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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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

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

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

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 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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TRENDS IN THE PREVALENCE AND GLOBAL BURDEN OF MUSCULOSKELETAL DISEASES AMONG ADULTS: A NARRATIVE LITERATURE REVIEW OF THE PAST 10 YEARS

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Abstract.

Musculoskeletal diseases (MSDs) are a significant public health problem and are among the leading causes of disability and poor quality of life.

Aim of the study: This review synthesizes findings on the prevalence, impact, and risk factors of musculoskeletal disorders (MSDs) among adults, emphasizing their epidemiological and social dimensions. Drawing on peer-reviewed sources, it highlights consistent evidence showing that MSDs remain one of the leading global causes of disability, underscoring the need for effective prevention strategies.

Materials and methods: Of 85 articles identified (2015-2024), 48 met inclusion criteria and were analyzed for prevalence, risk factors, and burden.

Results: MSDs are more prevalent among women, peaking at ages 65–69. They remain a major cause of disability, with the highest burden in developed countries due to aging populations. Risk factors include obesity, occupational exposures, and sedentary lifestyles. Healthcare professionals, particularly surgeons, dentists, nurses, and rehabilitation therapists, are at high risk of work-related MSDs. Economic impacts are substantial, including increased healthcare costs and lost productivity.

Conclusion: MSDs remain an underestimated but urgent public health issue. Prevention and management strategies should include wider access to rehabilitation, ergonomic workplace interventions, and policies addressing modifiable risk factors.

Key words. Musculoskeletal diseases, prevalence, risk factors, global burden.

Introduction.

Musculoskeletal diseases (MSDs) significantly impact global public health, contributing to disability, reduced quality of life, and substantial economic burden. According to the Global Burden of Disease (GBD) study, MSDs are among the leading causes of years lived with disability (YLDs) worldwide, affecting millions of individuals across various age groups [1]. These diseases, including osteoarthritis, rheumatoid arthritis, osteoporosis, and chronic back pain, limit mobility, impair daily functioning, and often lead to long-term dependence on healthcare services.

This literature review seeks to analyze recent studies on the prevalence, burden, and risk factors of MSDs, with a particular focus on their medical and social significance. By synthesizing data from the past decade, this review seeks to identify trends, highlight research gaps and evidence-based recommendations for improving MSDs prevention and healthcare policies.

Materials and Methods.

Study design: A narrative literature review method was selected to enable broad analytical coverage of musculoskeletal disorder (MSD) burden, integrating global prevalence trends, occupational influences, prevention strategies, and region-adaptable recommendations. These topics cannot be meaningfully synthesized using restrictive systematic review filters or pooled numeric estimates. Evidence in adult MSD research demonstrates substantial methodological heterogeneity, particularly in case definitions, surveillance methods, which limits comparability and may render direct quantitative aggregation misleading.

Unlike systematic reviews, narrative synthesis supports critical integration of multidisciplinary evidence, nuanced interpretation of contradictions between countries and professions, and examination of structural determinants such as ergonomic-intervention feasibility, socioeconomic modifiers, and disparities in healthcare access. These determinants are essential to understanding cross-country variability in MSD burden without implying new primary empirical findings. Therefore, narrative synthesis was considered the most appropriate methodology for structured, contextual, and unbiased critical discussion.

Information Sources and Search Strategy: A literature search and standard data extraction were performed using PubMed, Medline, Web of Science, EMBASE, and Cochrane databases for English-language articles.

Inclusion criteria: English language articles from 2015 to 2024 among the adult population. The search included phrases keywords: “musculoskeletal disorder” or “musculoskeletal disease” and “prevalence” or “burden” and “adult” and (2015:2024).

Eligibility Criteria: For this narrative literature review, publications from 2015–2024 were considered eligible to ensure contemporary relevance.

Only English-language sources were included, reflecting the predominant indexing language of the selected biomedical databases.

Eligible source types comprised peer-reviewed original research, systematic reviews, meta-analyses and official reports.

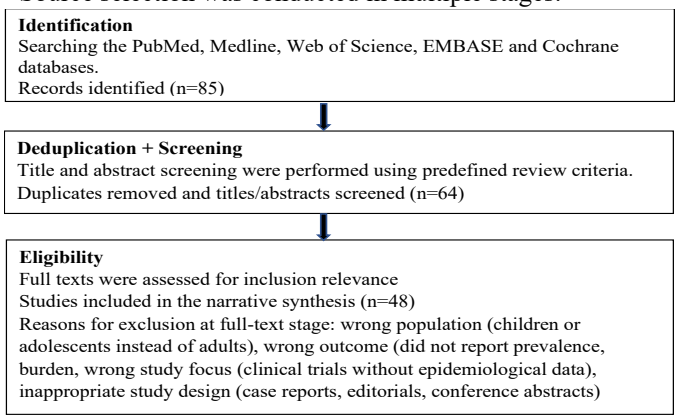
Studies were required to address epidemiological metrics (prevalence or incidence) of adult MSDs, their occupational and socioeconomic burden, including ergonomic exposures, workplace reform or intervention programs, or policy-driven approaches relevant to MSD prevention and early detection management.

No geographic restrictions were applied; evidence from all countries was considered to support global representativeness.

Records focusing primarily on injuries, pediatric populations outside an adult cohort, or non-analytical commentaries were excluded.

Study Selection and Evidence Analysis:

Source selection was conducted in multiple stages:



Data Extraction: From each included publication, the following data domains were extracted: bibliographic information (authors, publication year, country or study location), study objective, research design, characteristics of the target population (sample size, occupational or population group, working or environmental conditions), key epidemiological or intervention outcomes.

Extracted evidence was then organized into predefined thematic analysis categories, including: epidemiological outcomes reported (prevalence, incidence, DALYs, or YLDs when applicable); occupational and socioeconomic context (ergonomic exposures, occupational burden by profession, modifiable lifestyle risks, intervention evidence quality, and socioeconomic and health-policy moderators shaping country-level burden, and healthcare access factors); key findings and explicitly stated methodological limitations or risk of bias noted by the authors.

Quality Assessment of Included Studies: We assessed the methodological quality of the 48 included studies utilizing the JBI tool tailored to different study designs. Two reviewers (NM and KD) independently evaluated each article. Any discrepancy in scoring was resolved through discussion or, if necessary, arbitration by the third reviewer (KA). Based on this assessment, 72% were rated as high quality, 26% as moderate, and 2% as low quality. The overall body of evidence was deemed suitable for a narrative synthesis, though conclusions are tempered by the variability in study design and measurement noted in the limitations.

Results.

This review synthesizes findings on the prevalence, impact, and risk factors of musculoskeletal disorders (MSDs) among adults, emphasizing their epidemiological and social dimensions. Drawing on peer-reviewed sources, it highlights consistent evidence showing that MSDs remain one of the leading global causes of disability, underscoring the need for effective prevention and treatment strategies.

