Burnout and Associated Psychosocial Factors Among Resident Doctors in Western Uttar Pradesh: A Cross-Sectional Study

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Citation: Raman G, Bansal R, Gupta M, Gupta CK, Kumar V. Burnout and Associated Psychosocial Factors Among Resident Doctors in Western Uttar Pradesh: A Cross-Sectional Study. Indian J Comm Health. 2026;38(5): Page Number 779-784
https://doi.org/10.47203/IJCH.2026.v38i05.007
Article Cycle: Received: 01/06/2026; **Accepted:** 21/09/2026; **Published:** 31/10/2026

Abstract:

Background: Burnout among resident doctors is an important occupational health concern associated with demanding clinical responsibilities, prolonged working hours, academic pressure, sleep disruption, and psychological stress. This study assessed burnout and its associated psychosocial factors among resident doctors in a tertiary care teaching hospital in Meerut, Uttar Pradesh. **Materials and Methods:** A hospital-based cross-sectional study was conducted among 262 resident doctors at Subharti Medical College and Hospital, Meerut. Data collection was undertaken from November 2024 to April 2025. Participants were selected using purposive sampling. Burnout was assessed using the Copenhagen Burnout Inventory (CBI), and perceived stress, emotional intelligence, and spiritual well-being were assessed using the PSS-4, BEIS-10, and FACIT-Sp-12, respectively. CBI scores were categorized as low (<50), moderate (50–74), and high (≥75). Moderate-to-high burnout was defined as a CBI score ≥50 for descriptive analysis. For logistic regression, high burnout (CBI ≥75) was compared with CBI <75. Descriptive statistics, chi-square tests, and multivariable logistic regression were used. **Results:** Among 262 resident doctors, 97 (37.0%) had moderate and 34 (13.0%) had high overall burnout; therefore, 131 (50.0%) had moderate-to-high burnout. High burnout was observed in 19.8% for personal, 14.1% for work-related, and 6.5% for patient-related burnout. Moderate-to-high perceived stress was present in 219 (83.6%) participants. Moderate emotional intelligence was observed in 137 (52.3%), while moderate-to-high spiritual well-being was present in 224 (85.5%). Duty hours, night duties, branch category, perceived stress, emotional intelligence, and spiritual well-being showed significant bivariate associations with burnout. In the multivariable model, high perceived stress was associated with higher odds of high burnout (AOR 4.86, 95% CI 2.05–11.52), while low emotional intelligence was associated with higher odds of high burnout relative to high emotional intelligence (AOR 3.67, 95% CI 1.54–8.74). **Conclusion:** Half of the participants had moderate-to-high overall burnout, while 13.0% had high burnout. Perceived stress and emotional intelligence were independently associated with high burnout in the adjusted model. Because of the cross-sectional design, these findings should be interpreted as associations and not as evidence of causality.

Keywords: Burnout; Resident doctors; Perceived stress; Emotional intelligence; Spiritual well-being; Copenhagen Burnout Inventory

Introduction

Burnout is a psychological syndrome associated with chronic occupational stress and has important implications for the well-being and functioning of healthcare professionals. Resident doctors may be particularly vulnerable because residency combines clinical responsibilities, academic demands, long working hours, night duties, and emotionally demanding patient care.[1-4]

Residency training requires residents to balance service provision with progressive acquisition of clinical competencies. Prolonged exposure to workload and limited recovery time has been associated with psychological distress and burnout in medical trainees. International studies have reported substantial variation in burnout prevalence because estimates depend on the population studied, instrument used, and operational definition of burnout.[2,4,5]

Indian studies have also reported substantial burnout among resident doctors and healthcare workers. Studies have described burnout among medical practitioners and healthcare workers, with workload, sleep disturbance, stress, and working conditions reported as relevant correlates.[6-9] Dhusia et al. reported burnout in 56.66% of resident doctors in public-sector hospitals in Mumbai using the Copenhagen Burnout Inventory.[10]

Emotional intelligence and spiritual well-being have also been studied as psychosocial correlates of physician well-being. Recent evidence suggests that emotional intelligence is associated with mental health and burnout outcomes among physicians and trainees; however, observational associations should not be interpreted as evidence that emotional intelligence or spiritual well-being directly prevents burnout.[11-15]

Despite growing concern about resident burnout, data from tertiary care teaching hospitals in Western Uttar Pradesh remain limited. Therefore, the present study assessed the prevalence and severity of burnout and examined its association with perceived stress, emotional intelligence, spiritual well-being, and residency-related characteristics among resident doctors.

