



# Mental Health Adverse Effects of COVID-19 Pandemic on Health Care Workers in North West Ethiopia: A Multicenter Cross-Sectional Study

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**Background:** The coronavirus has affected nearly every aspect of our lives. Most importantly the health-care workers (HCWs) are under insurmountable psychological pressures which lead them to various mental health problems, such as anxiety, stress, and depression.

**Objective:** This study aimed to assess mental health adverse effects of COVID-19 pandemic on health-care workers in North West Ethiopia 2020.

**Materials and Methods:** Institutional-based cross-sectional study was conducted. A simple random sampling technique was applied and 419 participants completed the questionnaire. Mental health adverse effects were measured using the depression, anxiety and stress scale (DASS-21). Data were entered into Epi data version 4.4.2 then exported to SPSS version 24 for analysis. Descriptive, bivariate, and multivariate binary logistic regressions with odds ratios and 95% confidence interval were employed. The level of significance of association was determined at a p-value < 0.05.

**Results:** Prevalence of depression, anxiety, and stress in this study was 58.2%, 64.7%, and 63.7%, respectively. Those who had a medical illness, and mental illness, contact with confirmed COVID-19 pts, and poor social support showed a statistically significant association with depression. Female sex, participants who had families with chronic illness, had contact with confirmed COVID-19 case and poor social support had statistically significant association with anxiety, whereas participants who had families with chronic illness had contact with confirmed COVID-19 cases, and those participants who had poor social support were predictors of stress during COVID-19 pandemic.

**Conclusion:** The magnitudes of mental health problems were higher and the concerned body should emphasize the continuous assessment of the mental health of health-care workers during this pandemic.

**Keywords:** depression, anxiety, stress, DASS-21, COVID-19

## Background

The COVID-19 pandemic has challenged the health-care systems worldwide including Ethiopia. It is obvious that during this pandemic, people may be feeling afraid, worried, anxious, and depressed due to the continuous changing alerts regarding the spread of the virus. Since health-care workers are involved in the direct care of patients, they are more likely to be infected than the general population.<sup>1</sup> This makes them fear of contagion, concern for family health, interpersonal isolation, trust in and support from their organization, and stigma.<sup>2-4</sup>

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As a result, health-care workers will be under overwhelming psychological pressure which may lead to various psychological problems, such as anxiety, fear, depression, and stress.<sup>5</sup>

There is increased awareness to protect our frontline workers from COVID-19 exposure and its consequences<sup>6</sup> and the new norms of the health-care system can affect not only the physical but also the psychological wellbeing of health-care workers during the COVID-19 pandemic.<sup>7</sup>

In a study conducted in China during the corona outbreak, 53.8% of respondents experienced psychological problems, 16.5% depressive symptoms, 28.8% anxiety symptoms, and 8.1% reported stress.<sup>8</sup> Similarly, in the study done among nurses in Taiwan who worked during the outbreak of SARS 11% of them had anxiety, depression, and somatization.<sup>9</sup> Besides, in a study done on the mental health effect of the severe acute respiratory syndrome (SARS) outbreak on health professionals working in Toronto, 30.4% of the participants had burnout syndrome, 44.9% of them had psychological distress, and 13.8% of health-care workers (HCWs), had posttraumatic stress.<sup>10</sup>

A rapid systematic review conducted on 61 studies revealed that pooled prevalence for anxiety was 45%, to 69%, followed by depression (38% to 60%); and acute stress disorder (31%, to 82%).<sup>11</sup>

Evidence from systematic review from the previous outbreaks, on the potential impact of COVID-19 on mental health outcomes of health-care providers and the implications for service solutions, revealed that levels of moderate anxiety ranged from 22.6% to 44.6%, and severe anxiety from 2.9% to 5.3%. Moreover, about 50.4%, 34.0% and 10.5% of them had symptoms of moderate [or severe] depression, insomnia, and distress, respectively 34% of health-care workers had mild disturbances, 22% had moderate disturbances, and 6.2% had severe disturbances.<sup>12</sup>

