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From Service Burden to Burnout: The Protective Role of Supervisory Support Among Internal Medicine Postgraduate Residents in Punjab Teaching Hospitals

A Cross-Sectional Survey

Running head: Service burden, supervisory support, and burnout in Punjab Internal Medicine residents

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Abstract

Background: Internal Medicine postgraduate residents in teaching hospitals carry a dual responsibility: providing frontline clinical care and engaging in structured postgraduate training. Prolonged working hours, frequent night duties, and limited supervisory support may raise burnout risk, particularly in high-volume public-sector hospitals. Local evidence from Punjab on burnout in Internal Medicine residents, viewed through the lens of service burden and supervision, remains limited.

Objective: To determine the association between service burden and burnout among Internal Medicine postgraduate residents in Punjab teaching hospitals, and to assess whether perceived supervisory support plays a protective role.

Method: A Google Forms-based cross-sectional survey was conducted among 340 Internal Medicine postgraduate residents in Punjab teaching hospitals. The questionnaire gathered demographic, training, and workload data and measured supervisory support and burnout using Likert-type items (six items for supervisory support, nine for burnout). Descriptive statistics, reliability analysis, Pearson correlation, and multivariable linear regression were performed. Weekly working hours and monthly night duties served as service burden indicators.

Results: Mean age was 30.05 (±2.52) years; 53.2% were male and 77.6% worked in government teaching hospitals. Mean weekly working hours were 78.56 (±10.89) and mean monthly night duties were 6.56 (±1.74). Mean burnout score was 3.03 (±0.84), with high burnout observed in 32.6% of residents. Mean supervisory support score was 2.90 (±0.62). Weekly working hours showed a positive correlation with burnout ($r = 0.23$, $P < .001$). Supervisory support showed a moderate-to-strong negative correlation ($r = -0.55$, $P < .001$). In adjusted regression, longer

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working hours, government hospital placement, and lower supervisory support were significant independent predictors of burnout. The service burden-by-supervisory support interaction was not statistically significant.

Conclusions: Burnout was common among Internal Medicine postgraduate residents in Punjab teaching hospitals. Longer working hours and public-sector placement were associated with higher burnout, while stronger supervisory support was consistently associated with lower burnout. Improving resident well-being requires both workload review and strengthened supervision in Internal Medicine training programmes.

INTRODUCTION

Postgraduate training in Internal Medicine is one of the most demanding phases of medical professional development. Residents provide frontline clinical care, manage acutely ill patients, attend emergency and ward duties, participate in academic sessions, and prepare for postgraduate licensing examinations. In many teaching hospitals, particularly those with high patient volumes in the public sector, residents function at the intersection of service delivery and supervised learning.

This dual role can be productive when clinical exposure is balanced by structured supervision and protected educational time. When workload becomes excessive and supervision is inconsistent, training may become a source of chronic strain rather than professional growth. Internal Medicine residents rotate through busy wards, emergency units, intensive care units (ICUs), and outpatient settings where patient volume and clinical complexity are high, leaving them particularly vulnerable.

Burnout is a work-related syndrome involving emotional exhaustion, depersonalization or cynicism, and reduced professional efficacy.[1] In residency training, burnout should not be read solely as an individual failing. It often reflects the interaction between heavy job demands and insufficient job resources.[2,3] Long working hours, frequent night duties, and the pressure to sustain

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hospital services increase physical and emotional exhaustion, whereas supportive supervision can serve as a meaningful educational and professional resource.

Service burden is a locally relevant lens through which to examine burnout in Pakistani postgraduate training. It includes prolonged weekly working hours, night duties, heavy patient-care responsibility, and limited time for academic learning or recovery. Duty-hour regulation is widely discussed internationally, yet many postgraduate training systems continue to rely heavily on resident labour to sustain hospital services.[4,5]

Supervisory support is central to high-quality postgraduate medical education. A supportive supervisor provides clinical guidance, timely advice, fair workload direction, role modelling, and emotional support during demanding clinical work.[6,7] For residents under high service pressure, supervision may be the most practical and modifiable protective resource available.

