

# **WORKLOAD AND PERSONAL LIFE AS FACTORS IN THE FORMATION OF PSYCHO-EMOTIONAL STATE AMONG INFECTIOUS DISEASE PHYSICIANS DURING THE COVID-19 PANDEMIC**

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**Introduction.** The relevance of studying the psycho-emotional state of infectious disease physicians during the COVID-19 pandemic is driven by their significant emotional and psychological burden. The impact of prolonged stress and an increased risk of professional burnout can lead to a decline in the quality of medical care and exacerbate mental health issues. Assessing the impact of the pandemic on infectious disease doctors is crucial for developing strategies to support and prevent mental exhaustion in future crisis situations.

**Aim of the Study.** To determine the factors that affected the mental health and performance of infectious disease physicians in Kharkiv during the management of the COVID-19 pandemic.

**Materials and Methods.** The study involved 36 infectious disease doctors from Kharkiv. A comprehensive questionnaire was used to assess workload, psycho-emotional state, and family factors. The data were analyzed using Spearman's correlation analysis.

**Results.** It was found that 75% of the doctors experienced increased workload, and 81,25% were dissatisfied with their salary. Obsessive thoughts about the pandemic correlated with the presence of relatives requiring care ( $r = 0,74$ ). Feelings of emotional exhaustion were more common among doctors with family responsibilities. The impact of the pandemic on doctors' psycho-emotional state was significant and varied depending on age, marital status, and work experience.

**Conclusions.** The psycho-emotional state of infectious disease doctors during the COVID-19 pandemic was largely influenced by a combination of workload and personal circumstances. Younger doctors and those with relatives in need of care experienced greater pressure, which may increase the risk of professional burnout.

**Keywords:** COVID-19, infectious disease physicians, psycho-emotional state, stress, workload, sociodemographic factors

**Introduction.** “People-person” professions require constant interpersonal interaction, which creates high emotional and psychological stress for employees. Among specialists who work continuously with people, such as doctors, teachers, and managers, there is an increased risk of developing professional burnout due to the effects of chronic stress [1, 2].

Chronic stress is a key factor in the development of occupational burnout (OB). According to Hans Selye’s stress concept, OB corresponds to distress or the third stage of the general adaptation syndrome — the exhaustion stage [3].

The medical profession is extremely stressful and requires individuals to have the ability to cope with emotional overload. Doctors regularly face frequent stressful situations, make decisions under time constraints and limited information, and engage in high-intensity interpersonal interactions. Physicians experiencing burnout are more likely to make medical errors and receive lower patient satisfaction ratings [4]. Burnout provokes emotional and physical exhaustion, which increases the workload and increases the level of dissatisfaction among colleagues, creating a cycle of constant exhaustion [4,5]. Among the main occupational factors that contribute to the effects of prolonged stress, significant emotional intensity in interactions with patients can be highlighted [6]. Such working conditions can lead to mental and psychosomatic maladaptation.

The COVID-19 pandemic has caused a significant transformation in the working conditions of healthcare professionals worldwide. During the COVID-19 pandemic, the working conditions for doctors have deteriorated significantly [7, 8]. Medical workers, especially infectious disease physicians, found themselves in extremely difficult circumstances due to a significant increase in the number of patients, a high risk of infection,

the need to adhere to strict sanitary regulations and protocols, as well as constant pressure from the healthcare system. Infectious disease physicians played a key role in combating new diseases, particularly coronavirus disease 2019 (COVID-19), which presented them with new challenges [9-11].

Considering that the psycho-emotional state of employees directly impacts their productivity and overall level of professional safety, studying the effects of the pandemic on the mental health of infectious disease doctors is extremely important for developing measures to improve working conditions and prevent professional burnout. It is appropriate to identify the existing factors that protect or threaten the mental health of infectious disease physicians and to establish long-term recommendations for psychosocial support, targeted preventive measures, and the prevention of negative consequences for the mental health of medical personnel in future crises.

