



Prevalence of Burnout among Healthcare Workers in a Tertiary Care Hospital, its Contributing Factor, and Strategies to Overcome Challenges during the Covid-19 Pandemic

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Abstract

Introduction: Globally, burnout on healthcare workers leads to negative impact on the individual and organizational levels, which ultimately affects patient care. This study aims to identify the prevalence, contributing factors, and mitigation of burnout among healthcare workers during the Covid-19 pandemic.

Methods: This is a web-based cross-sectional study conducted among 177 healthcare workers during Covid-19 pandemic in Dhulikhel Hospital, Kathmandu University Hospital, Nepal, from June to December 2021. The participants were selected using a convenience sampling technique. The Copenhagen Burnout Inventory scale (>50) was used to assess the level of burnout among healthcare workers during this crisis, along with contributing factors and mitigation strategies to overcome the Covid-19 pandemic. The descriptive statistics, bivariate analysis and post-hoc test were utilized

Results: The prevalence of burnout for healthcare workers was 70.6% (125). Nurses and healthcare workers, who have previously worked in covid-19 management were having significantly higher level of personal burnout ($H=13.34$, $p=0.004$) and work related burnout ($H=9.78$, $p=0.02$) score. The main concerns were fear of infecting the family members (80.79%), followed by a lack of resources such as oxygen, personal protective equipment (64.97%). The major mitigation strategies were the provision of incentives (77.97%), good hospital management (74.01%), and training for healthcare professionals (67.8%).

Conclusion: Healthcare workers have higher burnout scores in Covid -19 pandemic. The study indicated the necessity of employing effective strategies at the individual and institutional level to overcome Covid-19 crises.

Keywords: Burnout, copenhagen burnout inventory scale, covid-19, healthcare worker

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Introduction

Burnout, a common phenomenon among healthcare workers, is characterized by a decline in physical, psychological, and emotional energy resulting from work-related stress, leading to cynicism toward colleagues and clients, along with feelings of low self-efficacy.^{1,2} The term "burnout" was first identified by Freuden Berger, who reported it as a feeling of failure and being worn out.^{1,2} Later, Maslach described it as a syndrome comprising cynicism and emotional exhaustion that often takes place among groups that engage in some kind of "people work".³

Healthcare workers (HCW), in general, are at increased risk of burnout,^{4,5} with studies showing that one in three physicians is likely to develop burnout at any point in time.⁷ During the Covid-19 pandemic, studies have shown a significant prevalence of burnout among healthcare workers, more so among doctors and support staff.^{6,7} A study has reported that healthcare workers responsible for looking after Covid-19 affected patients had an increased risk of developing distress, anxiety, depression, and insomnia.⁸ A study conducted among Indian healthcare workers showed that a significant number of healthcare workers experienced burnout while taking care of covid-19 patients.⁶ A study conducted at Chitwan Nepal Medical College shows that the healthcare system has a discriminating attitude towards patients and a negative attitude towards patients with Covid-19.⁹ Therefore, with the known burnout precursors, such as work in the setting of overloaded duty with irregular hours, lacking resources, a lack of team spirit, and workplace conflict, this study aims to assess the prevalence of burnout among health care workers during the 2nd wave of covid-19 pandemic, its contributing factors, and mitigation strategies to overcome those concerns and enable a healthy working environment.¹⁰

In Nepal, the prevalence of burnout among HCWs during the Covid-19 pandemic has not been studied well enough. With these considerations, the main objective of this study is to assess the level of burnout among HCWs working during the pandemic situation, its major challenges, and possible means of addressing those concerns.

Methods

This is a cross-sectional and web-based study conducted in Dhulikhel Hospital, Kathmandu University Hospital from June to December 2021. Study was started after obtaining ethical approval from the Institutional Review Committee (IRC) of Kathmandu University School of Medical Sciences (KUSMS), with the IRC approval number being 49/2021. Consent was taken from each participant before taking survey. HCW with ages greater than 18 years, those who can read and write, and those who provided informed consent were enrolled in the study. Individuals who were less than 18 years old, couldn't read and write Basic English, and did

not give consent were excluded from the study.

