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## MENTAL HEALTH OF MEDICAL WORKERS DURING COVID-19 PANDEMIC: A LITERATURE REVIEW

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### Abstract

**Background.** Medical workers at hospitals who were directly involved in the diagnosis, treatment, and care of *Covid-19* infected patients were at high risk of developing mental distress and other psychological health symptoms. The daily number of increased confirmed and suspected cases, stressful workload, lack of personal protection equipment and specific drugs, and adequate support led to the mental crisis of these healthcare workers.

**Aim.** To promote and maintain the mental health of medical workers, we aimed to evaluate the psychological symptoms of healthcare workers during the *Covid-19* pandemic.

**The research method.** To analyze and evaluate the mental health of healthcare workers during the *Covid-19* pandemic PubMed, Google Scholar, Web of Science, MEDLINE Complete, and Cochrane Library databases were used for the period of 2020 to 2023. Studies conducted on healthcare workers working during the COVID-19 pandemic, including physicians, paramedics, nurses, and other medical workers; cross-sectional studies, cohort studies, and case-control studies published in the English language were included for this study. Key terms used for this review include “healthcare workers” or “health care provider” or “medical workers” or “front line workers” or “professionals” or “nurses” or “doctor” and “mental health” or “mental disorder” or “mental illness” or “mental health status” or “psychiatric illness” and “Covid-19” or “coronavirus disease 2019” or “SARS-CoV-2” or “coronavirus disease”. Exclusion criteria: studies conducted with healthcare professionals outside of COVID-19, evidence-based medicine articles with clear conclusions, articles published in other languages. As a result 25 articles were selected for this review.

**Conclusions.** Covid-19 had a negative impact on the mental status of healthcare workers, especially frontline ones. Many studies showed that healthcare workers experienced symptoms of anxiety, depression, and insomnia during the COVID-19 pandemic and a lack of psychological services. Further strategies should address special interventions for screening and promoting the mental health of medical workers exposed to *Covid-19*.

**Keywords:** *healthcare workers, psychological/psychiatric issues, Covid-19, mental health, anxiety, depression, insomnia.*

### Резюме

## МЕНТАЛЬНОЕ ЗДОРОВЬЕ МЕДИЦИНСКИХ РАБОТНИКОВ ВО ВРЕМЯ ПАНДЕМИИ COVID-19: ОБЗОР ЛИТЕРАТУРЫ

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**Актуальность.** Медицинские работники больниц, которые непосредственно участвовали в диагностике, лечении и уходе за пациентами, инфицированными Covid-19, подвергались высокому риску развития психического расстройства и других симптомов ментального здоровья. Ежедневное увеличение числа подтвержденных и подозреваемых случаев, напряженная рабочая нагрузка, отсутствие средств индивидуальной защиты и специфических лекарств, а также адекватной поддержки — все это приводит ментальному кризису медицинских работников.

**Цель:** Провести анализ источников по вопросу оценки ментального здоровья медицинских работников для укрепления и поддержания ментального здоровья медицинских работников во время пандемии Covid-19.

**Стратегия поиска.** Для поиска информации по анализу и оценке ментального здоровья медицинских работников во время пандемии Covid-19 были использованы базы данных PubMed, Google Scholar, Web of Science, MEDLINE Complete и Cochrane Library за период с 2020 по 2023 год. *Критерии включения в обзор:* исследования, проведенные с участием медицинских работников, работавших во время пандемии COVID-19, включая врачей, фельдшеров, медсестер и других медицинских работников; перекрестные, когортные и исследования "случай-контроль", опубликованные на английском языке. Ключевые термины: "медицинские работники" или "медицинские работники передовой линии", или "профессионалы", или "медсестры", или "врачи", и "психическое здоровье", или "психическое расстройство", или "ментальное здоровье", или "состояние психического здоровья" или "психическое заболевание" и "Covid-19", или "коронавирусная болезнь 2019", или "SARS-CoV-2", или "коронавирусная болезнь". *Критерии исключения:* исследования, проведенные с участием медицинских работников, не во время COVID-19, статьи, выдержанные в рамках доказательной медицины, с четкими выводами, статьи, опубликованные на других языках. В результате, для этого обзора было отобрано 25 статей.

