

Research Article

Psychological Distress among Healthcare Workers with Chronic Diseases during the COVID-19 Crisis

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Background. Healthcare workers (HCWs) are a vulnerable group to psychological distress (PD) because they are subjected to strict working conditions, and the nature of the work implies a heavy level of emotional involvement. **Objective.** This study is aimed at determining psychological distress among healthcare workers with chronic diseases during the COVID-19 crisis. **Methods.** This was a quantitative cross-sectional correlation study. An online self-administered questionnaire was completed from July 2021 to October 2021 by a convenience sample of 302 HCWs at two primary healthcare centers in Saudi Arabia. The Kessler psychological distress scale was used to assess psychological distress among HCWs. **Results.** The prevalence of HCWs who contracted COVID-19 was 59.9%. The overall mean score of K10 was 4.38 (SD = 0.706). The majority of HCWs that had the highest percentage of a very high level of distress were female (66.2%), between the ages of 30 and 40 years (35.1%), had more than 10 years of work experience (48.0%), and were nurses (49.7%), married (61.6%), and infected with COVID-19 (59.9%). There was a significant association between the age, working experience, and PD scores of the HCWs P value < 0.05. A significant correlation between each of the variables of (heart disease, high blood pressure, lung disease, diabetes, ulcer, anemia, depression, and back pain) and PD whereas the P value < 0.05 and the R value < 0.3. **Conclusion.** HCWs with associated comorbidities have been greatly affected by the COVID-19 pandemic. There was a very high level of PD among the studied population. HCWs with hypertension and back pain were the most affected by psychological distress, and emotional distress could be exacerbated if the HCWs contracted COVID-19.

1. Background

Coronavirus disease 2019 (COVID-19) was declared a pandemic in March 2020 due to the worldwide concern surrounding the spread of the virus ([1] b). The outbreak of the COVID-19 pandemic has altered the psychological well-being of healthcare workers (HCWs) [2]. It has caused a serious burden and significant strain on healthcare systems and for many medical staff who have attempted to manage this situation, especially HCWs, who provide direct or indirect medical care to sick people [3]. Therefore, HCWs have been affected socially, physically, and psychologically [4].

Healthcare workers have been working on the frontline against the virus, and they have faced an increasing workload and increasing hours of work [5]. Furthermore, they may be directly exposed to the pathogen due to a lack of protective equipment; as a result, they may be afraid of infecting their friends and family as well as experience social isolation and discrimination. Additionally, it is very hard to deal with the patients who may die as a result of COVID-19 [6, 7]. In light of these concerns, psychological distress could be a possible emotional response that could lower the quality of the treatment delivered [2]. Therefore, healthcare workers may develop various aspects of PD as well as fear, emotional,

and sleep disorders [8], high levels of anxiety and depression, poor nutritional habits, and significant post-traumatic stress disorders (PTSD), which might occur at any stage [9]. This issue may have an impact on professional functions by lowering the quality of work and decision-making skills, particularly for those with a history of illness or who work with such patients. Therefore, maintaining the mental, physical, and social health of HCWs is crucial in the fight against the virus [10].

Healthcare workers who are exposed to COVID-19 face some challenges and barriers that cause PD. Some of these issues are related to the nature of illness, while others are related to social and organizational demands, and others are related to supportive resources that help to buffer the relationship between work demands and PD [11]. Additionally, the health crisis triggered by COVID-19 has affected HCWs with chronic diseases that are known as chronic health conditions that last one year or more and require ongoing medical attention or limit activities of daily living or both, such as heart disease, cancer, and diabetes and multiple sclerosis [12].

Moreover, the significant of the study was that working during the COVID-19 pandemic can have significant, negative consequences such as long-term PD in HCWs because of a high probability of exposure to the viral infection, an increasing workload through working more hours, and the fear of transferring the infection to their families. HCWs have a higher susceptibility to emotional distress in the form of stress, tension, sleeping disturbances, worry, depression, frustration, anger, and, most importantly, fear, than the general population throughout this widespread disease [13]. Therefore, HCWs most often experience negative emotions such as disappointment, detachment, isolation, and the loss of contact with family members as well as their close relatives, which have resulted in a decrease in service quality and negative attitudes toward patients [8].

The severity of psychological issues varies considerably and can manifest at any stage of crisis. It can range from low, moderate, high, and very high, accordingly. These psychological wellness issues have an impact on the quality of care provided by medical staff, their clinical agreement, and their dynamic abilities, which may make it difficult to combat COVID-19 [14].

