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Mental Health Status of Health Care Workers during COVID-19 Pandemic in Mettu Town Health Facilities, Mettu, Southwest Ethiopia. An Institutional Based Cross-Sectional Study

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Abstract

Background: Coronavirus Disease (COVID-19) is a new global epidemic and public health emergency of the international community and has an impact on the physical and mental health. We assessed the magnitude of psychological symptoms and its correlates related to COVID-19 among health care workers.

Objective: This study aimed to determine the current mental health status related to COVID-19 among health care workers in Mettu town.

Methods: From May 1st to May 15th, 2020, a facility-based cross-sectional study was conducted using convenient sampling techniques. Self-administered questioner was used to collect information on demographic data and mental health symptoms for the last week related to COVID-19. Depression Anxiety Stress Scale (DASS-21) was used to assess current mental health status. Data entry was done using EpiData version 3.1 and analyzed by using Statistical Package for Social Science version 24. Variables with a P value <0.05 in the final fitting model were declared to be associated with the outcome variable.

Result and Conclusion: The prevalence of depression, anxiety and stress among health care workers were 43.3%, 51.2% and 45.7% respectively. This result suggested the need for psychological support for healthcare workers.

Keywords: Coronavirus; Mental health; Health care workers; Ethiopia

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Abbreviations

CI: Confidence Interval; COR: Crude Odd Ratio; AOR: Adjusted Odd Ratio; DAAS: Depression, Anxiety and Stress Scale; COVID-19: Coronavirus Disease 2019

Introduction

The 2019 Coronavirus disease (COVID-19) epidemic is a global concern around the world after its first onset in Wuhan city of China [1]. Globally 15,123,892 confirmed cases, 620,314 deaths and 9,139,408 recoveries, and in Ethiopia 11,072 confirmed cases, 180 deaths, and 5,448 recoveries were recorded [2]. The virus is most contagious and transmits to humans through respiratory droplets as main mode of transmission, and symptoms were fever, cough, fatigue and breathing difficulty with the incubation period of 6 days ranging from 2 to 11 days and this helps for a quarantine period of duration for suspected cases [3]. Older age and people with chronic medical comorbidities have a greater chance to be infected by the virus with bad outcomes [4].

Providing frontline healthcare during infectious outbreaks increases the risk of Health Care Workers (HCW) developing mental health problems with both short and long-term consequences [5]. Health care workers may experience psychological distress from providing direct care to patients with COVID-19, knowing someone who has contracted or died of the disease, or being required to undergo quarantine or isolation [6].

A systematic rapid review and meta-analysis study found that the pooled prevalence was higher for anxiety 45%, for depression 38%, acute stress disorder 31% and post-traumatic stress disorder 19% [7]. Furthermore, the study found that socio-demographic variable such as younger age and female gender, social factors such as lack of social support, social rejection or isolation, stigmatization, and occupational (being a frontline staff, specific occupational roles (e.g., nurse), and lower levels of specialized training, preparedness and job experience) were factors associated with the likelihood of developing those problems identified in the study [7].

The study from China, Wuhan reported that 50.4%, 44.6%, 34% and 71.5% of health staff had symptoms of depression, anxiety, insomnia, and distress respectively. Nurses, women, frontline health care workers, staff engaged in direct diagnosis, treatment and care of patients with COVID-19 showed a higher severity of symptoms of depression, anxiety, insomnia, and distress [6]. A cross sectional study done in Italy showed that 49.38% of the health care workers participated in the study endorsed PTSS, 24.73% symptoms of depression and 19.80% symptoms of anxiety [8].

One cross sectional study done among health care workers from 2 major tertiary institutions in Singapore who was caring for patients with COVID-19 found that 14.5% participants screened positive for anxiety, 8.9% for depression, 6.6% for stress, and 7.7% for clinical concern of post-traumatic stress disorder. Furthermore, the study described that the prevalence of anxiety was higher among nonmedical health care workers than medical personnel [9].

A study done in Dilla town; southern Ethiopia found that the magnitude of perceived stress among health care workers was 51.6%. It was described in this study that being at the age range of 25 to 31 years, being nurse and pharmacist in professionals were variables found to have a statistically significant association with perceived stress related to COVID-19 [10]. A better understanding of those situations could help to enhance the mental health status of health care workers which in turn helps to minimize the impact of an epidemic. Therefore, this study aimed to determine the magnitude of psychological symptoms and its related to the COVID-19 an epidemic among health care workers in Mettu town, Southwest Ethiopia.

