



## Psychological Impact of COVID-19 on Healthcare Workers: A Systematic Review

Victor Trismanjaya Hulu<sup>1</sup>, Suharni Pintamas Sinaga<sup>2</sup>, Achmad Rifai<sup>3</sup>, Frans Judea Samosir<sup>1</sup>, Putranto Manalu<sup>1\*)</sup>

<sup>1</sup>Faculty of Public Health Universitas Prima Indonesia

<sup>2</sup>Sekolah Tinggi Ilmu Kesehatan Senior Medan

<sup>3</sup>Institut Kesehatan Helvetia Medan

### ARTICLE INFO

#### Article history:

Received November 11, 2020

Accepted January 30, 2021

Published April 05, 2021

#### Keyword:

Psychological impact  
COVID-19  
Health workers

### ABSTRACT

During the COVID-19 pandemic, many health workers working in hospitals experienced psychological problems and stress while serving patients because of their high risk of contracting COVID-19. This study explores the main findings from the literature examining the psychological impact of COVID-19 on healthcare workers. This study uses a systematic review method using the PRISMA statement. A systematic search was carried out to obtain relevant articles from three databases, namely Scopus, PubMed, and Google Scholar, published in the English version. The investigation of articles started from identifying, sorting, checking the feasibility and eligibility of the studies and including qualitative synthesis. This article's inclusion criteria were English-language articles and full text on studies assessing the psychological impact of COVID-19 on healthcare workers. There were 1429 articles found and eleven studies of which were analyzed, namely ten studies using a cross-sectional design, one study using a retrospective cohort design. The psychological impact experienced by health workers included fear of being infected with COVID-19; fear of contracting oneself, friends, and relatives; fear of being alienated by others; fear of being stigmatized by others; worrying about personal and family health; worrying about being quarantined or isolated; fear of close contact with patients at high risk of infection; fear of experiencing high insomnia; fear of experiencing acute stress disorders and psychological stress. The study concluded that health workers serving patients in hospitals face tasks full of pressure, worry, anxiety, and high fear of being infected with COVID-19. Health workers are in dire need of health protection as well as special recovery programs that aim to improve psychological well-being during the COVID-19 pandemic.

This open access article is under the [CC-BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



## Dampak Covid-19 Terhadap Kondisi Psikologis Tenaga Kesehatan: Sebuah Review Sistematis

### ABSTRAK

Selama masa pandemi COVID-19, banyak tenaga kesehatan yang bekerja di rumah sakit mengalami gangguan psikologis dan stres saat melayani pasien karena besar risiko mereka terinfeksi COVID-19. Penelitian ini bertujuan untuk mengeksplorasi temuan utama dari literatur yang meneliti tentang dampak psikologis COVID-19 pada petugas kesehatan. Penelitian ini menggunakan metode systematic review dengan menggunakan pernyataan PRISMA. Untuk memperoleh artikel yang relevan maka dilakukan pencarian secara sistematis dari tiga database yaitu Scopus, PubMed dan Google Scholar yang diterbitkan dalam versi bahasa Inggris. Penyelidikan artikel dimulai dari tahap identifikasi, pemilahan, kelayakan dan studi yang memenuhi syarat dan termasuk sintesis kualitatif. Kriteria inklusi adalah

#### Kata kunci:

Dampak psikologis  
COVID-19  
Petugas kesehatan

\*) *corresponding author*

Faculty of Public Health Universitas Prima  
Indonesia

Email: [putrantomanalu@unprimdn.ac.id](mailto:putrantomanalu@unprimdn.ac.id)

<https://doi.org/10.30604/jika.v6i1.469>

artikel berbahasa Inggris dan full text tentang studi yang menilai dampak psikologis COVID-19 pada petugas kesehatan. Dari tiga database diperoleh 1429 artikel dan sebanyak 11 (sebelas) studi diantaranya dianalisis dimana sepuluh studi yang menggunakan desain cross-sectional dan satu studi yang menggunakan desain kohort retrospektif. Dampak psikologis yang dialami oleh tenaga kesehatan meliputi takut terinfeksi COVID-19, takut tertular terhadap diri sendiri, teman dan kerabat, takut dijauhkan oleh orang lain, takut distigmatisasi oleh orang lain, khawatir tentang kesehatan pribadi dan keluarga, khawatir akan dikarantina atau diisolasi, takut kontak dekat dengan pasien berisiko tinggi terinfeksi, takut mengalami insomnia yang tinggi, takut mengalami gangguan stres akut dan tekanan psikologis. Penelitian menyimpulkan petugas kesehatan yang melayani pasien di rumah sakit selalu diperhadapkan dengan pekerjaan yang penuh dengan tekanan, khawatir, cemas dan rasa takut yang tinggi terinfeksi COVID-19. Petugas kesehatan sangat membutuhkan perlindungan kesehatan serta program khusus pemulihan yang bertujuan untuk meningkatkan kesejahteraan psikologis selama pandemi COVID-19.



This open access article is under the [CC-BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.

## INTRODUCTION

The emergence of the global COVID-19 pandemic coupled with high transmission and death rates has created an unprecedented emergency worldwide. This global situation can have a negative impact on the psychological well-being of individuals, which in turn impacts individual performance (Naser et al., 2020). The outbreak of the 2019 coronavirus disease (COVID-19), which has been known in Wuhan, China in December 2019 is still a pandemic. Coronavirus has been identified as a cause of respiratory disease characterized by acute pneumonia (Zhang et al., 2020; Wang et al., 2020). Globally, cases of COVID-19 have reached around 106,161,687 people in the world and 2,317,211 of them have died (Kementerian Kesehatan, 2021). Health professionals such as doctors and nurses who work in various hospitals around the world have experienced high morbidity and mortality after being infected with COVID-19, even experiencing psychological disorders. Therefore, handling psychological problems for health workers who work in hospitals needs to be a major concern in efforts to prevent the transmission of COVID-19 infection among those who provide care for patients in hospital.

