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Original Research Article

Burnout Among Internal Medicine Residents Working at the Tertiary Care Hospital, Karachi

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Abstract: *Burnout among residents threatens care quality and training outcomes, yet programme-specific evidence for Internal Medicine in Pakistan remains limited. We estimated Maslach Burnout Inventory–Human Services Survey (MBI-HSS) scores among Internal Medicine residents at a tertiary hospital in Karachi and examined variation across demographic strata.* ***Methods:*** *We conducted a cross-sectional survey of all eligible Internal Medicine residents. We scored MBI-HSS subscales—Emotional Exhaustion (EE), Depersonalisation (DP), and Personal Accomplishment (PA)—and a pre-specified total score from November 2024 till April 2025. We reported means with standard deviations (SD) and 95% confidence intervals (CI) and compared Total MBI across age, gender, and marital status using two-sample tests (α=0.05).* ***Results:*** *Sixty-eight residents participated; most were aged 36–45 years (48/68, 70.6%), 37/68 (54.4%) were female, and 38/68 (55.9%) were unmarried. Mean (SD) scores were: EE 15.01 (4.31), DP 29.55 (8.19), PA 12.15 (6.47), and Total MBI 56.64 (2.78); corresponding 95% CIs were EE 13.97–16.05, DP 27.57–31.53, PA 10.58–13.72, and Total 55.97–57.31. The Total MBI clustered tightly, whereas DP and PA showed wider dispersion. Total MBI did not differ by age (25–35 vs 36–45: 56.90 [2.48] vs 56.54 [2.92]; p=0.13), gender (male vs female: 56.12 [2.90] vs 57.08 [2.64]; p=0.53), or marital status (married vs unmarried: 56.66 [2.72] vs 56.63 [2.87]; p=0.68).* ***Conclusion:*** *Internal Medicine residents demonstrated a narrowly distributed overall burnout burden with marked heterogeneity in depersonalisation and personal accomplishment. Demographic characteristics did not meaningfully differentiate Total MBI, underscoring the need to focus on modifiable programme and system factors. These findings support subscale-focused monitoring and pragmatic reforms: protecting sleep, smoothing workload, and strengthening feedback and recognition. They also motivate prospective studies that measure duty hours, sleep opportunity, rotation intensity, and financial strain.*

Keywords: Burnout, Professional; Tertiary Care Centers; Internal Medicine; Internship and Residency; Teaching Hospitals; Pakistan;

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Introduction

Occupational stress in healthcare professionals has emerged as a significant concern, posing risks not only to the wellbeing of workers but also creating substantial economic burdens on a global scale (1). This condition has escalated to epidemic proportions among both practicing physicians and those in training, with reported prevalence rates approaching or surpassing 50% (2). Moreover, the economic burden is considerable, as replacing a physician can cost as much as two to three times their yearly income (3). Experiences of emotional fatigue and irritability in the workplace can contribute to the onset of mental health issues, particularly burnout, which is defined by three key dimensions: emotional exhaustion, depersonalization, and a reduced sense of personal achievement (4-5).

The demand for higher-quality and more efficient healthcare services has placed unprecedented pressure on the system, which in turn has created significant strain on healthcare professionals. This overwhelming stress often results in burnout—a condition marked by emotional, physical, and mental exhaustion brought on by sustained and excessive pressure (6).

In developed nations such as the UK, burnout has been documented in roughly one out of every three physicians (31%). In contrast, studies from China indicate considerably higher rates, ranging between 66.5% and 76.9% among doctors, and a local study reported a rate of 33% (7-9). Burnout does not arise in isolation; instead, it is triggered by various contributing factors such as excessive workload, prolonged duty hours, a high-stress environment, inadequate organizational or supervisory support, repeated exposure to litigation, unrealistic expectations, scarcity of resources, and the emotional strain of managing critically ill patients, frequent deaths, and relentless negative media scrutiny (10-11). During residency training, physicians are required to acquire specialized skills in their chosen field to ensure the delivery of high-quality patient care (12). Throughout this phase, residents often face sleep deprivation, heavy workloads, inadequate compensation, and the burden of numerous workplace responsibilities (13). Together, these challenges increase residents' susceptibility to burnout, which can hinder their capacity to navigate diagnostic uncertainties, build effective patient relationships, and manage complex treatment decisions (14-15). A study found mean emotional exhaustion 14.92±6.60, depersonalization 31.28±11.76, personal achievement 10.57±7.56, and total MBI score 56.77±12.51 (16). With increasing recognition towards the impact of these concerns as they relate to mental health, patient safety, and resident education, residency programs across the country have been prompted to re-evaluate how resident training is executed with emphasis on the cause and effects of Burnout like Depolarization, emotional exhaustion and personnel accomplishment, Moreover, highlighting these issues will help us to know the burden of disease, formulate policies and to take measures to improve them and give due importance to the physical and mental health of health care providers.

