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Impact of COVID-19 pandemic on mental health status among the frontline healthcare workers in Kathmandu, Nepal

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Abstract--Introduction: The coronavirus pandemic (COVID-19) has led to psychological distress among healthcare workers. We aimed to assess the prevalence of anxiety and insomnia severity among various occupational categories of frontline HCWs in COVID-19 treatment settings in Kathmandu, Nepal. Materials and Method: A cross-sectional web-based study was conducted over some time of 3 months from March to June 2021 among the frontline healthcare workers in Kathmandu, Nepal. An electronic survey link was sent via email and other social messaging sites and was requested to fill a questionnaire regarding sociodemographic information along with the Generalized Severity Disorder (GAD-7) and Insomnia Severity Index. Results: Out of 200 participants, most the respondents 87 (43.5%) had no anxiety disorder. 67 (33.5%) participants had mild levels of anxiety, 25 (12.5%) had moderate anxiety and 21 (10.5%) had severe anxiety. More than half participants (109, 54.5%) had no clinically significant insomnia. Subthreshold insomnia was seen in 63 (31.5%), clinical insomnia (Moderate) was seen in 23 (11.5%) and 5 (2.5%) of study participants had clinical insomnia (Severe). Conclusion: Due to the Covid-19 pandemic mental well-being of frontline HCWs is affected. Our study reports a mild level of symptoms of anxiety and insomnia among most frontline health workers. It also shows that nursing staff is having more anxiety and insomnia problem.

Keywords--COVID-19, HCWs, mental health status, mental wellbeing, health workers.

Introduction

Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) the etiological agent for coronavirus disease 2019 (COVID-19) first reported in China on the 31st of December 2019 as a cause of pneumonia and since then has spread to many countries around the globe which led the World Health Organization (WHO) to announce it as a worldwide pandemic on 11th of March 2020¹.

The majority of COVID-19 cases are asymptomatic. Nepal confirmed its first case of COVID-19 in a Nepali student who had returned from China on Jan 13, 2020, to Nepal, and two months a second case, a Nepali girl returning from France was confirmed.^{2,3} Coronavirus has invaded the world and has resulted in the worst crisis which we have ever experienced. Nonavailability of beds, shortage of

ICU/Medications and not getting a respectful burial are depressing events sited in every country.⁴

The COVID-19 pandemic put healthcare professionals (HCPs) in an unprecedented situation. The long working hours, the need for 'hard triage for ventilation support, and the tight restrictions on daily life implemented by the government had serious effects on both HCW and the general population. However, these seldom challenge healthcare systems (limited capacity of hospital beds and understaffing of personnel) in the way seen for the COVID-19 pandemic.⁵

The total number of confirmed cases of COVID-19 in the world is more than 173 million with more than 3.7 million deaths and Nepal had more than 5 lakh cases with nearly 8000 deaths as of June 6, 2021. As the capital city, Kathmandu has the highest case density. The increasing number of cases, social stigma, overwhelming workload, depletion of personal protective equipment, lack of specific drugs and training, feeling of being inadequately supported, lack of insurance and incentives, etc are associated with the mental health of frontline health care workers resulting from the poor quality of services. Hence, it is felt to assess the mental health status of frontline health workers working during the COVID 19 pandemic.

This study aimed to assess the prevalence of anxiety and insomnia severity among various occupational categories of frontline HCWs in COVID-19 treatment settings and explore socio-demographic factors that could affect sleep quality and anxiety among HCWs.

Materials and Methods

A cross-sectional web-based study was conducted over 3 months from March to June 2021 among the frontline healthcare workers working in Kathmandu city, Nepal. HCWs in all the hospital departments and clinical units were asked to participate in the study. Participants were selected using a convenience sampling technique. An electronic survey link was sent via email and other social messaging sites. At the beginning of the electronic survey, the purpose of the study was explained. A respondent who was having doubts was allowed to ask questions via a dedicated email address. The questionnaire was given in the English language. Ethical clearance was obtained from Institutional Ethical Committee. The study participants consisted of 200 HCWs including clinical, paramedical, nursing, public health, pharmacy, radiology, and laboratory staff who were randomly recruited from different Hospitals, clinics, /and NGOs in Kathmandu city. The questionnaire consists of three parts: demographic information, generalized anxiety disorder 7-item scale (GAD-7), and insomnia severity scale.

The GAD-7 has often been used and validated in various populations as brief screening measures for anxiety^{6,7,8}. It had seven questions with options ranging from 0 (not at all) to 3 (nearly every day) with an overall score of 0–21. The score of the respondents was classified into four distinct categories, such as none (<4), mild (5–9), moderate (10–14), and severe (>15). Using a threshold of 10, it has

shown a fair amount of Sensitivity (89 %) and Specificity (82%). Likewise, the insomnia severity scale has been used to measure Insomnia⁹. It had seven-question with options ranging from 0 (not at all) to 4 (many problems) with an overall score of 0-28. The score was classified into no clinically significant insomnia (0-7), subthreshold insomnia/mild (8-14), 15-21 clinical insomnia/moderate (15-and clinical insomnia /severe (22-28). The cut-off score for GAD-7 and ISI tools was ≥ 10 ¹⁰.