As the world is battling the COVID-19 pandemic, frontline health workers are among the most vulnerable groups at risk of developing mental health problems. Many risks to the welfare of health workers are not well understood. From the literature, there is a lack of information on how best to prevent psychological distress, and the steps needed to reduce problems for the well-being of health workers (Cabarkapa et al., 2020). Medical health workers are the first-line fighters treating patients with COVID-19. Every day face a high risk of infection and are exposed to long work shifts making it difficult for them to meet health requirements (Fava et al., 2019).

Healthcare workers during the COVID-19 epidemic had high prevalence rates of severe insomnia, anxiety, depression, somatisation and obsessive-compulsive symptoms. They also have risk factors for developing insomnia, anxiety, depression, obsessive-compulsive symptoms, and somatisation. Thus, in addition to battling COVID-19 daily, the presence of these symptoms indicates that they must cope with the psychological stress that is at risk of experiencing allostatic overload (Fava et al., 2019). Facing this critical situation, frontline health workers are directly involved in diagnosis, treatment, and treatment of

patients with COVID-19 is at risk of psychological distress and other mental health symptoms. The growing number of confirmed and suspected cases, excessive workload, depletion of personal protective equipment, widespread media coverage, lack of certain drugs, and feelings of insufficient support can all contribute to the mental burden of these healthcare workers (Lai et al., 2020).

Previous studies related to the psychological impact of COVID-19 on health workers showed that the impact of COVID-19 was significantly related to anxiety ( $p < .001$ ) and depression ( $p < .001$ ) (Han et al., 2020). The proportion who experienced symptoms of depression, anxiety and mild stress to severe was 13.6%, 13.9% and 8.6% respectively (Si et al., 2020). Most nurses (64%) experienced acute stress disorder due to the COVID-19 pandemic so that they are at risk of experiencing post-traumatic stress disorder. More than a third of nurses (41%) also suffer from significant psychological distress. Age, acute stress disorder, and self-efficacy significantly predicted psychological distress (Shahrour & Dardas, 2020). Health workers who experienced symptoms of anxiety were 41.9%, 37.5% experienced symptoms of depression and 33.9% experienced symptoms of insomnia. The stigma faced by health workers was significantly associated with a higher likelihood of experiencing symptoms of anxiety (AOR: 2.47; 95% CI: 1.62–3.76), depression (AOR: 2.05; 95% CI: 1.34–3.11) and insomnia (AOR: 2.37; 95% CI: 1.46–3.84). Nurses experienced significantly more symptoms of anxiety than other health workers (AOR: 2.33; 95% CI: 1.21–4.47) (Khanal et al., 2020). The overall prevalence of psychological problems among doctors, medical residents, nurses, technicians and public health personnel was 60.35%, respectively 60.35, 50.82%, 62.02%, 57.54% and 62.40% (Que et al., 2020).

Recommendations around the use of psychological first aid have been made by global authorities (World Health Organization, 2014). However, the effectiveness of this strategy has not been well studied and there are barriers to its implementation (Workforce and Leadership Development Advisory Committee, 2003; Birkhead & Vermeulen, 2018). Given the heavy burden and high demand for protecting healthcare workers worldwide through the provision of protective equipment self, training, overcoming fatigue, and fighting psychosocial consequences (Chen et al., 2020), therefore handling psychological problems for health

workers due to the transmission of the COVID-19 infection must be a major concern and be addressed immediately by the authorities. Therefore, in this systematic review study, we conduct a review of studies on the impact of the COVID-19 pandemic on healthcare workers in relation to psychological distress and mental health.

We aim at this systematic review study to summarise the psychological impact on health workers on the risk of transmitting COVID-19 infection. Health workers are always faced with jobs that full of pressure and fear, and high anxiety about being infected with COVID-19 because they have to serve sick patients so that health workers have a high risk of contracting COVID-19 infection. Health workers such as doctors, nurses, anesthetists, laboratory personnel and other health professionals are at greater risk of being exposed to physical stress and psychological disorders that can lead to mental health conditions, which can reduce their ability to handle health emergencies effectively. Thus, given the possibility of increasing psychological problems among health workers, this psychological impact must be addressed immediately. This study explores the main findings from the literature examining the psychological impact of COVID-19 on healthcare workers.

## METHOD

This study uses a systematic review method using the PRISMA statement to describe the psychological impact of COVID-19 on health workers. The inclusion criteria for this article are articles in English and full text about studies assessing the psychological impact of COVID-19 on health workers such as doctors, nurses, midwives, technicians, laboratory personnel, anesthetists. Articles in non-English and editorial languages are excluded. Then the article manuscripts that are currently in the proofreading stage are excluded because there is a possibility that changes may occur in the results of research reporting.

We conducted a search strategy to find relevant articles regarding the psychological impact of COVID-19 on healthcare workers. The search strategy is conducted with keywords, namely (“mental health” OR “psychological”) AND

(“covid” OR “COVID-19” OR “coronavirus”) AND (“health professional” OR “health worker” OR “personal health” OR “Medical doctor” OR “nurse” OR “doctor” OR “physicians”). To obtain relevant articles, a systematic search was conducted from three databases, namely Scopus, PubMed, and Google Scholar. We investigate the relevant articles published in the English version, after removing the duplication of the articles, the corresponding articles from the relevant abstracts are also taken.

