

The Impact of COVID-19 on Mental Health of Healthcare workers in Saudi Arabia: A Review

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Abstract: This study aimed to conduct a literature search to review the impact of COVID-19 on the mental health of healthcare workers in Saudi Arabia using statistical meta-analysis. This study also focused on the role of human resources in eliminating the pressure experienced by healthcare workers. The work overload due to the pandemic has led to high stress levels and other mental health issues among healthcare workers. The literature search was conducted in January 2021, and records were reviewed from the Scopus database using the keywords COVID-19, mental health, and healthcare workers. A pool of 488 papers was considered, of which 481 focused on the pandemic's impact, and seven included the keywords Saudi Arabia and the COVID-19 pandemic. Relevant studies were included in the literature search. The pandemic impacted the mental health and well-being of healthcare workers significantly. The findings were divided into three sections: literature search, theoretical perspective, and statistical analysis through meta-analysis using Meta-Essentials software. This study suggests that mental health is pivotal for healthcare workers' well-being during the pandemic as it affects the well-being of society at large. This study also showed that appreciation and increased remuneration have improved the efficiency of healthcare workers in Saudi Arabia.

Keywords: Human resources, COVID-19, healthcare workers, mental health, Saudi Arabia

1. INTRODUCTION

The healthcare sector is an arena in which a healthcare worker's (HCW) job is physically, mentally, and emotionally demanding. During a medical emergency, such as the coronavirus disease – 2019 (COVID-19) pandemic, surgeons and trainees find themselves overloaded with work. Altered and inflated work hours away from home and family, coupled with fear for one's own health and that of family members, add to stress and anxiety among HCWs (Zakout et al. 2020).

The novel coronavirus (Abolfotouh et al. 2020) (2019-nCoV, hereafter referred to as COVID-19) is a new virus strain that has not been previously identified in humans. COVID-19 first emerged in China in 2019 and engulfed the entire world by 2020. By February 2021, more than 107,000,000 individuals were affected globally, of which 2,336,667 lost their lives, while 78,889,626 recovered from the virus (Worldmeter 2021). The outbreak had an irreparable effect on almost all sectors of the country. Stores and services were ordered to close and save for required businesses and activities, and social distancing, self-isolation, and travel restrictions were imposed (Lukacs 2021). It impacted individ-

uals, families, and businesses - large and small, but most of all, frontline workers, especially nurses and doctors, who were in direct contact with COVID-19 patients while providing medical care (Bostan et al. 2020).

Many sectors worked continuously to reduce the number of COVID-19 cases and assist individuals with recovery. However, HCWs occupy the most important position in the response to the COVID-19 pandemic. According to previous studies (Bourgeault et al. 2020), HCWs are the first and primary responders to COVID-19 and are also the most prone to risk of infection; hence, experts suggest that health sector facilities should pay particular attention to the mental health and psychological well-being of their HCWs (AlAteeq et al. 2020). Studies have proved that reforms in health care systems can significantly reduce the mental health problems of health professionals (Akob et al. 2020).

The present literature review aims to analyze the medical literature to identify the psychological effects of COVID-19 on HCWs dealing with patients over the past year (Asnakew et al. 2021). Frontline HCWs face considerable risks of infection and death due to prolonged exposure to the virus (Bourgeault et al. 2020). Symptoms of depression, stress, and anxiety in the general population, students, and HCWs are signs of deteriorating mental health and typical psychological reactions to the COVID-19 pandemic. This decline in physical and mental health collectively nullifies COVID-19 management strategies and adversely affects the economy.

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Policymakers and health agencies must formulate preventive and curative policies and strategies to reduce global morbidity and address mental health needs (Aljehani et al. 2020).

This study assessed the anxiety levels experienced by HCWs during the COVID-19 pandemic, with special reference to healthcare providers and their mental health in Saudi Arabia.

This literature review answers the following research question: What is the impact of COVID-19 on the mental health of healthcare workers in Saudi Arabia?

The following sections outline the literature review on the role of human resources, the impact of COVID-19 on the mental health of HCWs, and policy interventions by Saudi Arabia. The methodology section presents the findings of the reviewed studies. The final section presents the discussion, recommendations, limitations, and conclusions of this study.

1.1. The Role of Human Resource Practices in the Saudi Healthcare Sector

Human resource practices play a crucial role in the healthcare sector. Human resource practices (Elarabi & Johari, 2014) are defined as workforce management in organizations or institutions. They encompass attraction, selection, training, assessment, and reward or compensation of employees while observing the institutional culture and adhering to state policies and laws. Human resource practices in the healthcare sector seek to reward HCWs who provide patients with the best healthcare services.

Important aspects of human resource practices in the healthcare sector are job satisfaction, employee performance, and structural empowerment. Job satisfaction among HCWs can be achieved by addressing issues that affect the work environment. For example, in an institution where work overload is an issue, HR can use techniques such as adequate staffing (West et al. 2006). Appropriate staffing ensures the selection and recruitment of employees to address HCW shortages in the industry. Once adequate staff is recruited, HR can use techniques such as job rotation, employee involvement, and a healthy work environment to ensure job satisfaction. Employee involvement involves the decentralization of decision-making, in which HCWs are encouraged to participate in both minor and major decision-making in the workplace. For example, involving HCWs in morning briefing and debriefing sessions encourages suggestions from personnel. This practice goes a long way to make HCWs feel significant in their workplace.