To our knowledge, a few studies have been conducted to assess this issue. However, this is the first study in the Kingdom of Saudi Arabia (KSA) until now. Furthermore, we were interested in investigating several COVID-19-related factors and psychological factors that may be associated with psychological distress. This study will highlight COVID-19-related PD factors, and its correlates among healthcare workers with chronic diseases. Moreover, this study will indicate the role of factors influencing psychological distress such as sociodemographic factors and pre-existing chronic health conditions, as well as factors related specifically to the circumstances surrounding COVID-19 including quarantine, being infected, concerns about the virus, and feeling alone in the fight against the virus. Therefore, the aim of this study is to investigate psychological distress among healthcare workers with chronic diseases during the COVID-19 crisis.

The transactional cognitive theory of stress and coping will be the theoretical framework for the current study [15]. Based on this theory, stress can take place when one's surroundings are perceived as installing too many demands on one's personal well-being, and one experiences a dynamic situation of imbalance between oneself and one's environment.

Moreover, the study proposed how often participants experience a different level of psychological distress while working during COVID-19 pandemic outbreaks as an external imbalance and its effect emotionally and may last as an internal imbalance.

1.1. Study Hypothesis. Study hypothesis that HCWs with chronic diseases would be at a higher risk of developing psychological distress. This concern was related to HCWs' emotional stress in the workplace during COVID-19 pandemic.

1.2. Objective. The aim of the study was to determine psychological distress among healthcare workers with chronic diseases during the COVID-19 crisis.

2. Methods

2.1. Study Design. A quantitative descriptive cross-sectional correlational design was used in this study to achieve the aim which is to determine psychological distress among healthcare workers with chronic diseases during the COVID-19 crisis.

2.2. Sample/Participants. This study was performed at 37 primary healthcare centers in the cities of Alkhobar and Dammam in the Kingdom of Saudi Arabia (KSA). The study was conducted from the 1st of July 2021 to the 30th of October 2021. Both genders of healthcare workers with chronic diseases who provide direct patient care and who were willing to participate in the study were included, as well as HCWs who worked during the COVID-19 crisis either full-time or part-time as permanent staff in PHC centers. Those who do not have any chronic diseases, receptionists, administrative HCWs, students, and interns were excluded from the research study.

The author selected the largest centers in the Eastern Province that provide healthcare for around 2000 patients monthly and which have a capacity of 1390 HCWs divided into 37 departments. These centers were purposively selected to represent the centers in the cities of Dammam and Alkhobar, including 17 PHC centers in Alkhobar and 20 PHC centers in Dammam.

The overall number of HCWs in the selected centers was 1390. Raosoft Inc.'s software (2004) was used to calculate the sample size with a response distribution of 50%, a margin of error of 5%, and a confidence level of 95%. Therefore, 302 HCWs were chosen as the sample size for this study. A convenience sample of HCWs at primary healthcare (PHC) centers in the cities of Alkhobar and Dammam was recruited based on the inclusion criteria to complete an electronic survey questionnaire.

2.3. Instruments. A self-administered questionnaire was developed, and the online platform was used to conduct the study. The questionnaires were divided into four main parts. The researcher created the first section, which was designed to gather information about the study participants' backgrounds. It was mainly composed of sociodemographic information and work-related factors that may contribute to the development of psychological distress. The socio-demographic characteristics included age, gender, job experience, nationality, occupation, level of education, marital status, and living status "with or without family members" [16].

The second part included COVID-19-related questions which were developed by the researcher after reviewing recent studies [8, 17–19]. This part included four questions related to the history of exposure to COVID-19, including diagnosis and testing and factors related specifically to the circumstances surrounding COVID-19, including contracting COVID-19, quarantine, feeling anxious after contracting COVID-19, and being vaccinated against the COVID-19 virus.

The third part comprised the self-administered comorbidity questionnaire (SCQ), which is a validated tool developed by a physician [20]. The questionnaire was used to identify whether or not the respondents have pre-existing chronic illnesses. The questionnaire consisted of 13 questions that dealt with the presence of chronic diseases.

The scoring system consisted of yes or no questions; each medical condition had a maximum of three points: one point for the presence of the problem, another point if he/she has received treatment for it, and another point if the problem has caused a limitation in functioning. The maximum total score was 39 points if the closed-ended items were used, because there were 13 defined medical problems.