Diseases of the musculoskeletal system encompass a wide range of pathological conditions affecting the bones, joints, muscles, tendons, ligaments, and connective tissues. These disorders can impair mobility, cause pain, and lead to functional limitations or disability. They arise from various etiologies, including trauma, degenerative processes, inflammation, genetic predisposition, metabolic imbalances, or systemic diseases.

According to the World Health Organization (WHO), over 150 musculoskeletal disorders typically fall within categories and are presented in Table 1 [2].

Synthesis of Global Prevalence and Incidence Trends:

According to Liu S et al. (2022) as for 2019, MSDs accounted for approximately 322.75 million new cases, 117,540 deaths, and 150.08 million DALYs globally [1]. Compared to 1990, both the age-standardized incidence rate and DALY rate showed a slight decline (AAPC: –0.32 and –0.05, respectively), while the age-standardized mortality rate remained stable over the period (AAPC: 0.05; 95% CI: –0.05 to 0.15). The highest burden in terms of onset and disability was observed among individuals aged 50–54 years [1].

Jin Z et al. (2020) noted that the highest age-standardized prevalence rates in 2017 were reported in Switzerland, Chile, and Denmark, all exceeding 22,000 cases per 100,000 population. Moreover, from 1990 to 2017 (Table 3), the most notable increases in MSD prevalence were observed in Chile, Benin, and El Salvador, highlighting both developed and developing countries experiencing growth in MSD-related health burdens [3].

Alzahrani H et al. (2023) reported that in 2019, MSDs were among the top-ranked health burdens across the Gulf Cooperation Council (GCC) countries. Specifically, (Table 4) they ranked fifth in Kuwait, sixth in Bahrain, Oman, Qatar, and the UAE, and seventh in Saudi Arabia among all diseases [4].

Higher reported prevalence in high-income countries (e.g., Switzerland and Denmark) likely reflects advanced diagnostic infrastructure and population ageing, whereas the sharp increases observed in countries such as Chile and Benin may indicate rapid epidemiological transition and occupational risk exposures, partly revealed through improvements in surveillance systems [3,4].

It was also stated, “Following age-standardized adjustment, the burden of MSDs is most significant in the United States of America and certain countries in Central Europe, a finding consistent with the 2017 findings. Additionally, Pakistan, Sweden, Georgia, and the Taiwan Province of China exhibited the highest EAPCs for ASRs” [5].

According GBD (2021), by 2050 (Figure 1), the global prevalence of other MSDs is projected to reach approximately 1.06 billion individuals (95% UI: 964–1170 million), reflecting a 115% increase compared to 2020 estimates - 107–124% [6].

According to Jin Z et al. data (2020), between 1990 and 2017, the global number of new MSD cases increased substantially from 211.8 million to 334.7 million [3]. Despite this absolute growth, the age-standardized incidence rate (ASR) demonstrated a slight annual decline of 0.18% (95% CI: –0.21 to –0.15, Table 2). When examining specific conditions, divergent trends were observed: the ASR for low back pain (LBP) showed a decline, while the rate for neck pain (NP) remained relatively unchanged. In contrast, conditions such as rheumatoid arthritis

Table 1. *Categories of Musculoskeletal Diseases [2].*

Category	Musculoskeletal Diseases
Degenerative and Inflammatory Joint Diseases	Osteoarthritis (OA), Rheumatoid Arthritis (RA), Gout, Degenerative Joint Lesions, Arthrosis
Bone diseases	Osteoporosis, Osteopenia, Osteomalacia
Muscle and tendon Conditions and Injuries	Myasthenia Gravis, Sarcopenia, Muscular Dystrophy, Rotator Cuff Tear, Tendinitis, Tendinosis
Connective Tissue and Autoimmune Diseases	Systemic Lupus Erythematosus (SLE), Vasculitis, Marfan Syndrome
Pain Syndromes and Neurological Involvement	Fibromyalgia, Nerve Compression by Tendons, Localized Pain (e.g., Neck Pain, Lower Back Pain)
Other MSDs	Psoriatic arthritis, spondyloarthritis, ankylosing spondylitis, Infectious Arthropathies, Systemic Connective Tissue Diseases

Table 2. *Age-standardized incidence rate of MSDs between 1990-2017 [3].*

Condition	Trend in ASR (EAPC%)	95% Confidence Interval
Low back pain (LBP)	–0.24	(–0.29 to –0.20)
Neck pain (NP)	–0.09	(–0.13 to –0.05)
Rheumatoid arthritis (RA)	+0.36	(0.28 to 0.43)
Osteoarthritis (OA)	+0.32	(0.28 to 0.36)
Gout	+0.22	(0.21 to 0.23)

Table 3. *Countries with the Highest Prevalence and Growth in MSDs in 2017 [3].*

Country	Age-Standardized Prevalence per 100,000 (2017) [95% UI]	Prevalence Increase (1990–2017) [95% UI]
Switzerland	23,346.0 (22,392.6–24,329.8)	—
Chile	23,007.9 (21,746.5–24,165.8)	10.8% (6.6–15.4)
Denmark	22,166.1 (20,817.2–23,542.1)	—
Benin	—	8.8% (6.7–11.1)
El Salvador	—	8.5% (5.5–11.9)

Table 4. *Age-Standardized Prevalence and YLDs for MSDs in GCC Countries in 2019 [4].*

Country	Prevalence (%) [95% UI]	YLDs per 100,000 [95% UI]	Top Risk Factor
Bahrain	18.56 (17.51–19.66)	1,734 (1,250–2,285)	High BMI
Kuwait	19.35 (18.25–20.52)	1,764 (1,272–2,322)	High BMI
Oman	18.23 (17.14–19.36)	1,710 (1,224–2,256)	High BMI
Qatar	18.93 (17.81–20.06)	1,721 (1,246–2,274)	Occupational Ergonomics
Saudi Arabia	19.05 (17.96–20.22)	1,715 (1,230–2,274)	High BMI
UAE	18.26 (17.18–19.38)	1,681 (1,207–2,235)	Occupational Ergonomics

(RA), osteoarthritis (OA), and gout exhibited increasing ASRs over the same period [3].

The global distribution of MSD cases showed the highest prevalence, 36.8% for low back pain, followed by 21.5% other musculoskeletal disorders, 19.3% osteoarthritis, 18.4% neck pain, 2.6% gout, and 1.3% rheumatoid arthritis [7].

Briggs highlights that a retrospective review of hospital records reveals a significant underdiagnosis of MSDs within the healthcare system. A clinical screening of over 2,500 households in Tanzania's Hai district found that 1 in 17 individuals (5.9%) had confirmed joint issues, 1 in 20 (5%) suffered from degenerative arthritis, and 1 in 100 had inflammatory arthritis [8].

