

<https://doi.org/10.33266/2070-1004-2022-3-36-41>  
УДК 616.895.4:614.23:578.834.1

Обзорная статья  
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## ПСИХИЧЕСКОЕ ЗДОРОВЬЕ МЕДИЦИНСКИХ РАБОТНИКОВ В УСЛОВИЯХ ПАНДЕМИИ COVID-19

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**Резюме.** На разных этапах своего развития мировое сообщество неоднократно сталкивалось с различными катастрофами, стихийными бедствиями и эпидемиями. Не стала исключением и пандемия COVID-19, последствия которой, так или иначе, затронули каждого человека, но в большей степени – медицинских работников. Именно в условиях пандемии возникли и усугубляются распространенные факторы стресса, многие люди испытывают негативные психические и психологические её последствия. Однако уже сейчас, опираясь на накопленный опыт и стремительное развитие медицины, есть возможность повлиять на сохранение психического здоровья любого человека, а также вовремя выявить риски и предотвратить негативные последствия пандемии.

Сохранение психического здоровья медицинских работников – одна из важнейших задач, стоящих перед здравоохранением. Рассмотрены факторы, влияющие на психическое и психологическое состояние медицинских работников, а также возможные организационные меры поддержки сотрудников медицинских организаций во время пандемии.

**Ключевые слова:** медицинские работники, пандемия COVID-19, посттравматическое стрессовое расстройство, психическое здоровье, эмоциональный стресс

**Конфликт интересов.** Авторы статьи подтверждают отсутствие конфликта интересов

**Для цитирования:** Родионова А.Д., Плутницкий А.Н., Савченко Н.А. Психическое здоровье медицинских работников в условиях пандемии COVID-19 // Медицина катастроф. 2022. №3. С. 36-41.  
<https://doi.org/10.33266/2070-1004-2022-3-36-41>

<https://doi.org/10.33266/2070-1004-2022-3-36-41>  
UDC 616.895.4:614.23:578.834.1

Review report  
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## MENTAL HEALTH OF MEDICAL WORKERS UNDER COVID-19 PANDEMIC CONDITIONS

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**Summary.** At different stages of its development, the world community has repeatedly faced various disasters, natural calamities and epidemics. COVID-19 pandemic was no exception, the consequences of which, one way or another, affected everyone, but mostly medical workers. It is in the conditions of the pandemic that common stress factors emerged and aggravated, many people experienced negative mental and psychological consequences of it. However, based on the accumulated experience and the rapid development of medicine, there is an opportunity to influence the preservation of mental health of any person, as well as to identify risks and to prevent negative consequences of the pandemic.

Preservation of mental health of medical workers is one of the most important tasks of public health. Factors influencing mental and psychological state of medical workers as well as possible organizational measures to support medical workers during the pandemic are considered in the article.

**Key words:** COVID-19 pandemic, emotional stress, medical workers, mental health, post-traumatic stress disorder

**Conflict of interest.** The authors declare no conflict of interest

**For citation:** Rodionova A.D., Plutnitskiy A.N., Savchenko N.A. Mental Health of Medical Workers under COVID-19 Pandemic Conditions. *Meditsina Katastrof* = Disaster Medicine. 2022;3-36-41 (In Russ.).  
<https://doi.org/10.33266/2070-1004-2022-3-36-41>

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**Introduction**

The pandemic of new coronavirus infection COVID-19 is accompanied by a high level of stress among population. The long incubation period, moderate severity and — in many cases — asymptomatic course of COVID-19 contributed to its rapid spread throughout the world, not allowing rapid identification and localization of the emerging foci. In fact, the COVID-19 pandemic was the first pharmacologically uncontrollable pandemic of the digital age, a qualitatively new challenge that exceeded the limits of the health systems of many countries, with an extremely negative impact on the physical and mental well-being of health workers.

