Mental Health Outcomes Among Tunisian Health Care Workers During the COVID-19 Pandemic

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Abstract- The pandemic caused by Coronavirus-19 Disease (COVID-19) is having negative effects on healthcare workers (HCW) mental health due to the tremendous amount of stress to which they are exposed to. We aimed to assess the number of mental health outcomes among HCW treating patients with COVID-19. This cross-sectional study collected demographic data and mental health measurements from HCW in different hospitals using an online questionnaire. Participants were asked to complete the 9-item Patient Health Questionnaire (PHQ-9), the 7-item Insomnia Severity Index (ISI), and the 7-item Generalized Anxiety Disorder scale (GAD-7). One hundred and forty-one participants with a mean age of 30.6±25 years and a sex ratio of 0.3 completed the online questionnaire. Participants from major university-hospital centers of northern Tunisia were divided into two groups: 78% medical and 22% paramedical staff. Twenty-two participants (15.6%) had a chronic disease, and 21 (14.9%) had a history of depression. Nineteen (13.4%) of the participants were infected with COVID-19. Thirteen percent of participants experienced the same anxiety level as the first-time taking care of COVID-19 patients, while 65% were rather an at ease compared to the first time. Forty-seven percent of participants felt the need for psychological support, and 16.7% of them had consulted a psychiatrist. Mild depression was detected in 14.1% of cases, moderate depression in 4.2% of cases, and severe depression in 2.1% of cases. As for anxiety, 36.1% of participants suffered from mild anxiety, 14.9% from moderate anxiety, and 4.9% from severe anxiety. Mild insomnia was detected in 44.6% of cases, moderate insomnia in 14.9% of cases, and severe insomnia in 9.9% of cases. Female gender (depression: *P*=0.05; anxiety: *P*=0.05; insomnia: *P*=0.02), having friends or relatives with COVID (depression: *P*=0.01; anxiety: *P*=0.05), psychiatric illness (depression: *P*=0.05; anxiety: *P*=0.01; insomnia: *P*=0.01), and chronic disease (depression: *P*=0.02; anxiety: *P*=0.03) were significantly associated with more severe mental health symptoms. Tunisian HCW experienced psychological burdens and a high rate of anxiety, depression, and insomnia. HCW should be protected in order to promote mental well-being.

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Introduction

Since December 2019, novel pneumonia caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was first reported in Wuhan (1). The virus spread internationally and rapidly, leading to a global pandemic: the COVID-19 pandemic (2). The first case in Tunisia was reported on 2 March 2020. As of November and December 2020, the total number of reported cases in Tunisia was 96,769 and 139,140, respectively, with 3,260 and 4,676 deaths, respectively (3). Healthcare workers (HCW) have played a vital role in the fight against the pandemic. In fact, the physical and mental load of working on the front lines could induce mental health problems and increase burnout, which is already frequent among HCW (4). Studies from previous

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infectious pandemics suggested that HCW may be at risk of experiencing or worsening mental health illnesses (5,6). Similar concerns about the mental health of the HCW who are directly involved in the diagnosis and treatment of COVID-19 patients arose. Not only are HCW experiencing death during this pandemic daily, but they are also putting themselves at risk of contracting the virus. The traumatic stress of the pandemic is already being assessed in HCW (7-11). Preliminary data from the COVID-19 pandemic in China reported that 50.3% of HCW developed depression, 44.6% anxiety, and 34% insomnia (12). Here we aimed to assess the number of mental health outcomes among HCW treating patients with COVID-19.

Materials and Methods

Study design and patients

This cross-sectional study conducted from November 1, 2020, to December 31, 2020, included Tunisian HCW from four major university-hospital centers in northern Tunisia, equipped with wards for COVID-19 patients and supporting a large number of COVID-19 cases daily. All participants were directly engaged in diagnosing or treating patients with COVID-19. HCW included were divided into two groups: medical and paramedical staff. Demographic data included occupation, age, and marital status. Mental health measurements were collected via an online questionnaire.

Outcomes

The 9-item Patient Health Questionnaire (PHQ-9) (13), the 7-item Generalized Anxiety Disorder scale (GAD-7) (14), and the 7-item Insomnia Severity Index (ISI) (15) were used to assess the severity of symptoms of depression, anxiety, and insomnia, respectively. The total scores of these measurement tools were interpreted as follows: PHQ-9 normal (0-4), mild (5-9), moderate (10-14), and severe (15-21) depression; GAD-7 normal (0-4), mild (5-9), moderate (10-14), and severe (15-21) anxiety; ISI normal (0-7), mild (8-14), moderate (15-21), and severe (22-28) insomnia. Statistical analysis was performed using SPSS 26.0 software. The Mann-Whitney test was applied for qualitative data, and the Chi-square test for quantitative data to investigate the effects of clinical features on depression, anxiety, and insomnia.

