The Effect of the COVID-19 Pandemic on the Mental Health of Health Care Workers: A Systematic Review

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Abstract

Health care workers (HCWs) continue to be the primary frontline workers treating patients during the COVID-19 pandemic, and consequently, their mental health has been affected. This study aimed to examine the prevalence of mental health issues experienced by HCWs as a result of their exposure to stressors caused by the pandemic. Prior to the pandemic, burnout and mental health have affected the turnover rate for HCWs, so meeting the workforce needs throughout a pandemic may be even more challenging and further increase the turnover rate. On account of these downstream effects, we also addressed the efficacy of interventions already in place to evaluate and address the mental health of HCWs. We searched the e-databases MEDLINE, PubMed, and PsychInfo to identify studies from 2019 to 2021 pertaining to HCWs' mental health during the COVID-19 pandemic, specifically from the United States. In addition, studies related to the HCWs' work environment and the overall effects of COVID-19 were included. We assessed the risk of bias and screened each study. We also interpreted data based on symptoms or diagnoses of mental health issues, including comparisons before and after the pandemic. Furthermore, we evaluated treatments and policies implemented for the mental health of HCWs. The investigation demonstrated that there are significant mental health effects observed in frontline HCWs, and new interventions and policies should be administered to prevent, treat, and evaluate these issues. Certain demographics within the HCW population are further impacted and may require additional or alternative treatments. As a result, it is integral to our healthcare system and to society to understand the impact of the pandemic on HCWs' mental health and to implement effective support and treatment policies for HCWs.

Introduction

The COVID-19 pandemic has stretched the healthcare field to its limits, accounting for over 6,274,000 deaths and 522,000,000 confirmed cases globally (1). In the United States (U.S.) alone, there have been over 82,000,000 cases and nearly 1,000,000 deaths (1). As a result, pandemic conditions have increased the demand for health care workers (HCWs) (1). HCWs can be defined as all individuals who work with patients in a medical setting (2). Frontline HCWs are specifically defined as those who directly treat patients in acute medical settings and have been called on to increase their workload during the COVID-19 pandemic due to the high patient demand (2). Amid the spreading of the disease in 206 countries, HCWs remain the primary population involved in treating the disease (3). The rise in deaths and cases, along with the lack of treatment and protective gear early on, affected the mental health of HCWs treating patients on the front lines (4). Furthermore, the uncertainty of the quality and quantity of personal protective equipment (PPE) heightened the impact of stress on HCWs, primarily due to the changing guidelines of what PPE is safe and effective (4). In addition, HCWs were expected to work long hours with the constant risk of being infected and transmitting the disease to their families (4). Though the mortality rate for COVID-19 is 2%, it has a higher transmission rate and a higher mortality rate than the related diseases severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) combined (3). By proximity, HCWs are much more vulnerable to the disease and witness great travesties during pandemics, exposing them to physical and psychological stressors (5). Following the 2003 SARS outbreak, the anxiety felt by HCWs rose due to an increase in illnesses and deaths of the colleagues of these HCWs (5). As a result, HCWs experienced heightened anxiety and were reluctant to work, significantly impacting the healthcare system, as the demand for HCWs sharply increased (5). Due to these demanding situations, the pandemic has extensively affected the mental health of HCWs (6). The increasing number of suspected and confirmed cases, deaths, overwhelming workload, lack of PPE, widespread media coverage, and inadequate support, have contributed to HCWs' psychological effects (6). As HCWs continue to treat patients with COVID-19, they have faced, and continue to face, multiple mental health issues, including depression, anxiety, insomnia, and post-traumatic stress disorder (PTSD) (7). PTSD is defined as experiencing a particular event that incites distressing memories, ultimately leading to the development of various depression and/or anxiety related symptoms (8).

As we continue to feel the effects of the COVID-19 pandemic, there is need for research to examine the long-term impacts of isolation and factors attributable to the pandemic. Because the pandemic is still ongoing, this study does not address the gap completely, but aims to answer this question using evidence from published studies. One gap in the literature is the specific effect of the pandemic on mental health in HCWs, particularly in the U.S. Both clinical and non-clinical employees have experienced negative effects on their mental health during the pandemic (9). This has been tied mainly to the change in the workplace environment (9). Prior to the pandemic, a key area of interest was physician burnout (10). Data from the beginning of the pandemic revealed that about half of physicians in practice were affected by burnout (10). Previous studies have demonstrated that occupational stress was consistently due to large numbers of patients, stress in giving care and fulfilling responsibilities as a physician (10). However, no studies have examined these topics in the context of the COVID-19 pandemic. Additionally, it has been found that mental health is a key factor in high turnover of medical physicians in addition to HCWs as a whole (11). Early in the COVID-19 pandemic, PTSD symptoms in HCWs were observed, stemming from the high death rates witnessed by HCWs and the mentally taxing environments (7). HCWs in some regions have worked through two pandemics in the past two decades caused by highly infectious respiratory illnesses (7). Previous research on past pandemics has highlighted the necessity of addressing the mental health toll of the pandemic on HCW (12). The arduous conditions imposed by the pandemic requires a thorough investigation into the effects of COVID-19 on HCW mental health, in order to treat our current HCWs, prevent future mental health issues in HCWs, and develop policies for future outbreaks and similar situations. This investigation aimed to explore the extent to which the COVID-19 pandemic has affected the mental health of HCWs. An overview of how HCWs have experienced changes in mental health as a result of the COVID-19 pandemic and the accompanying stressors is provided; further, these findings are compared to baseline data and the efficacy of implemented interventions on addressing mental health in HCWs is evaluated.

