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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии
საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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

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

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

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

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

WEBSITE

www.geomednews.com

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 საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ შემდეგი წესები:

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

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

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

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

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

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

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

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

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

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

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

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

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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ERGONOMIC PRACTICE IN DENTAL CLINICS AND MUSCULOSKELETAL DISORDERS AMONG DENTISTS IN GEORGIA

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Abstract.

The dental profession is associated with occupational health problems. The working environment of a dentist is associated with ergonomic risk factors that can significantly reduce the dentist's working ability and even cause the termination of his/her professional activity. Numerous studies have been conducted in different countries (Sweden, Denmark, Germany, Poland, Australia, etc.) to assess the prevalence of musculoskeletal disorders in dentists, though no studies related to the principles of ergonomics in dentistry have been carried out in Georgia.

Aim: The study aimed to assess the ergonomics of the working environment of dentists in Tbilisi (capital city of Georgia) clinics and to identify the prevalence of musculoskeletal disorders among them.

Methods: An observational descriptive study was conducted in April-July 2023 in Tbilisi. A special questionnaire of 40 questions was designed based on international experience. The survey was conducted by random sampling in selected dental clinics. Dentists were asked to fill out the questionnaire during their free time between patient appointments. Those who agreed to participate were provided with electronic versions of the questionnaire.

Results: Five hundred dentists were invited to participate in the survey, of whom 314 (62.8%) agreed to fill out the questionnaire. A total of 291 fully completed questionnaires were used for the descriptive statistical analysis. Our study shows that in Tbilisi clinics dentists work on average for 5-6 days (48.8% - 6 days, 37.1% - 5 days) or 40-48 hours a week. A majority of respondents said their workplace met the requirements of ergonomics (it had a good lighting, the chair had a back, instruments could be easily reached), yet most of them rarely lean on the backrest, never or rarely use the hand rest method, and never or rarely do light physical exercise during breaks.

The survey shows that 53.6% of dentists most frequently suffer from pain in the back, followed by pain in the neck (50.9%), shoulders (47.9%) and lower back (47.1%). Most of them said they had to work less because of the pain.

Conclusion: Introduction of the principles of ergonomics in dental profession is vital for preventing occupational musculoskeletal disorders. It is important to provide continuing professional development programs and information booklets for dentists and thematic online webinars for the management of dental clinics in Georgia.

Key words. Dentistry, ergonomics, dental practice, musculoskeletal disorders, dental practice in Georgia, ergonomics in Georgia.

Introduction.

The dental profession is associated with occupational health problems. The working environment of a dentist is associated with ergonomic risk factors that can significantly reduce the

dentist's working ability and even cause the termination of his/her professional activity.

Musculoskeletal disorders, including discomfort, sporadic muscle pain, and muscle tension, can be observed in dentists both in the initial stages of professional activity and during long-term clinical practice. These disorders are usually ignored until they lead to functional limitations.

Ergonomic risk factors associated with dental profession include working in an incorrect posture, prolonged static standing or sitting, unsupported sitting, repetitive mechanical movements, forceful work, vibration of hand instruments, improper lighting, lack of magnifying devices, etc. [1-3]. Ignoring ergonomic risk factors can affect muscles, tendons, blood vessels and nerves, leading to increased complaints and decreased productivity [4]. The most common body regions affected by pain due to musculoskeletal disorders in dentists are back, lower back, neck, fingers, shoulders, and legs [5-8].

Physical pain ergonomics aims to identify and mitigate factors that contribute to discomfort or musculoskeletal injuries associated with professional practice. Dentists' physical pain ergonomics focuses specifically on the ergonomic principles applied to the dental profession to minimize discomfort and reduce the risk of musculoskeletal injuries among dental practitioners. Dentists often experience physical strain due to prolonged periods of sitting, repetitive motions, and awkward body positions required during dental procedures. By prioritizing physical pain ergonomics, dentists can maintain their health and longevity in their profession while delivering quality dental care to their patients.

Numerous studies, conducted in different countries (Sweden, Denmark, Germany, Poland, Australia, etc.) to assess the prevalence of musculoskeletal disorders in dentists, show the global prevalence between 64 to 93% [9-12]. No studies related to the principles of ergonomics in dentistry have been carried out in Georgia.