**Выводы.** Covid-19 оказал негативное влияние на ментальное здоровье медицинских работников, в частности кто работал напрямую с пациентами с подтвержденным диагнозом Covid-19. Многие исследования показали, что медицинские работники испытывали симптомы тревоги, депрессии, бессонницы, а также отсутствие психологической консультации во время пандемии Covid-19. Дальнейшие стратегии должны предусматривать специальные мероприятия по скринингу и укреплению психологического здоровья медицинских работников, подвергающихся воздействию Covid-19.

**Ключевые слова:** медицинские работники, психологические/психиатрические проблемы, Covid-19, ментальное здоровье, тревога, депрессия, бессонница.

Түйіндеме

## **COVID-19 ПАНДЕМИЯСЫ КЕЗІНДЕГІ МЕДИЦИНА ҚЫЗМЕТКЕРЛЕРІНІҢ ПСИХИКАЛЫҚ ДЕНСАУЛЫҒЫ ӘДЕБИЕТТЕРГЕ ШОЛУ**

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**Өзектілігі.** Covid-19 жұқтырған науқастарды диагностикалауға, емдеуге және күтуге тікелей қатысқан медицина қызметкерлерінде психиканың бұзылысы және психологиялық денсаулықтың басқа белгілерінің даму қаупі жоғары. Расталған және күдікті Covid-19 науқастарының күнделікті санының көбеюі, ауыр жұмыс жүктемесі, жеке қорғаныс құралдары мен арнайы дәрі - дәрмектердің болмауы, сондай-ақ тиісті қолдаудың болмауы медицина қызметкерлерінің психикалық дағдарысына әкелді.

**Мақсаты.** Медицина қызметкерлерінің психикалық денсаулығын нығайту және қолдау үшін біз Covid-19 пандемиясы кезінде медицина қызметкерлерінің психологиялық белгілерін бағалауға тырыстық.

**Іздеу стратегиясы.** Covid-19 пандемиясы кезіндегі медицина қызметкерлерінің психикалық денсаулығын талдау және бағалау үшін 2020-2023 жылдар аралығында PubMed, Google Scholar, Web of Science, MEDLINE Complete және Cochrane Library дерекқорлары пайдаланылды. Шолуға енгізу критерийлері: Covid-19 пандемиясы кезінде жұмыс жасаған дәрігерлер, фельдшерлер, медбикелер және басқа да медицина қызметкерлеріне жүргізілген зерттеулер; ағылшын тілінде жарияланған кросс-секционды, когорт және оқиға-бақылау зерттеулері. Бұл шолуда қолданылған негізгі терминдерге "денсаулық сақтау мамандары" немесе "алдыңғы қатардағы медицина

қызметкерлері" немесе "медбикелер" немесе "дәрігер" және "психикалық денсаулық" немесе "психикалық бұзылыс" немесе "ментальды денсаулық" немесе "психикалық денсаулық жағдайы" немесе "психикалық ауру" және "Covid-19" немесе "коронавирус ауруы 2019" немесе "SARS-CoV-2" немесе "коронавирус ауруы". *Алып тастау критерийлері:* COVID-19 кезінде емес, медицина қызметкерлерінің қатысуымен жүргізілген зерттеулер, дәлелді медицина аясында жасалған, нақты тұжырымдары бар мақалалар, басқа тілдерде жарияланған мақалалар. Нәтижесінде, осы шолу үшін 25 мақаланы.

**Қорытынды.** Covid-19 медицина қызметкерлерінің психикалық жағдайына, әсіресе науқастармен тікелей жұмыс жасаған дәрігерлерге қатты әсер етті. Зерттеулердің көп бөлігі медицина мамандарының Covid-19 пандемиясы кезінде мазасыздық, депрессия және ұйқысыздық белгілерін және психологиялық көмектің жоқтығын көрсетті. Келешектегі стратегиялар Covid-19 пандемиясы кезінде жұмыс жасаған медицина қызметкерлерінің психикалық денсаулығын скринингтеу және нығайту бойынша арнайы іс-шараларды көздеуі тиіс.

**Түйінді сөздер:** медицина қызметкері, психологиялық/психиатриялық мәселелер, Covid-19, психикалық денсаулық, мазасыздық, депрессия, ұйқысыздық.