The Job Demands-Resources (JD-R) framework provides the theoretical underpinning for this study.[2,3] Service burden constitutes a job demand that may raise burnout risk, while supervisory support constitutes a job resource that may reduce it. Local evidence from Punjab teaching hospitals focusing specifically on Internal Medicine postgraduate residents is scarce. This study therefore examines burnout through the focused lens of service burden and supervisory support.

Research Question

Among Internal Medicine postgraduate residents working in Punjab teaching hospitals, is service burden associated with burnout, and does perceived supervisory support protect residents against burnout?

Objectives

1. To describe the level of service burden among Internal Medicine postgraduate residents in Punjab teaching hospitals by measuring weekly working hours and monthly night duties.
2. To determine the level of burnout using a validated burnout score derived from the study questionnaire.

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3. To assess the associations of service burden and perceived supervisory support with burnout, adjusting for relevant covariates.

METHOD

Study Design and Setting

A Google Forms-based cross-sectional analytical survey was conducted among Internal Medicine postgraduate residents working in teaching hospitals across Punjab, Pakistan. Both government (public) and private teaching hospitals were represented. The study was conducted between January–April 2026.

Participants

The study population consisted of Internal Medicine postgraduate residents, including FCPS and equivalent postgraduate trainees, currently enrolled and working in a Punjab teaching hospital during the survey period. House officers, medical officers not enrolled in postgraduate Internal Medicine training, residents from other specialties, and incomplete responses were excluded.

Sampling and Data Collection

A non-probability convenience sampling technique was used. The Google Forms link was circulated electronically among eligible postgraduate residents through professional and departmental networks. Participation was entirely voluntary. The final cleaned dataset included 340 complete responses. Reporting followed the Checklist for Reporting Results of Internet E-Surveys (CHERRIES)[10] and the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement.[11]

Measures

Burnout was measured using nine Likert-type items on a five-point scale (1 = strongly disagree to 5 = strongly agree), scored as a mean composite. Burnout was categorized as low (<2.50), moderate (2.50–3.49), and high (≥3.50). Supervisory support was measured using six Likert-type items assessing perceived clinical guidance, availability, responsiveness, fair workload direction, and emotional support from supervisors. Service burden was operationalized as mean weekly

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working hours and number of night duties per month. A composite service burden index was created by standardizing both indicators and averaging the two standardized values, then categorized into tertiles (low, moderate, high).

Ethical Considerations

Ethical approval was obtained from the Ethical Review Board, bannu medical college bannu (F.No. Punjab 11101-2026894-9; 1 January 2026). The Google Forms introduction page explained the study purpose, voluntary nature, and confidentiality of responses. No personally identifying information was collected or retained. Submission of the form served as electronic informed consent.

Statistical Analysis

Data were exported from Google Forms, cleaned, and analysed in IBM SPSS. Descriptive statistics were reported as frequencies and percentages for categorical variables and means with standard deviations (SD) for continuous variables. Cronbach alpha assessed internal consistency. Pearson correlation coefficients examined bivariate associations between service burden indicators, supervisory support, and burnout. Multivariable linear regression identified independent predictors of burnout. Covariates included age, sex, marital status, hospital sector, training year (PGY level), and current clinical rotation. An interaction term between the standardized service burden index and supervisory support score was tested to examine moderation. A P value of less than .05 was considered statistically significant.

RESULTS

Participant Characteristics

A total of 340 Internal Medicine postgraduate residents were included. Mean age was 30.05 (±2.52) years. Male residents constituted 53.2% (n = 181) and female residents 46.8% (n = 159). Most respondents were single (60.6%, n = 206). Government teaching hospitals contributed 264 respondents (77.6%) and private teaching hospitals contributed 76 (22.4%). By training level, 26.5% were in PGY-1, 33.2% in PGY-2, 20.0% in PGY-3, and 20.3% in PGY-4. The most common clinical

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rotation was the medical ward (46.2%), followed by emergency (22.1%), ICU/HDU (19.7%), and outpatient clinic (12.1%). Demographic characteristics are presented in Table 1.

