

GEORGIAN MEDICAL NEWS

ISSN 1512-0112

NO 9 (354) Сентябрь 2024

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 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 ბაზებში.

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. 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.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 საყურადღებო!

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, შემავსებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრაფიის ფოტოსურათები 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.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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PREVALENCE OF OSTEOPOROSIS IN PATIENTS WITH RHEUMATOID ARTHRITIS IN IRAQI KURDISTAN /DUHOK GOVERNORATE

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Abstract.

Background and objectives: The prevalence of osteoporosis among patients with rheumatoid arthritis (RA) in the Duhok governorate of Iraqi Kurdistan underscores a significant health concern that intersects autoimmune and bone health. The present study aimed to assess the prevalence of osteoporosis among patients with rheumatoid arthritis (RA) in the Duhok governorate.

Methods: Detailed questionnaire to collect demographic data, essential for identifying factors influencing BMD, such as age, sex, and lifestyle were used. Participants then underwent Dual-energy X-ray Absorptiometry (DXA) scans, a precise imaging technique for measuring BMD.

Results: The study involved middle-aged adults with an average age of 57.6 years, primarily females (91.5%), who had rheumatoid arthritis (RA) for about 15 years. Most participants were non-educated (71.5%) and lived in urban areas (77.1%). The majority worked in moderately heavy jobs (58.6%) and were married (98.5%). Most patients did not engage in exercise (84.3%), were non-smokers (77.1%), and alcohol-free (100%). Nearly half had a family history of RA, and all were tuberculosis-free. Clinically, most patients were obese, with 65.7% having comorbidities like hypertension and diabetes. A significant proportion tested positive for rheumatoid factors (74.3% for Rheumatoid factor and 84.3% for Anti-CCP) but were negative for DAS28-ESR. None had subcutaneous nodules, erosions, or joint surgeries. Regarding treatment, 65.7% used one DMARD, while 34.3% used two, and only 5.7% were on biologics; 80% also used corticosteroids. Osteoporosis was prevalent, with 80% showing signs (34.2% with osteopenia and 45.8% with osteoporosis).

Conclusion: Such efforts should focus on integrating routine bone health evaluations into RA care protocols, necessitating collaborative endeavors among rheumatologists, endocrinologists, and primary care professionals. This interdisciplinary model aims not only at early diagnosis but also at formulating comprehensive management plans tailored to the unique needs of this demographic within Iraqi Kurdistan's healthcare framework.

Key words. Rheumatoid arthritis, osteoporosis, dual-energy X-ray absorptiometry scans.

Introduction.

Rheumatoid arthritis, characterized by chronic inflammation of the joints, often contributes to systemic complications including the acceleration of bone density loss, making patients more susceptible to osteoporosis. In Duhok, this correlation is particularly notable due to several contributing factors such as genetic predisposition, nutritional deficiencies, lifestyle factors,

and limited access to comprehensive healthcare resources. Studies indicate that individuals with RA are at an increased risk for developing osteoporosis compared to the general population due to both disease-related inflammation and glucocorticoid treatments commonly used in managing RA symptoms, which adversely affect bone metabolism. Additionally, socio-cultural dynamics in the region may influence dietary calcium and vitamin D intake—critical components for bone health—further exacerbating susceptibility among this patient cohort. The confluence of these factors suggests a pressing need for targeted public health strategies focusing on early screening and intervention initiatives within this demographic group. Proactive measures could include patient education programs about nutrition and exercise tailored specifically for those with RA, alongside improved access to diagnostic tools like dual-energy X-ray absorptiometry (DEXA) scans for early detection of osteoporotic changes. Addressing these issues holistically can mitigate long-term disability risks associated with fractures and enhance overall quality of life for affected individuals in Iraqi Kurdistan's Duhok governorate.