Another study done in Singapore revealed that 14.5% of HCWs screened positive for anxiety, 8.9% for depression, 6.6% for stress, and 7.7% for clinical concern of PTSD.<sup>13</sup> In addition, a study carried out a year later on the mental health problems of health-care workers following severe acute respiratory syndrome outbreak in Hong Kong the mean depression and anxiety score were 19%, and 14% respectively.<sup>14</sup>

Likewise, in a study done on mental health and psychosocial problems between medical and non-medical health workers, in China, medical health

workers had a higher prevalence of insomnia 38.4% vs 30.5%, anxiety 13.0% vs 8.5%, depression 12.2% vs 9.5% as compared with non-medical health workers.<sup>7</sup> An umbrella review of meta-analyses revealed that the magnitude of depression and anxiety were 24.94% and 24.83% respectively.<sup>15</sup>

According to previous studies, mental health problems of health-care workers were affected by the numbers of factors. Among those, sociodemographic characteristics, history of mental and physical illness, having contact with suspected or confirmed COVID-19 patients, poor social support, having family members with chronic illness, lack of training regarding COVID-19 and lack of standardized personal protective equipment.

Many studies have been conducted on the mental health of health-care workers during the pandemic in different countries but there is scarcity of evidences in our country Ethiopia. The results of this study can provide important data to support health-care managers and the allocation mental health services for health-care workers. Moreover, understanding the mental health impacts of COVID-19 on health-care providers is important to identify possible interventions.

Therefore, this study aimed to assess the mental health adverse effects of COVID-19 and associated factors of COVID-19 on health professionals of South Gondar Zone hospitals, Amhara, Ethiopia, 2020.

## Materials and Methods

### Study Settings and Period

A multi-centered institutional-based cross-sectional study was conducted at South Gondar Zone hospitals, Amhara, from September up to November 2020. South Gondar is about 666 north of the capital city Addis Ababa. There are 8 hospitals in this zone which include Debre Tabor general hospital, Andabet, Estie, Addis Zemen, Ebnat, Lay Gaynt, Tach Gaynt, and Simada primary hospitals. There are about 756 health professionals currently serving these hospitals. Mental health care is one of the services rendered within these hospitals.

### Sample Size Determination

In this study, the sample size was determined by using the single population proportion formula with the assumptions of “P”-50% (as there were no studies done in Ethiopia in this area), 1.96 Z (standard normal

distribution), 95% CI,  $\alpha=0.05$ , and 10% non-response rate. Accordingly, a representative sample was calculated to be 423.

## Study Participants and Sampling

This research was conducted in 8 South Gondar Zone governmental hospitals among health-care workers. There are 331, 64, 59, 72, 55, 69, 54, and 52 health-care workers in Debre Tabor General Hospital, Andabet, Estie, Addis Zemen, Ebnat, Lay Gaynt, Tach Gaynt, and Simada primary hospitals, respectively. We proportionally allocated the sample size to each hospital and we invited 423 participants by using simple random sampling technique. Of these, 419 participants completed the questionnaire and two (2) of the eligible participants refused to participate and two (2) questionnaires were incomplete and has been discarded. All health professionals working in these hospitals were included, and those participants who were on annual leave and severely ill were excluded.

## Study Variables

The dependent variables were depression, anxiety, and stress which were measured using the Depression, Anxiety and Stress Scale (DASS-21) as dichotomous variables (yes/no). Independent variables include socio-demographic factors (age, gender, ethnicity, marital status, religion, profession, and having children), clinical variables (family history of medical illness, history of mental illness, having the medical illness, contact with confirmed and suspected COVID-19 cases), psychosocial and material factors consists social support, perceived stigma and lack of adequate and standardized PPE supply.

