



Literature Review

MENTAL HEALTH AND QUALITY OF LIFE FOR HEALTH WORKERS DURING THE COVID-19 PANDEMIC: A SYSTEMATIC REVIEW

 Siti Kotijah, Lutfi Wahyuni

STIKes Bina Sehat PPNI Mojokerto, East Java, Indonesia

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CORRESPONDING AUTHOR

Siti Kotijah
khodijah@stikes-ppni.ac.id
STIKes Bina Sehat PPNI
Mojokerto, East Java, Indonesia

ABSTRACT

Background: COVID-19, a strain of the coronavirus that causes acute respiratory syndrome, first appeared in the Chinese city of Wuhan and quickly spread throughout the world in early 2020. The COVID-19 pandemic has changed health care systems around the world and affected the mental health of healthcare workers and their quality of life. **Aim:** to review the existing scientific evidence regarding mental health and quality of life of health workers during the COVID-19 pandemic.

Methods: This study was taken from the pubmed, ScienceDirect, and Ebsco databases identified between December 2019 to July 2021 and was limited to peer-reviewed research written in English, quantitative research on mental health and quality of life with a cross sectional approach. Articles that fit the criteria are then analyzed using the critical appraisal tool that is appropriate for results of the research.

Results: The results showed an increase in mental disorders, including stress, anxiety, depression, and PTSD in health workers. This is caused by several factors, namely 1) stressors that contribute to the work environment 2) work pressure components, 3) epidemic components, 4) family-related components. This condition can affect the quality of life of health workers. **Conclusion:** Research evaluating the direct and indirect association of mental disorders on the mental health of healthcare professionals is urgently needed to improve treatment, mental health care planning and for preventive measures during a potential next pandemic.

Keyword: Mental Health; Quality Life; Health Worker; Covid 19

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1. INTRODUCTION

COVID-19, which is a typical strain of the coronavirus that causes acute respiratory syndrome, first appeared in the Chinese city of Wuhan and quickly spread to the rest of the world in early 2020 (Shuja, Aqeel, Jaffar, & Ahmed, 2020). The case fatality rate is 2.3% higher than the flu, which is more contagious than Severe Acute Respiratory Syndrome (SARS) (Yang et al., 2020). On March 11, 2020, the World Health Organization (WHO) announced that COVID-19 is a 'public health emergency of international concern' (Habas et al., 2020). The last time the world faced a similar global pandemic was the influenza (H1N1) outbreak, in 1918-1919 that estimated a death ratio of between 50 and 100 million with few

reported cases of mental health problems in the country since (Shuja et al., 2020).

Globally, the development of COVID-19 cases as of July 4, 2021 shows that the cumulative number of cases reported globally now exceeds 183 million and the death toll is nearly 4 million. The highest number of new cases was reported from Brazil (364,709 new cases; 30% decrease), India (312,250 new cases; 11%), Colombia (204,556 new cases; similar last week), Indonesia (168780). new cases; a 35 per cent increase, and the UK (161,805 new cases; a 67 per cent increase). Globally, cases of Alpha variants have been reported in 173 countries, regions or regions (hereinafter countries; one new country in the past week), Beta in 122 countries (three new countries), Gamma in 74 countries (two new countries) and Delta

in 104 countries (7 new countries) (WHO, 2021). As of 7 July 2021, the Government of Indonesia reported 2,379,397 (34,379 new) confirmed cases of COVID-19, 62,908 (1040 new) deaths, and 1,973,388 recovered cases from 510 districts in 34 provinces. The surge in COVID-19 cases continues in Indonesia with the highest daily increase in new confirmed cases and new deaths reported in the country on July 7. Emergency restrictions on community activities have been implemented in parts of Java and Bali; however, all regions of the country must ensure the timely implementation and monitoring of public health and social measures (PHSM) including restrictions on movement (Kemenkes RI, 2021).

The COVID-19 pandemic has transformed healthcare systems around the world. During this pandemic, many people are likely to feel scared, worried, anxious, and depressed due to changing warnings about the spread of the virus (Asnakew, Amha, & Kassew, 2021). Health care workers are involved in the direct care of patients, who are more susceptible to infection than the general population. Additionally, healthcare professionals who are in close contact with COVID-19 patients are vulnerable to adverse mental health outcomes. Research conducted in past epidemics has found that increased workload, fear of infection, depression, physical exhaustion and inadequate personal equipment have had a major impact on the mental health of healthcare workers (Lasalvia et al., 2021).

The psychological effects experienced by health workers directly affects their quality of life. So, they are easy to have dissatisfaction, burnout syndrome, and secondary trauma in the face of COVID-19 emergencies (Buselli et al., 2020). Research conducted by (Çelmeçe & Menekay, 2020) showed that high, medium, and positive correlations were found between stress, anxiety, and burnout levels of healthcare professionals and their quality of life. High, medium, and positive correlations were found between stress and anxiety and fatigue in the face of the COVID-19 pandemic. This is also supported by research conducted by (Huang et al., 2020) which states that the higher the risk of infection transmission suffered by medical workers, the effect on their mental health and quality of life.

The current study will focus on the available scientific evidence on regarding the mental health and quality of life of healthcare workers during the COVID-19 pandemic and systematically review the findings of studies testing its effectiveness. This systematic review aims to determine the description of psychological disorders, and a description of the quality of life experienced by medical workers during the COVID-19 pandemic and to determine the relationship between psychological disorders and the quality of life of medical workers during the Covid-19 pandemic.

2. METHODS

1. Design

The design carried out in this paper is a systematic review. Mental Health And Quality Of Life For Health Workers During The Covid-19 will be reviewed, including how to take samples and measured variables. Database search and article screening are conducted independently by reviewers by following the requirements in meeting the inclusion criteria.