Finally, the fourth part was about the Kessler psychological distress scale (K10) which was developed by Kessler and Mroczek [21] to assess psychological impact. It is a valid and reliable tool which has been used in several studies and cultures. The Cronbach's alpha coefficient value was 0.931. The scale consists of ten items, and each item has five response categories: "none of the time" (1), "a little of the time" (2), "some of the time" (3), "most of the time" (4), and "all of the time" (5) [22]. The scores for each of the categories can be low (score 10–15), moderate (score 16–21), high (score 22–29), and very high (score 30–50) [23].

2.4. Validity and Reliability. The self-administered comorbidity questionnaire is valid according to a study done by Kong et al. [24]. Moreover, construct validity was measured by the correlation between SCQ and Charlson Comorbidity Index (CCI) and was moderate (0.55). The test-retest reliability for the SCQ was 0.94 (95% confidence interval 0.72, 0.99) as calculated by the intraclass correlation coefficient and 0.81 by the Spearman correlation coefficient. These findings compare with the test-retest reliability of the Charlson instrument of 0.92 as measured with the interclass correlation coefficient and 0.94 as measured with the Spearman coefficient [25].

Furthermore, Kessler's psychological distress scale has been widely used in various countries including the USA, Canada, and Australia, as well as being adopted in the World Health Organization World Mental Health Survey [26]. A study of 725 participants in the Netherlands (Dutch, Turkish, Moroccan, and others) reported a high internal consistency of K10 (Cronbach's alpha 0.93) [22]. Another Dutch study of 1,607 participants reported reliability of K10 with Cronbach's alpha 0.94 [27]. It has been demonstrated that the K10 is a valid and reliable instrument [24, 25], and the Cronbach's alpha coefficient value for this study was 0.845.

The 10-item Kessler psychological distress scale (K10) has been presented as a valid measure, for the reliability, and the Cronbach's alpha value was of 0.91 [28].

2.5. Data Collection. Informed consent was obtained, and then, the questionnaire was sent individually through an e-mail and a link to the WhatsApp website to prevent bias and to follow strict COVID-19 protocols and precautions. The study started on the 1st of July 2021 using self-report questionnaires.

2.6. Data Analysis. The Statistical Packages for Social Sciences (SPSS) version 26 was used for data analysis. The descriptive statistics and graphs were presented using numbers, frequency, and the percentage of the sociodemographic variables, as well as the mean, standard of deviation, and the percentage of the Kessler psychological distress scale. Moreover, the chi-square test was used to determine the association between comorbidity scores and sociodemographic and psychological distress scores. Finally, the Pearson correlation test was used to determine the correlation between the comorbidity and distress scores. The level $P < 0.05$ was considered as the cut-off value for significance.

2.7. Ethical Consideration. Ethical approval was obtained from the ethical committee of the Faculty of Nursing at King Abdulaziz University, Jeddah. In addition, all official requirements were sent to the Department of Planning and Research in the General Directorate of Health Affairs in the eastern region to obtain permission for conducting the study in target PHC centers in Alkhobar and Dammam. Full information was provided to the participants through the online survey.

Ethics approval was granted by the Institutional Review Board of the Dammam Medical Complex in the eastern region (IRB Registration#H-05-D-107, Protocol#PHC-02, Approval Date: 17/06/2021).

3. Results

A total of 302 HCWs with chronic diseases fully answered the questionnaires. The response rate was 100%, and the researcher received good cooperation and collaboration from the hospitals' administration and participants. Table 1 represents the frequency distribution of a total of 302 HCWs that were recruited. The majority were working at Khobar PHC Centers (161; 53.3%), 141 (46.70%) were working at Dammam PHC Centers, and more than two-thirds of the respondents were females (67.2%). The most

TABLE 1: Sociodemographic characteristics of healthcare workers ($n = 302$).

