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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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QUALITY OF LIFE OF GENERAL PRACTITIONERS OF POLYCLINICS IN CITIES OF KAZAKHSTAN

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Abstract.

Context: The quality of life of healthcare workers is an important indicator of the state of the healthcare system and the quality of services provided. This study focuses on analyzing the factors affecting the quality of life of general practitioners working in urban polyclinics in Kazakhstan.

Objective: To assess the quality of life of general practitioners and identify key factors determining their physical and psychological well-being.

Methods: A cross-sectional study was conducted using the validated Russian-language version of the SF-36 questionnaire. A total of 203 physicians from five cities in Kazakhstan participated in the survey. Statistical tests, including analysis of variance and correlation analysis, were applied for data processing.

Results: The average overall SF-36 index was 58.2%. The lowest scores were recorded in the domains of social functioning and role limitations due to emotional problems. Age and marital status were found to influence specific quality-of-life domains. The proposed model for improving quality of life emphasizes the optimization of working conditions and the introduction of psychological support.

Conclusion: The results of the study demonstrate the need for systemic changes in the organization of work for general practitioners. The proposed measures may be used to improve quality of life and enhance the efficiency of healthcare professionals. A limitation of the study is the pronounced gender imbalance of the sample (92.6% women), which may affect the generalizability of the results.

Key words. Quality of life, general practitioners, polyclinic, professional burnout, working conditions.

Introduction.

The concept of "quality of life" covers a wide range of aspects that determine the level of life satisfaction and well-being [1-3]. The standard definition of quality of life implies the assessment of the living environment and the individual's satisfaction with the conditions within this environment. According to the literature sources, the main factors influencing the quality of life are economic and social components [4-13]. When studying the standard of living and quality of life, special importance is given to the macro-environment or surroundings in which a person is located, most often professional activity. When considering job satisfaction, it is necessary to take into account working conditions and schedule, comfort, social guarantees, and the state of the industry in which the person works [14-20]. According to studies, the quality of life of healthcare workers depends on such factors as workload, working conditions, social support, and emotional burnout. Medical workers face a high level of stress associated with responsibility for patients' health and the intensity of professional activity. Currently, due to the specifics of their work, healthcare professionals are exposed to significant adverse factors of the working and production environment, constant psychological and emotional pressure from patients, their relatives, and supervisors. Unfavorable working conditions, chronic mental and physical overload, enormous responsibility for the health and life of patients, lack of time, and other factors lead to a decrease in the quality of life of doctors, the development of their own health problems, and, consequently, to a deterioration in the quality of medical care provided to the population [21]. According to a number of studies, life expectancy is often used as one of the integral indicators of quality of life (QoL). The authors emphasize that improving the health and well-being of workers has a positive effect on their professional performance and overall quality of life. This is especially relevant for healthcare workers, whose activities are directly related to maintaining public health [22,23].

A review of international literature indicates significant interest in studying quality of life, as demonstrated by numerous research works. A substantial contribution to this field has been made by scholars such as F. Taylor, A. Fayol, E. Mayo, H. Ford, A. Maslow, D. McGregor, C. Alderfer, D. McClelland, F. Herzberg, L. Porter, E. Lawler, V. Vroom, R. Huseman, J. Hatfield, W. E. Deming, B. F. Skinner and others. Studies on the quality of life of healthcare workers have been conducted in different countries: Greece (Yannis Tountas, Panayotes T.H. Demakakos, Yannis Yfantopoulos, Jenny Aga, 2003); Japan (Yasuaki Hayashino, Shunichi Fukuhara, Yoshimi Suzukamo, Tomonori Okamura, 2007); USA (T. Shanafelt, B. Sonja, T. Litjen, L. Dyrbye, W. Sotile, S. Daniel et al., 2012); China (Ying Liang, Hanwei Wang, Xiaojun Tao, 2015); Thailand (C. Angkurawaranon, W. Jiraporncharoen, A. Sachdev, A. Wisetborisut, W. Jangiam, R. Uaphanthasath, 2016) and others. The results of these studies show that the level of quality of life of healthcare workers, as well as the influence of working conditions and other professional activity factors on it, remain insufficiently high.