2. Criteria for inclusion and exclusion of research

a. Inclusion criteria of research

This type of research is the result of the publication of all types of quantitative research on mental health and quality of life for health workers during the covid-19. The research in this systematic review study was centered in accordance with the results of the study with the criteria of working as a health service provider and aged 18–89 years. The results of the research studied were to measure the characteristics of mental health disorders that include stress, anxiety, depression, Post traumatic stress disorder (PTSD), sleep disturbances, and quality of life of health workers. We used the PubMed, ScienceDirect, and Ebsco databases identified between December 2019 to July 2021 and was limited to peer-reviewed research written in English, quantitative research on mental health and quality of life with a cross sectional approach. Additional studies were identified by searching the retrieved articles and reference lists of previous systematic reviews.

b. Exclusion criteria:

Characteristics of research that is not included in this study is research performed on individuals with substance abuse, using psychopharmaceuticals and research testing the intervention model that is being developed.

3. Literature Search Strategy

This systematic review was conducted by searching publication articles in the database: Pubmed, ScienceDirect, and Ebsco with the keywords Mental Health OR Psychology AND Quality Life AND Mental worker OR Care Worker OR health professional workers AND covid 19 OR sars cov 2019 OR Severe acute respiratory syndrome coronavirus 2019 OR coronavirus AND Cross sectional study. Literature search strategy using the PICO method and making research questions.

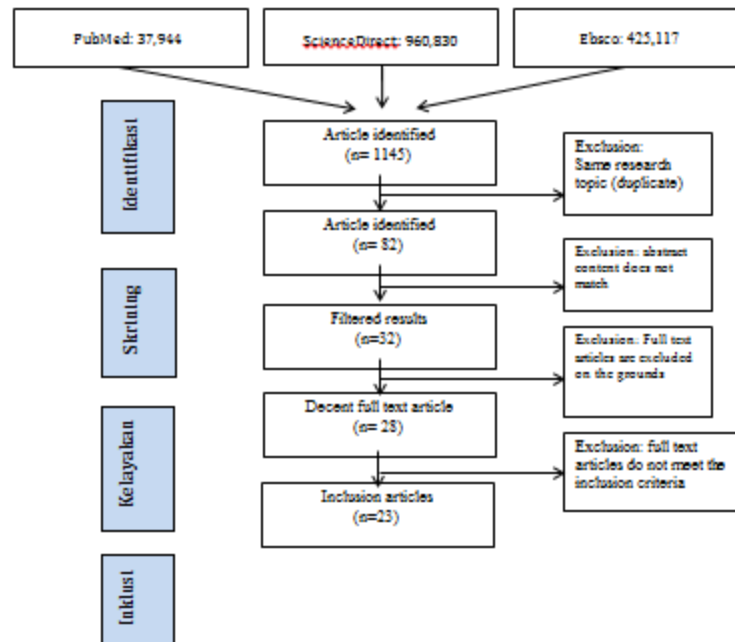


Figure 1. Flow Chart of the Review Process

Table 1. Table Mental Health And Quality Of Life For Health Workers During The Covid-19 Pandemic

PICO	DETAIL
P	Health workers
I	-
C	-
O	Mental health and quality of life

4. Study Quality

Articles that fit the criteria are then analyzed using the critical appraisal tool that is appropriate for the results of the research. The research was conducted by one person, the reviewer using a critical appraisal skills program (CSAP). The analyzed data is then extracted and synthesized according to the purpose.

5. Extract data research

All data derived from the literature must meet the research inclusion criteria. Furthermore, the review process is done one by one in a way arranged in a table adjusted to the provisions to facilitate the review process. The research table consists of the author's name and research topic, the year of study, Purpose, research variable, design, participant, instruments studi and finding. The extraction process is carried out by one person, the reviewer.

6. Data synthesis

Systematic Review is based on themcharacteristics of the study with inclusion criteria, namely 1) studies is working as a health service provider during the covid-19 aged 18–89 years old. 2) The results of the research studied were to measure the characteristics of mental health disorders that include stress, anxiety, depression, Post traumatic stress disorder

(PTSD), sleep disturbances, and quality of life of health workers 3) Sources of information were obtained from databases namely Pubmed, Science Direct and Ebsco. Search strategy methods for obtaining journals using Mental Health OR Psychology AND Quality Life AND Mental worker OR Care Worker OR health professional workers AND covid 19 OR sars cov 2019 OR Severe acute respiratory syndrome coronavirus 2019 OR coronavirus AND Cross sectional study. The process of collecting data using data extraction methods with the PICO (Population, Intervention, Compare, Outcome) approach. Articles are extracted from data in the form of citation are consisting of author's name and research topic, the year of study, Purpose, research variable, design, participant, instruments studi and final results. The method used to criticize journal articles is used using the Critical Appraisal Skills Program (CASP) instrument, this instrument identifies the literature through Screening questions. The method is to mitigate bias in this systematic review study. The results of the synthesis presented in this systematic review study consisted of the process of research identification, the screening process (filtration) of research results, the discovery of data in accordance with the research topic and the collection of data in accordance with the specified research inclusion criteria. Presentation of data is accompanied by the following flow diagram.

The results of identification from the search method in Pubmed, the articles obtained were 37944 articles while the search with ScienceDirect obtained 960830 articles and searches with Ebsco as many as 425117 articles. Selection of journals or articles for

the last 5 years and using English was found as many as 82 articles. Articles identified that have the same research topic (duplicate) were excluded from the study. So, that the remaining 32 articles with different topics. The articles were screened to see the suitability of the abstract content with the research topic, and found 28 articles. Based on the screening results, several full-text articles were excluded for reasons. So far, 23 decent full-text articles have been obtained. Of the total number of articles found, 10 articles reviewing the mental health and quality of life of health workers during the COVID-19 pandemic, 10 articles only reviewing the mental condition of health workers during the COVID-19 pandemic, and 3 articles reviewing the quality of life of health workers during the COVID-19 pandemic.

