Original Research

MENTAL HEALTH STATUS AND OCCUPATIONAL STRESS PREDICTORS AMONG HEALTHCARE WORKERS: A HOSPITAL-BASED CROSS-SECTIONAL STUDY FROM A TERTIARY CARE TEACHING HOSPITAL IN HARYANA, INDIA

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ABSTRACT

Background: Healthcare workers are exposed to multiple occupational stressors, including prolonged duty hours, high patient load, night-shift duties, inadequate sleep, workplace violence, and poor work-life balance. These factors contribute to adverse mental health outcomes such as stress, anxiety, and depressive symptoms.

Objective: To assess mental health status and identify occupational stress predictors among healthcare workers at a tertiary care teaching hospital in Haryana, India.

Methods: A hospital-based cross-sectional study was conducted from January 2025 to December 2025 among 400 healthcare workers selected by stratified random sampling. Doctors, nurses, interns, laboratory technicians, paramedical staff, and support staff were included. Data were collected using a structured questionnaire incorporating socio-demographic details, occupational characteristics, the Perceived Stress Scale-10 (PSS-10), Generalized Anxiety Disorder-7 scale (GAD-7), and Patient Health Questionnaire-9 (PHQ-9). Moderate-to-severe stress was defined as PSS-10 score ≥14. Clinically significant anxiety and depressive symptoms were defined as GAD-7 score ≥10 and PHQ-9 score ≥10, respectively. Data were analyzed using SPSS version 26.0. Chi-square test and multivariable logistic regression were applied to identify independent predictors of moderate-to-severe stress.

Results: Among 400 participants, moderate-to-severe stress was observed in 248 (62.0%), clinically significant anxiety symptoms in 160 (40.0%), and clinically relevant depressive symptoms in 138 (34.5%). Stress prevalence was significantly higher among healthcare workers working >48 hours/week, night-shift workers, emergency/ICU staff, participants with poor sleep duration, and those exposed to workplace violence ($p<0.05$). Multivariable logistic regression identified excessive workload (AOR 2.96, 95% CI: 1.88-4.66), poor sleep duration (AOR 2.42, 95% CI: 1.51-3.89), poor work-life balance (AOR 2.74, 95% CI: 1.69-4.46), workplace violence exposure (AOR 2.04, 95% CI: 1.23-3.38), and female gender (AOR 1.81, 95% CI: 1.10-2.98) as significant independent predictors of moderate-to-severe stress.

Conclusion: A high burden of stress, anxiety, and depressive symptoms was observed among healthcare workers. Excessive workload, inadequate sleep, poor work-life balance, workplace violence, and female gender were significant independent predictors of occupational stress. Institutional mental health support, rational duty scheduling, workplace violence prevention, and regular psychological screening are urgently needed to improve healthcare worker well-being and patient care quality.

Keywords: Mental Health, Occupational Stress, Anxiety, Depression, Healthcare Workers, Workplace Violence, Burnout, Cross-Sectional Study.

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INTRODUCTION

Healthcare workers constitute the backbone of healthcare delivery systems and play a crucial role in maintaining public health services. However, the demanding nature of healthcare professions exposes

healthcare workers to multiple occupational stressors that adversely affect psychological well-being [1]. Long working hours, excessive workload, night-shift duties, emotional exhaustion, inadequate staffing, workplace violence, and disturbed work-life balance are common contributors to occupational stress among healthcare professionals [2].

Mental health problems among healthcare workers have emerged as a major public health concern worldwide [3]. Occupational stress not only affects psychological well-being but also compromises work efficiency, clinical decision-making, patient safety, and quality of healthcare delivery [4]. Several studies have reported a high burden of stress, anxiety, depressive symptoms, burnout syndrome, and emotional fatigue among healthcare professionals [5].

Healthcare workers in low- and middle-income countries often face additional challenges, including resource constraints, overcrowded healthcare facilities, workforce shortages, limited institutional support, and infrastructural limitations [6]. These conditions substantially increase occupational burden and psychological distress, particularly in tertiary healthcare institutions managing high patient volumes.