In Kazakhstan, aspects of the quality of life of physicians have not been sufficiently studied. At the same time, the reform of the healthcare system, especially primary health care, makes the study of factors affecting the quality of life of doctors extremely

relevant, with the aim of developing effective measures for its improvement. International studies conducted in the United States, Japan, and China show that improving the quality of life of healthcare workers has a positive impact on the quality of services provided.

The aim of the study is to assess the quality of life of general practitioners in urban polyclinics of Kazakhstan and identify the key factors influencing it.

Materials and Methods.

The main study design was cross-sectional. The aim was to assess the quality of life of general practitioners working in urban polyclinics in Kazakhstan and to identify key factors influencing their physical and psychological well-being. The study was conducted from September 2020 to January 2021 among 203 general practitioners from five cities of Kazakhstan — Astana, Aktobe, Kokshetau, Shymkent, and Pavlodar. Inclusion criteria included physicians who had been working in polyclinics for at least one year and had provided written informed consent. The participants represented various age groups, marital statuses, and levels of professional experience.

Tools: A validated SF-36 questionnaire adapted for the Russian-speaking population was used in the studies. The study was approved by the local ethics committee. The questionnaire includes eight scales for assessing physical and psychological health: Physical Functioning (PF) — performing physical activities (walking, climbing stairs, etc.); Role-Physical (RP) — the impact of physical condition on daily activities; Bodily Pain (BP) — the presence of chronic pain and its impact on performance; General Health (GH) — assessment of current health status; Vitality (VT) — vitality; Social Functioning (SF) — the level of social activity; Role-Emotional (RE) — the current emotional state; Mental Health (MH) — psychological well-being. A total of 300 questionnaires were distributed to general practitioners in the specified cities of Kazakhstan. Questionnaires with missing answers or incorrectly completed were excluded from the analysis. The effective response rate was 67.7% (out of 300 respondents). As a result, 203 questionnaires were recognized as valid and used as the database for the study.

Statistical analysis: Descriptive statistical methods were used for data processing. Analysis of variance and Student's t-test were applied to assess differences between groups. Correlation analysis was used to examine the relationships between age, marital status and quality of life indicators. The level of statistical significance was set at $p < 0.05$.

Results.

The mean values on the SF-36 questionnaire scales from the main study are presented in Table 2. The lowest scores were identified on the Social Functioning scale (53.8%) and the Role-Emotional scale (53.3%).

The mean questionnaire score was 58.2%, while the indexed SF-6D score was 71.8%. Among the components of physical health, according to the obtained data, the Physical Functioning (PF) scale indicates that respondents maintain a sufficient level of physical activity. The Role-Physical (RP) scale demonstrates a certain impact of physical condition on the performance of daily roles, such as work and household duties. The Bodily Pain (BP) scale reflects a moderate level of pain among respondents. The General Health (GH) assessment was moderate, which may be associated with existing health issues among general practitioners working in polyclinics.

Table 1. *Characteristics of respondents participating in the study.*

Characteristic	Quantity (n=203)	%
Age		
20–29	45	22.2
30–39	62	30.5
40–49	48	23.6
50–59	32	15.8
60 years and over	16	7.9
Gender		
Men	15	7.4
Women	188	92.6
Marital status		
Married	140	68.9
Single	63	31.1

Table 2. *Quality of life indicators on SF-36 scales.*

Scale	Average	Standard deviation
Physical functioning (PF)	63.2	19.5
Role-Physical (RP)	61.8	24.0
Bodily Pain (BP)	55.7	21.2
General health (GH)	62.6	18.1
Vitality (VT)	55.8	13.8
Social functioning (SF)	53.8	18.8
Role-Emotional (RE)	53.3	34.3
Mental health (MH)	59.1	9.0

Regarding the psychological component of health, the Vitality (VT) scale indicates noticeable fatigue and reduced energy levels. The Social Functioning (SF) index reflects limited social interactions and decreased communication. The Role-Emotional (RE) scale demonstrates an increased influence of emotional factors on work performance and a general deterioration in emotional well-being. The Mental Health (MH) scale also showed relatively low results among the medical workers, suggesting psychological distress, symptoms of anxiety and depression, and a lack of positive emotions. It should be noted that the mean score of the psychological health component (42.44) is 3.0% lower compared to the physical component (45.47), highlighting the significance of emotional strain in the work of general practitioners. At the same time, median values for all domains exceeded 50, while the perceived physical health score was exactly 50 points.