Objective: To assess the prevalence and severity of burnout and determine its associated psychosocial and residency-related factors among resident doctors.

Materials and Methods

Study type and design: Hospital-based cross-sectional study.

Study duration and setting: The study was conducted at Subharti Medical College and Hospital, Meerut, Uttar Pradesh. The overall study period was November 2024 to November 2025; data collection was completed between November 2024 and April 2025, followed by data analysis and manuscript preparation.

Study population: Junior and senior resident doctors working in clinical and non-clinical departments.

Sample size: The sample size was calculated using the single-proportion formula: $n = Z^2pq / d^2$

A previously reported burnout prevalence of 56.66% was used ($p=0.5666$), with $q=1-p=0.4334$, a 95% confidence level ($Z=1.96$), and an absolute precision of 6% ($d=0.06$). Thus, $n = (1.96^2 \times 0.5666 \times 0.4334) / 0.06^2 = 262.04$, giving a minimum required sample size of 262 participants. No additional non-response inflation was applied. The final analytical sample comprised 262 resident doctors.[10]

Sampling technique: Purposive sampling was used because the study specifically targeted resident doctors who were actively engaged in postgraduate training during the study period and fulfilled the predefined eligibility criteria. This approach facilitated recruitment of the target population within the study institution. However, purposive sampling is a non-probability sampling method and may introduce selection bias because eligible residents may not have had an equal probability of selection. Accordingly, the findings should be generalized cautiously beyond the study institution.

Response rate and non-response: The number of eligible resident doctors approached was not prospectively recorded in the available study documentation; therefore, a formal response rate could not be calculated. Residents who declined participation were excluded. The possibility of non-response bias cannot therefore be completely excluded and is acknowledged as a study limitation.

Eligibility criteria: Inclusion criteria: Residents working for more than three months and willing to participate.

Exclusion criteria: Incompletely filled questionnaires and residents who declined participation.

Study tools: Data were collected using a predesigned, pretested, structured questionnaire comprising sociodemographic and residency-related variables and standardized assessment tools.

Burnout was assessed using the Copenhagen Burnout Inventory (CBI), developed by Kristensen et al. The CBI consists of 19 items across personal burnout (6 items), work-related burnout (7 items), and patient-related burnout (6 items). Scores are transformed to a 0-100 scale, with higher scores indicating greater burnout. Scores were categorized as low (<50), moderate (50-74), and high (≥75). [16]

For descriptive analysis, we defined moderate-to-high burnout as a CBI score ≤50, combining the moderate and high categories. Thus, participants with moderate or high burnout were classified as having moderate-to-high burnout. For multivariable logistic regression, the binary outcome was high burnout (CBI ≥75) versus not high burnout (CBI <75).

Perceived stress was assessed using the Perceived Stress Scale (PSS-4), a four-item instrument scored from 0 to 16. Scores were categorized as low (0-5), moderate (6-10), and high (11-16).[17]

Emotional intelligence was assessed using the Brief Emotional Intelligence Scale (BEIS-10), a 10-item instrument. Scores were categorized as low (0-30%), moderate (31-70%), and high (71-100%).[13]

Spiritual well-being was assessed using the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being Scale (FACIT-Sp-12), consisting of 12 items scored from 0 to 4, with reverse scoring for items 4 and 8. Total scores range from 0 to 48 and were categorized as low (0-24), moderate (25-36), and high (37-48).[14]

Statistical analysis: Data were entered in Microsoft Excel and analysed using SYSTAT version 13.2. Categorical variables were summarized using frequencies and percentages. Associations between categorical variables were assessed using the chi-square test. Variables were considered for multivariable logistic regression based on a priori clinical relevance and their observed associations in bivariate analysis. The dependent variable was high burnout (CBI ≥75). The final model was intentionally parsimonious because only 34 participants met the high-burnout outcome, limiting the number of parameters that could be reliably estimated. Age, gender, residency year, perceived stress, and emotional intelligence were retained in the final model. Duty hours, night duties, branch category, and spiritual well-being were examined in bivariate analyses but were not retained in the final parsimonious model. Their exclusion from the final model should not be interpreted as evidence that they are unrelated to burnout.