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#### Introduction

The coronavirus disease 2019 (Covid-19) started spreading in the Hubei province of China in December 2019 [25]. In March 2020 the World Health Organization (WHO) declared Covid-19 as an emergency outbreak worldwide [48]. As of March 30, 2023, Covid-19 has been diagnosed in 761,402,282 patients and was associated with 6,887,000 deaths globally [51]. This pandemic had an overwhelming impact on healthcare systems and medical staff as well. 206 countries stated positive cases of Covid-19 infection and medical workers remained as key persons for screening and treating patients with Covid-19 infection. The frontline workers who were directly working with patients with symptoms of Covid-19 were at high risk of getting infected compared to other healthcare workers [53]. The pandemic had been challenging for medical workers, especially for those who work in hospitals with suspected or confirmed patients of Covid-19 infection, which not only causes healthcare workers at a high risk to become infected but also results in a fear of spreading the infection to their relatives [6]. A different range of psychological outcomes also depended on excessive workload, working hours, over-enthusiastic media news, lack of medications and vaccines, inadequate personal protective equipment, feelings of being inadequately supported by health care administration, etc. [7, 46, 23, 45, 5, 41, 16, 29]. Routine of medical practice has been dramatically changed, and most of the healthcare workers' workplace have been switched to high-risk front-line works while having continuously change of diagnostic and treatment guidelines [28]. Additionally, increasing morbidity and mortality rates among healthcare workers had also a huge impact on the mental status of medical staff.

The sudden change in healthcare workers' role from medical staff to the patient might cause psychological symptoms such as helplessness, frustration, stigma, adjustment issues, and fear of discrimination from the

medical staff [38]. The Covid-19 infection had a high transmission rate, and the mortality was higher than that caused by middle east respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS) combined despite the low mortality rate of 2%. [30]. Researchers also states the impact of the COVID-19 on mental status pointing out the phenomenon of vicarious traumatization and belief that this element is left untreated, which might have negative impact on mental health of medical workers leading to post-traumatic stress disorder [26, 27, 14, 4]. Additionally, *Alharbi J.* states burnout and fatigue among healthcare workers, while *Neto M.L. et al.* mentions the mental exhaustion. Only *Li Z. et al.* only study provided results vicarious traumatization among medical workers [26, 2, 36].

The article published during the SARS outbreak stated that healthcare workers are at high risk of developing depression, anxiety, insomnia, and stress symptoms during the Covid-19 pandemic [49, 50]. Moreover, there were many cases of suicidal deaths due to the impact of the Covid-19 pandemic. Covid-19 pandemic have also leaded physical and mental exhaustion among healthcare workers [19]. As a result, attention to the mental status of healthcare workers became imperative all over the world since patients' health depends on them [1, 9, 20, 40]. Some research studies have identified several factors associated with the mental status of healthcare workers, which are limited hospital resources, long shifts, the threat of exposure to the virus, disruption to sleep patterns, fear of exposure to family members, work-life balance, neglecting of family and personal needs with an increased workload, and finally lack of sufficient communication and updated information. All these factors have been contributing to increased mental and physical fatigue, stress, anxiety, and burnout among healthcare workers [1, 4, 6, 11, 21, 22, 39, 42, 43]. However, there is a lack of systematic appraisal

and critique of current studies. Based on these results, many scientific studies have been published recently. Most of these are original articles and reviews; however, only few studies were conducted on mental health of healthcare workers or provide results from different populations, mainly from China [28, 37, 33, 10]. Therefore, this review will address the main factors contributing to the mental crisis among healthcare workers during the Covid-19 pandemic.

To promote and maintain the mental health of medical workers, we aimed to evaluate the psychological symptoms of healthcare workers during the Covid-19 pandemic.

The main objectives of this review were to identify the association between socio-demographic, psychological, and Covid-19-related factors and mental health problems faced by medical workers.

**Literature search.** The literature review was conducted using databases such as PubMed, Google Scholar, Web of Science, MEDLINE Complete, and Cochrane Library. Key terms used for retrieving the studies were: stress, psychological, or psychiatric issues, mental health, and corona, Covid-19, novel coronavirus, and healthcare workers, medical staff, doctors, or healthcare professionals. All the articles published within the period of 2020 to 2023 original research articles relevant to the subject of the review were searched.

