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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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TURNOVER INTENTIONS AMONG PHYSICIANS AND NURSES IN KAZAKHSTAN DURING THE COVID-19 PANDEMIC: A CROSS-SECTIONAL STUDY OF PSYCHOLOGICAL AND PROFESSIONAL CHALLENGES

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Abstract.

Background: In the context of a shortage of medical personnel, we aimed to assess the impact of factors related to the COVID-19 pandemic that influenced the intention to resign from work.

Materials and Methods: This was a cross-sectional survey involving 206 healthcare workers, including 89 doctors (42 with up to 5 years of experience and 47 with more than 5 years of experience) and 117 nurses (57 with up to 5 years of experience and 60 with more than 5 years), working in four outpatient clinics in Almaty. All participants provided informed consent and completed the authors' questionnaire titled "Reasons for Healthcare Workforce Attrition During the COVID-19 Pandemic."

Results: The following factors showed a direct correlation with the intention to resign: high stress levels, unauthorized patient complaints against healthcare workers, emotional burnout, threats and verbal abuse from patients, increased workload and overtime, dissatisfaction with legal protection, inadequate preparation for medical practice during education, lack of social support from friends and family, working with seriously ill patients, insufficient provision of protective equipment during the pandemic, and fear of infecting loved ones. Age and work experience showed inverse correlations with the intention to resign.

Conclusions: Legislative changes to protect the rights of healthcare workers, managerial support, socio-psychological assistance for young professionals, and preparing them for potential conflicts and legal proceedings are essential to prevent healthcare workforce attrition.

Key words. COVID-19 pandemic, healthcare workforce shortage, staff turnover, reasons for resignation.

Introduction.

A shortage of healthcare workers has been observed in many countries and, according to the World Health Organization (WHO), this trend is expected to persist in the coming years. The issue became particularly acute during the COVID-19 pandemic, when the demand for medical personnel rose sharply. Along with heavy workloads and poor working conditions, the pandemic introduced additional psycho-emotional stress and fears, which further exacerbated workforce challenges in the healthcare sector.

One of the main concerns for public health authorities during this time was the retention of medical staff. In the Republic of Kazakhstan, one of the key incentive measures implemented during the pandemic was increased financial compensation for medical personnel working with COVID-19 patients.

Globally, the scale of the pandemic was staggering: over 400 million people were infected, and more than 6.2 million died. The seriousness of the infection, rapid viral mutations, uncontrolled transmission, and the lack of a unified strategy for patient management led to a dramatic increase in the number of hospitalizations and placed unprecedented pressure on healthcare systems. Emotional exhaustion and burnout among medical professionals contributed to increased resignation rates. For example, in 2021, Singapore saw a significant outflow of healthcare workers. In the United States, the healthcare system lost approximately 460,000 employees between 2020 and 2021, with 18% reporting the pandemic as the primary reason for their resignation.

A meta-analysis conducted by Poon Y.S.R. and colleagues identified several key factors associated with the intention to leave the profession:

1. Fear of COVID-19 infection;
2. High levels of stress;
3. Socio-demographic factors;
4. Unfavorable working conditions;
5. Lack of support from management.

While international data highlight the seriousness of the problem, the situation in Kazakhstan remains ambiguous. According to the national statistical reports "The Health of the Population of the Republic of Kazakhstan and the Activities of Healthcare Organizations" for 2018–2022, no significant decline in the number of medical personnel was observed. The total number of doctors (excluding dentists) increased from 72,877 in 2018 to 79,409 in 2022, and the number of doctors per 10,000 population rose from 39.6 to 40.2. However, the staffing rate declined from 94.1% to 90.4% over the same period. Similarly, the number of mid-level healthcare workers rose from 17,570 to 19,130, but the rate per 10,000 population fell from 95.5 to 79.5.

This statistical growth does not fully reflect the internal dissatisfaction or emotional state of healthcare workers. Therefore, it is important to explore whether and to what extent factors associated with the COVID-19 pandemic influenced the intention of physicians and nurses in Kazakhstan to resign from their jobs [1-10].

