GEORGIAN MEDICAL NEWS

ISSN 1512-0112

NO 3 (360) Март 2025

ТБИЛИСИ - NEW YORK



ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

Monthly Georgia-US joint scientific journal published both in electronic and paper formats of the Agency of Medical Information of the Georgian Association of Business Press. Published since 1994. Distributed in NIS, EU and USA.

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 ВИНИТИ 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 ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE 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 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. Корректура авторам не высылается, 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 compu-ter-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.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 ᲡᲐᲧᲣᲠᲐᲦᲦᲔᲑᲝᲦ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ 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 შეღებვის 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 ფჩხილებში 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 პოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენოპა არ უნდა აღემატეპოდეს 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.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

Содержание:

Hua-Ting Bi, Yan Wang, Ting-Ting Wang. EFFICACY AND PROGNOSIS OF ANTI-VEGF AGENTS COMBINED WITH PANRETINAL PHOTOCOAGULATION IN DIABETIC RETINOPATHY: A CLINICAL OBSERVATIONAL STUDY
Askhat Z. Bralov, Ruslan A. Nurakhunov, Magzhan S. Sadykov, Assiya Marat Issayeva, Saule M. Mardenova, Galymzhan G. Gallamov, Daniyar B. Amangaliyev, Arina A. Kirdyaikina, Assiya K. Mirtayeva, Svetlana I. Kuzmenko, Madina M. Abduyeva, Dinara Zh. Akhmetova, Yestay Sh. Abzalbek.
A RARE CASE OF PULMONARY ARTERY INTIMAL SARCOMA: A DIAGNOSTIC CHALLENGE9-12
Ana Kokhreidze, lali Saginadze, Rusudan Kvanchaxadze, Marine Gordeladze, Shota Janjgava, Iamze Taboridze. THE HIDDEN LINK: HOW VITAMIN D AND ZINC INFLUENCE GROWTH AND MENTAL HEALTH IN CHILDREN
Tereza Azatyan. ANALYSIS OF THE RESEARCH STUDY OF THE PECULIARITIES OF INTERHEMISPHERIC ASYMMETRY AND INTERHEMISPHERIC INTERACTION OF NORMAL AND CHILDREN WITH INTELLECTUAL DISABILITIES20-24
Kaltrina Veseli, Fehim Haliti, Enis Veseli, Art Berisha, Argjira Veseli, Edona Breznica, Arta Veseli. CRANIAL MORPHOMETRY: COMPARING TRADITIONAL METHODS AND 3D SCANNERS25-30
Vadym Korniichuk, Anna Brodskaya, Igor Verbitskiy, Andrii Kurmanskyi, Petro Honcharenko. CUTTING-EDGE STRATEGIES IN CONTEMPORARY LAPAROTOMIC SURGERY: EMERGING TECHNOLOGIES, TECHNIQUES, AND FUTURE ADVANCEMENTS
Eris Ranxha, Drilona Kënga, Oneda Çibuku, Entela Basha, Gentian Vyshka. DISCONTINUATION OF ANTIEPILEPTIC DRUGS AFTER EMBOLIZATION OF DURAL ARTERIOVENOUS FISTULAS
Imasheva Bayan Imashkyzy, Kamaliev Maksut Adilkhanovich, Lokshin Vyacheslav Notanovich, Narymbaeva Nazerke Nurmagambetovna, Yerkenova Sandugash Yerkenkyzy.
STUDY OF THE MORBIDITY RATES OF ENDOMETRIAL HYPERPLASIA IN THE REPUBLIC OF KAZAKHSTAN FOR THE PERIOD 2012-2022
Skander MSOLLY, Emna BORNAZ, Haifa ABDESSLEM, Kamilia OUNAISSA, Chiraz AMROUCHE. EVALUATION OF SEXUAL DISORDERS IN DIABETIC WOMEN BEFORE MENOPAUSE: ASSOCIATED FACTORS AND DETERMINATINGTHRESHOLDS
Khabadze Z.S, Bakaev Yu.A, Mordanov O.S, Lokhonina A.V, Ivina A.A, Badalov F.V, Umarov A.Yu, Wehbe Ahmad, Kakabadze E.M, Dashtieva M.Yu. ANALYSIS OF STROMAL CELL CULTURE PROLIFERATION BIOMARKER USING MEDICAL ADHESIVES
Anfal Kadhim Abed. A STUDY OF THE EFFECT OF CA15-3 LEVELS AND APELIN PEPTIDE ON SOME BIOCHEMICAL VARIABLES IN PATIENTS WITH BREAST CANCER IN BAQUBAH CITY
Lian-Ping He, Xiang-Hu Wang, Cui-Ping Li, Jun-Hong Lin, Ling-Ling Zhou, Guang Chen. AN INSTRUCTIONAL DESIGN PROCESS FOR TEACHING MEDICAL STUDENTS HOW WILCOXON RANK SUM TEST ARE EXPLAINED
Adelina Ahmeti-Pronaj, Art Uka, Lirim Isufi. THE URBAN BATTLEFIELD OF THE MIND: ENVIRONMENTAL INFLUENCE ON ADHD AND EXECUTIVE FUNCTIONS IN ADOLESCENTS
Sofia E. Romero, Jose Antonio Paredes, Ximena Espillco, Julia Moya, Ricardo Rodriguez, Walter Gomez-Gonzales. T LYMPHOCYTE LEVELS PRE AND POST VITAMIN C INFUSION IN PEOPLE NOT INFECTED WITH SARS-COV-2
Nebogova K.A, Mkrtchyan L.K, Karapetyan A.G, Simonyan K.V, Danielyan M.H. DETERMINATION OF CHARACTERISTIC CHANGES IN FOOT MORPHOMETRIC PARAMETERS IN OVERWEIGHT ARMENIAN ETHNIC GIRLS OF THE SAME SOMATOTYPE AND AGE GROUP
Li Rui, Zhuo Pengpeng, Wen Wenjie. JAG2 AS A KEY MEDIATOR IN PORPHYROMONAS GINGIVALIS-INDUCED PERIODONTAL INFLAMMATION90-94
Tian-Hua Du, Er-Gang Zhu, Guang-Ren Zhu, Shou-Zhi Wu, Hai-Ning Ni. RESEARCH ON THE PATH OF COMBINING PHYSICAL EDUCATION CLASS WITH "HAPPY RUN" TO IMPROVE STUDENTS' PHYSICAL FITNESS TEST SCORES IN MEDICAL COLLEGES95-99
Sameer Mohammed MAHMOOD, Zaid Muwafaq YOUNUS, Manal Abdulmunem IBRAHIM, Hiba Radhwan TAWFEEQ. CARNOSINE VARIATIONS IN MALES: THE ROLE OF BMI AND VITAMIN D STATUS100-105
Khabadze Z.S, Bakaev Yu.A, Mordanov O.S, Magomedov O.I, Ivina A.A, Inozemtseva K.S, Badalov F.V, Umarov A.Yu, Wehbe Ahmad, Kakabadze E.M, Dashtieva M.Yu.
SYSTEMATIC REVIEW OF WOUND DRESSINGS FOR PALATAL DONOR SITE MANAGEMENT IN ORAL SOFT TISSUE SURGERY