After the screening stage, the Eligibility stage is carried out, namely the suitability of the search data with the inclusion criteria set by the researchers including working as a health service provider during the covid-19 aged 18–89 years old. The results of the research studied were to measure the characteristics of mental health disorders that include stress, anxiety, depression, Post traumatic stress disorder (PTSD), sleep disturbances, and quality of life of health workers databases identified between December 2019 to July 2021 and was limited to peer-reviewed research written in English, quantitative research on mental health and quality of life with a cross sectional approach. The results of screening to eligibility obtained literature data including 23 literature. The study results obtained a lot of results and carried out screening until eligibility to get documents that match the study criteria. Based on the results of the synthesis obtained 23 documents that fit the study criteria and then in-depth analysis (critical thinking) to get the best evidence of mental health and quality of life for health workers during the covid-19 pandemic. The quality of the articles reviewed has a minimum level of evidence based practice (EBP) III namely the evidence comes from the results of non-experimental descriptive research such as comparative studies, correlation studies and case studies.

3. RESULTS

Mental health disorders of health care workers during the covid-19 pandemic

Based on the review process that has been carried out, the mental health conditions of health workers during the COVID-19 pandemic are: anxiety, depression and stress experienced by health workers (Adhikari et al., 2021; Asnakew et al., 2021; Kim, Quiban, Sloan, & Montejano, 2021; Lasalvia et al., 2021; Xing et al., 2020);(Magnavita, Tripepi, & Di Prinzio, 2020; Yalcin, Sayinbatur, Karay, & Karakas, 2020), symptoms of post-traumatic distress (Babicki, Szewczykowska, & Mastalerz-Migas, 2021; Lasalvia et al., 2021; Marcomini et al., 2021);(Di Tella, Romeo, Benfante, & Castelli, 2020). Changes in sleep quality that affect quality of life (Stojanov et al., 2021),

changes in health status that affect the quality of life (Huang et al., 2020; Todorovic et al., 2020).

Study conducted by (An et al., 2020); (Çelmeçe & Menekay, 2020) stated that of the 197 healthcare professionals (HCP) assessed, eighty-seven percent provided direct COVID-19 care with 43% treating >10 patients/day. Most reported symptoms of depression (92.47%), anxiety (98.50%), and low quality of life (89.45%). This condition is also supported by research conducted by (Sevda Korkmaza et al, 2020) revealed that among the 309 participants, there were 88 (28.5%) with anxiety and 172 (56.0%) with depression. Moderate to severe depression and anxiety were independently associated with an increased risk of low quality of life. According to (Young et al., 2021) showed that (76% women, 88% white), 31% supported mild anxiety, and 33% clinically significant anxiety; 29% reported mild depressive symptoms, and 17% moderate to severe depressive symptoms; 5% supported suicidal ideation; and 14% screened positive for post-traumatic stress disorder. This is also supported by research conducted by (Buselli et al., 2020) which stated that female gender showed higher secondary traumatization than male, while front-line staff and health assistants reported higher compassion satisfaction than second-line staff and doctors.

Research conducted by (Tran et al., 2020) shows that in addition to mental disorders such as anxiety and depression, health workers also experience post-traumatic stress disorder (PTSD) that is among the 455 volunteers (356 women) enrolled in the study, almost half (48.8%) had a dissociative reaction; 26.6% reported re-experiencing trauma symptoms; 22.6% showed avoidance symptoms; 42.4% experienced hyperarousal, and 31.9% experienced maladaptive behavior.

Besides that, when health workers experience mental disorders due to the covid 19 pandemic, they also tend to experience impaired emotional and cognitive function that affects the quality of life of health workers. This condition occurs in respondents aged 30-39 years and 40-49 years (Suryavanshi et al., 2020); (Than et al., 2020). This condition will improve if health workers get good social support (Vafaei et al., 2020). The stigma factor from the surrounding environment is associated with a poor quality of life and has an impact on the mental health of the workers (Adhikari et al., 2021); (An et al., 2020); (Huang et al., 2020); (Magnavita et al., 2020);(Stojanov et al., 2021);(Tran et al., 2020). The results of the literature review will then be displayed in detail in table 2.

Risk factors for mental health disorders (anxiety, depression, stress and PTSD)

The following factors have been reported to be associated with the risk of mental health disorders among health workers during covid-19 pandemic:

Socio-demographic factors

The following sociodemographic factors are associated with the risk of psychological disorders, stress and depression in health workers during the

COVID-19 pandemic: female gender (Asnakew et al., 2021; Buselli et al., 2020; Çelmeçe & Menekay, 2020; Di Tella et al., 2020; Lasalvia et al., 2021; Suryavanshi et al., 2020; Yalcin et al., 2020), PTSD: (Marcomini et al., 2021), Unmarried health workers (An et al., 2020; Di Tella et al., 2020). Low education level (Suryavanshi et al., 2020), have children (Çelmeçe & Menekay, 2020) tend to be more likely to experience psychological disorders in the form of anxiety, depression and PTSD.

Current or past medical history

Current medical illness (including psychiatric disorders) is associated with/increased risk of depression and/or anxiety. Health workers with a previous history of mental disorders (Babicki et al., 2021) (Lasalvia et al., 2021) (Yalcin et al., 2020) and have a family with a chronic disease (Asnakew et al., 2021).

Psychological and social factors

Poor health as a result of poor sleep quality (Magnavita et al., 2020), less family support, low income families (Marcomini et al., 2021), (Than et al., 2020) associated with/increased risk of depression and/or anxiety. Health workers with family status with poor social support are more prone to depression and anxiety (Asnakew et al., 2021; Çelmeçe & Menekay, 2020; Vafaei et al., 2020) and low family resilience (Kim et al., 2021).