Materials and Methods.

This cross-sectional study was conducted from May to July 2023 and involved 206 healthcare professionals working in four outpatient clinics (State Municipal Enterprises No. 1, 11, 17, and 36) in Almaty, Kazakhstan. The sample included 89 physicians (42 with ≤5 years of experience and 47 with >5 years of experience) and 117 nurses (57 with ≤5 years and 60

with >5 years of experience). All participants provided written informed consent. The study was approved by the local bioethics committee of the Kazakh Medical University "Kazakhstan School of Public Health" and conducted in accordance with the Declaration of Helsinki.

Study Objective:

The aim was to identify and evaluate factors associated with the intention of healthcare workers to leave the medical profession during the COVID-19 pandemic. A comparative analysis was performed between physicians and nurses, and between early-career professionals (≤5 years of experience) and those with more than 5 years of experience.

Inclusion Criteria:

- Physicians and nurses working in the specified polyclinics of Almaty
- Minimum work experience of 2 years
- Voluntary informed consent to participate

Exclusion Criteria:

- Employment in other medical institutions
- Less than 2 years of work experience
- Refusal to participate

Questionnaire Design:

A structured, author-developed questionnaire titled "Reasons for Healthcare Workforce Attrition During the COVID-19 Pandemic" was used. It included 20 items, 19 of which addressed potential influencing factors:

- Psychological stress and burnout
- Workload and overwork
- Legal protection and patient complaints
- Lack of social or managerial support, etc.

Each item was rated on a 10-point Likert scale (1 = no influence, 10 = maximum influence). Scores above 5 were considered significant. The questionnaire was not validated prior to implementation, which is acknowledged as a limitation and subject for future research.

Statistical Analysis:

Data were analyzed using SPSS Statistics 26. The normality of distributions was assessed using:

1. Kolmogorov–Smirnov test (n > 50), modified by Lilliefors
2. Shapiro–Wilk test (n < 50)
3. Indicators of skewness and kurtosis
4. Histogram visual inspection

Parametric tests (Student's t-test for equal variances, Welch's t-test for unequal variances) were used for normally distributed data. Nonparametric data were analyzed using the Mann–Whitney U test.

For categorical variables, Fisher's exact test and the Pearson chi-squared test were applied. Effect size was evaluated using Cramér's V.

Correlations were analyzed using the Spearman rank correlation coefficient, and the strength of relationships was interpreted using the Cheddock scale. Statistical significance was set at $p < 0.05$.

Results.

The median age of doctors was significantly higher than that of nurses: 34.0 years (IQR = 11) vs. 27.0 years (IQR = 10), $p < 0.001$ (Table 1). No statistically significant difference was found in work experience between the two groups ($p = 0.558$). Among 89 doctors, 7 (7.9%) were male, whereas all 117 nurses were female. This difference was statistically significant ($p = 0.002$), with a moderate effect size (Cramér's V = 0.215) (Table 1).

There were no statistically significant differences in the overall intention to leave the healthcare sector between doctors and nurses ($p = 0.591$), with a weak effect size (V = 0.120) (Table 1 and Figure 1).

Doctors reported higher stress levels than nurses: median = 5.0 (IQR = 2) vs. 4.0 (IQR = 2), $p = 0.020$. However, this did not result in a significant difference in the impact of stress on the intention to leave (Table 2).

The impact of threats and insults from patients was significantly higher among nurses than doctors (median = 4.0 [IQR = 3] vs. 3.0 [IQR = 2], $p = 0.005$), despite no difference in the actual frequency of such incidents ($p = 0.511$).

Statistically significant differences were found in the frequency of unsubstantiated patient complaints ($p < 0.001$) and managerial support in disputes with patients ($p < 0.001$). However, these factors did not significantly affect the intention to leave ($p = 0.765$).