| Variable | Frequency (%) |
|-------------------------------|---------------|
| Work site | |
| (i) Dammam healthcare center | 141 (46.7%) |
| (ii) Khobar healthcare center | 161 (53.3%) |
| Gender | |
| (i) Male | 99 (32.8%) |
| (ii) Female | 203 (67.2%) |
| Age group | |
| (i) From 20 to <30 | 74 (24.5%) |
| (ii) From 30 to <40 | 106 (35.1%) |
| (iii) From 40 to <50 | 89 (29.5%) |
| (iv) From 50 to 60 | 33 (10.9%) |
| Nationality | |
| (i) Saudi | 265 (87.7%) |
| (ii) Non-Saudi | 37 (12.3%) |
| Working experience | |
| (i) From 1 month- <2 years | 12 (04.0%) |
| (ii) From 2- <6 years | 53 (17.5%) |
| (iii) From 6- <10 years | 90 (29.8%) |
| (iv) ≥ 10 | 147 (48.7%) |
| Professional title | |
| (i) Physician | 122 (40.4%) |
| (ii) Nurse | 151 (50.0%) |
| (iii) Radiology technician | 23 (07.6%) |
| (iv) Pharmacist | 06 (02.0%) |
| Level of education | |
| (i) Diploma | 41 (13.6%) |
| (ii) Bachelor | 101 (33.4%) |
| (iii) Master | 33 (10.9%) |
| (iv) Doctorate degree | 127 (42.1%) |
| Marital status | |
| (i) Married | 188 (62.3%) |
| (ii) Not married | 114 (37.7%) |
| Living with family member | |
| (i) Yes | 289 (95.7%) |
| (ii) No. | 13 (04.3%) |

common age group was between 30 and 40 years old (106; 35.1%), and 89 (29.50%) of them were between 40 and 50 years old. The majority of HCWs were Saudis (265; 87.7%), and 147 (48.7%) had more than 10 years of working experience. Half of the HCWs were nurses (151; 50.0%), and 122 (40.4%) of them were physicians. The majority of them were married (188; 62.3%). Furthermore, most of them were living with a family member (289; 95.7%).

Table 2 shows that the majority of HCWs contracted the disease (182; 60.3%), and 160 (87.9%) quarantined alone while 181 (59.9%) felt anxious after contracting COVID-19. Furthermore, all participants were vaccinated against COVID-19.

TABLE 2: COVID-19-related data ($n = 302$).

| Variable | Frequency-N (%) |
|--|-----------------|
| Contracted COVID-19 | |
| (i) Yes | 182 (60.3%) |
| (ii) No. | 120 (39.7%) |
| If yes, how was the quarantine? ($n = 182$) | |
| (i) Alone | 160 (87.9%) |
| (ii) With others | 22 (12.1%) |
| (iii) Not applicable | 120 (39.7%) |
| Did you feel anxious after contracting COVID-19? ($n = 182$) | |
| (i) Yes | 181 (59.9%) |
| (ii) No. | 01 (0.03%) |
| (iii) Not applicable | 120 (39.7%) |
| Did you get the COVID-19 vaccine? ($n = 302$) | |
| (i) Yes | 302 (100.0%) |
| (ii) No. | 0 (0.00%) |

TABLE 3: Psychiatric background of the participants.

| Psychiatric background | Problem | | Treatment | | Limit activities | |
|------------------------|---------|-------------|-------------|-------------|------------------|-------|
| | No | F (%) | F (%) | F (%) | F (%) | F (%) |
| Depression | No | 233 (77.2%) | 241 (79.8%) | 254 (84.1%) | | |
| | Yes | 69 (22.8%) | 61 (20.2%) | 48 (15.9%) | | |

Table 3 shows the psychiatric background of the participants by assess presence of depression and its affecting on their activities and use of treatment to manage it. It was found that the minority of participants 69 (22.8%) have depression. 61 (20.2%) of participants received depression treatment, and 48 (15.9%) of them have limited activities due to presence of depression.

Table 4 demonstrates that the majority of participants (90.20%) felt hopeless all of the time, with a mean score of 4.51 and an SD of ± 0.709 . This indicates that the level of PD among HCWs was very high. Following this, participants answered they were tired out for no good reason with a mean score of 4.48 and an SD of ± 0.759 , and nervous with a mean score of 4.47 and an SD of ± 0.718 . Regarding the consequences of PD among HCWs over the previous 4 weeks and how often they felt so nervous that nothing could calm them down, 89.20% of participants reported that they felt so nervous all the time that nothing could calm them down with a mean score of 4.46 and an SD of ± 0.771 . Moreover, 88.60% of the participants felt that everything was an effort (a mean score of 4.43 and an SD of ± 0.859). Regarding the consequences of feeling restless or fidgety, 87.80% of the HCWs reported that they felt restless or fidgety all of the time (a mean score of 4.39 and an SD of ± 0.847). Furthermore, 87.40% of participants reported feeling so sad all of the time that nothing could cheer them up (mean score of 4.37 and an SD of ± 0.982), and 86.00% reported feeling worthless all of the time (a mean score of 4.30 and an SD of ± 1.053). In