Data extraction performed by five people consisting of two reviewers who reviewed the articles for eligibility based on the title and abstract. Three reviewers extracted specific study characteristics including method, study design, sample size, and the psychological impact of healthcare workers during the COVID-19 epidemic. The findings from this review shed light on the psychological impact of COVID-19 on healthcare workers. In writing this systematic review, the author uses the PRISMA-P protocol (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols). The detailed article selection process can be seen in Figure 1. Eligible study articles were reviewed systematically and analyzed qualitatively.

## RESULTS AND DISCUSSION

1429 articles are taken from three databases, namely Scopus, PubMed and Google Scholar. The article contained a total of as many as 117 articles were duplicates. Duplicate articles and 509 non-full text articles from the three databases were deleted and 801 articles were retained because they were full text articles. Then, the full text article is read and filtered back or assessed for feasibility, so 790 is removed because the article is irrelevant. It is inappropriate to the topic or does not match the research questions and there are several methods of systematic review articles. From the full text and non-duplicate articles, 11 studies meet the inclusion criteria for analysis in discussing the psychological impact of COVID-19 on health workers. The following is the process of selecting articles in detail (Figure 1).

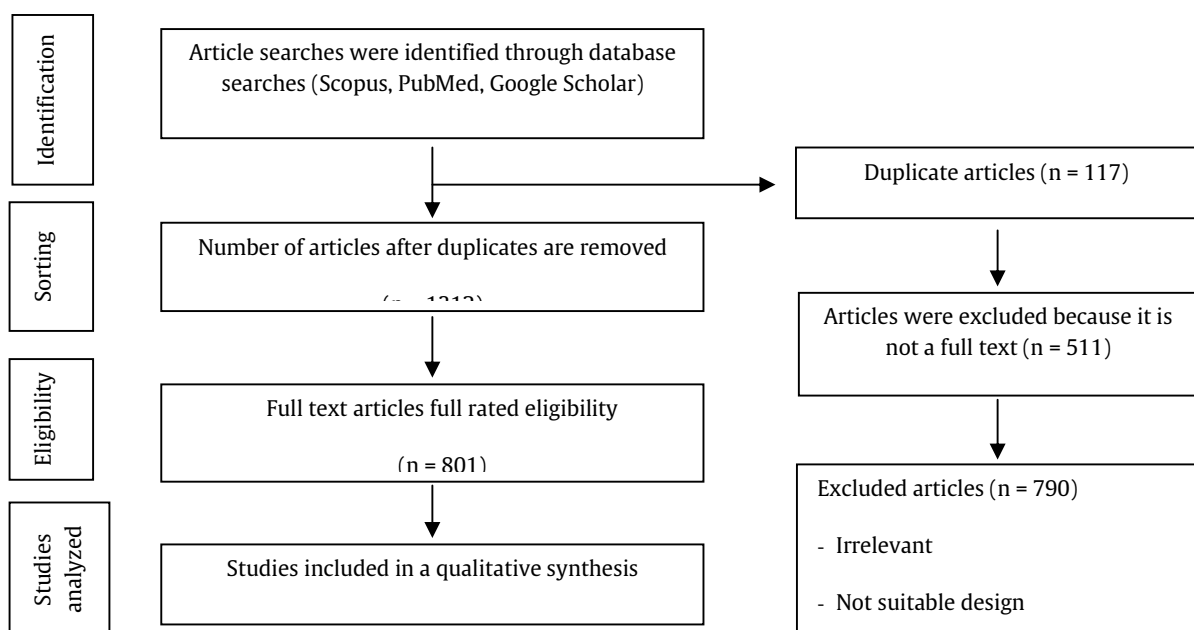


Figure 1. Diagram of Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA)

**Table 1.**  
**Characteristics or summary of findings from articles included in research on the psychological impact of COVID-19 on health workers**

Title	Author	Design	Population	Results
Psychological impact of COVID-19 on medical care workers in China	Si et al. (2020)	Cross-sectional	863 medical care workers	The proportions experiencing symptoms of depression, anxiety and mild to severe stress were 13.6, 13.9 and 8.6%, respectively. Perceived threat and passive coping strategies were positively correlated with scores of post-traumatic stress and depression, anxiety and stress scales, while perceived social support and active coping strategies were negatively correlated with depression, anxiety and stress scale scores.
COVID-19 pandemic: Psychological impact on anesthesiologists	Jain et al. (2020)	Cross-sectional	512 respondents	Of the 512 participants, 74.2% suffered from anxiety and 60.5% suffered from insomnia. Insomnia severity index score $\geq 8$ was observed at age <35 years, unmarried, those with stress due to COVID-19, fear of loneliness, food and accommodation problems, increased working hours and with a Generalized Anxiety Disorder score-7 $\geq 5$ .
Acute stress disorder, coping self-efficacy and subsequent psychological distress among nurses amid COVID-19	Shahrour & Dardas (2020)	Cross-sectional	448 Jordanian nurses	Most nurses (64%) are experiencing acute stress disorder due to the COVID-19 pandemic so that they are at risk of experiencing post-traumatic stress disorder. More than a third of nurses (41%) also suffer from significant psychological distress. Age, acute stress disorder, and self-efficacy significantly predict psychological distress. Younger nurses are more prone to psychological distress than older nurses. While higher scores in acute stress disorder indicate more psychological distress is generated, coping self-efficacy is a protective factor.
Psychological impact of the COVID-19 pandemic on healthcare workers: a cross-sectional study in China	Que et al. (2020)	Cross-sectional	2285 health workers	The prevalence of anxiety, depression, insomnia and overall psychological problems among health workers during the COVID-19 pandemic in China was 46.04%, 44.37%, 28.75%, and 56.59%, respectively. The overall prevalence of psychological problems among doctors, medical residents, nurses, technicians and public health workers was 60.35%, 50.82%, 62.02%, 57.54%, and 62.40%, respectively.
Psychological effects of the COVID-2019 pandemic: Perceived stress and coping strategies among healthcare professionals	Babore et al. (2020)	Cross-sectional	595 health professionals	Concerning gender differences, the level of perceived stress was higher among women (mean = 19.56; SD = 7.06) than men (mean = 15.38; SD = 6.65) [ $F(1.593) = 33,738, p < 0.001$ ]. Lower-positive attitudes, higher social support, working with COVID-19 patients and higher avoidance strategies predict higher levels of stress.
Acute psychological effects of Coronavirus Disease 2019 outbreak among healthcare workers in China: a cross-sectional study	Wang et al. (2020)	Cross-sectional	1897 health workers	Overall, the prevalence of depression, anxiety, and post-traumatic stress disorder was assessed at 15.0%, 27.1%, and 9.8%, respectively. The prevalence of depression, anxiety, and post-traumatic stress disorder among health workers working on the front lines was assessed as 21.7%, 38.5%, and 15.4%, respectively.
Psychological Impact of COVID-19 Emergency on Health Professionals: Burnout Incidence	Martínez-López et al. (2020)	Cross-sectional	157 health professionals	As many as 90.4% of health professionals think that psychological care should be provided from the work center. In addition, 43.3% of health workers estimated that they may need psychological treatment in the future. 85.4% stated that lack of personal protective equipment