In this study, all the HCW's working in different departments of Dhulikhel Hospital, Kathmandu University Hospital, namely doctors, nurses, paramedics, administrative staff, and supportive staff, were voluntarily asked to fill up the survey form via mail, Messenger, and Viber groups during the second wave of covid-19 pandemic. The questionnaire consists of general questions (age, gender, job profile, previous involvement in the management of Covid-19 patients), the Copenhagen Burnout Inventory scale (CBI), and specific questions regarding the challenges and possible solutions to mitigate covid-19 pandemic were asked through the Google forms every week for six months. The CBI score which has been used in several studies since its creation, has established itself as a viable and reliable instrument to assess the burnout¹¹. It has three sub-dimensions, specifically personal burnout (5 questionnaires), work-related burnout (7 questionnaires), and pandemic-related burnout (13 questionnaires). All three scales were found to have very high internal reliability. All the items had five response categories. The options mentioned in the questionnaire were in two formats: Five response categories on the Likert Scale (for intensity) range from "a very high degree" to "a very low degree"; others for the frequency range from "always" to "never or almost never". Each scale ranged from 0 to 100 points, with higher scores suggesting a higher level of burnout. We averaged the scores as a total score and defined burnout as a CBI score > 50. A convenience sampling technique was utilized.

Sample Size

Hospital staff: 1399

Doctors (Professor, Associate Professor, Assistant Professor, Lecturer, Registrar, Medical officers): 378

Nurses and paramedics: 1267

Students (nursing and medical): Doctorate of medicine, Master of Chirurgiae, Intern medical student, bachelor of nursing science, master of nursing etc who are currently working in Dhulikhel Hospital=260

Total Population size (N): 1805

For sample size calculation, the following formula has been used

$$n = \frac{\frac{Z^2 \times p \times q}{e^2}}{1 + \left\{ \frac{Z^2 \times p(1-p)}{e^2 \times N} \right\}}$$

$$= \frac{\frac{1.96^2 \times 0.5 \times 0.5}{0.07}}{1 + \left\{ \frac{1.96^2 \times 0.5(1-0.5)}{0.07 \times 1805} \right\}}$$

Where, n = minimum required sample size

$Z = 1.96$ at 95% Confidence Interval (CI)

p = prevalence taken as 50% for maximum sample size calculation
 $q = 1 - p$
 e = margin of error, 7%

A total sample size of 177 was taken for the study

All the data were entered into SPSS Version 20 for analysis. The frequency and percentage of categorical variables and the mean and standard deviation of continuous variables were calculated. Depending on the variables, Chi-square, Mann-Whitney U test, Kruskal Wallis H test and post hoc test for multiple comparisons were performed

Results

We received 205 responses from healthcare workers. Among them, 28 responses were incompletely filled, so we excluded those responses, resulting in a response rate of 87%. Among the respondents, we included a total of 177 healthcare workers in the study, with an age range of 18 to 47 years. The prevalence of burnout was 125 (70.6%). The prevalence of physical, work-related, and pandemic-related diseases was found to be 149 (84.2%), 119 (67.2%), and 126 (71.2%), respectively. The majority of our participants were female (67.2%). There were 44.1% doctors, 39.5% nurses, 8.5% paramedics, and 7.9% non-clinical staff. The majority of healthcare workers were already involved in covid-19 management (Table 1).

Table 1: Characteristics of Healthcare workers (n = 177)

Variables	Mean \pm SD n (%)
Age	26.5 \pm 5 18-47 years
Gender	
Male	58(32.8%)
Female	119(67.2%)
Job Profile	
Doctor	78(44.1%)
Nurse	70(39.5%)
Paramedics	15(8.5%)
Non- clinical staff	14(7.9%)
Previous Involvement in Covid-19 management	
Yes	162(91.5%)
No	15(8.5%)
Total CBI score *	57.48 \pm 11.63
Personal burnout	149(84.2%)
Work related burnout	119(67.2%)
Pandemic related burnout	126(71.2%)
Burnout (CBI > 50)	125(70.6%).

Note: *CBI: Copenhagen burnout Inventory

Table 2: Personal burnout among Healthcare workers (Domain 1)

Statement	None	Seldom	Sometime	Often	Always	Mean score
Domain 1: Personal burnout						
How often you are physically exhausted?	3(1.7%)	3(1.7%)	72(40.7%)	66(37.3%)	33(18.6%)	67.37 \pm 21.28
How often you are emotionally exhausted?	3(1.7%)	5(2.8%)	71(40.1%)	70(39.5%)	28(15.8%)	66.24 \pm 21.01
How often do you think "I cannot take it anymore?"	11(6.2%)	23(13%)	89(50.3%)	35(19.8%)	19(10.7%)	53.95 \pm 24.83
How often do you feel weak and susceptible to illness?	5,(2.8%)	20,(11.3%)	79,(44.6%)	52,(29.4%)	21,(11.9%)	59.04 \pm 23.3
How often do you feel worn out (extremely tired)?	3,(1.7%)	12,(6.8%)	79,(44.6%)	56,(31.6%)	27,(15.3%)	62.99 \pm 22.31
Average Score						61.92 \pm 17.93

