

Prevalence and Factors Associated with Mental Health Outcomes among Healthcare Workers Exposed to COVID-19 Pandemic in Nepal

Pushpa Kumari Ghimire¹, Bina Sigdel¹, Pushpa Dhakal², Shradda Kumari Sharma Baidhya², Kabita Pandey¹, Sharada Prasad Wasti³

¹Kanti Children's Hospital, Kathmandu, Nepal,

²National Academy of Medical Sciences, Bir Hospital, Kathmandu, Nepal,

³National Open College (Affiliated to Pokhara University), Lalitpur, Nepal.

ABSTRACT

Introduction: Corona virus disease (COVID-19) is an infectious disease caused by a newly discovered corona virus. Healthcare workers are at risk of developing psychological distress and other mental health related symptoms. This study was intended to evaluate the prevalence and predictors of depression, anxiety, stress, and fear during COVID-19 pandemic among healthcare workers of Nepal.

Methods: A cross-sectional survey was conducted between June and July 2020 with 167 healthcare workers. Mental health outcome, specially, fear was estimated using fear of COVID-19 scale (FCV-19S) whereas depression, anxiety and stress were assessed using DASS-21 survey questionnaire. Statistical analysis used: Chi-square test was performed to observe the association between mental health outcomes variables among health workers and the significance level was considered to be a p-value less than 0.05.

Results: There were 15.0%, 24.0%, and 5.4% of the respondents who had severe and extremely severe level of depression, anxiety, and stress respectively and 44.3% of the respondents had fear during COVID-19 pandemic. The gender and job position were statistically significant with depression. The gender, job position, and respondents who had any health problems were statistically significant with anxiety. The respondents who had any health problems were statistically significant with stress. The gender, education, and job position were statistically significant with fear.

Conclusion: During the COVID-19 outbreak, the frontline healthcare workers have experienced a varying level of depression, anxiety, stress, and fear. Specific counseling, support system, training on handling COVID-19 patient, and assigning normal working hour as government protocol to all healthcare workers are needed to enhance their psychological wellbeing and strengthen the healthcare systems capacity during pandemic.

Keywords: Factors associated, Mental health, Healthcare workers, COVID-19, Nepal

INTRODUCTION

Corona Virus Disease 2019 (COVID-19) is an infectious disease caused by a newly discovered corona virus which is characterized by its unambiguous capacity of person-to-person transmission.^{1,2} With the daily increasing numbers of COVID-19 cases, healthcare workers (HCW) are facing occupational exposures, infections and psychological pressure, which may lead to various psychological problems. It is serious challenge to the mental health all over the world.^{3,4} The overwhelming workload, depletion of personal protection equipment, inadequate support may all associate to the burden of stress, anxiety and depression.^{5,6} Therefore, to understand this dynamic, objective of this study was to assess the prevalence and predictors of depression, anxiety, stress, and fear among Health Care Workers during the COVID-19 outbreak.

METHODS

Study design, setting and population

A hospital based cross-sectional study was designed, and the prevalence and factors linked to depression, anxiety and stress in HCW working in Kanti children hospital in Kathmandu, Nepal was assessed. Data were collected from June and July, 2020. All the HCW such as doctors, nurses and paramedics who were working in Kanti Children's Hospital during the study period were included as the participants of this study.

Correspondence: Pushpa Kumari Ghimire, Kanti Childrens Hospital, Maharajgunj Kathmandu, Nepal, Email: pkghimire94@gmail.com

Sample size and sampling technique

The target sample size of the respondents under study was determined using the formula as per Slovin's formula,⁷ $n = N / (1 + Ne^2)$ in which n =number of samples, N =total population and e =margin of error

$$n = N / (1 + Ne^2)$$

n = the desired sample size

N = total population (267)

e = marginal error (0.05)

A total sample size was 160 where 10% non-response rate was added and a total of 176 samples were determined. The exact sample size for this study was 167. The non-response rate was 5%.

Data collection procedure

Data were collected via structured questionnaire from the HCW of Kanti Children's hospital. The data collection instrument was searched from different previously used tools elsewhere.⁸ The instrument was developed in English version. Participants' fear was measured via fear of COVID-19 scale (FCV-19S).⁹ Seven items Likert scale tool was used to assess fear of the health workers which cutoff point more than mean was considered as having fear. Similarly, Depression, Anxiety and Stress were assessed by using the DASS-21 scale which is an instrument in the assessment of mental health status.¹⁰

Validity and reliability of the study tools

Fear of COVID-19 and DASS-21 survey questionnaires were adopted for this study which tools were the previously used in the similar sort of studies.^{10,11} Prior to the final data collection, all questionnaires were pre-tested with 16 HCW in the out of the survey hospital. Few questionnaires flow and appropriate wording was adjusted after the pretesting. Fear of COVID-19 scale (FCV-19S) has internal consistency reliability of 0.82.⁹ The reliability of DASS-21 Cronbach's alpha values found 0.81, 0.89 and 0.78 for the subscales of depressive, anxiety, and stress respectively. It has excellent internal consistency, discriminative, concurrent, and convergent validities.⁸

Data analysis

Data were analyzed with SPSS version 23.0 and checked for its completeness, consistency, and accuracy. Bivariate analysis (chi-square test) was performed to describe the associations between exposure variables and outcome variables and the statistical significance level was considered to be a p -value less than 0.05.