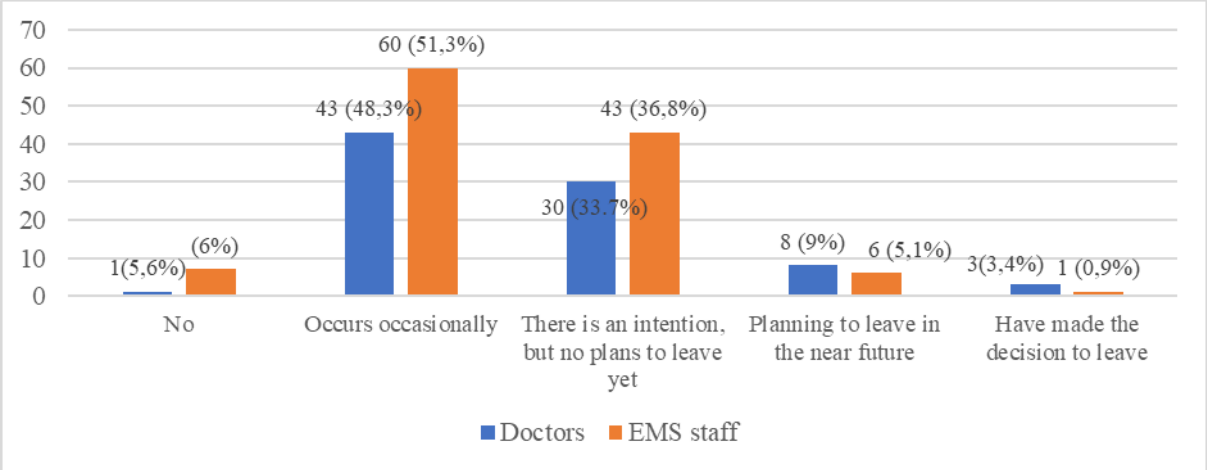

Figure 1. *Intention to leave the healthcare sector (doctors / EMS staff).*

Table 1. *Sociodemographic Characteristics and Intention to Leave the Healthcare Sector among Doctors and Nurses.*

Indicator	Result	Doctors (n=89)	Nurses (n=117)	p-value	Effect size
Intention to leave healthcare sector	No – n (%)	5 (5.6%)	7 (6.0%)	0.591***	0.120 (p=0.586)**
	Sometimes – n (%)	43 (48.3%)	60 (51.3%)		
	Would like to, but not planning – n (%)	30 (33.7%)	43 (36.8%)		
	Going to leave soon – n (%)	8 (9.0%)	6 (5.1%)		
	Yes, will leave soon – n (%)	3 (3.4%)	1 (0.9%)		
Gender	Male – n (%)	7 (7.9%)	0	0.002***	0.215 (p=0.002)**
	Female – n (%)	82 (92.1%)	117		
Age	Median (IQR)	34.0 (11)	27.0 (10)	<0.001****	
Experience	Median (IQR)	7.0 (10)	7.0 (8)	0.558****	

Note: *Me – median; IQR – interquartile range; Kramer's V **; Fisher's exact test ***; Mann–Whitney U test ****

Table 2. *Comparison of Factors Influencing Intention to Resign Among Doctors and Nurses.*

Factor	Doctors (Me, IQR)	Nurses (Me, IQR)	p-value	Interpretation
Stress level	5.0 (2)	4.0 (2)	0.020	Doctors more stressed
Impact of threats	3.0 (2)	4.0 (3)	0.005	Higher in nurses
Unfounded complaints	2.0 (2)	2.0 (2)	0.590	No difference
Overtime work	4.0 (3)	3.0 (3)	0.044	Higher impact on doctors
Lack of legal protection	5.0 (2)	3.0 (3)	<0.001	More concern among doctors
Right protection opinion	5.0 (3)	2.0 (3)	<0.001	More negative in doctors
Legal injustice experience	6.0 (3)	2.0 (2)	<0.001	Higher in doctors
Salary dissatisfaction	5.0 (2)	8.0 (3)	<0.001	Higher in nurses
Desire to migrate	3.0 (2)	2.0 (2)	0.001	Higher in doctors
Fear to infect relatives	8.0 (2)	7.0 (1)	0.002	More among doctors
Work with seriously ill	3.0 (3)	0.0 (3)	<0.001	Higher in doctors