Adjusted odds ratios (AORs), 95% confidence intervals (CIs), and p-values were reported. A p-value <0.05 was considered

statistically significant. Multicollinearity diagnostics and goodness-of-fit statistics must be inserted from the final SYSTAT regression output before submission; these statistics were not available in the supplied manuscript.

Ethical considerations: Ethical approval was obtained from the Institutional Ethics Committee of Subharti Medical College and Hospital, Meerut, Uttar Pradesh (Reference No. SMC/UECM/2024/1368). Written informed consent was obtained from all participants. Confidentiality and anonymity were maintained throughout the study.

Results

The analysis included 262 resident doctors. Sociodemographic and residency-related characteristics are summarized in Table 1. Most resident doctors were aged 21-30 years (77.9%), male (57.3%), and unmarried (79.8%). The majority were in the clinical branch (89.3%), with 38.2% in their first year of residency and 25.2% each in their second and third years. Regarding workload, 63.0% reported working 8-12 hours per day, while 67.9% performed 1-2 night duties per week.

Table 1. Sociodemographic and residency-related characteristics of resident doctors (N=262)

Variable	Category	n	%
Age (years)	21–30	204	77.9
	31–40	58	22.1
Gender	Male	150	57.3
	Female	112	42.7
Marital status	Unmarried	209	79.8
	Married	53	20.2
Year of residency	First year	100	38.2
	Second year	66	25.2
	Third year	66	25.2
	Senior resident	30	11.4
Branch category	Clinical	234	89.3
	Non-clinical	28	10.7
Duty hours/day	6–8 hours	14	5.3
	8–12 hours	165	63
	>12 hours	83	31.7
Night duties/week	None	25	9.5
	1–2 duties	178	67.9
	3–4 duties	44	16.8
	>4 duties	15	5.8

Table 2. Distribution of burnout according to Copenhagen Burnout Inventory domains (N=262)

CBI domain	Low n (%)	Moderate n (%)	High n (%)
Personal burnout	92 (35.1)	118 (45.0)	52 (19.8)
Work-related burnout	123 (46.9)	102 (38.9)	37 (14.1)
Patient-related burnout	176 (67.2)	69 (26.3)	17 (6.5)
Overall burnout	131 (50.0)	97 (37.0)	34 (13.0)

As shown in Table 2 and Figure 1, 131 (50.0%) participants had moderate-to-high burnout (CBI ≥50), while 34 (13.0%) had high burnout (CBI ≥75). Personal burnout had the highest proportion of high scores (19.8%), followed by work-related burnout (14.1%) and patient-related burnout (6.5%).

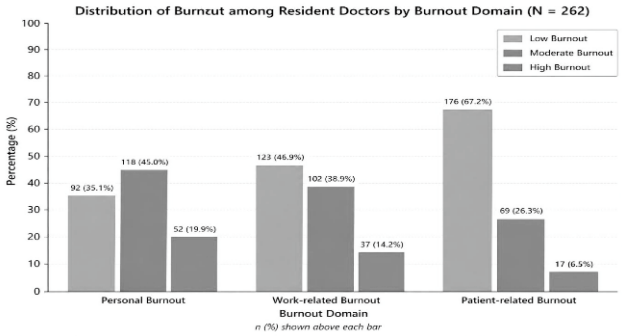


Figure 1. Distribution of burnout among resident doctors by CBI domain.

Table 3. Association between residency-related variables and burnout

Variable	Category	Low n (%)	Moderate n (%)	High n (%)	x^2/ p-value
Duty hours / day	6–8 hours	11 (78.6)	3 (21.4)	0 (0.0)	18.42/ 0.001
	8–12 hours	92 (55.8)	58 (35.2)	15 (9.0)	
	>12 hours	28 (33.7)	36 (43.4)	19 (22.9)	
Night duties / week	None	18 (72.0)	6 (24.0)	1 (4.0)	14.67/ 0.005
	1–2 duties	101 (56.7)	61 (34.3)	16 (9.0)	
	3–4 duties	10 (22.7)	24 (54.6)	10 (22.7)	
	>4 duties	2 (13.3)	6 (40.0)	7 (46.7)	
Branch category	Non-clinical	21 (75.0)	6 (21.4)	1 (3.6)	9.31/ 0.009
	>4 duties	110 (47.0)	91 (38.9)	33 (14.1)	