According to the National Centre for Disease Control and Public Health of Georgia (NCDC), in 2022, 585 dental clinics were operating in Georgia, including 216 clinics in Tbilisi (the capital city). In the same year, there were 3,964 dentists working throughout the country, of which 2,530 were working in Tbilisi.

The study aimed to assess the ergonomics of the working environment of dentists in Tbilisi and to identify the prevalence of musculoskeletal disorders among them.

Methods.

An observational descriptive study was conducted in April-July 2023 in Tbilisi. A special questionnaire of 40 questions was designed based on international experience [13-15]. The questions were related to the demographic data of the respondents, workplace ergonomic practices (posture, lighting, etc.), respondents' understanding of the ergonomic principles and their experience of musculoskeletal disorders.

The questionnaire was piloted with 10 dentists working in the University's Department of Dentistry. Only minor technical details were corrected after the piloting. Questions were rated on a 5-point Likert scale (never-1; rarely-2; sometimes-3; often-4; always-5).

The survey was conducted by random sampling in selected dental clinics. Dentists were asked to fill out the questionnaire during their free time between patient appointments. Those who agreed to participate, were provided with electronic versions of the questionnaire. The survey was conducted on conditions of anonymity with approval of the NCDC Ethics Committee (protocol no. 2023-031).

Results.

Five hundred dentists were invited to participate in the survey, of whom 314 (62.8%) agreed to fill out the questionnaire. A total of 291 fully completed questionnaires were used for the descriptive statistical analysis.

As to the gender and age composition of the survey participants, 219 (75.3%) of them were female and 72 (24.7%) were male; 74.7% were in the age group of 35-54 years, including 23% of 35-39 years, 18.3% of 50-54 years, 17.9% of 40-44 and 15.5% of 45-49 years.

53.3% of the respondents specialized in therapy, 20.3% in orthopedics, and 16.2% in surgery; 33% of them had 11-20-years' experience in profession, 24.7% had more than 21 years, 20.6% had 6-10 years, and 13.7% had 2-5-years' experience. At their last place of employment, 27.5% of respondents have worked for 2-5 years, 24.7% have worked for 6-10 years and 1 year, 19.6% have worked for 11-20 years, and 3.2% have worked for 21 years or more. Almost half of the respondents (48.8%) had a 6-day work week and 37.1% had a 5-day work week, while 14.1% did not answer the question (see Table 1).

Table 1. Characteristics of the study population (n = 291).

Variable	n	%
Gender		
Female	219	75,3%
Male	72	24,7%
Age Groups		
35 and older	217	74,7%
Younger than 35	74	25,3%
Specialty		
Therapy	155	53,3%
Orthopedics	59	20,3%
Surgery	47	16,2%
Other	30	10,2 %
Experience in profession		
More than 10 years	168	57,7%
Less than 10 years	123	42,3%
Number of patients per day		
8 patients and more	55	18,9%
Less than 8 patients	236	81,1 %
Working hours per day		
8h.	61	20,9%
More than 8h.	126	43,3%
Less than 8h.	104	35,8%

As per the findings, the average number of working hours per day is 8, although some dentists (n=126) work more than 8 hours: 5 named the longest working day of 12 hours, 3 respondents work for 11 hours, 100 work for 10 hours and 18 work for 9 hours a day. Dentists see an average of 7 patients per day, although some of them (n=55) see 8 or more patients.

According to 57.7% of respondents, they mostly sit while working, 30.6% sit or stand in turns, and 11.7% mostly stand. As regards patient positioning, 50.9% of them said they preferred supine position, 44.3% mentioned semi-sitting and 4.8% - upright position; 90% of respondents said they had good lighting at their workplace, while 10% answered in the opposite; 86.6% of dentists can easily reach their instruments, while 13.4% cannot; 98.3% them said that their chair had a back, 0.7% said it had not; 61.5% of dentists rarely lean on the back while working, 21.6% do it often, and 16.8% never do it; 38.1% of them never use the hand rest and 43.3% do it rarely (i.e. a total of 81.4%), while 13.7% use the hand rest often and 4.9% do it always; 54.4% of dentists rarely take a 10-minute break between patient appointments, 28.1% do it often, 23.7% do it always, and 2.7% never do it; 62.9% of dentists never do light physical exercise during breaks, 28.5% do it rarely, and 8.6% do it often.