TABLE 4: Assessment of the Kessler psychological distress scale (K10) ($n = 302$).

| Variable | Mean | SD | % | Distress deg. | Arrange items |
|--|------|-------|-------|------------------|---------------|
| (1) In the past 4 weeks, about how often did you feel tired out for no good reason? | 4.48 | 0.759 | 89.60 | All of the time | 2 |
| (2) In the past 4 weeks, about how often did you feel nervous? | 4.47 | 0.718 | 89.40 | All of the time | 3 |
| (3) In the past 4 weeks, about how often did you feel so nervous that nothing could calm you down? | 4.46 | 0.771 | 89.20 | All of the time | 4 |
| (4) In the past 4 weeks, about how often did you feel hopeless? | 4.51 | 0.709 | 90.20 | All of the time | 1 |
| (5) In the past 4 weeks, about how often did you feel restless or fidgety? | 4.39 | 0.847 | 87.80 | All of the time | 6 |
| (6) In the past 4 weeks, about how often did you feel so restless you could not sit still? | 4.12 | 1.037 | 82.40 | Most of the time | 10 |
| (7) In the past 4 weeks, about how often did you feel depressed? | 4.26 | 1.037 | 85.20 | All of the time | 9 |
| (8) In the past 4 weeks, about how often did you feel that everything was an effort? | 4.43 | 0.859 | 88.60 | All of the time | 5 |
| (9) In the past 4 weeks, about how often did you feel so sad that nothing could cheer you up? | 4.37 | 0.982 | 87.40 | All of the time | 7 |
| (10) In the past 4 weeks, about how often did you feel worthless? | 4.30 | 1.053 | 86.00 | All of the time | 8 |
| Total Kessler scale mean | 4.38 | 0.706 | 87.60 | | |

addition, 85.20% reported feeling depressed all of the time (a mean score of 4.26 and an SD of ± 1.037). Finally, 82.40% of HCWs reported that most of the time in the previous 4 weeks, they felt so restless that they could not sit still (a mean score of 4.12 and an SD of ± 1.037).

The overall mean distress score was 4.38, and the SD was ± 0.706 , indicating that HCWs had PD all of the time in the previous 4 weeks.

Table 5 shows that there was no significant association between the gender, nationality, occupation, level of education, marital status, living with a family member, contracting COVID-19, and the PD score of the HCWs, whereas the (P value > 0.05), and the calculated value of chi-square was less than the table value.

There was a significant association between the age, working experience, and PD scores of the HCWs, whereas their (P value ≤ 0.05 , 0.001), and the calculated value of chi-square was more than the table value. Furthermore, the variables of age and work experience had an effect on the PD score of HCWs.

The majority of HCWs that had the highest percentage of very high levels of distress were female (66.2%), and their age group was from 30 to <40 years (35.1%). Moreover, the majority were Saudi (86.4%) and about 48.0% had ≥ 10 years of working experience. Additionally, the majority were nurses (49.7%) with different levels of education (33.1% had a bachelor's degree, 13.2% had a diploma, and 10.9% had a master's degree). Furthermore, 61.6% were married, and the majority were living with family members (94.4%) and 59.9% contracted COVID-19.

Table 6 shows a significant correlation between each of the variables of (heart disease, high blood pressure, lung disease, diabetes, ulcer, anemia, depression, and back pain) and psychological distress, whereas the P value < 0.05 and the R value < 0.3 , indicating that there was a positive correlation between the comorbidity and PD. However, there was no

significant correlation between (kidney disease, liver disease, cancer, osteoarthritis, and rheumatoid arthritis) and psychological distress.

4. Discussion

This cross-sectional correlation study was carried out to understand the psychological distress of HCWs who have comorbidities during the COVID-19 pandemic. To achieve this, we studied 302 HCWs suffering from chronic diseases at primary healthcare centers in the cities of Khobar and Dammam in the Kingdom of Saudi Arabia during the COVID-19 pandemic outbreak and evaluated possible factors associated with it.

Our hypothesis that HCWs would be at a higher risk of developing psychological distress was confirmed by the findings. This concern was related to HCWs' emotional stress in the workplace during the COVID-19 pandemic.

The findings of this study revealed that majority of HCWs (98.7%) were classified as having a very high level of psychological distress, and none of them were classified in the low or moderate levels.