Studies suggest that employee involvement, job security, encouraging teamwork, performance appraisal, and employee compensation can help improve employees' on-the-job performance (West et al. 2006). Furthermore, HR practices such as employee compensation through incentives such as salary increments, gift vouchers, healthcare facilities, or job promotions can motivate HCWs to keep working at full potential.

Human resource practices also play a major role in the structural empowerment of HCWs. According to previous studies (Rondeau et al. 2016) structural empowerment is the perception of the existence or absence of empowering conditions in the workplace. As human resource managers, it is their duty

to ensure an empowering environment in healthcare institutions. For instance, creating opportunities for HCWs to further their medical knowledge and skills can go a long way to ensure the academic empowerment of personnel. This can be achieved through periodic scheduling, which grants HCWs additional time to further study. In the long run, such training will ensure readiness in managing difficult situations, such as the unexpected COVID-19 pandemic.

1.2. The COVID-19 Pandemic's Impact on HCWs

The COVID-19 outbreak has impacted HCWs in numerous ways. The rapid spread of the virus has put substantial pressure on healthcare systems and personnel globally. Studies (Al-Hanawi et al. 2020) note that despite the pandemic's strain on healthcare systems, workers in these sectors continue to provide services to patients regardless of various issues such as risk of infection, exhaustion, excessive strain due to continuous use of protective gear, stress and anxiety, fear of transmission of virus among the family and friends, and loss of life of family members and friends to the virus.

The COVID-19 pandemic has exhausted HCWs, with study authors noting (Shreffler et al. 2020) that HCWs are exposed to both physical and emotional exhaustion due to pandemic-related work overload. Given the rapid rate of COVID-19 infection, which translates to overpopulation at medical centers, HCWs are overloaded and subjected to long hours of work, resulting in physical exhaustion. According to one study (Alanazi et al. 2021), HCWs experience burnout in pandemic-like situations. Burnout syndrome occurs because of exhaustion over long periods, leading to lower levels of motivation and interest in one's job. The extensive efforts put in place by health institutions to combat the complications and mortality due to COVID-19 have resulted in overwhelming conditions among healthcare workers, leading to physical and mental burnout. The study (Alanazi et al. 2021) revealed variations in the prevalence of burnout syndrome among HCWs. According to the study, nurses, especially those working in the ICU, exhibited higher levels of burnout compared to other healthcare job categories.

The COVID-19 pandemic has exposed HCWs to varying levels of infection. HCWs have a higher probability of infection than other professionals do because of their constant exposure. According to a study (Shaukat et al. 2020) as of March 2020, more than 3,000 HCWs have been infected with COVID-19 in China alone. In addition, studies have reported that a shortage of skilled healthcare personnel and personal protective equipment (PPE) has made the situation even more gruesome. As cited by previous studies (Mehta et al. 2020) the COVID-19 pandemic has put a lot of pressure on healthcare facilities, leading to the rapid depletion of resources, especially in low- and middle-income countries (LMICs). The shortage of such basic and essential equipment during a pandemic can wreak havoc in a country. Therefore, HCWs must either sacrifice their limited resources for patients or reuse equipment ideally meant for single use. Studies (Rodríguez & Sánchez 2020) emphasize that the HCW infection rate dropped to 29% in China once adequate protective gear was provided and preventive and curative steps were initiated to contain the virus.

The spread of COVID-19 across the globe has affected HCWs in many other ways, such as their direct involvement in organizing and conducting awareness programs on ways to combat infection among the masses. The methods adopted to spread awareness have also made HCWs prone to infection, thereby putting their well-being at stake. The probability of infection increases with the unavailability of PPE. HCWs are under considerable pressure to provide patient care for COVID-19 victims without adequate PPE, resulting in increased stress and workload, which adds to fatigue, otherwise known as the burnout syndrome. Thus, the prevalence of COVID-19 is a serious cause of concern for HCWs during the pandemic. Despite these trying conditions, the pandemic has been a learning experience for all HCWs for a year to showcase strength and valor.

1.3. The COVID-19 Pandemic's Impact on the Mental Health of HCWs

In the Kingdom of Saudi Arabia (KSA), the healthcare sector and the well-being of its workers are of top priority, especially during the COVID-19 pandemic.

The spread of COVID-19 across the globe has been accompanied by many adverse effects, especially stressors, on the vital aspects of life and sustainability. The most important aspect is the mental well-being of HCWs worldwide. The COVID-19 pandemic has presented HCWs with responsibilities that are greater than expected. These responsibilities can be narrowed down to giving medical attention to infected patients while also protecting themselves, other non-COVID-19 patients, their families, and friends. All of these responsibilities have undoubtedly taken a toll on the mental well-being of HCWs. Research studies (Ofori et al. 2021) report that HCWs constitute the most vulnerable population, given that they are usually at the forefront of tackling issues related to pandemics. They portrayed the highest levels of mental issues during and after such periods of medical crisis. Recent studies have revealed that HCWs have reported the highest prevalence of anxiety, depression, stress, and insomnia during pandemics.

The impact on mental health can be described as follows:

First, the high rates of stress and depression among HCWs during COVID-19 can be attributed to the fact that HCWs are directly involved in the prevention, diagnosis, treatment, and care of patients with COVID-19. This, in itself, produces enough pressure on skilled personnel, given the tremendous number of infections worldwide (Kibret et al. 2020). Coupled with high numbers of suspected and confirmed COVID-19 infections, a heavy workload, lack of specified drugs, depletion of PPE, high risk of infection, and worry about the well-being of family and friends, results in high levels of stress and depression. Research studies³³ report that the prevalence of depression among HCWs is approximately 50.4%. It is especially stressful and depressing to work under conditions where one stays in isolation and away from their loved ones for fear of infecting them. Such situations deprive HCWs of the emotional and physical attachments and relationships necessary for easy functioning as human beings (Mehta et al. 2021). Evidence from this study shows that social support is essential to ease mental health issues such as depression and stress among HCWs during a pandemic.

