OCCUPATIONAL BURNOUT SYNDROME AMONG MEDICAL UNIVERSITY STUDENTS AND GENERAL PRACTITIONERS

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Occupational burnout (OB) negatively affects the quality of medical care provided. The subject of occupational hygiene among medical students combining studying and work has not been investigated sufficiently. This study explores OB in medical university students and general practitioners who actively use information and communication technologies in their daily activities. The goal was to look into the features of OB in these cohorts, identify the main risk factors, and give burnout prevention and mitigation recommendations. We examined 140 general practitioners (94 females, 46 males) aged 27–75 years (mean age 46.16 years [95% CI: 35.49–56.83]). As for students, the participants were from the Pirogov University, 39 female and 25 male, aged 20–25 years (mean age 22.42 years [95% CI: 22.23–22.61]). To assess the risks of burnout, we used the Boyko questionnaire and Maslach Burnout Inventory (MBI). The survey revealed clinically significant signs of OB in 96% of general practitioners and 16% of working students. According to the MBI's emotional exhaustion subscale the corresponding scales of the Boyko questionnaire, OB was significantly more prevalent among working students than among their peers who did not work (mean MBI scores 14.6 [95% CI: 10.8–18.4] and 12.7 [95% CI: 8.34–17.06], respectively, $p = 0.00362$; mean Boyko questionnaire scores 89.1 [95% CI: 72.9-–105.3] and 74.7 [95% CI: 69.8–79.6], respectively, $p < 0.00001$)). Both tools show the clinical signs of OB to be significantly more severe among general practitioners than in the cohort of working students ($p < 0.00001$). It has been proven that students who combine work and study face a higher risk of OB due to increased academic and additional workloads, along with elevated stress levels.

Keywords: performance of medical professionals, overwork, occupational burnout syndrome, secondary employment, students, job, medicine

Author contribution: Kaminer DD — research, its results processing and description, article authoring and formatting; Selezneva MA — research, its results processing and description; Kozelsky AS — description of the results of the research, literature selection and review, manuscript authoring.

Compliance with ethical standards: the experimental study was conducted in compliance with the applicable regulations (the Declaration of Helsinki, version of 2013). The study was approved by the Ethics Committee of the Pirogov Russian National Research Medical University of the Ministry of Health of the Russian Federation (Minutes No. 192 of January 27, 2020).

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Received: 01.04.2025 **Accepted:** 12.05.2025 **Published online:** 23.06.2025

DOI: 10.24075/rbh.2025.131

СИНДРОМ ПРОФЕССИОНАЛЬНОГО ВЫГОРАНИЯ У СТУДЕНТОВ МЕДИЦИНСКОГО УНИВЕРСИТЕТА И ВРАЧЕЙ-ТЕРАПЕВТОВ

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Синдром профессионального выгорания (СПВ) отрицательно влияет на качество оказываемой медицинской помощи. Наблюдается дефицит исследований по гигиене труда работающих студентов медицинских вузов. Представленное исследование посвящено изучению СПВ у студентов медицинского университета и врачей-терапевтов, активно использующих информационно-коммуникационные технологии в повседневной деятельности. Целью исследования было изучить особенности проявлений СПВ у работающих студентов медицинского университета и врачей-терапевтов, выявить основные факторы риска и привести рекомендации по профилактике и снижению уровня выгорания. Обследованы 140 врачей-терапевтов (94 женщины и 46 мужчин) 27–75 лет (средний возраст 46,16 лет [95% ДИ: 35,49–56,83]). Из студентов Пироговского университета в исследовании приняли участие 39 девушек и 25 молодых людей 20–25 лет (средний возраст 22,42 года [95% ДИ: 22,23–22,61]). Для оценки рисков выгорания использовали опросник по В. В. Бойко, опросник профессионального выгорания Маслач (MBI). У 96% опрошенных врачей-терапевтов и 16% работающих студентов по результатам анкетирования выявлены клинически значимые признаки СПВ. По шкале эмоционального истощения MBI и шкалам опросника Бойко распространенность СПВ значимо выше в группе работающих студентов, чем в группе неработающих студентов (средний балл по шкале MBI — 14,6 [95% ДИ: 10,8–18,4] и 12,7 [95% ДИ: 8,34–17,06] соответственно, $p = 0,00362$; по шкале Бойко — 89,1 [95% ДИ: 72,9—105,3] и 74,7 [95% ДИ: 69,8–79,6] соответственно, $p < 0,00001$)). Согласно результатам опросников MBI и Бойко, выраженность клинических признаков СПВ у врачей-терапевтов значительно выше, чем у работающих студентов ($p < 0,00001$). Доказано, что у студентов, предпочитающих работать во время обучения, выше риск развития СПВ, что связано с повышенными учебными и дополнительными рабочими нагрузками, а также с повышенным уровнем стресса.