Summary of statistically significant differences between doctors and nurses regarding reasons for the intention to leave work during the COVID-19 pandemic. Values represent median (Me) and interquartile range (IQR). p-values obtained using Mann–Whitney U-test. Differences are significant at $p < 0.05$.

Doctors reported a greater impact of overtime work on their intention to leave (median = 4.0 [IQR = 3]) than nurses (median = 3.0 [IQR = 3]), p = 0.044. However, the frequency of overtime did not differ (p = 0.460).

Doctors also more often expressed concern about legal protection, with a significantly higher perceived impact on their intention to leave (median = 5.0 [IQR = 2] vs. 3.0 [IQR = 3], p < 0.001). The proportion of those who felt unprotected by law was also significantly higher among doctors (75.3% vs. 9.4%, p < 0.001).

Doctors rated the protection of medical workers' rights significantly more negatively (median = 5.0 [IQR = 3]) than nurses (median = 2.0 [IQR = 3], p < 0.001). They also reported more frequent encounters with legal injustice (median = 6.0 [IQR = 3] vs. 2.0 [IQR = 2], p < 0.001).

In contrast, salary dissatisfaction was greater among nurses (median = 8.0 [IQR = 3]) than doctors (median = 5.0 [IQR = 2]), p < 0.001.

The desire to migrate had a stronger influence on doctors (median = 3.0 [IQR = 2]) than nurses (median = 2.0 [IQR = 2], p = 0.001), although actual migration readiness did not differ.

Doctors were also more affected by the fear of infecting relatives (median = 8.0 [IQR = 2] vs. 7.0 [IQR = 1], p = 0.002) and working with critically ill patients (median = 3.0 [IQR = 3] vs. 0 [IQR = 3], p < 0.001).

Statistically significant direct correlations were established between the intention to leave the healthcare sector during the Covid-19 pandemic and stress at work (rxy=0.498 - moderate association on the Cheddock scale; p<0.001), with unauthorized complaints of patients against medical personnel (rxy=0.331 – moderate association on the Cheddock scale; p<0.001), emotional burnout (rxy=0.256 – weak connection on the Cheddock scale; p<0.001), threats and insults from patients (rxy=0.173 – weak connection on the Cheddock scale; p=0.013), with overtime work (rxy=0.286 – weak connection on the Cheddock scale; p<0.001), with dissatisfaction protection by law (rxy=0.187 – weak connection on the Cheddock scale; ; p=0.007), with an opinion about improper preparation during study for practical work (rxy=0.3 – moderate connection on the Cheddock scale; p<0.001), with a lack of support from relatives and friends (rxy=0.278 – weak communication on the Cheddock scale; p<0.001), with work with seriously ill people (rxy=0.215 – weak communication on the Cheddock scale; p<0.001), with insufficient equipment of protective equipment during a pandemic (rxy=0.353 – moderate communication on the Cheddock scale; p<0.001), fear of infecting relatives and close (rxy=0.353 – moderate association on the Cheddock scale; p<0.001) and an inverse statistically significant correlation with age (rxy=- 0.359 – moderate association on the Cheddock scale;

