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Occupational stress and its correlates among healthcare workers of a tertiary level teaching hospital in Kathmandu, Nepal, during COVID-19 pandemic: a cross-sectional study

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ABSTRACT

Background Healthcare workers experience high job stress, contributing to negative health outcomes and poor patient care. This study aims to assess occupational stress and its associated factors among healthcare workers at a tertiary hospital during COVID-19 pandemic in Kathmandu, Nepal.

Methods A cross-sectional quantitative study was conducted among doctors and nurses in a tertiary hospital. A self-administered questionnaire was used to collect data from 368 participants. Bivariate and multiple linear regression analysis identified the predictors associated with occupational stress.

Results The mean occupational stress index score was 149.56±22.01. It was significantly higher among female participants (151.59±19.12 vs 144.2±27.6, p=0.004), married individuals (152.06±19.79 vs 147.01±23.86, p=0.028), those with over 1 year of employment duration (152.17±21.28 vs 145.45±22.60, p=0.004), health workers attending more than four night shift a month (152.30±19.44 vs 135.52±28.45, p<0.001), those working in rotating shift (151.68±21.12 vs 142.17±23.57, p=0.006), those working 48 hours or more per week (152.39±19.28 vs 145.97±24.66, p=0.005), those lacking support from other staff (157.81±18.70 vs 148.17±22.25, p=0.003) and those who consumed alcohol (152.14±21.25 vs 147.18±22.49, p=0.031). Multiple linear regression revealed associations with employment duration over 1 year (β=0.174, p=0.001), rotating shift (β=−0.106, p=0.006), night shifts (β=0.251, p<0.001), working hours of 48 hours or more per week (β=0.175, p=0.001), lack of support from other staff (β=0.130, p=0.010) and low-wealth quintile (β=0.161, p=0.006).

Conclusion Occupational stress is associated with employment duration, night shift, rotating shift, working hours, support mechanisms and socioeconomic profile among healthcare workers. There is a crucial need to establish evidence-based actions to prevent occupational stress and promote the overall health of healthcare workers.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Occupational stress in the healthcare profession is associated with long working hours, difficult conditions, shift work, heavy workloads, inadequate training, lack of social support and staff shortages.

WHAT THIS STUDY ADDS

⇒ This study assessed the occupational stress among health workers during the second wave of the COVID-19 pandemic in Nepal. More years of employment duration, night shift, rotating shift, higher working hours, lack of support from other staff and lower socioeconomic status were associated with high occupational stress.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ The absence of occupational health standards for health workers results in a stressful working environment and a higher level of occupational stress. Findings from this research can help formulate and implement standard policies for health workers related to working hours and social support mechanisms. This study will also identify gaps in research for subsequent investigations, providing insights to guide health policy decisions aimed at reducing workplace stress in the current era and in the event of future pandemics like COVID-19.

BACKGROUND

Occupational stress is a harmful physiological and emotional response that occurs when the requirements of the job do not match the capacities, resources or needs of the worker. Work stress can lead to poor health and injury.[1] It has become a global public health issue, particularly prevalent among healthcare workers with high job strain due to rotating shifts and long-standing duty hours.[2] Healthcare workers are also prone to occupational injuries, increasing healthcare costs and risking physical and psychological well-being.[3] Occupational stress has become increasingly prevalent since the initiation of the global COVID-19 pandemic, particularly impacting first responders and healthcare professionals.[4]

Occupational stress leads to poor health-related outcomes like reduced quality of life, disability, cardiovascular and cerebrovascular diseases and depression.[5] Occupational stress is likely to cause fatigue, sleepiness, physical inactivity, unproductivity and comfort-eating energy-dense food leading to overweight and obesity.[6] Other negative consequences include burnout which affects workplace performance and culture.[7] Stress also encourages an employee to leave the workplace due to low job satisfaction and impaired job performance.[8 9] The individual's attention, concentration and decision-making capacity will be significantly reduced in a stressful working environment. Occupational stress can have an undesirable impact on the clinical care, and treatment outcomes of patients.[10]