Rheumatoid arthritis (RA) and osteoporosis present interconnected challenges in the realm of public health, particularly because RA exacerbates the decline in bone mass often seen in osteoporosis [1-3]. In individuals with RA, bone mass is negatively impacted by both functional impairment and active inflammation, particularly during the early stages of the disease [4,5]. These factors contribute to an increased susceptibility to osteoporosis, a condition defined by low bone density and deterioration of microarchitectures that weaken bones and elevate fracture risk. As age progresses, the prevalence of osteoporosis rises significantly, posing a major public health concern worldwide as it affects up to 30% of women and 12% of men at some point in their lives [1]. The WHO has established diagnostic criteria for osteoporosis through measurements of bone mineral density (BMD), typically conducted via dual-energy X-ray absorptiometry (DEXA) scans at critical sites such as the proximal femur and lumbar spine [6]. This relationship between RA-induced inflammation and decreased BMD underlines the necessity for timely diagnosis and intervention in patients with RA to mitigate further progression into full-fledged osteoporosis. Moreover, understanding this link highlights the importance of comprehensive management strategies that address both inflammatory control in RA patients and preventive measures against osteoporosis-related fractures. Osteoporosis emerges as a significant extra-articular complication of rheumatoid arthritis (RA), characterized by decreased bone mineral density (BMD) and an increased incidence of both hip and vertebral fractures, as evidenced in various studies comparing RA patients to non-RA individuals

[7,8]. The intricate relationship between RA disease activity and bone loss underscores the utility of the Disease Activity Score 28 (DAS28), which has been a pivotal tool for assessing RA since its development by van der Heijde et al. in the early 1990s and subsequent modifications by Dutch researchers [9]. Officially endorsed by the European League Against Rheumatism (EULAR), DAS28 is instrumental in clinical trials and routine practice for evaluating both disease activity and therapeutic progress. This scoring system encapsulates comprehensive assessments such as tender and swollen joint counts, patient's global health evaluation via a visual analogue scale (VAS), alongside inflammatory markers like erythrocyte sedimentation rate (ESR) or C-reactive protein (CRP) levels. Particularly, CRP serves as a robust indicator of acute phase inflammation due to its dramatic elevation during inflammatory responses—sometimes up to a thousandfold—which makes it invaluable in monitoring chronic inflammatory states like RA [10]. Therefore, understanding these dynamics is critical not only for managing RA but also for addressing associated complications such as osteoporosis. Consequently, targeted studies are essential; hence, research aimed at exploring bone loss frequency in RA patients within Erbil city fills an important gap since similar investigations have yet to be conducted within Kurdistan, providing vital insights into regional variations and management strategies.

Patients and Methods.

In the study, a comprehensive approach was employed to evaluate bone mineral density (BMD) among patients recruited from an outpatient clinic. The process began with the distribution of a meticulously structured questionnaire designed to gather detailed demographic information, which is crucial for understanding potential influencing factors on BMD such as age, sex, and lifestyle choices. Following the completion of this initial step, participants were referred for assessment using Dual-energy X-ray Absorptiometry (DXA or DEXA), a sophisticated imaging technology renowned for its accuracy in measuring BMD. DXA utilizes two distinct X-ray beams at varying energy levels aimed precisely at the patient's bones. This dual-energy method allows for precise differentiation between bone and soft tissue, yielding highly reliable measurements of bone density that are critical in diagnosing conditions like osteoporosis. A total of 70 patients were recruited over period of February 2024 to August 2024. By integrating patient-specific demographic data with advanced spectral imaging results from DXA scans, researchers can draw more nuanced conclusions about factors affecting bone health across different population segments. Consequently, this systematic approach not only enhances the precision of BMD assessments but also contributes to a deeper understanding of demographic influences on skeletal health, thereby informing more targeted preventive and therapeutic strategies in clinical practice.

Results.

The demographic parameters of patients involved in the present study were middle aged adult with an average age of (57.6±12) years and having RA for (15±7.8) years with majority of them being females (91.5%). Most of enrolled patients were

non-educated (71.5%) and living in urban area (77.1%). The occupational possibility to induce bone deficit were considered and most of cases were working in moderately heavy works (58.6%) and only few of them (4.3%) in severely intensive works. Almost all enrolled patients were married (98.5%). Almost all patients have developed the disease for after 16 years old. Personal habit has shown that majority of patients have no exercise (84.3%), most were non-smokers (77.1%), and non-alcoholic (100%). Nearly one-half of patients were having positive family history for RA. Patients were all reported to be tuberculosis-free (TB free).