Results

A total of 141 participants with a mean age of 30.6±25 years (26-45) and a sex ratio of 0.3 completed the online questionnaire. Sociodemographic and occupational characteristics are presented in table 1.

Table 1. Sociodemographic and occupational characteristics of the participants

Variable	Value
Technical title, n (%)	109 doctors (78%), 29 nurses (20%), 3 hygienists (2%)
Marital statutes, n (%)	85 married (60.2%), 53 single (37.5%), 1 widowed (0.8%), 2 divorced (1.5%)
Smoking, n (%)	78 (55.3%)
Accompanying chronic disease, n (%)	22 (15.6%)
History of psychiatric illness, n (%)	21 (14.8%)
Number of individuals living together, M±SD	3.97±1.1 42% of whom were immunosuppressed
Living with an individual aged>60, n (%)	92 (65.2%)
Friends or relatives with COVID, n (%)	27 (19.1%)

Participants from major university-hospital centers of northern Tunisia were divided into two groups: 78% medical, including 60% doctors in training and 18% hospital doctors, and 22% paramedical staff. Nineteen (13.4%) of the participants were infected with COVID-19. The infection was contracted in the hospital in 4 of the cases. The diagnosis of COVID-19 among HCW was based on a real-time/Polymerase Chain Reaction in 73% of cases, computed tomography of the lungs in 16% of cases, and serology in 11% of cases. The department of occupational medicine was notified in 70% of cases. Eighty-seven percent of infected participants were confined in their homes, and 13% were confined in hotels dedicated to containment. The mean work disruption duration was 11.5 days. The mean number of night shifts per month in the COVID unit was 5.3. The mean number of hours of work in the COVID unit per month was 62. Compared to the first-time taking care of patients with COVID, the same level of anxiety was noted in 13% of cases, while 65% of participants were rather at ease. The workload increased in 62.9% of cases compared to the pre-epidemic state. The need for psychological support was noted in 47% of cases, 16.7% of whom had consulted a psychiatrist. A diagnosis of depression, anxiety, and

burnout was made in 9, 13, and 3 cases, respectively. Antidepressants, anxiolytics, and psychotherapy were prescribed in 5, 10, and 12 cases, respectively. A significant number of participants reported symptoms of depression (20.4%), anxiety (55.9%), and/or insomnia (69.4%). Table 2 presents the severity categories of depression, anxiety, and insomnia among participants. Figure 1 summarizes the severity categories of depression, anxiety, and insomnia.

Table 2. Effects of clinical factors on depression, anxiety, and insomnia

Clinical factors	PHQ-9; *P*	GAD-7; *P*	ISI; *P*
Female gender	6 ; *P*= 0.05	6 ; *P*= 0.05	17 ; *P*= 0.02
Age < 40 years	2 ; *P*= 0.70	3 ; *P*= 0.20	15 ; *P*= 0.05
Participants with a history or current psychiatric illness	7 ; *P*= 0.05	7 ; *P*= 0.01	20 ; *P*= 0.01
Participants with chronic disease	6 ; *P*= 0.02	5 ; *P*= 0.03	8 ; *P*= 0.40
Participants with friends or relatives with COVID	5 ; *P*= 0.01	5 ; *P*= 0.05	6 ; *P*= 0.10
Participants living with individuals aged > 60 years	2 ; *P*= 0.50	6 ; *P*= 0.01	6 ; *P*= 0.50

