Burnout and mental health problems among health care workers during second wave of Covid-19 pandemic: A hospital based cross sectional study

Nirajan Bhattarai[1], Mankeshari Maharjan[1], Chet Raj Bhatta[1], Hira Kumari Niraula[1], Pradeep Thapa[1],

1. Consultant Psychiatrist, Child and Adolescent Psychiatry Unit, Mental Hospital Lagankhel, Lalitpur, Nepal
2. Senior Nursing Officer, Dadeldhura Hospital, Dadeldhura, Nepal
3. Consultant Physician, Department Of Internal Medicine, Dadeldhura Hospital, Dadeldhura, Nepal
4. Director, nursing and social security, Department of health service, Kathmandu, Nepal
5. Consultant Orthopedic Surgeon, Department of Orthopedics, Dadeldhura Hospital, Dadeldhura, Nepal

Abstract

Background:

Large number of healthcare workers exposed to COVID-19 might be at increased risk of developing mental and psychological disorders. This study aimed to find out the prevalence of burnout, depression, anxiety and stress and its correlates.

Methods:

This was hospital based cross-sectional study using printed Questionnaire conducted during second wave of COVID-19. Total 96 healthcare workers participated in this study. Depression Anxiety Stress Scale (DASS-21) and Copenhagen Burnout Inventory (CBI) were used to measure study variables. Multivariable logistic regression analysis was done to determine the associate factors.

Results:

The symptoms of depression, anxiety and stress were found to be 31.3%, 40.6 % and 14.6 % respectively. Doctors were 5.2 and 6 fold more likely to experience anxiety and depression respectively. The prevalence of personal, work, and client-related burnout were 43.7%, 31.3% and 14.6% respectively. Younger healthcare workers (HCWs) less than 27 years were 3.5 fold more likely to develop personal burnout. Healthcare workers who had worked for more than 100 hours/week were 5 times more likely to experience personal burnout. Doctors and nurses were 7.9 and 3.5 times more likely to develop work related burnout. Personal, work and client related burnout were significantly correlated with anxiety.

Conclusion:

This study finds considerate proportion of burnout, depression, anxiety and stress among HCWs. Doctors and younger HCWs with increased working hours had high level of these symptoms. Early identification of mental health disorders and awareness intervention could increase the efficiency and quality of care.

Keywords:

Burnout; COVID-19; CBI; DASS-21; healthcare workers

*Corresponding Author

Dr. Nirajan Bhattarai

Consultant Psychiatrist, Child and Adolescent Psychiatry Unit, Mental Hospital Lagankhel, Lalitpur, Nepal
email: nirajanbhattarai13@gmail.com

INTRODUCTION

COVID-19 was a devastating epidemic for the world over and in Nepal people from all 77 districts were affected and it claimed 9,922 death till 3rd August 2021.[1] Due to a greater risk of exposure to the virus, increased working hours, limited resources, fear of infecting their families, inadequate personal equipment, HCWs are more vulnerable to mental illness than the general population which might increase medical errors, lower patient satisfaction, and decreased professional care leading to negative effects on health, work ability, and productivity.[2–4] Psychological wellbeing has an important impact on individuals' performance. The impact of COVID- 19 on mental health is well documented among different populations including health professionals.[5] The mental health problems faced by HCWs during the pandemic is still under-recognized and unaddressed as a result, they are susceptible to experience psychological and mental problems. So this study attempt to assess the prevalence of burnout, depression , anxiety and stress.

METHODS

A cross sectional study was conducted via printed questionnaire among health care workers in Dadeldhura hospital. Data were collected from June 1 to July 30, 2021. Ethical

approval was obtained from Nepal Health Research Council. Prior to data collection, written informed consent was taken after explaining the objectives of the study, the risk and benefits involved and were permitted to withdraw from the study any time if they don't want to participate. Health care workers currently working at Dadeldhura hospital with age greater than 18 years including doctors, nurses, paramedics, laboratory technician were recruited for the study. HCWs who had history of psychiatric disorder or currently taking psychotropic medication were excluded from the study. Convenience sampling technique was used. Sample size was determined using formula, N =[(Z2 *p(1-p)]/e2 and althogether 96 HCWS were recruited in this study. Variable of interest such as burnout, depression, anxiety and stress was measured using Copenhagen Burnout Inventory (CBI) and Depression, Anxiety, stress scale (DASS 21)[6,7.] Cronbach's alpha coefficient for DASS-21 and CBI ranged from (0.78-0.91) and (0.85-0.87) respectively.[6,7]