The clinical presentation of enrolled patients revealed that their BMI showed obesity. Only 34.3% were having no other illness while 65.7% of them having associated comorbidities including hypertension, diabetes, and other cardiovascular diseases. Up to 74.3% of patients were positive for Rheumatoid factor positivity, 84.3% were positive for Anti-CCP positivity, and all were negative for DAS28-ESR. Enrolled patients were free from Subcutaneous nodules, erosion, and joint surgery. The drug profile indicated that 65.7% were using one DMARDs and 34.3% were using two DMARDs. Only 5.7% were using biologics and 80% were also using corticosteroids. The prevalence of osteoporosis indicated that up to 80% were having osteoporosis (34.2% with osteopenia and 45.8% with osteoporosis) while only 20% of them showing no sign of osteoporosis (Tables 1 and 2).

Table 1. The demographic parameters of the participants in the study.

Demographic parameters		mean±SD
Age (Years)		57.6±12
Disease duration (Years)		15±7.8
		N (%)
Sex (M/F)		6/64 (8.5/91.5%)
Educational level	Non-Educated	50 (71.5%)
	Educated	20 (28.5%)
Residency	Rural	16 (22.9%)
	Urban	54 (77.1%)
Occupational status	Mild	26 (37.1%)
	Moderate	41 (58.6%)
	High	3 (4.3%)
Marital status	Single	1 (1.4%)
	Married	69 (98.6%)
Age at disease onset (years)	<16	0 (0%)
	>16	70 (100%)
Exercise habit	No	59 (84.3%)
	Regular	2 (2.8%)
	Irregular	9 (12.9%)
Smoking habit	Non-smoker	54 (77.1%)
	Ex-smoker	15 (21.4%)
	Current smoker	1 (1.5%)
	Passive smoker	0 (0%)
Alcohol consumption	Yes	0 (0%)
	No	70 (100%)
Family history of RA	Yes	36 (51.4%)
	No	34(48.6%)
History of TB	Yes	0(0%)
	No	70 (100%)

Table 2. The clinical parameters of the participants in the study.

Clinical parameters			
BMI (kg/m ²)			32.7±3.9
Comorbidities	No Comorbidities		24 (34.3%)
	Hypertension		21(30%)
	Diabetes mellitus		2(2.8%)
	Heart Diseases		23(32.9%)
Rheumatoid factor positivity	Positive		52(74.3%)
	Negative		18(25.7%)
DAS28-ESR	Positive		0(0%)
	Negative		70(100%)
Anti-CCP positivity	Positive		59(84.3%)
	Negative		11(15.7%)
Subcutaneous nodules	Positive		0(0%)
	Negative		70(100%)
Erosion	Positive		0(0%)
	Negative		70(100%)
Joint Surgery	Positive		0(0%)
	Negative		70(100%)
Drug use	One DMARDs		46(65.7%)
	Two DMARDs		24(34.3%)
	Biologics		4(5.7%)
	Corticosteroids		65(80%)
T-score	≥-1	Normal	14 (20%)
	-1> T>-2.5	Osteopenia	24 (34.2%)
	≤-2.5	Osteoporosis	32(45.8%)

Discussion.

The age of participants being 57.6 years suggests that the condition predominantly affects middle-aged adults. This is consistent with existing literature that indicates RA commonly develops in individuals between the ages of 30 and 60, with a peak onset in the 50s. The average duration of the disease being 15 years indicates that these patients have likely experienced the chronic nature of RA, which is characterized by periods of remission and exacerbation. The long duration of RA in this cohort underscores the importance of long-term management strategies, including pharmacological treatments, physical therapy, and lifestyle modifications, to mitigate symptoms and improve quality of life [11].

The overwhelming majority of female patients (91.5%) highlights the gender disparity prevalent in RA, as studies consistently show that women are more likely to develop the disease than men, with ratios often cited around 2:1 or even higher. This gender difference may be attributed to hormonal, genetic, and environmental factors, suggesting that women may be more susceptible to autoimmune conditions. The predominance of female patients in this study compels healthcare providers to consider sex-specific factors when diagnosing and treating RA, such as the influence of hormonal fluctuations and the potential for pregnancy-related complications [12].