Work-related factors

A total of six articles stated that health workers at the forefront of treating COVID-19 patients had a greater risk of psychological disorders in the form of stress, anxiety and depression (Buselli et al., 2020; Marcomini et al., 2021; Sevda Korkmaza et al., 2020; Than et al., 2020; Tran et al., 2020; Zhang et al., 2021). Providing direct care to Covid-19 patients (An et al., 2020; Lasalvia et al., 2021; Marcomini et al., 2021; Suryavanshi et al., 2020; Than et al., 2020; Vafaei et al., 2020; Xing et al., 2020; Zhang et al., 2021) cause higher rates of depression and anxiety than health workers who provide direct care to non-covid-19 patients. Stigma faced by health workers (Adhikari et al., 2021). And less work experience (Adhikari et al., 2021).

The quality of life of health workers during the COVID-19 pandemic

Research conducted by (Stojanov et al., 2021); (Huang et al., 2020) stated that mental disorders (anxiety) and sleep disturbances experienced by health workers during the COVID-19 pandemic could have a negative impact on improving the problems of health workers and causing a decrease in their quality of life. The health workers, consisting of doctors, nurses, and assistant health staff, had statistically significant differences between groups for the variables of sleep quality and problem solving. It was determined that nurses had higher scores on sleep quality and problem solving compared to doctors and assistant health staff with scores ($p = 0.002$; $p = 0.04$). Nurse participants' QoL scores were also lower ($p = 0.04$). Health workers who directly provided health

care to family members had physical and mental differences in those who provided care for non-family members of care ($p = 0.001$ and $p = 0.002$). During the epidemic, 65% of workers stated that they had an increasing improvement in the health of themselves and those treated as a result of the COVID-19 epidemic, while 40% did not believe that they were more threatened than in the pre-epidemic period. They had an increasing improvement about their own health and the health of people being cared for. They believe that their health is more at risk during a pandemic (Todorovic et al., 2020).

4. DISCUSSION

The coronavirus pandemic, which has profoundly affected the world, has caused the deaths of thousands of people, and with the start of the pandemic, healthcare professionals have had to work at a very busy pace. In our article the effects of mental health which include stress, anxiety, depression and PTSD of healthcare professionals working during the COVID-19 pandemic and affecting their quality of life have been investigated.

A total of 23 research studies were involved in the literature review analysis. Ten articles were found investigating mental health and its relationship to the quality of life of healthcare workers during the COVID-19 pandemic. There were four articles investigated for having mental health disorders with high rates of anxiety disorders (98%), depression (92%) and PTSD (54%) (An et al., 2020). Based on the stressor assessment conducted, it was found that the prevalence of moderate to severe depression was relatively high in health workers due to discrimination from co-workers or family members by 47%. Based on the load factor, 1) the stressors that contribute to the work environment are lack of knowledge, lack of manpower and fear of infection. 2) the work pressure component, more pressure from seniors, pressure due to patient burden, concerns about mortality rates among patients and discrimination from coworkers or family members. 3) Epidemic components, including stressors related to isolation and physical distancing, as well as uncertainty in epidemic control. 4) family-related components, including fear of infecting family members and losing family members/relatives/friends (Duncan, Zimmer-Gembeck, & Furman, 2018). Mental disorders that appear in health workers in the form of anxiety, depression and PTSD during this pandemic is increasing because of the emergence of feelings of anxiety about health on himself and his family. They feel at risk of being exposed to Covid-19, this is a factor increased anxiety. Besides that, the existing stigma also increases the emergence of mental disorders. Therefore, health workers need to get great support from various parties, including the government in order to reduce mental disorders that occur.

Three studies reported symptoms in psychiatric patients who appeared to have worsened with a past history of psychological disorders. Health workers with symptoms of stress, anxiety, depression and PTSD experience increased psychological stress and poor sleep quality, which affects their quality of life. Various sociodemographic factors, current or past medical history, psychological and social factors and work-related factors also play a role in influencing the mental health and quality of life of health workers.

Female gender (social demographic factors) in health workers during the COVID-19 pandemic has the potential to experience psychological disorders. This is in line with the general consensus that women have a two to three times higher risk of experiencing post-traumatic stress symptoms compared to men (Kessler, Wai, Demler, & Walters, 2005; Tolin & Foa, 2006). Women with trauma exposure showed greater sensitivity and lower tolerance for negative emotions than men. Consistently, women appear to have a more sensitive hypothalamic-pituitary axis (Carmassi et al., 2020).

The level of education affects the individual in terms of knowledge. There is a strong positive correlation between the level of education and knowledge which supports that the level of education can be obtained from functional health literacy. It is the process by which individuals acquire numbers and current health-related literacy is acquired through formal education. Several studies in recent scientific investigations reveal the importance of education and training, association skills, and critical thinking (Gomes da Silva, Silva, Alexandre, & Morgado, 2021).

The anxiety level of health workers who have children was found to be higher. This finding is in line with research conducted by (Hacimusalar, Civan, Burak, & Sinan, 2020). During the pandemic schools have been evacuated and children have to stay at home. This situation has caused many problems for working parents such as care and education of their children. Parents who have to go to work are having a hard time finding someone to look after their children, some babysitters have quit their jobs and the difficulties of working parents are increasing. This condition is a stressful life event that causes an increase in the individual's level of anxiety.

Factors associated with depression, stress and anxiety. Respondents who have a history of medical illness have a higher chance of experiencing depression compared to those who do not have a medical illness which is supported by previous research (Savovic, 2020). Respondents with a history of mental illness were more likely to develop depression than those without a history of mental illness. This is because they are more prone to psychological damage and the stigma faced by workers can affect the concentration of their work, so that their psychological burden is higher (Khanal, Devkota, Dahal, Paudel, & Joshi, 2020).