Table 1

Demographic and Training Profile of Respondents (N = 340)

Variable	Category	n (%)
Sex	Male	181 (53.2%)
	Female	159 (46.8%)
Marital status	Single	206 (60.6%)
	Married	134 (39.4%)
Hospital sector	Government	264 (77.6%)
	Private	76 (22.4%)
Training level	PGY-1	90 (26.5%)
	PGY-2	113 (33.2%)
	PGY-3	68 (20.0%)
	PGY-4	69 (20.3%)
Current rotation	Medical ward	157 (46.2%)
	Emergency	75 (22.1%)
	ICU/HDU	67 (19.7%)
	OPD/Clinic	41 (12.1%)

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Service Burden, Supervisory Support, and Burnout

Mean weekly working hours were 78.56 (±10.89; range 45–105). Mean monthly night duties were 6.56 (±1.74; range 2–11). Mean supervisory support score was 2.90 (±0.62; range 1.33–4.83). Mean burnout score was 3.03 (±0.84; range 1.00–4.78). High burnout was observed in 111 residents (32.6%). Continuous service burden and burnout measures are summarized in Table 2, and burnout level distribution in Table 3.

Table 2

Service Burden, Supervisory Support, and Burnout Descriptive Statistics (N = 340)

Variable	Mean (± SD)	Minimum	Maximum
Weekly working hours	78.56 ± 10.89	45	105
Night duties per month	6.56 ± 1.74	2	11
Supervisory support score	2.90 ± 0.62	1.33	4.83
Burnout score	3.03 ± 0.84	1.00	4.78

SD = standard deviation.

Table 3

Burnout Level Distribution Among Internal Medicine Postgraduate Residents (N = 340)

Burnout Level	Criterion (Mean Score)	n	%
Low	< 2.50	94	27.6
Moderate	2.50–3.49	135	39.7
High	≥ 3.50	111	32.6

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Burnout Across Service Burden and Supervisory Support Groups

Burnout scores showed a stepwise increasing pattern across service burden tertiles and a clear decreasing pattern across supervisory support levels. Residents in the high service burden group had a mean burnout score of 3.19 (±0.78) and 38.4% with high burnout, compared to 2.86 (±0.89) and 29.7% in the low service burden group (Table 4). Among residents with high supervisory support, the mean burnout score was 2.32 (±0.77) and only 9.8% met high burnout criteria. Among those with low supervisory support, the mean burnout score was 3.63 (±0.66) and 63.1% had high burnout (Table 5). High burnout was also more prevalent among government hospital residents (35.6%) compared to private hospital residents (22.4%).

Table 4

Burnout Across Service Burden Tertile Groups

Service Burden Group	n	Mean Burnout Score (± SD)	High Burnout n (%)
Low	118	2.86 ± 0.89	35 (29.7%)
Moderate	110	3.07 ± 0.80	33 (30.0%)
High	112	3.19 ± 0.78	43 (38.4%)

SD = standard deviation.

Table 5

Burnout Across Supervisory Support Levels

Supervisory Support Level	n	Mean Burnout Score (± SD)	High Burnout n (%)
Low	84	3.63 ± 0.66	53 (63.1%)
Moderate	195	3.00 ± 0.74	52 (26.7%)
High	61	2.32 ± 0.77	6 (9.8%)

SD = standard deviation.

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Scale Reliability

Internal consistency was acceptable to excellent. Cronbach alpha was 0.838 for the supervisory support scale and 0.944 for the burnout scale.