**Article selection.** Only original articles relevant to the title of the review in which researchers evaluated the mental status of healthcare workers were included in this review. A total of 25 articles were selected by initial screening. Out of these 6 were original, 4 were editorials, 5 were reviews, 5 were correspondence articles, 3 were letters, and 2 were ideas. Additional articles published before 2020 were included for the background and discussion sections of the study because of the valuable information related to the mental status of healthcare workers during MERS, SARS and other infection outbreaks, to compare mental status trends during these outbreaks as well.

**Inclusion criteria:** The inclusion criteria were applied based on the list below: a) healthcare workers working during the COVID-19 pandemic, including physicians, paramedics, nurses, and other medical workers; b) cross-sectional studies, cohort studies, and case-control studies; c) published in the English language.

**Exclusion criteria:** All articles that were either not original articles or were not peer-reviewed, such as review articles, studies are not conducted on healthcare workers during COVID-19, not estimated prevalence, used not validated questionnaire, and published in other languages are excluded from the literature review.

**Socio-demographic characteristics.** The mean age of the healthcare workers ranged between 26–40 years, and most of the participants were females (69%–86%). According to *Lai J. et al.*'s study, professional title and being a woman was highly associated with depression, anxiety, and distress symptoms [21]. Additionally, *Liang Y. et al.*'s study assessed the relationship between the age of participants and depressive symptoms. Younger healthcare workers had a higher rate of self-depression compared to older ones. However, the association was not statistically significant [24].

*Cai H. et al.*'s study also stated that participants' age can differently cause stress symptoms. 31–40 years old

healthcare workers were more likely stressed about their family members getting infected compared to medical workers older than 50 years. However, staff older than 50 years of age were more stressed about the patient's death. Self-safety was also important for medical workers aged 41–50 years. Excessive workload and lack of personal protective equipment were one of the main factors leading to stress symptoms among older healthcare workers [7].

*Liang Y. et al. and Lai J. et al.*'s studies were also assessing depressive symptoms and the degree of anxiety among frontline healthcare workers [21, 24]. According to *Liang Y. et al.*'s study, there were significant differences in depression and anxiety symptoms among medical staff working in Covid-19 infected patients' departments and other departments. Front-line medical workers and those who worked in Wuhan departments had a higher rate of depressive symptoms, severe anxiety, and insomnia. Moreover, nurses had a higher rate of depression, anxiety, and insomnia symptoms compared to professionals. Also, nurses felt more nervous and anxious compared to doctors [7].

#### Psychological characteristics

*Xiao H. et al.*'s study assessed sleep quality, self-efficacy, degrees of stress, and anxiety among medical workers and studied social support provided by health departments. Based on the results of this study, social support increased the rate of self-efficacy and reduced their level of stress and anxiety. There was a statistically significant relation between sleep quality and social support [53]. According to *Cai H. et al.*'s study, worries about family members, self-safety, and patient death were one of the leading factors causing stress among healthcare workers. This study also evaluated excessive workload, social support provided by hospital administration, and financial compensation [7]. The study conducted by *Lai J. et al.* in 34 Chinese hospitals reported that ¼ of 1257 medical professionals reported distress symptoms, 50% of them were depressed, a third of healthcare workers felt insomnia symptoms, and ⅔ of them were anxious [21].

The study conducted in India showed that the main factors causing depression among medical workers were fear of being quarantined, getting infected themselves and family members, not properly the usage of personal protective equipment, etc. In order to reduce the stigma community awareness should be increased [34].

**Covid-19 associated stress.** *Cai H. et al.*'s study tried to find factors that reduce the level of stress during Covid-19. Family safety was one of the main factors in reducing stress compared to other factors such as prevention actions and psychological support from the health administration itself [7]. According to *Kang L. et al.*'s study, contact with Covid-19 infected patients and access to psychological resources are associated with mental health issues. Direct contact was highly associated whereas access to psychological materials was inversely associated with the part of mental health issues. Participants who had a high level of mental health issues had poor physical health [20]. A study from India stated that positive motivational factors such as positive role models, supportive family, and colleagues, appreciation by patients, and knowledge and acceptance of being infected need to be strengthened to protect and promote the mental status of healthcare

workers. Additionally, the negative factors related to patient care include stigma, the multiple needs of the patients, and the need for clear management plans. Setting up multidisciplinary teams and screening surveys should be conducted to overcome negative factors affecting the mental status of medical professionals [31].