The survey showed that 26.5% of respondents do regular physical activity (walking, running, swimming, etc.) 1-2 times a month outside of work hours, 21.0% do it once a week, 21.6% do it 2 times a week, and 16.2% do it 3 times a week. On average, 42.3% of respondents spend 60 minutes, 32.3% spend 30 minutes, 15.8% spend less than 15 minutes and 9.6% spend more than an hour for physical activity.

In the past 12 months, 53.6% of dentists reported the most frequent pain syndrome in the back, neck (50.9%), shoulders (47.9%) and lower back (47.1%). About a quarter of them also reported frequent pain in the finger bones, and a fifth complained of pain in the wrist (see Table 2). According to 32.3% of respondents, they experienced pain for more than one month in the last 12 months, due to which 78.7% of them had to work less, 4.5% had to miss the work, 22.7% had to consult a doctor, and 38.5% had to undergo medical treatment; 57.7% of respondents had experienced pain in the above regions in the last 7 days.

Table 2. The affected body regions and frequency of pain.

Body region	Frequency of pain		No pain (n-%)
	frequent (n-%)	Seldom (n-%)	
Neck	148-50.9%	90-30.9%	53-18.2%
Shoulder	139-47.9%	99-21.6%	53-18.2%
Back	156-53.6%	87-29.9%	48-16.5%
Finger bones	71-24.4%	77-26.5%	143-49.1%
Wrist	61-21.0%	89-30.6%	141-48.5%
Elbow	37-12.7%	57-19.6%	197-67.7%
Lower back	137-47.1%	104-35.7%	50-17.2%
Pelvis	55-18.9%	82-28.2%	154-52.9%
Knee	45-15.5%	92-31.6%	154-52.9%
Ankle cuff	34-11.7%	58-19.9%	199-68.4%
Toe bones	29-10.0%	46-15.9%	216-74.1%

The survey showed that 67.4% of respondents assess their health as poor, 7.9% - as satisfactory, and 24.7% - as good; 87.3% of them associate their health problems with their profession, and 97.3% of them believe that dentist's profession is associated with health risks. According to 92.8% of respondents, it is important to consider the principles of ergonomics in daily activities to prevent occupational diseases.

It is noteworthy that 99.7% of respondents said they would like to improve their knowledge regarding ergonomics and prevention of occupational diseases through: participation in continuous professional development programmes (61.5%), information booklets (12.0%) and online webinars (26.6%).

Discussion.

According to scientific literature, dentists work on average for 4-5 days (35-40 hours) a week. Our study shows that in Tbilisi clinics dentists work on average for 5-6 days (48.8% - 6 days, 37.1% - 5 days) or 40-48 hours a week. A majority of respondents said their workplace met the requirements of ergonomics (it had a good lighting, the chair had a back, instruments could be easily reached), yet most of them rarely lean on the backrest, never or rarely use the hand rest method, and never or rarely do light physical exercise during breaks. Maintaining overall physical fitness can enhance resilience to physical stress and reduce the risk of injuries. Engaging in regular exercise, such as strength training and cardiovascular workouts, can improve muscle strength, flexibility, and endurance. By prioritizing physical pain ergonomics, dentists can minimize discomfort, prevent injuries, and maintain their health and well-being throughout their careers.

Dentistry involves prolonged periods of sitting and performing intricate tasks with repetitive motions, which can lead to various musculoskeletal issues such as back pain, neck pain, shoulder pain, and carpal tunnel syndrome. The survey shows that 53.6% of dentists suffer from back pain, followed by pain in the neck (50.9%), shoulders (47.9%), and lower back (47.1%). They said they had to work less because of pain. A quarter of them rated their health as good, while the majority rated it as poor, and most of them consider their health problems to be occupational.

The goal of ergonomics in dental practice is to prevent musculoskeletal disorders associated with occupation. There are various strategies available for physical pain ergonomics:

- Maintaining proper posture is crucial for preventing musculoskeletal issues. Dentists should sit upright with their back straight, shoulders relaxed, and feet flat on the floor. Avoiding slouching or leaning forward can reduce strain on the spine and muscles.
- The dental chair and workstation should be adjusted to support proper posture and minimize strain. Chairs with adjustable height, lumbar support, and armrests can help dentists maintain ergonomic positioning. The dental operatory should be organized to ensure that instruments and equipment are easily accessible, reducing the need for awkward reaching or twisting movements,
- Ergonomically designed dental instruments can reduce hand and wrist fatigue. Lightweight and well-balanced instruments with ergonomic grips can minimize the strain on muscles and joints during procedures.