Title	Author	Design	Population	Results
at the Most Critical Period in Spain				leads to increased stress and anxiety. In the case of a particular doctor, OR = 4,270, 95% CI (1,180-15,445), p = 0.027. The nurses had OR = 3,782, 95% CI (1,419-10,078), p = 0.008. Doctors and nurses are at risk for emotional exhaustion. The risk was 4.27 and 3.78 times greater, respectively than that of other healthcare professionals.
Psychosocial Effects of COVID-19 on Health Care Workers: A Cross Sectional Study from Tertiary Level Pediatric Hospital	Talat et al. (2020)	Cross-sectional	989 hospital staff	Regarding concerns about personal and family health, 544 (59.5%) were concerned about their health, but much greater concerns about their families (672, 73.5%). The fear of going home was expressed by 629 (69%) of the participants. Regarding employee protection by using personal protective equipment, 680 (74.4%) hospital workers were dissatisfied. Wearing protective clothing and gloves was the precautionary measure that was often cited as the most disturbing measure (38.8%). More than 65% of workers feel anxious when handling fever patients. More than 60% of healthcare workers cite religion as their main source of coping with psychological impacts.
Psychological Status Among Anesthesiologists and Operating Room Nurses During the Outbreak Period of Covid-19 in Wuhan China	Li et al. (2020)	Cohort study	197 medical staff	During the city lockdown, 177 (89.8%) had close contact with confirmed COVID-19 cases. The prevalence of depression and anxiety in the operating room medical staff was 41.6 and 43.1% during the Wuhan lockdown, whereas 13.2 and 15.7% after the lifting of the Wuhan lockdown (P = 0.002, P = 0.004).
Psychological impact of COVID-19 outbreak on frontline nurses: A cross-sectional survey study	Nie et al. (2020)	Cross-sectional	263 frontline nurses	Of the 263 frontline nurses, 66 (25.1%) were identified as psychological distress. Various logistical analysis revealed that working in an emergency department, caring for family, being treated differently, negative coping styles, and stress symptoms related to COVID-19 were positively related to psychological distress. More social support and effective preventive measures are negatively associated with psychological distress.
The psychological impact of COVID-19 pandemic on health care workers in a MERS-CoV endemic country	Temsah et al. (2020)	Cross-sectional	582 health workers	Although no cases of COVID-19 had yet been reported in Saudi Arabia at the time of data collection, the level of anxiety from COVID-19 was significantly higher than the level of anxiety from MERS-CoV. 41.1% were more worried about COVID-19, 41.4% were equally worried about MERS-CoV and COVID-19, and 17.5% more stressed by previous hospital outbreaks of MERS-CoV. The most common concern is passing the infection to family and friends rather than to themselves.

Of the 11 studies included in this review, all assessed the psychological impact of COVID-19 on health care workers. The methodological characteristics of this study are summarized in Table 1. Of the 11 studies, there were ten studies using a cross-sectional design, one study using a retrospective cohort design. The study population was health personnel such as doctors, nurses, anesthetists and laboratory personnel. Study articles related to the psychological impact of COVID-19 on health workers are summarized in Table 1.

All the studies included in this review assessed the psychological impact on healthcare workers due to the anxiety and stress experienced while providing care and medication to patients visiting the hospital. One of them is that health workers who work in hospitals feel worried, anxious and afraid of patients who do not undergo tests while visiting the hospital, are worried about personal and family health and are afraid of close contact with people at high risk of being infected with COVID-19.

### Perceived threats

The publications included in this review mostly focus on the threats that are felt during the outbreak including research (Si et al., 2020; Jain et al., 2020; Talat et al., 2020; Li et al., 2020). The threats felt by health workers during the COVID-19 outbreak can be seen in the following explanation of the research. Because of COVID-19, there are eight items of the threat felt by health workers that were developed based on previous studies, namely fear of being infected with COVID-19, eager to be transferred to a ward for patients with COVID-19, worrying about being quarantined or isolated, work puts me at high risk of being infected with COVID-19, my close contacts are at high risk of infection, friends and relatives are worried about catching it by me, I am being alienated by other people because of my job, I am stigmatized by others because of my job. In this study, it was found that nurses were more likely to experience symptoms of anxiety than other health professionals. This means that nurses always contact patients with different diseases, diverse socioeconomic status, and access patient blood samples directly, so they have the highest risk of contracting the COVID-19 virus (Si et al., 2020).