Davydova Z.V, Pustova N.O, Popova N.G, Kachailo I.A, Gulbs O.A, Dikhtyarenko S.Yu, Lantukh V.V, Minin M.O, Torianyk I.I, Gargin V.V. SOCIOCULTURAL IMPACT ON STUDENTS IN A STRESSFUL ENVIRONMENT: MEDICAL AND PSYCHOLOGICAL ASPECT
Tevzadze M, Kakhadze S, Janjghava Sh, Vashakmadze N, Khurodze T, Gulua N. DIAGNOSTIC VALUE OF PHOTON-EMISSION COMPUTED TOMOGRAPHY IN THE DIAGNOSIS OF THYROID GLAND DISEASES
Mohammed Mosleh Shwaish, Muhammed Malik Askar, Mustafa Adnan Abed Al-Qaysi. IMPLICATIONS OF SYZYGIUM AROMATICUM EXTRACTS TO REDUCE MULTI-DRUG RESISTANCE OF KLEBSIELLA PNEUMONIAE IN INDUCED URINARY TRACT INFECTION OF FEMALE RATS
Z.S. Khabadze, A.V. Vasilyev, A.A. Kulikova, Yu.A. Generalova, M.U. Dashtieva, Yu.A. Bakaev, A.Yu. Umarov, F.V. Badalov, A. Wehbe, I.V. Bagdasarova. ANALYSIS OF PERIODONTAL POCKET MICROBIOTA IN PATIENTS WITH CHRONIC GENERALIZED PERIODONTITIS135-142
Maysaloon Shaman Saeed, Rasha Nadeem Ahmed, Heba Khaled Hatem, Waseem H. Alkhaffaf. CLINICAL AND RADIOLOGICAL PROFILE OF PATIENTS PRESENTING WITH CEREBROVASCULAR ACCIDENTS: A CROSS- SECTIONALSTUDY
Narine Harutyunyan, Lusine Stepanyan. FAMILY ROLES AND CAREER PRIORITIES AS PREDICTORS OF FAMILY WELL BEING
Liuxia Shi, Yi Wei, Hongqing Yu, Mengchao Xiao, Xue Chen, Pengpeng Zhuo, Yuelong Jin, Jian Zhai. RELATIONSHIP BETWEEN LIPID PROFILES AND RISK OF HYPERGLYCEMIA IN HYPERTENSIVE AND OBESITY PATIENTS: A MULTIVARIATE ANALYSIS
Iryna Dvulit, Nataliia Dymar, Petro Kuzyk, Inna Marush, Serhii Chugin. ALIGNMENT OF HEALTHCARE TRAINING CRITERIA IN UKRAINE WITH EUROPEAN STANDARDS
Yurevych N.O, Varzhapetian S.D, Buniatian Kh.A, Khotimska Yu.V, Sukhina I.S, Kuzmenko N.M, Trach O.O, Alekseeva V.V. CT-BASED STUDY OF ANATOMICAL VARIATIONS IN CHRONIC RHINOSINUSITIS PATIENTS
Izmaylov Nikita P, Abduragimov Abduragim M, Platonova Ekaterina A, Evchenko Daniil A, Bogatyrev Gennady S, Isakova Margarita S, Avtsinov Fedor O, Ershova Mariia A, Shingarev Fedor A, Yakhyaeva Nargiz T. COMPREHENSIVE ASSESSMENT OF VEGETATIVE AND NOCICEPTIVE STATUS IN PATIENTS WITH CARDIAC ARRHYTHMIAS
Ruaa A. Hamid, Hadeel A. AL Sarraje, Suha M. Abdulla. AWARENESS, USE AND EFFECTIVENESS OF EMERGENCY CONTRACEPTION
Aigerim Utegenova, Gulnara Kassymova, Ildar Fakhradiyev. EXPERIENCE OF IMPLEMENTING DIGITAL TELEMEDICINE TECHNOLOGIES TO IMPROVE ACCESS TO CERVICAL CANCER SCREENING IN RURAL AREAS OF THE REPUBLIC OF KAZAKHSTAN
Ahmad Khaleel, Elene Nikoleishvili, Natia Kharati. DIFFERENT TYPES OF SCREEN BEHAVIOR AND THE DEVELOPMENT OF PSYCHIATRIC DISORDERS IN ADOLESCENCE AND ADULTS IN ADJARA
Walter Edgar Gomez-Gonzales, Juan Carlos Valencia Martínez, Luis Alberto Chihuantito-Abal, Jessika Corahua Ordoñez, Yeni Gutiérrez Acuña, Lidia Vargas Pancorbo, Maria Fatima Gómez-Livias. EPIDEMIOLOGICAL AND CLINICAL FACTORS ASSOCIATED WITH COVID-19 REINFECTION IN PATIENTS TREATED IN A HIGH- ALTITUDE REGION
Kaibkhanov Ulukhan K, Konyshev Mikhail V, Ovsienko Aleksei A, Khromov Artur M, Glushets Daria D, Molchanova Maria N, Meilikhovich Sofia A, Kopitko Olga N, Solomonenko Andrey V, Mamedova Roksana G, Larina Anna D, Boyko Valeria, Kutenko Anna I, Gaponova Natalia A, Ermolenko Ekaterina V. ENDOTHELIAL GLYCOCALYX AND ATHEROSCLEROSIS: FROM MOLECULAR MECHANISMS TO THERAPEUTIC
OPPORTUNITIES