Methods and Materials

Study setting and design

Facility based cross-sectional study was conducted from May 1st to 15th, 2020 at Mettu town which located 600 km far in the south-western direction from Addis Ababa, the capital city of Ethiopia. There was one referral hospital (Mettu Karl), one health center in the town, 8 private clinics and 11 private pharmacies, and about 135 health care workers were providing health care services in these facilities.

Population

The study population were all health care workers in Mettu town health facilities who were 18 and above years and available during the time of data collection. Those who were unable to fill the self-administered questioner because of the illness were excluded. Convenient samples of 127 healthcare workers were involved in the study.

Sampling technique and procedure

A convenient sampling technique was used to get the participants.

Data collection instruments

Socio-demographic variables were measured by carefully designed questioner by reviewing previous literature. Outcome variables (depression, anxiety and stress) were measured by using the Depression Anxiety Stress Scale (DASS-21) (16).

Study variables

Outcome variables - Depression, anxiety and stress.

Age, sex, marital status, educational status, occupational status, family size, current Khat, tobacco and alcohol use were explanatory variables.

Operational definition

As measured by the depression subscale of DASS-21, score ≥ 10 was used to define depression. Anxiety was defined by score ≥ 8 as measured by the anxiety subscale of DASS-21, and stress was defined by score ≥ 14 [11].

Medical health care workers were used to refer to health personnel licensed in medical doctors, laboratory technician/expert and pharmacy in the current study.

Non-medical health care workers: In the current study refers to health personnel licensed in nurse, midwifes and public health.

Data collection procedures

The questioner was carefully designed by reviewing previous literatures and was pretested on 10 healthcare workers at nearby health center. Training was provided for data collectors and supervisors for two days on the aims of the study, how to distribute the questionnaire and on the content of the questionnaire. To keep the safety of the data collector and respondents' initial measures like wearing face masks, using hand sanitizers and practicing social distance were employed during questionnaire distribution and collection by both data collectors and supervisor.

Data processing and analysis

Epi-Data version 3.1 was used to enter the data and Statistical Package for Social Science version 24 was used to analyze the data. Chi square test was used to see the association between the outcome variables and demographic data. Multivariable logistic regression was conducted to determine the strength of association with an outcome variable at p-value <0.05 with 95% confidence interval. Finally, the results of the study were summarized by using frequency tables, graphs, and narrative descriptions.

Ethical consideration

Ethical clearance was obtained from the ethical review board of Mettu University faculty of health and medical sciences. Written informed consent was obtained from each respondent after they informed about the aims of the study.

Results

Socio-demographic and current substance use characteristics of the study participants

A total of 127 healthcare workers were enrolled in the study. Eighty-six (67.7%) were males. The mean age of the respondent was 31.89 (SD=5.95) years. Majority of them 68 (53.5%) were married. Regarding the educational status majority 77 (60.6%) were first degree and above holders. About 57 (44.9%) were current Khat users (Table 1).

Table 1: Socio-demographic characteristic distributions of healthcare workers in Mettu town health facilities, Southwest Ethiopia, 2020 (N=127).

Variables	Category	Frequency (N)	Percent (%)
Sex	Male	86	67.7
	Female	41	32.3
Age in years	≤ 31	71	55.9
	>31	55	43.3
Marital status	Never married	59	46.5
	Married	68	53.5
Religion	Muslim	32	25.2
	Orthodox	44	34.6
	Protestant	51	40.2
Educational status	Diploma	50	39.4
	1st degree and above	77	60.6
Occupation	Medical HCWs	51	40.2
	Non-medical HCWs	76	59.8
Household family size	≤ 3	68	53.5
	>3	59	46.5
Current khat use	No	70	55.1
	Yes	57	44.9
Current alcohol use	No	76	59.8
	Yes	51	40.2
Current tobacco use	No	81	63.8
	Yes	46	36.2

Prevalence of depression, anxiety and stress among healthcare workers

The prevalence of depression, anxiety and stress among HCWs were 43.3% (95% CI 34.6, 51.2), 51.2% (95% CI 42.5, 59.8) and 45.7% (95% CI 37.0, 54.3) respectively. More female 30 (73.2%) than male 25 (29.1%) were found to have depressive symptoms. Anxiety observed to be higher among female 32 (78.0%), degree and above holders 42 (54.5%) and HCWs with family size of four and above 42 (54.5%) than their reverses. Stress was higher among female 23 (56.1%), non-medical HCWs 40 (52.6%), and current alcohol 35 (68.6%), tobacco 34 (73.9%) and khat 35 (61.4%) users than their counterparts (Figure 1).