Another study describes the threats that health workers feel while working in hospitals. Health workers experience many psychological implications of the COVID-19 pandemic related to disease behavior uncertainty, associated comorbidities and risk factors for health workers, as well as the existence of local policies related to health care. In the COVID-19 pandemic, thousands of new cases are being diagnosed and hundreds of people are critically ill with considerable morbidity and mortality. Health workers are not only concerned about handling known cases of COVID-19, but many patients are silent and do not undergo tests, which can pose a great risk of transmitting the infection to health workers. In fact, health workers show concerns about personal and family health, for example doctors pay more attention to family health, while other health workers pay significantly more attention to personal health (Talat et al., 2020).

Fear of self-infection, risk of family exposure, cut wages, loneliness, food and accommodation problems, increased working hours and unavailability of personal protective equipment (PPE) are common factors for anxiety. Then the factors related to anxiety and insomnia include age less than 35 years, female gender, fear of contracting themselves or

their family, fear of being cut wages, fear of facing loneliness during isolation, or problems with food and accommodation, increased working hours and fear related to the transmission of the COVID-19 infection. In addition, married anesthetists have higher anxiety, whereas insomnia is higher in unmarried anesthesiologists (Jain et al., 2020).

Jobs that have a high risk of exposure can cause psychological stress. Operating room medical staff who have been exposed to COVID-19 are prone to experiencing psychological disturbances. The high incidence of anxiety and depression in the operating room medical staff may be related to factors such as occupational exposure to the new coronavirus, shortages of medical protective equipment, and enforcement of lockdowns. Due to the high risk of COVID-19 exposure and workplace lockdown, operating room medical staff exhibited high levels of depression and anxiety in these specific situations. Protecting operating room medical staff is an essential component of public health measures to tackle the COVID-19 epidemic. Operating room medical personnel are in dire need of health protection, including adequate medical protective equipment, as well as special recovery programs aimed at improving psychological well-being (Li et al., 2020).

### Perceived stress

The studies included in this review mostly focused on perceived stress during an outbreak include research (Shahrour & Dardas, 2020; Babore et al., 2020; Martínez-López et al., 2020; Temsah et al., 2020). Age factors, acute stress disorder, and self-efficacy are significant predictors of psychological distress. Most nurses are experiencing acute stress disorder due to the COVID-19 pandemic, and therefore are at risk of predisposing to post-traumatic stress disorder and psychological distress. Younger nurses are more prone to psychological distress than older nurses. Meanwhile higher scores in acute stress disorder result in more psychological distress, and coping self-efficacy is a protective factor (Shahrour & Dardas, 2020).

Pandemic and epidemic infectious diseases such as COVID-19 or MERS-CoV create significant levels of anxiety and stress in healthcare workers caring for infected patients, with their main concern being the risk of passing the infection to their families or fear of catching themselves. Therefore, it is necessary to optimize the compliance of healthcare workers with appropriate infection prevention and control measures during an outbreak of an infectious disease, to ensure their safety such as reducing the likelihood of becoming infected or transmitting the infection to others, reducing psychological distress and anxiety (Temsah et al., 2020).

Doctors and nurses are at risk of emotional exhaustion. Doctors and nurses are in frequent contact with patients and they spend more time than other health professionals. Therefore, these two professions are vulnerable because at the same time they have the responsibility to restore the health of patients who may be at risk of infecting themselves due to lack of availability of personal protective equipment in the first few weeks (Martínez-López et al., 2020). Overall, a positive attitude toward stressful situations is a good recovery strategy, while groups of women, those who lack social support, and treatment for patients with COVID-19 are part of the risk factors for psychological impact (Babore et al., 2020).

## Psychological intervention

The studies included in this review mostly focused on psychological interventions during outbreaks include research (Que et al., 2020; Wang et al., 2020; Nie et al., 2020). Self-reported psychological problems were prevalent among healthcare workers during the COVID-19 pandemic. Various health workers indicated an overall different prevalence of depression, insomnia, and psychological problems. Psychological problems are spreading among health workers during the COVID-19 pandemic. Accepting negative information and engaging in front line work are serious risk factors for psychological problems. The psychological health of diverse health workers must be protected during the COVID-19 pandemic with timely intervention and appropriate information feedback (Que et al., 2020).

The COVID-19 has a significant psychological impact on frontline nurses. Early detection of psychological distress and supportive interventions should be conducted according to the factors involved to prevent a more serious psychological impact on frontline nurses. Frontline nurses are usually a major force in the battle against public health emergencies, and their psychological health is critical to cope with epidemics. Moreover, the COVID-19 outbreak has spread to every country in the world. All hospital staff around the world are battling the epidemic. Therefore, the relatively high prevalence of psychological distress among frontline nurses during the COVID-19 outbreak should be of concern to nursing managers (Nie et al., 2020).

Working on the front lines, receiving inadequate training for self-protection, and lack of confidence in protective measures, having secondary education, and worrying about infection are significantly associated with acute psychological effects of healthcare workers and an increased risk of depression and anxiety. Some health workers are suffering from acute psychological effects caused by the COVID-19 outbreak. Psychological interventions should be implemented among healthcare workers during the COVID-19 outbreak to reduce acute psychological effects and prevent long-term psychological comorbidities (Wang et al., 2020).