These findings can be explained by several factors, including the fact that COVID-19 was a new, ambiguous virus, no one knew its potential effects on the human body, and whether it would cause death or have long-term effects. Moreover, the huge media campaign about the disease and its effects had a greater effect on elevating the level of psychological distress, especially for those HCWs with background illnesses, in addition to daily statistics about patients who died as a result of virus infection while in the intensive care unit. Furthermore, social distancing and the fact that humans are social beings by nature may have influenced the elevation of the level of psychological distress. Moreover, subjective overload and the fear of contacting with infected patients, the interaction between job demands

TABLE 5: Association between psychological distress scores and sociodemographic variables.

| Demographic variables | Psychological distress score | | D.F | Chi-square value | | Sig. <i>P</i> value |
|----------------------------|------------------------------|--------------------------|-----|------------------|------------|---------------------|
| | High distress F (%) | Very high distress F (%) | | Calc. value | Tab. value | |
| Gender | | | | | | |
| Male | 1 (0.3%) | 98 (32.5%) | 1 | 0.111 | 3.84 | 0.739 |
| Female | 3 (1.0%) | 200 (66.2%) | | | | |
| Age | | | | | | |
| 20 to <30 years | 2 (0.7%) | 72 (23.8%) | 3 | 9.35 | 7.81 | 0.025* |
| 30 to <40 years | 0 (0.0%) | 106 (35.1%) | | | | |
| 40 to <50 years | 0 (0.0%) | 89 (29.5%) | | | | |
| 50 to 60 years | 2 (0.7%) | 31 (10.3%) | | | | |
| Nationality | | | | | | |
| Saudi | 4 (1.3%) | 261 (86.4%) | 1 | 0.566 | 3.84 | 0.452 |
| Non-Saudi | 0 (0.0%) | 37 (12.3%) | | | | |
| Working experience | | | | | | |
| From 0- <2 | 2 (0.7%) | 10 (3.3%) | 3 | 23.53** | 7.81 | <0.001 |
| From 2- <6 | 0 (0.0%) | 53 (17.5%) | | | | |
| From 6- <10 | 0 (0.0%) | 90 (29.8%) | | | | |
| ≥10 | 2 (0.7%) | 145 (48.0%) | | | | |
| Occupation | | | | | | |
| Physician | 3 (1.0%) | 119 (39.4%) | 3 | 2.09 | 7.81 | 0.552 |
| Nurse | 1 (0.3%) | 150 (49.7%) | | | | |
| Radiology technician | 0 (0.0%) | 23 (7.6%) | | | | |
| Pharmacist | 0 (0.0%) | 6 (2.0%) | | | | |
| Level of education | | | | | | |
| Diploma | 1 (0.3%) | 40 (13.2%) | 3 | 0.980 | 7.81 | 0.806 |
| Bachelor | 1 (0.3%) | 100 (33.1%) | | | | |
| Master | 0 (0.0%) | 33 (10.9%) | | | | |
| Doctorate degree | 2 (0.7%) | 125 (41.4%) | | | | |
| Marital status | | | | | | |
| Married | 2 (0.7%) | 186 (61.6%) | 1 | 2.101 | 3.83 | 0.143 |
| Not-married | 2 (0.7%) | 112 (37.08%) | | | | |
| Living with family members | | | | | | |
| Yes | 4 (1.3%) | 285 (94.4%) | 1 | 0.182 | 3.84 | 0.669 |
| No | 0 (0.0%) | 13 (4.3%) | | | | |
| Contracted COVID-19 | | | | | | |
| Yes | 1 (0.3%) | 181 (59.9%) | 1 | 2.105 | 3.84 | 0.147 |
| No | 3 (1.0%) | 117 (38.7%) | | | | |

*Significant at the (0.05) level; **significant at the (0.001) level.

and the need for the perception of job control among individuals, and social support are factors associated with elevated psychological distress and led to individuals having low levels of control.

This result is consistent with study performed in Spain by Gómez-Salgado et al. [29] who found 80.6% of the healthcare providers were showing a sign of psychological distress.

