting encouraging results for both reduced infection rates and earlier separation, predominantly in industrialized countries. However, many studies report a less favorable response for the dry method compared to breast milk application [8]. Another method for keeping the umbilicus clean from urine and stool contamination is washing it with soap and water, which can contribute to the drying of the umbilical stump [9].

### Aims of Study.

The primary objective of this research was to investigate the effectiveness of breast milk as a natural antiseptic for umbilical stump care and to determine whether it promotes rapid umbilical stump separation compared to standard practices such as open dry care, soap and water cleansing, alcohol application, and to look for which method shows less incidence of omphalitis.

### Patients and Methods.

We conducted a single-center, prospective, non-blinded randomized controlled trial from April 1, 2024, to May 1, 2025. The aim was to compare the effectiveness of four umbilical cord care methods:

Topical breast milk application, open dry care, Soap and water cleansing, Alcohol application

### Eligibility Criteria:

Healthy term or preterm newborns with a birth weight of  $\geq 1000$  g were eligible. Infants were excluded if they had congenital anomalies of the umbilical cord, signs of sepsis at enrollment, or a birth weight  $< 1000$  g.

### Randomization and Interventions:

Two hundred eligible newborns were randomly assigned, using a computer-generated randomization sequence, to one of four umbilical cord care groups:

- Topical breast milk application
- Open dry care
- Soap-and-water cleansing
- Alcohol application

Parents were instructed on the assigned care method and advised to apply it until cord separation. Due to the nature of the interventions, blinding was not feasible.

#### **Sample Size:**

Considering a predicted absolute difference of 4.39% in omphalitis incidence with a significance level of 0.05 and 80% power, the anticipated required sample size was 55 infants per group (220 total). Owing to recruitment constraints, 200 infants were enrolled, and 182 completed follow-ups.

#### **Outcome Measures:**

The primary outcome was time to umbilical cord separation (days). The secondary outcome was the incidence of omphalitis.

Clinical diagnosis of omphalitis was based on predetermined criteria, encompassing erythema extending  $\geq 5$  mm from the umbilical stump, with or without edema, tenderness, or purulent discharge. Systemic signs such as fever or lethargy were recorded when present.

#### **Follow-up:**

Infants were followed using outpatient check-ups and telephonic follow-up until the cord separated. Parents were educated regarding signs of infection and instructed to seek medical attention if these occurred.

#### **Outcomes:**

The primary outcome was time to cord separation (days). The secondary outcome was the incidence of omphalitis.

#### **Statistical Analysis:**

Continuous variables are presented as mean  $\pm$  standard deviation (SD) or median (range) as appropriate. Group comparisons for cord separation time were performed using one-way ANOVA, followed by post-hoc Tukey testing when significant. Categorical variables were compared using the chi-square test. A p-value  $< 0.05$  was considered statistically significant. Statistical analyses were performed using Excel 2016.

#### **Ethical Approval:**

This study was approved and conducted in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments.

#### **Patient Consent:**

Written informed consent was obtained from the parents or legal guardians of all participating newborns prior to enrollment in the study.

#### **Results.**

##### **Demographic Characteristics:**

Of the 200 enrolled newborns, 182 completed follow-up and were included in the analysis. Baseline demographic characteristics, including sex, gestational age, and mean age at enrolment, were comparable across the four groups (Table 1).

##### **Incidence of Omphalitis:**

The overall incidence of omphalitis was 4.39% (8/182 analyzed cases). Eight cases of omphalitis were identified among the 182 infants. The incidence did not differ significantly between

groups: breast milk (4.25%), open dry care (6.6%), soap and water (4.5%), and alcohol (2.17%) ( $\chi^2 = 0.44$ ,  $p = 0.93$ ).

To explore factors potentially influencing omphalitis risk, a multivariable logistic regression model was constructed (Table 3). Predictors included cord care method, gestational age, and infant sex. None of these factors showed a statistically significant association with omphalitis (all  $p > 0.05$ ). Term infants had slightly lower odds compared with preterm infants (OR 0.82, 95% CI 0.40–1.67), though not significant. Similarly, male sex and the type of cord care did not materially alter infection risk. A forest plot (Figure 2) illustrates that all confidence intervals crossed unity, confirming the lack of predictive value. These findings reinforce that omphalitis incidence was independent of cord care method or basic demographic factors in this study cohort.