*The aim of this study was to determine factors that affected the mental health and productivity of infectious disease physicians in Kharkiv during management of the COVID-19 pandemic*

**Materials and methods.** The research involved conducting a survey using a comprehensive questionnaire titled “The Impact and Consequences of the COVID-19 Acute Respiratory Disease Pandemic on the Mental Health of Healthcare Personnel.” The questionnaire consists of 10 sections that encompass blocks of questions regarding general socio-demographic data, characteristics of professional activity, working conditions and workload, assessment of moral stress, opinions about the pandemic, screening for psycho-emotional symptoms, social support, and various aspects of life. The survey was conducted among practicing infectious disease doctors at the Kharkiv Regional Clinical Infectious Disease Hospital in Kharkiv during 2020-2021, in accordance with a scientific and practical cooperation agreement between the hospital and Kharkiv National Medical University dated September 20, 2021, No. 107. Participants were informed about the study through clinical management. Participation in the survey was anonymous and voluntary, and the introductory letter included informed consent for participation. The study was conducted with methodological support from specialists at the Institute of Occupational Medicine (led by Prof. I. Böckelmann) of Otto von Guericke University Magdeburg, Germany.

Statistical Analysis. The results of the survey were described using quantitative results in percentage terms and compared with socio-demographic data (age, gender, work experience, marital status, number of children, and relatives in need of care) using Spearman correlation analysis to determine the relationships between variables. The mathematical and statistical data processing was carried out using the Python library scipy.stats in the client-server application Jupyter Notebook.

**Results and Discussion.** The sample of respondents consisted of 36 individuals, with an average age of  $44.73 \pm 2.16$  years, of which 56.2% were women and 43.8% were men. The average work experience of the doctors was 22.8 years, with a minimum of 10 years and a maximum of 42 years.

Workload. Looking at the workload indicators, it can be stated that due to high stress, 75% of respondents experienced a significant lack of time, and 62.5% reported an increased workload. At the same time, 75% of infectious disease doctors claimed that they receive adequate recognition from their management. However, 81.25% of doctors feel that their salary is insufficient compared to the expenses and efforts they put into their work. The statement regarding the lack of time at work due to overload correlated with the marital status of the doctors ( $r = -0.59$ ), which may indicate that younger doctors with families are more likely to experience more pressure from the combination of professional and personal responsibilities (tab.1).

**Table 1.** Correlations between workload, age, length of service, marital status and psycho-emotional state of infectious disease physicians during the COVID-19 pandemic  
(n = 36)

Indicators	Taking care of relatives	Fatigue	Psycho-emotional symptoms	Intrusive thoughts	Overburdened with responsibilities	Spearman's Rho, p-value
Age	0.67	-0.53	-0.51	-	-0.64	
Work experience	-	-	-	-	-0.57	

<b>Marital status</b>	-	-	0.60	0.62	-0.59	$\rho < 0,050$
<b>Presence of children</b>	0.65	-	-	-	-	
<b>Relatives in high risk group</b>	-	-	-	0.74	-	

Thoughts on the pandemic. Certain patterns emerge in how the pandemic has affected doctors' thoughts. "Even if I don't want to, I have to think about it (the pandemic)" - intrusive thinking was a common phenomenon for 50% of respondents, along with "other things constantly remind me of it". The workload during the pandemic has led to a subjective increase in sensitivity and caution in half of the doctors. The direct correlation between intrusive thoughts and both having relatives in need of care ( $r = 0.74$ ) and marital status ( $r = 0.62$ ) suggests that personal circumstances affect the psycho-emotional state of physicians (tab.1).