Second, COVID-19 is responsible for the increase in anxiety levels among HCWs. According to research (Ki Bret et al. 2020), anxiety is an emotion characterized by a feeling of fear or apprehension about what is to come in the future. It is a state of tension, worried thoughts, and a rapid heartbeat. This emotion is likely to manifest in HCWs because of the tense working environment surrounding the brutal reality of COVID-19. For instance, HCWs have the highest probability of infection owing to their direct contact with suspected and confirmed patients. Thus, HCWs are constantly worried about infecting their loved ones. On one hand, the implementation of COVID-19 safety (emergency) protocols, such as the prohibition of public transportation, avoidance of public gatherings, and quarantine, has increased anxiety levels among some HCWs, while on the other hand, it has led to a decrease in the anxiety of other HCWs. The reports show that the prevalence of anxiety among HCWs is averaging 44.6%. Studies have also shown that anxiety issues among HCWs, if not addressed in a timely manner, may adversely affect their efficiency and how these professionals deliver their services, especially during the COVID-19 pandemic.

Third, COVID-19 has resulted in sleep disorders such as insomnia, sleep apnea, and other sleep-related issues among HCWs. Research has shown that sleep disorders are caused by constant stress, anxiety, and depression (Shreffler et al. 2020). Sleep disorders are most prevalent among HCWs diagnosed with burnout syndrome. This syndrome is related to prolonged stress, characterized by emotional fatigue, dissociation, and depersonalization (Rodríguez & Sánchez 2020). During the COVID-19 pandemic, HCWs tend to experience burnout syndrome because of the excessive workload caused by the high number of infected patients who demand immediate medical attention. Normal human beings require ample sleep to perform their functions efficiently. HCWs who are overworked during medical crises tend to face sleep issues if they are deprived of adequate sleep. Studies have shown that the large-scale hospitalization of patients due to COVID-19 has added to the health risks faced by HCWs and patients alike, as sleep issues have repercussions that affect self-efficacy and work quality.

1.4. The COVID-19 Pandemic and Crisis Handling in Saudi Arabia

A successful drop in the infection rate has occurred in Saudi Arabia owing to timely interventions, including strict hygiene protocols, social distancing, and successful lockdowns. The government of Saudi Arabia imposed rigorous restrictions within the country, as the number of COVID-19 cases had risen rapidly, both in Saudi Arabia and globally (Faisal, et al 2021). COVID-19's severe consequences, such as a high morbidity rate, call for quicker and more stringent actions by the Ministry of Health (MOH) in different countries. The MOH in Saudi Arabia recognizes it as a duty to sensitize both the general public and HCWs personnel on how to respond to, diagnose, and protect themselves from COVID-19. Saudi Arabia played a major role by implementing strategies that go a long way towards reducing the spread of COVID-19. Strategies adopted by the MOH of the KSA include public sensitization to the pandemic, quarantine, lockdowns and curfews, social distancing, and the formulation of hygiene protocols.

When the severity of COVID-19 was first reported in China, the government of the KSA, through the MOH and other healthcare volunteers, initiated public sensitization. It is a method of reaching out to the general public to create awareness of a new phenomenon. According to research (Alsayedahmed 2020) statements like “Stay Home,” “Stay Safe,” “We shall show solidarity by staying at home,” “We are all responsible,” “Let’s keep the whole nation healthy and safe”, “Keep your distance,” “Avoid shaking hands and direct contact with others,” “Say hello with a smile,” “Don’t visit them, call them,” and “Keeping them safe is a priority” were some of the sensitization messages sent to the general public, using mobile phones, to create awareness on how to conduct themselves as COVID-19 was a new phenomenon for everyone across the globe. Along with these short statement-based messages, other awareness messages comprising facts and guidelines on how to safeguard oneself by self-quarantine, hygiene protocols, and appropriate sanitization were also shared with the public. It is important to note that the KSA began taking precautions before any case of COVID-19 was reported in the country (Alshammari et al. 2020). This proactive approach adopted by Saudi Arabia has enabled it to prevent a surge in COVID-19, thereby maintaining a check on the mortality rate.

Saudi Arabia imposed lockdowns and curfews within its borders to protect its people from COVID-19. According to related studies ((Alshammari et al. 2020), the KSA implemented lockdowns before COVID-19 cases reached the country. First, the government suspended foreign entry into the country. Second, it suspended the issuance of visas for people travelling from countries that reported COVID-19 cases. Third, the government restricted entry into the country using a national identification card, specifically for Gulf countries that do not require a visa to enter. Through its MOH, the government created awareness of the steps to prevent the spread of the virus. However, despite these precautions, the first case of COVID-19 was reported in Saudi Arabia on March 2, 2020 (Alshammari et al. 2020). Subsequently, Saudi Arabia extended its advisory to other countries in the region as precautions to prevent the spread of COVID-19. Finally, the Government introduced a lockdown during which schools and restaurants were closed and restrictions imposed on travel while all nonessential services necessitating any contact between people were brought to a halt. (Chakhovich, & Marttila, 2020)