The data was extracted in MS excel and was analyzed using SPSS version 22. Frequency and percentage were evaluated using descriptive statistics. The chi-square test was used to see the association between dependent and independent variables. P-value < 0.05 was considered as significant. Data were expressed in graphs, tables, and charts wherever necessary.

Results

A total of 200 frontline HCWs working in different sectors of healthcare participated in the study. The mean age of participants was 28.71 ± 6.81 and the mean duration of working hours was 44.73 ± 14.02 hours. Most of the participants were Female (n=105,52.5%); single (n=115,57.5%) and maximum number of participants were living with their family (n=151,75.5%). A total of 115 (57.5%) worked in private healthcare centers and have an educational level of an undergraduate degree (99,49.5%) as shown in (Table 1)

Table 1
Participant demographic and occupational characteristics

Characteristics	N (%)
Gender	
Male	95 (47.5)
Female	105 (52.5)
Marital Status	
Unmarried	115 (57.5)
Married	83 (41.5)
Divorced	1 (0.5)
Widower / Widowed	1 (0.5)
Living Situation	
Alone	40 (20)
With family	151 (75.5)
Hostel	6 (3)
Others	3 (1.5)
Educational Level	
TSLC	6 (3)
PCL / Diploma	37 (18.5)
Undergraduate Degree	99 (49.5)
Post Graduate Degree	51 (25.5)
Others	7 (3.5)
Working Sector	
Government	47 (23.5)

Semi-Government	8 (4)
Private	115 (57.5)
NGO / INGO	21 (10.5)
Others	9 (4.5)

HCWs (Doctors= 40, 20%, nurses= 66, 33%, paramedical= 27, 13.5%, public health= 34, 17%,

pharmacist= 9, 4.5%, radiographer= 4, 2%, lab technician=9, 4.5% and others =11, 5.5% were participated in the study. Among the participants, nursing staffs, paramedical and doctors have higher prevalence of anxiety (31.8%, 29.6% and 17.5%) compared to those of public health and other professions. Similarly, Nursing staffs, paramedical and public health staffs have higher prevalence of insomnia disorder (19.7%, 11.1% and 8.8%). (As shown in Table 2)

Table 2
Prevalence of anxiety/Insomnia among frontline HCWs

Occupational Category	N (%)	Anxiety Disorder % (95% CI)	Insomnia % (95% CI)
Doctor	40 (20)	17.5 (3.85-6.34)	7.5 (5.30-8.59)
Paramedical	27 (13.5)	29.6 (5.45-9.21)	11.1 (6.39-10.63)
Nursing	66 (33)	31.8 (6.81-9.69)	19.7 (6.15-9.35)
Public Health	34 (17)	14.7 (3.63-6.96)	8.8 (4.98-9.01)
Pharmacist	9 (4.5)	0 (0.81-4.96)	0 (2.95-8.38)
Radiographer	4 (2)	25 (1.87-9.12)	25 (2.88-15.62)
Laboratory Technician	9 (4.5)	0 (3.32-5.78)	0 (4.08-11.02)
Others	11 (5.5)	36 (4.37-9.80)	45.5 (10.90-16.91)

Most of the respondents 87 (43.5%) had no anxiety disorder. 67 (33.5%) participants had mild levels of anxiety whereas nursing staff had higher anxiety levels (27, 40.9%) as compared with other professions. A moderate level of anxiety was seen in 25 (12.5%) of respondents and was higher among doctors, paramedical, and nursing staff. Severe anxiety was seen in 21 (10.5%) respondents and had high prevalent among nurses (16, 24.2%). There was a positive association between profession and prevalence of anxiety which is highly significant ($P < 0.002$). (As shown in Table 3)

Table 3
Association of the prevalence of anxiety with the occupation of respondents

Occupation	Anxiety Severity				P-value
	No Anxiety	Mild anxiety	Moderate anxiety	Severe Anxiety	
	Count (Row %)	Count (Row %)	Count (Row %)	Count (Row %)	
Doctor	23 (57.5)	10 (25.0)	6 (15.0)	1 (2.5)	
Paramedical	9 (33.3)	10 (37.0)	6 (22.2)	2 (7.4)	

Nursing	18 (27.3)	27 (40.9)	5 (7.6)	16 (24.2)	0.002
Public Health	20 (58.8)	9 (26.5)	3 (8.8)	2 (5.9)	
Pharmacist	7 (77.8)	2 (22.2)	0 (0.0)	0 (0.0)	
Radiographer	2 (50.0)	1 (25.0)	1 (25.0)	0 (0.0)	
Lab Technician	5 (55.6)	4 (44.4)	0 (0.0)	0 (0.0)	
Others	3 (27.3)	4 (36.4)	4 (36.4)	0 (0.0)	
Total	87 (43.5)	67 (33.5)	25 (12.5)	21 (10.5)	