The educational background of the patients reveals that a significant portion (71.5%) are non-educated. This finding raises important considerations regarding health literacy and access to healthcare resources. Patients with lower educational attainment may face challenges in understanding their condition,

adhering to treatment regimens, and effectively communicating with healthcare providers. This lack of education can lead to poorer health outcomes, as patients may not fully grasp the importance of managing their disease or the implications of their treatment choices. It is vital for healthcare systems to implement educational programs that cater to this demographic, ensuring that they receive the information needed to manage their condition effectively [13].

Furthermore, the fact that 77.1% of patients reside in urban areas adds another layer of complexity to their treatment and management. Urban living often comes with both advantages and disadvantages. On one hand, urban areas typically provide better access to healthcare facilities, specialists, and treatment options compared to rural settings. On the other hand, urban environments may expose individuals to higher levels of pollution and stress, which could exacerbate inflammatory conditions such as RA. The urban context also implies that these patients may have different social support structures, which can influence their coping mechanisms and adherence to treatment [14].

The occupational context plays a crucial role in the development of bone deficits. The fact that a significant majority of the patients (58.6%) engaged in moderately heavy work indicates a potential link between physical strain and bone health. Occupations that involve physical labor can lead to repetitive stress on the bones and joints, which may contribute to wear and tear over time, potentially exacerbating conditions like RA. Interestingly, only a small fraction (4.3%) of patients engaged in severely intensive work, suggesting that while moderate physical activity might contribute to bone deficit, extreme physical exertion might not be as prevalent among this group. This observation highlights the importance of not only the nature of the work but also the intensity and duration of physical activity in relation to bone health [15].

Moreover, it is noteworthy that almost all patients (98.5%) were married. This demographic detail could have implications for social support systems and health behaviours. Marital status may influence health-related habits, such as dietary choices and physical activity levels. For instance, individuals in supportive relationships might be more encouraged to engage in healthier lifestyle practices, including regular exercise, which could potentially mitigate the risk of developing bone deficits. However, the data indicates that a staggering 84.3% of patients reported no exercise, raising concerns about the overall health consciousness and lifestyle choices among this population. Regular physical activity is vital for maintaining bone density and overall musculoskeletal health. The lack of exercise among these patients could be a significant contributing factor to their bone health decline [16].

In terms of personal habits, the data indicates that the majority of patients were non-smokers (77.1%) and non-alcoholic (100%). This is particularly significant as smoking and excessive alcohol consumption are both established risk factors for various health issues, including osteoporosis and other bone deficits. The absence of these habits in nearly all patients suggests a potentially lesser risk factor associated with lifestyle choices. However, it also raises questions about what other

personal habits or environmental factors might contribute to the development of bone deficits. For instance, dietary patterns, nutritional intake, and exposure to sunlight (for vitamin D synthesis) are also key factors in bone health, yet these are not addressed in the provided data [17].

Another critical point is the observation that nearly half of the patients had a positive family history for rheumatoid arthritis. This finding reinforces the notion of genetic predisposition in the development of RA and potentially other related conditions. Family history can significantly influence an individual's risk profile, underscoring the importance of genetic counselling and awareness in families with a history of such disorders. It may also suggest a need for targeted screening and preventive strategies in these families to detect early signs of bone health issues [18].

Lastly, the report indicates that all patients were TB-free, which is an important health marker, as certain infections can complicate or exacerbate existing conditions like RA. Understanding the broader health context of these patients is essential in developing comprehensive treatment and management plans that address not just the symptoms of RA but also the underlying factors contributing to bone deficits [19].

Obesity has long been recognized as a risk factor for several chronic conditions, including hypertension and diabetes, both of which are prevalent among the enrolled patients. The 65.7% of patients with associated comorbidities highlight the multifaceted health challenges they face. For instance, hypertension and diabetes can exacerbate the inflammatory processes in RA, leading to worse overall disease outcomes. Furthermore, obesity itself is associated with an increased systemic inflammatory response, which can further aggravate conditions like RA. This interplay between obesity and comorbidities necessitates a holistic approach to patient care, where managing weight could be as crucial as managing the underlying autoimmune disease [20].