Poor social support and family resilience as well as families with low incomes were significantly associated with depression, anxiety, and consistent stress (Yusuf & Fitryasari, 2019). Evidence from previous studies has found positive effects of social support on the mental health of health workers. In addition, it is known that adequate social support provided by a partner or friend is a protective factor for psychological well-being. Lack of help to compensate for physical disability, emotional support, and lack of family resilience can increase the risk of mental health problems (Id et al., 2020).

Health workers at the forefront and providing direct care for COVID-19 patients have a greater risk of psychological disorders in the form of stress, anxiety and depression because of direct exposure received and allegedly having a high potential for transmission. This is in line with research conducted by (Rossi et al., 2020). The stigma faced by the workers also becomes an additional burden and affects the concentration of their work. Lack of work experience is a factor for workers' concerns regarding how to properly carry out disinfection in accordance with the standards applied in the workplace.

During the pandemic, where health workers are at the forefront of treating COVID-19 patients. They are required by circumstances to work outside normal working hours. So that the time to gather with family or closest relatives is less affected by these conditions. It can be seen that each individual has an achievement that has been determined by the individual himself as a whole who has felt, in this case of course including health workers who have these achievements, which is called quality of life. Quality of life is an individual's perception of his position in life, in the context of the culture, value system in which they are located and their relationship to life goals, expectations, standards, and other related matters. Problems that cover quality of life are very broad and complex, including physical health problems, psychological health status, degrees of freedom, social relationships and the environment in which they are located. health workers have a lower quality of life. this is due to the anxiety and fear of family members being infected with covid 19. so they begin to limit themselves to meeting other people. The stigma factor from the surrounding environment is associated with a poor quality of life and has an impact on the mental health of the workers (Adhikari et al., 2021);

Untreated mental health conditions among health workers have an impact on levels of fatigue which ultimately affects the capacity of the health care system to provide safe and effective care. Health workers who proactively manage their mental health are better able to treat patients and maintain resilience in the face of stress during the COVID-19 pandemic. High, moderate, and positive correlations were found between stress, anxiety and burnout levels of healthcare professionals and their quality of life. In a study conducted with 376 health workers in

Italy, one of the countries most affected by the COVID-19 outbreak, the burnout rate of its employees was surprisingly high. This will affect the quality of life of health workers in treating COVID-19 patients (Barello, Palamenghi, & Gra, 2020).

5. CONCLUSION

Evidence of research results related to the direct effects of the COVID-19 pandemic and indications of an increase in the occurrence of mental disorders including stress, anxiety, depression and PTSD in health workers has been widely reviewed. Regarding the indirect effects of COVID-19 on mental health in general there appears to be evidence of an increase in symptoms of depression and anxiety along with a negative impact on mental health in general, particularly among healthcare professionals. Research evaluating the direct and indirect association of mental disorders on the mental health of health professionals is urgently needed to improve treatment, mental health care planning and for preventive measures during a potential next pandemic.

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TABLE 2. MENTAL HEALTH AND QUALITY OF LIFE FOR HEALTH WORKERS DURING THE COVID-19 PANDEMIC

NO	Research title & author	Purpose	Research variable	Design	Participant	Instruments Studi	Finding
1	Professional Quality of Life and Mental Health Outcomes among Health Care Workers Exposed to Sars-Cov-2 (Covid-19) (Buselli et al., 2020)	identify the contextual impact of work and individual factors and the quality of life of professional workers	1. Quality of Life: satisfaction, fatigue, and secondary trauma 2. Mental health: anxiety and depression	cross-sectional	265 health workers in Italy's central hospital	1. Quality Of Life Scale version 5 (ProQOL-5) 2. (GAD-7) 3. the Patient Health Questionnaire-9 (PHQ-9)	1. Women are more traumatized than men 2. front-line staff and health care assistants are more satisfied than second-line staff and doctors 3. occupational variables and individual factors associated with depression or anxiety
2	Health Care Workers' Mental Health and Quality of Life During COVID-19: Results From a Mid-Pandemic, National Survey (Young et al., 2021)	Assess the level of psychological distress of health workers during the COVID-19 pandemic and identify factors related to work and personal risks.	1. Quality of Life 2. Mental health	cross-sectional	1,685 health care providers aged 18-89 years old	1. Patient Health Questionnaire-9 (PHQ-9) 2. General Anxiety Disorder-7 (GAD-7) 3. Primary Care Post-traumatic Stress Disorder Screen (PC-PTSD) and 4. the Alcohol Use Disorders Identification Test-C	1. 1,685 participants (76% female, 88% White) 2. 31% (404 of 1,311) supported mild anxiety, and 33% (427 of 1,311) clinically significant anxiety 3. 29% (393 of 1,341) mild depressive symptoms, and 17% (233 of 1,341) moderate to severe depressive symptoms 4. 5% (64 out of 1,326) support suicidal ideation; and 14% (184 of 1,300) screened positive for post-traumatic stress disorder.
3	Prevalence of depression and its impact on quality of life among frontlinenurses in emergency departments during the COVID-19 outbreak	prevalence of depressive symptoms and their correlation and relationship between depression and quality of life of Emergency	1. Depression 2. Quality of life	cross-sectional	1.1103 emergency room nurses 2. 18 years and over 3. frontline health workers working in	1. 9-item Patient Health Questionnaire 2. The World Health Organization Quality of Life Questionnaire-Brief Version	1. The prevalence of depression in emergency room nurses was 43.61% (95% CI=40.68-46.54%). 2. workers in tertiary hospitals (OR=1,647,P=0.009) 3. direct patient care for COVID-19 patients (OR=1.421,P=0.018), and active smokers (OR=3.843,P<0.001)

