

Perceived Stress, Anxiety and Depression and its Associated Factors During COVID-19 Pandemic among Healthcare Workers in COVID-19 Health Facilities in Mogadishu Somalia

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ABSTRACT

Coronavirus disease 2019 (abbreviated "COVID-19") is an emerging respiratory disease that is caused by a novel coronavirus and was first detected in December 2019 in Wuhan, China. The rapid spread of the disease created challenges for healthcare systems and forced healthcare workers to grapple with clinical and nonclinical stressors, including shortages of personal protective equipment, mortality and morbidity associated with COVID-19, fear of bringing the virus home to family members, and the reality of losing colleagues to the disease.

Objective: This study was carried out to find-out the perceived anxiety, depression, stress as well as their associated factors among healthcare workers in COVID-19 health facilities in Mogadishu Somalia.

Methods: The study was cross-sectional, descriptive analysis involving all healthcare workers in COVID-19 health facilities in Mogadishu Somalia namely Demartino hospital, Benadir hospital and Dr Sumait hospital. The calculated sample size was 168 using slovin formula since the target population was known from the staff registration book, candidates were selected through systematic random sampling from each hospital in accordance with their proportion in the total population.

Results: Anxiety was perceived mostly among respondents since only 30.7% were in normal level however only 10.7% had severe anxiety while stress was perceived the least since only 84.8% of participants were normal. Female participants were much more likely to have anxiety and stress, working department was also related with level of perceived anxiety, depression or stress; participants working at ICU and emergency were the most to have anxiety or stress compared to others.

Conclusion: Perceived anxiety was the highest while only 1.1% of respondents had severe stress. Female gender as well as working departments was significantly associated with the level of Anxiety and stress while average income, motivation and living condition was associated with depression.

Keywords

COVID-19, Respiratory disease, Healthcare workers, Anxiety, Depression.

Introduction

Coronavirus disease 2019 (abbreviated “COVID-19”) is an emerging respiratory disease that is caused by a novel coronavirus and was first detected in December 2019 in Wuhan, China [1,2].

The rapid spread of the disease created challenges for healthcare systems and forced healthcare workers to grapple with clinical and nonclinical stressors, including shortages of personal protective equipment, mortality and morbidity associated with COVID-19, fear of bringing the virus home to family members, and the reality of losing colleagues to the disease. Evidence from previous outbreaks, along with early evidence from the COVID-19 pandemic, suggests that these events have significant short- and long-term effects on the mental health of healthcare workers [3].

Situation Overview two months after Somalia reported the first confirmed COVID-19 case on 16 March; the numbers have surged to 1,421 cases (72 per cent male, 28 per cent female), 56 deaths and 152 recoveries as of 17 May. As a result, cases continue to be under reported, and according to WHO, the actual rates are likely to be higher [5,6]. The confirmed cases include four doctors at Kismayo general hospital who tested positive for COVID and are now in self-quarantine [7].

Statement Problem

Addressing physician burnout is important in order to preserve an individual’s optimal health. Healthcare professionals who are unable to care for their own physical and mental wellbeing are not fit to treat those in the hospitals. Identifying this issue and providing support may enable HCWs to deliver the best possible care amongst all their patients [17].

The rapid spread of the disease created challenges for healthcare systems and forced healthcare workers to grapple with clinical and nonclinical stressors, including shortages of personal protective equipment, mortality and morbidity associated with COVID-19, fear of bringing the virus home vulnerability. There is an urgent need to investigate the burden of anxiety, depression, stress as well as their associated factors to have evidence-based information that can help with reduction of the serious mental health situation that healthcare workers can face.

Objectives of the Study

To Find-out the perceived stress, anxiety and depression and its associated factors during COVID-19 pandemic among healthcare workers in COVID-19 health facilities in Mogadishu Somalia.

Specific objectives

- To Identify demographic factors associating with perceived stress, anxiety and depression during COVID-19 pandemic among healthcare workers in COVID-19 health facilities in Mogadishu Somalia.

