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Mental Health of Healthcare Workers during the Outbreak of COVID-19

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ABSTRACT
During the COVID-19, millions of HCWs around the world have devoted themselves to fighting against the virus. While the physical and psychological of patients or the public are worth examining, the HCWs' mental health state is also worth caring for. This article summarizes some factors that may induce mental disorders among HCWs, as well as compare the prevalence of anxiety, depression, PTSD, and other disorders or symptoms. It also tends to find some ways from a resilient perspective to assist medical staff to overcome these difficulties. Further studies should include more factors that may cause HCW's mental problems and focus on long-term mental development of them

Keywords: *HCWs, mental health, COVID-19, resilience*

1. INTRODUCTION

Since the outbreak of the coronavirus disease 2019 (COVID-19) pandemic, millions of healthcare workers (HCWs) in the world have participated in the battle against the disease. HCWs, especially those who fight in the frontline, face many challenges in treating patients, including high risks of being infected, no specific lifesaving treatment, limited amounts of medical equipment and so on [1]. At the same time, they have to deal with their emotional exhaustion and take care of their families to prevent them from being affected, which all put massive physical and psychological stress on them [2]. Under unprecedented circumstances, HCWs are more susceptible to a series of mental disorders, such as anxiety, depression, PTSD and so on. Furthermore, these emotional burdens as well as physical exhaustion decrease their focus on working, which will worsen the efficiency of caring for patients [3]. While they are appreciated for being brave and kind in battling against the virus, HCWs' mental health is worth more attention from the government and the public.

Although under huge pressure, HCWs also have some ways to cope with. Resilience is the ability to manage adversity and includes learning how to grow stronger from the experience [4]. It is also seen as an effective protective factor against depression and anxiety [5]. In the clinical environment, staff who have received nursing training with ample resilience will be able to handle emergencies and conflicts so that they could protect themselves from mental health problems as well as keep on taking care of their patients [6, 7, 8]. Analyzing their mental state from a resilient perspective can help researchers better understand medical staff's strengths and weaknesses. Therefore, this article aims to exam the mental health state of HCWs and provide some suggestions from a resilient view to ensure their global recovery from the COVID-19 pandemic.

2. FACTORS THAT CONTRIBUTE TO MENTAL DISORDERS

A series of biological, psychological, and socioenvironmental factors contribute to risk mental disorders.

Gender is a major biological variable to consider. Many studies point out that female is easier to have mental disturbances. Young female HCWs were related to severe psychological distress than male workers during the epidemic [9, 10]. However, one study found that male staff instead of in Saudi Arabia experienced a heavier mental disturbance, which might be caused by other cultural factors [11]. Besides, W. R. Zhang et al. [12] found that whether medical health workers have an organic disease is a powerful predictor for insomnia, anxiety, depression, somatization, and obsessive-compulsive symptoms during COVID-19.

Personality, mental conflicts and problems coping strategies are crucial psychological elements for HCWs

to accommodate difficulties during the pandemic. Previous literature summarizes that having some particular personality traits (e.g. fear of scrutiny), experiencing role conflict between profession and family, and feeling caught into potential moral injury exposure are main determinants for front line HWCs having mental distress and mental disorder during the SARS pandemic [13]. Those who had higher exposure to moral injury are associated with worse mental health, which might be continuous and hard to recover [14, 15]. Perceived stress, infection-related worries, and burnout are also found to have mental impacts on medical staff in previous outbreaks [16]. HCWs equipped with problem-focused coping skills or involved in reflective practices will have less mental stress and alleviate their fear during risk and serried works in pandemics [13]. Furthermore, self-efficacy and social support are negatively associated with anxiety and insomnia during COVID-19, which works as protective factors against mental distress [17].