## Data Sources and Measurement

Data were collected using a standardized self-administered questionnaire by 12 trained health professionals using the Amharic version of the tool. The questionnaire was prepared in English and translated to Amharic and back to English to maintain consistency. Data collectors were trained on how to collect the data and explain the unclear questions and the purpose of the study. Furthermore, they were made aware of ethical principles, such as confidentiality/anonymity/data management, and securing respondents' informed consent for participation.

Mental health adverse effects were measured using the Depression, Anxiety and Stress Scale (DASS-21). The DASS-21 is a 21-item system that provides independent measures of depression, anxiety, and stress, with

recommended severity thresholds. Cutoff scores  $>9$ ,  $>7$ , and  $>14$  indicate a positive screen for depression, anxiety, and stress, respectively. The subscale score for depression was divided into normal (0–9), mild depression (10–12), moderate depression (13–20), severe depression (21–27), and extremely severe depression (28–42). The total anxiety subscale score was divided into normal (0–6), mild anxiety (7–9), moderate anxiety (10–14), severe anxiety (15–19), and extremely severe anxiety (20–42). The stress subscale score was divided into normal (0–10), mild stress (11–18), moderate stress (19–26), severe stress (27–34), and extremely severe stress (35–42).<sup>2</sup> It had good internal consistency reliability with Cronbach's alpha values in the range of 0.837 to 0.863.<sup>16</sup> We conducted a reliability analysis for the DASS-21 questionnaire (Amharic version) using the Cronbach's alpha and that it had a high score. The internal consistency was 0.88 for depression, 0.93 for anxiety, 0.95 for stress subscales and 0.96 for the full scale of DASS-21.

This tool has been used by many studies in Ethiopian population.<sup>17–19</sup> A socio-demographic questionnaire was used to assess the patients' background information. Clinical, psychosocial, and material factors were used to assess by yes/no answers of respondents. Social support was measured by the Oslo-3 scale which has a sum score scale ranging from 3–14.<sup>4</sup> The OSS-3 contains three items assessing the number of close confidants, perceived level of concern from others and perceived ease of getting help from neighbors. It has good predictive validity<sup>20</sup> and has been used in a population level study in Ethiopia.<sup>21</sup>

Mental health adverse effects were measured using DASS-21 with cutoff scores  $>9$ ,  $>7$ , and  $>14$  indicate a positive screen for depression, anxiety, and stress, respectively.<sup>2</sup>

Social support was measured using Oslo 3 items social support scale (OSS-3)

Poor social support was a score of "3–8" on (OSS-3)

Moderate social support was a score of "9–11" (OSS-3)

Strong social support was a score of "12–14" on (OSS-3).<sup>4</sup>

Perceived stigma: To examine the perceived stigma, respondents were asked, "Did you feel stigmatized by the public because of your profession?" and the responses were Yes/No

History of mental illness: To examine a history of mental illness, respondents were asked: "Have you ever been diagnosed with mental illness and treated" and responses were yes/no.

History of medical illness: To examine a history of medical illness, respondents were asked: “Did you have any medical illness?” and responses were yes/no.

Families with medical illness: To examine families with medical illness, respondents were asked: “Did you have a family member who had a medical illness?” and responses were yes/no.

## Data Processing and Analysis

All collected data were checked for completeness and consistency and entered into Epi-data version 4.4.2 and then exported to SPSS for version 24 for analysis. We computed descriptive, bivariate, and multivariate logistic regression analyses. Factors associated with depression, anxiety, and stress were selected during the bivariate analysis with  $p < 0.05$  for further analysis in the multivariable logistic regression analysis. In the multivariable logistic regression analysis, variables with  $p < 0.05$  at 95% CI with adjusted OR were considered statistically significant.

## Ethical Consideration

The ethical clearance was obtained from ethical review committee of Debre Tabor University and a permission letter was obtained from each hospital. We received written informed consent from study participants and confidentiality was maintained by omitting personal identifiers.