- To determine the work-related factors associating with perceived stress, anxiety and depression during COVID-19 pandemic among healthcare workers in COVID-19 health facilities in Mogadishu Somalia.
- To assess level of perceived anxiety, stress and depression among healthcare workers in COVID-19 health facilities in Mogadishu Somalia.

Literature Review 1

COVID-19 as Public Health Emergency

Coronavirus disease 2019 (abbreviated “COVID-19”) is an emerging respiratory disease that is caused by a novel coronavirus and was first detected in December 2019 in Wuhan, China [8]. The disease is highly infectious, and its main clinical symptoms include fever, dry cough, fatigue, myalgia, and dyspnea. In China, 18.5% of the patients with COVID-19 develop to the severe stage, which is characterized by acute respiratory distress syndrome, septic shock, difficult-to-tackle metabolic acidosis, and bleeding and coagulation dysfunction [9]. Empirical clinical data have shown that the overall case fatality rate of COVID-19 is 2.3% in China, much lower than those of SARS (9.5%), MERS (34.4%), and H7N9 (39.0%) [10].

The ongoing COVID-19 epidemic has spread very quickly, and by February 15, 2020, the virus had reached 26 countries altogether, resulting in 51,857 laboratory-confirmed infections and 1669 deaths, with nearly all infections and deaths occurring in China [11]. In response to this serious situation, the World Health Organization (WHO) declared it a public health emergency of international concern on January 30 and called for collaborative efforts of all countries to prevent the rapid spread of COVID-19. WHO and public health authorities around the world are acting to contain the COVID-19 outbreak. However, this time of crisis is generating stress throughout the population. The WHO Department of Mental Health and Substance Use as a series of messages that can be used in communications to support mental and psychosocial well-being in different target groups during the outbreak have developed the considerations presented in this document [12].

Literature Review 2

COVID-19 and Mental Health Disorders in Healthcare Workers

It is crucial to address the burnout that is occurring amongst a wide variety of health care workers who are currently fighting against the COVID-19 pandemic. This pandemic has resulted in an international public health emergency and has affected populations all across the world. Although this is not the first pandemic to have occurred, past experiences such as the SARS outbreak, have shown frontline healthcare workers reporting a lack of support and lasting psychological symptoms.

COVID-19 has proven to be very aggressive and attacks the respiratory system, which places patients into the hospital [13]. This has led to many hospitals and clinics struggling to balance patient occupancy and proper protective equipment (PPE). With

a high inflow of patients and an inadequate amount PPE, these circumstances may be correlated with of high amounts of stress. Another factor that contributes to their stress is the fear of spreading this disease to many others. Due to this, professionals have reported feeling unprepared and confused when faced with treating COVID patients especially since equipment guidelines and treatments were not established in the beginning [14]. Consequently, this population reported feelings of helplessness, isolation, and uncertainty. Burnout is a psychological syndrome that can be described as chronic exhaustion. This phenomenon may result from extremely stressful work conditions where an individual's stress is not properly managed [15]. Experiencing burnout may have a very strong impact on a person's psychological and physical well-being and affects various aspects. Burnout can be categorized as feelings of exhaustion, negative feelings towards one's job, and reduced work productivity [16]. A study was conducted in order to assess the prevalence of burnout in healthcare professionals working in hospitals within Northern Italy. After analyzing the survey results, it was shown that there were moderate to severe levels of emotional exhaustion and Running head, reduced personal accomplishment in more than 60% of the sample [17]. Professionals experiencing burnout may experience a huge mental strain on themselves while fighting this virus. The study has also shown a prevalence in other mental health disorders such as depression, anxiety, and stress amongst 25% of their sample [18].