An analysis of variance (ANOVA) was then conducted for all respondents to determine the statistical significance of differences in the SF-36 questionnaire results. The differences across individual domains were found to be statistically significant, which substantiates the need for further correlation and regression analyses to identify the factors underlying these differences.

A correlation analysis was conducted to examine the relationship between the age of general practitioners and the

overall indexed quality of life score according to the SF-6D scale. The Pearson correlation coefficient was (-0.07), indicating a weak negative correlation between age and the overall quality of life index (that is, with increasing age, there is a slight decrease in the average SF-6D level; however, the relationship is weak and does not account for heterogeneity across age subgroups). This value, being close to zero, corresponds to the observed distribution across age groups: the highest mean scores on the questionnaire scales were observed among respondents aged 30–39, while lower scores were recorded in the 20–29 and 40–49 age groups. In contrast, the 50–59 and 60–69 age groups demonstrated relatively high values across several domains. Thus, the overall influence of age on the SF-6D index is weak, whereas certain age cohorts exhibit distinctive profiles across specific quality-of-life domains.

The analysis of the distribution of quality-of-life scales across age groups in this study revealed considerable variation in indicators characterizing the physical and psychological components of health. This indicates that, in addition to assessing the overall trend, it is important to evaluate individual domains within specific age subgroups.

Taking into account the various characteristics of the respondents, a multifactor analysis of variance (ANOVA) was conducted to examine differences in questionnaire results across these parameters. Although male physicians represented only 7.4% of the sample, potential gender differences in the survey results were also included in the analysis. With a 95% confidence level, statistically significant differences were identified by age in the domain of role limitations due to emotional problems (RE), indicating the influence of age on the emotional state that may hinder the performance of professional duties and/or daily activities. Gender-related differences among physicians were not found to be statistically significant. Marital status, however, determined the significance of differences in three domains: physical functioning (PF), role limitations due to physical problems (RP), and mental health (MH).

The correlation analysis conducted for these domains showed that the Pearson correlation coefficient for the relationship between role limitations due to emotional problems (RE) and the age of general practitioners was (-0.24), indicating a weak negative correlation and a tendency toward a decline in emotional well-being with increasing age within this specific domain. Correlation coefficients were also calculated for statistically significant differences depending on the marital status of physicians. The analysis revealed a weak correlation, suggesting that marital status has a limited impact on the quality of life of general practitioners working in polyclinics.

Thus, the social characteristics of general practitioners (age, gender, and marital status) have a multifaceted influence: statistically significant differences were identified in certain domains (for example, age in RE; marital status in PF, RP, and MH), whereas for aggregated indicators (mean physical health score = 45.74, mental health score = 42.44, overall SF-6D index = 0.71), the impact of social characteristics was limited or weak. In other words, social factors partially explain the variation observed in specific domains of quality of life but do not lead to strong or consistent changes in the overall quality-of-life indices within our sample.