Furthermore, a high level of stress was more prevalent among the 30–40 age group, which was consistent with the study conducted by Alqutub et al. [30], where they reported that participants over 40 years of age were more prone to psychological distress. They further added that the male gen-

der, working for >45 hours/week, years of experience of more than 7 years, living in the Asir region, and using psychological services were factors associated with increased rates of emotional distress. Moreover, similar findings were found in a recent study conducted by Zhu et al. [31] in Wuhan, China, where healthcare workers with more than ten years at their job reported higher acute stress, depression, and anxiety during the COVID-19 outbreak. However, our findings showed a significant difference between working more or less than ten years. Incidentally, various studies conducted in Nepal (63.3%) [13], Saudi Arabia (92.4%) [32], Australia (68.9%) [33], and Spain (79.6%) [29], all reported significantly higher psychological distress among female

TABLE 6: Correlation (Pearson's R) between the psychological distress score and comorbidities.

| Variables | Pearson's coefficient (R) | The effect size index (R^2) | Sig. P value |
|---|-------------------------------|---------------------------------|----------------|
| Heart disease and psychological distress | 0.190 | 0.036 | <0.001 |
| High blood pressure and psychological distress | 0.132 | 0.017 | 0.021 |
| Lung disease and psychological distress | 0.145 | 0.021 | 0.012 |
| Diabetes and psychological distress | 0.188 | 0.035 | 0.001 |
| Ulcer and psychological distress | 0.30 | 0.09 | <0.001 |
| Kidney disease and psychological distress | 0.023 | 0.001 | 0.689 |
| Liver disease and psychological distress | 0.005 | 0.000 | 0.932 |
| Anemia and psychological distress | 0.217 | 0.047 | <0.001 |
| Cancer and psychological distress | 0.007 | 0.000 | 0.910 |
| Depression and psychological distress | 0.122 | 0.015 | 0.035 |
| Osteoarthritis and psychological distress | 0.011 | 0.000 | 0.843 |
| Back pain and psychological distress | 0.200 | 0.040 | <0.001 |
| Rheumatoid arthritis and psychological distress | 0.047 | 0.002 | 0.416 |

healthcare workers. In our study, we also noted that the psychological distress of females (66.2%) was higher than males (32.5%); however, the overall comparison did not yield statistical significance ($P = 0.739$), which could be the turning point. This finding could be attributed to gender differences in the hormonal response to stress as reported by Al-Hanawi et al. [32]. Furthermore, the sex differences observed in our study were attributed to the higher representation of female workers, representing 67.2% of the sample. Similarly, it is predicted (59.9%) that the psychological distress of HCWs would increase once they contracted the COVID-19 disease. Moreover, women were found to usually have significantly higher levels of distress than men, and this can be interpreted as an individual risk factor in the face of the COVID-19 epidemic. However, in a study conducted by Hines et al. [34] using a 3-month follow-up, they observed that there was a significant decrease in the distress levels of HCWs as the pandemic went on. This could be due to the increased social awareness and job satisfaction of the impact of COVID-19-related care on the well-being of healthcare workers, as well as stories in the news about infection measurement and control and social media.

HCWs who have contracted COVID-19 could have experienced more severe psychological distress than others. Gómez-Salgado et al. [29] noted that psychological distress, as well as the sense of coherence, were related to the presence of COVID-19 symptoms, and that taking care of mental health is necessary to effectively cope with the current pandemic. As we reported, the prevalence of HCWs who contracted the disease was 60.3%, of whom the majority quarantined alone, and nearly all experienced anxiety in the process. This figure is higher than that obtained in the study of Bizri et al. [35], who found that only 32% were exposed to COVID-19, which was a lower prevalence of COVID-19 infection among HCWs than that reported by Petzold et al. [36]. The difference in COVID-19 infection could be due to the timing, as previous reports were conducted at the earlier onset, while in our study, this was carried out recently when the effect of the pandemic was felt by everyone both physically and psychologically.

In a study performed by Bizri et al. [35], the researchers found that nurses were significantly more associated with PTSD, which was consistent with our results. On the other hand, in a report by Sarapultseva et al. [37], they reported that the risk of PTSD development was higher among HCWs working directly with COVID-19 patients.

This can be explained by a number of factors, including the fact that nurses are more likely to interact with COVID-19-positive patients and to carry out doctor's orders, which may add to the burden. Moreover, nurses characteristically have a higher level of work-related burnout compared to other staff in the medical field.

Studies have established that individuals with comorbidities are vulnerable to COVID-19 infection. In this study, high blood pressure, back pain, and ulcer or stomach pain were the most common chronic problems that HCWs suffer from, leading to psychological distress which affected most of their activities. Current result further noticed that there was a positive significant correlation between PD and each of the following variables: heart disease, high blood pressure, lung disease, diabetes, ulcer, anemia, depression, and back pain, which indicates that the increase in the SCQ score was correlated with the increase in the K10 score. Nevertheless, HCWs with associated comorbidities were likely to have an increased chance of psychological distress due to the burden of COVID-19. This was also indicated by Rahman et al. [33], who reported that people with pre-existing health conditions were more likely to experience higher psychological distress, which is similar to the findings documented by Petzold et al. [36].