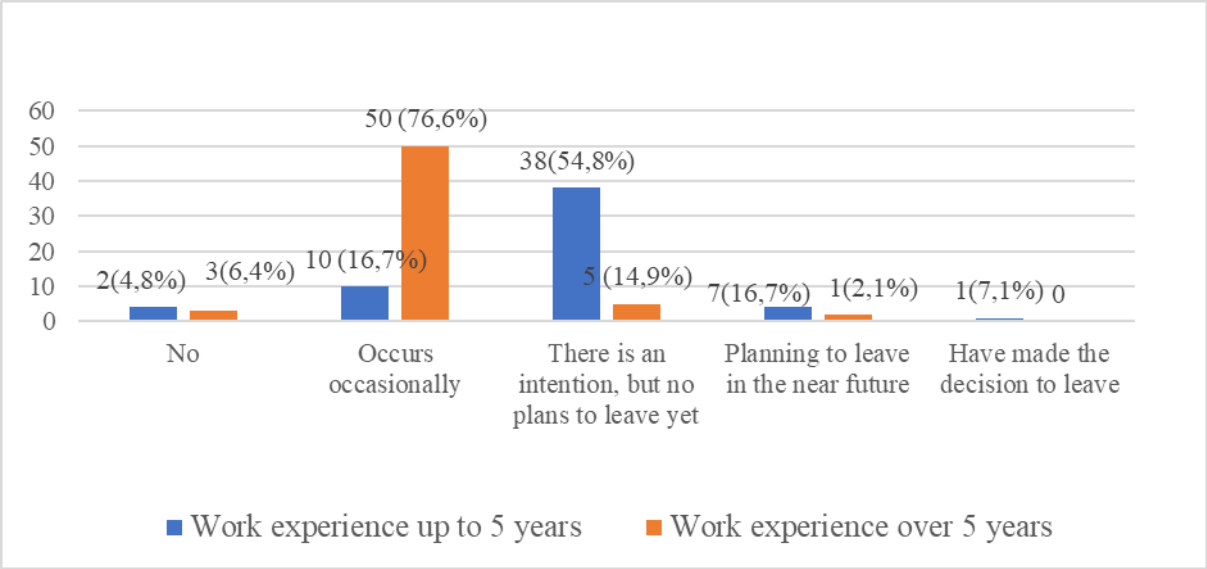

Figure 2. *Intention to leave the healthcare sector among doctors (work experience up to 5 years / over 5 years).*

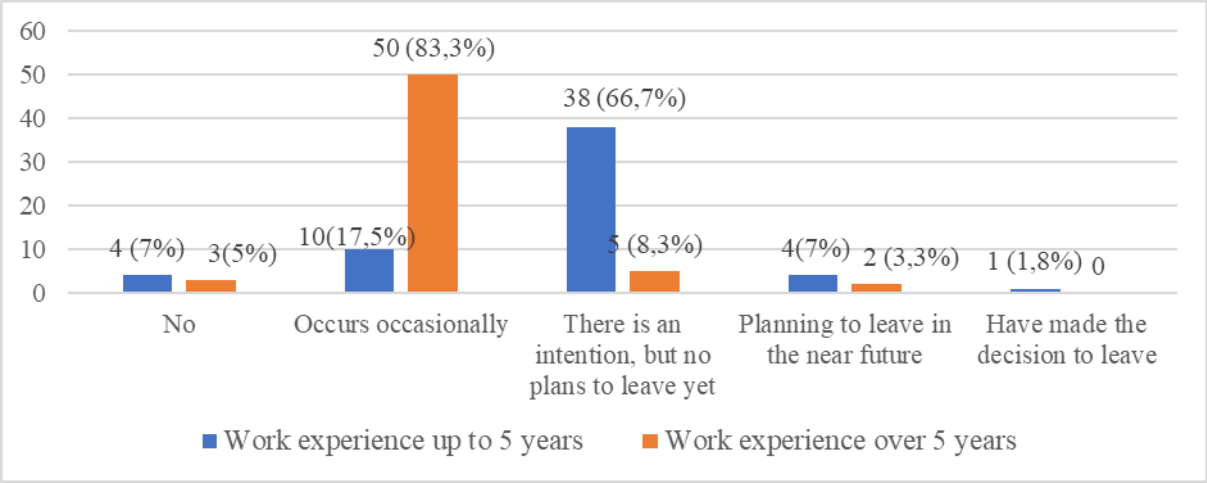

Figure 3. *Intention to leave the healthcare sector among EMS staff (work experience up to 5 years / over 5 years).*