This analysis was exploratory and underpowered due to the small number of events.

##### **Umbilical Cord Separation Time:**

Mean cord separation times differed modestly among groups (Table 4). Soap-and-water care resulted in the shortest and most consistent separation time, whereas open dry care was associated with longer and more variable separation. One-way ANOVA demonstrated a borderline overall difference ( $F(3,178) = 2.67$ ,  $p = 0.049$ ). Post-hoc Tukey analysis showed that soap-and-water care led to significantly faster separation compared with open dry care, while other group comparisons were not statistically significant. No significant differences were found between the other groups. These findings suggest that while all methods are broadly comparable, soap and water achieved the most favourable combination of shorter and consistent separation times.

ANOVA:  $F(3,178) = 2.67$ , showed a borderline overall significance ( $p$  value = 0.049).

Post-hoc Tukey: Only the comparison between soap-and-water and open dry care remained statistically significant. ( $P < 0.05$ ); other comparisons not significant.

##### **Discussion.**

This RCT evaluated four interventions for umbilical cord care in neonates. The incidence of omphalitis was similar across groups, indicating that breast milk, soap and water, alcohol, and open dry care are of similar efficacy in preventing infection when proper hygiene is maintained.

Cord separation time changed minimally according to the care method. Soap and water facilitated the quickest and most uniform separation, whereas open dry care resulted in longer and more inconsistent times (Figure 3). Despite statistical significance, the 1–3-day difference is unlikely to be clinically relevant in otherwise healthy newborns.

The relatively elevated omphalitis rate in the open dry care group (~6.6%) compared with prior published studies may be due to the use of extensive clinical criteria in the absence of microbiological confirmation. This highlights the need for standardized diagnostic criteria in future research.

These results are consistent with earlier reports showing that umbilical cord care outcomes vary with context. While the WHO continues to endorse chlorhexidine in low-resource settings with poor hygiene and sanitation, Observations from

**Table 1. Demographic Characteristics of Patients.**

Characteristic	Breast Milk (n=47)	Open Dry Care (n=45)	Soap and Water (n=44)	Alcohol (n=46)	P value
<b>Sex, n (%)</b>					>0.05
<b>Male</b>	30 (63.8)	26 (57.8)	30 (68.2)	37 (80.4)	
<b>Female</b>	17 (36.2)	19 (42.2)	14 (31.8)	9 (19.6)	
<b>Gestational age, n (%)</b>					>0.05
<b>Term</b>	40 (85.1)	41 (91.1)	38 (86.4)	35 (76.1)	
<b>Preterm</b>	7 (14.9)	4 (8.9)	6 (13.6)	11 (23.9)	
<b>Age at enrollment (days), mean ± SD</b>	2.4 ± 1.0	3.1 ± 0.0	2.6 ± 3.1	2.8 ± 3.2	>0.05

**Table 2. Incidence of Omphalitis.**

Care Method	Omphalitis n (%)	No Omphalitis n (%)	Total (n)
Breast milk	2 (4.25)	45 (95.75)	47
Open dry care	3 (6.6)	42 (93.33)	45
Soap and water	2(4.5)	42(95.45)	44
Alcohol	1 (2.17)	45 (97.82)	46
<b>Total</b>	8 (4.39)	(95.6)	182