Due to the hospitals being unprepared and not well equipped to face this unprecedented emergency, this has contributed to many healthcare professionals experiencing burnout [19]. COVID-19 outbreak expected to impact the mental health of local medical and nursing staff in china initially since the virus was first identified there [20]. Moreover, frontline HCW from four hospitals in Wuhan were surveyed during the COVID-19 outbreak and reported elevated depression (12.7%) and anxiety (20.1%). Symptoms associated with greater perceived stress, poor sleep quality, and absence of perceived psychological preparedness were linked to higher risk for depression and anxiety. Kang et al. tested the psychological burden on HCW showed that 36.9% had subthreshold mental health disturbances, 34.4% had mild disturbances, 22.4% had moderate disturbances, and 6.2% had a severe disturbance in the immediate wake of the viral epidemic [21].

Another study done in Wuhan, which was a cross-sectional study showed 29.8%, 13.5%, and 24.1% of HCW having stress, depression, and anxiety, respectively.[22] Comparing these results to the previous 2003 SARS outbreak, psychological distress continued to even 1 year after the outbreak. The long-term psychological consequences of infectious diseases should not be overlooked. [23] Another study showed that medical staff in the period of Middle East respiratory syndrome, a different subtype of the coronavirus, had a high risk for post-traumatic stress disorder symptoms even after time had elapsed [24].

Methodology

The study was **analytic cross-sectional study design**, involving all healthcare workers in COVID-19 hospitals; DE martini,

Benadir and Dr Summat hospitals in Mogadishu.

$$n = \frac{N}{1 + Ne^2}$$

The calculated **sample size** was 186 using slovin

formula since the target population was known, the

Sample size was calculated as following

The total target population among all hospitals was 292 and using this formula the calculated sample size was 169.

Adding a 10% of non-respondents rate or missing data the sample became 186 From the hospital record of the staff, a systematic random sampling were utilized to select the candidates; following the registration list numbers only odd number were selected until the sample size is obtained.

Assessment of the level of Depression Anxiety and Stress

We used DASS 21 set of questions with scoring points. The Depression, Anxiety and Stress Scale - 21 Items (DASS-21) are a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress. Each of the three DASS-21 scales contains seven items, divided into subscales with similar content. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest / involvement, anhedonia and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset / agitated, irritable / over-reactive and impatient. Scores for depression, anxiety and stress are calculated by summing the scores for the relevant items.

NB: Scores on the DASS-21 will need to be multiplied by 2 to calculate the final score.

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

Ethical Approval

The study was obtained from the researchers and ethics committee of Ministry of health.

Findings / Analysis /Discussion

Demographic Characteristics

Most of respondents were in the age group of 18 to 30 years, female healthcare workers were 41.1% of all respondents. Most of respondents 72.6% were living with their family, in according to the marital status 47.9% were married while only 1.6% was widowed

Table 1: Describes the Demographic Characteristics of Respondents.

Age	18 to 30 years	66	35.5 %
	>30 to 45 years	52	27.9 %
	> 45 to 55 years	39	21.0 %
	> 55 years	29	15.6 %
	Total	186	100%
Gender	Male	109	58.6%
	Female	77	41.4%
	Total	186	100%
Residence	Mogadishu	174	93.5%
	Outside of Mogadishu	12	6.5%
	Total	186	100%
Marital Status	Single	66	35.5%
	Married	89	47.9%
	Divorced	28	15%
	Widowed	3	1.6%
	Total	186	100%
Average Monthly income	< 200\$	49	26.3%
	200 – 500 \$	66	35.5%
	> 500 \$	71	38.2%
	Total	186	100%
Living condition	Alone	51	27.4%
	With family	135	72.6%
	Total	186	100%

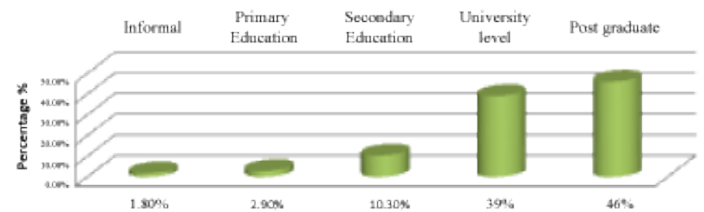


Figure 1: Demonstrates the Level of Education of Respondents.