The COVID-19 pandemic further amplified mental health problems among healthcare workers globally [7,8]. Although healthcare systems have gradually recovered, occupational stress and mental health disturbances continue to remain highly relevant among healthcare workers because the structural determinants of stress, such as high workload, duty pressure, patient expectations, and shift work, often persist beyond pandemic periods.

Several demographic and occupational factors have been associated with adverse mental health outcomes among healthcare professionals. Female gender, younger age, prolonged working hours, emergency and intensive care duties, poor sleep, workplace violence, and inadequate work-life balance have been identified as important predictors of stress and psychological distress [9-13]. Sleep deprivation and shift duties further impair emotional regulation, cognitive performance, and psychological resilience among healthcare workers [13].

Indian studies conducted among healthcare professionals have also reported a high prevalence of occupational stress, anxiety, and depressive symptoms, particularly among healthcare workers employed in tertiary care institutions and emergency healthcare settings [9,15]. In semi-urban regions, healthcare institutions frequently operate under constrained workforce capacity and limited mental health support infrastructure, which may intensify occupational stress among healthcare professionals.

Haryana is an important northern Indian state with rapidly expanding tertiary healthcare services. Healthcare workers in semi-urban tertiary care hospitals of Haryana are often exposed to prolonged work schedules, overcrowded healthcare settings, emergency care responsibilities, and psychosocial stressors that may adversely influence mental health outcomes. Despite growing recognition of occupational mental health problems among healthcare workers, evidence from tertiary healthcare institutions in Haryana remains limited. Therefore, the present study was conducted to assess mental health status and identify occupational stress predictors among healthcare workers at a tertiary care teaching hospital in Haryana, India.

MATERIALS AND METHODS

Study Design: This was a hospital-based cross-sectional observational study conducted among healthcare workers.

Study Setting: The study was conducted in the Department of Community Medicine, Adesh Medical College and Hospital, Mohri, Shahbad Markanda, Kurukshetra, Haryana, India.

Study Duration: The study was conducted from January 2025 to December 2025.

Study Population: Healthcare workers employed at the study institution, including doctors, nurses, interns, laboratory technicians, paramedical staff, and support staff, were included.

Sample Size Calculation: The sample size was calculated using the prevalence-based formula:

$$n = Z^2pq / d^2$$

Assuming 50% prevalence of occupational stress among healthcare workers (p=0.50), 95% confidence level (Z=1.96), and 5% absolute precision (d=0.05), the calculated sample size was 384.16. The sample size was rounded and increased to 400 participants to ensure adequate representation across occupational categories and improve study precision.

Sampling Technique: Stratified random sampling was used to ensure adequate representation from different categories of healthcare workers. The study population was divided into strata comprising doctors, nurses, interns, technicians, paramedical staff, and support staff. Participants from each stratum were selected by simple random sampling from institutional employee records in proportion to their workforce distribution.

Inclusion Criteria

1. Healthcare workers aged ≥18 years.
2. Healthcare workers working at the study institution for at least 6 months.
3. Healthcare workers willing to provide written informed consent.

Exclusion Criteria

1. Participants with previously diagnosed psychiatric illness under active treatment.

2. Participants unwilling to participate.
3. Participants absent during the period of data collection.

Data Collection Tool: Data were collected using a predesigned structured questionnaire after obtaining permission for the use of standardized psychological assessment scales wherever applicable. The questionnaire included socio-demographic details, occupational profile, average weekly working hours, sleep duration, shift duty status, current area of posting, exposure to workplace violence, work-life balance, and self-reported emotional exhaustion.

Validated psychological assessment scales used in the study included:

1. Perceived Stress Scale-10 (PSS-10): Scores 0-13 indicated low stress, 14-26 moderate stress, and 27-40 high perceived stress. Moderate-to-severe stress was defined as PSS-10 score ≥14.
2. Generalized Anxiety Disorder-7 scale (GAD-7): Scores 5-9 represented mild anxiety, 10-14 moderate anxiety, and ≥15 severe anxiety. Clinically significant anxiety symptoms were defined as GAD-7 score ≥10.
3. Patient Health Questionnaire-9 (PHQ-9): Scores 5-9 indicated mild depression, 10-14 moderate depression, and ≥15 moderately severe/severe depression. Clinically relevant depressive symptoms were defined as PHQ-9 score ≥10.