Correlation Findings

Weekly working hours showed a small but statistically significant positive correlation with burnout ($r = 0.23$, $P < .001$). Night duties per month did not show a significant correlation with burnout ($r = 0.02$, $P = .710$). Supervisory support showed a moderate-to-strong negative correlation with burnout ($r = -0.55$, $P < .001$). The composite service burden index showed a small but significant positive correlation with burnout ($r = 0.17$, $P = .002$). Results are presented in Table 6.

Table 6

Pearson Correlation of Service Burden and Supervisory Support with Burnout Score

Variable	r	P Value
Weekly working hours	0.23	< .001
Night duties per month	0.02	.710
Supervisory support score	−0.55	< .001
Service burden index (composite)	0.17	.002

Regression Analysis

The adjusted multivariable linear regression model is presented in Table 7. Weekly working hours (standardized: B = 0.13, 95% CI [0.06, 0.21], $P < .001$), government hospital placement (B = 0.24, 95% CI [0.04, 0.43], $P = .018$), and PGY-2 training level (B = 0.20, 95% CI [0.01, 0.39], $P = .045$) were significant positive predictors of burnout. Supervisory support was the strongest negative predictor (B = −0.45, 95% CI [−0.52, −0.37], $P < .001$). Night duties per month were not a significant predictor after adjustment. The model explained approximately 37.1% of the variance in burnout ($R^2 = 0.371$). The interaction term between standardized service burden and

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supervisory support was not statistically significant, indicating that supervisory support functions as an independent protective correlate rather than a statistical moderator in this sample.

Table 7

Adjusted Multivariable Linear Regression: Predictors of Burnout Score (N = 340)

Predictor	Adjusted B	95% CI	P Value
Weekly working hours (z-score)	0.13	[0.06, 0.21]	< .001
Night duties/month (z-score)	−0.07	[−0.15, 0.02]	.121
Supervisory support score	−0.45	[−0.52, −0.37]	< .001
Government hospital sector	0.24	[0.04, 0.43]	.018
PGY-2 training level	0.20	[0.01, 0.39]	.045

CI = confidence interval; PGY = postgraduate year; R^2 = 0.371. Covariates included age, sex, marital status, hospital sector, training level, and current rotation.

DISCUSSION

This cross-sectional survey examined burnout among Internal Medicine postgraduate residents in Punjab teaching hospitals through the focused lens of service burden and supervisory support. Nearly one-third of respondents fell into the high burnout category, a finding that reflects patterns reported in systematic reviews of resident burnout internationally.[12,13]

Weekly working hours averaged nearly 79 per week. This level of workload is well above commonly recommended limits in medical education, and it reflects how deeply resident physicians are embedded in the service structure of Punjab teaching hospitals. Residents were not only learners; they were central contributors to ward, emergency, ICU, and outpatient care. This dynamic is consistent with the JD-R model, where heavy job demands deplete personal resources and contribute to the exhaustion component of burnout.[2,3]

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Weekly working hours showed a clearer association with burnout than monthly night duty frequency. This finding suggests that cumulative workload matters more than the specific pattern of night work. A resident may manage night duties tolerably when the overall weekly burden is reasonable and recovery time is available. Sustained excessive hours, by contrast, create persistent fatigue even when the count of night duties is not extreme. This distinction has practical implications for how training programmes monitor resident workload.

Government hospital placement was an independent predictor of higher burnout after adjustment. Government teaching hospitals in Punjab typically carry greater patient volumes, heavier emergency loads, and more intense service pressure. They offer rich clinical exposure, but that exposure becomes educationally costly when it is not balanced by adequate supervision, protected teaching time, and reasonable rest. The sector difference in burnout reinforces the need for sector-specific policy attention.

The strongest and most actionable finding was the inverse association between supervisory support and burnout. Residents with high perceived supervisory support had substantially lower mean burnout scores and far fewer high-burnout cases. This association held after adjustment for working hours, hospital sector, training level, and demographic variables. Supervisory support explained a larger share of variance in burnout than working hours did, suggesting it may be a more modifiable and immediately responsive lever than workload reduction alone.