Despite its anticipated impact, Saudi Arabia was among the first countries to call for social distancing and quarantine measures. The implementation of social distancing as a technique to minimize the spread of COVID-19 has taken a toll on major societal aspects in the country. Saudi Arabia's sociocultural and religious norms call for the country to host two international religious gatherings that attract many people worldwide (Alsayedahmed 2020). Implementing strategies such as social distancing and avoiding crowded areas meant religious sacrifices for the Muslims of Saudi Arabia. People were prohibited from visiting holy mosques in Makkah and Al-Madinah. The people of the country also abided by the COVID-19 protocols in a bid to flatten the infection curve. The government also advised the use of PPE, such as medical face masks, and observed social distancing during (unavoidable) gatherings. Thus, the country played a major role

in containing COVID-19 and led by making sacrifices to reduce the spread of COVID-19 among its people.

1.5. Human Resources Practices in Eliminating Mental Health Risks for HCWs in Saudi Arabia during COVID-19

Protection of HCWs during the COVID-19 pandemic is of utmost priority for the KSA (Alaska et al. 2019). The COVID-19 pandemic has taken a toll on the mental health of HCWs, jeopardizing their psychological well-being. Research studies (Singh et al. 2021) report that stress, depression, anxiety, and psychological distress are some of the common issues that affect the psyche of workers. This adversely affects the quality of healthcare services. Research (De Kock et al. 2021) note that psychological issues arise from many factors, such as excessive workload due to the uncontrolled spread of the coronavirus infection, creating pressure on existing medical infrastructure, concern about the risk of infection for oneself, for family and friends, and limited availability of PPE.

To alleviate the risk of mental health disorders among HCWs, Saudi Arabia has implemented human resource techniques such as staff preparedness, crisis counseling, physical protection, family preparedness, and job rotation. Some of these practices are detailed below:

Crisis counseling is an important human resource practice that can help eliminate mental health risks among HCWs in Saudi Arabia. According to research (Sahebi et al. 2020), crisis counseling in the form of either personal or group counseling for HCWs can be helpful because it initiates a sense of social support among workers. Social support is an important requirement for all human beings, as each individual wants to be associated with a social group. For instance, in a bid to curb the spread of COVID-19, one of the guidelines put in place in Saudi Arabia is restriction on movement and social gatherings (Singh et al. 2021). This preventive technique can be mentally draining for HCWs who use social gatherings to ease their work frustrations. To support HCWs, various health institutions have used mobile or other internet-based crisis counseling sessions to serve as a stress and frustration outlet for HCWs in Saudi Arabia.

Family considerations and preparedness are important human resource factors that can help eliminate the mental crisis among HCWs due to COVID-19. The sociocultural orientation of Saudi Arabia emphasizes the importance of family. Hence, as HCWs provide healthcare services, they constantly worry about the well-being of their families and friends. A study (Almaghrabi et al. 2020) suggest that one way to allay their worries and concerns regarding family is through incentives. In Saudi Arabia, family incentives include medical access to all close family members and ensure an adequate supply of protective gear, such as masks and sanitizers, to the family. Research (De Kock et al. 2021) suggests that the provision of adequate PPE can go a long way toward eradicating distress, given that PPE can protect HCWs from infection at work and prevent the spread of COVID-19 to their loved ones. In Saudi Arabia, HCWs were provided with adequate PPE before the first case of COVID-19 was reported. In doing so, the KSA aimed to minimize the anxiety and

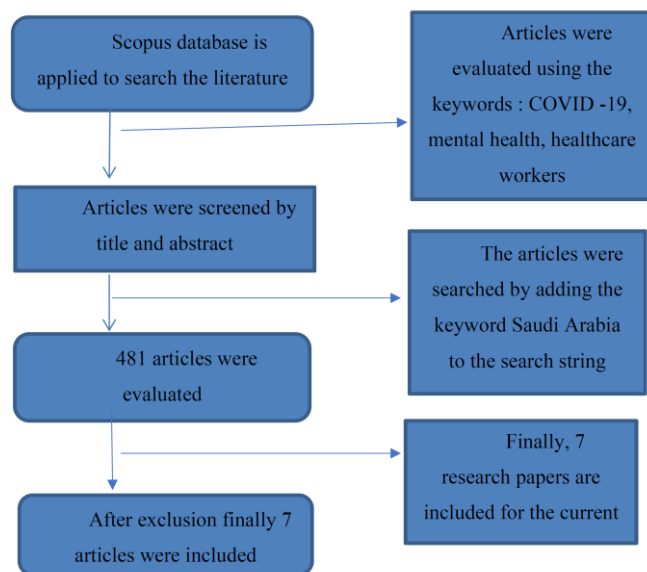


Fig. (1). Flow chart of the included literature during the search strategy (AlSadrah 2021).

distress associated with the fear of infection from Covid-19 among HCWs.

Work rotation is another popular human resource technique that helps eliminate mental health issues. This technique addresses psychological issues caused by the overwhelming workload of medical institutions. Work overload due to the surge in COVID-19 patients in hospitals causes exhaustion among HCWs, leading to burnout syndrome. Research (Bourgeault et al. 2020) suggests that such techniques must be used to reduce the workload of HCWs, thereby resolving the mental fatigue that follows. The Saudi Arabian government has implemented techniques including recalling inactive workers, such as those on leave or who have retired, utilizing the services of internationally trained professionals during the pandemic, redeploying HCWs across jurisdictions, and job rotation, including allowing trainees to take care of acute cases while registered nurses are deployed to attend to chronic and serious cases (Bourgeault et al. 2020). Owing to these practices, Saudi Arabia has been able to put up a good fight against the spread of COVID-19 within its borders.