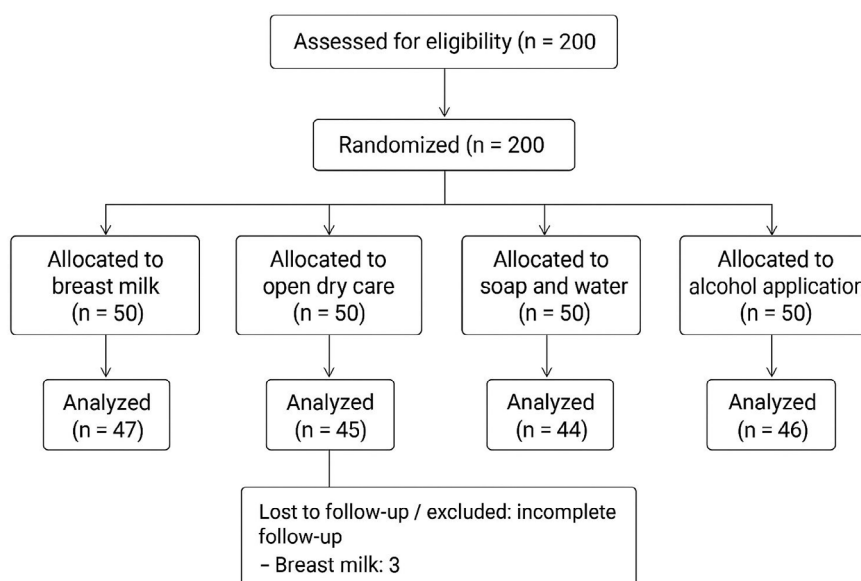
Chi-square:  $\chi^2 = 0.44$ , ( $p = 0.93$ ).

**Table 3. Multivariable Logistic Regression Predicting Omphalitis.**

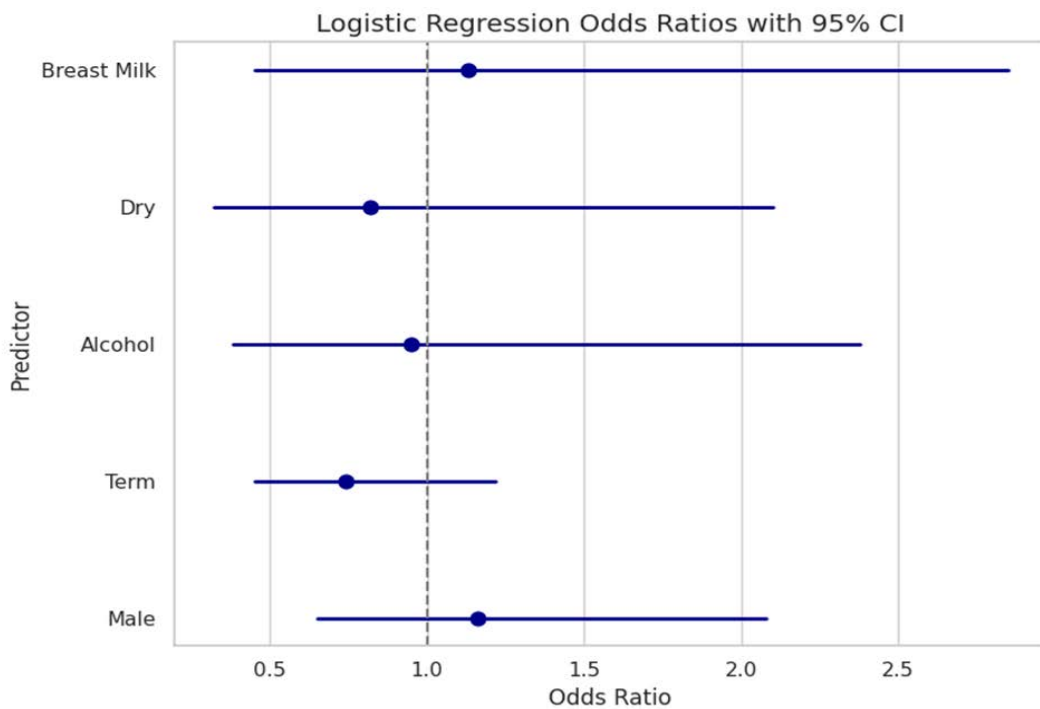
Predictor	Coefficient ( $\beta$ )	Odds Ratio ( $e^{\beta}$ )	P-value	Interpretation
Intercept	-1.10	-	0.04	Baseline odds
Breast Milk	0.12	1.13	0.78	No significant difference
Dry	-0.20	0.82	0.65	Slightly lower odds, not significant
Alcohol	-0.05	0.95	0.88	No significant difference
Term	-0.30	0.74	0.22	Lower odds in term babies, not significant
Male	0.15	1.16	0.60	Slightly Higher odds, not significant