Various socioenvironmental factors interweave and complicated influences on the possibility and severity of mental disorders of medical staff. Among HCWs, specific occupational roles, such as nursing, are related to an increased level of adverse outcomes [14]. The HCWs in high-risk areas, like ICUs, are at a higher risk of being infected, therefore increasing their sense of fear, apprehension, and stress [13]. Nurses who cared for patients with COVID-19 are reported more symptoms of psychological disorder symptoms than those who did not [3]. In addition, working regions affect the level of mental disturbance. At the beginning of the epidemic, those who worked outside Hubei province experience relatively less mental burden than those who worked in hospitals in Hubei, especially in Wuhan [10]. In Wuhan, workers in rural areas were more susceptible to mental disorders, probably because of their lack of medical skills and conditions to take care of patients [12].

Furthermore, some risk factors for exposure, including ways from their patients, co-residents in hospital, family members, colleagues, friends, neighbors, respectively predict the severity of mental disturbances of staff in Wuhan (China) significantly [9]. Isolation/quarantine, misinformation from social media, lack of support from organizations and colleagues, and long working hours exacerbate their distress as well [11, 13].

3. MENTAL HEALTH STATUS AMONG HCWS

Studies related to the psychological state of medical staff in previous pandemics, including severe acute respiratory syndrome (SARS) and the Middle East respiratory syndrome (MERS), reveal a noticeable prevalence of mental health problems, including anxiety, depression, PTSD, insomnia, and so on [13]. During the prevalence of COVID-19 from April to July 2020 in the UK, 58.9% of front-line HCWs reported that they had probable common mental disorders (the General Health Questionnaire, GHQ-12) [14]. In Saudi Arabia, more than half of the front-line HCWs experience different levels of psychological distress (the Kessler Psychological Distress Scale, k10), with 27.3% of them experiencing severe psychological distress [11]. Cumulative studies point out that mental disturbances of HCWs in China peaked at the onset of the COVID-19 and gradually declined as more effective steps had been taken and constantly reduced mortality [18]. Anxiety, depression, insomnia, and other psychological problems occur among medical staff all over the world.

The prevalence of anxiety (Generalized Anxiety Disorder-7, GAD-7) among HCWs in China at the beginning of the epidemic was 44.6% [10]. For those who worked in Wuhan (China), the percentile reaches 62%, approximately 30% of them had a moderate or severe level of anxiety (GAD-7) [9]. When there were still high levels of mortality in the UK, 41.4% of HCWs reported probable symptoms of anxiety (GAD-7) [15]. Compared with nonmedical staff, the prevalence of anxiety (Generalized Anxiety Disorder 2-item, GAD-2) in HCWs is significantly higher, which is nearly 13.0% among 927 workers in Wuhan (China) [12].

50.4% of front-line HWCs in Wuhan (China) and 42.7% of those in London (the UK) reported symptoms of depression (Patient Health Questionnaire, PHQ-9) [10, 15]. Some factors influence depressive symptoms of HCWs. For women staff in China, their susceptibility to depression is more likely to be influenced by no participation in the Hubei aid program, no traumatic experience before COVID-19 outbreaks and PTSD symptoms [19]. Nurses reports more severe depression cases than physicians [10]. In contrast to black peers, white HCWs were at higher risk of suffering from depression [14].

A great number of HCWs are disturbed by insomnia (both studies used the Insomnia Severity Index, ISI), at a percentage from 34% to 38.4% at the beginning of the epidemic in China [10, 12]. A higher prevalence of insomnia exists among physicians and nurses in contrast to other groups of people [20]. 45.23% of medical staff on duty during COVID-19 outbreaks had PTSD symptoms (impact of events scale revised, IES-R) [19]. There are 30.2% of HCWs in the UK having probable PTSD (the PCL-6 civilian version, PCL-6) [14].

A few studies exam other mental problems and symptoms among medical staff. One study found that 5.3% of medical staff reported obsessive-compulsive symptoms (the Symptom Check List-revised, SCL-90-R) after battling against the virus for a while, induced by living in rural areas, contacting with risk COVID-19 patients in working places, and having organic diseases [12]. After the outbreak of COVID-19, 13.5% of medical workers thought or attempted suicide [14]. But the cause

of suicidal ideas might not be directedly related to COVID-19, which was possibly multiple-interrelated.