	(An et al., 2020)	Room nurses during the COVID-19 pandemic in China			the emergency room		were significantly associated with depression. 4.nurses with depression had a lower QOL than those without (F(1.1103)=423.83, P<0.001)
4.	Obstetrics healthcare providers' mental health and quality of life during covid-19 pandemic: Multicenter study from eight cities in Iran(Vafaei et al., 2020)	evaluate depression, social support, and quality of life of obstetricians	1. Depression 2. social support 3. quality of life	cross-sectional multicenter study	599 Health Workers are divided into direct and indirect contact groups	1.The Patient Health Questionnaire-9 (PHQ-9) 2.Multidimensional Scale of Perceived Social Support (MSPSS) 3.Short Form-36 (SF-36)	1.Depression is negatively correlated with quality of life 2.Social support is positively correlated with quality of life (physical function, energy/fatigue, and emotional well-being)
5	Impacts and interactions of COVID-19 response involvement, health-related behaviours, health literacy on anxiety, depression and health-related quality of life among healthcare workers: a cross-sectional study (Tran et al., 2020)	examine the impact and interaction of the COVID-19 response, related to the behavior and health literacy of health workers.	1. Depression 2. Quality of life 3. Anxiety	A cross-sectional study	7,124 health workers aged 21-60 years	1. a short-form health literacy questionnaire 2. Generalised Anxiety Disorder (GAD-7) 3. a patient health questionnaire (PHQ)-9 4. The 36-Item Short Form	Higher physical activity and health literacy were found to protect against anxiety and depression and were associated with a higher quality of life.
6	Mental health and quality of life among healthcare professionals during the COVID-19 pandemic in India (Suryavanshi et al., 2020)	assessing mental health and quality of life of Indian healthcare workers	1. Depression 2. Anxiety	Snowball sampling dan survey online	A total of 197 health workers	1. Patient Health Questionnaire (PHQ-9) 2. Generalized Anxiety Disorder (GAD-7) 3. Quality of life visual analogue scale	1.87% provided direct COVID-19 care with 43% treating >10 patients/day. 2.depressive symptoms (92.47%), anxiety (98.50%), and low quality of life (89.45%). 3.The probability of a combination of depression and anxiety was 2.37 times higher among single health scale

							workers compared with married (95% CI: 1.03-4.96). 4. Work environment stressors were associated with a 46% increased risk of depression and anxiety combined (95% CI: 1.15-1.85). 5. Moderate to severe depression and anxiety were independently associated with an increased risk of low quality of life [OR: 3.19 (95% CI:1.30-7.84), OR: 2.84 (95% CI:1.29-6,29)].
7	Relationship Between Acute Stress Responses and Quality of Life in Chinese Health Care Workers During the COVID-19 Outbreak (Zhang et al., 2021)	find out the relationship between acute stress and quality of life and explore the factors that affect them in health care workers	1. Acute stress 2. Quality of life	A descriptive cross-sectional study	525 health workers were recruited from 15 hospitals	1. Stanford AcuteStress Reaction Questionnaire (SASRQ) 2. the World Health Organization Quality of Life Questionnaire (WHOQoL-BREF)	1. Acute stress response outcomes varied significantly between marital status, physical activity, employment status, perceived risk of contracting COVID-19, and estimated duration of the pandemic. 2. Younger age, lack of physical activity, being on the front line of medical staff, and higher acute stress scores indicate a poorer quality of life. The acute stress of health workers is negatively correlated with their quality of life.
8	The anxiety levels, quality of sleep and life and problem-solving skills in healthcare workers employed in COVID-19 services (Sevda Korkmaza et al, 2020)	investigate the level of anxiety experienced by health workers working in COVID-19 services	1. Anxiety 2. Sleep quality	Cross sectional	A total of 140 health workers in pandemic services or pandemic outpatient clinics, between 18 and 65 years old	1. The Pittsburgh Sleep Quality Index (PSQI) 2. Problem Solving Inventory (PSI), 3. World Health Organization Quality of Life-BREF (WHOQOL-BREF) 4. Beck Anxiety Inventory (BAI).	1. Number of participants without anxiety 41 (29%), mild anxiety 53 (38%). 2. Clinically significant anxiety findings were found in only 33% of the participants. 3. Positive correlation was found for anxiety disorders, sleep quality and problem solving 4. negative correlation was found on quality of life 5. Nurses' sleep quality and problem solving scores were statistically > high compared to doctors and staff scores.

							6. Quality of life scores were found to be lower.
9	Mental Health and Health-Related Quality-of-Life Outcomes Among Frontline Health Workers During the Peak of COVID-19 Outbreak in Vietnam: A Cross-Sectional Study (Than et al., 2020)	measuring psychological distress and quality of life of frontline health workers during the peak of the outbreak in Vietnam	1. Quality of life 2. Depression 3. Anxiety 4. Stress	a cross-sectional survey	A total of 173 health workers participated in the survey	1. Depression, Anxiety, and Stress Scale - 21 Items (DASS-21) 2. Impact of Event Scale - Revised (IES-R) 3. the Insomnia Severity Index (ISI). 4. EQ-5D-5L	1. the proportions of depressive symptoms, anxiety symptoms, and stress were 20.2%, 33.5%, and 12.7%. 2. The average index value of EQ-5D-5L is 0.93 (IQR=0.85-0.94) 3. aspects of anxiety/depression had the highest reported problems. 4. The most specific concerns among frontline health workers are a decrease in income (59%) and an increase in the cost of living (54.3%). 5. Health workers working in COVID-19 referral hospitals have significantly higher rates of mental health problems and lower quality of life. 6. Other factors associated with psychological distress and sleep problems include age, occupation, income, chronic disease status, and years of service in health care settings. Health workers who are 30 years old, have more years of service, have higher incomes, and have mental health and sleep problems are more likely to have lower quality of life scores.
10	The Effect of Stress, Anxiety and Burnout Levels of Healthcare Professionals Caring for COVID-19 Patients on Their Quality of Life (Çelmeçe & Menekay, 2020)	determine the effect of stress, anxiety, and saturation levels of health workers caring for COVID-19 patients on quality of life	1. Stress 2. Anxiety 3. Fed up	cross-sectional study	A total of 240 people participated in this study.	1. Perceived Stress Scale 2. Spielberger State-Trait Anxiety Inventory 3. Maslach Burnout Inventory and Quality of Life Scale	the mean scores of stress, anxiety traits, and quality of life of female health workers, married and having children were higher than other groups, high, medium, negative, and positive correlations were found among all variables.