2. METHODOLOGY

A literature review has great value in international research, although few reviews have been published that elucidate how researchers can design and develop classic review articles. The current literature search was conducted in January 2021.

Literature Search: This study adopts a qualitative literature review method based entirely on random research collection from databases such as Scopus, EBSCO, PubMed, Web of Science, and Google Scholar (Alsayedahmed 2020).

Data Sources and Search Strategy: Studies conducted on this research topic were obtained from the Scopus database using keywords. Only papers written in English and published in Saudi Arabia were considered.

Inclusion and Exclusion Criteria: The present study investigated survey studies on the general population and HCWs. After considering these limitations, the collected information was evaluated for efficiency and ethical review.

Study Selection: We screened various titles and their corresponding abstracts to exclude insignificant articles. Articles that fulfilled the search criteria were inspected to determine their compliance with the inclusion criteria.

Quality Assessment: We examined the quality of information in the selected research papers. The quality of “included” research papers was appraised as great, reasonable, or destitute (poor). Nonetheless, we considered the studies in the research and the structure of the results.

Meta-Analysis Review: A meta-analysis (Singh et al. 2021) of the included studies was conducted using Meta-Essentials software. Research papers were retrieved from Scopus and Google Scholar databases. The current literature search was conducted in January 2021.

After the inclusion and exclusion process of the literature search, seven research papers were finally included in the current research, and Meta-Essentials software was used for the statistical analysis of the included studies. Of the seven included studies, two were based on observational theoretical reviews, and the remaining five were based on primary data collection using survey research. Hence, the two theoretically based studies were not included in the meta-analysis because there was no data collection. The remaining five studies were analyzed statistically by applying the meta-analysis random-effects model using the Meta-Essentials software.

Data Extraction: Data from all selected and “included” studies were extracted and converted into standardized data extraction tables using Excel spreadsheets. The collected data were checked for their accuracy.

Data Synthesis: Prevalence was calculated to determine the impact of COVID-19 on the mental health of HCWs.

3. RESULTS

Publications were identified and selected from the Scopus database. After screening the titles and abstracts, articles that failed to meet the eligibility criteria were removed. The remaining articles were read in full and assessed against the eligibility criteria. Articles that did not satisfy the eligibility criteria were excluded. Finally, seven articles were considered after conducting a rigorous eligibility assessment of the literature search. (Fig. 1)

Study Details: (Fig. 2) presents a summary of the research output from the selected studies. The research outputs use the following keywords: COVID-19, mental health, and healthcare workers in Saudi Arabia.

Study Characteristics: Study characteristics comprising details and outcomes related to mental health in the “included” articles are presented in Table 1.

Quality of the Included Studies: The quality of the selected articles was fair as per the qualitative assessment.

Measurement Tools: The measurement tools comprised scales used to assess the mental health condition of HCWs.

A variety of scales were used to assess the COVID-19 pandemic’s impact on the mental health of HCWs as outcomes of the included studies (n = 7).

The following are the commonly used mental health instruments in this analysis (Chigwedere et al. 2021): The five

included studies were based on the generalized anxiety disorder (GAD) inventory, psychological distress using the per traumatic distress index, the anxiety severity screening tool, and a structured survey.

Table 1. Summarizing the Research Output.

s.no	Title of the Study	Author(s)	Journal name	Research Output
1.	Stress and psychological resilience among general surgery residents during the COVID-19 pandemic	Aljehani, Y.M., Othman, S.A., Telmesani, N.K., (...), Alharbi, T.M., Alnajim, R.K.	Saudi Medical Journal 41(12), pp. 1344-1349	The COVID-19 pandemic has impacted both healthcare workers and surgical residents to a great extent. They all have faced a tremendous amount of stress while they worked tirelessly to provide medical care to the patients.
2.	Perception and attitude of healthcare workers in Saudi Arabia with regard to Covid-19 pandemic and potential associated predictors	Abolfotouh, M.A., Almutairi, A.F., Banimustafa, A.A., Hussein, M.A.	BMC Infectious Diseases 20(1),719	This study accentuates the serious concern among HCWs with respect to COVID-19. It has helped identify the predictors of those with the highest concern levels.
3.	Migrant health in Saudi Arabia during the COVID-19 pandemic	Ali, M.A., Al-Khani, A.M., Sidahmed, L.A.	Eastern Mediterranean Health Journal 26(8), pp. 879-880	The study concludes that the COVID-19 pandemic is an unprecedented challenge not only to the health infrastructure but also to the people working in the healthcare sector across the globe.
4.	COVID-19 pandemic’s precautionary measures had hit the reset button of the quality of life at different aspects	Alsayedahmed, H.H.	Journal of Infection in Developing Countries 14(8), pp. 812-816	In conclusion, various strategies to contain the spread of COVID-19 have been advocated, like complete lockdown, restrictions on public services, applying quarantine and curfew in epidemic zones, and physical and social distancing. All these aforesaid measures are taken in addition to the implementation of health and hygiene-related precautions and practices. It is believed that these measures will effectively curb the COVID-19 spread.
5.	The psychological impact of COVID-19 pandemic on healthcare workers in a MERS-CoV endemic country	Temsah, M.-H., Al-Sohime, F., Alamro, N., (...), Al-Subaie, S., Somily, A.M.	Journal of Infection and Public Health 13(6), pp. 877-882	The study states that infectious diseases such as COVID-19 or MERS-CoV, which may take the form of an epidemic and/or pandemic, pose a high level of anxiety and stress among the workers in the healthcare sector, especially those who are directly involved in providing medical attention and care to infected patients. The main cause of concern among these workers is the fear of getting infected and/or transmitting the infection to their families.
6.	Healthcare workers experience in dealing with Coronavirus (COVID-19) pandemic	Almaghrabi, R.H., Alfaradi, H., Hebshi, W.A.A., Albaadani, M.M.	Saudi Medical Journal 41(6), pp. 657-660	The study recommends that a regular supply of PPEs can alleviate the fear of infection and reduce psychological stress. In addition to the safety equipment, adequate financial support and the safety of family members of healthcare workers may go a long way towards maintaining the mental health of HCWs.
7	Psychological distress amongst health workers and the general public during the COVID-19 pandemic in Saudi Arabia <i>Open Access</i>	Al-Hanawi, M.K., Mwale, M.L., Alshareef, N., (...), Almubark, R., Alsharqi, O.	Risk Management and Healthcare Policy 13, pp. 733-742	People living in Saudi Arabia have exhibited high levels of distress during the spread of COVID-19.