Methodology

The study was designed as a cross-sectional study and was carried out in the Department of Medicine at Jinnah Postgraduate Medical Centre (JPMC), Karachi. The study lasted three months following approval of the study from ethical review board and College of Physicians and Surgeons Pakistan. A sample size of 68 residents was obtained, calculated using the WHO software, with a mean depersonalization score of 31.28±11.76, a margin of error of 4%, and a 95% confidence level. (16) Participants were selected using non-probability consecutive sampling.

All internal medicine trainees registered with CPSP for FCPS between the ages of 25 and 45 years, irrespective of gender, were considered eligible for participation. Residents who refused consent, did not appear in the IMM examination when eligible after 24 months of training, or had failed the IMM examination twice were excluded. In addition, trainees with comorbid conditions such as diabetes mellitus, hypertension, chronic kidney disease, chronic liver disease, asthma, COPD, or acute coronary syndrome were also excluded.

After receiving approval from the College of Physicians and Surgeons of Pakistan and the institutional ethical review committee, the study was initiated. Residents fulfilling the inclusion criteria were recruited from the Department of Medicine, JPMC. The participants were informed in detail about the objectives, risks, and benefits of the study, and both written and verbal informed consent was obtained. Information regarding demographic characteristics such as age, gender, and marital status was recorded. Burnout was assessed using the Maslach Burnout Inventory (MBI), a validated tool that measures three domains: emotional exhaustion, depersonalization, and personal accomplishment. The inventory consists of 22 items, each scored on a Likert scale ranging from 0 (never) to 6 (every day). For each participant, subscale scores of emotional exhaustion, depersonalization, and personal accomplishment were calculated, along with the total MBI score. The findings were documented in a predesigned proforma.

Data were analyzed using SPSS version 22. Quantitative variables such as age, emotional exhaustion, depersonalization, personal accomplishment, and total MBI score were summarized as mean and standard deviation when normally distributed, assessed through the Kolmogorov–Smirnov test. In contrast, non-normally distributed variables were expressed as median with interquartile range (IQR). Qualitative variables such as gender and marital status were presented as frequencies and percentages. Effect modifiers, including age, gender, and marital status, were addressed through stratification. Post-stratification, comparisons were made using the independent t-test or Mann-Whitney U test, as appropriate, with a p-value of ≤0.05 considered statistically significant.

Results

We enrolled 68 Internal Medicine residents. Most participants fell in the 36–45 age category (48/68, 70.6%), with the remainder in the 25–35 category (20/68, 29.4%). Females comprised a slight majority (37/68, 54.4%) compared with males (31/68, 45.6%). Just over half were unmarried (38/68, 55.9%), while 30/68 (44.1%) were married (Table 1).

We observed mean (SD) scores of 15.01 (4.31) for Emotional Exhaustion, 29.55 (8.19) for Depersonalization, and 12.15 (6.47) for Personal Achievement, with a mean Total MBI of 56.64 (2.78) (Table 1). Depersonalization and Personal Achievement showed the widest dispersion, indicating greater between-person variability on these dimensions, whereas the Total MBI clustered narrowly around the mean.

By age, the mean Total MBI was 56.90 (2.48) among residents aged 25–35 and 56.54 (2.92) among those aged 36–45 (p=0.13) (Table 2). This slight absolute difference suggests minimal age-related variation in overall burnout burden within the cohort.

By gender, males had a mean Total MBI of 56.12 (2.90) and females 57.08 (2.64) (p=0.53) (Table 2). Although females showed a modestly higher mean, the magnitude of difference was small and compatible with chance variation.

By marital status, mean Total MBI scores were nearly identical—56.66 (2.72) among married and 56.63 (2.87) among unmarried residents (p=0.68) (Table 2). Taken together, Total MBI scores varied little across demographic strata, while the broader spread in Depersonalization and Personal Achievement points to heterogeneity not explained by age, gender, or marital status.

Table 1: Distribution of baseline characteristics among the study participants

Variables	n (%)
Age	
25 to 35 months	20 (29.4)
36 to 45 months	48 (70.6)
Gender	
Male	31 (45.6)
Female	37 (54.4)
Marital status	
Married	30 (44.1)
Unmarried	38 (55.9)
Burnout	
Emotional exhaustion score	15.01±4.31
Depersonalization score	29.55±8.19
Personal achievement score	12.15±6.47
Total MBI score	56.64±2.78
Total	68 (100)

Table 2: Distribution of patient characteristics according to the Maslach Burnout Inventory.