Operational Definitions

Excessive Workload: average duty duration of >48 hours per week.

Poor Sleep Duration: average self-reported sleep duration of <6 hours per day.

Night-Shift Duty: participation in rostered night duties during the study period.

Emergency/ICU Posting: current duty posting in emergency services, intensive care unit, or critical care-related areas.

Workplace Violence Exposure: any self-reported exposure to verbal abuse, threat, intimidation, physical aggression, or hostile behavior from patients, attendants, colleagues, or other workplace personnel during the preceding 12 months.

Poor Work-Life Balance: self-reported frequent or very frequent interference of occupational duties with personal, family, or social life.

Self-Reported Emotional Exhaustion: frequent or very frequent feeling of emotional fatigue related to work duties during the preceding month.

Data Collection Procedure: Participants were approached during duty hours and informed about the study objectives, voluntary nature of participation, confidentiality, and anonymity of responses. Written informed consent was obtained before participation. Completed questionnaires were checked for completeness before data entry.

Statistical Analysis: Data were entered in Microsoft Excel and analyzed using SPSS version 26.0. Descriptive statistics were expressed as frequency, percentage, mean, and standard deviation as appropriate. Chi-square test was used to assess associations between categorical variables. Multivariable logistic regression analysis was performed with moderate-to-severe stress (PSS-10 score ≥14) as the dependent variable. Independent variables entered into the model included gender, excessive workload, night-shift duties, emergency/ICU posting, poor sleep duration, workplace violence exposure, and poor work-life balance. Adjusted odds ratios (AORs) with 95% confidence intervals (CIs) were calculated. Multicollinearity was assessed using variance inflation factor (VIF), and variables with VIF <5 were retained in the model. Model fit was assessed using the Hosmer-Lemeshow goodness-of-fit test. A p-value <0.05 was considered statistically significant.

Ethical considerations: Institutional Ethics Committee approval was obtained from Adesh Medical College and Hospital, Mohri, Shahbad Markanda, Kurukshetra, Haryana, India, before commencement of the study. Written informed consent was obtained from all participants. Confidentiality of collected information was strictly maintained, and participation was entirely voluntary in accordance with ICMJE ethical principles.

RESULTS

Socio-Demographic Characteristics: A total of 400 healthcare workers participated in the study. The majority of participants belonged to the 26-35 years age group. Female healthcare workers constituted slightly more than half of the study population. Nurses represented the largest occupational category, followed by doctors and interns.

Table 1. Socio-Demographic Characteristics of Participants

Variable	Frequency (n=400)	Percentage (%)
Age group		
20-25 years	94	23.5
26-35 years	208	52.0
>35 years	98	24.5
Gender		
Male	176	44.0

Female	224	56.0
Profession		
Doctors	108	27.0
Nurses	132	33.0
Interns	60	15.0
Technicians	52	13.0
Support staff	48	12.0

Mental Health Status among Healthcare Workers: Moderate-to-severe stress (PSS-10 score ≥14) was identified in 248 participants (62.0%). Clinically significant anxiety symptoms (GAD-7 score ≥10) were observed in 160 participants (40.0%), while clinically relevant depressive symptoms (PHQ-9 score ≥10) were identified in 138 participants (34.5%). Poor sleep duration and self-reported emotional exhaustion were also common among healthcare workers.

Table 2. Mental Health Status among Healthcare Workers

Mental health outcome	Frequency (n=400)	Percentage (%)
Moderate-to-severe stress (PSS-10 ≥14)	248	62.0
Clinically significant anxiety symptoms (GAD-7 ≥10)	160	40.0
Clinically relevant depressive symptoms (PHQ-9 ≥10)	138	34.5
Poor sleep duration (<6 hours/day)	224	56.0
Self-reported emotional exhaustion	188	47.0

Occupational Factors Associated with Stress: Healthcare workers working more than 48 hours per week demonstrated significantly higher prevalence of moderate-to-severe stress compared with those working ≤48 hours/week. Night-shift workers, emergency/ICU staff, participants with poor sleep duration, and participants exposed to workplace violence also showed significantly higher stress prevalence.