Multiple factors contribute to occupational stress in the healthcare profession[2 6 11 12] including long working hours, challenging working conditions, shift work, heavy workloads, inadequate training, lack of social support and staff shortage.[2 12] Studies have also suggested additional stressors like low salaries, lack of motivation and positive feedback, low job satisfaction and exposure to high-risk procedures and the COVID-19 pandemic.[13] Furthermore, COVID-19 imposed a psychological burden on healthcare workers, encompassing concerns about infection, feelings of social isolation and a heightened sense of urgency at work.[14] Prior research has indicated that healthcare workers bore substantial mental and psychological challenges during the COVID-19 pandemic.[4]

The Nepalese health system fails to meet the standards required for the healthcare workforce employed in various health facilities.[15] Issues like inadequate staffing and job dissatisfaction, staff turnover, inadequate training, poor skill, poor remuneration, burnout and poor staff retention are most prevalent in the health sector.[16] However, these factors and the underlying mechanisms governing relationships in the context of COVID-19 remain ambiguous. Hence, considering the influence of work stress and its adverse impact on mental health, it is imperative to investigate the process and factors involved in the transformation of COVID-19-related work stress. Hence, knowing about occupational stress and relative factors among healthcare workers can aid the policymakers in Nepal's health system to address workplace stress and design and implement resilient strategies, especially in the context of future pandemics like COVID-19.

METHODS

Study design

This was a cross-sectional survey using a quantitative method from June 2021 to December 2021 at Tribhuvan University Teaching Hospital (TUTH) Maharjgunj, a tertiary hospital in Kathmandu, Nepal.

Study participants

The study included doctors and nurses employed in different departments at TUTH and the study participation rate was 100% (n=368).

Sample size

Overall, 368 healthcare workers were included in the study. The sample size was calculated using a prevalence of occupational stress among healthcare workers (68%) from a study in India,[17] with a 5% level of confidence and a 10% non-response rate. It was calculated using the formula, $n=Z^2pq/d^2$, where, z=standard normal variate, with a value of 1.96 at 95% CI, p=prevalence of job-related stress (p=0.68, according to the study on the prevalence of stress and obesity among health professionals in India),[17] q=1 p and d=allowable error, taken as 5%.

Sampling method

In the first stage, the tertiary hospital (TUTH) was selected purposively. This is the oldest, central level hospital in Nepal with a capacity of nearly 800 beds, catering to a substantial patient flow. This hospital serves as a hub for medical education and research beyond clinical roles. The total list of doctors and nurses employed in the hospital was obtained from the human resource department. In total 735 nurses and 454 doctors including residents were working in the TUTH. Then for the sample selection, initially, two groups were formed based on occupation (doctors and nurses) employed in the hospital. Then, from each group proportionate sample size was calculated. To fulfil the required sample size of 368, study participants were selected from respective hospital units (medical, surgical, operation theatre, intensive cae unit (ICU), obstetrics and gynaecology, paediatrics, special ward and emergency department) using a simple random sampling technique. Out of the 368 sampled participants, 38% were doctors and 62% nurses. Health workers apart from doctors and nurses were excluded due to time constraints. All 368 participants completed an informed consent form and structured questionnaire. A detailed calculation of sample size is provided in the supporting information online supplemental S1 Sampling.

Questionnaire

The questionnaires were printed out and distributed to the participants. Before distributing the final version of the self-administered questionnaire to the healthcare workers, pre-testing of the questionnaire was carried out among 10% of the total sample in Manmohan Cardiothoracic Vascular and Transplant Center, a tertiary-level cardiology hospital, which does not share geographical boundaries with the main study site. The questionnaire was adapted from the Occupational Stress Index (OSI) tool developed by Srivastava and Singh.[18] Consultation with the subject experts was done for developing the questionnaire. All the questions were translated into

Nepali language and back-translated into the English language to maintain validity.