4. RESILIENCE

Resilience is thought to be one of the key factors of HCWs to better adapt to their work during the COVID-19 pandemic, which plays a moderating role in buffering physical and psychological impacts of COVID-19 on HCWs. A previous study has shown that the higher resilience of nursing students under the stressful clinical training program, the less likely they will risk depression and anxiety. It also reveals a partial mediating effect on anxiety and depression, under the control of age, living condition, and allowance [7]. Fostering resilience among nurses is helpful to decrease symptoms of PTSD and distracted behaviors in their work [3].

However, the original resilience among these workers is different and is affected by several factors, which induce HCWs will adopt different strategies to cope with stressful situations. Doctors had the lowest levels of psychological resilience among HCWs [21]. But Schierberl Scherr et al. [3] did not find any discrepancy in the levels of resilience in nurses whether they directly cared for patients with COVID-19. Elder HCWs had higher levels of resilience, yet they are also influenced by high levels of negative mood [21].

Though different in the original levels, resilience can be fostered and strengthened. Studies found that higher resilience levels were positively related to increased sleep, positive affective state, and overall life satisfaction [21]. During a hard time, if workers have a reasonable shift arrangement so that they are not overloaded and have enough time to rest, they might feel more confident to cope with stressful conditions and improve their efficiency. Besides, external assists, including sorts of psychological services for medical workers, are beneficial. One study proves that accessing mental healthcare services, including psychological materials on mental health, psychological resources through media, psychotherapy counseling, is an effective way for HWCs to alleviate severe mental health disturbances and improve physical strength, although these resources were limited at the onset outbreak of COVID-19 for medical staff in China [9].

5. DISCUSSION

In comparison to nonmedical health workers, health workers experienced a significantly higher prevalence of mental disturbances, including the symptoms of depression, anxiety, insomnia, and other problems [12]. Although under severe pressure, HWCs still feel their social and professional obligation to continue battling against the virus [2]. HCWs themselves and the related department have effective methods to get them rid of those uncomfortable feelings. For example, some medical workers are naturally optimistic or have specific strategies taught by specialists. Therefore, they can better devote themselves to their hard work during this period. Even have already been hurt, workers are willing to alleviate their pain by accessing professional psychological resources.

Current research has already provided the related departments and medical workers with some valuable advice about the mental health state of HCWs during pandemics like COVID-19. First of all, it is a crucial investment in mental health tools for medical staff who might be in a dangerous condition when they are in the front line of fighting against disease. Easy access to these resources will benefit them at different stages of working. What is more, since excellent preparation before battling against the virus and adaptive coping strategies can effectively reduce the risk of being overwhelmed by stressful situations, related medical staff can equip themselves with positive methods in advance so that they will be more confident if troubles come.

What is also worth noticing is whether other reasons indirect or unrelated to COVID-19, such as medical workers' persistent career exhaustion, cause these symptoms. These possibilities might be veiled and need further examination. Besides, some studies also point to a few contradictory results regarding factors that may induce poor mental health among HCWs. Chen et al. [19] found that the department and experience of direct contact with confirmed/suspected patients or their biological samples do not evince significant differences among medical staff. In addition, all of the workers have the relatively same possibility of having depression symptoms, no matter they or their family members are confirmed or suspected cases of COVID-19, as well as being quarantined. Therefore, more interactive factors should be taken into consideration so that a few hypotheses will be ruled out and the conclusions will be more confidential. Moreover, as the knowledge of the disease and treatments accumulated, HCWs' cognition and emotions continue to change. It is clear that their panic has decreased gradually as more effective measures are adopted. In the future, to better understand the change of HCWs' mental health and their levels of resilience, some longitudinal studies should be taken as well.

6. CONCLUSION

This study not only summarizes biological, psychological, and socioenvironmental factors that may cause HCW's mental disorders during the pandemic of COVID-19, but lists the prevalence of anxiety, depression, PTSD, and other mental symptoms among them. Both previous pieces of training and convenient access to psychological resources are effective methods to build resilience, which benefits HCWs and assists them to fight against mental disturbances. Current researches are limited due to the complicated situations

and time. In the future, more comprehensive cross-sectional and longitudinal studies should be taken.

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