11	Mental health adverse effects of covid-19 pandemic on health care workers in north west Ethiopia: A multicenter cross-sectional study (Asnakew et al., 2021)	assessing the adverse mental health effects of the COVID-19 pandemic on healthcare workers in North West Ethiopia 2020	1. Depression 2. Anxiety 3. Stress	cross-sectional study	419 participants	Depression, Anxiety and Stress Scale (DASS-21)	<ol style="list-style-type: none"> The prevalence of depression, anxiety, and stress were 58.2%, 64.7%, and 63.7%, respectively. Female gender, having a family with chronic illness, having contact with a confirmed case of COVID-19 and poor social support had a statistically significant relationship with anxiety
12	The Mental Well-Being of Health Care Workers during the Peak of the COVID-19 Pandemic—A Nationwide Study in Poland (Babicki et al., 2021)	assessing the mental health of health professionals in their work.	Mental health	The Computer-Assisted Web Interview (CAWI) survey,	A total of 2150 respondents	a standardised psychometric tool (GHQ-28)	The COVID-19 pandemic has had a significant impact on mental decline among healthcare professionals, especially among those who directly work with patients infected with SARS-CoV-2 and those who are forcibly seconded to work with these patients.
13	Psychological impact of COVID-19 pandemic on healthcare workers in a highly burdened area of north-east Italy (Lasalvia et al., 2021)	assessing the magnitude of psychological stress and related factors among hospital staff during the COVID-19 pandemic in a tertiary hospital	1. PTSD 2. Anxiety 3. Depression	a web-based survey	A total of 2195 health workers	<ol style="list-style-type: none"> Impact of Event Scale (IES-R) the Self-rating Anxiety Scale (SAS) the Patient Health Questionnaire (PHQ-9). Personal 	<ol style="list-style-type: none"> 63.2% of participants reported a traumatic experience at work and 53.8% (95% CI 51.0%-56.6%) showed symptoms of post-traumatic stress; In addition, 50.1% (95% CI 47.9%-52.3%) showed clinically relevant symptoms of anxiety and 26.6% (95% CI 24.7%-28.5%) had symptoms of at least moderate depression. women, nurses, health care workers who are directly involved with COVID-19 patients and have previous psychological problems are at higher risk for psychopathological consequences
14	COVID-19 and post-traumatic stress disorder among nurses: a descriptive	investigated the prevalence of PTSD among nurses working	PTSD	cross-sectional study	275 participant	The Impact of Event Scale - Revised (IES-R)	<ol style="list-style-type: none"> 39.88% experienced temporary PTSD dominated by disturbing thoughts (M = 1.55).

	cross-sectional study in a COVID hospital (Marcomini et al., 2021)	in a COVID hospital and evaluated the associated factors					3. Worked in an emergency unit during the COVID-19 pandemic (OR=2.40, p=0.02), irregular work shifts (OR=5.41; p=0.01) and came from a mental health ward (OR = 3.80; p = 0.02) increased risk of receiving a provisional PTSD diagnosis. Our findings showed significantly higher IES-R scores among women than men (p = 0.01).
15	Anxiety and depression in frontline health care workers during the outbreak of Covid-19 (Xing et al., 2020)	to assess the psychological impact of Covid-19 on frontline health workers	1. Anxiety 2. Depression	cross-sectional survey	Participants were 301 with a mean age of 33.5 ± 9.5 years (IQR 26-41, range 19-57 years).	1. the Self-Rating Anxiety Scale (SAS) 2. the Self-Rating Depression Scale (SDS).	1. 88 (28.5%) with anxiety and 172 (56.0%) with depression. 2. age ≤30 years, age >30-45 years, working in a confirmed case isolation ward fear of inadequate disinfection measures independently associated with anxiety with an odds ratio (95% confidence interval, CI) of 4.4 (1.6-12.2), 3.1 (1.1-8.8), 2.3 (1.4-4.0) and 2.5 (1.5-4.3) 3. age 30 years, age > 30 to 45 years, nurses and concerns about inadequate disinfection measures were independently associated with depression with an odds ratio (95% CI) of 3.8
16	Prevalence of Anxiety, Depression, and Perceived Stigma in Healthcare Workers in Nepal During Later Phase of First Wave of COVID-19 Pandemic: A Web-Based Cross-Sectional Survey (Adhikari et al., 2021)	determination of anxiety, depression and stigma among healthcare providers in Nepal	1. Anxiety 2. Depresi	Cross-Sectional Survey	the 213 participants their mean age was 29.90 ± 6.43 years.	1. Generalized Anxiety Disorder-7 (GAD-7), 2. Patient Health Questionnaire-9 (PHQ-9)	1. The prevalence of anxiety and depression among health workers was 46.95% and 41.31%, respectively. 2. Around 57% of health workers experience some form of stigmatization due to COVID-19 3. Frontline health workers are six times more likely to be stigmatized than non-frontline health workers