Gender and Age differences:

In the study in Thailand in 2024, Rungruangbaiyok et al confirmed that the data on the risks of developing musculoskeletal diseases is 5.2 times higher in women compared to men [9]. Pensioners had a 19.5-fold increase in prevalence, while physical labor and heavy industry workers had a 7.9-fold increase compared to unemployed individuals.

Tiwari et al. (2024) conducted an assessment of the prevalence of MSDs was conducted using a nationally representative survey of older adults. The results were: more than half of the participants had musculoskeletal disorders, with an overall prevalence of 53.5% (95% CI: 52.9–54.1%), with the highest rates of 60.4% (95% CI: 59.3–61.4%) observed among women and people over 60 years of age [10]. This gender difference can be explained by physiological and anatomical factors, such as hormonal influences, body composition, and biomechanics. Furthermore, the risk of developing musculoskeletal conditions like osteoarthritis may increase in older females due to post-menopausal changes [10].

As indicated by the research in Korea in 2022, female farmers had a 1.29-fold higher risk of developing MSDs than males [11].

Evidence from the GBD study (2023) indicates the global age-standardized prevalence of other MSDs was 47.4% (44.9–49.4%) higher in women than in men, with peak prevalence

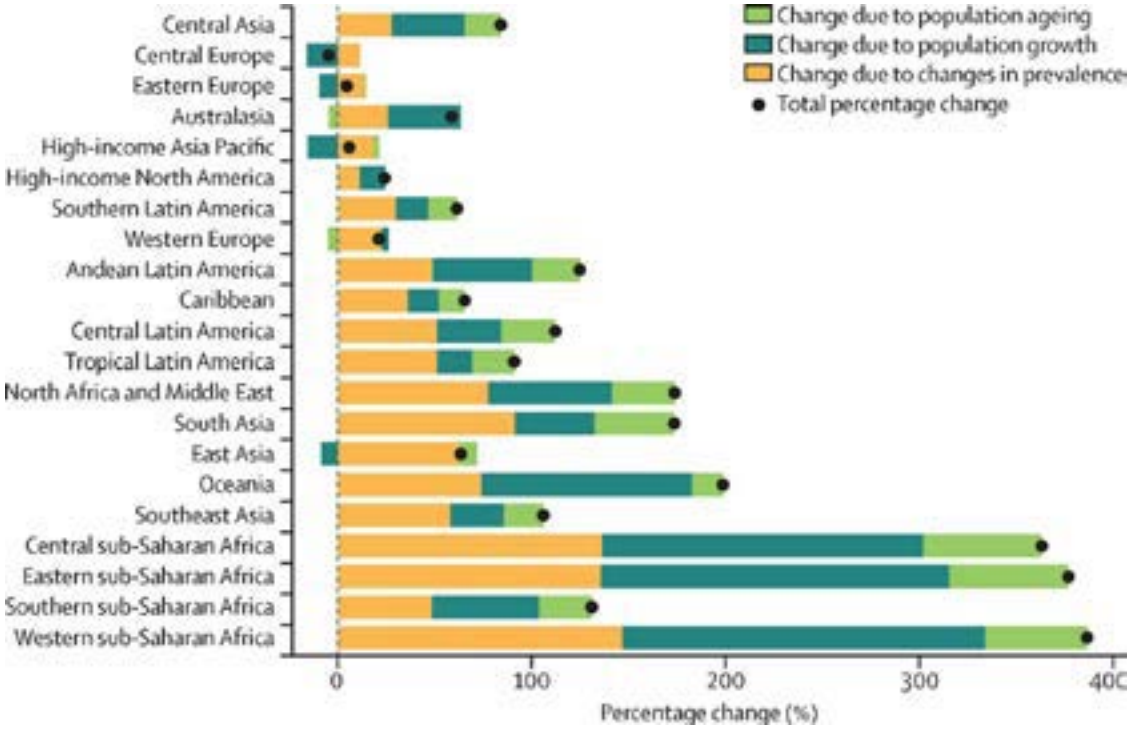


Figure 1. *Decomposition of forecasted change in the number of prevalent cases of other MSDs by region from 2020 to 2050 [7].*

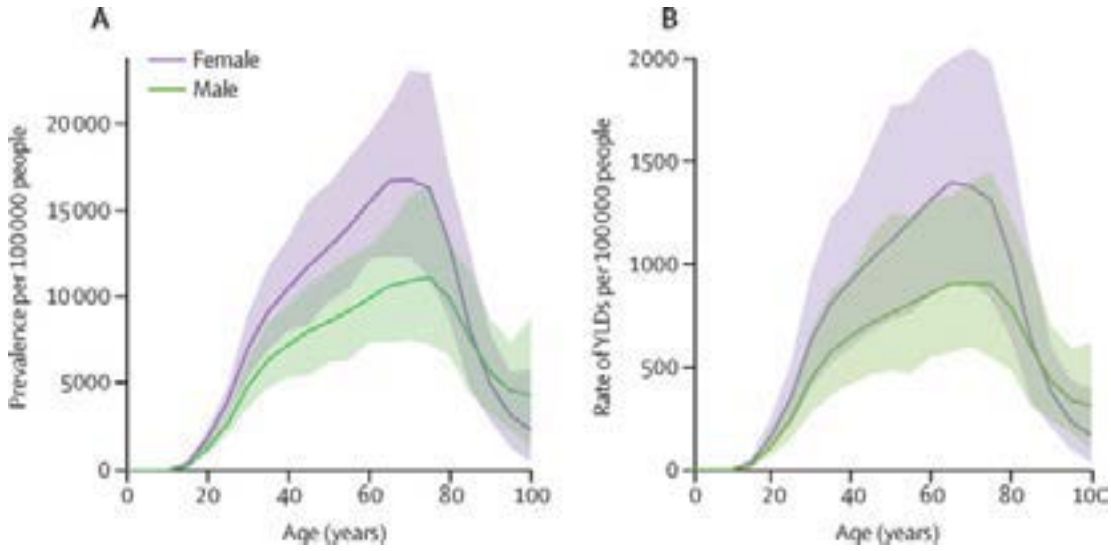


Figure 2. *Global prevalence of and rate of YLDs attributed to other MSDs by age and sex in 2020 [8].*

occurring at ages 65–69 in both sexes. Additionally, as shown in Figure 2, the age-standardized YLD rate was greater in females (604 per 100,000 [417–841]) compared to males (418 per 100,000 [287–591]) [8].

Rungruangbaiyok et al (2024) noted that the presence of underlying diseases such as hypertension, dyslipidemia, and type 2 diabetes was associated with a lower prevalence of musculoskeletal diseases. Thus, patients with hypertension had a slightly reduced prevalence of musculoskeletal diseases, with a 0.39-fold decrease [9].