## Patient and Public Involvement

In the current study, participants were people who are working in South Gondar Zone hospitals, Amhara, Ethiopia. Participants were not involved in the study design and recruitment. The result of this study has been disseminated to the Amhara Regional Health Bureau and each study hospital.

## Result

### Sociodemographic Characteristics

From the total of 423 invited individuals, 419 respondents participated in this study with a response rate of 99.1%. The mean age of the respondents was 32 years and the range was 24–58 years. About 2/3th of the respondents were males 292 (69.7%). Half of the participants were married 212 (50.6%), and the majority of participants were orthodox Christian followers 355 (84.7%), and Amhara by ethnicity 398 (95.0%). Regarding their profession, most of them were nurses 218(52%) (Table 1).

**Table 1** Sociodemographic Characteristics of the Participants in South Gondar Governmental Hospitals Amhara Ethiopia 2020 (n=419)

Characteristics	Category	Frequency	Percent
Age	<25	42	10
	25–30	223	53.2
	31–40	108	25.8
	41–50	26	6.2
	≥50	20	4.8
Sex	Female	127	30.3
	Male	292	69.7
Marital status	Married	212	50.6
	Divorced	45	10.7
	Single	141	33.7
	Separated	16	3.8
	Widowed	5	1.2
Ethnicity	Amhara	398	95.0
	Tigray	5	1.2
	Oromo	16	3.8
Religious Status	Orthodox Christian	355	84.7
	Muslim	33	7.9
	Catholic	10	2.4
	Protestant	11	2.6
	Adventist	10	2.4
Profession	Nurse	218	52
	Doctor	83	19.8
	Laboratory	62	14.8
	Pharmacist	29	6.9
	Midwifery	15	3.6
	Psychiatry	12	2.9
	Having children	Yes	188
No		231	55.1

## Clinical and Other Factors Related to Mental Health Adverse Effect

In this study, more than ¾th of participants report as they did not get standardized and adequate PPE while caring for COVID-19 patients, and only 50 (11.9%) of respondents took training regarding COVID-19. About 96 (22.9%) of participants had perceived stigma related to their profession (Table 2).

## Mental Health Adverse Effects of COVID-19

The magnitude of depression, anxiety, and stress in this study on health-care workers related to the COVID-19

**Table 2** Clinical and Other Factors of Mental Health Adverse Effects of Participants Working in South Gondar Governmental Hospitals Ethiopia 2020 (n=419)

Characteristics	Category	Frequency	Percent
Personal protective equipment	Yes	94	22.4
	No	325	77.6
Having medical illness	Yes	56	13.4
	No	363	86.6
Families with chronic illness	Yes	143	34.1
	No	276	65.9
Hx of mental illness	Yes	44	10.5
	No	375	89.5
Contact with suspected COVID-19 cases	Yes	157	37.5
	No	262	62.5
Contact with confirmed COVID-19 cases	Yes	178	42.5
	No	241	57.5
Training	Yes	50	11.9
	No	369	88.1
Perceived stigma	Yes	96	22.9
	No	323	77.1
Social support	Poor	243	58
	Moderate	99	23.6
	Strong	77	18.4

pandemic were 58.2% (CI95:53.5, 63), anxiety 64.7% (CI95:59.9, 69.2), and stress 63.7% (CI95:59.2, 68.3) respectively.

### Factors Associated with Depression

To determine the association of independent variables with depression, bivariate, and multivariate binary logistic regression analyses were carried out. On the bivariate analysis having the medical illness, Hx of mental illness, contact with suspected and confirmed COVID-19 pts, perceived stigma, and poor social support were found to be associated with depression at a P-value <0.05. These factors were entered into multivariable binary logistic regression for further analysis to control confounding effects. In multivariate analysis having the medical illness, Hx of mental illness contact with confirmed COVID-19 pts poor social support were significantly associated with depression at a p-value less than 0.05.

The odds of developing depression among respondents with medical illness were 2.52 as compared with those participants who had no history of medical illness (AOR=2.52, 95CI; 1.18, 5.39).