The high rates of rheumatoid factor (74.3%) and anti-citrullinated protein antibody (Anti-CCP) positivity (84.3%) indicate a strong autoimmune component among the patients studied. Both of these serological markers are commonly used in the diagnosis and prognosis of RA. Their prevalence suggests that the enrolled patients could potentially be at a higher risk for more severe disease manifestations. However, the finding that all patients were negative for DAS28-ESR, which assesses disease activity in RA by evaluating tender and swollen joint counts and the level of inflammation, raises several questions. It could indicate that while these patients have serological markers of RA, they may be in a state of remission or low disease activity, potentially due to effective management strategies or possibly even a phenomenon known as seronegative RA, where symptoms and radiographic findings may not align with serological results [21].

The absence of subcutaneous nodules, erosions, and joint surgery among the enrolled patients further complicates the clinical picture. These clinical findings are traditionally associated with more severe forms of RA. Their absence could suggest that the patients are either in an early stage of the disease, have a less aggressive form of RA, or are effectively managing their symptoms and disease progression. It raises the possibility that the presence of obesity and comorbidities may not always

correlate with disease severity, highlighting the complexity of autoimmune diseases and the need for individualized treatment plans [22].

From a therapeutic standpoint, the management of these patients would involve a multifaceted approach. Weight management strategies could not only help in alleviating some of the comorbidities they face but could also potentially have a positive impact on their autoimmune condition. Interventions could include dietary modifications, physical activity, and educational programs aimed at lifestyle changes. Furthermore, addressing comorbidities such as hypertension and diabetes through an integrated care model would be essential in improving the overall health outcomes of these patients [23].

The data indicates that a significant majority, 65.7%, of patients are using one DMARD, while 34.3% are on two DMARDs. DMARDs are critical in managing inflammatory arthritis as they work to slow disease progression and reduce joint damage. The choice to use one or multiple DMARDs can be influenced by several factors, including disease severity, patient response to initial therapy, safety profiles, and the presence of comorbid conditions [24].

The use of a single DMARD may suggest initial treatment strategies aimed at minimizing side effects and monitoring the patient's response closely. However, the fact that over a third of patients are on two DMARDs indicates a certain level of treatment resistance or inadequacy in controlling disease activity with a single agent. The combination therapy is often used when disease progression is observed, and it aims to target multiple pathways involved in inflammation, thus enhancing therapeutic efficacy [25].

The statistic that only 5.7% of patients are using biologics raises questions about access, cost, and treatment guidelines. Biologics have revolutionized the treatment of inflammatory conditions and are generally indicated for patients who exhibit moderate to severe disease activity, particularly when DMARDs have proven inadequate. The low utilization rate could suggest barriers such as high costs, limited access to specialty care, or a conservative approach among healthcare providers in prescribing these agents [26].

Conversely, the high percentage (80%) of patients using corticosteroids is noteworthy. Corticosteroids play an important role in managing acute flares of inflammation, providing rapid relief from symptoms. However, long-term use of corticosteroids is associated with various side effects, including increased risk of infections, cardiovascular issues, and notably, osteoporosis. The reliance on corticosteroids may indicate suboptimal management strategies for controlling disease activity and may also reflect the complexity of balancing immediate symptom relief with long-term disease control [27].

The prevalence of osteoporosis in this cohort is alarmingly high, with 80% of patients showing signs of bone density loss (34.2% with osteopenia and 45.8% with osteoporosis). This statistic is particularly concerning given the well-documented relationship between chronic inflammation, glucocorticoid therapy, and bone health. Chronic inflammatory states can lead to increased bone resorption and decreased bone formation, contributing to osteoporosis. The use of corticosteroids, which are known to impair bone density, further exacerbates this risk [28].

The fact that only 20% of patients show no signs of osteoporosis underscores the urgency of addressing bone health in this population. Clinicians must adopt a proactive approach to osteoporosis management, which can include regular bone density screenings, lifestyle modifications (such as weight-bearing exercises and dietary adjustments), and pharmacologic interventions (such as bisphosphonates or vitamin D supplementation) when necessary [29].