Global Burden of MSDs:

Provided a foundational analysis of occupational MSDs in different countries, highlighting the multifactorial nature of these disorders, the articles emphasize the role of work-related factors, such as repetitive motions and non-neutral postures, in exacerbating MSDs, particularly in the upper limbs and neck.

Studies have been conducted on occupational MSDs among healthcare workers such as surgeons, ultrasound technicians and nurses, dentists, rehabilitation therapists, as well as teachers, musicians, police officers, and international transport truck drivers.

Country-Level Differences in the Burden of MSDs: The highest burden of MSDs occurs in regions of East Asia and Western Europe, where the population is ageing. In 2017, the burden of MSDs was most significant in developed countries.

One analysis by Jin Z, et al. (2020) included in this review

suggested that low back pain was among the top five diseases with the global cause of years lived with disability (YLDs), contributing approximately 57.6 million YLDs (7.2% of the total). It consistently ranked as the top cause of disability in high-, upper-middle-, and middle-SDI countries, highlighting its significant burden across diverse socioeconomic contexts [12]. MSDs ranked fifth globally in terms of disability-adjusted life years (DALYs) and were the leading cause of years lived with disability (YLDs) in 2017, accounting for 5.6% of total DALYs and 15.9% of total YLDs. With ongoing population growth and increased life expectancy, the global burden of MSDs is projected to rise further. Beyond pain, mobility limitations, and reduced work capacity, these conditions are frequently associated with mental health challenges, an elevated risk of all-cause mortality, and a higher likelihood of developing chronic non-communicable diseases [12].

The study by Al-Ajlouni YA et al. (2023) reported that a regional comparison in the Middle East and North Africa (MENA) of the age-standardized DALY rates for MSDs, Afghanistan exhibited the lowest burden, while Iran, Turkey, and Jordan recorded the highest values. A temporal analysis revealed that Syria experienced the most substantial decline in these rates between 1990 and 2019, whereas Saudi Arabia showed the greatest increase [13].

Shahrezaee M et al. (2023) showed that in 2017, MSDs in Iran accounted for 1.82 million DALYs (95% UI: 1.3–2.4 million). Over the past 28 years, Iran showed the highest global increase in all-age DALY rates for MSDs (APC: 1.75%), despite minimal change in age-standardized rates [14].

According research of "GBD 2021 other Musculoskeletal Disorders", MSDs were the second-highest ranked cause of non-fatal disability, affected more than 1·63 billion people worldwide and "Global YLDs of other musculoskeletal disorders in 2020 amounted to 42·7 million (95% UI 29·4–60·0), with south Asia having the highest number of YLDs (12 800 000 [8 880 000–18 100 000])" [8].

According to study Al-Ajlouni YA. et al. (2023), patients with confirmed diagnoses of musculoskeletal diseases face significant economic costs for health care, accounting for more than 10% of income and 2–3 times higher than those without MSDs. The economic burden is compounded by decreased work capacity, accompanied by elevated levels of stress and anxiety. Chronic pain and limited joint mobility reduce a person's ability to perform basic self-care activities and limit participation in social and community activities. The combined effects of these factors result in a 25% reduction in health-related quality of life in people with MSDs compared to those without such problems [13]. The study of Liu revealed that the burden of musculoskeletal (MSK) conditions is generally lower in countries with a higher sociodemographic index [15].

In 2015, 53% of employees with MSDs reported missing work within the past year. Those affected by MSDs not only take leave more often but also for extended durations; 26% of workers with both MSDs and another health condition were absent for over eight days in a year [24]. Additionally, the presence of MSDs in the workforce is linked to increased presenteeism, early retirement, and financial strain [16].

The study conducted in Belgium by Gorasso V. et al. in 2018 noted that the burden of disability from MSDs such as osteoarthritis, rheumatoid arthritis, and back and neck pain increased among women and men, reaching 180,746 DALYs and 116,063 DALYs, respectively. And the economic costs associated with MSDs in Belgium in 2018 amounted to 3 and 2 billion euros in direct and indirect costs, respectively [17].

In 2018, a group of scientists conducted a study in Canada and Australia to determine the impact of age and gender on the disability burden associated with compensated occupational musculoskeletal disorders (OMDs) and obtained the following results: 1.2 million cases of OMDs with compensation for loss of working capacity. The total time lost due to OMDs was 239,345 years in Canada and 321,488 years in Australia, and "The proportion of the disability burden grew among older workers (aged 55+), particularly males" [18].

Recent findings from a population-based study in Chile by Zitko P. et al. (2021) indicate that chronic musculoskeletal diseases (CMDs), particularly chronic low back pain, knee osteoarthritis, and shoulder pain, are among the most prevalent conditions, contributing substantially to disability. Pain alone was responsible for approximately 23.4% of the total burden of disability in the general population. Notably, fibromyalgia was associated with the highest disability weight (0.501), suggesting a significantly greater impact on daily functioning compared to other musculoskeletal conditions. The total years lived with disability (YLDs) attributable to chronic musculoskeletal pain exceeded 1.19 million, with a crude rate of 6679 per 100,000 inhabitants. A novel methodological approach using the concepts of attributable fraction to assess the contribution of diseases to disability based on a continuous disability variable was used, enhancing the precision of burden estimation and emphasizing the role of pain as a central component of CMD-related disability [19].

According to Haagsma et al. (2013), injuries contributed to 10.1% (UI 9.5–10.8) of the global disease burden. The majority (85.2%; UI 81.2–88.7) of injury-related disability-adjusted life years (DALYs) were due to years of life lost (YLLs). However, the proportion of DALYs attributed to disability (YLD) was significantly higher for collective violence (69.1%; UI 54.3–81.8), falls (46.4%; UI 38.3–54.1), and natural disasters (43.0%; UI 26.0–56.7). The leading causes of injury-related DALYs included road traffic injuries (29.3%; UI 26.4–32.2), self-harm (14.0%; UI 11.8–16.2), falls (12.0%; UI 9.8–14.1), drowning (8.7%; UI 6.3–11.2), and interpersonal violence (8.4%; UI 6.5–10.4) [20].

Thinkhamrop et al. (2017) noted in their article that MSDs affect almost half of nurses in Thailand each year, and are a major cause of lost workdays due to sick leave and poor quality of care. Of 17,686 nurses, especially those over 50 years old, overweight, and with heavy physical workloads, 47.8% (95% CI: 47.0-48.5) reported having a MSD within 12 months [21]. This study suggests that "This burden of MSDs is predominantly concentrated in developed countries, particularly the United States, with a smaller portion found in developing countries, notably China [21]. Additionally, the analysis by Zhou J indicates that the burden of MSDs is expected to shift towards middle-low SDI regions, specifically Central Asia, in the future" [6].