#### **Psychological support.**

Based on *Cai H. et al's* study, the protective measures used by healthcare workers were knowledge of infection transmission and prevention, positive attitude, social isolation, and social support [7]. Healthcare workers with a high level of mental issues were more interested in self-protection skills, and more needed psychological support from psychotherapists and psychiatrists. Participants who had mild levels of stress mostly needed information from media sources whereas medical workers who had a high level of stress desired to receive information directly from professionals [20].

#### **Discussion.**

This literature review provides information that healthcare workers had a considerable level of depression, anxiety, stress, and insomnia during the Covid-19 pandemic. Covid-19-related factors leading to the mental health crisis among healthcare workers include infection transmission, lack of treatment guidelines, and protective vaccines. Global connectivity and huge media coverage led to catastrophic reactions during Covid-19 [47, 19].

Different studies have shown that epidemics can lead to severe psychological outcomes for people. For instance, it can cause different psychological symptoms, and even worsen existing diseases in human beings. The feeling of getting infected can develop a worry of getting sick or dying, excessive level of anxiety, being helpless, and blaming other people who got sick. The psychological morbidities that people develop might include stress, anxiety, depression, panic attacks, posttraumatic stress disorder symptoms, somatic symptoms, psychosis, and even suicidality [21, 32, 44].

As previously stated, most of the studies reported that healthcare workers especially those working in the frontline at the infectious departments, intensive care units, or emergency departments were at high risk of developing psychological disorders [35]. Also, the prevalence rate of depression varied significantly among different types of medical workers. For instance, nursing assistants had a high prevalence rate of depression compared to other healthcare workers [5]. The current literature review also found that medical workers were at high risk of developing mental crises during the Covid-19 pandemic. However, some studies showed that there is no significant difference in stress levels between healthcare workers working frontline and other departments.

The research conducted during the SARS outbreak also stated that frontline healthcare workers are at higher risk of developing post-traumatic stress disorder. According to *Lee S.M. et al's* study, healthcare workers in the emergency department were at higher risk of developing post-traumatic stress disorder compared to the professionals in the psychiatric department [23]. However, none of the included studies for this review evaluated post-traumatic stress disorder among healthcare workers.

A systematic review conducted on the mental health of

healthcare workers during the pandemic reported the effect of social support and coping. According to the current review, the main risk factors leading to psychiatric illnesses were lack of communication, social support, lack of training, and maladaptive coping [35]. A study conducted by *Xiao H. et al.* reported the effect of social support on levels of depression, anxiety, insomnia, and self-efficacy [53]. This review provided information that nurses have a higher level of depressive and anxiety symptoms compared to professionals. However, a study conducted in Singapore reported that single doctors are at a higher risk of developing psychological problems compared to married nurses [8].

During the pandemic, professionals mostly focus on the biological and physical characteristics of human beings rather than their psychological needs. Certain actions were taken by the Chinese government to solve psychological problems among their population. They created emergency psychological crisis intervention guidelines for patients infected with Covid-19 [34]. In order to reduce psychological morbidities among healthcare workers, certain strategies were implemented in China, which include the use of shift duties, providing psychological intervention teams, and online platforms with psychological and medical advice. 4 different teams were included in the psychological intervention: the psychological intervention technical support team, the psychosocial response team, the psychological assistance hotline teams, psychological intervention medical team [20]. *Rana W. et al's* study also suggested the development of a psychological crisis intervention team [38].

There were some limitations in the included studies. All of them were cross-sectional studies in which data were collected from days to months. Only one study collected data from 37 hospitals and 3 different geographical areas. Other studies were conducted in only one place limiting their generalizability within the country. The results of these studies may not be used in developing countries 5 the studies were conducted in China. 3 studies included in this review had a sample size of more than 550. The larger sample size studies would better identify psychological issues among healthcare workers.

#### **Conclusion**

The health administrations should consider creating multidisciplinary mental health teams to work with mental health problems and provide psychological support to both healthcare workers and patients. Assessment and evaluation of mental status can be conducted using applications like whats app, telegram, or chat depending on geographic locations. Healthcare workers involved in the diagnosis and treatment of patients with Covid-19 should regularly screen to evaluate levels of depression, stress, anxiety, and insomnia. Therefore, it is crucial to timely address mental health problems among healthcare professionals through psychological teams [12, 13].

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