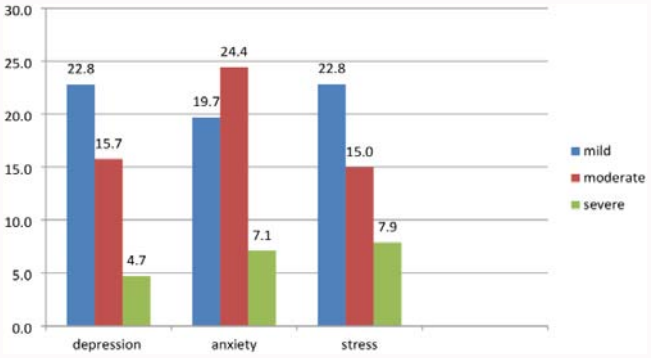

Figure 1: Level of depression, anxiety and stress among HCWs during COVID-19 pandemic in Mettu town, Southwest Ethiopia, 2020.

Factors associated with anxiety among HCWs

Chi square test shows that sex (χ^2=15.94 p<0.001) and family size (χ^2=5.03 p=0.025) were found to have association with anxiety. However, multivariate logistic regression analysis revealed that only being female (AOR=4.69 (95% CI = 1.94, 11.33) was significantly associated with anxiety (Table 2).

Factors associated with depression among HCWs

As shown in chi square test sex (χ^2=20.23 p<0.001), age (χ^2=7.71 p=0.006) and family size (χ^2=18.41 p<0.001) were factors associated with depression. Multivariate logistic regression analysis shows that the odds of having depression were 7 times [AOR=7.55 95% CI (2.88,

Table 2: Factors associated with anxiety among HCWs during COVID-19 pandemic in Mettu town health facilities (N=127).

Variable	category	Anxiety		χ^2	AOR (95% CI)	p-value
		No N (%)	Yes N (%)			
Sex	Male	53(61.6)	33(38.4)	15.94	1	0.001
	Female	9(22.0)	32(78.0)		4.69 (1.94, 11.33)	
Age	≤ 31	34(47.2%)	38(52.8%)	0.05	1	0.337
	>31	28(50.9%)	27(49.1%)		0.65 (0.27, 1.55)	
Marital status	Never married	33(55.9%)	26(44.1%)	1.73	0.62 (0.28, 1.36)	0.238
	Married	29(42.6%)	39(57.4%)		1	
Educational status	Diploma	27(54.0)	23(46.0)	0.57	0.62 (0.27, 1.41)	0.254
	Degree and above	35(45.5)	42(54.5)		1	
Occupation	Medical	27(52.9)	24(47.1)	0.34	1	0.267
	Non-medical	35(46.1)	41(53.9)		1.58 (0.70, 3.56)	
Family size	≤ 3	40(58.8)	28(41.2)	5.03	1	0.069
	>3	22(37.3)	37(62.7)		2.08 (0.94, 4.60)	
Current tobacco use	No	42(51.9)	39(48.1)	0.52	1	0.772
	Yes	20(43.5)	26(56.5)		1.15 (0.44, 2.97)	
Current khat use	No	29(41.4)	41(58.6)	2.78	1	0.086
	Yes	33(57.9)	24(42.1)		0.50 (0.23, 1.10)	
Current alcohol use	No	37(48.7)	39(51.3)	0	1	0.256
	Yes	25(49.0)	26(51.0)		1.72 (0.67, 4.41)	

Table 3: Factors associated with depression among HCWs during COVID-19 pandemic in Mettu town health facilities (N=127).