Analysis of population-level data by Walker-Bone K, et al. (2022) from Scotland (2015–2018) revealed that MSDs represent a significant burden not only in terms of prevalence but also in relation to socioeconomic inequality and work-related impact. The most commonly reported symptoms were back and shoulder pain, and more than half of the affected individuals had symptoms lasting over six weeks. Importantly, 41% of all new callers were categorized as high risk for disability using a modified risk assessment tool, with risk levels strongly correlated to socioeconomic deprivation. Moreover, nearly 1 in 5 employed individuals were on sickness absence due to MSDs, with significantly higher absence rates among those living in more deprived areas [22].

The Occupational Burden:

Jacquier-Bret et al. (2022) conducted a systematic review of studies on the prevalence of occupational musculoskeletal disorders among healthcare workers to identify the relationship between the specialization of healthcare workers and MSDs by body region. The review included 36 articles (94% of which were considered of moderate quality) from the following countries: the USA, Nigeria, Korea, Australia, the State of Kuwait, Greece, the Kingdom of Saudi Arabia, Taiwan, the United Kingdom, India, New Zealand, Iran, Uganda, China, Hong Kong, Malaysia, and Poland. The following conclusions were made that all healthcare professions are at high risk of developing MSDs. The most frequently affected areas are the back, neck, shoulders, and hands/wrists. However, certain professional groups experience increased loads in specific areas due to the nature of their work: surgeons and dentists often have shoulders and upper limbs affected (35–55%), while nurses have lower limbs most affected (>25%). The key causes common to all health care workers are prolonged maintenance of awkward postures and repetitive loads [23].

A study in India by Mahajan D. et al. (2023) on MSDs among physicians and nurses found that "Almost 73% (95%CI: 67.9-78.1) of participants had MSD in the last 12 months, with approximately 41.6% (95%CI: 36.1-47.3) suffering from MSDs in the previous seven days of the survey" [24].

The study conducted by Vijay A. et al. (2025) among 53 orthopedic surgeons demonstrated that about 11% had to significantly change their work practices to relieve pain; a third of them (30%) resorted to medical treatment and reduced the number of hours spent on operations. In addition, 15% of respondents considered early retirement due to pain syndrome [25].

A systematic review and meta-analysis of articles on MSDs in sonographers found by Zangiabadi Z. et al. (2024) that "the overall prevalence of MSDs among sonographers was reported as 75.80%" (95% CI: 65.37–86.23, $I2 = 99.7\%$, $P < 0.001$) [26]. The meta-analysis revealed by Pan J, et al. (2024) that the overall prevalence of work-related musculoskeletal disorders (WMSDs) among rehabilitation therapists was 72% (95% CI: 64%–80%) [27].

In 2024, a study was conducted by Zhao L. et al. (2024) at a music conservatory among Chinese conservatory piano students. The study result indicated that 82.64% of the participants had at least 1 MSD, and the wrist was found to be the most affected area of injury, followed by the shoulder, fingers, and arm. The most commonly reported symptoms included pain, fatigue, and stiffness [28].

A systematic review and meta-analysis were conducted by Tahernejad S. et al. (2024) of MSDs among teachers, where results revealed that the prevalence of MSDs among teachers is 68% [29].

According to a study conducted by Kim W. et al. (2024) in Korea, only 36.37% of police officers received treatment and 17.83% underwent surgery [30].

Cross-sectional studies conducted by Yosef T. et al. (2019) in different regions of the world have shown (Table 6) that more than half of truck drivers experienced episodes of low back pain within 12 months [31].

Direct comparison across professions is complicated by methodological heterogeneity. For example, higher self-reported prevalence among musicians may reflect greater symptom awareness, whereas the physical strain experienced by truck drivers is compounded by factors rarely captured in research,

Table 5. *Distribution of musculoskeletal pain among different groups of workers.*

Literature	Category	Distribution of musculoskeletal pain
Tiwari J et al [13]	Physicians and Nurses	Lower back 49.7%, neck 36.5%
Vijay A et al [14]	Surgeons	Back, neck 60%
Zangiabadi Z et al [15]	Sonographers	Neck 63.7%, shoulder 60.1%, upper back 53.69%, lower back 49.8%, wrist 44.41%, elbow 27.46%, hip 24.93%, knee 19.59%, and ankle 16.92%
Pan J et al [16]	Rehabilitation therapists	Lower back 51%, neck 42%, shoulder 32%
Tahernejad S et al [18]	Teachers	Neck 47%, lower back
Kim W et al [19]	Police Officers	Back pain 63.32%, shoulder 33,5%

Table 6. *Complaints of lower back pain (%): Truck Drivers [20].*

Country	Complaints of lower back pain (%):
Great Britain	60%
Brazil	59%
India	73,5%
Tanzania	88,7%
Turkey	57,1%
South Korea	63,32%

such as road quality and compliance with rest regulations, potentially resulting in underestimation of true burden.

Evolution of Key Risk Factors and Their Context-dependence:

As of 2019, major modifiable risk factors for MSDs included occupational exposure, elevated body mass index (BMI), and tobacco use, with occupational hazards being the leading contributor. However, over the past three decades, the relative impact of occupational risks has diminished, whereas the contribution of high BMI has markedly increased, reflecting global shifts in lifestyle and work patterns [1].

According to Kim's researche the odds of MSDs increased with age, being 2.66-fold higher for those aged 50–59 years, 4.60-fold higher for those aged 60–69 years, and 7.16-fold higher for those aged 70 years and above, compared to those under 50 years. In addition, pesticide exposure was found to be associated with a 1.26-fold higher risk of MSDs [11].

In Greece, a team of scientists conducted a quasi-experimental study among office workers, who are also at risk for MSDs due to prolonged and sedentary work at computers, to evaluate the effectiveness of a workplace intervention program. The program included ergonomics (equipment, e.g., height-adjustable desks) and exercise intervention. Efficacy was assessed by self-assessment of health status according to MSDs, presence of pain, and absence from work 4 months after the intervention using the SF-36 questionnaire. The results were notable improvements in physical ($p = 0.007$) and psychological well-being ($p = 0.012$). Pain levels significantly decreased in the neck ($p = 0.032$), shoulders ($p = 0.015$), wrists ($p = 0.014$), as well as (each $p = 0.044$) in the upper and lower back, hips, and knees [32]. Risk factors identified by Vijay A, et al. (2025) included prolonged work in the same position (43.5%) and (31.3%) lack of breaks [25].

Zhou et al (2024) noted that China, as the country with the highest incidence and DALYs of MSDs in the world, faces problems with high vitamin D deficiency in Chinese children and rapid growth of obesity [5].

High body mass index (BMI) was identified by Alzahrani H, et al (2023) as the most significant contributing risk factor in most countries, followed by occupational ergonomic exposures, particularly in Qatar and the UAE [5]. Risk factors identified by respondents included prolonged work in the same position (43.5%) and (31.3%) lack of breaks [4].