Based on the obtained data, a model for improving the quality of life of general practitioners was developed, and a pilot "before-and-after" study was conducted. The objective was to evaluate the effectiveness of the proposed organizational and social model aimed at improving the quality of life of general practitioners. The pilot study involved general practitioners from two urban polyclinics in Astana and lasted four months (March–July 2021). The participants included general practitioners who had taken part in the first stage (n=54) and agreed to participate in the follow-up study. The intervention consisted of a set of measures, including workload reduction, improvement of working conditions, provision of psychological support, and enhancement of legal literacy. A validated SF-36 questionnaire, adapted for the Russian-speaking population, was used before and four months after the implementation of the model. The pilot study analysis involved comparing paired mean scores across the SF-36 scales using Student's t-test for dependent samples. Following the completion of the main study, a pilot study was carried out in Astana to provide a preliminary assessment of the effectiveness of the proposed model for improving the quality of life of general practitioners. A follow-up survey was conducted among the same employees of urban polyclinics four months after the introduction of the interventions. Figure 1 presents the results comparing the quality-of-life indicators of general practitioners before and after the preliminary implementation of the quality-of-life improvement model.

After the implementation of the model, an improvement in quality-of-life indicators (according to the SF-36 scale) was observed, increasing from 63.3% to 64.3%, along with positive feedback from general practitioners regarding reduced stress levels, improved working conditions, and increased motivation. Positive changes were noted in social and psychological domains, as well as an increase in job satisfaction. However, the one-percentage-point increase was not statistically significant ($p>0.05$), which calls for cautious interpretation of the intervention's effectiveness.

The pilot study confirmed the feasibility of scaling up the proposed model for improving the quality of life of general practitioners to other regions of Kazakhstan. Further research may focus on longer-term observation and evaluation of the sustainability of the achieved changes.

Discussion.

The results of the study highlight the importance of improving the quality of life of general practitioners as a strategic objective for Kazakhstan's healthcare system. The identified low scores in the domains of social functioning and role limitations due to emotional problems indicate that emotional burnout and stress factors significantly reduce physicians' professional efficiency. It should be noted that the study exhibited a pronounced gender imbalance, with 92.6% of participants being women. This may have influenced the results, particularly in the domains of psychological and social functioning, as literature suggests that women more frequently report higher levels of emotional stress, anxiety, and fatigue in the performance of professional duties. Therefore, the results may more accurately reflect the perception of quality of life among the female segment of medical personnel, which should be taken into account when

interpreting the data and planning future studies with a more balanced sample.

In the current context of ongoing reforms and innovations within primary healthcare organizations in the Republic of Kazakhstan, as well as the increasing workload of primary care specialists, the development of mechanisms to eliminate adverse factors in the work of general practitioners in polyclinics—and consequently, to improve their quality of life—has become more relevant than ever.

Based on the results of the main study, we proposed a model for improving the quality of life of general practitioners, which includes the enhancement of organizational, managerial, legal, social, and preventive activities, as well as close intersectoral collaboration between healthcare authorities and primary healthcare organizations. These measures will contribute to the formation and maintenance of a positive image of general practitioners working in polyclinics and, overall, to the improvement of their social status.

The proposed model is aimed at addressing key shortcomings and creating a supportive environment for general practitioners. It targets the identified weaknesses across several areas. To address issues related to social functioning, the model includes measures of social support—improving working conditions, providing benefits, and creating a comfortable work environment that fosters interpersonal relationships and teamwork among staff. These measures help reduce isolation and increase physicians' engagement within the professional community. To mitigate role and emotional limitations, the model incorporates a psychological component that includes regular consultations with a psychologist, stress resilience training, prevention of emotional burnout, and the development of self-regulation skills. These interventions are directly aimed at enhancing emotional stability, reducing anxiety, and improving job satisfaction. Organizational measures—such as workload reassessment, better distribution of duties, and schedule optimization—contribute to reducing fatigue and preventing professional exhaustion, which also has a positive impact on the emotional well-being of physicians.

The model is presented in figure 2, which outlines the functions assigned to each sector of the healthcare system.

Thus, each component of the model is designed to address specific issues identified in the study: social support strengthens communication and teamwork, while psychological and organizational assistance reduces emotional stress and enhances the overall quality of life of general practitioners.

