



Prevalence and Determinants of Depression, Anxiety, and Stress Among Healthcare Workers in a Tertiary Care Hospital: A Cross-Sectional Study

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Abstract

Background: Healthcare workers (HCWs) are exposed to occupational stressors that place them at elevated risk of mental health disorders, with implications for both workforce sustainability and patient safety. This study aimed to estimate the prevalence of depression, anxiety, and stress among HCWs at a tertiary care hospital and to identify associated sociodemographic and occupational factors.

Methods: A cross-sectional study was conducted among 400 HCWs (physicians, nurses, and allied health staff) selected by stratified random sampling. Data were collected using a structured questionnaire comprising sociodemographic and occupational variables and the Depression, Anxiety and Stress Scale-21 (DASS-21). Associations were tested using the chi-square test, and multivariable logistic regression was used to identify independent predictors. A p-value <0.05 was considered statistically significant.

Results: The prevalence of depression, anxiety, and stress was 34.5%, 41.3%, and 28.8%, respectively. Nurses reported the highest burden of anxiety (48.9%). In multivariable analysis, working >48 hours per week (aOR 2.31; 95% CI 1.47–3.63), night-shift duty (aOR 1.86; 95% CI 1.19–2.91), and <5 years of work experience (aOR 1.72; 95% CI 1.10–2.69) were independently associated with at least one adverse mental health outcome.

Conclusion: More than one-third of HCWs screened positive for a mental health problem. Workload regulation, shift rationalization, and institutional psychological support services are urgently needed.

Keywords: Healthcare workers; depression; anxiety; stress; burnout; DASS-21.

INTRODUCTION

Healthcare workers (HCWs) constitute the backbone of any health system, yet their own mental health is frequently neglected. The healthcare workplace combines high emotional demands, long and irregular working hours, exposure to suffering and death, medico-legal anxiety, and, in many settings, chronic understaffing. These conditions create a fertile environment for psychological morbidity, and a substantial body of evidence now demonstrates that HCWs experience depression, anxiety, stress, and burnout at rates exceeding those of the general population and of most other occupational groups (1,2).

Burnout—characterized by emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment—was first operationalized by Maslach and Jackson and has since become a central construct in occupational health research among clinicians (3). The World Health Organization has formally recognized burnout as an occupational phenomenon in the 11th revision of the International Classification of Diseases, underscoring its public health importance (4). A landmark systematic review by Rotenstein and colleagues found that estimates of physician burnout ranged widely but were consistently substantial, affecting a large proportion of the medical workforce worldwide (5). Shanafelt et al. further demonstrated that burnout and dissatisfaction with work–life balance among physicians in the United States worsened over time relative to the general working population (6).

The consequences of poor mental health among HCWs extend well beyond the individual. Physician burnout has been linked to medical errors, reduced quality of care, lower patient satisfaction, absenteeism, and attrition from clinical practice (7). Aiken and colleagues showed that adverse nurse working conditions, including high patient-to-nurse ratios, were associated with greater nurse burnout, job dissatisfaction, and even increased patient mortality (8). Most alarmingly, HCWs—particularly physicians—face an elevated risk of suicide compared with the general population, as demonstrated in a meta-analysis by Duteil et al. (9).

The COVID-19 pandemic dramatically amplified these pre-existing vulnerabilities. Lai et al., in a large multicentre study of Chinese HCWs during the initial outbreak, reported high rates of depression (50.4%), anxiety (44.6%), insomnia (34.0%), and distress (71.5%), with frontline nurses most severely affected (1). A meta-analysis by Pappa et al. pooled data from thirteen studies and confirmed substantial pooled prevalences of anxiety, depression, and insomnia among pandemic-era HCWs (2). Similar findings emerged from low- and middle-income countries, including India, where studies documented significant psychological distress among doctors and other frontline workers (10,11). Kang et al. highlighted early in the pandemic that mental health services for medical workers were inadequate and urgently required strengthening (12).

Despite this growing global literature, institution-level data remain essential, because the prevalence and determinants of psychological morbidity vary with local staffing patterns, workload, and organizational culture. Locally generated evidence is a prerequisite for designing feasible workplace interventions. The present study was therefore undertaken to (a) estimate the prevalence of depression, anxiety, and stress among HCWs at a tertiary care teaching hospital, and (b) identify sociodemographic and occupational factors associated with these outcomes.

MATERIALS AND METHODS

Study design and setting: A hospital-based cross-sectional study was conducted over four months (January–April 2025) at a 1,200-bed tertiary care teaching hospital.

Study population: All HCWs—physicians (faculty and residents), nurses, and allied health professionals (laboratory technicians, pharmacists, physiotherapists)—with at least six months of continuous service at the institution were eligible. HCWs on long-term leave (>1 month), those with a self-reported psychiatric diagnosis predating employment, and those unwilling to consent were excluded.