Risk factors among pianists were gender, long experience of playing, lack of warm-up, and breaks during playing. This study, for the sake of completeness, as they indicated, did not take into account important risk factors for musicians that contribute to the development of MSDs, such as playing posture, psychological stress, and ergonomics [28].

In 2023, scientists in China conducted a meta-analysis of Chinese articles and found that overtime is considered a risk factor for the development of cervical musculoskeletal disorders among the professionally active population of China. Optimization of work schedules can help reduce the prevalence of these diseases [5].

In 2024 year the Norwegian HUNT study found some interesting facts “parental chronic pain (HR 1.36, 95% CI 1.27–1.45), disability benefits (HR 1.41, 95% CI 1.33–1.48) and low educational attainment (HR 1.78, 95% CI 1.67–1.90) increased the risk of long-term sick leave due to MSDs among offspring [33].”

Prevention and Management: A Landscape of Inconsistent Evidence and Implementation Gaps:

One analysis included in this review suggested that individuals with better musculoskeletal health are more likely to engage in physical activity and have higher incomes. Regarding the relationship between income and physical activity levels, those with lower incomes tend to spend more time exercising but exhibit poorer musculoskeletal health compared to higher-income individuals. These findings can serve as a foundation for identifying populations at risk of MSDs and offer a reference point for developing exercise recommendations tailored to different income groups [34].

Sun RB et al. (2024) suggested the following recommendations were proposed for the prevention of diseases of the musculoskeletal system among medical professionals: a regular strength training routine combined with ergonomic improvements, assessments, and interventions in the workplace [35].

A study by Wilson N. was conducted where patients with limited access to rehabilitation services were engaged in Aquatic exercises with the support of rehabilitation specialists and volunteers, which showed clinical effectiveness in the treatment of MSDs [36].

Also, a study by Demir OB. et al (2024) on the impact of training on the productivity of intensive care nurses showed a decrease in pain and fatigue and a partial increase in productivity. The recommendations of this study were “posture regulation training should be added to continuing education programs, and ongoing measures should be taken to address ergonomic risks in intensive care units” [37]. And also, further research is recommended to better understand nursing ergonomics and effective preventive interventions. The consequences of MSDs that may lead to increased nurse turnover or premature departure from the profession, leading to a nursing shortage, need to be monitored [37].

According to the research by Mendoza-Pinto C, in Latin America and the Caribbean, the following conclusions were made that due to the limited number of rheumatologists, especially in rural areas, diagnosis and treatment depend on primary care physicians, who often lack basic skills. The solution to this problem may be training in the diagnosis and treatment of MSDs for primary care physicians and nurses. In addition, it is critical to develop national musculoskeletal health programs, including the development of guidelines for prevention and treatment at all levels of health care. Telemedicine to deliver preventative care and treatment should also be explored [38].

One of the latest studies conducted by Kelly M. and others to develop an eHealth surveillance system for adults with MSDs in the Republic of Ireland. The study focuses on the development of an eHealth intervention with components: an information library, a goal-tracking feature, a social forum, and a chat function to support self-management in individuals with MSDs. Using a three-step system development cycle, the research involved designing intervention components, conducting

heuristic testing, and assessing usability through think-aloud interviews and the System Usability Scale. The developed prototype of E-health integrates remote monitoring, behavioural change techniques, and interactive features to enhance self-management for patients with MSDs [39].

In Sweden, Ekhammar A. noted that the PREVSAM model—a team-based rehab approach to prevent sick leave in MSDs patients—was generally well implemented and accepted, but optional elements were underused, and external barriers like COVID-19 limited its distinct impact [40-43].

The increasing attributable risk of high body mass index (BMI) worldwide highlights the emergence of a lifestyle-driven pandemic, whereas the persistent predominance of occupational risk factors in low-income settings reflects inequalities in workplace protection. This divergence underscores the need for prevention strategies that are context-specific rather than universally applied.

Discussion.

Global Epidemiological Patterns.

The present narrative review synthesizes global evidence on the prevalence, burden, and risk factors of musculoskeletal disorders (MSDs), highlighting substantial heterogeneity in epidemiological patterns across countries, professions, and socioeconomic contexts. The findings suggest that variability in reported prevalence reflects not only biological and demographic determinants but also differences in diagnostic capacity, surveillance systems, occupational exposures, and healthcare accessibility.

According to the data presented by GBD (2023), in sub-Saharan Africa population growth is expected to be the primary driver of increasing case numbers, with changes in age-standardized prevalence also playing a contributory role. In contrast, a slight decline in prevalence is projected in Central Europe, primarily due to a reduction in population growth. Similarly, the prevalence in Eastern Europe and high-income Asia-Pacific regions is expected to remain stable, as the effects of declining population growth offset other contributing factors [6]. Importantly, increases in absolute case numbers do not necessarily indicate worsening epidemiological trends. In countries experiencing rapid population growth, rising case counts are largely driven by demographic expansion, while age-standardized rates may remain stable or even decline.

While the burden from low back pain showed a notable decline in age-standardized incidence, prevalence, and DALYs, other conditions—particularly osteoarthritis, gout, and rheumatoid arthritis—demonstrated significant increases. These trends were strongly influenced by demographic shifts such as population aging and modifiable risk factors, especially the rising prevalence of high body mass index [33]. Current GBD data therefore suggest mixed epidemiological trajectories toggle trends, emphasizing that MSDs should not be considered as a homogeneous disease group requiring uniform prevention strategies.

Health System Capacity and Methodological Variability.

Country-specific differences in MSD prevalence also reflect variations in health system capacity and diagnostic practices. High-income countries with widespread medical coverage tend to diagnose MSDs more frequently, resulting in higher reported prevalence, whereas many low-income countries significantly underestimate the true burden due to underdiagnosis and lack of surveillance systems.

Aggregated findings often mask substantial methodological variability across studies, making direct comparison difficult. Differences in diagnostic criteria and case definitions significantly influence reported prevalence. Countries with advanced electronic health registries produce more accurate estimates, while studies relying on self-reported data may over- or under-report MSD prevalence due to reporting bias. Direct comparison of MSD prevalence across occupational groups is further complicated by reliance on heterogeneous data sources, including anonymous questionnaires, clinical examinations, and registry data.

Jacquier-Bret et al. noted that many studies and reviews are conducted with limitations, frequently focusing on a single country, profession, or subset of disease impacts [23]. These methodological inconsistencies highlight the need for standardized surveillance approaches to enable meaningful cross-country comparisons.

Socioeconomic and Occupational Determinants.

Socioeconomic factors contribute substantially to variability in MSD estimates between countries. Higher MSD rates in Europe and North America partially reflect aging populations, whereas in developing countries primary drivers include heavy physical labor, limited access to rehabilitation, and weak occupational health systems. For instance, farmers in Korea and industrial workers in Thailand demonstrate prevalence levels comparable to or exceeding those in high-income countries despite younger population cohorts.