AWARENESS, USE AND EFFECTIVENESS OF EMERGENCY CONTRACEPTION

Ruaa A. Hamid¹*, Hadeel A. AL Sarraje¹, Suha M. Abdulla².

¹Department of Obstetrics and Gynecology, College of Medicine, University of Mosul, Iraq. ²Albatool Teaching Hospital, Ninevah Health Directorate, Mosul, Iraq.

Abstract.

Background: Emergency contraception (EC) is a method that is used to prevent pregnancy after unprotected sexual intercourse (UPSI), it can decrease the risk of unplanned pregnancy by up to 95% when given within 72 hours of UPSI; therefore may reduce the rates of unsafe abortion. Objectives: The aim of this study is to assess awareness, use of emergency contraception among a sample of reproductive age in Iraqi women and effectiveness of this method in preventing unplanned pregnancy. Methods: This study used an observational cross sectional design conducted in Iraq between January and August 2023, consist of (131) reproductive age Iraqi women, data is collected using an online structured self-administered questionnaire, Descriptive data were presented using tables and statistical analysis performed using Minitab version 23 statistic program. Results: (29.01%) of the respondents used emergency contraception, (76.31%) of the respondents used the EC within 24 hours of UPSI, (13.15%) have unplanned pregnancy following EC use and (86.84%) did not. Conclusion: Despite the good awareness of emergency contraception among the participants the use and attitude are still substandard, a significant percentage of pregnancies occurred among EC users which are unplanned, more efforts must be made to raise awareness, use and attitude about EC and inclusion of these methods in the free family planning services in Iraq.

Key words. Awareness, effectiveness, emergency contraception, unplanned pregnancy.

Introduction.

Emergency contraception (EC) is a method that is used to prevent pregnancy following unprotected sexual intercourse (UPSI), it can decrease the risk of unplanned pregnancy by up to 95% when given within 72 hours of UPSI. It is useful in the following circumstances: incorrect use of contraceptives, method failure, rape and for women who have consented to unplanned and unprotected sexual intercourse [1].

The EC methods have developed since the 1960's to allow a better tolerance. Decreased hormone doses, simplified regimen and withdrawal of estrogens have led to a lower side effects profile, over the counter (OTC) available EC. The copper intrauterine device (Cu-IUD) required to be fitted by health care professional, is less accessible; However, it enables simultaneous commencement of a dependable long-term contraception. Unfortunately, EC use is still substandard, and information reinforcement is needed to overcome unwillingness to its use [2].

Types of emergency contraception and mechanism of action.

Levonorgestrel intrauterine system (LNG-EC): 1.5 mg single oral tablet suppress ovulation by postponing or inhibiting

follicular rupture and causing luteal dysfunction. If administered earlier to luteinizing hormone (LH) surge, it can suppress ovulation for the next five days, LNG becomes ineffective in the late follicular phase [3]. Despite post-ovulation effect have been suggested succeeding studies haven't demonstrated a substantial EC effect when used following ovulation [4,5]. In vitro, no effect on endometrial receptiveness or embryo implantation have been demonstrated [6].

Uliprestal acetate-emergency contraceptive (UPA-EC): 30 mg single oral tablet delays ovulation by at least 5 days, even when given following the onset of LH surge but can't suppress ovulation at or following the LH peak, therefore, no post-ovulation EC effect [7]. At the doses used in the emergency contraception UPA does not appear to interfere with embryo implantation [8]. Both LNG and UPA are Food and Drug Administration (FDA) approved EC methods.

An increased body mass index (BMI) decrease the effectiveness of levonorgestrel and UPA. A meta-analysis of two randomized controlled trial concluded that women with a body mass index more than 30 kg/m2 had > 3 fold higher risk of pregnancy, compared to women with a body mass index less than 25 kg/m2 [9].

Cu-IUD: the main mechanism of action is by suppression of fertilization by its toxic effects on the gametes. If fertilization does occur, the local endometrial inflammatory reaction induced by Cu-IUD deters implantation, it therefore has both pre- and post-fertilization contraceptive effect. It can be used up to five days following the first unprotected sexual intercourse in a cycle. Given that the earliest implantation is thought to occur six days following ovulation, a Cu-IUD can also be inserted up to five days post ovulation. It is the most efficient method of emergency contraception [10]. The guideline development group recommended that it should be considered for all women requiring emergency contraception [7].