The present study showed no correlation of osteoporosis and arthritis with TB because all cases involved were negative family history for TB. Globally, tuberculosis is a major infectious illness that causes a high rate of morbidity and mortality, especially in underdeveloped nations. The growing usage of biologics is concerning in the management of RA, especially in those who have already experienced the development of TB. Information from China's national registry revealed that these Anti-TNF treatment for RA patients resulted in a 10.1-fold a 34.9-fold higher chance of contracting tuberculosis when in contrast with the corresponding general population [30]. The research indicated a higher chance of contracting TB in 2.28 times as many RA patients as the general population, as well as these individuals undergoing anti-TNF treatment were more susceptible to contracting tuberculosis than those administered with additional drugs [31]. Consequently, the relationship between the risk and biologics treatment.

Conclusion.

In summary, the investigation into the prevalence of osteoporosis among patients with rheumatoid arthritis in the Duhok governorate of Iraqi Kurdistan has highlighted a significant intersection between these two chronic conditions, underscoring the multifaceted challenges faced by this population. The findings reveal a concerning prevalence rate of osteoporosis, which is exacerbated by the inflammatory processes associated with rheumatoid arthritis, as well as potential socio-economic and healthcare access factors unique to the region. Furthermore, the study emphasizes the critical need for enhanced awareness and proactive screening measures among healthcare providers to mitigate the risk of osteoporotic fractures, which can severely impact the quality of life in these patients. It also calls for the implementation of comprehensive treatment protocols that address both the rheumatological and bone health aspects of care, including lifestyle modifications, nutritional interventions, and pharmacological therapies tailored to the specific needs of the population. Ultimately, this research not only contributes to the existing body of knowledge regarding the interplay between rheumatoid arthritis and osteoporosis but also serves as a catalyst for future studies aimed at developing targeted public health strategies to improve patient outcomes in a region where such chronic diseases pose significant public health challenges.

REFERENCES

1. Doherty M, Lanyon P, Ralston SH. Rheumatoid arthritis. In: Boon NA; College NR; Walker BR; Hunter JAA (editors). Davidson's principles and practice of medicine, 20th ed. New York: Churchill Livingstone; 2006:1101-6.
2. Taysi S, Polat F, Gul M, et al. Lipid peroxidation, some extracellular antioxidants and antioxidant enzymes in serum of patients with rheumatoid arthritis. *RheumatolInt*. 2002;21:200-4.
3. Heimick CG, Flson DT, Lawrence RC, et al. Estimate of the prevalence of arthritis and other rheumatic conditions in the US. part I. *Arthritis Rheumatism*. 2008;58:15-25.
4. Tehlirian CV, Bathon JM. Clinical and laboratory manifestations. In: Klippel JH, Stone JH, White PH. *Primer on the rheumatic diseases*. New York: Springer Science & Business Media; 2008:114-21.
5. Aizer J, Reed G, Onofrie A, et al. Predictors of density testing in patients with rheumatoid arthritis. *Rheumatol Int*. 2009;29:897-905.
6. Richards JS, Peng J, Amdur RI. Dual energy x-ray absorptiometry and rheumatoid arthritis. *J Clin Densitom*. 2009;12:434-40.
7. Spector TD, Hall GM, McCloskey EV, et al. Risk of vertebral fracture in women with rheumatoid arthritis. *BMJ*. 1993;306:558.
8. Huusko TM, Karppi P, Avikainen H, et al. Threefold increase risk of hip fractures with rheumatoid arthritis in centralfinland. *Ann Rheum Dis* 2001;60:521-2.
9. Van Leeuwen MA, van Rijswijk MH, van der Heijde DM, et al. The acute-phase response in relation to radiographic progression in early rheumatoid arthritis: a prospective study during the first three years of the disease. *Br J Rheumatol*. 1993;32:9-13.
10. Tishler M, Caspi D, Yaron M.C. Reactive protein level in patients with rheumatoid arthritis, the impact of therapy. *Clinical Rheumatol*. 1985;4:321-4.
11. Monroe RT. *Diseases in old age: a clinical and pathological study of 7941 individuals over 61 years of age*. Harvard University Press; 1951.
12. Alwhaibi M, AlRuthia Y, Meraya AM. Gender differences in the prevalence of complementary and alternative medicine utilization among adults with arthritis in the United States. *Evidence-Based Complementary and Alternative Medicine*. 2019;2019:8739170.
13. Abdelmowla RA, Abdel Aziz EM, Hassan AM, et al. Effectiveness of A nurse-Led Educational Intervention Program on Symptoms, Quality of Life and Progression of Mineral Bone Disorders among Patients with End-Stage Renal Disease. *Assiut Scientific Nursing Journal*. 2024;12:211-230.
14. Adomah-Afari A, Addo-Kwafo AK. Factors Influencing Utilisation of Hernia Care among Women Seeking Surgical Healthcare: A Study of a Peri-urban Health Facility in Eastern Ghana. *Asian Journal of Medicine and Health*. 2023;21:137-56.
15. Eminoğlu DÖ, Kaşali K, Şeran B, et al. An assessment of musculoskeletal disorders and physical activity levels in dentists: A cross-sectional study. *Work*. 1-1.
16. Shen H, Peng JL, Tayarachakul S, et al. Association between serum cotinine level and prevalence of non-alcoholic fatty liver disease: a cross-sectional study from the Third National Health and Nutrition Examination Survey. *Journal of Investigative Medicine*. 2017;65:43-8.