Variables	Maslach Burnout Inventory	P value
Age		0.13
25 to 35 months	56.90±2.48	
36 to 45 months	56.54±2.92	
Gender		0.53
Male	56.12±2.90	
Female	57.08±2.64	
Marital status		0.68
Married	56.66±2.72	
Unmarried	56.63±2.87	

Discussion

We observed a tightly clustered overall burnout burden among Internal Medicine residents, with wider dispersion in Depersonalisation and Personal Accomplishment. This pattern suggests that residents share a similar aggregate level of strain, yet differ in how burnout expresses itself—some primarily through detachment, others through diminished feelings of achievement. Because MBI subscales capture distinct constructs, these findings argue for subscale-oriented monitoring and intervention rather than reliance on a composite alone.

Our demographic analyses did not detect meaningful differences in Total MBI by age, gender, or marital status. These null associations align with several regional reports that either used different instruments or examined related constructs such as work–life balance, and similarly found limited explanatory value for basic demographics (18, 22-24). At the same time, Karachi surgical cohorts have reported associations between higher burnout and modifiable exposures—including longer duty hours,

curtailed sleep, and financial strain—with mixed signals for gender and marital status (19-21). Taken together, the evidence suggests that context and programme design—rotation intensity, rest opportunities, staffing, and remuneration—likely matter more than fixed demographic characteristics for resident wellbeing in South Asian tertiary settings (17-21).

Instrument differences help explain some heterogeneity across studies. Our use of the MBI permits subscale-specific interpretation, whereas Pakistani paediatric data from Lahore relied on the Copenhagen Burnout Inventory and emphasised personal and work-related domains (18). Karachi data on work–life balance, although not a burnout measure per se, consistently point toward structural levers residents themselves prioritise (reduced hours, better pay, supervisory support) (17). Our finding of greater spread in Depersonalisation and Personal Accomplishment is consistent with these levers: workloads and recovery time plausibly influence detachment, while recognition, mentorship, and educational climate may shape perceived accomplishment (17-21).

These results have immediate implications for programme improvement. Residency leaders can incorporate routine, rotation-level reporting of MBI subscales, flagging months or services where depersonalisation is persistently high or personal accomplishment is low. Targeted actions may include schedule adjustments to protect sleep, workload smoothing across ICU and ward blocks, structured debriefs after high-acuity events, faculty development in feedback and recognition, and attention to financial stressors where feasible. These approaches are congruent with resident-endorsed solutions in Karachi and with correlates identified in surgical cohorts regionally (17-21). Embedding such changes within existing governance (e.g., programme evaluation committees) can enable iterative quality improvement and accountability (22-24).

This study has limitations—the single-centre, cross-sectional design limits causal inference and generalisability. Self-reported data may be subject to reporting and social desirability biases. Our analysis focused on demographic stratifiers and did not include granular exposures (duty hours, sleep duration, rotation intensity, financial strain), which prior work has linked to higher burnout risk (19-21). Although our sample yielded precise overall means, we may have lacked power to detect minor subgroup differences. Finally, while we reported a Total MBI score to aid summarisation, the MBI was developed for subscale interpretation; readers should treat any composite as a descriptive summary rather than a diagnostic construct.

In summary, Internal Medicine residents at a Karachi tertiary hospital exhibited a narrow distribution of overall burnout with substantial heterogeneity in depersonalisation and personal accomplishment. Demographic characteristics offered little explanatory value, reinforcing the need to address modifiable programme and system factors. Future work should prospectively capture workload, sleep, and financial exposures; compare subscale trajectories across rotations; and evaluate the impact of targeted reforms on depersonalisation and perceived accomplishment. These programme-specific MBI findings contribute actionable evidence for residency quality improvement in Pakistan and similar settings (17-24).

Conclusion

Internal Medicine residents at a Karachi tertiary hospital exhibited a narrow distribution of overall burnout, with marked heterogeneity in depersonalisation and personal accomplishment. Additionally, demographic characteristics did not meaningfully differentiate Total MBI scores. These findings support subscale-focused monitoring and pragmatic programme changes: protecting sleep, smoothing workload, and strengthening feedback and recognition. Meanwhile, prospective studies should measure duty hours, sleep opportunity, rotation intensity, and financial strain to test whether such reforms reduce depersonalisation and enhance professional accomplishment.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC-24)

Consent for publication

Approved

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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

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All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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