Table 3. *The relationship between the intention to leave work and the influence of causes.*

Influence of reasons	**Intention to leave work (Spireman's Rank Correlation Criterion)**	**Assessment of the strength of the connection on the Cheddock scale**	**Communication direction**	**p-value**
Age	- 0,359	Moderate	Reverse	<0,001
Experience	-,419	Moderate	Reverse	<0,001
Stress on the work	0,498	Moderate	Direct	<0,001
Patient complaints	0,331	Moderate	Direct	<0,001
Emotional burnout	0,256	Weak	Direct	<0,001
Threats/insults	0,173	Weak	Direct	0,013
Overworking	0,286	Weak	Direct	<0,001
Dissatisfaction with the protection of legislation	0,187	Weak	Direct	0,007
Inadequate preparation during studies	0,3	Умеренная	Direct	<0,001
Absence of social support	0,278	Weak	Direct	<0,001
Work with hard sick people	0,215	Weak	Direct	0,002
Insufficient equipment of protective equipment during a pandemic	0,353	Moderate	Direct	<0,001
Fear to infect close people	0,199	Weak	Direct	0,016

p<0.001) and seniority (rxy=0.199 – weak association on the Cheddock scale; p=0.016), (Table. No. 3).

Statistically significant differences in intention to leave were also found within each profession based on work experience. Among doctors, those with ≤5 years of experience were significantly more likely to consider leaving than those with >5 years ($p < 0.001$, $V = 0.633$) (Figure 2). A similar trend was observed among nurses ($p < 0.001$, $V = 0.678$) (Figure 3).

Discussion.

During the COVID-19 pandemic, several factors showed a statistically significant direct correlation with the intention of healthcare workers to leave their jobs. These included increased stress levels, unauthorized complaints from patients, emotional burnout, threats and insults from patients, overwork, dissatisfaction with legal protection, inadequate preparedness for clinical practice during training, lack of social support from family and friends, working with severely ill patients, insufficient provision of personal protective equipment, and fear of infecting loved ones.

Numerous studies have similarly identified fear of infection transmission as a major motivator for leaving the profession during the pandemic [10-13]. Schug C et al. highlighted high levels of depression as a contributing factor to turnover intention [14,15]. Emotional burnout was also shown to significantly influence job-leaving intentions in studies by Riggan KA et al. [16] and Shah SHA et al. [17]. Psychological stress and anxiety were associated with a desire to resign in several U.S. based studies [18,19]. Additionally, compassion fatigue was found to be positively correlated with intention to quit in one investigation [20]. Research conducted in China reported that any pandemic-related psychological problems were significantly associated with a desire to leave the profession [21]. Conversely, psychological resilience was found to be inversely associated with the desire to quit in other studies [22,23].

In our study, age and professional experience were inversely correlated with intention to leave the healthcare sector, indicating that younger professionals were more likely to consider leaving. This finding is consistent with a study conducted in Peru [24,25], but contrasts with research by Cole A et al. [14], which found that nurses with more work experience were more likely to leave. Our results demonstrated that both young doctors and nurses were significantly more likely to express intent to leave compared to those with more than five years of experience.

Thus, during the COVID-19 pandemic, emotional stressors were the dominant triggers for intention to leave. These included emotional fatigue, fear, exposure to suffering among critically ill patients, and general physical and emotional overload. On the other hand, those healthcare workers who reported strong support from family and friends were significantly less likely to consider leaving their job. Other studies also support the critical role of social support: nurses with strong family ties and support from colleagues and friends were less likely to report an intention to resign [24]. Conversely, lack of support from the team was associated with higher turnover intentions [26].

Healthcare workers who were subject to complaints and verbal abuse from patients were more likely to express an intention to leave, as were those who felt insufficiently protected by the law. Similar findings were reported in other studies, where experiences of physical or emotional violence in the workplace correlated with a desire to quit [27-29].