Variable	category	Depression		χ^2	AOR (95% CI)	p-value
		No N (%)	Yes N (%)			
Sex	Male	6170.90%	25 (29.1)	20.23	1	<0.001
	Female	11 (26.8)	30 (73.2)		7.55 (2.88, 19.74)	
Age	≤ 31	49 (68.1%)	23 (31.9%)	7.71	1	0.018
	>31	23 (41.8%)	32 (58.2%)		2.97 (1.20, 7.33)	
Marital status	Never married	39 (66.1%)	20 (33.9%)	3.29	0.48 (0.19, 1.17)	0.107
	Married	33 (48.5%)	35 (51.5%)		1	
Educational status	Diploma	30 (60.0)	20 (40.0)	0.18	0.56 (0.22, 1.40)	0.218
	Degree and above	42 (54.5)	35 (45.5)		1	
Occupation	Medical	32 (62.7)	19 (37.3)	0.89	1	0.276
	Non-medical	40 (52.6)	36 (47.4)		1.65 (0.67, 4.09)	
Family size	≤ 3	51 (75.0)	17 (25.0)	18.41	1	0.005
	>3	21 (35.6)	38 (64.4)		3.44 (1.44, 8.22)	
Current tobacco use	No	49 (60.5)	32 (39.5)	0.92	1	0.752
	Yes	23 (50.0)	23 (50.0)		0.84 (0.28, 2.48)	
Current khat use	No	43 (61.4)	27 (38.6)	1.03	1	0.441
	Yes	29 (50.9	28 (49.1)		1.51 (0.53, 4.33)	
Current alcohol use	No	47 (61.8)	29 (38.2)	1.55	1	0.076
	Yes	25 (49.0)	26 (51.0)		2.25 (0.92, 5.48)	

Table 4: Multivariate logistic regression analysis of factors associated with stress.

Variable	Category	Stress		χ^2	AOR (95% CI)	p-value
		No N (%)	Yes N (%)			
Sex	Male	51 (59.3%)	35 (40.7%)	2.07	1	0.076
	Female	18 (43.9%)	23 (56.1%)		2.46 (0.91, 6.63)	
Age	≤ 31	40 (55.6%)	32 (44.4%)	0.02	1	0.837
	>31	29 (52.7%)	26 (47.3%)		0.90 (0.35, 2.32)	
Marital status	Never married	35 (59.3%)	24 (40.7%)	0.76	0.70 (0.28, 1.76)	0.453
	Married	34 (50.0%)	34 (50.0%)		1	
Educational status	Diploma	33 (66.0%)	17 (34.0%)	3.78	0.22 (0.08, 0.61)	0.003
	Degree and above	36 (46.8%)	41 (53.2%)		1	
Occupation	Medical	33 (64.7%)	18 (35.3%)	3.03	1	0.214
	Non-medical	36 (47.4%)	40 (52.6%)		1.82 (0.71, 4.67)	
Family size	≤ 3	46 (67.6%)	22 (32.4%)	9.34	1	0.012
	>3	23 (39.0%)	36 (61.0%)		3.14 (1.28, 7.66)	
Current tobacco use	No	57 (70.4%)	24 (29.6%)	21.44	1	0.009
	Yes	12 (26.1%)	34 (73.9%)		3.73 (1.39, 9.97)	
Current khat use	No	47 (67.1%)	23 (32.9%)	9.2	1	0.065
	Yes	22 (38.6%)	35 (61.4%)		2.58 (0.94, 7.07)	
Current alcohol use	No	53 (69.7%)	23 (30.3%)	16.59	1	0.037
	Yes	16 (31.4%)	35 (68.6%)		3.08 (1.07, 8.90)	

19.74)] higher among female than male. Depression was observed to be 3 times higher [AOR=2.97 (1.20, 7.33)] among HCWs above 31 years old than their counterpart. HCWs who reported to have family size of four and above were 3.44 times [AOR=3.44 95% CI (1.44, 8.22)] more likely to have depressive symptoms than their counterparts (Table 3).

Factors associated with stress among HCWs

Chi square test shows that family size (χ^2=9.34 p=0.002), current use of khat (χ^2=9.20 p=0.002), alcohol (χ^2=16.59 p<0.001) and tobacco (χ^2=21.44 p<0.001) were found to be factors associated with stress. Multivariate logistic regression analysis revealed that being current user of alcohol was 3.0 times [AOR=3.08 95% CI

(1.07, 8.90)] more likely to be associated with having stress. Current tobacco use [AOR=3.73 95% CI (1.39, 9.97)] were found to have significant association with stress. The odds of having stress were about 3.14 times more likely among HCWs with family size of four and above than those with family size of less than four. Stress was 78% [AOR=0.22 95% CI (0.08, 0.61)] less likely among HCWs who had educational status of diploma compared to those who had degree and above (Table 4).