These results align with evidence from national Dutch surveys showing that the learning environment, particularly supportive supervision, is inversely associated with burnout in residents.[6,7] They also align with graduate medical education literature demonstrating that clinical supervision quality is a consistent moderating resource.[9]

The moderation analysis did not confirm a statistically significant interaction between service burden and supervisory support. This means the data do not support the stronger claim that supervision directly buffers the harmful effect of heavy workload on burnout. Supervisory

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support appears to act as an independent protective correlate across the whole sample, regardless of service burden level. This distinction is scientifically important and makes the conclusion more precise and credible.

PGY-2 training level was also associated with higher burnout after adjustment. This may reflect the transition from the relatively structured PGY-1 year to greater clinical responsibility without a proportionate increase in formal support. Targeted attention to PGY-2 residents may help catch burnout risk during a vulnerable transition.

This study has several strengths. It focused specifically on Internal Medicine postgraduate residents, a group carrying a high service burden. Both government and private sector hospitals were represented. The sample size was adequate for regression modelling. Internal consistency of both scales was excellent. The study is framed around a practical, modifiable training factor.

The study also has important limitations. The cross-sectional design does not allow causal inference. Data were self-reported via Google Forms, introducing potential response bias. Response rate could not be precisely calculated given the convenience sampling approach. The burnout instrument was study-specific rather than a validated instrument such as the Maslach Burnout Inventory, so burnout scores should be interpreted as reflecting perceived burden rather than clinical diagnosis. The study was limited to Punjab teaching hospitals and may not generalise to all postgraduate training contexts in Pakistan or other low- and middle-income country settings. Unmeasured factors such as salary, sleep quality, examination stress, family responsibilities, and institutional culture may also influence burnout.

CONCLUSIONS

Burnout was common among Internal Medicine postgraduate residents in Punjab teaching hospitals, with nearly one-third meeting high-burnout criteria. Longer weekly working hours and placement in government teaching hospitals were independently associated with higher burnout. Stronger perceived supervisory support was strongly and independently associated with lower burnout, making it one of the most actionable factors in this study.

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Supervisory support did not statistically moderate the service burden–burnout relationship, but it remained a consistent independent protective correlate across the sample. These findings suggest that postgraduate Internal Medicine programmes should address burnout through both workload monitoring and formal strengthening of supervisory structures.

Practical Recommendations

1. Departmental monitoring of weekly working hours for Internal Medicine residents should be established.
2. Government teaching hospitals should prioritise structured workload review, given the higher burnout rates in this sector.
3. Supervisory support should be treated as a formal training quality indicator and assessed regularly, not only informally.
4. Scheduled supervisor-resident meetings should be introduced during each rotation.
5. PGY-2 residents may benefit from targeted support during the transition to greater clinical autonomy.
6. Protected teaching and recovery time should be incorporated during heavy clinical rotations.

DECLARATIONS

Ethics approval: Obtained from the Ethical Review Board, Bannu Medical College, Bannu (F.No. Punjab 11101-2026894-9; 1 January 2026).

Consent to participate: Electronic informed consent was obtained through the Google Forms introduction page before survey submission.

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Conflicts of interest: None declared.

Data availability: The anonymized dataset may be made available from the corresponding author upon reasonable request, subject to institutional approval.

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Author Contributions

Qismat Ullah: Conceptualization, data collection, data curation, initial drafting, and corresponding author responsibilities. Junaid Sarfraz Khan: Academic supervision, health professions education guidance, methodological review, and critical revision. Asif Ali Shah: Clinical content review, interpretation of Internal Medicine training context, and manuscript revision. Meshqat Ullah Khan: Data support, clinical coordination, and manuscript review. Muhammad Rehan Khan: Literature support, formatting assistance, and manuscript review. Syed Atif Waheed: Final review and approval of manuscript.

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