Healthcare Work Related Factor

Most of respondents 66.7% were motivated and only 24.7 were less motivated and none of the respondents were not motivated at all. Regarding contact with COVID-19 patients most of participants 82.8% had direct contact with them. Doctors and nurses were contributing to 31.4 % and 40.1% respectively out of all participants.

Table 2: Entails the Healthcare Work Related Factors among the Respondents.

Average working hours per week	<54 hours	23	12.4%
	54 hours to 72 hours	69	37.1%
	> 72 hours	94	50.5%
	Total	186	100%
Availability of PPE	Fully available	135	72.6%
	There was shortage	51	27.4%
	Not available at all	0	0%
	Total	186	100%

Nature of work

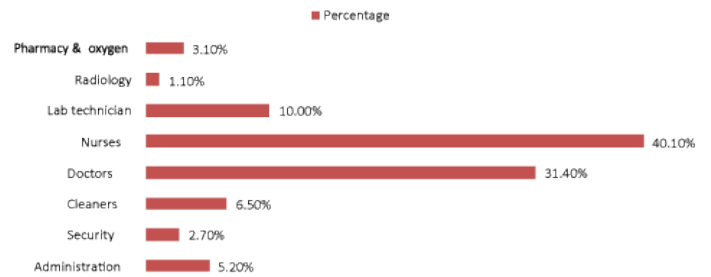


Figure 2: Describes the Work of Nature of the Respondents.

Level of Perceived Anxiety, Depression and Stress

In the assessment of perceived anxiety, stress or depression a DASS (Depression, anxiety stress scale) set of 21 questions were utilized with score 0 to 3 points for each question depending on the respond of the participants.

The level of anxiety

The level of anxiety was high among healthcare workers in COVID-19 health facility hence only 30.7% of respondents were normal while 36.2% and 22.4 % of participants were mildly and moderately perceived anxiety respectively.

The level of Depression

Depression was not as high as anxiety among the respondents, only 24.9% and 19.8% of candidates' were mildly and moderately perceived depression respectively. Severe depression symptoms has shown in only 1.8% of study participants

Stress level

Severity level of stress among respondents showed that only 1.1% of respondents had severe Stress while 84.8% of them did not perceive stress

Level of anxiety

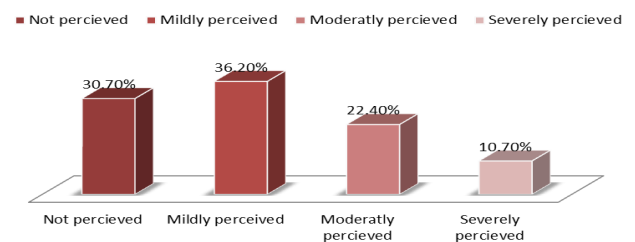


Figure 3: Describes the Level of Perceived Anxiety among Participants.

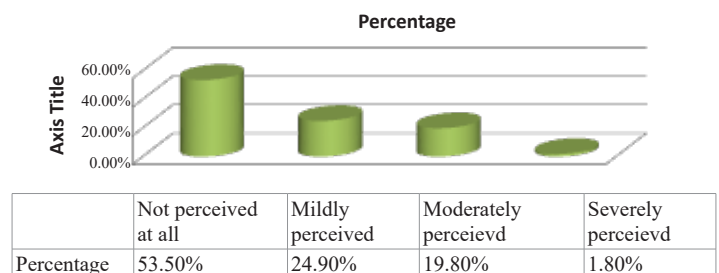


Figure 4: Details the level of Depression among Respondents.

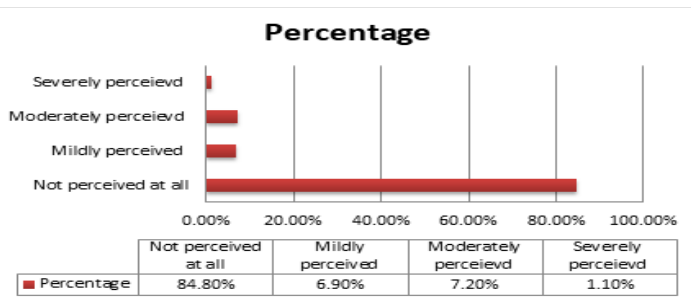


Figure 5: Details the Level of Stress among Respondents.