## DISCUSSION

The findings in this study highlight the psychological impact of COVID-19 on healthcare workers working in hospitals. From several studies, this systematic review shows that health workers who work in hospitals face various perceived threats such as fear of being infected with the coronavirus and passing it on to family and friends. Health workers such as doctors, nurses, laboratory personnel, anesthetists and other health workers have a higher risk of being infected with COVID-19 because they have frequent contact and physical contact with sick patients while providing medication and care. Health workers are always faced with jobs full of pressure and high fear of being infected with COVID-19 because it requires them to serve sick patients so that health workers have a higher risk of contracting COVID-19 infection compared to the community. Even though these health workers use personal protective equipment such as masks, gloves, hand sanitizer and frequently wash their hands with soap before and after providing treatment and care to patients in the hospital, there are still health workers who are infected with COVID-19 so that it can cause morbidity and mortality rates are high

among them. As a result, health workers feel afraid, anxious, and worried about being infected with COVID-19, so that it can affect their psychological state to be disturbed. Seeing coworkers who fall ill and are infected with COVID-19 while serving sick patients can affect their psychological state to be disturbed, such as fear, anxiety and worry about the transmission of COVID-19 infection.

Some domains that are risk factors for psychological impact on health workers include acute stress, and the presence of depression and anxiety symptoms in nurses and doctors. Three out of every four health workers are deeply distressed by fears about passing COVID-19 to family or friends, and most are deeply stressed to maintain “social distancing” from their families. In a clinical setting, perceptions of a lack of control/uncertainty, caring for other healthcare workers for COVID-19, and uncertainty about COVID-19 status, coworkers are the most important source of severe psychological distress (Shechter et al., 2020). Therefore, the consequences of feeling fear of being infected with COVID-19 on oneself, coworkers and family when caring for sick patients in the hospital, many health workers such as doctors, nurses, anesthetists and laboratory personnel who experience high anxiety and depression so that it affects their psychological well-being and decreased immunity of health workers.

During an outbreak, individuals are in a state of severe stress so that they are at higher risk of experiencing anxiety and depression, which impacts psychological well-being, especially for students and healthcare professionals (Naser et al., 2020). Unclear dynamics of COVID-19 transmission coupled with high morbidity and mortality can lead to perceptions harm to individuals and triggers depression and anxiety (Wang et al., 2020). Healthcare workers are at a higher risk of contracting COVID-19 infection compared to the general population because of the stressful nature of work and necessity that they must serve sick patients. Health workers who work on the front lines represent a risk factor for making mental health disorders worse in all dimensions of life. In this study, concerns were found about the psychological well-being of doctors and nurses involved in the COVID-19 outbreak. Healthcare workers reported experiencing anxiety, depression and insomnia, respectively (Lai et al., 2020).

Healthcare workers can be exposed to infections and face death and moral dilemmas in deciding who is prioritized for intensive care. The workload was excessive during the COVID-19 pandemic. All experiences can be traumatic and increase the risk of mental health conditions in high-risk groups, for example, health workers are at a higher risk of death than the general population (Dutheil et al., 2019).

Some of the symptoms of psychological disorders experienced by healthcare workers in the hospital include symptoms of anxiety, depression symptoms, obsessive-compulsive symptoms, and somatization symptoms. The severity of psychological distress on hospital staff and identifying factors associated with psychological distress can be used to provide valuable information for psychological interventions to improve the mental health of vulnerable groups during the COVID-19 pandemic (Juan et al., 2020). Nurses are more likely to experience anxiety than other health professionals. This can easily be interpreted that nurses always contact patients with different diseases, varying socioeconomic status, and access patient blood samples directly, so that they have the highest risk of contracting COVID-19 (Si et al., 2020). Levels of psychological distress due to anxiety and depression were higher in the

first week after trauma and decreased thereafter. Therefore, early psychological intervention is needed for nurses with screening and follow-up referrals for these services (Munter et al., 2020).

Thus positive motivational factors such as supportive and proud family and colleagues, positive role models, validation and appreciation by friends / patients, positive care experiences , a sense of validation of existence, knowledge and acceptance of the inevitable possibility of infection can assist in the enhancement of the morale of the healthcare profession (Mohindra et al., 2020).

## CONCLUSIONS AND RECOMMENDATIONS

Health workers such as doctors, nurses, anesthetists, laboratory workers and other health workers who work in hospitals have a great chance of being infected with COVID-19 when providing care and medication to every sick patient. This is caused by health workers who are always in physical contact with sick patients, so it is easy to be directly infected with the corona virus if they do not strictly implemented the use of personal protective equipment. Health workers are always faced with jobs full of pressure, worry, anxiety and high fear of being infected with COVID-19. Health workers caring for patients also experience insomnia during the COVID-19 pandemic, fear of contracting COVID-19 infection to themselves and their families so that it disrupts the psychological well-being of health workers. To prevent the transmission of the corona virus between health workers and patients, each hospital must implement and organize adequate training related to the use of personal protective equipment and provide mental health support services for health workers. Health workers are in dire need of health protection and special recovery programs that improve psychological well-being during the COVID-19 pandemic.

## Declaration of Conflicting Interests

The authors declared that no potential conflicts of interests with respect to the authorship and publication of this article.