Regarding the severity of insomnia, more than half participants (109, 54.5%) had no clinically significant insomnia. Subthreshold insomnia was seen in 63 (31.5%) respondents and was most common among nursing, public health, and paramedical as compared with others, and clinical insomnia (Moderate) was seen in 23 (11.5%) and was very common among nurses (12, 18.2%). Only 5 (2.5%) of study participants had clinical insomnia (Severe). There was a positive association between profession and prevalence of insomnia disorder which is significant ($P < 0.02$). (As shown in Table 4)

Table 4
Association of the prevalence of insomnia with the profession of respondent

Occupation	Insomnia Severity				P-value
	No Significant Insomnia	Sub Threshold Insomnia	Clinical Insomnia (Moderate)	Clinical Insomnia (Severe)	
	Count (Row %)	Count (Row %)	Count (Row %)	Count (Row %)	
Doctor	28 (70.0)	9 (22.5)	2 (5.0)	1 (2.5)	0.02
Paramedical	13 (48.1)	11 (40.7)	3 (11.1)	0 (0.0)	
Nursing	38 (57.6)	15 (22.7)	12 (18.2)	1 (1.5)	
Public Health	18 (52.9)	13 (38.2)	2 (5.9)	1 (2.9)	
Pharmacist	6 (66.7)	3 (33.3)	0 (0.0)	0 (0.0)	
Radiographer	1 (25.0)	2 (50.0)	1 (25.0)	0 (0.0)	
Lab Technician	4 (44.4)	5 (55.6)	0 (0.0)	0 (0.0)	
Others	1 (9.1)	5 (45.5)	3 (27.3)	2 (18.2)	
Total	109 (54.5)	63 (31.5)	23 (11.5)	5 (2.5)	

Discussion

According to WHO guidelines for the mental health of healthcare workers, certain coping strategies such as sufficient rest, a balanced and healthy diet, physical activities, keeping in contact with friends and family members through digital media, and decreasing the screen time on social media help to decrease the stress and anxiety at personal level.¹¹

The role of HCWs during a pandemic as front-liners is vital and massive, making them more susceptible to anxiety and insomnia disorder due to overwhelming health care systems in addition to fear of acquiring the infection. Many studies

have been conducted in different countries to assess the mental health status among frontline HCWs. This study found the symptoms of anxiety and insomnia disorder among a substantial number of survey respondents. Nursing staff, paramedical, and doctors had a significantly higher level of insomnia and anxiety symptoms.

Our study found 43.5% had no symptoms of anxiety, 33.5% had mild anxiety, 12.5 % had moderate anxiety and 10.5% had severe anxiety. A study conducted in Turkey among HCWs reported varying levels of anxiety, but 20% were moderate, and 17% showed severe anxiety levels¹². Japan and Singapore showed a high level of fear and anxiety in more than half of HCWs surveyed before and during SARS-CoV outbreaks¹³. In our study, female frontline HCWs had a significantly high prevalence of anxiety symptoms and insomnia disorder. Likewise, during the epidemic, a study was conducted among 52,730 study participants who reported higher psychological distress among female participants than males¹⁴.

This study reported insomnia significantly more among nurses and paramedical staff. Similar results were reported in studies done in China and Italy^{15,16}. A greater level of insomnia disorder was seen among nurses and paramedical staff as compared with other HCWs which may be due to increased physical work and having consecutive night shifts. Our study showed that those living alone or in a hostel are prone to insomnia as compared to those living with family. A study conducted in Pakistan reported most participants were living with families and were more prone to insomnia than the ones living alone as fear of transmission of diseases to the families, especially to old people at home led to sleep disturbances¹⁷.

Frontline HCWs in our study who were married had a lower risk of both anxiety and insomnia disorder as compared to others. Similar findings were reported by a study conducted in India but the living arrangement did not impact the mental wellbeing of the respondent as our study showed a positive impact¹⁸.

Conclusion

In conclusion, due to Covid-19 pandemic mental well-being of frontline HCWs is affected. Our study reports a mild level of symptoms of anxiety and insomnia among most frontline health workers. It also shows that nursing staff is having more anxiety and insomnia problem. Follow-up studies with a larger sample size are warranted to confirm the results of the study. Immediate psychological interventions for frontline health workers should be launched by the government.

Limitation

Our study had certain limitations. Due to its convenience sampling technique, the generalizability is limited but this study provided an insight into the current mental health status of frontline health workers. It was challenging to undertake a study offline so we did an online study which may lead to response bias.

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Conflicts of Interest:

The writer states no disagreement of attentiveness.

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