The high prevalence of low back pain among truck drivers in Africa and South Asia is influenced not only by physical strain but also by poor road infrastructure, insufficient rest breaks, and weak labor regulations. Conversely, lower prevalence among European drivers reflects improved working conditions and mandatory ergonomic standards. Socioeconomic working conditions remain a critical determinant rarely addressed in primary research, with access to preventive programs, regulated working hours, and ergonomic equipment varying widely across countries and professions.

Comparison across reviewed studies suggests that MSDs are more common among teachers than among healthcare workers, whereas no significant differences were identified between orthopedic surgeons and dentists [23]. These findings indicate that occupational risk is influenced not only by physical load but also by psychosocial stressors and work organization.

Risk Factor Profiles Across Economic Contexts.

The relative contribution of occupational exposures and high BMI varies significantly depending on socioeconomic development. In high-income countries, obesity and sedentary behaviour dominate the risk profile, whereas in low- and middle-income countries heavy physical labor and lack of ergonomic protections remain primary drivers.

A study in Thailand reported lower MSD prevalence among patients with hypertension and type 2 diabetes. This seemingly

paradoxical association may reflect behavioral factors, increased medical supervision, and confounding influences such as BMI or reporting bias, underscoring the importance of cautious interpretation of epidemiological associations.

Public Health Burden and Prioritization Challenges.

The burden of noncommunicable diseases in low- and middle-income countries has increased to 66% of disability-adjusted life years in 2019. Despite growing recognition of MSDs as a major public health concern, their importance remains underestimated compared to cardiovascular diseases, cancer, and diabetes [39]. Diagnostic complexity, chronic symptom variability, and low mortality contribute to under prioritization within health systems focused on fatal outcomes. Funding inequalities further exacerbate this problem, resulting in limited integration of MSDs into national strategies.

The Scottish data emphasize the importance of early intervention and tailored services to prevent prolonged disability and productivity loss, particularly among socioeconomically disadvantaged working-age populations [22].

Policy Initiatives and Implementation Barriers.

The World Health Organization (WHO) has introduced several programs targeting MSD prevention. Rehabilitation 2030 emphasizes integration of rehabilitation services across health systems, while Packages of Interventions for Rehabilitation provide evidence-based management strategies. The ICOPE (Integrated Care for Older People) program focuses on mobility preservation and prevention of functional decline. Additionally, WHO and ILO (International Labor Organization) workplace recommendations promote ergonomic interventions and safe work practices.

However, integration of these initiatives into national policies remains limited. Key barriers include insufficient funding, lack of employer incentives, low policymaker awareness of long-term cost-effectiveness, and competing health priorities. In low- and middle-income countries, resource constraints hinder procurement of ergonomic equipment and digital platforms for telerehabilitation. Fragmented occupational safety policies and stakeholder conflicts further impede implementation.

Regional Evidence Gaps: Central Asia Perspective.

A significant gap identified in this review is the limited availability of data from Central Asian countries, including the Kyrgyz Republic. The region presents unique risk factors such as a high proportion of physically demanding occupations and restricted access to rehabilitation services. Demographic aging and the rising burden of noncommunicable diseases are expected to increase the prevalence of osteoarthritis, chronic back pain, and osteoporosis. However, the absence of reliable epidemiological data limits accurate burden estimation and adaptation of international initiatives to local contexts.

Strategies for Improving MSD Prevention and Care.

Improving MSD care in resource-limited settings requires innovative and cost-effective approaches. Task shifting to primary health care, including training general practitioners and nurses in basic musculoskeletal management, represents a promising strategy. Telerehabilitation based on low-cost digital platforms may enhance access to physiotherapy in rural areas. Community-based rehabilitation programs involving local communities and volunteers can support physical activity promotion and preventive interventions. Integration of musculoskeletal screening into existing noncommunicable disease programs may also improve resource efficiency and population coverage.

Research gaps and future directions.

Despite the existence of strategies for the prevention of musculoskeletal diseases, their widespread implementation faces a number of systemic barriers. In low- and middle-income countries, limited resources hinder the procurement of necessary ergonomic equipment and the development of digital platforms for telerehabilitation. Insufficiently developed digital infrastructure and low levels of digital literacy in the regions further limit the potential of e-health. The lack of a comprehensive policy in the field of occupational safety and health and the prevention of musculoskeletal diseases leads to fragmented initiatives that do not cover all risk groups. Contradictions between stakeholders also remain an important obstacle: employers often resist the implementation of ergonomic reforms due to the initial costs, while governments traditionally focus on infectious and cardiovascular diseases. At the same time, governments, as key stakeholders, are responsible for funding programs, developing a legislative framework, and integrating musculoskeletal diseases prevention into national health strategies.

In resource-limited settings, improving care for MSDs requires innovative and cost-effective strategies. One promising area is to devolve tasks to the primary health care level, including training general practitioners and nurses in basic musculoskeletal care skills, including pain assessment, exercise prescription, and ergonomic counselling. Telerehabilitation, based on low-cost digital platforms for remote physiotherapy and self-monitoring, can be an additional tool, which is especially important for rural and hard-to-reach areas. Community-based rehabilitation also has significant potential, with a key role for local communities, support groups, and volunteers who can promote physical activity and basic preventive measures. Finally, it is advisable to integrate musculoskeletal prevention and screening into existing programs for noncommunicable diseases, such as diabetes, hypertension, and obesity, to make more rational use of limited resources and increase population coverage.

This review highlights several research gaps, including limited data from low- and middle-income regions, insufficient analysis of systemic determinants such as health policy and socioeconomic inequality, and lack of standardized surveillance systems. These gaps underscore the need for broader conceptual frameworks integrating epidemiological, occupational, and policy perspectives.

Across the reviewed literature, several overarching patterns emerge. Global variability in MSD prevalence cannot be attributed solely to biological or demographic determinants; socioeconomic context, labor market structure, health-system capacity, and methodological differences substantially influence reported outcomes. High prevalence in high-income countries may reflect improved detection, whereas low prevalence in resource-limited settings often results from underreporting.

Consequently, interpretation of global prevalence patterns requires contextualized analysis rather than assumptions of uniform epidemiological trends.

Cochrane Review.

The authors of a Cochrane review on the prevention of low back pain analysed nine randomized controlled trials and nine cohort studies. None of these studies demonstrated a significant positive effect of educational interventions on reducing the prevalence or intensity of back pain. They also noted that proving the absence of an effect is methodologically always more challenging than confirming effectiveness. Nevertheless, the consistent lack of convincing evidence of benefit across all included studies substantially reduces the likelihood that future research will yield opposite results [33].