Sample size: Assuming an expected prevalence of anxiety of 44.6% based on prior literature (1), an absolute precision of 5%, a 95% confidence level, and a 10% non-response allowance, the minimum required sample size was calculated as 418; 400 complete responses were analyzed after data cleaning.

Sampling technique: Stratified random sampling was employed. The workforce was stratified into three cadres (physicians, nurses, allied health), and participants were selected from each stratum proportional to its size using computer-generated random numbers applied to duty rosters obtained from the hospital administration.

Study tools: Data were collected using a pre-tested, self-administered questionnaire in two parts. Part I captured sociodemographic variables (age, sex, marital status) and occupational variables (professional cadre, years of experience, weekly working hours, night-shift duty, department of posting). Part II comprised the Depression, Anxiety and Stress Scale-21 (DASS-21), a validated 21-item instrument with three 7-item subscales scored on a 4-point Likert scale; subscale scores are doubled to correspond to the full DASS (13). Standard cut-offs were applied: depression ≥ 10 , anxiety ≥ 8 , and stress ≥ 15 . Severity was graded as mild, moderate, severe, or extremely severe per the DASS manual. The tool was pilot-tested on 20 HCWs (excluded from the final analysis), and internal consistency in the study sample was good (Cronbach's α : depression 0.88, anxiety 0.84, stress 0.86).

Data collection: Questionnaires were distributed in sealed envelopes at departmental meetings and collected in drop boxes to preserve anonymity. No identifying information was recorded.

Ethical considerations: The study was approved by the Institutional Ethics Committee (approval no. IEC/2024/xxx). Written informed consent was obtained from all participants. Participants scoring in the severe or extremely severe range were provided information about free, confidential counselling services.

Statistical analysis: Data were entered in Microsoft Excel and analyzed using SPSS version 26. Categorical variables were summarized as frequencies and percentages, and continuous variables as mean $\pm$ standard deviation. The chi-square test was used to assess associations between independent variables and mental health outcomes. Variables with $p < 0.20$ in bivariate analysis were entered into a multivariable binary logistic regression model with "any adverse mental health outcome" (depression, anxiety, or stress) as the dependent variable; adjusted odds ratios (aOR) with 95% confidence

intervals (CI) were reported. A two-tailed p-value <0.05 was considered statistically significant.

RESULTS

A total of 400 HCWs participated (response rate 89.7%). The mean age was 32.4 ± 7.8 years; 236 (59.0%) were female.

Table 1. Sociodemographic and occupational characteristics of study participants (N = 400)

Characteristic	Category	n (%)
Age (years)	20–29	168 (42.0)
	30–39	154 (38.5)
	≥40	78 (19.5)
Sex	Male	164 (41.0)
	Female	236 (59.0)
Marital status	Married	218 (54.5)
	Unmarried/other	182 (45.5)
Professional cadre	Physicians	140 (35.0)
	Nurses	180 (45.0)
	Allied health staff	80 (20.0)
Work experience	<5 years	190 (47.5)
	≥5 years	210 (52.5)
Weekly working hours	≤48 hours	232 (58.0)
	>48 hours	168 (42.0)
Night-shift duty	Yes	246 (61.5)
	No	154 (38.5)

The sample was predominantly young (80.5% under 40 years) and female, reflecting the nursing-heavy composition of the hospital workforce. Notably, 42% of participants worked beyond the conventional 48-hour weekly threshold and nearly two-thirds performed night shifts, indicating a high baseline occupational load.

Table 2. Prevalence and severity of depression, anxiety, and stress by DASS-21 (N = 400)

Severity	Depression n (%)	Anxiety n (%)	Stress n (%)
Normal	262 (65.5)	235 (58.8)	285 (71.3)
Mild	58 (14.5)	60 (15.0)	52 (13.0)
Moderate	46 (11.5)	62 (15.5)	38 (9.5)
Severe	22 (5.5)	28 (7.0)	18 (4.5)
Extremely severe	12 (3.0)	15 (3.8)	7 (1.8)
Total above cut-off	138 (34.5)	165 (41.3)	115 (28.8)

Anxiety was the most prevalent outcome (41.3%), followed by depression (34.5%) and stress (28.8%). Although most affected participants fell in the mild-to-moderate range, a clinically important minority (8.5% for depression, 10.8% for anxiety) screened in the severe or extremely severe categories, warranting referral. Overall, 192 participants (48.0%) had at least one adverse outcome.

Table 3. Prevalence of mental health outcomes by professional cadre

Cadre	Depression n (%)	Anxiety n (%)	Stress n (%)	Any outcome n (%)
Physicians (n=140)	52 (37.1)	55 (39.3)	46 (32.9)	72 (51.4)
Nurses (n=180)	66 (36.7)	88 (48.9)	54 (30.0)	96 (53.3)
Allied health (n=80)	20 (25.0)	22 (27.5)	15 (18.8)	24 (30.0)
χ^2 (p-value)	4.21 (0.122)	11.36 (0.003)	5.61 (0.061)	13.10 (0.001)

Nurses carried the greatest anxiety burden (48.9%), significantly higher than allied health staff, and cadre was significantly associated with anxiety (p=0.003) and with any adverse outcome (p=0.001). Physicians and nurses showed comparable levels of depression and stress, both exceeding those of allied health workers.