Ключевые слова: работоспособность врачей, переутомление, синдром профессионального выгорания, вторичная занятость, студенты, трудоустройство, медицина

Вклад авторов: Д. Д. Каминер — проведение исследований, обработка и описание результатов исследования, написание и оформление статьи; М. А. Селезнева — проведение исследований, обработка и описание результатов исследования; А. С. Козельский — описание результатов, работа с литературой, написание рукописи.

Соблюдение этических стандартов: экспериментальное исследование проводили с соблюдением необходимых нормативных актов (Хельсинкской декларации 2013 г.). Исследование одобрено этическим комитетом ФГАОУ ВО «Российский национальный исследовательский медицинский университет имени Н. И. Пирогова» Минздрава России (протокол № 192 от 27 января 2020 г.).

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Статья получена: 01.04.2025 **Статья принята к печати:** 12.05.2025 **Опубликована онлайн:** 23.06.2025

DOI: 10.24075/rbh.2025.131

Occupational burnout syndrome (OB) is a serious problem in modern society, especially in the areas associated with high emotional and psychological stress [1–10]. Medical care, which involves constant interaction with patients, responsible decision-making, and working under pressure, is one of activities most susceptible thereto. There are two key groups that require special attention: medical university students who are just starting their professional career, and practicing general practitioners who face high workloads on a daily basis [2, 3, 10]. Current generations of medical students have some special traits, including secondary employment, i.e., combining work and studying at the university [11–14]. Many researchers note that the number of working students is growing today [11], which calls for a comprehensive analysis of this cohort. The relevance of the work stems not only from the effect of OB on the psychosomatic health of medical students but also from the syndrome's impact on their theoretical and practical preparedness for future work, as well as from the increasing quality demands in medical care and the growing burden on the healthcare system [2, 3, 10]. It is assumed that medical students may experience burnout during their education, which negatively affects their motivation and professional development.

General practitioners, manning the front line of the medical care system, can suffer performance deterioration and emotional exhaustion due to the burnout, with subsequent worsening of the quality of services provided [15–17]. The concept of "emotional burnout" was first proposed by H.J. Freudenberger in 1974 [16]. He described this phenomenon as a condition linked to fatigue and frustration, manifesting in physical and emotional exhaustion and associated with professional dissatisfaction and elevated stress levels. Modern medicine has the burnout syndrome included in the ICD-10 as Z73.0. There are three key symptoms thereof: emotional exhaustion (EE), which encompasses depression, psychological fatigue, loss of energy, and decreased emotional responsiveness; depersonalization (DP), manifesting in a formal, detached and indifferent attitude towards patients; reduced professional efficacy (RPE), characterized by a negative assessment
of one's own professional qualities, a feeling of incompetence, and inability to work effectively [15, 18–23].

This study aimed to investigate the features of OB in working medical students and general practitioners, identify the main risk factors, and give burnout prevention and mitigation recommendations. The results of this work can be used to improve the psychological well-being of medical professionals and students, and to enhance the quality of medical education and care.

METHODS

The study included 140 general practitioners (94 females and 46 males) aged 27–75 years (mean age 46.16 years [95% CI: 35.49–56.83]). As for students, the participants were from the Pirogov University, 39 females and 25 males, aged 20–25 years (mean age 22.42 years [95% CI: 22.23–22.61]). In addition, we recruited 20 students who did not combine work and study, 14 females and 6 males (mean age 22.43 ± 0.2 years [95% CI: 22.23–22.63]).

The questionnaire "Degree of Chronic Fatigue" (A.B. Leonova and I.V. Shishkina, revision of 2003) was used to assess concentration and performance during the working day and week, as well as to identify the preclinical symptoms of fatigue.

To assess the risks of burnout, we used:

- V.V. Boyko emotional burnout scale;
- Maslach Burnout Inventory (MBI) adapted for medical professionals (Bekhterev Psychoneurological Institute, 2007).