## REFERENCES

- Babore, A., Lombardi, L., Viceconti, M. L., Pignataro, S., Marino, V., Crudele, M., Candelori, C., Bramanti, S. M., & Trumello, C. (2020). Psychological effects of the COVID-2019 pandemic: Perceived stress and coping strategies among healthcare professionals. *Psychiatry Research*, 293(May), <https://doi.org/10.1016/j.psychres.2020.113366>
- Birkhead, G. S., & Vermeulen, K. (2018). Sustainability of psychological first aid training for the disaster response workforce. *American Journal of Public Health*, 108(Cdc), S381–S382. <https://doi.org/10.2105/AJPH.2018.304643>
- Cabarkapa, S., Nadjidai, S. E., Murgier, J., & Ng, C. H. (2020). The psychological impact of COVID-19 and other viral epidemics on frontline healthcare workers and ways to address it: A rapid systematic review. *Brain, Behavior, & Immunity - Health*, 8(June), 100144. <https://doi.org/10.1016/j.bbih.2020.100144>
- Chen, Q., Liang, M., Li, Y., Guo, J., Fei, D., Wang, L., He, L., Sheng, C., Cai, Y., Li, X., Wang, J., & Zhang, Z. (2020). Mental health care for medical staff in China during the COVID-19 outbreak. *The Lancet Psychiatry*, 7(4), e15–e16. [https://doi.org/10.1016/S2215-0366\(20\)30078-X](https://doi.org/10.1016/S2215-0366(20)30078-X)
- de Munter, L., Polinder, S., Haagsma, J. A., Kruijthof, N., van de Ree, C. L. P., Steyerberg, E. W., & de Jongh, M. (2020). Prevalence and Prognostic Factors for Psychological Distress After Trauma. *Archives of Physical Medicine and Rehabilitation*, 101(5), 877–884. <https://doi.org/10.1016/j.apmr.2019.10.196>
- Dutheil, F., Aubert, C., Pereira, B., Dambrun, M., Moustafa, F., Mermillod, M., Baker, J. S., Trousselard, M., Lesage, F.-X., & Navel, V. (2019). Suicide among physicians and health-care workers: A systematic review and meta-analysis. *PLoS One*, 14(12), e0226361. <https://doi.org/10.1371/journal.pone.0226361>
- Fava, G. A., McEwen, B. S., Guidi, J., Gostoli, S., Offidani, E., & Sonino, N. (2019). Clinical characterization of allostatic overload. *Psychoneuroendocrinology*, 108(May), 94–101. <https://doi.org/10.1016/j.psyneuen.2019.05.028>
- Han, L., Wong, F. K. Y., She, D. L. M., Li, S. Y., Yang, Y. F., Jiang, M. Y., Ruan, Y., Su, Q., Ma, Y., & Chung, L. Y. F. (2020). Anxiety and Depression of Nurses in a North West Province in China During the Period of Novel Coronavirus Pneumonia Outbreak. *Journal of Nursing Scholarship*, 52(5), 564–573. <https://doi.org/10.1111/jnu.12590>
- Jain, A., Singariya, G., Kamal, M., Kumar, M., Jain, A., & Solanki, R. K. (2020). COVID-19 pandemic: Psychological impact on anaesthesiologists. *Indian Journal of Anaesthesia*, 64(9), 774–783. [https://doi.org/10.4103/ijja.ijja\\_697\\_20](https://doi.org/10.4103/ijja.ijja_697_20)
- Juan, Y., Yuanyuan, C., Qixiang, Y., Cong, L., Xiaofeng, L., Yundong, Z., Jing, C., Peifeng, Q., Yan, L., Xiaojiao, X., & Yujie, L. (2020). Psychological distress surveillance and related impact analysis of hospital staff during the COVID-19 epidemic in Chongqing, China. *Comprehensive Psychiatry*, 103, 152198. <https://doi.org/10.1016/j.comppsy.2020.152198>
- Kementerian Kesehatan. (2021). *Kasus Global COVID-19*. COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University. <https://satudata.kemkes.go.id/infocovid19>
- Khanal, P., Devkota, N., Dahal, M., Paudel, K., & Joshi, D. (2020). Mental health impacts among health workers during COVID-19 in a low resource setting: A cross-sectional survey from Nepal. *Globalization and Health*, 16(1), 1–12. <https://doi.org/10.1186/s12992-020-00621-z>
- Lai, J., Ma, S., Wang, Y., Cai, Z., Hu, J., Wei, N., Wu, J., Du, H., Chen, T., Li, R., Tan, H., Kang, L., Yao, L., Huang, M., Wang, H., Wang, G., Liu, Z., & Hu, S. (2020). Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. *JAMA Network Open*, 3(3), e203976. <https://doi.org/10.1001/jamanetworkopen.2020.3976>
- Li, X. Y., Wang, J., Zhang, R. X., Chen, L., He, C. K., Wang, C. Y., Ke, J. J., Wang, Y. L., Zhang, Z. Z., & Song, X. M. (2020). Psychological Status Among Anesthesiologists and Operating Room Nurses During the Outbreak Period of COVID-19 in Wuhan, China. *Frontiers in Psychiatry*, 11(December), 1–8. <https://doi.org/10.3389/fpsy.2020.574143>
- Martínez-López, J. Á., Lázaro-Pérez, C., Gómez-Galán, J., & Fernández-Martínez, M. del M. (2020). Psychological Impact of COVID-19 Emergency on Health Professionals: Burnout Incidence at the Most Critical Period in Spain. *Journal of*