Methods

Protocol

A systematic review of studies published in PubMed and PsychInfo was conducted to understand how the mental health of HCWs were affected by the COVID-19 pandemic. MEDLINE was used to construct our systematic review. MEDLINE is published by the National Center for Biotechnology and specializes in articles pertaining to the life sciences and has a specific focus on biomedicine (13). MEDLINE is published by the National Center for Biotechnology Information and has been used since 1966 (13).

Our inclusion criteria consisted of peer-reviewed literature examining the effect of the COVID-19 pandemic on HCWs, specifically analyzing the effects on HCWs in the U.S. Our exclusion criteria were publications in languages other than English. We limited our search from 2019 through 2021 and included all types of studies. After the search was conducted and possible sources were identified, a rigid screening process was used. By utilizing a pre-specified robust search strategy, we aimed to reduce potential screening bias in our review. The study was deemed exempt from IRB review.

Data exploration and inferential statistics

We used a qualitative approach to identify key concepts and summarized them in relation to the search query. Our goal was to identify and summarize relevant details, such as prevalence of mental illness symptoms reported among HCWs, and before-and-after comparisons from individual investigations. We integrated conclusions from relevant sources into a focused project regarding the effect of the COVID-19 pandemic on the mental health of HCWs in the U.S., as well as the consequences of these effects. Additionally, we evaluated the efficacy of implemented interventions as a separate, but related, issue. As such, we conducted a two-pronged investigation to integrate the evidence for each piece into a more usable, accessible, source, displaying the data in a comprehensive conclusion for decision makers. Because we conducted a systematic review, the use of quantitative statistical analysis was not applicable to our research.

Results

Quality assessment

A combined total of 124 citations were identified from the database searches after removal of duplicates. Sixty-two papers met the eligibility criteria and reported information for quality appraisal and data extraction. Most of the included studies were assessed as being of high risk of bias (n = 26/62), or of "some concern" (n = 18/62). Ten studies were assessed as low risk of bias. Studies that were considered as high risk or of "some concern" showed shortcomings due to either their randomization process, deviations from their intended interventions, missing outcome data, their measurement of outcomes, or selective reporting.

Observation of anxiety and depression symptoms in HCWs

Twenty-nine studies specifically examined the incidence of anxiety and depression on HCWs. Of the 29 articles, 17 conducted original research in the form of surveys, 9 were meta-analyses, 2 were editorials, and 1 was a mixed method study. All 17 surveys used some form of the Patient Health Questionnaire (PHQ) to assess depression and/or anxiety. Out of the 29 studies, 14 used the GAD-7, and 2 used the GAD-2 assessment to assess anxiety. The meta-analyses overall showed an increase in anxiety and depression for HCWs (3, 21, 23–24), but Smallwood et al. found that there was no difference in the mental health of HCWs and the public for anxiety, depression, and insomnia (21). However, there was a higher prevalence of suicidal thoughts and ideation in HCWs (18, 39, 42) compared to the general population. The systematic reviews also showed a high prevalence of anxious and depressive symptoms in HCWs, along with sleep disturbances (4, 14, 39, 41).

Observation of PTSD symptoms in HCWs

Seven studies specifically reported the presence of PTSD symptoms in HCWs (25, 27, 29, 34, 36–37, 41). Three studies utilized versions of the impact of events scale (27, 36, 38), three studies used the PTSD checklist-5 (30, 43, 39), and one employed the primary care posttraumatic stress disorder screen (25) to assess PTSD symptoms. These methods of evaluation were effective choices because they allowed the assessment of the impact of pandemic stressors on mental health (specifically PTSD symptoms) in a time-sensitive manner. PTSD symptoms were significantly correlated with other characteristic signs of distress such as substance abuse, as HCWs who reported experiencing PTSD symptoms correlated with having at least five drinks in a day (25). Elevated percentages of HCWs reporting symptoms of PTSD corresponded with higher burnout rates (27, 30, 43). PTSD symptoms were exceptional among psychiatric considerations due to their strength of correlation with occupational stressors in addition to their relation to adverse occupational outcomes. Demoralization was the factor most strongly correlated with PTSD symptoms (39). Hendrickson et al. also demonstrated a significant relationship between PTSD and thoughts of self-harm or suicide. HCWs in direct contact with COVID patients, particularly patients suffering from severe disease, are at greater risk of experiencing PTSD symptoms than their coworkers (27, 36, 38, 43). Most (73.3%) critical care nurses reported mild to severe PTSD symptoms during and after caring for COVID patients (38). PTSD symptoms may be particularly important for early detection to decrease occurrences of adverse personal and occupational effects (39).