4. DISCUSSION

4.1. Literature Search

In this study, the authors find that the COVID-19 pandemic has had a serious impact on all medical staff and surgical residents, as they have been under tremendous work pressure. The psychological effect of such pressures should be seriously considered by the organization while formulating its strategy. Developing guidelines that would help surgical trainees continue their learning process in a congenial environment with minimal psychological stress are recommended.

2. This study highlights the main concerns of HCWs regarding COVID-19 and identifies predictors for those in the healthcare sector. To mitigate the negative impact of these concerns on the performance of HCWs during the pandemic, measures must be taken for their protection. This would help minimize the adverse psychological impact of the perceived risk of infection.

3. This study finds that the COVID-19 pandemic is an unprecedented challenge for everyone in the health sector worldwide. Saudi Arabia is committed to providing state-of-the-art medical services to all residents without discrimination, whether they are legal or illegal workers. This approach is unprecedented and hence holds great importance because an effective response to the pandemic depends on its weakest link, that is, the risk among the floating population.

4. In summary, this study finds that a combination of restriction and protection measures, such as shutting down public services, imposing curfews, quarantine in epidemic zones, strict and impactful physical social distancing, and taking all the necessary health and hygiene precautions, are remarkably effective in containing the spread of COVID-19. It is critical for one's well-being to appreciate wonderful things in life during such a difficult time. Certainly, by incorporating these prospective tactics into our daily routine, the quality of family life in the majority of cases will show marked improvement, even in Saudi Arabia. However, it has had a negative impact on the psychological health of others in unusual circumstances.

5. This study reports that epidemics and pandemics, such as COVID-19 or MERS-CoV, have created a high degree of anxiety and stress among HCWs who provide medical assistance to infected patients. As stated by HCWs, the main cause of concern is the risk of transmitting the deadly virus to their family members and becoming infected. Therefore, during infectious disease outbreaks, HCWs should strictly follow infection prevention and control measures to ensure their safety and reduce the possibility of transmission. This would ensure the mental peace and well-being of workers by alleviating stress and anxiety.

6. This study recommends providing adequate PPE, financial assistance, and safety to the families of health workers to increase service willingness and reduce mental stress.

7. The authors argue that the COVID-19 pandemic is responsible for the increasing difficulties faced by people living in Saudi Arabia. Supporting evidence from other countries, this study found that exposure levels vary according to socio-

demographic characteristics. Therefore, to limit possible psychological harm, mid- to long-term policies must be formulated that include tracking stress and anxiety rates to effectively allocate psychotherapy and establish innovative online methods to improve people's mental health.

This review provides a comprehensive study on the negative impact of COVID-19 on the mental health of HCWs. This clearly shows that current healthcare frameworks and numerous governments across the globe ought to prioritize mobilizing assets to supply adequate and fundamental mental support to HCWs amid the pandemic (Al-Otaibi, 2020).

4.2. Theoretical Perspective in view of HRM

The sudden and sharp rise in COVID-19 cases globally has added to the uneasiness and high levels of stress in all sectors of society. The greatest impact can be seen on people working in the healthcare sector. The fear of catching and transmitting infection, added to an increased workload, has led to many mental health issues among HCWs. Seven research papers primarily based on the mental health of HCWs in Saudi Arabia were included in this study.

The summary of the seven articles is as follows:

1. *"Covid-19 Pandemic's Precautionary Measures Had Hit the Reset Button of the Quality of Life at Different Aspects"* (2020), by Alsayedahmed (2020). This study focuses on the role of human resources in the healthcare system to ensure the welfare and wellness of HCWs. Human resources in Saudi Arabia's MOH have supported healthcare providers with the supply of proper PPE and training. They updated HCWs' COVID-19 related data, thus supporting them in embracing emerging healthcare practices and procedures for executing a telemedicine strategy. Telecommunication plans such as health assessment through video calls and drive-through telemedicine services have also been implemented.
2. *"Healthcare workers experience in dealing with Coronavirus (COVID-19) pandemic"* (2020) by Almaghrabi et al. (2020) the researchers randomly collected data from 1,036 participants (nurses and physicians) in a medical military city in Saudi Arabia. According to the participants' responses, one of the mental issues faced by HCWs is fear (Almaghrabi et al. 2020). During the pandemic, HCWs experienced anxiety due to safety concerns for themselves as well as their family members, the care of their children due to isolation, long stays away from home, and quarantine amongst others.
3. *"The Psychological Impact of the COVID-19 Pandemic on Health Care Workers in a MERS-Cov Endemic Country"* (2020), by Temsah et al. (2020) This study finds that the COVID-19 outbreak has resulted in psychological impacts among HCWs worldwide. The researchers conducted an investigation to assess the effect of the virus on HCWs and gathered data from 852 HCWs. Respondents were asked to fill out questionnaires containing questions about their anxiety and concerns during the COVID-19 pandemic. The research revealed that HCWs had greater anxiety levels due to COVID-19. Approximately 41.4% were equally anxious about MERS-CoV and COVID-19, and approximately

17.5% expressed high levels of stress from the outbreak of MERS-CoV. The most recurrent worry faced by HCWs was transmitting the virus to family members and friends. The study concluded that pandemics, such as COVID-19 or MERS-CoV, expose HCWs who frequently attend to infected patients to high levels of stress, worry, and anxiety (Temsah et al. 2020).

4. *“Stress and Psychological Resilience among General Surgery Residents during COVID-19 Pandemic”* (2020). This study indicates that the COVID-19 outbreak has resulted in psychological problems among healthcare providers. The authors tested the correlation between COVID-19 and stress and psychological resilience among HCWs, particularly among general surgery residents. This study included 234 participants. The results indicated that half of the participants tested positive for anxiety and stress and concluded that COVID-19 had severe impacts on all healthcare providers and surgical residents, as the workers experienced a substantial amount of stress (Aljehani et al. 2020).
5. *“Migrant health in Saudi Arabia during the COVID-19 pandemic”* (2020) (Ali et al. 2020). This study indicates that migrants (temporary) working in the healthcare sector have been experiencing mental health deterioration because of the fear that they might lose their jobs. However, it is important to illustrate the role of the MOH in ensuring that all residents, including immigrants, receive quality healthcare services during the pandemic. Services such as free screenings were provided to all participants regardless of their citizenship.
6. *“Perception and attitude of healthcare workers in Saudi Arabia with regard to the COVID-19 pandemic and potential associated predictors”* by Abolfotouh et al. (2020). This study found that HCWs have been experiencing mental and physical stress due to COVID-19, as they are working continuously to provide medical assistance to patients. This was concluded after studies (Abolfotouh et al. 2020) assessed the perceptions and attitudes. Participants were provided with online surveys where they indicated their perceptions of COVID-19. The investigation results showed that about three-fourths of the participants were concerned about their safety as they feared contracting the virus in the workplace while caring for COVID-19 patients (Abolfotouh et al. 2020). Many respondents feared contracting the infection from their colleagues, while others expressed worry about existing operating standards, procedures, and precautions.
7. *“Psychological Distress amongst Health Workers and the General Public during the COVID-19 Pandemic in Saudi Arabia”* by Al-Hanawi et al. (2020). This research indicates that healthcare workers and the public have been experiencing psychological distress during COVID-19 because millions have been restricted to their homes during the lockdowns. This assumption was made after a study examined psychological distress among HCWs and the public during the COVID-19 pandemic. The data were collected from 3,036 respondents who were given online surveys to share their perceptions of the pandemic (Al-Hanawi et al. 2020). Psychological distress was assessed alongside the COVID-

19 per traumatic Distress Index, and participants were categorized as having normal, mild, or severe distress levels. The investigation results demonstrated that approximately 40% of participants were in distress due to the impact of COVID-19, 33% were mildly distressed, and 7% were in severe distress.

4.3. Statistical Analysis

4.3.1 Prevalence of included studies

Statistical analysis was performed by meta-analysis using Meta-Essentials software (Suurmond et al. 2017). The percentage prevalence of included studies was statistically estimated using an Excel spreadsheet. The meta-analysis indicated that heterogeneity was high between studies ($I^2 = 97.5\%$; $T^2 = 0.82$, $P = 0$; and Q statistic value $Q = 160.24$); hence, the random effects model was considered. The z-value was $z=0.28$, whereas the one-tailed and two-tailed tests for p-values were 0.388 and 0.776, respectively.

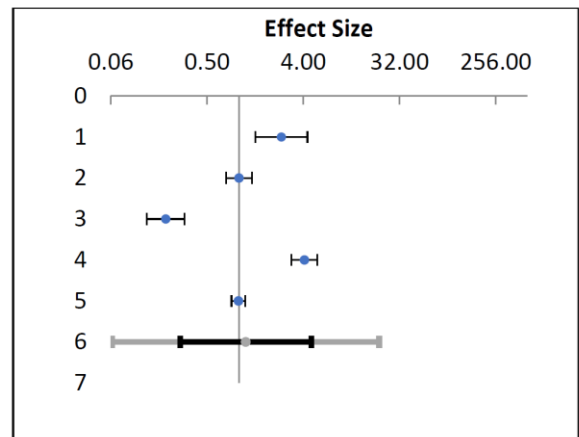


Fig. (2). Graph representing effect size.

Input values for the meta-analysis with the random effects model: The sample size and mean of the five included studies were data tabulated gender-wise for meta-analysis. Confidence interval: The prevalence of the 5 included studies with 95% confidence limits is shown in Table 2, representing the odds ratio.