Burnout severity was significantly associated with daily duty hours, with the proportion of high burnout increasing from 0% among those working 6-8 hours to 22.9% among those working more than 12 hours per day (p=0.001). Night duties were also significantly associated with burnout, as high burnout was reported by 46.7% of residents performing more than four night duties per week (p=0.005). Branch category showed a significant association with burnout (p=0.009), with high burnout more prevalent among clinical residents (14.1%) than non-clinical residents (3.6%). (Table 3)

Table 4. Association of perceived stress, emotional intelligence and spiritual well-being with burnout (N=262)

Variable	Low n (%)	Moderaten (%)	High n (%)	Total	x^2/ p-value
Perceived stress					
Low (0–5)	35 (81.4)	7 (16.3)	1 (2.3)	43	42.6/ <0.001
Moderate (6–10)	78 (58.6)	46 (34.6)	9 (6.8)	133	
High (11–16)	18 (20.9)	44 (51.2)	24 (27.9)	86	
Emotional intelligence					

Low (0–30%)	18 (29.0)	28 (45.2)	16 (25.8)	62	24.3/ <0.001
Moderate (31–70%)	70 (51.1)	54 (39.4)	13 (9.5)	137	
High (71–100%)	43 (68.3)	15 (23.8)	5 (7.9)	63	
Spiritual well-being					
Low (0–24)	10 (26.3)	18 (47.4)	18 (47.4)	10 (26.3)	28.7/ <0.001
Moderate (25–36)	52 (43.7)	49 (41.2)	49 (41.2)	18 (15.1)	
High (37–48)	69 (65.7)	30 (28.6)	30 (28.6)	6 (5.7)	

Table 4 shows the moderate-to-high perceived stress was present in 219 of 262 participants (83.6%). Moderate emotional intelligence was present in 137 (52.3%), while 62 (23.7%) had low and 63 (24.0%) had high emotional intelligence. Moderate-to-high spiritual well-being was present in 224 (85.5%) participants.

Table 5. Multivariable logistic regression analysis for factors associated with high burnout among resident doctors (N=262)

Variable	Comparison	AOR	95% CI	p-value
Age	≥31 years vs 21–30 years	1.28	0.62–2.63	0.49
Gender	Female vs Male	0.81	0.39–1.69	0.57
Year of residency	1st year vs 3rd year	1.72	0.78–3.81	0.17
Perceived stress	High vs Low	4.86	2.05–11.52	<0.001*
Emotional intelligence	Low vs High	3.67	1.54–8.74	0.003*

Outcome: high burnout (CBI ≥75) versus CBI <75. *p<0.05.

Table 5 shows the adjusted model, high perceived stress was associated with higher odds of high burnout compared with low perceived stress (AOR 4.86, 95% CI 2.05-11.52; p<0.001). Low emotional intelligence was also associated with higher odds of high burnout compared with high emotional intelligence (AOR 3.67, 95% CI 1.54-8.74; p=0.003). Age, gender, and year of residency were not statistically significant after adjustment.

Discussion

The present study found that 50.0% of resident doctors had moderate-to-high overall burnout, while 13.0% had high burnout. At the domain level, high personal burnout was observed in 19.8%, high work-related burnout in 14.1%, and high patient-related burnout in 6.5%. The greater proportion of high personal and work-related burnout compared with patient-related burnout suggests that burnout in this population may reflect broader occupational and individual demands rather than being restricted to patient-facing interactions.

The prevalence observed in this study is comparable with findings from Indian studies, although direct comparisons should be made cautiously because burnout instruments, thresholds, populations, and study settings differ. Dhusia et al. reported burnout in 56.66% of resident doctors in public-sector hospitals in Mumbai using the CBI. The present estimate of 50.0% for moderate-to-high burnout is therefore within a similar range, but the operational definition and setting differ. [10]

Workload-related variables showed significant bivariate associations with burnout. Residents working more than 12 hours per day had a higher proportion of high burnout (22.9%) than those working 8-12 hours (9.0%) or 6-8 hours (0.0%). Similarly, high burnout increased across categories of night-duty frequency, reaching 46.7% among residents reporting more than four-night duties per week. These findings are consistent with literature describing workload and recovery time as relevant correlates of resident well-being. However, because the present study is cross-sectional, the observed associations should not be interpreted as demonstrating that longer duty hours or night duties cause burnout. [8,9,18]

Perceived stress was common: 83.6% of participants had moderate-to-high stress. High stress was associated with burnout in bivariate analysis (X^2=42.6, p<0.001) and remained associated with high burnout after adjustment (AOR 4.86, 95% CI 2.05-11.52). Nevertheless, reverse causality is possible: burnout may itself influence how residents perceive and report stressful circumstances. The cross-sectional design cannot establish the temporal sequence.