More recently there is strong evidence that the LNG-IUS is just as effective when used for EC as the non-hormonal Cu-IUD. However the LNG-IUS is not FDA-approved for use as EC [11]. Both the Cu-IUD and the LNG IUS are not affected by the weight of the user [9].

The Yuzpe method consist of a combination of $100 \mu g$ of ethinyl estradiol and 0.5 mg of LNG administered simultaneously orally, followed by a 2nd dose of both hormones in twelve hours. This method is not available as an EC preparation but consists of a collection of typical combined hormonal contraceptive pills [12]. this method can inhibit or delay ovulation so that an oocyte is not available for fertilization at the time when sperms are viable within the female genital tract [13].

For both types of FDA approved oral EC drugs (LNG and UPA) there are no medical contraindications and for IUDs, the same medical eligibility criteria is applied for emergency contraception as for their non-EC insertion [14].

Emergency contraception can prevent unplanned pregnancy and therefore may reduce the rates of unsafe abortion this is particularly beneficial in countries where abortion laws are restrictive for religious and ethical issues. Studies done since 1990 on termination of pregnancy (TOP) have identified EC as one of the main reasons to prevent unplanned pregnancy in the UK. However, the uptake of the EC is still low, and the public knowledge is below the standard. Women are attentive to prevent unplanned pregnancies, so more information and accessibility of the method will be helpful to increase its utilization [15].

An unplanned pregnancy is either unwanted (when no children or no further children are wanted) or is mistimed (occurred earlier than preferred) [16]. It is a universal problem with substantial adverse concerns for women, including significant morbidity or mortality following childbirth or unsafe abortion in addition to the adverse effects on a woman's psychological and socioeconomic condition of her and her family. It has a significant economic burden for the health care services [17].

According to the 2017 world health organization (WHO) report, there is about 56 million TOP annually worldwide, 6.6 million in developed world and 49.3 million in developing regions where each year approximately 22,000 women died due to the complications of abortion [18]. There are 6 million unwanted pregnancies, 2.1 million unplanned births, 3.2 million abortions and 5,600 maternal mortalities would be lowered each year by evading the unmet requirements for the present contraception [16,19].

Around 26.5 million unplanned pregnancies occur annually due to incorrect use or failure of the contraceptive method [20]. The WHO included the EC on its list of the essential medicines and is advised for improved access to the emergency contraception can decrease the adverse health consequences for women without increasing the risk of sexually transmitted infections or unwanted pregnancies [17].

Patient and Methods.

This is a descriptive cross-sectional study was conducted in Iraq between January and August 2023 among a sample of (131) reproductive age Iraqi women to assess awareness, use of emergency contraception and effectiveness of this method in preventing unplanned pregnancy

Data is collected using an online structured self-administered questionnaire, using Google form and posted to the participants by social media, study participants were kept confidential. The first statement in the Google form was the consent of participants agreement to enroll in the study.

The questionnaire consists of three sections, the first part assess information on the socio-demographic characteristics of the respondents (age, educational level, occupation and socioeconomic status).

The second part includes questions about the use and the type, if any, of regular contraceptives, the knowledge, the use of emergency contraception and the sources of their information about this method.

The third section includes questions about the pregnancy history regarding the numbers of children and the mode of deliveries. The occurrence of unplanned pregnancy and the outcome of each whether (term pregnancy and live birth, spontaneous or induced abortion, fetal congenital anomalies) is inquired about, the participants attitude towards emergency contraception is evaluated.

The descriptive data are presented using tables and statistical analysis performed using Minitab version 23 statistic program.

Results.

In this study the majority of respondents fall within the age range of 26-35 years (60.30%), while (19.84%) are in the 17-25 and 36-45 age groups. The educational distribution shows that (78.62%) have a higher education level, with smaller proportions having secondary (13.74%) or primary (7.63%) education. In terms of occupation, the majority of the respondents are employees (61.83%), while (38.16%) are housewives. The socio-economic state reveals that most participants are in the medium category (49.61%), with (44.27%) falling into the good category and a smaller percentage in the poor category (6.10%) (Table 1).

Demographic cha	aracteristics	No.	%
Age range (year)	17-25	26	19.84
	26-35	79	60.30
	36-45	26	19.84
Educational level	Primary	10	7.63
	Secondary	18	13.74
	Higher education	103	78.62
Occupation	Employee	81	61.83
Occupation	Housewife	50	38.16
Socio- economic state	Good	58	44.27
	Medium	65	49.61
	Poor	8	6.10
Total		131	100
Poor=illiterate or	primary school grad	luate,	
Medium=Seconda	ry school graduate,		
Good=Graduate or	r postgraduate		

Table 1. Demographic characteristics of participants.

The following table provides information about the contraceptive behavior and usage among the sampled women. It is evident that a significant percentage (82.44%) of the respondents do use regular contraception, which can decrease the potential risks of unplanned pregnancies. Among the methods used, natural family planning and condoms/vaginal suppositories are the most common choices, each accounting for (36.69%) and (17.55%) respectively. It is concerning that both methods carry the highest failure rate among the contraceptive options available, suggesting the need for increased awareness and access to a more efficient contraceptive methods. (29.01%) of the sampled women have used EC, with (65.78%) used single oral pill LNG 1.5mg (UPA is not widely available in Iraq), only (7.89%) used Cu IUD as EC, (26.31%) used COC (Yuspe method) which has the highest failure rate and side effect profile compared with LNG single tab and Cu-IUD. The cause of using the EC was equally for method failure or no method use at that particular cycle (50%). (76.31%) of the respondents used the EC within 24 hours of UPSI, (15.78%) used it within 48 hours and only (7.89%) used the method within 72 hours of UPSI which may suggest awareness among the users about the significance of time interval between UPSI and EC use for the method effectiveness. The source of information about EC among the participants is primarily the healthcare workers (42.74%), highlighting their crucial role in promoting contraceptive awareness, the social media comes in second as a source of information about EC (29.77%) (Table 2).