Ethical considerations

Ethical approval was obtained from the Institutional Review Board of Kanti Children's Hospital, Nepal (Register Number: 781/2020).

RESULTS**Socio-demographic characteristics**

Table 1: Socio-demographic characteristics of the respondents

| Variables | Frequency | Percentage |
|---|----------------------|------------|
| Age (years) | | |
| 33 years and below | 103 | 61.7 |
| >34 years | 64 | 38.3 |
| Mean age and (SD) | 32.6 (SD 7.5) years | |
| Gender | | |
| Male | 42 | 25.1 |
| Female | 125 | 74.9 |
| Marital status | | |
| Unmarried | 46 | 27.5 |
| Married | 121 | 72.5 |
| Ethnicity | | |
| Brahmin/Chhetri | 109 | 65.3 |
| Janajati/Dalit | 58 | 34.7 |
| Religion | | |
| Hindu | 156 | 93.4 |
| Other religions | 11 | 6.6 |
| Education attainment | | |
| Vocational training and proficiency certificate level | 44 | 26.3 |
| Bachelor’s degree | 89 | 53.3 |
| Master degree and above | 34 | 20.4 |
| Current job position | | |
| Doctor | 47 | 28.1 |
| Paramedics | 11 | 6.6 |
| Nursing staff | 109 | 65.3 |
| Work experience | | |
| Mean year of work experience (SD) | 9.6 (SD 7.6) years | |
| Received any training/orientation regarding COVID-19 (n=167) | | |
| Yes | 43 | 25.7 |
| Currently have any health problems | | |
| Yes | 35 | 21.0 |
| Fear during COVID-19 | | |
| Yes | 74 | 44.3 |

A total of 167 health workers were interviewed in this study. 74.9% of the respondents were female, the mean age was 32.6 (SD 7.5) years, and around three-fourth (72.5%) of the respondents were married. Around two-third (65.3%) of the respondents belong to Brahmin/Chhetri caste/ethnic background, 93.4% belong to the Hindu religion, and 53.3% had completed bachelor's level education. Near to two-third (65.3%) of the respondents were nursing staffs, mean year of work experience was 9.6 (SD 7.6) years, and

25.7% of the respondents received training/orientation regarding COVID-19. Four out of 10 (44.3%) respondents reported fear during COVID-19 (Table1).

The level of depression, anxiety, and stress among participants

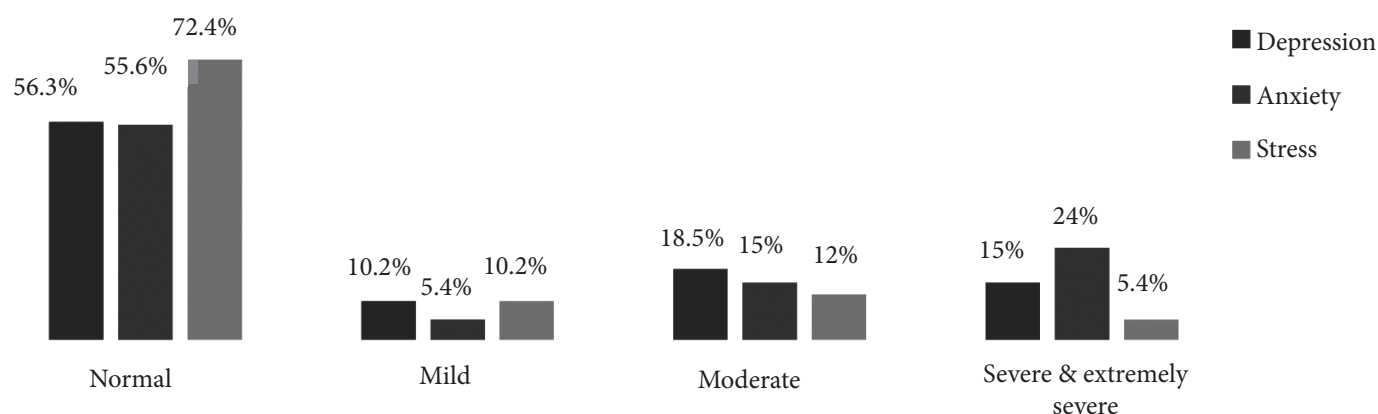


Figure 1: Prevalence of depression, anxiety, and stress among participants during COVID-19 (n=167)

Figure 1 shows that there were 10.2%, 5.4%, and 10.2% of the respondents who had mild level of depression, anxiety, and stress during COVID-19 respectively. There were 18.5%, 15%, and 12% of the respondents who had moderate level of depression, anxiety, and stress during COVID-19 respectively. There were 15%, 24%, and 5.4% of the respondents who had severe and extremely severe level of depression, anxiety, and stress during COVID-19 respectively (Figure 1).