The questionnaire consisted of five sections. Section one contained questions regarding socio-demographic characteristics including the age of the participants, marital status, education and occupation. Section two contained questions regarding the socioeconomic status and household wealth quintile. Section three had questions regarding work-related factors including employment duration, nature of work shift, frequency of night shift, working department, working hours per week and support from staff. Section four consisted of health behaviour-related questions including smoking habits, alcohol consumption and sleep activity. Section five was the OSI questionnaire. The OSI questionnaire consisted of 46 items and answers were provided on a 5-point Likert scale whose values were absolutely true 5, almost true 4, partially true 3, almost false 2 and absolutely false 1. This questionnaire assessed 12 subscales of occupational stress: role overload (items 1, 13, 25, 36, 44, 46), role ambiguity (items 2, 14, 26, 37), role conflict (items 3, 15, 27, 38, 45), unreasonable groups and political pressure (items 4, 16, 28, 39), responsibility for persons (items 5, 17, 29), under participation (items 6, 18, 30, 40), powerlessness (items 7, 19, 31), poor peer relations (items 8, 20, 32, 41), intrinsic impoverishment (items 9, 21, 33, 42), low status (items 10, 22, 34), strenuous working conditions (items 12, 24, 35, 43) and unprofitability (items 11, 23). The total score was calculated from the sum of all the items' scores. To estimate the level of occupational stress, scores on all the statements were added. The score was categorised as low (<115), moderate (116 and 161) and high (>161). We retained the scores as numbers for analysis in this paper. Detail of the tool is provided in a online supplemental file S1 tool.

Data management and analysis

Statistical analysis

We used EpiData software V.3.1 for data entry. The entered data was transferred to Statistical Package for Social Sciences (SPSS) V.20 for further analysis (online supplemental S1 data). Descriptive statistics (including means, SD, frequencies and percentage) was calculated for the socio-demographic, socioeconomic, work-related variables, health behaviours and occupational stress. The household wealth quintiles were calculated using principal component analysis. Household wealth quintiles were recategorised into wealth categories (low, middle and high).

In addition to descriptive statistics, we conducted a bivariate analysis to explore the associations between occupational stress and related factors by using either Student's t-test and analysis of variance (ANOVA) test or Pearson's correlation test.

Then, we conducted multiple linear regression analyses to identify the unique contribution of relevant predictors on occupational stress. All the correlates that showed statistical significance at a p value<0.05 in the bivariate analyses were included in the regression analysis. Model fitness was assessed by ANOVA. The independent variables statistically significantly predicted the dependent variable, $F(11\ 356)=7.19$, $p<0.001$. Multicollinearity was assessed by variance inflation factor (VIF). None of the predictor variables had VIF more than 5. The independence of the observations was checked using Durbin-Watson statistic (value=1.125). Linearity of the relationship between dependent and independent variables was determined by scatter plot of the residuals versus predicted score. The normality assumption was assessed through histograms and a normal P–P plot.

Ethical consideration

The investigators protected the privacy and ensured the confidentiality of the health workers. Details related to personal identity were not collected. Permission was obtained from the hospital administration before the survey. Heads of each department informed the healthcare workers verbally before the survey started that they would be asked to fill out a questionnaire related to occupational stress. Written informed consent was taken from each respondent. Respondents were not compelled to fill out the questionnaire if they did not wish to. The objectives of the study were clarified to all the participants and confidentiality of the information provided by the participants was maintained. All the respondents were given need-based education regarding occupational stress after data collection. Participants reporting high stress scores were advised to seek counselling services provided by TUTH.

Patient and public involvement

The patients/public were not involved in the formulation of the research question and the research process. However, the stressful working condition of the hospital and personal experiences shared by the health workers in the media guided the development of the research question. The research report has been submitted to the Central Department of Public Health, Institute of Medicine, through which we plan to disseminate the results to the participants of the concerned departments.

RESULTS

Descriptive characteristics of the participants

The healthcare workers had a mean age of 30.21±5.56 years. The women constituted 72.3% of the total sample, 49.5% were unmarried and 60.9% held a bachelor's degree. Nurses accounted for 62% of the workforce, and 83.7% resided in urban areas. Most participants (81%) were employed for more than 1 year, with 77.7% working in rotating shifts. Results indicated that 83.7% attended four or more night shifts monthly, 56% worked more than 48 hours per week and 47.6% always received support from their colleagues and seniors. Out of 368, 84.8% did not smoke, 51.9% never consumed alcohol and 48.1% were former or current drinkers. Most participants slept 6–8 hours per day, with 20.1% sleeping for less