This could be explained by the fact that people with chronic illnesses are more vulnerable to COVID-19 infection. This is possibly due to the widespread nature of the disease. Therefore, HCWs with background illnesses presented an elevation of psychological distress levels during the crisis.

These findings can be attributed to the risk of COVID-19 complications and further mortality that may increase steadily for those with a history of background illness. This aspect may increase the psychological burden on healthcare workers with chronic diseases due to their fear of death, illness, or complications. Furthermore, participants may have

other medical comorbidities that increase their risk of contracting COVID-19 or developing dangerous health complications as medically compromised patients.

According to data from the Centers for Disease Control and Prevention, people who have chronic medical conditions, such as diabetes, lung disease, and heart disease, face an increased chance of being hospitalized with COVID-19 and put into intensive care [2].

This study has some limitations that should be acknowledged. First, it was conducted among HCWs in two facilities which may limit the generalizability of the findings. Furthermore, a cross-sectional design does not always provide a complete picture of the impact of the COVID-19 outbreak.

Additionally, to eliminate psychological distress during crisis situations, monitoring and activating a system of coping strategies are highly recommended. To sum up, risks must be minimized, and healthcare providers who work on the front-line during the COVID-19 pandemic must be protected, should be provided with social support and resources from their organization, and should enhance their coping skills.

To address this, in addition to providing more information about COVID-19, HCWs should be helped with managing their distress. Therefore, it is vital to maintain the psychological well-being of the healthcare system in order to gain adequate control of the current crisis, and an arrangement of the healthcare system may reduce job stress.

Evidently, promoting mental and social support by the health organizations and providing resources are necessary to maintain the physical and mental health of HCWs to monitor distress that may lead to significant posttraumatic stress disorders.

The following recommendations may help reduce to reduce the risk of negative psychological outcomes occurred by COVID-19 outbreak and facilitate social stability.

4.1. Recommendations for Practice

- (i) Coping strategies must be performed to eliminate psychological distress during crisis situation to enhance the skills of coping and proper handling of personal protective equipment
- (ii) Providing of appropriate personal protective equipment and specialised training about direct care of COVID-19 patients. These strategies may relieve anxiety that caused by the perceived unfamiliarity and unpredictability of the COVID-19 outbreak

4.2. Recommendations for Education

- (i) Frequent training must be conducted to ensure the competency of HCW performance and appropriate handling techniques of infected patients with minimal risk or danger to be infected
- (ii) Teaching of appropriate communication and proper using of personal protective equipment are highly recommended for most vulnerable HCWs to maintain safe contact with infected patients

4.3. Recommendations for Research

- (i) Further research should investigate the short-term and long-term psychological impact of the COVID-19 pandemic among healthcare workers
- (ii) More research is recommended in order to determine the influence of these factors on healthcare workers with comorbidities at the time of the pandemic

5. Conclusions

Healthcare workers with associated comorbidities have been greatly affected by the COVID-19 pandemic. There was a very high level of psychological distress among the study population. Of all of the subjects, HCWs with hypertension and back pain were greatly affected by psychological distress, and this emotional distress could be even more increased when HCWs contracted COVID-19. Moreover, the COVID-19 pandemic has the potential to cause chronic adverse psychological effects and PTSD, and psychological distress may occur at any stage of the crisis and can last for a long time. Perhaps, identifying emotional well-being would be useful and effective.

Healthcare workers with chronic diseases are the most at risk for psychological distress during and after an outbreak, and modifying the methods to reduce distress and improve resilience is highly recommended. Identifying HCWs who are showing signs of mental disorders is important for early intervention and treatment. The constant monitoring among these people is equally important for the continuous improvement of cognitive conditions. Moreover, increased COVID-19-related job stressors may reduce the quality of healthcare systems and their ability to meet increased demand. The findings should be considered to maintain early prevention intervention to protect HCWs from psychological distress and further posttraumatic psychological disorders.

The current study's findings may also highlight the importance of delivering and implementing appropriate plans and policies to help minimize the distress among health service providers in the current pandemic, to have an effective frontline health workforce to deal with any further disasters, and to cope with the increased demand for healthcare accordingly.

Data Availability

The dataset generated during and/or analyzed during the current study is available from the corresponding author on reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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