The effectiveness of the proposed model was demonstrated in a pilot project implemented in two polyclinics in Astana. Over a four-month period, quality-of-life indicators increased from 63.3% to 64.3%. Despite the modest improvement, it suggests a positive impact of the implemented measures on physicians' well-being, as in addition to the quantitative changes, positive feedback was received from doctors who reported reduced stress levels, improved working conditions, and increased motivation. Efforts were undertaken in urban polyclinics to reduce the workload of specialists by revising staffing schedules. Working conditions were improved: additional workspaces and offices, personal computers, and office equipment (copiers, printers, etc.) were provided. The responsibilities of the staff psychologist were expanded to include mandatory work with medical personnel aimed at preventing professional emotional burnout or identifying it at an early stage, as well as training physicians in stress-resilience techniques and exercises to stabilize their psychological state when risk factors arise.

The duties of the polyclinic's legal officer were also expanded to include improving the legal literacy of primary care physicians by explaining key regulatory provisions relevant to

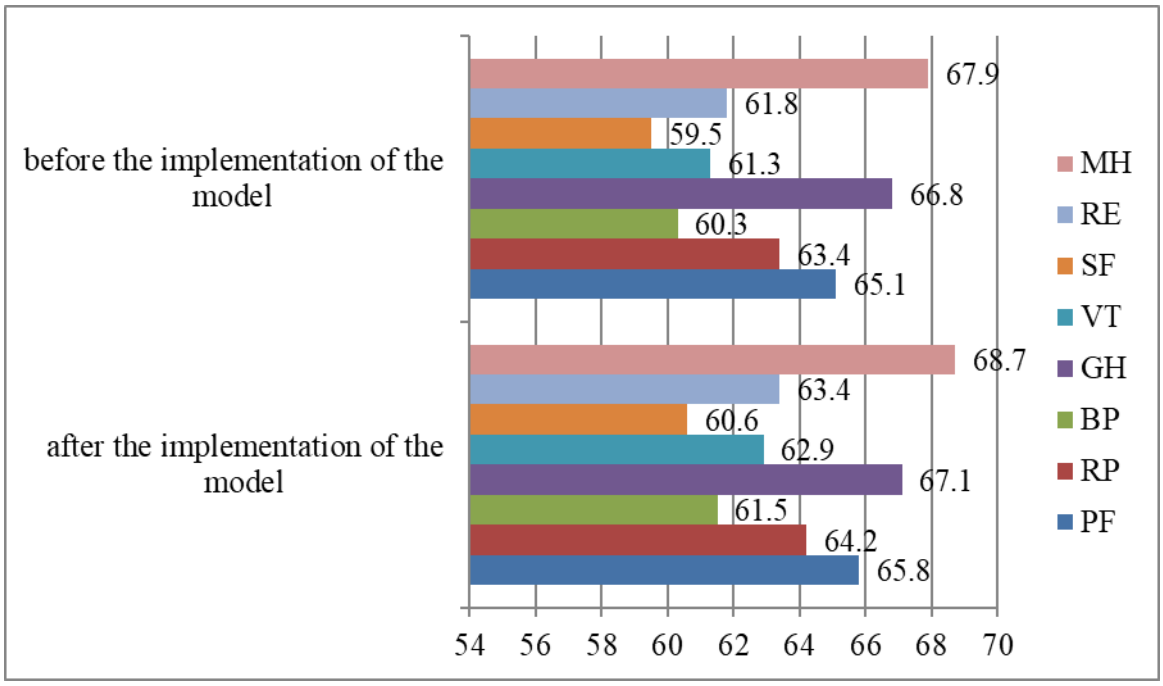

Figure 1. *Comparison of quality-of-life indicators of general practitioners in polyclinics before and after the implementation of the model.*