Table 1 Descriptive characteristics of the participants (n=368)

Characteristics	Number	Percentage
Age (years)	30.21±5.56	
Sex		
Male	102	27.7
Female	266	72.3
Marital status		
Unmarried	182	49.5
Ever married	186	50.5
Educational attainment		
Diploma and bachelors	265	72.0
Masters and above	103	27.9
Occupation		
Doctors	140	38
Nurse	228	62
Residence area		
Rural	60	16.3
Urban	308	83.7
Household wealth quintile		
Low	149	40.5
Middle	76	20.7
High	143	38.9
Length of employment		
Less than 1 year	68	19.5
More than or equal to 1 year	300	80.5
Working department		
Medical unit	118	32.1
Surgical unit	11	12.0
Operation theatre	52	14.1
Intensive care unit	25	6.8
Paediatrics	24	6.5
Obstetrics and gynaecology	28	7.6
Emergency	46	12.5
Special ward	31	8.4
Nature of work shift		
Rotating shift	286	77.7
Non-rotating shift	82	22.3
Frequency of night shifts per month		
1–3 times	60	16.3
≥4 times	308	83.7
Working hours per week		
Less than 48 hours	162	44.0
More or equal to 48 hours	206	56.0
Support from staff		
Yes	315	85.6
No	53	14.4
Ever smoker		
No	312	84.8
Yes	56	15.2
Ever consumed alcohol		
No	191	51.9
Yes	177	48.1
Sleep habit		
Less than 6 hours	74	20.1
More or equal to 6 hours	294	79.9

than 6 hours in 24 hours (table 1). The mean OSI score was 149.56±22.01 (table 2).

Factors associated with occupational stress

The bivariate analysis findings for occupational stress are presented in table 3, illustrating the association of various independent variables with the OSI using the Student's t-test, one-way ANOVA test and Pearson's correlation test. The t-test revealed significantly higher mean OSI scores among female participants (151.59±19.12 vs 144.2±27.6, p=0.004), married participants (152.06±19.79 vs 147.01±23.86, p=0.028), nurses compared with doctors (151.53±18.88 vs 146.36±26.08, p=0.028), participants working in rotating shift (151.68±21.12 vs 142.17±23.57, p=0.001), participants employed for more than 1 year (152.17±21.28 vs 145.45±22.60, p=0.004), participants working for 48 hours or more per week (152.39±19.28 vs 145.97±24.66, p=0.005), healthcare workers with more than four night shifts in a month (152.30±19.44

Table 2 Mean occupational stress index scores of the participants (n=368)

Occupational stress index score	Occupational stress index (Mean±SD)
Total score	149.56±22.01
Subscale scores	
Role overload	23.42±4.11
Role ambiguity	11.75±3.27
Role conflict	15.29±3.26
Unreasonable group and political pressure	11.47±2.85
Responsibility for person	8.66±2.30
Under participation	14.99±2.96
Powerlessness	11.08±2.38
Peer group relations	10.07±2.41
Intrinsic impoverishment	12.25±3.05
Low status	8.86±2.38
Strenuous working condition	14.26±3.15
Unprofitability	7.41±2.13

Table 3 Association of independent variables with occupational stress index scale