Discussion

Prevalence of anxiety, depression and stress among HCWs

The study revealed that higher proportions (51.2%) of HCWs were found to have anxiety symptoms. This finding is in line with rapid systematic review which reported a pooled prevalence of anxiety 45% [7]. However, results lower than the current study finding was reported from Singapore (14.5%) [11] and Wuhan, china (20.1%) [12]. The discrepancy might be because of the differences in the level of country preparedness, previous experience to combat corona virus infection and health system differences. Differences in the screening instrument used which was BAI in previous study [12] and DASS-21 in the current study could also be another possible explanation for the discrepancy.

The current study showed that 43.3% of HCWs were found to have depression. Similar finding was reported from systematic review conducted which reported 38% pooled prevalence of depression [7]. Conversely results lower than the current study finding was reported from study carried out in Singapore (8.9%) [11] and Wuhan, china (12.7%) [12]. The discrepancy might be explained by the difference in the level of preparedness in the country, difference in healthcare systems and health care provider previous experience to treat related pandemic outbreak.

The current study also indicated that a significant proportion of HCWs (45.7%) were found to have psychological stress. This finding is in line with the study conducted in Dilla town, Ethiopia [10] and Wuhan, china [12]. Nevertheless, lower prevalence rate than the current study was reported from study carried out in Singapore (6.6%) [11]. The possible explanation might be due to the better previous experience/exposure to the other corona virus disease in Singapore than in Ethiopia which might influence the capacity of the HCWs to cope with stress. This is supported by the finding from systematic review conducted which stated that healthcare workers who had previous experience of working during infectious disease pandemic had lower levels of stress because of confidence in their infection control [13].

Factors associated with anxiety, depression and stress among HCWs

The study demonstrated that being female was significantly associated with anxiety. Similar finding was reported from study conducted elsewhere which indicated that anxiety symptoms were common among female than male [14,15]. This might be related with the extensive level of stress and suffering the women faced as a result of the social and household responsibilities [16]. In agreement with the finding from previous studies, depression was also observed to be higher among female than male [7]. Biological factors such as hormonal difference and differing psychosocial stressor for both sexes may contribute for the differences [17].

Healthcare workers aged above 31 years old were observed to have significant depressive symptoms than those who aged less than or equal to 31 years old. This may be associated with the mean age of onset of depression which is usually about 40 years [17].

Depression was observed to be higher among HCWs who live in family size of four and above than those who live in family size of less than four. This might be explained by the fact that those who live in large family size will be more stressed and tensioned because of increased concern about their health (fear of contracting the disease due to increased exposure) and increased concern about their family health (fear of transmitting the virus to the family), problems related to resources like personal protection equipment and financial crisis expected to be triggered by COVID-19.

The study revealed that healthcare workers who used substances such as alcohol, Khat and tobacco in the recent 3 months were more likely to report psychological stress than non-users. There has been adequate evidence that current involvement in substance use may not only predict to cause an individual to deal with the additional financial problem but also further exacerbate the overall psychological well-being and the ability to cope with stress [18]. Further the study demonstrated that the odds of having stress was 3.14 times more likely among HCWs with family size of four and above than those with family size of less than four.

Contrast to systematic review conducted [7] stress was about 78% less likely among HCWs who had educational status of diploma compared to those who had degree and above. This may be related with the job-related stress such as heavy workload which may interfere with home life, fear of getting infected or infecting others because of more exposure and dealing with the high expectations of the public [13].

Limitation of the Study

Considering the limited availability of resources and alarming effect of the COVID-19 pandemic, we employed the convenience sampling technique which was not based on a random selection; the study population may not reveal the actual pattern of the general population.

Conclusion

The study revealed that a significant proportion of healthcare providers were found to have depression, anxiety and stress. This will indicate the need to provide psychological intervention to healthcare provider during the pandemic outbreak. Additionally, further studies addressing multi center with large sample will be needed to further understand the psychological challenges posed by COVID-19 pandemic outbreak on health care providers.

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Authors' Contribution

DD contributed to the inception, wrote the protocol, design the study, organized data collection process, analyze the data and drafted and edited the manuscript. MAH and TT revise and approve the protocol, participated in data analysis, reviewing and editing of the manuscript. MM approved the protocol, participated in analysis of the data, drafted the manuscript, critically reviewed and approved the manuscript for publication. All authors read and approved the final

version of the manuscript and agreed to be accountable for all aspects of the work.

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