In the conditions of the pandemic, doctors and paramedical staff worked in an environment of various risks: risk of infection, risk of possible death, risk of infection of their close environment. It is known that prolonged exposure to a stress factor leads to a depletion of a person's functional reserves. As the result the medical worker's working ability and motivation for professional activity significantly decrease, which in its turn inevitably leads to the increase in the number of medical errors, and sometimes to the manifestation of negligence.

Attention to the mental health of medical personnel and timely measures taken significantly reduce the severity of the consequences of a psychogenic nature, as well as the burden on the medical workers themselves.

In March 2020. The World Health Organization (WHO) declared the new coronavirus infection SARS-CoV-2 (COVID-19), ICD-10 U07.1 and U07.2, a global pandemic in late 2019 [1-3]. Due to the threat of the spread of COVID-19, a high alert regime has been introduced throughout the Russian Federation.

Problems associated with the spread of COVID-19 have affected, in one way or another, all countries of the world and the entire population of the planet. However, medical workers, whose working conditions have been and in many territories remain close to those of an emergency situation (ES), have borne the brunt of the blow.

As of April 14, 2021, more than 137.46 million people worldwide had been infected with the virus, and more than 2.96 million people had died. In the Russian Federation (as of April 14, 2021) 4.67 million people were infected and over 104,000 people died. [4, 5] - (Fig. 1, 2).

Due to the high level of health care system and professionalism of medical workers the number of diseases throughout the country is constantly decreasing. However, the number of infections in other countries is still increasing, with rapid growth in both European countries and other parts of the world.

Throughout the spread of COVID-19, health care professionals have worked under intense and prolonged psycho-

logical stress. The rapidly increasing number of COVID-19 cases, the number of hospitalizations, and the number of patients in critical condition have all made the work of health care providers extremely difficult [6, 7].

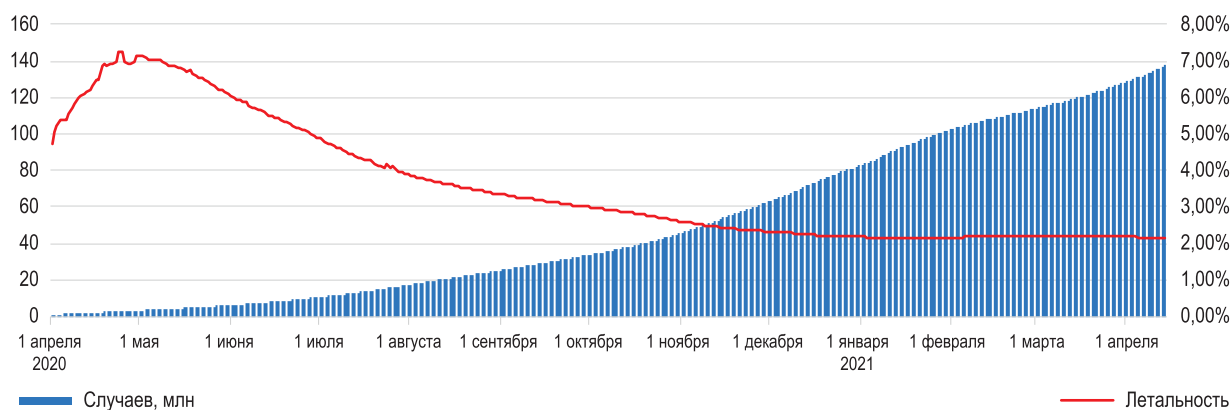
In 2020, 2,450 medical organizations of all forms of ownership were involved in the Russian Federation, more than 276,000 beds were deployed, including 41,000 beds in infectious disease hospitals and 235,000 beds in medical organizations reassigned to treat COVID-19; about 550,000 medical workers were involved at the peak of the disease, of which 156,000 were doctors, 318,000 were nurses and 76,000 were junior medical staff [8].

Due to the rapid spread of COVID-19, great danger of infection, high mortality rate in severe cases, and lack of drugs at the initial stage, the virus posed a huge threat to human life and health [9]. In addition, the virus had and still has a great impact on human mental health, causing people to experience emotional problems regardless of their physical health [10, 11].