Variable	OSI (mean±SD)	Test statistics	P value
Age (years)	30.21±5.56	r=0.038	0.465
Sex			
Male	144.2±27.6		
Female	151.59±19.12	t=−2.88	0.004
Education			
Bachelor or less	149.29±21.65		
More than bachelor	150.27±23.02	t=0.385	0.701
Marital status			
Married	152.06±19.79		
Unmarried	147.01±23.86	t=2.211	0.028
Occupation			
Doctor	146.36±26.08		
Nurse	151.53±18.88	t=−2.20	0.028
Length of employment			
Less than 1 year	145.45±22.60		
More than or equal to 1 year	152.17±21.28	t=−2.882	0.004
Working department			
Medical unit	148.27±19.95	F=1.145	0.319
Surgical unit	144.14±28.23		
Operation theatre	147.60±23.0		
Intensive care unit	151.80±11.15		
Paediatrics	163.25±13.8		
Obstetrics and gynaecology	141.79±18.72		
Emergency	158.67±22.06		
Special ward	146.58±25.28		
Nature of work shift			
Rotating shift	151.68±21.12	t=−3.501	0.001
Non-rotating shift	142.17±23.57		
Frequency of night shifts per month			
1–3 times	135.52±28.45	t=5.622	<0.001
≥4 times	152.30±19.44		
Work hours			
Less than 48 hours	145.97±24.66		
More than or equal to 48 hours	152.39±19.28	t=−2.802	0.005
Support from staff			
Yes	148.17±22.25		
No	157.81±18.70	t=−2.979	0.003
Ever smoker			
Yes	148.97±22.14		
No	152.88±21.20	t=1.224	0.222
Ever consumed alcohol			
No	147.18±22.49		
Yes	152.14±21.25	t=−2.169	0.031
Sleeping hours			
Less than 6 hours	150.65±27.32		
More or equal to 6 hours	149.29±20.51	t=0.474	0.636
Household wealth quintile			
Low	153.90±18.11		
Medium	150.32±20.10		
High	144.64±25.55	F=6.706	0.001*

*Analysis of variance.

vs 135.52±28.4, p<0.001), participants lacking support from other staff (157.81±18.70 vs 148.17±22.25, p=0.003) and participants with an alcohol drinking habit (152.14±21.25 vs 147.18±22.49, p=0.031). The OSI scores were significantly higher for those in the low-wealth quintile (153.90±18.11) compared with the middle (150.32±20.10) and high wealth quintile (144.64±25.55). Other variables such as age, education status of participants, sleeping hours and smoking habits did not exhibit a statistically significant difference on the mean OSI scale (table 3).

A multiple linear regression analysis was conducted to assess the independent effects of gender, marital status, occupation, nature of work shift, frequency of night shift per month, employment duration, working hours, support from other staff, alcohol use and wealth quintile on occupational stress. Participants who were employed for more than 1 year showed a 17.4% increase in occupational stress (β=0.174, p=0.001). Those participants working in non-rotating shifts experienced a 10.6% decrease in occupational stress (β=−0.106, p=0.006). Also, participants attending more than four night shifts per month experienced a 25% increase in occupational stress (β=0.251, p<0.000) (online supplemental S1 figure). Those working for 48 hours or more per week experienced a 17.5% increase in occupational stress (β=0.175, p=0.001). Similarly, having less or no support from other staff increased occupational stress by 13% (β=0.130, p=0.010), and participants in the low-wealth quintile showed a 16.1% increase in occupational stress (β=0.161, p=0.006). Increased employment duration, longer weekly working hours, lack of support from other staff and being in the low-wealth quintile were independently associated with higher OSI scores. Other factors such as marital status, occupation and alcohol use were not found to be associated with occupational stress (table 4).

Table 4 Multiple regression analyses on OSI total scores

	B	SE	B	t(mlr)	95% CI	P value
Gender*	−5.516	3.790	−0.112	−1.45	−12.970 to 1.939	0.147
Marital status†	3.051	2.237	0.069	1.351	−1.348 to 7.450	0.178
Occupation‡	0.044	3.790	0.001	0.012	−7.409 to 7.496	0.991
Length of employment§	7.858	2.309	0.174	3.399	3.318 to 12.398	0.001
Nature of work shift¶	−5.617	2.760	−0.106	−0.143	−12.197 to −0.2.042	0.006
Number of night shifts**	14.922	3.110	0.251	4.798	8.807 to 21.037	<0.001
Working hours per week††	7.753	2.299	0.175	3.372	3.232 to 12.274	0.001
Support from other staff‡‡	8.135	3.138	0.130	2.592	1.963 to 14.306	0.010
Alcohol use§§	4.350	2.220	0.099	1.960	−0.015 to 8.715	0.051
Medium wealth quintile¶¶	4.734	3.060	0.087	1.547	−1.283 to 10.752	0.123
Low-wealth quintile***	7.197	2.593	0.161	2.876	2.241 to 12.139	0.005

*2=female, 1=male.
†2=married, 1=unmarried.
‡2=nurse, 1=doctor.
§2=more than 1 year, 1=1 year or less.
¶2=non-rotating, 1=rotating.
**2=more than four times, 1=one to three times.
††2=48 hours or more, 1=less than 48 hours.
‡‡2=no, 1=yes.
§§2=no, 1=yes.
¶¶2=no, 1=yes.
***2=no, 1=yes.