**Table 4. Cord Separation Time by Care Method.**

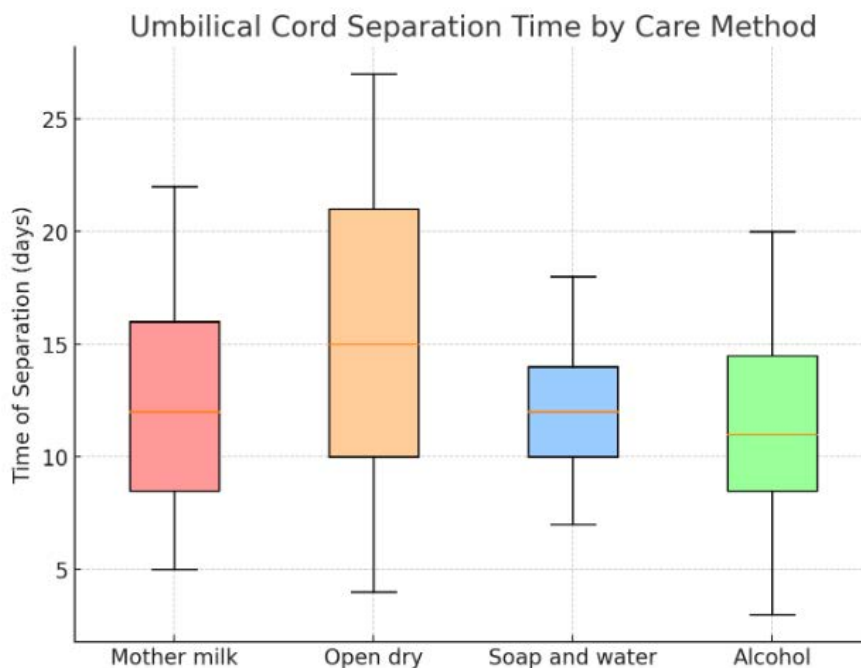
Care Method	Mean ± SD (days)	95% CI	Median (days)	Range (days)
Breast milk	12.4 ± 4.2	10.6–14.2	12	5–22
Open dry care	14.5 ± 5.8	12.1–16.9	15	4–27
Soap and water	11.8 ± 3.2	10.8–12.9	12	7–18
Alcohol	12.0 ± 4.8	10.3–13.7	11	3–20



**Figure 1. A single-center, prospective, non-blinded randomized controlled trial.**



**Figure 2.** A forest plot illustrates that all confidence intervals crossed unity, confirming the lack of predictive value.



**Figure 3.** Boxplots of cord separation times across four care methods. Soap and water showed the shortest and most consistent times, while open dry care was the longest and most variable.

clean healthcare and community environments, including our findings, indicate that simpler community-approved practices like breast milk or soap and water can serve as safe alternatives.

The observed differences in cord separation time may be explained by several factors. Soap and water likely promote drying of the stump while controlling contamination, resulting in faster and more consistent separation. Breast milk, despite its antimicrobial and anti-inflammatory properties, may

increase moisture that slightly delays separation. In contrast, open dry care is associated with longer and more variable separation, possibly due to higher exposure to contamination and inconsistent caregiver hygiene.

Clinically, the similar infection outcomes highlight that hygiene, parental education, and early recognition of infectious signs are more critical than the specific cleansing agent. However, even minimal differences in cord separation time may

influence parental experience and attitudes of normal healing, an important factor for counselling.

### **Strengths.**

Strengths of this study include the randomized design, comparative analysis of four approaches, and prospective follow-up until cord separation.

### **Limitations.**

Limitations use of clinical criteria without microbiological validation, restricted parental reporting of results, and was conducted at a single site, which may constrain generalizability. Furthermore, environmental effects such as climate and humidity, which may influence cord healing, were not considered.

Research should involve multiple centers in the future, be sufficiently powered, and encompass microbiological confirmation of omphalitis. Including parental beliefs and observational outcomes could also provide an assessment of acceptability and compliance with cord care practices.

### **Conclusion.**

Omphalitis incidence did not differ significantly among breast milk, soap-and-water, alcohol, and open dry care. Soap-and-water cleansing promoted faster and more consistent cord separation compared with open dry care. In clean environments, the choice of cord care may be influenced by parental choice, community practices, cost, and availability rather than by marked superiority in preventing infection.

### **Acknowledgment.**

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