The collected data were processed using descriptive and comparative statistical methods. We applied the descriptive methods to all the indicators: calculated the arithmetic mean, standard error, and minimum and maximum values for quantitative variables, frequency and percentage of the total number for qualitative variables. The data series were presented as $\bar{x}$ [95% CI: LL–UL], where:

- $\bar{x}$ is the mean;
- [95% CI: LL–UL] is the 95% confidence interval, which defines the range where the true mathematical expectation of the general population lies with a 95% probability.

For statistical analysis, we used the Kruskal–Wallis test for independent groups (as applicable to the distribution of the sample population) and the Mann–Whitney test for independent groups. The software selected for processing was Statistica 12.0 for Windows (StatSoft; USA), which was also used to determine the exact values of the corresponding confidence probability (p) and significant differences in the arithmetic means.

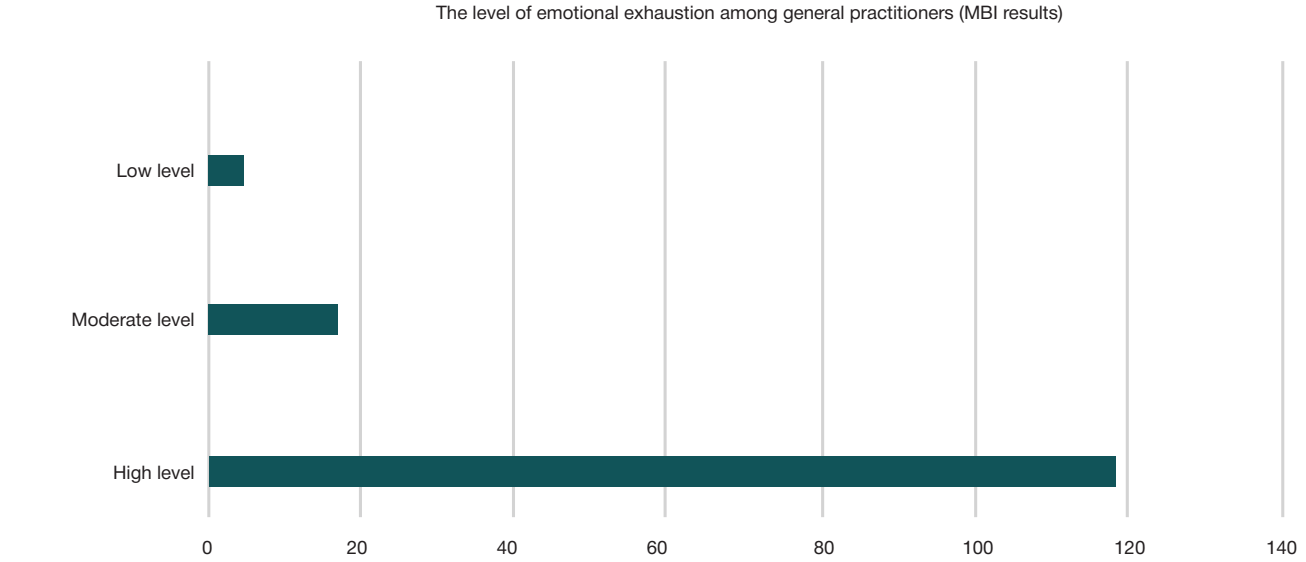

Fig. 1. The levels of emotional exhaustion among general practitioners using information and communication technologies in their daily clinical practice (MBI results)