DISCUSSION

This study used the OSI to determine the occupational stress among healthcare workers in the context of the COVID-19 pandemic in Nepal. Developed in 1982, this scale has been applied in various studies in both India and Nepal. After examining 368 subjects, the results indicated that the mean OSI score among healthcare workers was 149.56±22.01. However, it is noteworthy that this study focused exclusively on doctors and nurses in the hospital, while some previous studies included other health professionals with larger sample sizes.[19] Additionally, several studies selected only nurses [2 20 21] or doctors.[22]

The findings of this study revealed a significantly higher mean OSI among female participants, married individuals, those working more than 1 year, working in rotating shifts, attending more than four night shifts in a month, participants working for 48 hours or more per week, those lacking support from other staff, participants with an alcohol drinking habit and those belonging to low-wealth quintile. The association between gender and occupational stress may be attributed to most of the participants being female nurses. In this study, there was no statistically significant difference in OSI with age and education. This finding is consistent with a study conducted in China during COVID-19 pandemic where, age and educational status had no significant association with stress among health workers.[23] However, reports from Vietnam indicated that the rate of occupational stress among healthcare workers under 30 years old was 5.24 times higher compared with those over 30 years old (95% CI: 1.33 to 20.53, p value=0.019) before the pandemic.[6] Studies from Germany[2] and Ethiopia[13] supported this finding, suggesting that young doctors and nurses face high job demands, long shifts, mental health issues and a lack of working experience. Educational status in this study did not show an association with the level of workplace stress, consistent with the study in Ethiopia.[13] In contrast, a study in Vietnam concluded that health workers holding postgraduate degrees experienced less stress than those with bachelor's or lower degrees.[6] The reason may be that less educated individuals feel more pressure to become more professional and improve their skills to meet job demands. Occupational stress has shown a significant difference among nurses compared with doctors in this study, but no significant association in multiple regression, aligning with the results of studies conducted in Vietnam[6] and Bangladesh.[24] This could be attributed to the association between occupational stress and gender, as the majority of the professionals in this study were female nurses. The assessment of stress exclusively in the nurse population tends to yield higher stress levels than assessing stress in a population including both doctors and nurses. Comparable findings were noted in a study conducted among healthcare workers in Nepal and India during the COVID-19 pandemic. The study indicated that being women and working as a nurse were correlated with more pronounced mental health outcomes.[25 26] This observation may be attributed to the substantial time nurses dedicate to patient care compared with other healthcare workers.

Additionally, factors such as increased job demands shift work, long-standing working hours and unpredictable duties among nurses could contribute to their heightened stress levels.

This study also supported the findings of research conducted in Iran[2] and a systematic review and meta-analysis,[27] indicating that being married is correlated with occupational stress among healthcare workers. In Nepalese context, married health workers have added responsibilities like managing household chores and taking care of children which is likely to contribute to occupational stress.

The current study did not show a significant association between the working department and stress levels among health workers. In contrast a study reported, ICU nurses assigned to COVID-19 units were more than twice as likely to express insufficient sleep and three times as likely to contemplate leaving their current department.[28] Another study concluded that ICU workers were 4.5 times more likely to experience work stress before the pandemic.[29] Discrepancies in these findings may be attributed to variations in sample size, country-specific contexts and workload disparities across different departments. Health workers working in rotating shift experienced more occupational stress. This is supported by the results of a study conducted in Saudi Arabia.[19] This study showed that working in night shift had an association with occupational stress among health workers which is similar to the findings from Germany and Austria.[30] Our study does reveal a significant association between social support and occupational stress. This finding is in line with the findings from the study in Italy, where stress related to COVID-19 partially mediated the connection between the absence of supervisor support and psychological distress.[31] Also, the results from a study during COVID-9 showed that work stress can be mitigated by increasing social support and resilience[32]