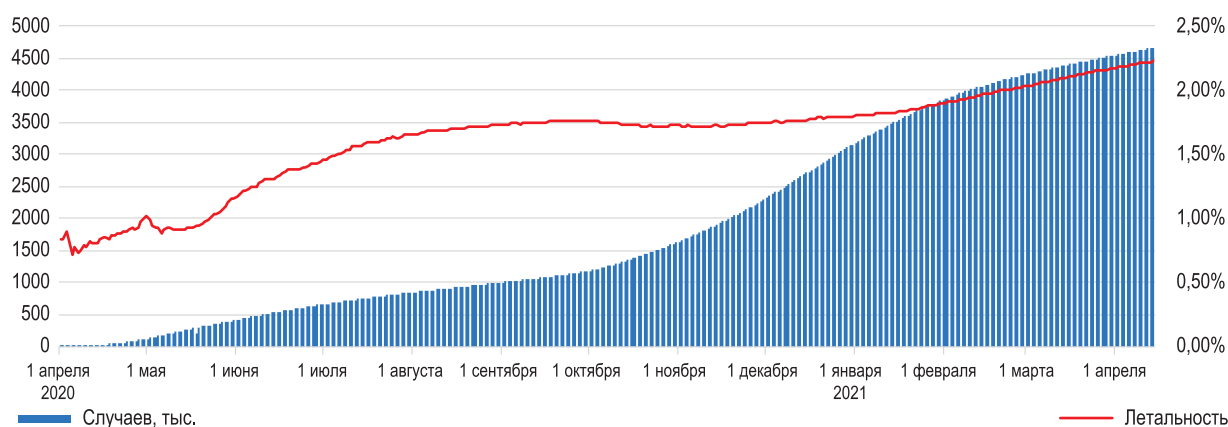
The rapid person-to-person transmission of COVID-19 and the increasing lethality caused anxiety and fear of infection in populations in all countries. The state of patients in critical condition, the anguish experienced by patients and their relatives, in many cases lead to even greater anxiety and, as a consequence, to prolonged stress and even to mental disorder [12]. In addition, for all health care professionals, fear of the possible absence of medical drugs and personal protective equipment (PPE), unverified information from various media, and anxiety about their loved ones significantly increase the risk of existing psychological discomfort. These factors increase the anxiety of medical workers and can lead to rather serious consequences [13, 14].

The problems of medical workers in a pandemic are not only a significant increase in the workload of each specialist, regardless of whether he works directly with COVID-19 or provides care to other patients in a "clean" area — it is also a huge psychological burden. In addition to the difficulties of working in a pandemic described above, need to work with new and frequently changing protocols and requirements, care of very severe patients whose condition deteriorates rapidly, and care of colleagues who become ill, makes the work of doctors and nurses close to working in an emergency or during hostilities [15, 16].

Indeed, the COVID-19 pandemic is justifiably called a war. The characteristic of working conditions of all health care professionals is comparable to military conditions. And we are talking not only about those doctors who work directly with COVID-19 patients, but about all health care workers who continue to be in health care organizations. Considering the fact that the threat to life and health under any conditions makes the situation traumatic, we can talk about possible consequences of the pandemic in medical



**Рис. 1.** Новая коронавирусная инфекция COVID-19: заболеваемость и летальность в мире, млн случаев  
**Fig. 1.** New coronavirus infection COVID-19: global morbidity and mortality, million cases



**Рис. 2.** Новая коронавирусная инфекция COVID-19: заболеваемость и летальность в Российской Федерации, тыс. случаев  
**Fig. 2.** New COVID-19 coronavirus infection: morbidity and mortality in the Russian Federation, thous. cases

workers in the form of posttraumatic stress disorder — PTSD (ICD-10 F43.1), especially in regions with heavy viral load, where doctors and other medical workers experience not just stress, but mental trauma [17].