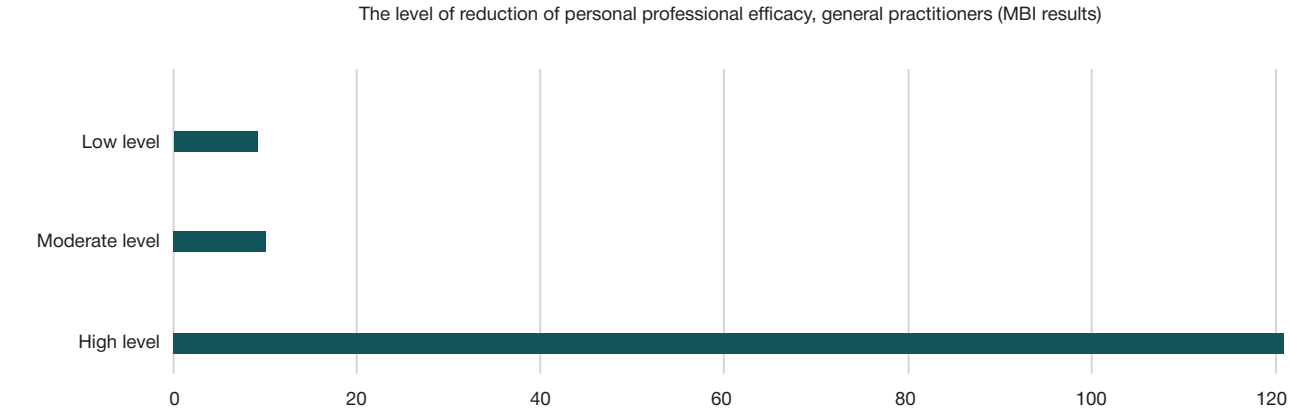

Fig. 2. Indicators of reduction of personal professional efficacy, general practitioners (MBI results)

RESULTS

According to the collected data, all respondents (doctors and students) use various information and communication technologies (ICTs) in their work. MBI results revealed that most general practitioners (n = 118.84% [95% CI: 78.0–90.0]) using ICTs in daily clinical practice have a high level (more than 26 points) of emotional exhaustion. Twelve percent (n = 17) [95% CI: 6.6–17.4] of the respondents from this cohort were moderately exhausted, and only 4% (n = 5) [95% CI: 0.75–7.25] showed a low level of emotional exhaustion (Fig. 1).

Among general practitioners, the analysis of the MBI results revealed the occupation-related emotional exhaustion level to be at 38.9 [95% CI: 29.1–48.7] points. The depersonalization score in this cohort was 23.1 [95% CI: 18.8–27.4] points, with all respondents (n = 140) exhibiting a high level of this indicator (over 10 points).

The next indicator was professional efficiency. The results of the MBI revealed that most general practitioners (n = 121) (86% [95% CI: 80.25–91.75]) had it reduced highly (scored less than 33 points), while 8% (n = 10) [95% CI: 3.5–12.5] exhibited moderate reduction (scored 34-39 points), and 6% (n = 9) [95% CI: 2.07–9.93] became only slightly less effective than usual (Fig. 2). As for the reduction of the personal professional efficacy, the scores for the respective indicators were 27.9 ± 6.1 points [95% CI: 21.8–34.0].

The results of analysis of data collected using the Boyko questionnaire showed that the majority of the participating general practitioners (n = 107, 76% [95% CI: 68.9–83.1]) had clinically significant signs of OB, while in 24% (n = 33) [95% CI: 16.9–31.1] the burnout symptoms were moderately severe (Fig. 3). The aggregate emotional burnout indicator score, which factors in all the three phases, stress, resistance, and exhaustion, was 214.4 ± 41.0 points [95% CI: 207.61–221.19].

Thus, the majority of the participating general practitioners had clinically significant symptoms of OB.

In the student group, 64 participants (76% [95% CI: 66.9–85.1]) were working, most of them in medicine (Fig. 4).

According to the MBI results, 16% (n = 10) [95% CI: 7.02–24.98] of working students exhibited signs of OB (Fig. 5).

Within this cohort, working students significantly more often exhibited clinical signs of OB (as per the related MBI scale) that their non-working peers: mean scores of 14.6 [95% CI: 10.8–18.4] and 12.7 [95% CI: 8.34–17.06], respectively; Mann–Whitney test U = 362, p = 0.00362. As for the depersonalization and professional efficacy indicators, there were no significant differences between working and non-working students: mean scores 10.6 [95% CI: 8.23–12.92] and 11.65 [95% CI: 9.91–13.39], respectively; U = 460, $p > 0.06$). The comparative analysis of all the Boyko questionnaire scales revealed that working students had clinical signs of OB significantly more often than non-working students: mean scores of 89.1 [95% CI: 72.9–105.3] and 74.7 [95% CI: 69.8–79.6], respectively; U = 48, $p < 0.00001$).

Thus, it was established that students who combine work and study face a higher risk of OB due to increased academic and additional workloads, along with elevated stress levels.