A Cochrane review found conflicting evidence regarding the effectiveness of individual ergonomic interventions among office workers. In particular, the use of a hand rest or an alternative mouse was associated with both a potential reduction and no reduction in the incidence of musculoskeletal disorders of the neck and shoulders. There was no convincing evidence of an effect for other physical ergonomic measures. Organizational interventions, including additional work breaks, demonstrated very low quality of evidence for their effect on upper limb discomfort. There was also no reliable evidence for the effectiveness of training or multifunctional programs in reducing pain and discomfort [34].

Similar conclusions were reached in a Cochrane review that aimed to evaluate the effectiveness of ergonomic interventions among dental professionals. The authors found no studies evaluating cognitive or organizational ergonomic measures and highlighted the need for well-designed, methodologically rigorous, and appropriately reported randomized controlled trials. Taken together, these findings indicate a significant gap in the evidence base and highlight the importance of further research to evaluate ergonomic and organizational strategies among workers in a variety of occupations, including office professionals and healthcare staff [35].

Despite widely implemented recommendations, the evidence base supporting many ergonomic and educational interventions remains weak, as demonstrated by recent Cochrane reviews. This may be attributed to short follow-up periods, limited fidelity of intervention implementation in real-world settings, or an emphasis on individual behaviour without adequate consideration of systemic organizational constraints.

Limitations.

This narrative literature review has several important limitations that must be considered when interpreting the synthesized evidence.

Language Bias. By limiting inclusion to publications available only in English, this review may overlook regionally relevant epidemiological findings published in national languages. Such an approach tends to disproportionately represent high-income countries where English-language publication is more common, while underrepresenting low-income and middle-income regions, including Central Asia. As a result, country comparisons may reflect differences in publication practices rather than true epidemiological variability.

Publication Bias. Studies reporting statistically significant or substantial findings are more likely to be published and widely disseminated in indexed journals, whereas investigations demonstrating null or modest effects, particularly ergonomic and organizational interventions, remain unpublished or less visible. This may distort the apparent effectiveness or magnitude of certain risk associations.

Search Bias. The literature search was conducted across multiple large biomedical databases (PubMed, Web of Science, EMBASE, Cochrane Library, Medline), but this scope does not represent the full universe of MSD research. Databases vary in journal coverage, regional representation, and indexing approaches, meaning that some relevant studies may not have been retrieved.

Collectively, these constraints highlight that this review reflects global indexed evidence availability more than comprehensive geographic MSD surveillance. Future literature reviews would benefit from multilingual searches, targeted regional databases, and systematic inclusion of unpublished or non-peer-reviewed data to improve representativeness and reduce bias amplification.

Conclusion.

This review synthesizes findings from 48 peer-reviewed sources, highlighting consistent evidence that MSDs remain a leading global cause of disability. The collective body of research demonstrates that age-standardized prevalence is higher among women, with peak rates at ages 65–69 years. The burden of musculoskeletal diseases (MSDs) is expected to rise due to population aging and growth, yet MSDs remain a significant but underestimated cause of disability, leading to chronic pain, functional limitations, and reduced quality of life. Effective policymaking requires up-to-date data on disease burden, while programs addressing risk factors such as obesity and low physical activity, along with rehabilitation efforts and improved healthcare access, are essential. Urgent action is needed to enhance disease management through new research and its broader implementation.

Population growth and aging are the key demographic forces driving the rise in MSD prevalence, especially in sub-Saharan Africa, where these factors substantially contribute to the expected case increase. In contrast, regions such as Central and Eastern Europe and the high-income Asia-Pacific are expected to show stable or slightly reduced prevalence, as slower or declining population growth offsets other demographic pressures.

Cochrane systematic reviews consistently describe the evidence on ergonomic and educational interventions for preventing or reducing adult MSDs as inconsistent, limited, or low in methodological quality, underscoring a persistent gap between real-world use and proven effectiveness. The absence of clear effects can be explained by several methodological and contextual factors. First, non-standardized intervention protocols vary widely in duration, intensity, adherence requirements, and outcomes measured. Second, many included primary studies apply cross-sectional or short follow-up designs that cannot detect long-term effects or may capture transient

symptom fluctuation rather than sustained improvement. Third, ergonomic education alone may fail to translate into behaviour change when structural workplace constraints persist as a lack of adjustable equipment, insufficient breaks, or unregulated workloads. Additionally, cohort designs may underestimate intervention effects due to the "healthy worker effect," while self-reported outcomes introduce reporting bias, making benefits difficult to quantify with certainty.

This review exposes a critical lack of high-quality data from Central Asia. To address this, priority should be given to establishing population-based registries and conducting longitudinal studies in this region to understand the unique interplay of occupational risks, aging, and healthcare access.

Furthermore, the inconsistent evidence for preventive interventions, as noted in Cochrane reviews, calls for a new generation of research. Future trials must employ robust designs (e.g., cluster-randomized controlled trials), longer follow-ups, and process evaluations to understand not just if an intervention works, but how and for whom it works in diverse socioeconomic contexts.

Future research should focus on the next priorities: evaluating real workplace ergonomic changes (equipment + break and workload regulation), analysing socioeconomic and policy factors that influence intervention success. More longitudinal studies are especially needed in under-studied regions such as Central Asia, where occupational and healthcare access patterns differ from those in English-dominant databases.

Over the past 10 years, studies have provided extensive data on the global burden of CMS, highlighting its importance for the health system. Despite significant progress in diagnosis and treatment, additional efforts are needed to reduce the prevalence of CMS and improve the quality of life of patients. This requires not only medical, but also social and economic measures.

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Аннотация.

Цель исследования: Заболевания опорно-двигательного аппарата (ЗОДА) являются значимой проблемой общественного здравоохранения и входят в число ведущих причин инвалидности и снижения качества жизни. Данный обзор посвящён анализу распространённости, влияния и факторов риска ЗОДА среди взрослого населения с акцентом на эпидемиологические и социальные аспекты, что обосновывает необходимость разработки и внедрения эффективных профилактических и лечебных мер.

Материалы и методы: Из 85 публикаций, отобранных за 2015–2024 гг., 48 соответствовали критериям включения и были проанализированы по распространённости, факторам риска и бремени.

Результаты: ЗОДА чаще встречаются у женщин, с пиком в возрасте 65–69 лет. Наибольшая нагрузка наблюдается в развитых странах из-за старения населения. Основные факторы риска включают ожирение, профессиональные воздействия и малоподвижный образ жизни. Медицинские работники, особенно хирурги, стоматологи, медсестры и реабилитологи, подвержены высокому профессиональному риску. Экономические последствия значительны и включают рост затрат на здравоохранение и потерю производительности.

Заключение: ЗОДА остаются недооценённой, но крайне актуальной проблемой общественного здравоохранения.

Приоритетами должны быть расширение доступа к реабилитации, внедрение эргономических решений на рабочем месте и меры по коррекции модифицируемых факторов риска.

Ключевые слова: Заболевания опорно-двигательного аппарата, распространённость, факторы риска, глобальное бремя.