Table 2: Work related burnout among Healthcare workers (Domain 2)

Statement	None	Seldom	Sometime	Often	Always	Mean score
Domain 2: Work related burnout						
Do you feel worn out at the end of the working day?	2(1.1%)	6(3.4%)	48(27.1%)	78(44.1%)	43(24.3%)	71.75±21.49
Are you exhausted in the morning at the thought of another day at work?	12(6.8%)	28(15.8%)	63(35.6%)	46(26%)	28(15.8%)	57.06±27.94
Do you feel that every working hour is tiring for you?	10(5.6%)	31(17.5%)	72(40.7%)	43(24.3%)	21(11.9%)	54.8±26.08
Do you have enough energy for family and friends during leisure time?	17(9.6%)	50(28.2%)	72(40.7%)	29(16.4%)	9(5.1%)	44.77±24.95
Is your work emotionally exhausting?	4(2.3%)	25(14.1%)	70(39.5%)	47(26.6%)	31(17.5%)	60.73±25.24
Does your work frustrate you?	14(7.9%)	39(22%)	67(37.9%)	42(23.7%)	15(8.5%)	50.71±26.44
Do you feel burnt out because of your work?	7(4%)	24(13.6%)	74(41.8%)	49(27.7%)	23(13%)	58.05±24.9
Average Score						56.84±16.85

Table 2. Pandemic related Burnout among Healthcare workers (Domain 3)

Statement	none	seldom	sometime	often	always	Mean score
Domain 3: Pandemic related Burnout						
Do you feel that it is hard to work in the current scenario?	6(3.4%)	9(5.1%)	63(35.6%)	62(35%)	37(20.9%)	66.24±24.45
14. Does it drain more of your energy to work during the current scenario?	3(1.7%)	16(9%)	51(28.8%)	74(41.8%)	33(18.6%)	66.67±23.49
Do you find it fruitful while performing your work during the current scenario?	6(3.4%)	15(8.5%)	63(35.6%)	63(35.6%)	30(16.9%)	63.56±24.57
Do you feel that you are giving more time than what you get back while working in the current scenario?	2(1.1%)	7(4%)	51(28.8%)	71(40.1%)	46(26%)	71.47±22.26
Do you hesitate to work during this current scenario?	52(29.4%)	44(24.9%)	57(32.2%)	16(9%)	8(4.5%)	33.62±28.2
Do you feel depressed because of the current scenario?	17(9.6%)	38(21.5%)	66(37.3%)	39(22%)	17(9.6%)	50.14±27.5
Do you feel that your patience is tested while working in the current scenario?	2(1.1%)	19(10.7%)	66(37.3%)	57(32.2%)	33(18.6%)	64.12±23.8
Do you feel that the current lockdown has added stress on you ?	8(4.5%)	32(18.1%)	61(34.5%)	54(30.5%)	22(12.4%)	57.06±26.1
Do you have fear of catching Covid-19 infection while working in the current scenario?	6(3.4%)	10(5.6%)	38(21.5%)	56(31.6%)	67(37.9%)	73.73±26.55
Do you have fear of family members catching infection because of your work exposure?	4(2.3%)	4(2.3%)	12(6.8%)	46(26%)	111(62.7%)	86.16±22.28
Are you indulging in any substance abuse? (alcohol/drugs/smoking) during this period of lockdown?	135(76.3%)	14(7.9%)	19(10.7%)	6(3.4%)	3(1.7%)	11.58±23.39
Do you feel that you will be welcomed by the community despite your work duties in the current scenario?	16(9%)	47(26.6%)	60(33.9%)	34(19.2%)	20(11.3%)	49.29±28.26
Do you have a fear of death while working in the current scenario?	32(18.1%)	42(23.7%)	51(28.8%)	29(16.4%)	23(13%)	45.62±31.85
Do you feel you are being properly protected by the hospital while working in the current scenario?	34(19.2%)	59(33.3%)	47(26.6%)	30(16.9%)	7(4%)	38.28±27.57
Do you feel you are being supported by colleagues during the current scenario?	1(0.6%)	18(10.2%)	55(31.1%)	66(37.3%)	37(20.9%)	66.95±23.43
Average sore						56.3±10.53

The mean (SD) of personal, work related and pandemic related burnout scores were 61.92 ± 17.93 , 56.84 ± 16.85 and 56.3 ± 10.53 respectively. And the average personal burnout scores is higher than pandemic and work related burnout scores, as illustrated in Tables 2.