Table 2. Contraceptive behavior and use among participants.

Contraceptive information	No.		%
Use of merulan Contracontion	Yes	108	82.44
Use of regular Contraception	No	23	17.55
Total		131	100
Condom /Vaginal suppositories Copper IUCD Hormonal IUCD	Condom /Vaginal suppositories	23	17.55
	Copper IUCD	12	9.16
	Hormonal IUCD	3	2.29
Type of contraception used	Injectable contraception	5	8.81
	Oral hormonal contraception	13	9.92
	Natural family planning	52	36.69
Total		108	100
Use of emergency	Yes	38	29.01
contraception	No	93	70.99
Total		131	100
Type of emergency contraception used	Single oral pill	25	65.78
	Combined contraceptive pills	10	26.31
	Copper IUD	3	7.89
Total		38	100
Cause of emergency	Contraception failure	19	50
contraception use	No method used	19	50
Total		38	100
	Before 24 hour	29	76.31
and EC	Before 48 hour	6	15.78
	Before 72 hour	3	7.89
Total		38	100
	Family and friends	22	16.79
Source of information about EC	Health workers	56	42.74
	Printed media	14	10.68
	Social media	39	29.77
Total		131	100

The study revealed that the majority of respondents have (1-3) children (87.78%) with a smaller percentage having no children or (4-6) children (6.10%). The data on delivery modes indicates that vaginal delivery is the most common (43.90%), followed by one cesarean section (29.26%) and (26.82%) of respondents had ≥ 2 Cesarean deliveries. (13.15%) have unplanned pregnancy following EC use and (86.84%) did not. The participants were asked if they had previous unplanned pregnancy (30.53%) answered yes.

Among those who had unwanted pregnancies, the outcomes varied, with (65%) resulting in term pregnancy, (20%) had spontaneous miscarriage, (7.5%) resorted to induced abortion and the same percent had pregnancy with congenital anomalies. Interestingly, a significant percentage of respondents (76.33%) do not think that emergency contraception can reduce the

number of unplanned pregnancies, which highlights the need for further efforts to raise awareness and education on its efficacy (Table 3).

Table 3. Pregnancy information of the participants.

Pregnancy information		No.	%
	No children	8	6.10
Number of children	1-3	115	87.78
	4-6	8	6.10
Total		131	100
Mada of delivery	Normal vaginal delivery	54	43.90
Mode of derivery	1 Cesarean section	36	29.26
	≥2 Cesarean section	33	26.82
Total		123	100
Occurrence of unplanned	Yes	5	13.15
pregnancy following EC use	No	33	86.84
Total		38	100
Previous history of unplanned	Yes	40	30.53
pregnancy	No	91	69.46
Total		131	100
	Term pregnancy	26	65
Outcomes of previous	Spontaneous miscarriage	8	20
unplaimed pregnancy	Induced abortion	3	7.5
	Fetus with congenital anomalies	3	7.5
Total		40	100
Do you think that EC reduces	Yes	31	23.66
the no. of unplanned pregnancy?	No	100	76.33
Total		131	100

Discussion.

This is a descriptive cross-sectional study designed to give an insight into the awareness, use of emergency contraception among a sample of reproductive age Iraqi women and effectiveness of this method in preventing unplanned pregnancy.

The demographic data shows that more than halve of the participants (60.30%) are in the 26-35 years age range and (19.84%) are 17-25 years old. A study in Japan published in 2019 revealed that most EC users were in their 20s [21] in Nigeria the age range of the participants in the study of "Sexuality and Emergency Contraceptive Practice among Female Undergraduates in Lagos" (93.2%) were 16-24 years [15].

In this study most of the participants have a higher education level, more than halve are of the working class, (44.27%) and (49.61%) lied within the good and medium socioeconomic status respectively, these demographic data may explain the high uptake and adherence to regular contraceptive methods among the respondents (82.44%); these findings are consistent with the results of a study published in 2016 in Canada which concluded that the socioeconomic factors influenced both choice and use of contraception and unplanned pregnancy rates, the main demographic predictor of not using any form of contraception was the low educational attainment [22]. The findings of an Indian study published this year that the negative socioeconomic and cultural factors like low educational level, no contact with mass media. Etcetera remain an important obstacles to the use of contraceptives [23].

In this study the natural family planning is the most commonly used contraceptive method followed by Condom /Vaginal suppositories, both Cu-IUD (9.16%), COC (9.92%) and injectable contraception (depoprovera) (8.81%) are used in close proportions, the least commonly used method is LNG IUS (2.29%), this may reflect the general tendency among the sampled women to avoid the hormonal methods of contraception because of fear of side effects, In a study implemented at the family planning clinic in the New General Mansoura hospital in Egypt the distribution of contraception use was as follows: Cu-IUD is the most commonly used method (40.2%) followed by oral contraceptive pills (OCPs) (27.6%), sub-dermal hormonal contraceptive was the least used method (2.3%) [24]. In Saudi Arabia a study of Contraceptive Use and the Associated Factors in Jazan city the women were most familiar with OCPs (74.9%) and intrauterine devices (69.9%) [25]. In the above-mentioned Canadian study, the barrier (33.1%) and hormonal (27.7 %) methods were the most commonly used forms of contraception in the combined cohort [22]. This reflects different trends in contraception use in different countries.