No statistically significant difference was found between doctors and nurses in the overall frequency of intention to leave. However, differences emerged in the influence of specific factors. Doctors reported higher stress levels, while nurses were more affected by patient threats and insults, possibly due to less perceived support from leadership. In contrast, doctors more frequently reported managerial backing in disputes with patients. It has been shown that strong managerial support is associated with reduced staff turnover [30], while low support levels contribute to resignation intentions [7,14]. Effective communication, trust, a positive organizational climate, and motivation were also protective factors [31,32]. However, one study did not find a significant association between turnover and employer-employee relationships [31].

Among doctors, overwork, legal dissatisfaction, perceived injustice, and desire to migrate were more strongly associated with the intention to leave. Nurses, meanwhile, were more affected by salary dissatisfaction. The increase in workload was also shown to correlate with resignation intentions in prior research [21,27].

Conclusion.

1. Improving legal protections for healthcare workers may significantly reduce their intention to leave the healthcare sector. Currently, many professionals report feeling inadequately protected by existing laws.
2. Clinical leadership must enhance protection of healthcare workers' interests, particularly in disputes with patients. Preventative measures against unreasonable complaints, threats, and verbal abuse should be formalized both legislatively and in internal regulations.
3. For early-career professionals, supportive mechanisms should be developed to manage stress. These include mentoring by senior colleagues, access to psychological services, and free mental health training sessions.
4. Training programs for healthcare professionals should include comprehensive legal education, conflict resolution strategies, and real-world case analysis. This would better prepare future professionals for dealing with complex and potentially litigious clinical scenarios.

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Conflicts of interest.

The authors declare that none of the contents of this manuscript have been published elsewhere and the manuscript is not under consideration by another publisher.

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НАМЕРЕНИЯ УЙТИ ИЗ ПРОФЕССИИ СРЕДИ ВРАЧЕЙ И МЕДСЕСТЁР В КАЗАХСТАНЕ ВО ВРЕМЯ ПАНДЕМИИ COVID-19: ПОПЕРЕЧНОЕ ИССЛЕДОВАНИЕ ПСИХОЛОГИЧЕСКИХ И ПРОФЕССИОНАЛЬНЫХ ФАКТОРОВ

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Аннотация

Актуальность. На фоне дефицита медицинских кадров целью исследования стало изучение влияния факторов, связанных с пандемией COVID-19, на намерение медицинских работников уволиться с работы.

Материалы и методы. Было проведено поперечное исследование, включающее 206 медицинских работников, среди которых 89 врачей (42 со стажем до 5 лет и 47 — более 5 лет) и 117 медицинских сестёр (57 со стажем до 5 лет и 60 — более 5 лет), работающих в четырёх поликлиниках города Алматы. Все участники подписали информированное согласие и заполнили авторскую анкету под названием «Причины дефицита медицинских кадров в период пандемии COVID-19».

Результаты. С намерением уволиться статистически значимо коррелировали следующие факторы: высокий уровень стресса, необоснованные жалобы пациентов на медицинских работников, эмоциональное выгорание, угрозы и словесные оскорбления со стороны пациентов, высокая нагрузка и переработки, неудовлетворённость правовой защитой, недостаточная подготовка к практической деятельности во время обучения, нехватка социальной поддержки со стороны друзей и родственников, работа с тяжёлыми пациентами, недостаточное обеспечение средствами индивидуальной защиты в период пандемии и страх заразить близких. Возраст и стаж работы демонстрировали обратную корреляцию с намерением уволиться.

Выводы. Для предотвращения оттока медицинских кадров необходимо совершенствование законодательства в сфере защиты прав медицинских работников, усиление управленческой поддержки, социально-психологическая помощь молодым специалистам, а также подготовка к возможным конфликтам и юридическим ситуациям.

Ключевые слова: пандемия COVID-19, дефицит медицинских кадров, кадровая текучесть, причины увольнения.