The marital status of doctors also correlated with the feeling of work burden and emotional state. 75% of doctors reported that their relatives were at risk of severe COVID-19 due to their age, and 37.5% due to certain health factors that contribute to the development of the disease. The majority of doctors expressed more concern for the health of their loved ones than for themselves: 81.25% of respondents were afraid of their loved ones getting infected with SARS-CoV-2, while only 43.75% were afraid of personal infection. Compliance with quarantine measures by doctors was directly correlated with the presence of children ( $r = 0.65$ ) and was confirmed by a positive response in 87.5% of cases. Taking care of relatives was also an important burdening factor of the SARS-CoV-2 situation and was directly correlated with age of the doctors ( $r = 0.67$ ) (tab.1). 37.5% of infectious disease doctors felt heavily burdened, and 25% felt extremely burdened. It is important to note that the presence of relatives of doctors in the risk group for severe COVID-19 was negatively correlated with age ( $r = -0.64$ ) and work experience ( $r = -0.57$ ) (tab.1).

At the same time in the section “psycho-emotional symptoms” 37.5% of physicians rarely experienced difficulty concentrating, 43.75% reported a lack of energy at work, and 75% had a weak interest in their professional activities on certain days. Problems with sleep were reported by 18.75% every day. No respondents (100%) expressed a desire to suffer. A low interest in or satisfaction from work negatively correlated with age ( $r = -0.51$ ), as did fatigue or feelings of lack of energy ( $r = -0.53$ ). It is important to note that a negative self-image, feelings of being a “failure,” or family disappointment correlated with the marital status of doctors ( $r = 0.6$ ) (tab.1), although the majority, specifically 68.75%, did not have such perceptions of themselves.

Regarding the above mentioned 68.75% of doctors felt high moral stress ( $\geq 5$  out of 10 on a ten-point scale), with 18.75% experiencing it at a level of 10/10. However, no statistically significant correlations were found.

The World Health Organization (WHO) indicates the presence of serious occupational hazards for medical workers during the response to COVID-19, among which psychological distress and chronic fatigue stand out [10].

During the COVID-19 pandemic, infectious disease physicians faced increased workloads that included constant shifts, an increased number of patients, and insufficient time for rest and recovery. Such demands can lead to chronic fatigue and a lack of energy, manifesting as decreased alertness, coordination, cognitive effectiveness, delayed reaction times, emotional exhaustion, and mood changes [13]. Personal risk factors for the mental health of infectious disease doctors include reduced time at home, lower income, age, gender, comorbidities and the impact of the pandemic on lifestyle (fig.1) [14].

Nevertheless, in our study, no statistically significant differences were found by gender: men and women alike experienced anxiety and stress with the same intensity, and the workload was at an equal level.

Taking into account that the level of psychological stress was the same among doctors of different age groups, its causes were different. Young specialists experienced anxiety related to having relatives in high-risk groups for severe COVID-19, which heightened their fear and depleted their energy, while older physicians faced anxiety due to having family members in need of care.

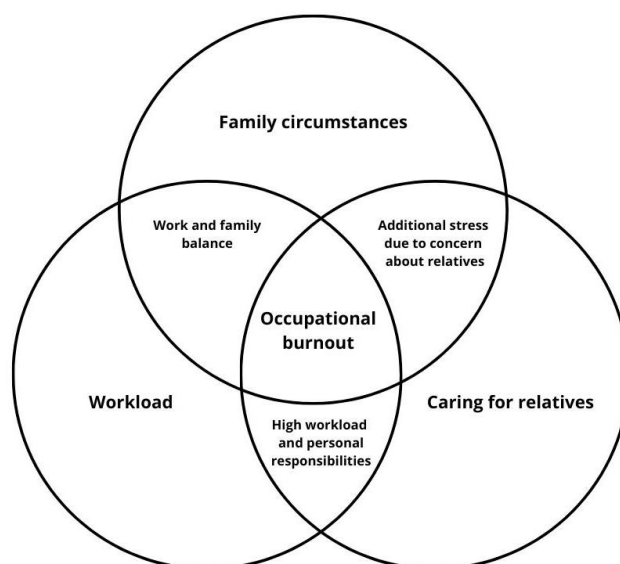


Fig. 1. Scheme of formation of the psycho-emotional state of infectious disease physicians during the COVID-19 pandemic

Insufficient workplace health and safety measures can contribute to an increase in occupational diseases, higher rates of absenteeism, and a decrease in productivity and the quality of medical care. These factors are directly related to the development of occupational burnout syndrome [5, 15].