The likelihood of developing depression was higher among health professionals with Hx of mental illness as compared with those respondents with no history of mental illness (AOR=2.72,95CI;1.05,7.01). Similarly, respondents who had contact with the confirmed COVID-19 case (AOR= 2.59, 95CI; 1.37, 4.89) and poor social support were more affected for depression (AOR=1.87, 95CI; 1.08, 3.22) as compared with their counterparts (Table 3).

### Factors Associated with Anxiety

Regarding the anxiety level of the HCWs, females were more anxious than their counterparts (AOR=1.85, 95CI; 1.09, 3.13). Health-care providers who had families with chronic illness had a high level of anxiety as compared with those health professionals who had families with no chronic illness (AOR=3.15, 95CI; 1.83, 5.40). The odds of having anxiety were 2.77 times among respondents who had contact with confirmed COVID-19 cases as compared with those respondents who had not the history of contact with the case (AOR=2.77, 95CI; 1.39, 5.52). Likewise, those health-care providers who had poor social support were more likely to develop anxiety as compared with participants who had strong social support (AOR=2.64,95CI;1.49,4.67) (Table 4).

### Factors Associated with Stress

Health professional who had families with chronic illness had contact with confirmed COVID-19 cases, and those participants who had poor social support were more likely stressed as compared with their counterparts (Table 5).

### Discussion

Mental health adverse effects such as depression, anxiety, and stress are the most common psychopathology and important public health matters following experiencing epidemics. To the best of our knowledge, this study is the first related to the mental health adverse effect of the COVID-19 pandemic on the health-care providers in the Amhara region, Ethiopia, particularly the South Gondar Zone. We found that the COVID-19 pandemic hurt the mental health of exposed health professionals. According to the result of this study, 58.2% (CI95:53.5, 63) of the respondents had depression, 64.7% (CI95:59.9, 69.2) of them had anxiety and 63.7% (CI95:59.2, 68.3) had stress related to the COVID-19 pandemic. Those who had a medical illness, a history of mental illness, contact with confirmed COVID-19 pts, and poor social support showed a statistically significant association with depression. Female sex, participants who had families



**Table 3** Factors Associated with Depression on Health-Care Providers in South Gondar Governmental Hospitals Ethiopia 2020 (n=419)

Characteristics	Category	Depression		COR (95CI)	AOR (95CI)
		Yes	No		
Having medical illness	Yes	46	10	3.83(1.88,7.83) 	2.52(1.18,5.39) 
	No	198	165		
Hx of mental illness	Yes	38	6	5.19(2.15,12.59) 	2.72(1.05,7.01) 
	No	206	169		
Contact with suspected COVID-19 pts	Yes	106	51	1.87(1.24,2.82) 	1.03(0.61,1.75) 
	No	138	124		
Contact with confirmed COVID-19 pts	Yes	130	48	3.02(1.99,4.58) 	2.59(1.37,4.89) 
	No	114	127		
Perceived stigma	Yes	70	26	2.31(1.39,3.80) 	0.76(0.37,1.57) 
	No	174	149		
Social support	Poor	163	80	2.56(1.53,4.3) 1.13(0.62,2.06) 	1.87(1.08,3.22) 0.92(0.49,1.73) 
	Moderate	46	51		
	Strong	35	44		

with chronic illness, had contact with confirmed COVID-19 case and poor social support had statistically significant association with anxiety whereas participants who had families

with chronic illness, had contact with confirmed COVID-19 cases, and those participants who had poor social support were predictors of stress during COVID-19 pandemic.