Table 3: Analysis of Domain of Copenhagen burnout scores with dependent variables

Variables	Personal burnout score		Work-related burnout score		Pandemic related burnout score	
	Mean rank/ frequency	Statistic (p- value)	Mean rank	Statistic (p- value)	Mean rank	Statistic (p- value)
Gender *	81.1		82.78		89.21	
Male	92.85	U=2993	92.03	U=3090	88.90	U= 3439
Female		p=0.15		p= 0.258		p=0.970
Job profile						
Doctor	80.77		85.08		89.15	
Nurses	105.74	H= 13.34	101.96	H=9.78	92.61	H=1.3
Paramedic	72.13	p= 0.004	66.43	p=0.020	78.2	p=0.727
non-clinical	69.25		70.25		81.64	
Working environment						
Previous exposure with covid	92.68		92.89		90.9	
Non exposure	49.27	U=619	46.97	U=584.5	68.5	U= 907.5
		p=0.002		p=0.001		p=0.10.
Age in years						
<25	burnout=65 Non burnout=8	$\chi^2=2.2$ p=0.138	burnout=50 Non burn- out=23	$\chi^2=0.19$ p=0.89	burnout=57 Non burnout=16	$\chi^2=2.88$ p=0.090
>25	burnout=84 Non burnout=20		burnout=69 Non burn- out=35		burnout=69 Non burnout=35	

Table 3 shows the relationship between the different categorical variables (gender and job profile) and the three subscales of the CBI. The Kruskals Wallis test showed that there was a significant difference in personal burnout ($H=13.34$, $p=0.004$) and work related burnout ($H=9.78$, $p=0.02$) related to job category. Similarly, health care

workers who had already been involved in previous covid-19 management had significantly higher levels of physical and work-related burnout. However, none of the variables were statistically significant with pandemic related burnout ($p>0.05$).

Table 4: Post Hoc test for multiple comparison of the physical burnout score and work-related burnout score with the job category

Analysis of Physical burnout score with job profile						
(I) jobprofile1	(J) jobprofile1	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Nurse	Doctor	8.97619*	2.84382	.010	1.5988	16.3536
	Paramedics	13.80952*	4.91453	.028	1.0604	26.5587
	Non clinical	13.85714*	5.05701	.034	.7384	26.9759

Analysis of work related burnout score with job profile						
(I) jobprofile1	(J) jobprofile1	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Nurse	Doctor	5.07849	2.70492	.242	-1.9385	12.0955
	Paramedics	13.26531*	4.67449	.026	1.1388	25.3918
	Non clinical	11.63265	4.81001	.077	-.8454	24.1107

Table 4 shows that nurses were having statistically significant higher mean score related to physically burnout than doctors, paramedics and non-clinical staff. Similarly, nurses were having higher statistically work related burnout mean score than other healthcare workers excluding doctors.

showed the self-health medical issue as a problem while providing care to Covid-19 patients. 10 (5.65%) participants suffered other problems such as transportation problems, worker health insurance problems and a lower stipend, decreasing the motivation of the health care worker

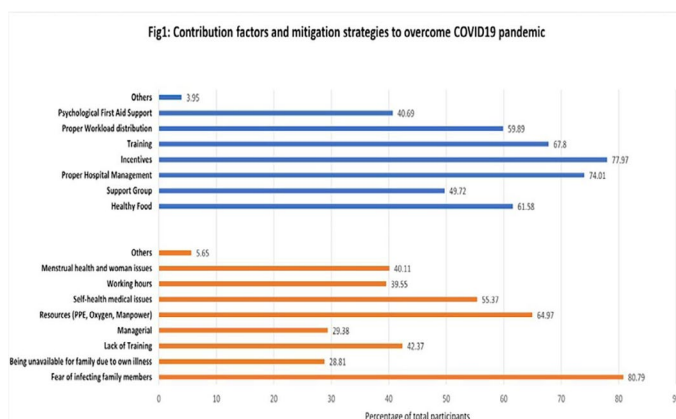


Figure 1: Contributing factors and mitigation strategies to overcome covid-19 pandemic

Figure 1 shows that out of 177, the most needed support to work proactively in hospitals during covid-19 crisis was the provision of incentives, with 138 (77.97%) indicating a need for this type of support. This was followed by hospital management, with 74.01% of participants requesting this type of support. Training was also a popular form of support needed, with 67.8% of participants indicating a need for it.