Decreasing these hazards and protecting health, safety and well-being of doctors requires coordinated and comprehensive workplace health and safety measures, management of human resources in the healthcare sector, and the provision of mental health and psychosocial support, taking into account individual characteristics (age, marital status, and the presence of family members in need of care) [16].

**Conclusions.** The conducted study demonstrated that:

1. During the COVID-19 pandemic, the workload of infectious disease physicians significantly increased, contributing to higher stress levels. The negative correlation between increasing lack of time due to workload and marital status of doctors ( $r = -0.59$ ) indicates the necessity of considering individual circumstances when organizing work. As so does the increased doctors' sense of burden due to the presence of relatives at risk of severe COVID-19, which negatively correlated with their age ( $r = -0.64$ ) and years of experience ( $r = -0.57$ ).

2. Personal circumstances, such as having relatives in need of care, had a significant impact on doctors' mental health. The correlation between intrusive thoughts about the pandemic and caring for relatives ( $r = 0.74$ ) highlights the importance of social support for doctors.
3. Dissatisfaction with the level of financial reward had a negative impact on the moral and emotional state of doctors, despite their high professional engagement.
4. To prevent occupational burnout, it is necessary to improve working conditions for doctors, including reducing workload, increasing reward and providing access to psychological support, especially for younger physicians, which will help maintain mental health and stability of the healthcare system.

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## **РОБОЧЕ НАВАНТАЖЕННЯ ТА ОСОБИСТЕ ЖИТТЯ ЯК ФАКТОРИ ФОРМУВАННЯ ПСИХОЕМОЦІЙНОГО СТАНУ ЛІКАРІВ-ІНФЕКЦІОНІСТІВ ПІД ЧАС ПАНДЕМІЇ COVID-19**

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**Вступ.** Актуальність дослідження психоемоційного стану лікарів-інфекціоністів в умовах пандемії COVID-19 зумовлена їхнім значним емоційним та психологічним навантаженням. Вплив тривалого стресу та підвищений ризик професійного вигорання можуть призвести до погіршення якості медичної допомоги та загострення проблем із психічним здоров'ям. Оцінка впливу пандемії на лікарів-інфекціоністів є ключовою для розробки стратегій підтримки та профілактики психічного виснаження в майбутніх кризових ситуаціях.

**Мета дослідження.** Визначити фактори, які впливали на психічне здоров'я та продуктивність лікарів-інфекціоністів м. Харкова під час ліквідації пандемії гострого респіраторного захворювання COVID-19.

**Матеріали та методи дослідження.** У дослідженні взяли участь 36 лікарів-інфекціоністів м. Харкова. Використовувалася комплексна анкета, що оцінювала робоче навантаження, психоемоційний стан та сімейні фактори. Дані аналізували з використанням кореляційного аналізу Спірмена.

**Результати.** Встановлено, що 75% лікарів відчували підвищене робоче навантаження, а 81,25% — незадоволеність заробітною платою. Нав'язливі думки про пандемію корелювали з наявністю родичів, що потребували догляду ( $r = 0,74$ ). Відчуття емоційного виснаження частіше зустрічалося у лікарів з сімейними обов'язками. Вплив пандемії на психоемоційний стан лікарів був суттєвим і різнився в залежності від віку, сімейного стану та стажу роботи.

**Висновки.** Психоемоційний стан лікарів-інфекціоністів під час пандемії COVID-19 був значною мірою обумовлений поєднанням робочого навантаження та особистих обставин. Молодші лікарі та ті, хто має родичів, які потребують догляду, відчували більший тиск, що може підвищувати ризик професійного вигорання.

**Ключові слова:** COVID-19, лікарі-інфекціоністи, психоемоційний стан, стрес, робоче навантаження, соціально-демографічні фактори

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