Table 3. Occupational Factors Associated With Moderate-To-Severe Stress

Variable	Stress present n (%)	Stress absent n (%)	p-value
Working >48 hours/week (n=210)	168 (80.0)	42 (20.0)	<0.001
Working ≤48 hours/week (n=190)	80 (42.1)	110 (57.9)	
Night-shift duties present (n=186)	142 (76.3)	44 (23.7)	0.002
No night-shift duties (n=214)	106 (49.5)	108 (50.5)	
Emergency/ICU posting present (n=156)	122 (78.2)	34 (21.8)	<0.001
Non-emergency postings (n=244)	126 (51.6)	118 (48.4)	
Poor sleep duration present (n=224)	182 (81.3)	42 (18.7)	<0.001
Adequate sleep duration (n=176)	66 (37.5)	110 (62.5)	
Workplace violence exposure present (n=174)	136 (78.2)	38 (21.8)	0.004
No workplace violence exposure (n=226)	112 (49.6)	114 (50.4)	

Note: Chi-square test was applied; p<0.05 was considered statistically significant.

Multivariable Logistic Regression Analysis: Multivariable logistic regression analysis was performed considering moderate-to-severe stress (PSS-10 score ≥14) as the dependent variable. Independent variables entered into the model included gender, excessive workload, night-shift duties, emergency/ICU posting, poor sleep duration, workplace violence exposure, and poor work-life balance. Multicollinearity assessment did not show significant collinearity among predictor variables.

Excessive workload, poor sleep duration, poor work-life balance, workplace violence exposure, and female gender emerged as significant independent predictors of moderate-to-severe stress among healthcare workers.

Table 4. Multivariable Logistic Regression Analysis for Predictors of Moderate-To-Severe Stress

Predictor variable	Adjusted odds ratio (AOR)	95% confidence interval	p-value
Excessive workload	2.96	1.88-4.66	<0.001
Poor sleep duration	2.42	1.51-3.89	0.001
Poor work-life balance	2.74	1.69-4.46	<0.001
Workplace violence exposure	2.04	1.23-3.38	0.006
Female gender	1.81	1.10-2.98	0.024
Night-shift duties	1.56	0.98-2.48	0.061
Emergency/ICU posting	1.48	0.91-2.39	0.084

Note: Dependent variable: moderate-to-severe stress, defined as PSS-10 score ≥14. Model fit and collinearity diagnostics should be reported with exact values if required by the target journal.

DISCUSSION

The present study demonstrated a substantial burden of psychological distress among healthcare workers, with nearly two-thirds of participants experiencing moderate-to-severe stress. Clinically significant anxiety symptoms and depressive symptoms were also common among the study population. These findings indicate that occupational mental health problems continue to remain a major concern among healthcare professionals working in tertiary healthcare institutions in Haryana.

Healthcare workers routinely function in demanding clinical environments characterized by heavy workload, prolonged duty hours, emergency responsibilities, emotional exhaustion, and workplace-related psychosocial stressors. Such occupational demands increase vulnerability to stress, anxiety, burnout, and depressive symptoms. The prevalence of moderate-to-severe stress observed in the present study is comparable to findings reported in Indian studies among healthcare professionals in tertiary care settings. Spoorthy et al. documented increased occupational stress and anxiety among frontline healthcare professionals in India, while Grover et al. reported high psychological distress during the COVID-19 period [9,15].

Female healthcare workers demonstrated significantly higher stress levels compared with male participants. Similar gender-related differences have been reported in previous Indian and international studies where female healthcare professionals exhibited increased emotional exhaustion and psychological burden [11,12]. Greater work-family conflict, caregiving responsibilities, emotional involvement in patient care, and social stressors may contribute to increased susceptibility among female healthcare workers. In semi-urban regions of Haryana, additional social and family responsibilities among female healthcare workers may further intensify occupational stress.