Table 4. Multivariable logistic regression of factors associated with any adverse mental health outcome (N = 400)

Variable	Category	aOR (95% CI)	p-value
Weekly working hours	>48 vs ≤48	2.31 (1.47–3.63)	< 0.001
Night-shift duty	Yes vs No	1.86 (1.19–2.91)	0.006
Work experience	<5 vs ≥5 years	1.72 (1.10–2.69)	0.017
Cadre	Nurses vs allied health	1.94 (1.08–3.48)	0.026

	Physicians vs allied health	1.79 (0.97–3.30)	0.062
Sex	Female vs male	1.28 (0.83–1.97)	0.264
Age	<30 vs ≥30 years	1.19 (0.76–1.86)	0.448

After adjustment, prolonged weekly working hours emerged as the strongest independent predictor, more than doubling the odds of an adverse outcome. Night-shift work, early-career status (<5 years), and being a nurse also remained significant, whereas sex and age lost significance after adjustment—suggesting the excess burden is driven primarily by modifiable occupational factors rather than demographic ones.

DISCUSSION

In this cross-sectional study of 400 HCWs, nearly half (48.0%) screened positive for at least one adverse mental health outcome, with anxiety (41.3%) the most common, followed by depression (34.5%) and stress (28.8%). These figures are broadly consistent with the multicentre findings of Lai et al., who documented depression in 50.4% and anxiety in 44.6% of HCWs, although our depression prevalence was somewhat lower, plausibly reflecting the post-pandemic timing of data collection (1). Our estimates also fall within the pooled ranges reported in the meta-analyses of Pappa et al. and Salari et al., reinforcing that substantial psychological morbidity among HCWs persists beyond acute crisis periods (2,11).

The disproportionate anxiety burden among nurses (48.9%) mirrors a consistent international pattern. Lai et al. identified nurses—particularly frontline female nurses—as the subgroup with the most severe symptoms (1), and Aiken et al. demonstrated decades ago that adverse nurse staffing conditions drive burnout and job dissatisfaction (8). Nurses' continuous bedside presence, emotional labour, and limited decision latitude likely combine to elevate their risk relative to other cadres.

Our multivariable analysis identified working more than 48 hours per week as the strongest independent predictor of psychological morbidity (aOR 2.31). This accords with the broader occupational literature on physicians, in which excessive workload is repeatedly identified as a principal driver of burnout and distress (5-7). Night-shift duty was also independently associated with adverse outcomes, consistent with the known effects of circadian disruption on mood regulation. Early-career workers (<5 years of experience) had 72% higher adjusted odds of morbidity, echoing findings that junior clinicians face the compounded pressures of skill acquisition, examinations, and low workplace autonomy (7). Importantly, demographic factors such as sex and age lost significance after adjustment, indicating that the observed burden is largely attributable to modifiable organizational exposures—a finding with direct policy relevance.

These results matter because HCW mental ill-health is not only a personal tragedy but an institutional and patient-safety hazard: burnout and distress are associated with medical errors, reduced quality of care, absenteeism, and workforce attrition (7,8), and in the extreme with suicide (9). Encouragingly, intervention evidence exists. West et al., in a systematic review and meta-analysis, showed that both individual-focused approaches (mindfulness, stress-management training) and structural or organizational interventions (duty-hour reduction, workflow modification) produce meaningful reductions in burnout, with organizational strategies tending to yield larger effects (14). Our findings—centred on hours, shifts, and cadre—argue strongly for prioritizing such organizational reforms, supplemented by confidential, stigma-free counselling services of the kind whose absence Kang et al. lamented (12).

Strengths and limitations: Strengths include stratified random sampling, a validated instrument with good internal consistency, and multivariable adjustment. Limitations include the cross-sectional design, which precludes causal inference; reliance on self-report screening rather than diagnostic interview; possible social desirability and healthy-worker biases; and single-centre conduct, which limits generalizability. Longitudinal, multicentre studies with clinical validation are warranted.

CONCLUSION

Nearly one in two healthcare workers in this tertiary care hospital screened positive for depression, anxiety, or stress, with anxiety predominating and nurses most affected. Excessive weekly working hours, night-shift duty, early-career status, and nursing cadre were independent predictors, while demographic factors were not—pointing squarely at modifiable workplace conditions. Hospital administrations should regulate working hours, rationalize shift schedules, provide targeted support to nurses and junior staff, and establish routine mental health screening alongside accessible, confidential counselling services. Protecting the mental health of the health workforce is not a luxury; it is a prerequisite for safe, sustainable patient care.

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