17	Predictors of poor mental health among nurses during COVID-19 pandemic (Kim et al., 2021)	examine the impact of various factors on the mental health of nurses	<ol style="list-style-type: none"> 1. Stress 2. Resilience of family function 3. spirituality, anxiety and depression. 	online cross-sectional study.	1.397 participant	<ol style="list-style-type: none"> 1. The 10-item Perceived Stress Scale (PSS) 2. The Connor-Davidson Resilience Scale (CD-RISC)-10 3. The Family APGAR 4. The 12-item Spirituality Support Scale 5. The General Anxiety Disorder-7 (GAD-7) and 6. Patient Health 7. Questionnaire-9 (PHQ-9) 	<ol style="list-style-type: none"> 1. Moderate/high stress (80.1%) 2. 43% and 26% reported moderate/severe anxiety and depression, 3. Patient care was positively associated with moderate/severe high stress (OR = 2.25; p = 0.012) and moderate/severe anxiety (OR = 3.04; p < 0.001), while quarantine was associated with moderate/severe depression (OR = 2.68 ; p < .001). 4. High levels of family functioning, resilience, and spirituality predict two to six times lower odds of moderate/severe stress, anxiety, or depression.
18	Psychological Stress of Healthcare Workers Caused by the COVID-19 Pandemic (Yalcin et al., 2020)	evaluating the psychological stress of hospital workers	<ol style="list-style-type: none"> 1. Depression 2. Anxiety 3. Stres 	A survey	257 respondents Average age (20-61) years	<ol style="list-style-type: none"> 1. Turkish Impact of Events Scale 2. depression, anxiety, and stress scale 	Mental health of hospital workers affected during the COVID-19 pandemic
19	Mental health of healthcare workers during the COVID-19 pandemic in Italy (Di Tella et al., 2020)	investigating the psychological impact of the COVID-19 outbreak on Italian health workers	Depression PTSS	Survey	145 health workers	<ol style="list-style-type: none"> 1. quality of life and health-related Visual Analogue Scales (VAS) 2. State-Trait Anxiety Inventory-Form Y1 (STAI Y1); 3. Beck Depression Inventory (BDI-II) 4. PTSD Checklist for DSM-5 (PCL-5) 	Health professionals working in COVID-19 wards and other units revealed that the first ward reported higher rates of depressive symptoms and PTSS.
20	Symptoms in Health Care Workers during the COVID-19 Epidemic. A Cross-Sectional	To assess the initial symptoms that appear in health workers	<ol style="list-style-type: none"> 1. Anxiety 2. depression 3. sleep quality 	A Cross-Sectional Survey	595 health workers from public companies	<ol style="list-style-type: none"> 1. Goldberg Anxiety and Depression Scale (GADS) 2. the Sleep Condition Indicator (SCI) 	1. Anxiety 16.6% and depression 20.3%, with a significant increase in risk estimates (OR = 4.3; 95% CI = 2.4–7.4 for anxiety, OR = 3.5; 95%CI = 2.0– 6.0 for depression).

	Survey (Magnavita et al., 2020)					3. Siegrist's effort/reward imbalance (ERI) model,	2.sleep was a significant moderating factor in the relationship between job stress, or organizational justice, and anxiety.
21	Quality of sleep and health-related quality of life among health care professionals treating patients with corona virus disease-19 (Stojanov et al., 2021)	evaluate sleep quality and health-related quality of life and measuring the magnitude of depressive symptoms and levels of anxiety.	1. Sleep quality 2. Health status 3. Quality of life	a cross-sectional	201 health care professionals	1. Generalized Anxiety Disorder (GAD-7) Scale 2. Zung Self-rating Depression Scale, 3. 36-item Health Survey of the Medical Outcomes Study Short Form (SF36) 4. Pittsburgh Sleep Quality Index (PSQI	1. Poor quality of sleep and quality of life correlated with high health anxiety and symptoms of major depression. 2. a higher score on the GAD-7 (beta=.71, p<.01) and a lower score on the mental health subscale (MH) on the SF36 questionnaire (beta=-.69; p<.01) were independent predictors higher sleep quality scores (adjusted R2=.61, p<.01 for the overall model). 3. Higher scores on GAD-7 (beta=.68, p<.01) and poorer self-perception mental status (beta=.25; p<.05) were independent predictors of lower SF36 scores (R2 adjusted = .73, p<.01 for the overall model).
22	Health-Related Quality of Life and Influencing Factors of Pediatric Medical Staff During the COVID-19 Outbreak (Huang et al., 2020)	To evaluate health-related quality of life status and explore the associated factors in pediatric medical staff during the COVID-19 epidemic	Quality of life	cross-sectional study	A total of 2,997 participants were recruited. Respondents aged 30-39 and 40-49 years	HRQoL	1. Women scored worse than men in terms of emotional functioning (OR=1.6, 95% CI: 1.2-2.1) and cognitive function (OR=1.4, 95% CI: 1.1-1.8). 2. Respondents aged 30-39 and 40-49 years scored worse in almost all quality of life domains than those under 30. 3. Respondents with higher education had lower scores in physical functioning (OR = 1.3, 95% CI: 1.0-1.7) and emotional functioning (OR = 1.5, 95% CI: 1.2- 1.9).
23	Quality of Life of Caregivers behind the Scene of the	to assess the quality of life of health workers	Quality of life	cross-sectional study	112 respondents with an	36-Item Short-Form Health Survey (SF-36)	1. a significant predictor of physical health providing care to family

	COVID-19 Epidemic in Serbia (Todorovic et al., 2020)	during the COVID-19 epidemic in Serbia			average age of 51.1±12.3 years		members and a higher level of complexity of care 2. a significant mental health predictor of higher complexity of care and increased concern about personal health and the health of people being cared for due to the COVID-19 epidemic
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