And in these severe conditions, the outcome will depend not only on the availability of necessary medications, beds and equipment in medical organizations, and not even on a sufficient number of highly qualified medical workers, but on the ability of each of them to adequately and fully perform their professional duties, which, in turn, depends on the stability of their mental, moral and emotional status.

Of course, the problem of emotional stress among medical workers was acute even before 2020. [18]. Suffice it to

say that, according to researches of many authors, about a half of doctors have high indicators of professional burnout, which is twice as high as such indicators of the population engaged in other spheres of professional activity.

And it is especially important because emotional stress among medical workers of all specialties leads to the increased risk of medical errors, worsening of treatment prognosis and other unfavorable consequences [19]. In extreme conditions the probability and rate of formation of emotional burnout increase.

As the experience of epidemics, including the COVID-19 pandemic, shows, the sustainability and efficiency of measures taken by the state and the health care system depend



**Рис. 3.** Количество развернутых коек (тыс. коек) и численность медицинских специалистов (тыс. чел.), участвовавших в борьбе с пандемией COVID-19 в Российской Федерации в 2020г.  
**Fig. 3.** The number of beds deployed (thousand beds) and the number of medical specialists (thousand people) who participated in the fight against the COVID-19 pandemic in the Russian Federation in 2020

largely on the ability to protect the health of those directly involved in the fight against the virus spread, including medical workers [20, 21].

Stresses caused by high patient mortality rates, shortages of medical personnel, and fears about infecting oneself or family members can add to an already high workload. This rightly raises concerns among mental health professionals about the negative impact on the psychological and mental well-being of epidemic and pandemic responders [22-24].

Because of the danger of infectious disease in a number of countries, human resources are exhausted or on the verge of being exhausted and, as we know from outbreaks of epidemics, difficult decisions often have to be made about who is appropriate for invasive treatments such as life support and who is not. In some cases, these decisions will be different from the decisions that any health care provider would make under normal circumstances when the disease is learned and known or medical resources are adequate. And this greatly complicates the situation and the quality of the decisions made [16]. At the same time, it is important for medical professionals to know and to understand the algorithm of decision-making throughout the crisis [25].

It should be noted that in many cases mental pathology can go unnoticed for a long time [16]. Psychological disorders or psychiatric symptoms and illnesses can occur much later and have distant consequences.

In other words, they can manifest in the acute phase as well as in later stages (26,27).

For a deeper understanding of possible consequences, it is necessary to take into account several mechanisms underlying the specificity of psychopathological manifestations. These can include individual factors such as age, gender, and family, as well as work experience, length of work time, and availability of PPE (28).

A number of factors (prior psychiatric history, stress coping styles, cross-cultural characteristics, and, especially important in the current context, support measures) play an important role in the response to trauma.

In China, which experienced a 2019 outbreak of the new coronavirus infection COVID-19, a scientific study was conducted in 31 medical organizations that measured various factors associated with mental health changes in health care providers working with COVID-19 patients. The study found that physicians and nursing staff are at high risk for negative mental health outcomes, the severity of which is influenced by a number of factors [3, 29].

Mental or psychological traumatization of medical personnel is associated with the threat to their own lives, the lives of relatives and friends, as well as the presence of children or elderly relatives in the family, the duration of contact with an infected patient, the availability of work experience and special training, as well as the level of pay and availability of PPE; moral traumatization — with the perceived helplessness in saving people in conditions of health system overload, worrying about "inattention" from the state health system in general. Thus, according to the results of a number of researches, the average medical personnel, especially women, have higher level of symptoms and stress than doctors [2, 3, 30, 31].

The environment of exposure, its duration and personal experience have a significant impact on the psychological stress and emotional reactions of medical staff.

Scientific studies conducted in 2020 in relation to the pandemic showed that health care workers of different specialties, working in different positions, testified about their resulting anxiety, depression, stress, sleep problems, and more [6, 7, 13, 14, 20, 25]. The reasons for these symptoms may vary, but if we refer to those who work in the so-called "red" zone, it is primarily the lack of opportunities for sleep and rest, associated with an extremely heavy workload. Lack of work experience or specialized training can also exacerbate the effects on mental health.