**Table 4** Factors Associated with Anxiety on Health Professionals in South Gondar Governmental Hospitals Ethiopia 2020 (n=419)

Characteristics	Category	Anxiety		COR (95CI)	AOR (95CI)
		Yes	No		
Sex	Female	95	32	1.96(1.23,3.11) 	1.85(1.09,3.13) 
	Male	176	116		
Having medical illness	Yes	51	5	6.63(2.58,17.01) 	2.41(0.85,6.80) 
	No	220	143		
Families with chronic illness	Yes	114	29	2.98(1.86,4.78) 	3.15(1.83,5.40) 
	No	157	119		
Hx of mental illness	Yes	38	6	3.86(1.59,9.36) 	1.46(0.53,4.03) 
	No	233	142		
Contact with suspected COVID-19 pts	Yes	113	44	1.69(1.10,2.59) 	1.03(0.58,1.83) 
	No	158	104		
Contact with confirmed COVID-19 pts	Yes	141	37	3.25(2.09,5.06) 	2.77(1.39,5.52) 
	No	130	111		
perceived stigma	Yes	79	17	3.17(1.79,5.60) 	1.13(0.51,2.54) 
	No	192	131		
Social support	Poor	185	58	3.81(2.24,6.49) 1.27(0.70,2.31) 	2.64(1.49,4.67) 0.92(0.48,1.75) 
	Moderate	50	47		
	Strong	36	43		

**Table 5** Factors Associated with Stress on Health-Care Providers in South Gondar Governmental Hospitals Ethiopia 2020 (n=419)

Characteristics	Category	Stress		COR (95CI)	AOR (95CI)
		Yes	No		
Sex	Female	90	37	1.58(1.01,2.48)	1.63(0.97,2.75)
	Male	177	115		
Medical problems	Yes	40	221	2.96(1.45,6.05)	0.91(0.38,2.16)
	No	10	142		
Families with chronic illness	Yes	109	34	2.39(1.52,3.77)	2.79(1.63,4.76)
	No	158	118		
Hx of mental illness	Yes	38	6	4.04(1.67,9.79)	1.60(0.58,4.43)
	No	229	146		
Contact with suspected COVID-19 case	Yes	112	45	1.72(1.12,2.63)	1.06(0.59,1.89)
	No	155	107		
Contact with confirmed COVID-19 case	Yes	145	33	4.29(2.72,6.75)	3.09(1.53,6.17)
	No	122	119		
Perceived stigma	Yes	84	12	5.36(2.81,10.19)	2.01(0.86,4.73)
	No	183	140		
Social support	Poor	185	58	3.62(2.13,6.16)	2.49(1.40,4.43)
	Moderate	45	52	0.98(0.54,1.78)	0.66(0.34,1.27)
	Strong	37	42		

In our study, the magnitude of depression was consistent with the study conducted in Libya 56.3%.<sup>5</sup> On the other hand, the prevalence of depression on health-care workers was higher than the studies conducted in China 44.37%,<sup>6</sup> 12.2%,<sup>7</sup> 50.4%,<sup>8</sup> 15.4%,<sup>9</sup> 40%,<sup>22</sup> Spanish 46%,<sup>23</sup> systematic review studies 22.8%,<sup>12</sup> 21.7%,<sup>24</sup> India 11.4%,<sup>25</sup> Singapore 8.9%,<sup>13</sup> Nepal 8%,<sup>26</sup> Alberta Canada 44.0%,<sup>27</sup> Malaysia 21.8%,<sup>28</sup> whereas the prevalence of depression in this study was lower than studies done in Turkey 77.6%,<sup>29</sup> 64.7%.<sup>30</sup> The reason for this discrepancy might be, the sample size difference, the time of research done.

Similarly, the prevalence of anxiety was in line with the study carried out in Turkey 60.2%.<sup>29</sup> Conversely, the prevalence of anxiety was higher than the studies conducted in China 46.04%,<sup>6</sup> 44.6%,<sup>8</sup> 13%,<sup>7</sup> 32.6%,<sup>9</sup> 38%,<sup>22</sup> Spanish 58.6%,<sup>23</sup> systematic review studies 23.2%,<sup>12</sup> 22.1%,<sup>24</sup> India 17.7%,<sup>25</sup> Singapore 14.5%,<sup>13</sup> Nepal 38%,<sup>26</sup> Libya 46.7%,<sup>5</sup> Alberta Canada 47.0%,<sup>27</sup> Turkey 51.6%,<sup>30</sup> and Malaysia 31.6%.<sup>28</sup> The difference could be the sample size difference, the time of the research done, the level of health service development, and the difference in experiences to similar pandemics.