The results of comparative analysis of the severity of clinical signs of OB in general practitioners, working and non-working students, as collected using MBI, revealed that general practitioners had significantly higher scores on the scales of emotional exhaustion, depersonalization, and reduced professional efficacy than students (Kruskal–Wallis test H = 156.6, $p < 0.00001$; H = 156.7, $p < 0.00001$; H = 112.6, $p < 0.00001$, respectively). A similar analysis was conducted using the data collected with the Boyko questionnaire, and it showed similar results: general practitioners had significantly more pronounced clinical signs of OB than students (H = 158.8, $p < 0.00001$).

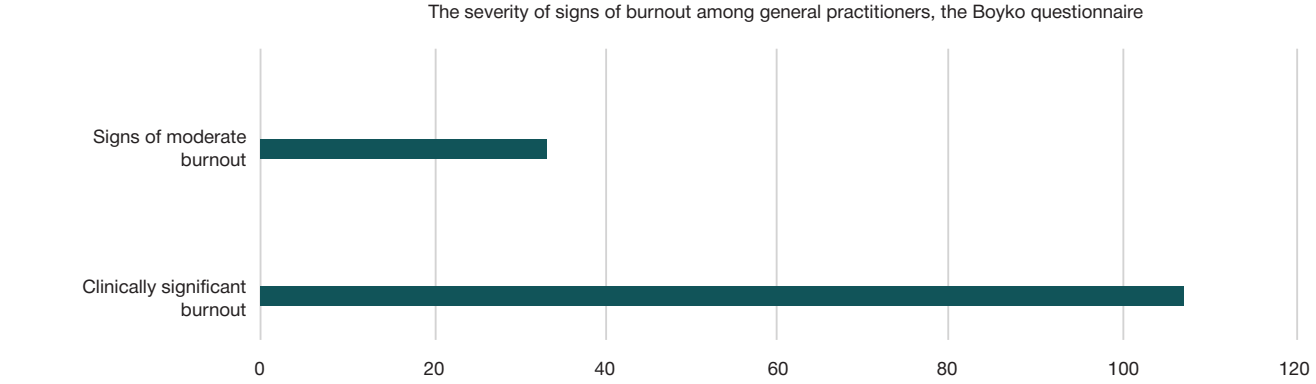

Fig. 3. Burnout indicators for general practitioners, all scales, the Boyko questionnaire

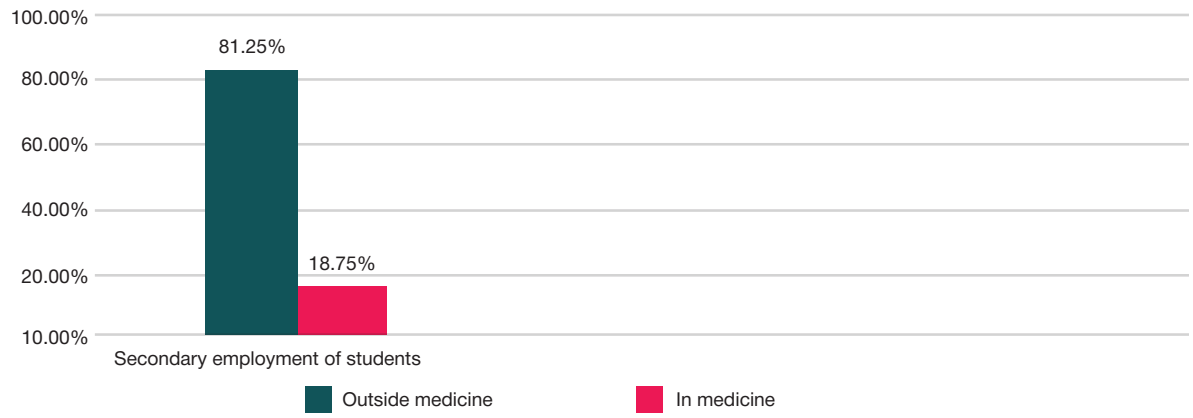

Fig. 4. The choice of the field of activity by working students of a medical university

Sixteen percent of students with burnout syndrome (n = 10) [95% CI: 7.02–24.98] had more than two years of experience working in the medical field as secondary employment and were in their 5th or 6th year of education. Eighty percent (n = 8) [95% CI: 61.79–98.21] of students with burnout syndrome worked as junior medical staff in departments characterized by high physical, emotional, and psychological stress, such as intensive care, oncology, and emergency surgery. It should be noted that all students experiencing burnout syndrome reported a decline in their motivation to continue working in their specialty after graduating from medical school. Those working in the medical field and not suffering from emotional burnout (81% (n = 42) [95% CI: 75.02–92.98]) noted a significant increase in motivation to continue working in their specialty after completing their studies at the medical university.