Bivariate Analysis

Concerning the association between age groups and perceived anxiety, stress or depression; a chi square test showed that there is no statically significant association between age of the respondents and the perceived anxiety or depression since the P value for both is greater than 0.05 (0.6234 and 0.841 respectively). While assessing the association between Respondents age groups and perceived stress a chi square test showed that there is statically significant association since the P value is less than 0.05 (0.041) respondents with age group >55 are 1.431 times more likely to have Perceived stress than the others with the confidence interval 95% speaking of gender and it's relation with the perceived stress, a chi square test showed there is no statically significant association between gender and stress since the P value is greater than 0.05 (0.064). It has shown that female is 3.174 times more likely to perceive anxiety than male with statically significant association between gender of respondents and anxiety since the P value is less than 0.05 (0.013). The chi square test also showed that there is statically significant association between gender and perceived depression since the P Value is less than 0.05 (0.041). Female respondents are 2.069 times more likely to perceive depression than male respondents are. In relation to the residence of respondents the chi square test showed that there is no statistically significant association between the residence of respondents and perceived stress, anxiety or depression hence the P value is greater than 0.05 (0.121), (0.402) and (0.318) for stress, anxiety and depression respectively. Regarding marital status, a chi square test showed that there is no statically significant association between marital status and perceived anxiety, stress or depression since the P value is less than 0.05 for stress, anxiety and depression as respective (0.0931), (0.1622) and (0.072).

According to the living condition and its association with the perceived stress, anxiety and depression the chi square test shows there is no statistically significant association between them since the P value is greater than 0.05 for stress, anxiety and depression as respective (0.166), (0.121), and (0.371). The average monthly income showed by the chi square test to not having a significant association with the perceived anxiety and depression among respondents since the P value for anxiety and depression is greater than 0.05 as respective (0.0541) and (0.216). However, there is statically significant association showed by the chi square test between average monthly income and stress among participants.

Respondents that have an average monthly income of <200\$ are 1.644 times more likely to have perceived stress with a confidence level of 95%.

In regards to level of education, chi square test shows that there is no statistically significant association between level of education and perceived Stress, anxiety and depression with a P value more than 0.05 as respective (0.226), (0.0692) and (0.0832). The perceived anxiety, stress and depression were more common with respondents that are working in DE martini hospital compared to Benadir Dr. Summait hospitals. A chi square test showed that there is statically significant association between the health facility that respondents work at and the perceived stress, anxiety and depression since their P value is less than 0.05 as respective (0.0204), (0.0109) and (0.0371).

The nature of work of participants has shown to be not associated with stress and anxiety since the chi square test showed that there is no statically significant association between nature of work respondents and their perceived stress or anxiety hence the P value is greater than 0.05 (0.740) and (0.0743) respectively.

The chi square test showed a statically significant association between depression and nature of work of respondents since the P value was less than 0.05 (0.020). Doctors and nurses were more likely to have perceived depression compared to others with confidence level 95%.

Regarding contact with COVID-19 patients most of respondents had direct contact with COVID-19 patient while only few had in direct contact. A chi square test showed that contact with COVID-19 patient has no statically significant association with stress among respondents since the P value is greater than 0.05.

Motivation of respondents have shown by the chi square test to not having statically significant association with perceived stress, anxiety or depression since the P value for the three is more than 0.05 (0.162), (0.095) and (0.055) respectively. Respondents that are not motivated are 1.12 times more likely to perceive depression compared to others with confidence level of 95%. Respondents that were motivated are 0.643 times less likely to have perceived stress compared to others with confidence level of 95% for the nurses and doctors the chi square test showed that there is statically significant association between their working department and perceived stress, anxiety or depression. The perceived anxiety showed to have the strongest statically significant association with working department since the P value was 0.004. Doctors and nurses working at the ICU are 4.451 times more likely to have perceived anxiety compared to others with confidence level of 95%

For depression the chi square test showed that it's significantly associated with working departments of nurses and doctors since the P value less than 0.05 (0.04). Stress is also significantly associated with working department of nurse and doctors since the P value is less than 0.05 (0.02).