Other forms of support that were needed included healthy food (61.58%), a helpline or support group (49.72%), workload redistribution (59.89%), and psychological first aid support (40.68%). A small number of participants (3.95%) indicated a need for other types of support, such as salary on time, which will motivate health workers to do work, proper waste management, proper quarantine for health care workers, and proper transportation.

The main concern of the participant while providing efficient care to patients was the fear of infecting family members. Out of 177 participants, 143 (80.79%) felt fear of infecting family members, while 115 (64.97%) showed the problem of a lack of resources (personal protective equipment, Oxygen, and manpower). 98 (55.37%) of the participants

Discussion

This results for the study reveals that a significant number of healthcare workers were in burnout during the second wave of covid-19 pandemic. The crisis caused by the COVID-19 pandemic has had profound ramifications for the physical and emotional health of HCWs on a global scale.¹² A study on burnout has discovered that the highest level of burnout during any hospital emergency occurs among HCWs.¹³ According to our study, the prevalence of burnout was 58.8% which was similar to the findings in other studies.^{14,15} Our findings show that more than half of the participants experienced high levels of personal, work-related, and pandemic related burnout. Similar findings were noted regarding personal and work-related burnout in a study done among Portuguese HCWs.¹⁵ Therefore, in a pandemic like this, aggravation of this situation is certainly expected.

In a systematic review conducted in the pre-pandemic era, the overall burnout rate was found to be 67%.¹⁶ In a post-pandemic systematic review, more than half of healthcare workers had burnout.¹⁷ Our study shows that among all 3 domains, rate of pandemic related burnout is the highest. This explains how pandemic has had a staggering role in increasing an overall prevalence of burnout among health care workers. Moreover, in our study, pandemic related burnout is found to be higher than work-related and personal burnout in both sexes, and among doctors, nurses, and paramedics alike.

Health professionals require adequate support in these difficult times to boost productivity and keep them engaged.¹⁸ In our study, 138 (77.97%) of 177 participants felt the need of incentives to work proactively in the hospital during Covid-19 crisis. However, another study indicated that family support is the main factor that motivated health care workers (98.7%).¹⁸ This was followed by hospital management, with 74.01% of participants requesting this type of support. 67.8% of the participants indicated the need for training. A helpline or support group is a crucial factor for

supporting health care workers, as indicated by 49.72% of our participants. A study has drawn attention to how crucial health care leaders' physical presence and apparent efforts were to raising health care workers' favorable perceptions of leadership.¹⁹ Other forms of support needed include healthy food (61.58%), workload redistribution (59.89%), and psychological first aid support (40.68%). Our results are consistent with prior research on the duty of leaders to ensure the psychological safety of health care workers.¹⁹ In this study, we found that 72 (43.95%) participants needed psychological first aid support to work in hospitals during the COVID-19 crisis. With these regards, attempts should be made to support the HCWs mentally and emotionally. Other than the demands imposed by practicing medicine itself, personal and family stressors can aggravate the chances of developing burnout.^{13,20,15,21}

All three of the above mentioned dimensions of burnout were found to be higher in females compared to males. Some other studies also show similar findings.^{21,22} Moreover, 60.75% of females faced menstrual health and other women's issues while working during the time of covid-19 crisis, with them having to work long hours wearing Personal protective equipment, which could be cumbersome. A study suggests that women's having to undertake multiple responsibilities in their personal and professional lives may explain their higher burnout rates in them.¹⁵ Another study in China mentions that women suffer more frequent negative changes in mood or cognition along with hyper-arousal, which could also explain our finding.²¹

Conclusion

Health care workers had a significantly higher level of Copenhagen Inventory burnout score. Especially, nurses and healthcare workers with previous exposure of covid-19 management were had higher levels personal and work related burnout score. The main contributing factors were fear of infecting family members, followed by a lack of resources (oxygen, personal protective equipment). The major mitigation strategies were the provision of incentive, good hospital management, and training for healthcare professionals.

This study reveals that a significant number of healthcare workers experienced burnout during the second wave of covid-19 pandemic. These results indicated the necessity of employing effective strategies both at an individual and organizational level for the physical and mental well-being of healthcare workers, increasing the productivity of an organization, and creating a better healthcare environment in the future.

Limitation

The main limitation of this cross-sectional study is observing in individuals at one particular period via using online platform. However, this study was conducted in peak of the

pandemic where government had implemented lockdown and social distance in all over the country Nepal. Another limitation of this study was that this study was conducted on only one teaching center. So, the results may not be representative of the broader population and are therefore may be biased.

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