- Clinical Medicine*, 9(9), 3029. <https://doi.org/10.3390/jcm9093029>
- Mohindra, R., R. R., Suri, V., Bhalla, A., & Singh, S. M. (2020). Issues relevant to mental health promotion in frontline health care providers managing quarantined/isolated COVID-19 patients. In *Asian journal of psychiatry* (Vol. 51, p. 102084). <https://doi.org/10.1016/j.ajp.2020.102084>
- Naser, A. Y., Dahmash, E. Z., Al-Rousan, R., Alwafi, H., Alrawashdeh, H. M., Ghoul, I., Abidine, A., Bokhary, M. A., AL-Hadithi, H. T., Ali, D., Abuthawabeh, R., Abdelwahab, G. M., Alhartani, Y. J., Al Muhaisen, H., Dagash, A., & Alyami, H. S. (2020). Mental health status of the general population, healthcare professionals, and university students during 2019 coronavirus disease outbreak in Jordan: A cross-sectional study. *Brain and Behavior*, 10(8), 1–13. <https://doi.org/10.1002/brb3.1730>
- Nie, A., Su, X., Zhang, S., Guan, W., & Li, J. (2020). Psychological impact of COVID-19 outbreak on frontline nurses: A cross-sectional survey study. *Journal of Clinical Nursing*, 29(21–22), 4217–4226. <https://doi.org/https://doi.org/10.1111/jocn.15454>
- Que, J., Shi, L., Deng, J., Liu, J., Zhang, L., Wu, S., Gong, Y., Huang, W., Yuan, K., Yan, W., Sun, Y., Ran, M., Bao, Y., & Lu, L. (2020). Psychological impact of the covid-19 pandemic on healthcare workers: A cross-sectional study in China. *General Psychiatry*, 33(3), 1–12. <https://doi.org/10.1136/gpsych-2020-100259>
- Shahrour, G., & Dardas, L. A. (2020). Acute stress disorder, coping self-efficacy and subsequent psychological distress among nurses amid COVID-19. *Journal of Nursing Management*, 28(7), 1686–1695. <https://doi.org/10.1111/jonm.13124>
- Shechter, A., Diaz, F., Moise, N., Anstey, D. E., Ye, S., Agarwal, S., Birk, J. L., Brodie, D., Cannone, D. E., Chang, B., Claassen, J., Cornelius, T., Derby, L., Dong, M., Givens, R. C., Hochman, B., Homma, S., Kronish, I. M., Lee, S. A. J., ... Abdalla, M. (2020). Psychological distress, coping behaviors, and preferences for support among New York healthcare workers during the COVID-19 pandemic. *General Hospital Psychiatry*, 66, 1–8. <https://doi.org/10.1016/j.genhosppsych.2020.06.007>
- Si, M., Su, X., Jiang, Y., Wang, W., Gu, X., Ma, L., Li, J., Zhang, S., Ren, Z.-F., Liu, Y.-L., & Qiao, Y.-L. (2020). The Psychological Impact of COVID-19 on Medical Care Workers in China. *SSRN Electronic Journal*, 1–13. <https://doi.org/10.2139/ssrn.3592642>
- Talat, N., Azam, M. K., Mirza, M. B., Singh, N., Aziz, U., Tahir, W., Nawaz, K., Rehan, M., Ameer, A., Saleem, M., & Sadiq, M. (2020). Psychosocial Effects of COVID-19 on Health Care Workers: A Cross Sectional Study from Tertiary Level Pediatric Hospital. *Annals of King Edward Medical University Lahore Pakistan*, 26(SI), 170–175.
- Temsah, M.-H., Al-Sohime, F., Alamro, N., Al-Eyadhy, A., Al-Hasan, K., Jamal, A., Al-Maglouth, I., Aljamaan, F., Al Amri, M., Barry, M., Al-Subaie, S., & Somily, A. M. (2020). The psychological impact of COVID-19 pandemic on health care workers in a MERS-CoV endemic country. *Journal of Infection and Public Health*, 13(6), 877–882. <https://doi.org/10.1016/j.jiph.2020.05.021>
- Wang, D., Hu, B., Hu, C., Zhu, F., Liu, X., Zhang, J., Wang, B., Xiang, H., Cheng, Z., Xiong, Y., Zhao, Y., Li, Y., Wang, X., & Peng, Z. (2020). Clinical Characteristics of 138 Hospitalized Patients with 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China. *JAMA - Journal of the American Medical Association*, 323(11), 1061–1069. <https://doi.org/10.1001/jama.2020.1585>
- Wang, W., Tang, J., & Wei, F. (2020). Updated understanding of the outbreak of 2019 novel coronavirus (2019-nCoV) in Wuhan, China. *Journal of Medical Virology*, 92(4), 441–447. <https://doi.org/https://doi.org/10.1002/jmv.25689>
- Wang, Y., Ma, S., Yang, C., Cai, Z., Hu, S., Zhang, B., Tang, S., Bai, H., Guo, X., Wu, J., Du, H., Kang, L., Tan, H., Li, R., Yao, L., Wang, G., & Liu, Z. (2020). Acute psychological effects of Coronavirus Disease 2019 outbreak among healthcare workers in China: a cross-sectional study. *Translational Psychiatry*, 10(1). <https://doi.org/10.1038/s41398-020-01031-w>
- Workforce and Leadership Development Advisory Committee. N. A. of C. and C. H. O. (NACCHO). (2003). Workforce Development at the Local Level: The NACCHO Perspective. *Journal of Public Health Management and Practice*, 9(6). [https://journals.lww.com/jphmp/Fulltext/2003/11000/Workforce\\_Development\\_at\\_the\\_Local\\_Level\\_The.2.aspx](https://journals.lww.com/jphmp/Fulltext/2003/11000/Workforce_Development_at_the_Local_Level_The.2.aspx)
- World Health Organization. (2014). Psychological first aid during Ebola virus disease outbreaks. In *WHO Library Cataloguing-in-Publication Data Psychological*.
- Zhang, W. R., Wang, K., Yin, L., Zhao, W. F., Xue, Q., Peng, M., Min, B. Q., Tian, Q., Leng, H. X., Du, J. L., Chang, H., Yang, Y., Li, W., Shangguan, F. F., Yan, T. Y., Dong, H. Q., Han, Y., Wang, Y. P., Cosci, F., & Wang, H. X. (2020). Mental Health and Psychosocial Problems of Medical Health Workers during the COVID-19 Epidemic in China. *Psychotherapy and Psychosomatics*, 89(4), 242–250. <https://doi.org/10.1159/000507639>