(29.01%) of women used EC in this study, this may paradoxically reflects two facts the high rate of women using regular contraception in this study may reduce the need for use of the emergency contraception ; or the negative attitude towards EC among the participants; However these findings when compared to a study of knowledge, attitude and practice of EC among sample of women in Bagdad that was published in 2014 there is increased use of EC (12.00%) versus (29.01%) in the current study [26]. A higher percent of women in Saudi Arabia (37.1%) used emergency contraception to prevent pregnancy according to a study looking at the Knowledge and attitude about EC published in 2019 [27]. While (78.0%) of Ethiopian women used EC methods according to a study of Female Undergraduates in Arba Minch University in Southern Ethiopia [28]. Suggesting the need to increase efforts to raise awareness of EC and its role in decreasing the rate of unplanned pregnancy among Iraqi women.

The most common type of EC used according to this study is LNG 1.5 mg single tablet which is available, affordable and easy to use, but it is given only with a medical prescription according to the instructions of the Iraqi Ministry of Health, (uliprestal acetate is not widely available in Iraq), followed by the Yuspe method used by (26.31%) and only (7.89%) of the respondents had Cu IUD fitted as EC method, Similarly In study of "Sexuality and Emergency Contraceptive Practice among Female Undergraduates in Lagos, Nigeria", the most widely known emergency contraception was Postino (26%) followed by combined hormonal contraceptive pills (23%), intrauterine device (10%) [15]. Similar findings demonstrated among young unmarried women in Accra, Ghana [29]. Despite the high efficacy and long-lasting contraceptive benefits Cu-IUD it is rarely recommended for EC according to a study in University of California, San Francisco [30].

In this study EC equally used for either Contraceptive method failure (50%) or in the cycles where no method is used (50%). According to study done in Pathein, Myanmar (55.6 %) used EC because of the failure of regular contraceptive methods, and more than one-third replied that they have experienced unplanned sexual intercourse [31]. Different findings in a study done in Public Hospitals, Eastern Tigray, Ethiopia the causes of EC use were either contraceptive method used (10.3%) [32].

In the present study the vast majority of EC users used the method within 24 hours of UPSI (76.31%) this may suggest high awareness among EC users about the significance of time interval between UPSI and EC use for the method effectiveness, (15.78%) used the method within 48 hours and (7.89%) within 72 hours of UPSI these findings may represent improved knowledge of EC use when compared to a previous Iraqi study of knowledge of EC ;the correct time of EC effectiveness (up to 72 hours) was recognized by only (8.25%) of women [26]. In the above-mentioned Saudi study of the Knowledge and attitude about EC women were asked about the maximum time interval to use a pill for emergency contraception following UPSI (53.2%) responded "immediately after sex." However, when women were asked about the maximum the time to insert Cu-IUD for emergency contraception (66.1%) answered that they did not know [27]. Different findings in Ethiopian study of knowledge and utilization of EC among women seeking induced abortion only (7%) used EC within 24 hours, (20.3%) within 72 hours and (4.1%) within 5 days of UPSI [32].

The main source of information about EC in the sampled women is the healthcare workers (42.74%) highlighting their crucial role in promoting contraceptive awareness, (29.77%) from social media to less extent from family and friends and the least likely from printed media. Similar findings in the abovementioned Iraqi study the commonest source of information about EC was the obstetricians and Gynecologist (75.00%) and the internet (8.330%) [26]. In Saudi Arabia the source of knowledge about EC was different and is as follows: (60%) from family members, (20%) from social media, (13.3%) from friends and only (6.6%) heard about EC from a doctor or family planning visit [33]. In a Japanese study the source of information of EC was mainly from internet (47.8%), (23.3%) from friends, (8.7%) from physicians and (2.6%) hospital staff [21].

In this study most of the participants have (1-3) children, (6.10%) of women equally have no children or (4-6) children, less than halve of the mothers delivered vaginally, (29.26%) have one cesarean birth and (26.82%) have ≥ 2 CS deliveries which denote high cesarean delivery rate among the sampled women. In the above-mentioned Saudi study (10.7%) had no children (16.9%) had one child, (11.6%) had two children and (60.74%) had more than two children [33]. Regarding the number of children in a study from Ethiopia where (61.0%) had (1-2) children, (33.0%) had (3-4) children and (6.0%) had 5 and more [34].

In this study (13.15%) of the participants have pregnancy that occurred following EC use, which is high percentage compared to the global rates more studies are needed to explain these observations with larger sample size to decrease bias and to find out the reasons of this high failure rate (timing of EC administration during the cycle, BMI of the users, GIT upset, drug interaction, or storage defect..). Only (2.4%) of women had pregnancy following administration of single dose of LNG in the above-mentioned Japanese study [21]. According to WHO report on 21st of November 2021. A meta-analysis of two studies displayed that women who had used emergency contraception pills with ulipretal acetate had a pregnancy rate of (1.2%) and those used levonorgestrel their pregnancy rate was (1.2% - 2.1%) [35].

In the current study (30.53%) of women give a previous history of unplanned pregnancy and (69.46%) do not. The findings of a study implemented in Erbil/ Iraq published in 2022; (39.4%) reported unintended pregnancy and (60.6%) had planned pregnancy [36]. According to United Nations Population Fund report in December 2018 in the Arab region two in five pregnancies are unintended and one half of them ended in abortion [37]. Different findings in a study of Proportion of unplanned pregnancy rate was (17.2%) and the majority of pregnancies were planned (70.1%) [38].