17. Yoo JJ, Park MY, Cho EJ, et al. Smoking increases the risk of hepatocellular carcinoma and cardiovascular disease in patients with metabolic-associated fatty liver disease. *Journal of Clinical Medicine*. 2023;12:3336.
18. Short CL, Bauer W, Reynolds WE. Rheumatoid arthritis: a definition of the disease and a clinical description based on a numerical study of 293 patients and controls. Harvard University Press. 1957.
19. Amaral EP, Vinhaes CL, Oliveira-de-Souza D, et al. The interplay between systemic inflammation, oxidative stress, and tissue remodeling in tuberculosis. *Antioxidants & redox signaling*. 2021;34:471-85.
20. Field AE, Coakley EH, Must A, et al. Impact of overweight on the risk of developing common chronic diseases during a 10-year period. *Archives of internal medicine*. 2001;161:1581-6.
21. Molano-González N, Rojas M, Monsalve DM, et al. Cluster analysis of autoimmune rheumatic diseases based on autoantibodies. New insights for polyautoimmunity. *Journal of autoimmunity*. 2019;98:24-32.
22. Young A, Koduri G. Extra-articular manifestations and complications of rheumatoid arthritis. *Best practice & research Clinical rheumatology*. 2007;21:907-27.
23. Giacomelli R, Afeltra A, Bartoloni E, et al. The growing role of precision medicine for the treatment of autoimmune diseases; results of a systematic review of literature and Experts' Consensus. *Autoimmunity reviews*. 2021;20:102738.
24. Carli C, Ehlin A, Klareskog L, et al. Trends in DMARD prescription in early rheumatoid arthritis are influenced more by hospital setting than patient or disease characteristics. *Annals of the Rheumatic Diseases*. 2005.
25. Combe B. Early rheumatoid arthritis: strategies for prevention and management. *Best practice & research Clinical rheumatology*. 2007;21:27-42.
26. Atzinger CB, Guo JJ. Biologic disease-modifying antirheumatic drugs in a national, privately insured population: utilization, expenditures, and price trends. *American health & drug benefits*. 2017;10:27.
27. Dorrington AM, Selinger CP, Parkes GC, et al. The historical role and contemporary use of corticosteroids in inflammatory bowel disease. *Journal of Crohn's and Colitis*. 2020;14:1316-29.
28. Lo SS. Prevalence of osteoporosis in elderly women in Hong Kong. *Osteoporosis and Sarcopenia*. 2021;7:92-7.
29. Edwards BJ, Koval K, Bunta AD, et al. Addressing secondary prevention of osteoporosis in fracture care: follow-up to "own the bone". *JBJS*. 2011;93:e87.
30. Wang X, Wong SH, Wang XS, et al. Risk of tuberculosis in patients with immune-mediated diseases on biological therapies: a population-based study in a tuberculosis endemic region. *Rheumatology (Oxford)*. 2019;58:803-810.
31. Chung TT, Ko HJ, Lau CS, et al. A retrospective study on the risk of tuberculosis in patients with rheumatoid arthritis. *Rheumatol Int*. 2020;40:983-990.