Table 3: Demonstrates the Bivariate Association of Stress, Anxiety and Depression to the Associating Factors.

	Stress		Anxiety		Depression	
	Sig	Chi	sig	Chi	Sig	Chi
Age:						
18 to 25 years						
>25 to 40 years	0.041	1.431	0.6234	0.3871	0.841	
> 40 to 55 years						
> 55 years						
Gender: Female to male	0.064	0.720	0.013	3.174	0.041	2.069
Residence Mogadishu						
Outside Mogadishu	1.021	0.733	0.9402	0.683	0.318	0.507
Marital status: Single Married Divorced						
Widowed	0.0931	0.462	0.1622	0.672	0.072	0.811
Average monthly income						
< \$200						
\$200 - \$500	0.0313	1.644	0.0541	0.499	0.216	0.748
> \$500						
Living condition Alone						
With family	0.166	0.441	0.121	0.223	0.371	0.431
Level of Education Informal						
Primary education Secondary education University level						
Postgraduate	0.226	0.276	0.0692	0.2246	0.0832	0.9134
Health facility						
Demartini Hospital, Benadir Hospital, Dr. Summait Hospital	0.0204	1.8814	0.0109	6.403	0.0371	2.79
Nature of work: Administration, Security, Cleaners, Doctors, Nurses, Lab technician, Radiology, Pharmacy						
	0.740	0.813	0.0743	0.960	0.020	1.691
Contact with COVID-19 patients: Direct Contact - Indirect contact						
	0.048	0.0661	0.09	0.778	0.02	1.87
Motivation: Motivated, Less motivated, Not motivated at all						
	0.162	0.643	0.095	0.914	0.055	1.12
Working Department; if nurse or Doctor: ICU, Emergency Normal Ward						
	0.02	1.801	0.004	4.451	0.04	2.336
Average working hours per week: <54 hrs, 54 – 72 hrs, >72 hrs						
	0.551	0.362	0.537	1.047	0.320	0.761
Availability of PPE: Fully available, There was shortage, Not available at all						
	0.264	0.418	0.961	1.0287	0.503	0.194

Average working hours as shown by the chi square test has no statically significant association with perceived stress, anxiety or depression since the P value is more than 0.05 (0.551), (0.537) and (0.320) respectively. Speaking of availability of PPE to healthcare workers the chi square test showed that there is no statically significant association between the availability of PPE and perceived stress, anxiety or depression since the P value for the three is more than 0.05 (0.264), (0.961) and 0.503) respectively.

Discussion

The perceived anxiety, stress and depression was evaluated as well as its association with the demographic and health work related factors among respondents. The prevalence of stress among healthcare workers participated in our study was 15.2% categorized into mild, moderate and severe 6.9%, 7.1% and 1.1% respectively.

In 2011, DASS-21 was also used in research in an Oncology hospital, Hanoi and Tran Thi they found a prevalence of stress in 36.9% of staff It's was find out in this study that stress was the least perceived among respondents compared to anxiety and depression since 84.8% of them showed normal symptoms to stress assessment. This quite different from study conducted in ho chi minh city-Vietnam regarding Stress, anxiety and depression among health care workers showing that only 65% of respondents showed normal symptoms to stress. On the other hand, our finding regarding stress is similar to another study conducted in Nepal showing that 82.9% of respondents with normal stress symptoms.