(65%) of unplanned pregnancies in this study proceeded to term however further studies is needed to specify details of how these unplanned pregnancies proceeded regarding ANC, time and mode of delivery, maternal and neonatal outcome. According to a Swedish cohort study, unplanned pregnancies were associated with delayed initiation of ANC, higher probabilities for induction of labor (IOL) and longer hospital stay, but not with any adverse pregnancy outcomes [39].

In the current study (20%) of unplanned pregnancies ended with spontaneous miscarriage, (7.5%) resorted to induced abortion and same percent have pregnancies complicated with congenital anomalies, in the study of unintended pregnancy among women in Erbil (58%) of unintended pregnancies ended with abortion (no further details about the type of abortion mentioned in the study) and only (42%) proceed to birth [36]. regarding the Abortion regulations in the Arab region: "Nearly one-third of the region's population lives in 11 countries that do not allow abortion or allow it only to save a woman's life and in case of fetal impairment". In Iraq abortion is allowed for both fetal maternal health indications [37]. According to a study of women Perspective of induced abortion in Turkey;(12.7%) of the women have had an induced abortion, the commonest reasons were unwanted pregnancy, economic causes, and no more children were desired [40].

In this study, only (23.66%) believed that EC reduces the numbers of unplanned pregnancies and (76.33%) have opposite opinion suggesting negative attitude of the sampled group towards EC. In a study of knowledge, attitude and practice of EC among women attending PHC in Bagdad (69.50%) showed neutral attitude and (18.75%) showed positive attitude [26]. Different findings seen in a study of EC knowledge and attitude, among female students of Botswana (71.2%) believed that EC could prevent unwanted pregnancy, but only (45.3%) were willing to consider it [41]. (67.7%) of Saudi women thought that EC should be widely advertised and (48.4%) thought that it should be made available without prescription, suggesting positive attitude for EC use exist [42].

The limitations of the present study include that the participants self-reported data might carry social desirability bias due to their awareness from emergency contraception usage. The study sample have limitations regarding their demographic parameters which is likely not fully representative of the general population hindering the generalizability of the results, therefore, more diverse population required with longitudinal approaches and follow-up programs to encourage results validity and clinical applicability.

Conclusion.

Despite the good awareness of emergency contraception among the sampled women the use and the attitude are still substandard, a significant percentage of pregnancies occurred among EC users which are unplanned. More efforts must be made by healthcare workers and social media to raise awareness and use and attitude about EC in our community and inclusion of these methods in the free family planning services in Iraq.

Acknowledgement.

The authors are thankful to the College of Medicine/University of Mosul for their scientific guidance and support, we would also like to thank all the participant for their contributions to this study.

Authors contributions.

All the authors made substantial contributions to the conception, design of the study, acquisition, analysis and interpretation of data, they equally contributed in critical review of the study for intellectual content and gave the final consent of this version to be issued and agreed to be responsible for all parts of the study.

REFERENCES

1. Kwame KA, Bain LE, Manu E, et al. Use and awareness of emergency contraceptives among women of reproductive age in sub-Saharan Africa: a scoping review. Contraception and Reproductive Medicine. 2022;7:1.

2. Kolanska K, Faucher P, Daraï É, et al. La contraception d'urgence-Une longue histoire. médecine/sciences. 2021;37:779-784.

3. Brache V, Cochon L, Deniaud M, et al. Ulipristal acetate prevents ovulation more effectively than levonorgestrel: analysis of pooled data from three randomized trials of emergency contraception regimens. Contraception. 2013;88:611-618.

4. Novikova N, Weisberg E, Stanczyk FZ, et al. Effectiveness of levonorgestrel emergency contraception given before or after ovulation--a pilot study. Contraception. 2007;75:112-118.

5. Noé G, Croxatto HB, Salvatierra AM, et al. Contraceptive efficacy of emergency contraception with levonorgestrel given before or after ovulation. Contraception. 2010;81:414-420.

6. Lalitkumar PGL, Lalitkumar S, Meng CX, et al. Mifepristone, but not levonorgestrel, inhibits human blastocyst attachment to an in vitro endometrial three-dimensional cell culture model. Hum Reprod. 2007;22:3031-3037.

7. Chaplin S. Update of the FSRH guideline on emergency contraception. Prescriber. 2017;28:27-31

8. Li HW, Resche-Rigon M, Bagchi IC, et al. Does ulipristal acetate emergency contraception (ella®) interfere with implantation?. Contraception. 2019;100:386-390.

9. Saito-Tom LY, Soon RA, Harris SC, et al. Levonorgestrel Intrauterine Device Use in Overweight and Obese Women. Hawaii J Med Public Health. 2015;74:369-374.

10. Cheng L, Che Y, Gülmezoglu AM. Interventions for emergency contraception. Cochrane Database Syst Rev. 2012;8:CD001324.

11. Turok DK, Gero A, Simmons RG, et al. Levonorgestrel vs. copper intrauterine devices for emergency contraception. New England Journal of Medicine. 2021;384:335-344.

12. Charisse Loder MD, Solomon LM. Improving contraceptive care for marginalized populations. Contemporary OB/GYN. 2022;67:10-13]

13. Leung VW, Levine M, Soon JA. Mechanisms of action of hormonal emergency contraceptives. Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy. 2010;30:158-168.

14. Munro ML, Martyn KK, Campbell R, et al. Important but incomplete: plan B as an avenue for post-assault care. Sexuality research and social policy. 2015;12:335-346.

15. Oshodi YA, Akinlusi FM, Uduosoro AA, et al. Sexuality and Emergency Contraceptive Practice among Female Undergraduates in Lagos, Nigeria. Open Journal of Obstetrics and Gynecology. 2020;10:836.