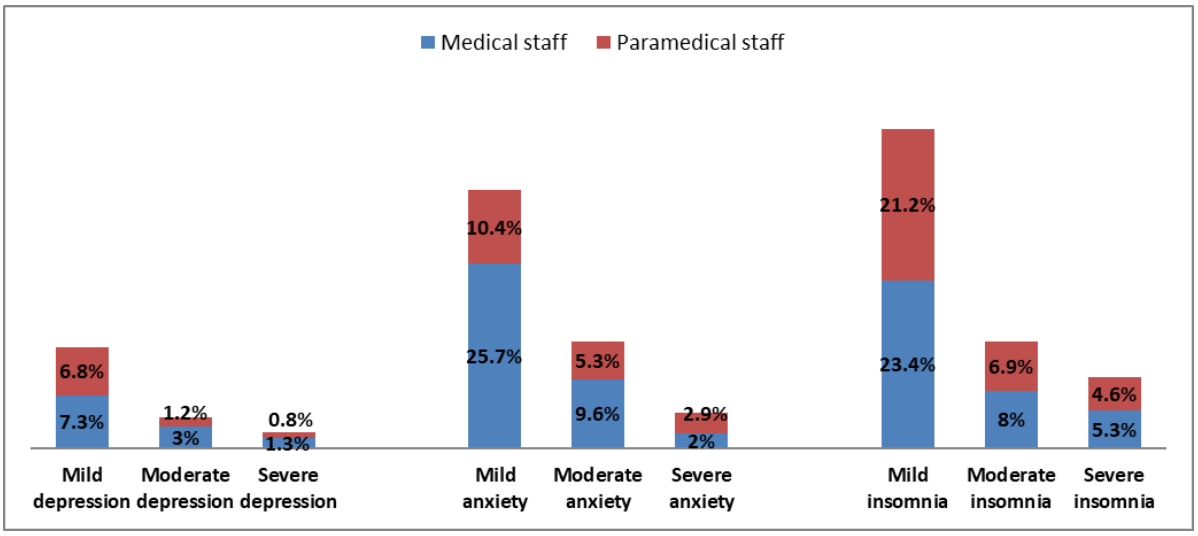

Figure 1. Severity categories of depression, anxiety, and insomnia.

Discussion

Our study highlights the frequency of mental health symptoms among HCW treating patients with COVID-19. Symptoms of depression, anxiety, and insomnia were reported in 20.4%, 55.9%, and 69.4% of participants, respectively. These findings are persistent with previous reviews on the topic (15-20). Our results further indicated that female gender, having friends or relatives with COVID, psychiatric illness, and chronic disease were associated with more severe mental health symptoms. These findings underline the major concern about the psychological well-being of HCW during this pandemic. According to the number of reported cases, our country had an important increase in the number of patients in a short time frame with a rapidly-growing rate of deaths. Measures to reduce the spread of the virus such as lockdowns and social distancing were attempted. The high prevalence of mental health symptoms is thus an expected finding among not only HCW, but also in society. This high prevalence of mental health problems among individuals with psychiatric illness may be explained by the recurrence of psychiatric diseases in distress situations, as shown in previous studies (21,22). Previous studies demonstrated that health anxiety was higher in women, which was confirmed in our study (22,23). The higher prevalence of anxiety and depression in individuals with chronic diseases may be explained by the increased risk of infection among these people. In fact, advanced age, as well as comorbid chronic diseases, are factors associated with higher mortality and increased risk of contracting the virus (24,25). HCW have high educational levels and have more access to information and more knowledge of the pandemic situation compared to normal people. The psychological response to these pieces of information may have an impact on their

psychological well-being. Sources of distress may include concern about self and family's lives, the quick spreading of the virus, suspected lack of supplies, and a high rate of mortality (12). Frontline HCW treating COVID patients are likely exposed to infection because of their frequent contact with COVID-19 patients, as well as the increased workload caused by the pandemic (26). Moreover, 61% of participants were juniors who had less work experience. During the SARS pandemic, studies among HCW showed that nurses with junior titles were more likely to develop psychological stress (26,27). Workplace burnout is also highly frequent among HCW (28), and it is interesting to further study the association with depression and anxiety. Possible protective factors were reported in previous reviews, including access to protective equipment, a good amount of rest, and psychological support (29,30). Although some effective interventions are available (31), their uptake is limited by the lack of time among HCW. Protecting HCW during this pandemic should be a priority in public health measures. Interventions promoting mental well-being should be implemented in frontline workers and those with psychiatric and chronic diseases.

This study has strengths and limitations. This study synthesized the current psychological impact of the COVID-19 pandemic on HCW in our country. To our knowledge, this is the first study nationally investigating this subgroup of the population on this topic. However, the cross-sectional nature of this study can be considered a limitation, which makes it difficult to assess the long-term effect of the psychological impact of this pandemic. Second, all participants included in this study were from the same region.

Our study suggests that the pandemic caused psychological distress among HCW. The effect was higher among female participants, individuals with psychiatric illness, and comorbid chronic disease. Therefore, psychological support system should be a priority to protect HCW and promote mental well-being.

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