Scores for depression, anxiety, stress were calculated by summing the scores for relevant items[7]. The subscale scores for CBI were calculated by taking mean of the items in each scale. A general burnout is achieved by totaling the scores and calculating the mean. Total scores range between 0 and 100 and a score of 50 or more indicated burnout.[7] After collecting data, analysis was done using SPSS 22.0. Chi –square test and multivariate logistic regression was used for inferential analysis. Spearman's rho was used to identify the correlations between CBI and DASS subscale. DASS subscale scores were used as continuous variables and merged into two group (Normal versus Mild-Extremely severe) and CBI subscales was also merged into (No burnout versus Burnout) using the cut off points provided in User's manual.[6,7] A 95 % confidence interval was taken and P value less than 0.05 was termed as statistically significant.

RESULT

Personal variables

Out of 96 HCWs 43.8% ranged between ages 18 to 25 years. The mean age of the HCWs is 27.4 years (S.D=5.99). Most of the HCWs were females (71.9%) and married (51%). Majority of HCW's were from middle socio-economic status (96.6%). Majority of HCWs were Chettri (47.9%) and minority were Dalit (10.4%) (Table 1)

Table 1. Socio-demographic characteristics of study participants (n=96)

Variables	Frequency	Percent
Age (Completed years)		
18-25	42	43.8
26-30	31	32.3
31-35	13	13.5
>35	10	10.4
Sex		
Male	27	28.1
Female	69	71.9
Marital Status		
Married	49	51.0
Single	47	49.0
Level of Education		
Proficiency Certificate level47	49	
Graduate	41	42.7
Post Graduate	8	8.3
Caste		
Chhetri	46	47.9
Brahmin	25	26
Dalit	10	10.4
Others	15	15.7
Socio-economic		
Lower	3	3.1
Middle	93	96.9

Work related variables

Majority of the HCWs were nurse (45.8%) and 9.4% were doctors. Majority of the HCWs had worked for less than 5 years (62.5%). Most HCWs were working in COVID ward (22.9%). Majority of HCWs had worked for 42 hours per week (Table 2)

Table 2. Work related characteristics of study participants (n=96)

Variables	Frequency	Percent
Profession		
Nurse	44	45.8
Paramedics	17	17.7
Lab Technician	14	14.6
Doctor	12	12.5
Health Assistant	9	9.4
Work Experience		
<5 years	60	62.5
6-10 years	23	24.0
11-15 years	9	9.4
>15 years	4	4.2
Currently Working Department		
COVID Isolation Ward	22	22.9
Intensive Care Unit (ICU)	11	11.5
Surgery/OT	14	14.6
Laboratory	14	14.6
Emergency	9	9.4
Others (SNCU, Psychiatry, Maternity)	26	27.1

Levels of burnout, depression, anxiety and stress

The mean (±SD) scores of personal, work-related and client related burnout were 46.00(±10.52), 41.40 (±11.25) and 35.85 (± 11.49) respectively. Almost 13.5 % of the study sample were experiencing general burnout across all three domains. The scores for the subscales revealed that the

prevalence of personal, work related and client related burnout were 43.7%, 31.2% and 14.6% respectively. Analysis of DASS scale showed that the symptoms of depression, anxiety and stress among healthcare workers were 31.3 %, 40.6 % and 14.6 % respectively (Table 3)

Table 3. Prevalence of burnout, depression, anxiety and stress by study group (n=96).

Measure	Mean (SD)	Prevalence N (%)
CBI		
Personal Burnout	46.00 (10.52)	NO / Low =54 (56.3) Moderate= 41(42.7) High= 1 (1.0)
Work Burnout	41.40 (11.25)	No/Low=66 (68.8) Moderate=30 (31.2)
Client Related Burnout	35.85 (11.49)	No/Low=82 (85.4) Moderate=14 (14.6)
DASS		
Depression	7.20 (4.59)	Normal=66 (68.8) Mild= 25 (26.0) Moderate=4 (4.2) Extremely Severe=1 (1.0)
Anxiety	7.20 (6.42)	Normal=57 (59.4) Mild= 12 (12.5) Moderate=21 (21.9) Severe=3(3.1) Extremely severe=3 (3.1)
Stress	8.79 (6.70)	Normal=82 (85.4) Mild=6(6.3) Moderate=6(6.3) Severe=1(1.0) Extremely Severe=1(1.0)