Factors associated with depression, anxiety, stress, and fear during COVID-19

Table 2: Association between various variables with depression, anxiety, stress, and fear among the health workers during COVID-19

| Characteristics | Depression | | Anxiety | | Stress | | Fear on COVID-19 | |
|-----------------------|------------|---------|-----------|---------|-----------|---------|------------------|---------|
| | N (%) | P-value | N (%) | P-value | N (%) | P-value | N (%) | P-value |
| Age (years) | | 0.34 | | 0.45 | | 0.56 | | 0.13 |
| 33 years and below | 48 (46.6) | | 48 (46.6) | | 30 (29.1) | | 41 (39.8) | |
| > 34 years | 25 (39.1) | | 26 (40.6) | | 16 (25.0) | | 33 (51.6) | |
| Gender | | < 0.001 | | 0.01 | | 0.06 | | 0.01 |
| Male | 11 (26.2) | | 12 (28.6) | | 7 (16.7) | | 12 (28.6) | |
| Female | 62 (49.6) | | 62 (49.6) | | 39 (31.2) | | 62 (49.6) | |
| Ethnicity | | 0.38 | | 0.16 | | 0.71 | | 0.08 |
| Brahmin/Chhetri | 45 (41.3) | | 44 (40.4) | | 29 (26.6) | | 43 (39.4) | |
| Janajati/Dalit | 28 (48.3) | | 30 (51.7) | | 17 (29.3) | | 31 (53.4) | |
| Religion | | 0.9 | | 0.93 | | 0.47 | | 0.18 |
| Hindu | 68 (43.6) | | 69 (44.2) | | 44 (28.2) | | 67 (42.9) | |
| Other religions | 5 (45.5) | | 5 (45.5) | | 2 (18.2) | | 7 (63.6) | |
| Marital status | | 0.27 | | 0.4 | | 0.51 | | 0.06 |
| Unmarried | 17 (37.0) | | 18 (39.1) | | 11 (23.9) | | 15 (32.6) | |
| Married | 56 (46.3) | | 56 (46.3) | | 35 (28.9) | | 59 (48.8) | |

| | | 0.07 | 0.21 | 0.33 | 0.04 |
|--|-----------|-----------|-----------|-----------|---------|
| Education attainment | | | | | |
| Vocational training and proficiency certificate level | 21 (47.7) | 23 (52.3) | 14 (31.8) | 20 (45.5) | |
| Bachelor's degree | 43 (48.3) | 40 (44.9) | 26 (29.2) | 45 (50.6) | |
| Master degree and above | 9 (26.5) | 11 (32.4) | 6 (17.6) | 9 (26.5) | |
| Current job position | | < 0.001 | < 0.001 | 0.22 | < 0.001 |
| Doctor | 12 (25.5) | 12 (25.5) | 11 (23.4) | 11 (23.4) | |
| Paramedics | 4 (36.4) | 4 (36.4) | 1 (9.1) | 6 (54.5) | |
| Nursing staff | 57 (52.3) | 58 (53.2) | 34 (31.2) | 57 (52.3) | |
| Work experience | | 0.26 | 0.18 | 0.55 | 0.10 |
| 10 years and below | 42 (40.4) | 42 (40.4) | 27 (26.0) | 41 (39.4) | |
| > 10 years | 31 (49.2) | 32 (50.8) | 19 (30.2) | 33 (52.4) | |
| Received any training/ orientation regarding COVID-19 | | 0.17 | 0.27 | 0.46 | 0.07 |
| No | 58 (46.8) | 58 (46.8) | 36 (29.0) | 60 (48.4) | |
| Yes | 15 (34.9) | 16 (37.2) | 10 (23.3) | 14 (32.6) | |
| Currently have any health problems | | 0.07 | <0.001 | 0.02 | 0.08 |
| No | 53 (40.2) | 51 (38.6) | 31 (23.5) | 54 (40.9) | |
| Yes | 20 (57.1) | 23 (65.7) | 15 (42.9) | 20 (57.1) | |

In Chi-square test, the gender ($p \leq 0.001$) and job position ($p \leq 0.001$) were statistically significant with depression during COVID-19. The gender ($p = 0.01$), job position ($p \leq 0.001$), and respondents who had any health problems ($p \leq 0.001$) were statistically significant with anxiety during COVID-19. The respondents who had any health problems ($p = 0.02$) were statistically significant with stress during COVID-19. The gender ($p = 0.01$), education ($p = 0.04$), and job position ($p = 0.001$) were statistically significant with fear during COVID-19 (Table 2).