The prevalence of stress in this study was in line with the studies conducted in China 56.59%.<sup>6</sup> On the other

hand, our estimation was higher than the studies conducted in Spanish 41.1%,<sup>23</sup> India 3.7%,<sup>25</sup> Singapore 6.6%,<sup>13</sup> Turkey 41.2%,<sup>30</sup> and Malaysia 29.1%,<sup>28</sup> while the magnitude of stress was lower than studies conducted in China 71.5%,<sup>8</sup> 18.0%,<sup>9</sup> Turkey 76.4%,<sup>29</sup> and Alberta Canada 85.6%.<sup>27</sup> This could be the sample size difference, the health system service difference.

Pertaining to factors associated with depression, those respondents who had medical illness had higher odds of depression as compared with those participants who had no medical illness which was supported by the previous studies.<sup>7,31</sup> Respondents who had a history of mental illness were more likely affected by depression as compared with their counterparts. This was supported by the study of Nepal.<sup>32</sup> Professionals who had contact with confirmed COVID-19 pts were more affected for depression, anxiety, and stress as compared with their counterparts. This was supported by the previous studies conducted in China<sup>7-9</sup> and a rapid review on the impact of COVID-19 on the HCWs.<sup>33</sup> Moreover, our findings were consistent with the previous studies where it was found that directly contacting the suspected or confirmed COVID patients were the major risk factors that caused psychological distress and anxiety among the HCWs.<sup>34,35</sup> Additionally,

poor social support was significantly associated with depression, anxiety, and stress which was consistent with the review study.<sup>36</sup> Evidence from previous studies has already found the positive effect of social support on the mental health of the HCWs. Furthermore, it is well known that adequate social support provided by partners or spouses, friends represents a protective factor for the psychological well-being.<sup>37,38</sup> Lack of help to compensate for physical incapacity, emotional support, and someone to talk with about the pandemic or to turn to for advice could increase the risk of mental health problems.<sup>39</sup>

Likewise, women had the increased odds of developing anxiety disorders during the pandemic as compared with men. This finding was supported by the study of China,<sup>7</sup> Spanish,<sup>23</sup> and India.<sup>25</sup>

## Conclusion

This study indicated that health professionals are affected by the high level of anxiety, stress, and depression during the COVID-19 pandemic. The COVID-19 pandemic has disrupted mental health of the population particularly the health-care workers and the demand for mental health service is increasing. This study highlights the need for high quality, theory- and evidence-based interventions for the well-being of health-care workers during this COVID-19 pandemic. This study also depicted the need for support systems and coping strategies that may assist to reduce stress, anxiety, and depression among health-care workers. These strategies may be developed to target HCWs who are female, who had a medical illness, history of mental illness, those who had contact with confirmed COVID-19 patients, who lacked social support, and those who had families with chronic illness, during their routine practice. Moreover, taking care of the HCWs is crucial to strengthen their mental health, which contributes to the quality of medical services as a frontline fighter during this pandemic.

## Data Sharing Statement

No additional data is available for this study; all data are included in the manuscript.

## Ethics Approval and Informed Consent

This study was conducted in accordance with the Declaration of Helsinki. Ethical approval was obtained from Ethical

Review committee of Debre Tabor University. A formal letter of permission was obtained from each hospital and written informed consent from each participant was taken.

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## Author Contributions

All authors contributed to data analysis, drafting or revising the article, have agreed on the journal to which the article was submitted, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

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## Disclosure

The authors report no conflicts of interest in this work.

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