Emotional intelligence was also associated with burnout. Participants with low emotional intelligence had a greater proportion of high burnout (25.8%) than those with moderate (9.5%) or high emotional intelligence (7.9%). In the adjusted analysis, low emotional intelligence was associated with higher odds of high burnout compared with high emotional intelligence (AOR 3.67, 95% CI 1.54-8.74). This finding is consistent with evidence examining emotional intelligence in physicians, residents, and medical students. However, the present cross-sectional data do not establish that increasing emotional intelligence would prevent burnout. Emotional intelligence and burnout may also be related through shared psychological or occupational factors, and both were assessed using self-reported instruments.[11-14]

Spiritual well-being showed a significant bivariate association with burnout (X^2=28.7, p<0.001). High spiritual well-being was accompanied by a lower proportion of high burnout (5.7%) than low spiritual well-being (26.3%). This pattern is compatible with the possibility that spiritual well-being is related to coping or

perceived meaning during demanding training. However, spiritual well-being was not included in the final parsimonious regression model. Therefore, an independent association cannot be inferred from the present adjusted analysis.

Potential confounding is important when interpreting these findings. Sleep duration and sleep quality, workload, specialty or department, residency year, marital status, and work-life balance may influence both psychosocial measures and burnout. Although some residency-related variables were assessed, not all potentially relevant constructs were measured in depth, particularly sleep quality and work-life balance. Residual confounding therefore remains possible.

The lack of statistically significant associations of age, gender, and residency year in the adjusted model should not be interpreted as evidence that these characteristics are unrelated to burnout in other settings. Differences between studies may reflect differences in residency structure, workload, specialty composition, institutional culture, sample size, and measurement methods.

Evidence on interventions for resident burnout indicates variable effects across approaches. In the present setting, institutional measures may include workload monitoring, adequate recovery opportunities, mentorship, psychological support, and resident wellness measures; however, intervention effectiveness cannot be established from this cross-sectional study. [19]

Conclusion

Half of the resident doctors in this study had moderate-to-high overall burnout, and 13.0% had high burnout. Personal burnout was the most frequently observed high-burnout domain. Perceived stress and emotional intelligence were independently associated with high burnout in the multivariable analysis, while duty hours, night duties, branch category, and spiritual well-being showed significant bivariate associations. These findings represent cross-sectional associations and do not establish causality or demonstrate that emotional intelligence or spiritual well-being directly prevents burnout. Longitudinal studies and well-designed intervention studies are needed to clarify temporal relationships and evaluate strategies for reducing burnout among resident doctors.

Limitations

The cross-sectional design prevents determination of temporal or causal relationships between burnout and psychosocial factors.

The study was conducted in a single tertiary care teaching hospital and used purposive sampling; selection bias and limited generalizability are therefore possible.

A formal response rate could not be calculated because the number of eligible residents approached was not prospectively recorded. Non-response bias therefore cannot be excluded.

Data were collected using self-administered questionnaires and may be affected by recall, reporting, and social-desirability bias.

Several potential confounders, including sleep quality and work-life balance, were not assessed comprehensively, and residual confounding may remain.

The final logistic regression model was intentionally parsimonious because only 34 participants had high burnout. Consequently, not all variables that were significant in bivariate analyses were included in the final model.

Recommendations

Institutional measures may include monitoring of duty hours and night-duty schedules, protected opportunities for rest and recovery, accessible counselling and mental health support, mentorship, and periodic assessment of resident well-being. Future studies should use longitudinal designs, probability-based or multicentre sampling where feasible, validated measures of sleep quality and work-life balance, and adequately powered multivariable models.

Author Contribution: All authors contributed to the study and manuscript preparation.

Conflict of Interest: Nil.

Funding: No external funding was received for the study.

Acknowledgement: The authors acknowledge all resident doctors who participated in the study.

Declaration of Generative AI and AI-assisted Technologies in the Writing Process: During the preparation of this work, the authors used ChatGPT (OpenAI) for language refinement and manuscript structuring. After using this tool, the author carefully reviewed, edited, and validated the content and took full responsibility for the accuracy and integrity of the publication.

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