Regarding severity of stress, only 1.10 % of participants had severe stress making it quite less than the finding of the study in Nepal addressing that 5% of healthcare workers included in the study had either severe or extremely severe stress symptoms. Only 30.7% had normal level in assessing anxiety among study participants making over 69% of participants positive with a degree of anxiety. Descriptive analysis of anxiety scale of DASS 21 conducted in Nepal, which demonstrates varied anxiety levels among participants where majority of the participant's i.e. 64.4% had normal level of anxiety symptoms. This shows that the norms of this study to anxiety are double to our finding. This can be explained by the fact that our study participants were working in only COVID-19 specialized centers while the other study was conducted among non COVID-19 specific health facilities in which both COVID-19 and non-COVID patients are served.

In the assessment of depression using DASS – 21 scale 19.8% of participants shown to have moderate depression symptoms while which is almost double to the finding of the study in Nepal showing that only 10.9% of their study participants had moderate depression symptoms. However, our study finding is similar to the findings of the study conducted in vietnam showing that 20% of health care workers in their study were moderately depressed

Regarding the association between the perceived stress, anxiety and depression with demographic factors and health work related factors. The association test shown by the chi square test was different in aspect with different demographic factors and

they associated differently with the perceived stress, anxiety or depression.

In this study, it has shown that gender is significantly associated with perceived anxiety and stress while the chi square test showed that there is no statically significant association between gender and stress. This is similar to the study among health care workers in ho chi minh city-Vietnam showing that anxiety and depression are significantly associated with gender stating that women had higher risk of depression ($p= 0.048$) and anxiety ($p=0.043$) than men. Female were found to have anxiety 3.174 times more than males this much similar to the study in Nepal which found that females are almost 3 folds more likely to have anxiety compared to male. In contrast to our study, stress was significantly associated with gender in the study conducted in Nepal showing that females were found to have higher chance of developing stress.

Among healthcare workers, the prevalence of stress, anxiety and depression was more common in DE martini Public hospital staff this can be explained by the fact that DE martini was the only health facility dealing with all series cases of COVID-19 in both waves.

Concluding Remarks

The prevalence of anxiety and depression is high among healthcare workers at COVID-19 health facilities. Almost two third of participants 69.3% were shown to have perceived anxiety using DASS-21 while almost half of respondents 46.5% shown to have perceived depression.

Stress was also perceived among respondents ranging from mild stress to severe with total percentage of 15.2% among all healthcare participants working at three COVID-19 health facilities. This shows the magnificent effect of COVID-19 on the mental health of the healthcare providers calling for immediate action gender is consider having a statically significant association with perceived anxiety and depression. Females are more likely to have perceived anxiety or depression compared to males.

For the nurses and doctors the chi square test showed that there is statically significant association between their working department and perceived stress, anxiety or depression.

The perceived anxiety showed to have the strongest statically significant association with working department since the P value was 0.004. Doctors and nurses working at the ICU are 4.451 times more likely to have perceived anxiety compared to others

Limitation of the Study

- The study design was cross-section, which give less about the longitudinal course of the problem
- The study population were only the frontline healthcare workers at COVID-19 specialized health facilities which lacks the comparison element that can show the effect COVID-19 pandemic on the healthcare mental health

- Recall biases
- The study cannot rollout pre-existing mental condition

Recommendation

- COVID-19 pandemic has profoundly affected the HCW Mental wellbeing; measures to ensure they receive the support and motivation as well protection they deserve for optimal healthcare delivery.
- Empowering female healthcare workers since they were found to be much vulnerable to perceive.
- Anxiety and depression..
- Continues monitoring and close observation on mental status of the frontline health care work for early detection of any mood swings or other mental health impact from the pandemic to ensure preservation of mental health of our human capital against the COVID-19 pandemic.
- Motivation has found to be significantly associate with anxiety, continues support and appreciation form the community can make a tremendous difference.
- More in depth qualitative approach study is needed to evaluate the mental status of the frontline.
- Healthcare workers with generalization that includes the COVID-19 health care task forces as well as other health care workers.

COVID-19 pandemic has profoundly affected the HCW Mental wellbeing; measures to ensure they receive the support and motivation as well protection they deserve for optimal healthcare delivery

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