DISCUSSION

In present study, the prevalence of depression 43.7%, anxiety 44.4%, and stress 27.6% was comparable to a study done in Australia and China.¹² The medical staff working in those departments such as respiratory, emergency, intensive care unit and infectious disease were revealed to experience more psychological disorder and had almost twice risk for suffering anxiety and depression compared to non-clinical staff with hardly possibility to come in contact with COVID-19 patients.^{13,14} The possible reason is due to regular contact with COVID-19 cases, involve in their treatment, care of dead body and their family members causes the physical as well as psychological

exhaustion regularly which ultimately leads to stress, anxiety and depression. Study done in China shows that health workers had a higher prevalence of insomnia, anxiety and depression.¹⁵ Findings of present study shows that the staff who had worked more than 10 years were more likely to have depression, anxiety and stress which is similar to the study conducted in China.¹⁶ Similarly, other studies reported that a large portion of healthcare providers were most vulnerable to mental health problem and facing enormous pressure including a high risk of infection causing mental health disturbances.^{4,17,18} However, a study conducted in Singapore reported the contrary findings on the prevalence of anxiety which was higher among non-medical health care workers than medical personnel.¹⁰ The study findings revealed higher proportion of anxiety, depression and insomnia among health workers during the early phase of pandemic in Nepal during COVID-19 which shows that 41.9% had anxiety, 37.5% had depression and 33.9% had insomnia,¹⁹ this result support to the present study. The possible reason is due to inadequate support of protective equipment, long working hours, detachment with their family as well as high chance of being infected because of regular contact with COVID-19 cases. The study done in China reported

low level of depression (14.8%), anxiety (18.3%) and stress symptoms (10%) respectively whereas males, doctors, individuals aged 31-60 years with senior job titles, those who had direct contact with COVID-19 or suspected cases had more likely to have depression, anxiety and stress symptoms.²⁰

A study done in Nepal reported that 25.4% of the participants had experienced anxiety and 7% depression due to lockdown on COVID-19.²¹ The studies done in China reported that health care workers were at high risk of mental illness.^{22,23} There was a significant association between the prevalence of physical symptoms and psychological outcomes among healthcare workers during COVID-19 outbreaks in different hospitals of Singapore and India.²⁴ A study done in Nepal with frontline healthcare workers reported that 29% have depression, 35.7% have anxiety and 17.1% have psychological distress. As compared to a doctor, nurses and laboratory personal were more likely to have anxiety as compared to other mental health issues.²⁵ The nature of COVID-19, limited testing, treatment options, PPEs, and medical supplies as well as heavy workload may be the main reasons of stress among the health care providers in Nepal. In GAD (Generalized Anxiety Disorder) scoring done in Nepal, the analysis revealed that 16.7% of the participants had mild anxiety, 25.6% had moderate and 10.35 had severe anxiety.²⁶ Length of working time and the frequency of checking for COVID-19 related information were significant predictors of anxiety.²⁷ Special training on the use and management of personal protective equipment and handling COVID-19 patient could reduce anxiety.²⁸ That could help and support them to work effectively decreases the psychological stress and anxiety which improve the mental health of Health Care Worker.

CONCLUSION

In conclusion, we identified major mental health problems of Health Care Worker, the prevalence of fear, anxiety and depression is higher than the stress experiencing by HCW during the COVID-19 pandemic in Nepal. Health care workers were emotionally affected and traumatized which increases feeling of anxiety as well as stress and depression during the COVID-19 pandemic. An effective strategy is recommended towards improving mental health among front line HCW during COVID-19 pandemic, staff counselling, support to staff as well as training on infection prevention and control, proper use of PPE and how to handle COVID-19 patients. On the other hand, it would be great to assign normal work hours as government protocol to all frontline HCW that can reduce fear, anxiety and stress. Being prepared in all aspects to support frontline

workers through mental health interventions to reduce their fear of being infected and detachment of family member, psychological distress and minimize poor mental health as well as strengthen the health care system capacity during pandemic at workplace improves the mental health of Health Care Worker.

STRENGTH AND LIMITATIONS OF THE STUDY

Social and demographic characteristics as well as psychological status of this study can guide to develop short term and long term support and interventions that would combat the psychological stress and anxiety which improve the mental health of healthcare workers. The limitation of the present study is that it was conducted only at a referral pediatric hospital located in the capital of Nepal so the result has limited power to generalize all HCW in Nepal. The researchers did not have psychological status data from non-epidemic periods for the comparison of the outcome.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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