- Performing the same tasks repeatedly can lead to overuse injuries. Dentists should incorporate task variation into their workday to distribute physical strain more evenly across muscle groups. Alternating between different procedures or taking breaks to perform administrative tasks can help prevent overuse injuries.
- Magnification devices, such as loupes or microscopes, can improve visualization during procedures, reducing the need for awkward postures. Proper lighting is also essential for reducing eye strain and maintaining visibility.
- Taking regular breaks during the workday allows dentists to rest and relieve muscle tension. Stretching exercises can help improve flexibility and reduce the risk of musculoskeletal injuries. Dentists should incorporate stretching routines into their daily schedule to promote physical well-being.
- Participation in continuing professional development programs is essential for dentists to understand the principles of ergonomics. Dentists and dental staff should receive training on proper ergonomic techniques and injury prevention strategies. Education on body mechanics, lifting techniques, and workstation setup can help raise awareness of potential risk factors and promote safe work practices.

The results of our survey showed that the majority of respondents considered it important to know and follow the principles of ergonomics in their daily work, and they were interested in improving their knowledge and awareness in this area.

The study limitation. The study's applicability to broader contexts is limited since it focused solely on dental clinics within the capital city. To validate the broader relevance of the findings, further research should encompass diverse settings.

Conclusion.

Introduction of the principles of ergonomics in dental profession is vital for preventing occupational musculoskeletal disorders. It is important to provide continuing professional development programs and information booklets for dentists and thematic online webinars for the management of dental clinics in Georgia.

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Эргономическая практика в стоматологических клиниках и заболевания опорно-двигательного аппарата среди врачей-стоматологов в Грузии

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Абстракт

Рабочая среда врача-стоматолога связана с эргономическими факторами риска, которые могут существенно снизить трудоспособность врача и даже стать причиной прекращения профессиональной деятельности. В разных странах (Швеция, Дания, Германия, Польша, Австралия и др.) проведены многочисленные исследования по оценке распространенности нарушений опорно-

двигательного аппарата у врачей-стоматологов. В Грузии исследований, связанных с принципами эргономики в стоматологии, не проводилось.

Целью настоящего исследования является оценка состояния эргономики клинической рабочей среды врачей-стоматологов, работающих в стоматологических клиниках города Тбилиси, и выявление частоты нарушений опорно-двигательного аппарата среди них.

Методика исследования

Наблюдательное описательное исследование было проведено в апреле-июле 2023 года в Тбилиси. Для опроса была подготовлена специальная анкета. Исследование проводилось по принципу случайной выборки в выбранных стоматологических клиниках. Врачам-стоматологам предложили заполнить анкету в свободное время между приемами пациентов. В случае согласия врачу предоставлялась онлайн-версия анкеты.

Результаты

К участию в исследовании были приглашены 500 стоматологам, 314 (62,8%) из которых согласились заполнить анкету. Для описательного статистического анализа была использована 291 полностью заполненная анкета.

По результатам исследования на примере тбилисских клиник клиническая деятельность стоматологов составляет в среднем 5-6 дней в неделю (48,8% стоматологов работают 6 дней, 37,1% - 5 дней), а количество рабочих часов составляет 40-48 часов.

Для большинства респондентов рабочая обстановка в клинике соответствует требованиям эргономики (хорошее освещение на рабочем месте, кресло со спинкой, инструменты легкодоступны), однако большая часть респондентов редко опирается на спинку, никогда или редко использует метод опоры для рук, не выполняет или редко выполняет легкие физические упражнения во время перерывов.

Согласно результатам исследования, 53,6% стоматологов чаще всего жаловались на боли в спине, далее следуют шея (50,9%), плечи (47,9%) и поясничный отдел (47,1%). По их словам, им приходилось ограничивать рабочий процесс из-за боли.

Выводы

Внедрение принципов эргономики в стоматологической профессии жизненно необходимо для предотвращения профессиональных заболеваний опорно-двигательного аппарата. Важно разработать программы непрерывного профессионального развития и информационные буклеты для стоматологов, а также проводить тематические онлайн-вебинары для руководства стоматологических клиник в Грузии.