Association between Burnout and other variables

Younger HCWs were 3 fold more likely to develop personal burnout as compared to HCWS with age greater than 27 (AOR=3.50, CI=1.44-8.45). Male HCWs were 3 times (AOR=3.09, CI=0.96-9.91) more likely to experience client related burnout. HCWs who had worked for 100 hours per week were significantly more likely to experience personal burnout (AOR=5.077 C.I=1.260-20.458). Doctors were 7.9 times (AOR=7.933, CI =1.88-33.44) whereas nurses were 3 times (AOR =3.56, CI =1.23-10.28) more likely to develop work related burnout as compared to other profession. Doctors were 6 times more likely to develop client related burnout burnout (AOR=6.16, C.I= 1.148-33.112) and 4.5 times (AOR=4.50, C.I= 1.054-19.217) more likely to develop personal burnout as compared to other profession. HCWs in COVID ward were 3.2 fold (AOR = 3.22, C.I= 1.315-7.933) more likely to develop work related burnout however the difference between personal burnout and client related burnout with working department was not statistically significant (Table 4)

Table 4. Factors associated with burnout among healthcare workers (n=96).

Characteristics	Personal burnout			Work related burnout			Client related burnout		
	Odds ratio 95% CI			Odds ratio 95% CI			Odds ratio 95% CI		
		Lower	Upper		Lower	Upper		Lower	Upper
Age (Ref: greater than 27 years)	3.500*	1.449	8.453	1.158	0.470	2.853	0.473	0.122	1.830
Sex (Ref: female)	1.577	0.644	3.859	0.900	0.341	2.370	3.09*	0.96	9.91
Marital status (Ref: single)	2.618*	1.139	6.019	1.143	0.481	2.713	0.952	0.307	2.959
Living condition (Ref: family)	0.989	0.435	2.248	0.963	0.399	2.312	2.194	0.695	6.919
Working hours/week (Ref: 42hrs/week)									
56	1.692	0.534	5.368	0.168	0.021	1.365	1.130	0.216	5.897
100	5.077*	1.260	20.458	3.055	0.872	10.701	2.259	0.513	9.917
Profession (Ref; others)									
Doctors	4.50*	1.054	19.217	7.933*	1.88	33.44	6.617*	1.148	33.112
Nurses	0.944	0.393	2.269	3.568*	1.23	10.28	2.333	0.560	9.723
Department (Ref: Non Covid)	0.789	0.349	1.789	3.229*	1.315	7.933	2.673	0.822	8.689

*Significant at the 0.05 level (2-tailed)

Association between depression, anxiety and stress with other variables

Male HCWs were 4 fold (AOR=4.421, CI =1.364-14.34) more likely to experience stress as compared to female HCWs. Younger HCWS were found to have to higher proportion of depression, anxiety and stress but the difference between age and level of anxiety, depression and stress was not significantly associated. Doctors were 6 times more likely to develop depressive symptoms (AOR=6.00, CI=1.43-24.26 and were 5 fold likely to experience anxiety symptoms (AOR= 5.27, CI= 1.31-21.09) as compared to other profession. HCWs working in COVID ward had more level of anxiety and stress but the association between level of anxiety and stress with department was not statistically significant (Table 5)

Table 5. Factors associated with depression, anxiety and stress among health workers (n=96).

Characteristics	Depression			Anxiety			Stress		
	Odds ratio 95% CI			Odds ratio 95% CI			Odds ratio 95% CI		
		Lower	Upper		Lower	Upper		Lower	Upper
Age (Ref: greater than 27 years)	1.158	0.470	2.853	1.120	0.476	2.634	1.528	0.482	4.846
Sex (Ref: female)	2.267	0.894	5.745	1.536	0.625	3.771	4.421*	1.364	14.334
Marital status (Ref: single)	0.941	0.397	2.231	0.719	0.317	1.628	1.890	0.583	6.125
Living condition (Ref: family)	0.963	0.399	2.321	0.717	0.310	1.657	0.784	0.241	2.548
Working hours/week (Ref: 42hrs/week)									
56	1.156	0.322	4.145	0.637	0.182	2.236	1.130	0.216	5.897
100	5.778*	1.552	21.509	3.185	0.874	11.607	2.259	0.513	9.917
Profession (Ref; others)									
Doctors	6.00*	1.43	24.26	5.27*	1.318	21.094	2.333	0.467	11.649
Nurses	1.125	0.424	2.985	2.19	0.882	5.475	1.105	0.310	3.949
Department (Ref: Non Covid)	0.654	0.269	1.585	1.675	0.735	3.817	2.673	0.822	8.689