DISCUSSION

The study of OB among general practitioners and working medical students revealed significant differences in the prevalence and severity of this syndrome between the two groups. Clinical signs of OB, ranging from moderate to severe, were observed in all general practitioners. In contrast, only 16% (10 individuals) [95% CI: 7.02–24.98] of the student cohort exhibited symptoms of the condition. The results of this study confirm that general practitioners are at an increased risk of developing OB, which is consistent with the data from numerous works indicating that medical professionals, especially those who work in primary health care, are subject to high emotional and physical stress [1–8, 22–25]. The main OB risk factors general practitioners are exposed to are as follows [1–10, 22–24]:

- high workload (general practitioners often treat a large number of patients, which leads to chronic overwork);
- emotional strain (constant interaction with patients, the need to make responsible decisions and face negative treatment outcomes create significant emotional stress);
- administrative barriers (increased bureaucratic burden, the need to fill out a large number of documents and limited resources of the healthcare system);
- lack of support (in some cases, lack of psychological and organizational support from management and colleagues also contributes to the development of burnout).

The presence of signs of OB among working students indicates that some of them are already experiencing professional stress, which may be caused by the combination of study and work, high academic and workload, or lack of experience in stress management. Our results show that students working in departments characterized by high physical, emotional, and psychological stress — such as intensive care, oncology, and emergency surgery — face a higher risk of OB (80%, n = 8, 95% CI: 61.79–98.21). It should be noted that most medical students (81.25%) chose to work in the medical field while studying, whereas their peers pursuing other fields of education largely preferred employment outside their area of study [17]. General practitioners with many years of work experience suffer from accumulated stress, which leads to severe burnout: for them, the total emotional exhaustion risk score under the Boyko questionnaire (tension, resistance, and exhaustion scales) was 214.4 ± 41.0 points [95% CI: 207.61–221.19].). In addition, general practitioners scored significantly higher than students on the emotional exhaustion, depersonalization, and professional efficacy reduction scales (H = 156.6, p < 0.00001; H = 156.7, p < 0.00001; H = 112.6, p < 0.00001, respectively). Moreover, the severity of clinical signs of OB in them was also significantly than among students (H = 158.8, p < 0.00001)), which is associated with longer work under conditions of increased workload and stress [2]. At the same time, some of the surveyed students who are starting their professional career also exhibit first signs of OB (16% [95% CI: 7.02–24.98] (n = 10)), which necessitates a more in-depth study of the problem of OB not only among general practitioners but also among medical students.

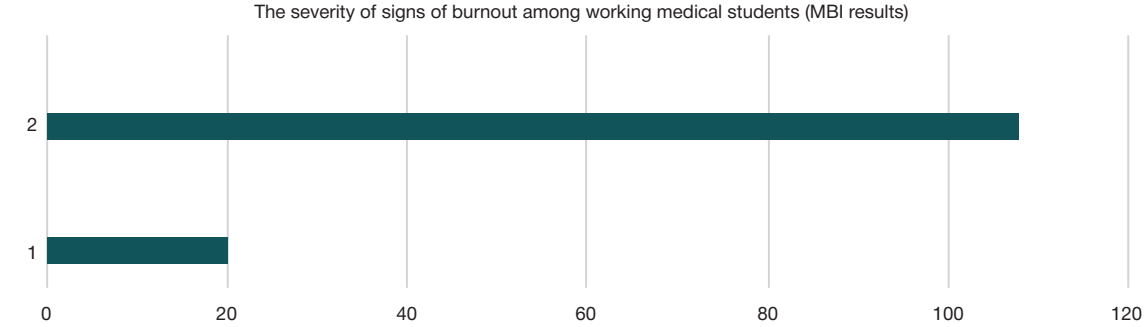

Fig. 5. Indicators of signs of burnout among working medical students (MBI results)

CONCLUSIONS

The results of this study emphasize the need for attention to the problem of occupational burnout among both practicing doctors and working medical students. Early diagnosis and prevention of burnout can help preserve the health of healthcare professionals, improve the quality of medical care, and enhance the sustainability of the healthcare system as a whole. It will also help students not to give up their profession and maintain their interest in work and health.

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