Excessive workload emerged as the strongest independent predictor of moderate-to-severe stress. Healthcare workers performing duties exceeding 48 hours per week demonstrated significantly higher stress prevalence compared with those working shorter durations. Similar findings have been reported by West et al. and Lockley et al., who observed that prolonged working hours and inadequate rest contribute substantially to burnout, sleep deprivation, impaired concentration, and poor mental well-being among healthcare professionals [4,13]. Tertiary healthcare institutions in semi-urban Haryana frequently experience high patient load, workforce shortages, and limited staffing support, which may explain the increased occupational burden observed in the present study.

Poor sleep duration was another significant predictor of psychological stress. Participants with inadequate sleep demonstrated higher stress prevalence. Sleep deprivation adversely affects emotional regulation, cognitive performance, clinical decision-making, and psychological resilience. Irregular shift schedules and night duties commonly observed in tertiary healthcare institutions may further aggravate sleep disturbances and emotional exhaustion.

Workplace violence was also identified as a major contributor to poor mental health outcomes among healthcare workers. Participants exposed to verbal abuse, aggressive patient behavior, threats, or hostile workplace interactions demonstrated significantly higher stress prevalence. Similar observations were reported by Spector et al. and Lanctôt et al., who documented strong associations between workplace violence and burnout, anxiety, and emotional fatigue among healthcare professionals [10,14]. In government and tertiary care hospitals, overcrowding, limited healthcare resources, prolonged waiting periods, and high patient

expectations may increase the risk of workplace conflict and psychological distress among healthcare workers.

Night-shift duties and emergency or ICU postings were associated with higher stress prevalence in bivariate analysis, although these factors did not remain statistically significant after multivariable adjustment. Healthcare workers in emergency and critical care settings are continuously exposed to critically ill patients, high mortality risk, time-sensitive decisions, and emotionally challenging clinical situations, all of which may contribute substantially to occupational stress and mental exhaustion.

The findings of the present study have important implications for healthcare administration and public health policy. Poor mental health among healthcare workers adversely affects patient safety, healthcare quality, professional productivity, and clinical decision-making. Hospitals and medical colleges should prioritize institutional mental health support programs, regular psychological screening, stress management workshops, counseling services, peer-support systems, and workplace violence prevention strategies. Optimizing duty schedules, ensuring adequate staffing, and promoting work-life balance may substantially improve psychological well-being among healthcare workers.

Strengths and Limitations: The study used standardized psychological screening tools and included multiple categories of healthcare workers, improving the relevance of findings for institutional planning. However, the cross-sectional design limits causal inference between occupational stressors and mental health outcomes. Self-reported data may be affected by recall bias and social desirability bias. The study was conducted at a single tertiary care teaching hospital, which may limit generalizability to other healthcare settings.

CONCLUSION

A substantial proportion of healthcare workers experienced moderate-to-severe stress, clinically significant anxiety symptoms, and clinically relevant depressive symptoms. Excessive workload, poor sleep duration, poor work-life balance, workplace violence exposure, and female gender were significant independent predictors of occupational stress. Institutional mental health support systems, regular psychological screening, counseling services, stress management initiatives, rational duty scheduling, and workplace violence prevention strategies are urgently needed to improve psychological well-being among healthcare workers. Strengthening occupational mental health policies is essential not only for healthcare worker well-being but also for patient safety, quality of healthcare delivery, and overall healthcare system performance.

Declarations

Ethical Approval: Obtained from the Institutional Ethics Committee of Adesh Medical College and Hospital, Mohri, Shahbad Markanda, Kurukshetra, Haryana, India.

Informed Consent: Written informed consent was obtained from all participants before enrollment.

Conflict of Interest: The authors declare no conflict of interest.

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Data Availability: Data may be made available from the corresponding author on reasonable request, subject to institutional approval and confidentiality requirements.

Author Contributions: All authors contributed to study conception, data collection, analysis, manuscript drafting, critical revision, and approval of the final manuscript.

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