*Significant at the 0.05

Association between burnout with depression, anxiety and stress

All subscales of burnout were positively correlated with depression, anxiety and stress. All three subscales of burnout were significantly correlated with anxiety while work and client burnout was significantly correlated with stress Spearman's rho correlation ranging from 0 .26 to 0.34 (Table 6)

Table 6. Spearman's rho correlations between Copenhagen Burnout Inventory and Depression, Anxiety and Stress Scale

		DASS Dep	DASS Anx	DASS Stress
CBI personal	Correlation coefficient	0.143	0.267	0.176
	P value	0.165	0.009*	0.087
CBI work-related	Correlation coefficient	0.142	0.317	0.312
	P value	0.167	0.002*	0.002*
CBI client-related	Correlation coefficient	0.184	0.233	0.344
	P value	0.073	0.023*	0.001*

*Correlation is significant at the 0.05 level (2-tailed)

DISCUSSION

Epidemics have always been part of human life. The mental and physical health of HCWs are at particular risk.[8]

This study is the first to use CBI for measurement of burnout in Nepal and the first one assessing mental health of HCW's working in rural settings. Several studies have reported that during pandemics, burnout had been frequently reported among HCW'S which require immediate attention.9 In this study the prevalence of personal, work-related and client related burnout was found to be 43.7%, 31.2% and 14.6% respectively. This finding is similar to the study conducted in Malaysia by Roslan et al.[9] with personal, work and client related burnout with 53.8%, 39.1% and 17.4 % respectively. This finding is also supported by the study conducted in India and Australia.[10,11]

The present study shows that the prevalence of depression, anxiety and stress symptoms are 31.3%, 40.6% and 14.6% respectively. The findings is similar the study conducted in China.[12-14]

In our study the level of all three burnout were significantly higher in doctors and also has high prevalence of anxiety, stress among doctors. This might be due to increased working hours, limited doctors, low doctor patient ratio, high level of work related stress as compared to other HCW's. Doctors had to attend on-call everyday which might increases the level of burnout, depression in this study. Physicians are particularly vulnerable to experience burnout due to heavy workload and high level of work related stress.[15] In the study conducted in Saudi Arabia showed HCWs with increased working hours was significantly associated with the increased rate of burnout.[16] On contrary, the study conducted in other parts of the world showed that burnout, depression, stress and anxiety was more in nurses as compared to doctors.[4,11,13,14,17]

The present study reveals that younger HCWs had high level of burnout, depression, anxiety and stress as compared to the older age. This findings is supported by many studies which found that the younger HCWs are at higher risk of developing mental stress.[18-21] Younger age group are more exposed to social media, which shares huge amount of information regarding the crisis and older HCWs have the ability to manage their stress as they are more knowledgeable regarding pandemic than younger HCWs.[22,23]

HCWs working in COVID ward had significant work related burnout as compared to non COVID ward and also had high level of depression, anxiety and stress. Similar results were also found in study conducted in India, Singapore and China.[11, 12, 24-26] HCWs in COVID ward are especially vulnerable to mental health problems, including burnout, stress, fear, anxiety, depression and insomnia.[26]

In our study male HCWs had higher level of depression, anxiety and stress. On contrary, the other studies conducted in various part of the world showed higher prevalence of depression, anxiety and stress symptoms among female HCWs.[19,21,25] .

Our findings indicate that not all HCWs are equally affected by COVID-19 pandemic. It was especially the doctors who are affected more during this COVID-19 pandemic. Findings can help to quantify staff support, staff need and tailored intervention.

CONCLUSION

We found the significant proportion of burnout, depression, anxiety and stress among doctors, younger HCWS and HCWs working in COVID ward. Furthermore having longer working hours assigned to treat patient with COVID-19 are strong predictor of psychological distress. We would like to recommend stratification of working hours for all HCW's and adequate staffing along with fulfilment of vacant posts in hospital taking care of COVID-19 patients. It is necessary to pay attention to mental health of HCWS combating the COVID-19 pandemic. Regular assessment of mental health is necessary as the pandemic continues to rise again. Keeping stable working team, improving communication, social support and providing clear guidelines are necessary to improve psychological well- being of HCWs.

LIMITATION

This study is conducted in single hospital settings and the result cannot be generalized. Moreover relatively small sample size didn't allow in depth analysis. Another limitation could be self -reporting bias, depending upon interest level and mindset of the respondent.

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