Interventions

Numerous studies have been published in the past two years providing evidence of the COVID-19 pandemic's effect on the mental health of frontline HCWs. Of the studies that met our inclusion criteria, 8 explicitly mentioned the need for some form of intervention. Three of these studies did not provide specifics regarding what the intervention should be, and two others provided broad suggestions of better stress management. Three of the 8 studies suggested a need for a digital or virtual way to improve mental health of HCWs. While these studies merely defined the need for intervention, 4 publications were aimed at studying specific interventions to improve mental health in health care during the COVID-19 pandemic.

The first was a systematic review of 31 intervention-based studies of mental health, but only studies designed during the COVID-19 pandemic were included. Three important themes of improving mental health during the pandemic emerged from these studies: harm prevention, illness-focused mental health management, and promoting positivity (48). The study detailed by Kelly et al. utilized an experimental design to test an e-learning digital solution to improve HCWs' well-being (49). A total of 474 healthcare workers were included in the study's results, which showed that their training tool improved resiliency and well-being scores with 95% confidence (49). Another investigation by Bureau et al. examined a digital intervention to improve mental health through cognitive-behavioral therapy (50). A total of 10 HCWs participated, which included nurses, a social worker, a medical student, and various other members of the interprofessional healthcare team. After utilizing the digital tool, phone interviews and surveys were used to assess the success of the intervention. Based on qualitatively positive feedback from the subjects, the website was deemed successful, but in a self-described convenience sample of only 10 participants (50). The final publication is a systematic review of various psychological support interventions and their usefulness during outbreak conditions. Of the 12,104 studies included in the review, only 4 were conducted during the COVID-19 pandemic with HCWs, while many others related to past outbreaks of infection in varying populations. Two separate investigations, performed by Bureau et al. and Doherty et al., tested interventions that were delivered remotely, in the form of a digital app or website (50–51). While they concluded that the digital interventions show some effectiveness, more longitudinal studies will need to be performed on larger sample sizes to determine their true utility (51). All told, 3 of the 4 intervention studies examined digital forms of intervention.

Discussion

As evidenced by the literature, there are measurable impacts on the mental health of HCWs across the globe, resulting in varying degrees of burnout. Regarding anxiety and depression, 3 studies indicated there was a higher prevalence of suicidal thoughts and ideation amongst HCWs, and 4 studies noted a higher prevalence of depressive and anxious symptoms in HCWs. These symptoms often worsened with influxes in the patient population, which have become increasingly common as the COVID-19 variants have emerged and spread. The combination of elevated number of deaths and emergencies prompted by the COVID-19 pandemic contributed to the development of psychiatric symptoms in some HCWs and exacerbated existing conditions in others. Seven studies documented the presence of PTSD symptoms in HCWs through screenings, which revealed that workers with direct contact with COVID-19 patients were at greater risk of developing PTSD. Development of PTSD, anxiety, depression, and insomnia can lead to burnout and substance abuse if left untreated. Several intervention studies have been conducted for treatment of anxiety, depression, and PTSD in HCWs. These studies demonstrated some effectiveness of digital tools to address the mental health of HCWs. However, they all cite significant limitations in the way they were conducted, namely with the utilization of small convenience samples of the population, in addition to publication bias and region/country specificity. There were also limitations that were not mentioned by the papers that relate to restrictions posed by the pandemic, which narrowed their choices of methods to study. Limiting the type of intervention solely to digital methods, while informative, also limits the assumptions that can be made about interventions more broadly.

Future studies should use a more varied approach to their designs, assessing more traditional therapies to gauge the effectiveness of those resources as well. To address future occurrences of burnout, the healthcare field must ensure that there are measures to protect the well-being and mental health of their employees. Through preventive measures and intervention at the individual level, there may be ways to decrease the prevalence of depression and anxiety among HCWs and limit the lasting impacts of trauma.

Conclusion

In conclusion, numerous studies have demonstrated an increase in mental health symptoms (anxiety, depression, sleep disturbances, and PTSD) among HCWs during the COVID-19 pandemic. Several investigations have proposed specific interventions that can be implemented to improve the mental health symptoms. As the COVID-19 pandemic progresses and HCWs continue to experience stressors, it is essential for researchers and policy makers to better understand the impact on the mental health of the health care workforce and address the unmet psychological needs.

Disclosures

The authors have no relevant disclosures.

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