This is also supported by the findings from the study in Bangladesh[24] and Taiwan,[33] which concluded that lack of peer support was linked with high occupational stress for the healthcare professional. This study concluded that work stress was more prevalent among individuals who consumed alcohol. This finding is consistent with a study conducted in Ethiopia, where cigarette smoking, chewing tobacco and alcohol consumption was associated with stress due to COVID-19 pandemic.[34]

In the multiple linear regression analysis, longer employment duration, working in rotating shift, higher number of night shifts, increased weekly work hours, lack of minimal support from colleagues and belonging to a low-wealth quintile were identified as independent factors associated with high occupational stress. Similar with the previous study,[14] our study revealed that longer employment duration had a notable negative impact on stress. This may be attributed to the practice in hospitals, where healthcare workers with lengthier experience were typically assigned to care for and treat a larger number and/or more severe COVID-19 patients.[23] The uncertainty or lack of clarity surrounding effective treatments for COVID-19 added to this stress. Also, longer work experience correlates with decision-making authority which could have contributed higher level of occupational stress.[33] Occupational stress was also observed to be higher among those working for 48 hours or more per week. This result was consistent with global studies that showed the overwhelming workload among healthcare workers during the COVID-19 pandemic.[1435] Also, increase in daily working hours and number of working days per week increased the risk of work stress among healthcare professional.[36] The associations observed in this study might have been strengthened due to the ongoing second wave of the COVID-19 pandemic in Nepal which posed an extra burden on all healthcare workers.[37] This necessitated healthcare workers to take on additional shifts due to resource constraints, staff shortages and the increased risk of COVID-19 transmission among workers.

Strengths and limitations of the study

This study has investigated the factors contributing to occupational stress among healthcare workers. The selection of only one tertiary hospital with only doctors and nurses as sampled participants was a major limitation due to time constraints and COVID-19 restrictions. Personal factors that could influence the stress response of individual healthcare workers and prior history of stress, anxiety, depression and chronic diseases were not examined in this study. The sample size was drawn from a single tertiary hospital in Nepal, limiting the generalisability of the findings to healthcare workers across Nepal. This study did not assess the coping strategies adopted by healthcare workers to reduce their daily life stress. This study has not assessed any change of occupational stress compared with pre-COVID-19 period due to lack of baseline data. This suggests a need for more comprehensive, in-depth and multidimensional studies to understand occupational stress and identify the source of stressors in the healthcare setting. This study gains particular significance in the context of the COVID-19 pandemic, wherein healthcare workers have had to work under excess demand.

Policy implications

Healthcare workers represent the most suitable group for intervention programmes designed to prevent occupational stress. Government and health institutions can implement the following strategies to identify, intervene and prevent occupational stress among the health workforce:

- The assessment and documentation of causes or sources of stress in the workplace, and developing strategies or remedies to improve working conditions.
- Health institutions must ensure that workloads align with the worker's capacity and facilitate healthcare workers in decision-making, taking breaks and understanding job stress.

- Worksite improvements and stress intervention programmes should be conducted at the workplace to enhance the physical and psychological well-being of healthcare workers.
- Identification and implementation of various coping strategies, as well as the promotion of healthy lifestyle, behavioural modification and the raising of mental health awareness among health professionals.

Conclusion

Based on the findings, it is evident that there are stronger associations between certain factors and occupational stress among healthcare workers. This underscores the crucial need to establish evidence-based measures to prevent occupational stress, promote conducive workplace settings and enhance the overall health of healthcare workers. These measures need to be enhanced in the context of pandemics like COVID-19 where there is an extra burden on the overall health system. Longer working experience, increased work hours, inadequate or no support from colleagues and a low-wealth quintile contribute to the development of stress among healthcare workers in the tertiary hospital. The adverse effects of occupational stress may manifest as reduced efficiency, diminished job performance, decreased initiative and interest in work, increased rigidity of thought, lack of concern for the organisation and colleagues and a loss of responsibility and loyalty to the organisation. Hence, understanding occupational stress and its associated factors among healthcare workers can assist decision-makers at the policy level in Nepal's health system in addressing workplace stress and devising and implementing resilience strategies.

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