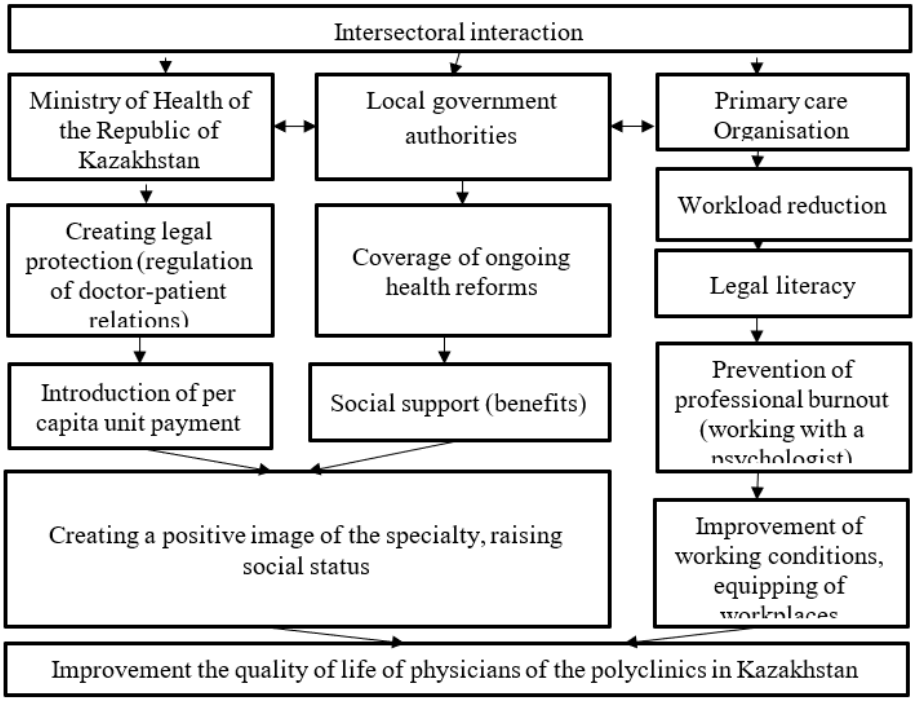

Figure 2. *Model of improving the quality of life of general practitioners of polyclinic in Kazakhstan.*

their professional activities, regularly updating and modernizing these documents, promptly communicating any changes, and ensuring staff are familiarized with new regulations.

The proposed model is of significant importance for the entire healthcare system. It not only contributes to improving the quality of life of general practitioners but also has a positive impact on the quality of medical services provided. Physicians who work in comfortable conditions, experience lower stress levels, and have a high level of professional satisfaction are able to deliver more attentive and higher-quality medical care. Thus, the implementation of the model can contribute not only to enhancing the well-being of healthcare professionals but also to improving the overall level of public health in Kazakhstan.

To maximize the effect, it is recommended to scale this model nationwide, taking into account the specific characteristics of each region. This will support the development of a more resilient and efficient primary healthcare system capable of adapting to modern challenges.

Conclusion.

The study demonstrated that the quality of life of general practitioners working in urban polyclinics in Kazakhstan requires improvement. The average score on the SF-36 questionnaire was 58.2%, indicating the presence of issues related to both physical and psychological well-being of healthcare professionals. Higher quality-of-life scores were observed among physicians in the 30–39 age group, while comparatively lower values were recorded in the 20–29 and 40–49 age groups. At the same time, statistical analysis revealed only a weak overall relationship between age and the indexed quality-of-life indicator (SF-6D), reflecting the heterogeneity across age subgroups. The influence of gender and marital status on the integral quality-of-life indicators was found to be statistically insignificant, although differences were noted in certain domains (physical and mental health, role limitations). A limitation of the study is the noticeable gender imbalance in the sample (92.6% women), which may affect the generalizability of the findings.

The obtained results highlight the need for comprehensive measures aimed at reducing professional stress and improving working conditions. The proposed model for enhancing quality of life—which includes improvements in organizational, social, psychological, and legal aspects of physicians work- has already demonstrated a certain level of effectiveness within the pilot project. Improving the quality of life of healthcare workers contributes not only to their own well-being but also enhances the quality of medical care provided to the population.

Thus, the conclusions of this study confirm the importance of a systemic approach to improving the quality of life of general practitioners. The results can serve as a basis for further research and the development of targeted programs aimed at improving the physical and psychoemotional state of healthcare professionals within the healthcare system of Kazakhstan.

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Conflicts of Interest.

The authors declare no conflicts of interest.

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