16. Moges Y, Worku SA, Niguse A, et al. Factors associated with the unplanned pregnancy at Suhul General Hospital, Northern Ethiopia, 2018. Journal of pregnancy. 2020;2020:2926097.

17. Michie L, Cameron ST. Emergency contraception and impact on abortion rates. Best practice & research Clinical obstetrics & gynaecology. 2020;63:111-119.

18. Sedgh G, Bearak J, Singh S, et al. Abortion incidence between 1990 and 2014: global, regional, and subregional levels and trends. The Lancet. 2016;388:258-267.

19. Darroch JE, Woog V, Bankole A, et al. Adding it up: costs and benefits of meeting the contraceptive needs of adolescents. 2016.

20. World Health Organization. (2015). Trends in maternal mortality: 1990-2015: estimates from WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. World Health Organization.

21. Sakurai S. Pregnancy rate after emergency contraception with single-dose oral levonorgestrel in Japanese women. Journal of Obstetrics and Gynaecology Research. 2019;45:1892-1898.

22. Metcalfe A, Talavlikar R, du Prey B, et al. Exploring the relationship between socioeconomic factors, method of contraception and unintended pregnancy. Reproductive health. 2016;13:1-8.

23. Srivastava S, Mohanty P, Muhammad T, et al. Socioeconomic inequalities in non-use of modern contraceptives among young and non-young married women in India. BMC Public Health. 2023;23:797.

24. Hassan S, El-Kurdy R, M Yousef A, et al. The effect of an educational guidelines on childbearing women's knowledge, attitude and their intention regarding emergency contraceptive use. Egyptian Journal of Health Care. 2020;11:816-831.

25. Mahfouz MS, Elmahdy M, Ryani MA, et al. Contraceptive use and the associated factors among women of reproductive age in Jazan City, Saudi Arabia: a cross-sectional survey.

International Journal of Environmental Research and Public Health. 2023;20:843.

26. Alkhazrajy LA, Hadi AH. Knowledge, attitudes & practice about emergency contraception among sample of women attending primary health care centers in Baghdad. European Journal of Biology and Medical Science Research. 2014;2:1-24. 27. Alharbi MS, Almujil AS, Alreshid FF, et al. Knowledge and attitude about emergency contraception among Saudi women of childbearing age. Journal of Family Medicine and Primary Care. 2019;8:44-48.

28. Habitu YA, Yeshita HY, Dadi AF, et al. Prevalence of and Factors Associated with Emergency Contraceptive Use among Female Undergraduates in Arba Minch University, Southern Ethiopia, 2015: A Cross-Sectional Study. International journal of population research. 2018;2018:2924308.

29. Rokicki S, Merten S. The context of emergency contraception use among young unmarried women in Accra, Ghana: a qualitative study. Reproductive health. 2018;15:1-10. 30. Harper CC, Speidel JJ, Drey EA, et al. Copper intrauterine device for emergency contraception: clinical practice among contraceptive providers. Obstetrics & Gynecology. 2012;119:220-226.

31. Htun KW, Yodmai K, Taechaboonsermsak P. Emergency contraceptive pill use among women of reproductive age in Pathein, Myanmar. Journal of Health Research. 2019;33:349-358.

32. Abraha D, Welu G, Berwo M, et al. Knowledge of and Utilization of Emergency Contraceptive and Its Associated Factors among Women Seeking Induced Abortion in Public Hospitals, Eastern Tigray, Ethiopia, 2017: A Cross-Sectional Study. BioMed research international. 2019;2019:7209274.

33. Karim SI, Irfan F, Rowais NA, et al. Emergency contraception: Awareness, attitudes and barriers of Saudi Arabian Women. Pak J Med Sci. 2015;31:1500-1505.

34. Moges Y, Worku SA, Niguse A, et al. Factors associated with the unplanned pregnancy at Suhul General Hospital, Northern Ethiopia, 2018. Journal of pregnancy. 2020;2020:2926097.

35. WHO; World Health Organization (2021). Emergency contraception. https://www.who.int/news-room/fact-sheets/ detail/emergency-contraception

36. Salih RK, Zangana J. A Cross-Sectional Study about Unintended Pregnancy among Women in Erbil, Kurdistan Region of Iraq. 2022;5:171-176.

37. UNFPA; United Nation Population Fund (2018). Addressing unintended pregnancy in the Arab region. United Nation Population Fund Arab States Regional Office.

https://iraq.unfpa.org/sites/default/files/pub-pdf/addressing_ unintended_pregnancy_in_as_- pb_2019.pdf

38. Ranatunga ID, Jayaratne K. Proportion of unplanned pregnancies, their determinants and health outcomes of women delivering at a teaching hospital in Sri Lanka. BMC pregnancy and childbirth. 2020;20:1-5.

39. Carlander A, Hultstrand JN, Reuterwall I, et al. Unplanned pregnancy and the association with maternal health and pregnancy outcomes: A Swedish cohort study. PLoS One. 2023;18:e0286052.

40. Baykan Z, Çetinkaya F, Naçar M, et al. The Perspective of Women Regarding Induced Abortion in an Islamic Country (Turkey): A Descriptive Study. J Women's Health Care. 2015;4:2167-0420.

41. Kgosiemang B, Blitz J. Emergency contraceptive knowledge, attitudes and practices among female students at the University

of Botswana: A descriptive survey. African Journal of Primary Health Care and Family Medicine. 2018;10:1-6.

42. Alharbi MS, Almujil AS, Alreshid FF, et al. Knowledge and attitude about emergency contraception among Saudi women of childbearing age. Journal of Family Medicine and Primary Care. 2019;8:44-48.