Table 2.

#	Study Name	Odds Ratio	CI Lower Limit	CI Upper Limit	Weight
1	Aljehani	2.50	1.42	4.39	18.93%
2	Abolfotouh	1.00	0.76	1.32	20.32%
3	Temsah	0.21	0.14	0.31	19.78%
4	Almaghrabi	4.11	3.10	5.45	20.31%
5	Al-hanawi	0.99	0.85	1.15	20.67%

Estimating the extent of heterogeneity: The meta-analysis indicates that the heterogeneity was high between studies ($I^2 = 97.5\%$, $T^2 = 0.82$, $P = 0$, and Q statistic value $Q = 160.24$); hence, the random effect model was considered.

Heterogeneity	
Q	160.24
p _Q	0.000
I ²	97.50%
T ² (Odds Ratio)	0.82
T (Odds Ratio)	0.91

The z-value is z=0.28, while the one-tailed and two-tailed tests for p-values were 0.388 and 0.776, respectively.

Z-value	0.28
One-tailed p-value	0.388
Two-tailed p-value	0.776

Publication bias: The Egger test was used to determine publication bias, and a funnel plot was used to graphically show the bias (Fig. 3) (Dwivedi et al. 2021). High heterogeneity (I² = 97.5%) between studies, as evidenced by the funnel plot, indicates that there is no asymmetry in the distribution of effect sizes, with an Egger test value of P = 0.07. The funnel plot was asymmetric, and trim-and-fill analyses yielded similar pooled effect sizes, assuming that this asymmetry reflects publication bias.

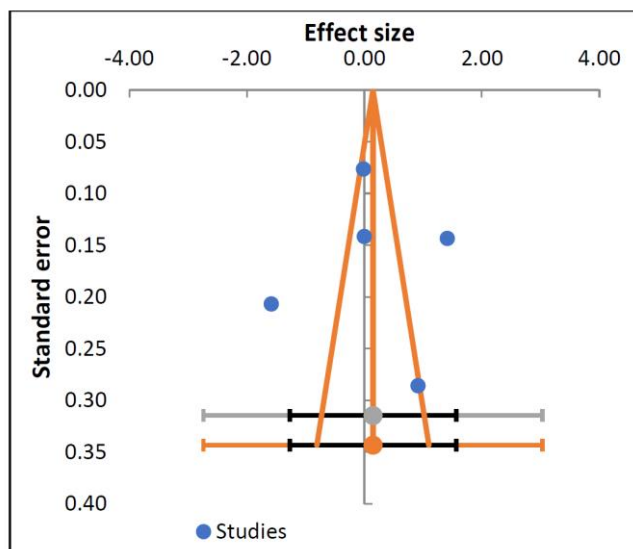


Fig. (3). Funnel plot in publication bias.

The current research is based on original research articles that have used screening tools for literature searches and meta-analyses of the impact of the COVID-19 pandemic on the mental health of HCWs.

5. LIMITATIONS

In this study, only the Scopus database was used because of the time constraints. Other databases, such as Google Scholar, EBSCO, and PubMed, can be used to assess the distress felt by HCWs. Further research is needed to assess the effect of distress on acute mental health crises and decreased productivity. Finally, this study focused on HCWs in Saudi Arabia, although future studies may replicate this model or

extend it to other countries, such as other GCC or Arab countries (Almaghrabi et al. 2020). We would also emphasize the latent potential contribution of a strategic orientation to HRM in the healthcare context.

6. CONCLUSIONS

This study aimed to review the available research on the impact of COVID-19 on HCWs, specifically in Saudi Arabia. First, a research question was presented: “What is the impact of COVID-19 on the mental health of healthcare workers in Saudi Arabia?”

The literature search resulted in seven papers that were analyzed to study the impact of COVID-19 on the mental health of HCWs. From these studies, it is evident that COVID-19 adversely affected HCWs. The major causes of concern are the fear of contracting the virus from the patients they are attending to, and the fear of transmitting it to their family members and friends, making them vulnerable to the disease. This literature review and meta-analysis reports a high prevalence of anxiety, depression, trauma, and sleep disorders among caregivers during the COVID-19 pandemic. During the lockdown, self-reported acute mental health issues were frequent (Alfawaz et al. 2021). Consequently, there is a major concern for the mental health of caregivers during the COVID-19 pandemic, as well as potential future health crises (Yan et al. 2021). Curfews, lockdowns and quarantine regulation determine everyday life in most countries worldwide, since the outbreak of the Corona Pandemic in the beginning of 2020 the world is upside down, and it has a significant impact on the global economy also(Bernhardt, 2021).

It can be concluded from the current study that COVID-19 has produced varied levels of impact on the mental health of HCWs (Abolfotouh et al. 2020). Hence, it is the responsibility of mental health departments to assume a leadership role and show high levels of preparedness in crisis-like (COVID-19 pandemic) situations. Such external crises require the dynamism of HR systems to address the growing concerns of all sectors worldwide (Adonu et al. 2020). Departments and systems should implement strategies for psychosocial management that involve the development of new skill sets, steps to educate the public about risk, proactive training, dissemination of information to avert (medical) crises, and prevention and management procedures during a crisis. Finally, providing full support and assistance to the health staff and rescuers is critical. A proactive approach to providing psychological and counselling services to prevent the increasing rate of HCW anxiety disorders is necessary because if the health staff struggles with mental health and psychological pressures, the fight against COVID-19 will be lost and the weapons will be compromised.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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