According to a study by Shaukat, et al (International Journal of Emergency Medicine), working in a high-risk COVID-19 department, poor precautions and hygiene, inappropriate use of PPE, frequent ( $\geq 12$  times/day) contact with patients, long ( $\geq 15$  h) daily interactions with patients, and prolonged use of PPE resulting in skin damage are consequences of improper work organization of staff and often lead to mental health problems [30].

Given the fact that, over time, many health care workers may experience mental health problems and somatic complaints, the Russian Federation places great importance on measures to support health care staff — providing sufficient appropriate PPE, shift work schedules to ensure rest, and necessary training and information support at all levels.

Given the psychosocial impact of previous global epidemics, early assessment of the mental and psychological state of health care workers is vital in order to preserve their mental health and take appropriate action [32]. Accordingly, given that the mental health of the physician and nurse in an emergency setting is critical, comprehensive practices to protect health workers and preserve their mental health are a priority [14].

This makes mental health professionals think from the first months of the pandemic about what we can do now, so that we do not have to face further long-term consequences for health workers in the form of depression, PTSD and other disorders (33). Actions aimed to minimize the traumatic nature of the situation cannot, unfortunately, level the stress, but they can significantly reduce its intensity [34].

As experience shows, the following measures of prevention of consequences of long-term stress and post-traumatic stress disorder can be attributed to the most productive.

Social: providing the media with sufficient information about the arisen situation and support measures [29]; creating appropriate conditions in a health care institution. The COVID-19 pandemic has complicated the information and communication environment in health care. In such conditions absence of access to reliable information and low level of communication lead to increase of stress influence and more expressed emotional burnout of medical workers [35].

Professional: an opportunity to receive additional education on the work with epidemics; strict control over the personnel's state of health; tested algorithm of actions, from admitting patients to contacts with relatives and interaction with other personnel; opportunity to live separately if there is a risk of infection in the nearest environment; time and space for recreation, including on the territory of a medical organization. At the same time, it is important to provide access to psychological support services for medical workers.

Psychosocial support is a key factor in preventing and overcoming the negative consequences of stressful situations, both for each individual and for groups of people [36].

Since mechanisms of emotional stress development among medical workers providing care to patients with the new COVID-19 coronavirus infection are comparable to those in emergency situations, psychological support is considered to be an integral component of support measures for medical workers in the prevention of mental disorders in emergency situations.

### **Conclusion**

The new coronavirus infection COVID-19 that broke out in China in 2019 has become a global medical, social, and economic threat to all of humanity as early as 2020. The World Health Organization estimated the mortality rate from COVID-19 at 3.4%. And in spite of the fact that at present the schemes of treatment of patients with COVID-19 have been tested, vaccines have been developed and successfully applied, and a significant decrease of morbidity and mortality from the new coronavirus infection is observed in the Russian Federation, one of the most complicated issues

is the one related to the recommendations on prevention of PTSD (F43.1) and distant psychiatric consequences for those medical workers who have been exposed to high levels of distress for a long time.

In examining the emotional and psychological responses of health care workers to stress while working in a pandemic setting, a number of negative consequences affecting the mental health of health care workers were noted. To preserve and maintain the mental health of health care workers and to maximize the leveling effects of PTSD, psychological service providers and other mental health professionals should take deliberate steps to systematically address the challenges health care workers face in severe crisis situations.

### **Acknowledgements**

Thanks to all health care workers who provided care, diagnosis, and treatment to patients throughout the period of threatened coronavirus infection.

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Материал поступил в редакцию 16.04.21; статья принята после рецензирования 06.09.22; статья принята к публикации 23.09.22  
 The material was received 16.04.21; the article after peer review procedure 06.09.22; the Editorial Board accepted the article for publication 23.09.22