

# INVESTIGATING BURNOUT AMONG POSTGRADUATE RESIDENTS OF DIFFERENT SPECIALTIES IN PAKISTAN: A MULTIFACETED PERSPECTIVE

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#### Abstract

Burnout leads to significant detrimental outcomes on both healthcare professionals and patient care, including increased medical errors, reduced job satisfaction and higher rates of depression and substance use. This cross-sectional study assesses the prevalence and determinants of burnout among postgraduate residents across Pakistan's private and public hospitals. Using the Burnout Assessment Tool (BAT), 335 residents (58.2% male, 41.8% female, mean age 27.8±5.2 years) were evaluated. Results revealed 32.2% exhibited to have very high risk of burnout, 30.1% were at risk, and 37.6% showed no signs of burnout. Public sector hospitals showed significantly higher burnout rates compared to private institutions. Specialty-specific analysis indicated that internal medicine residents were most affected, followed by surgery, while gynecology, ENT, and psychiatry residents also showed elevated risk. Key determinants of burnout included excessive workload (OR 1.92), poor work-life balance (OR 1.82), inadequate supervisor support (OR 3.41), and lack of colleague support (OR 4.41). Financial instability and insufficient health benefits further exacerbated burnout risk. Residents identified workload management, fair compensation, and institutional support as critical interventions to mitigate burnout. These findings underscore the urgent need for systemic reforms in medical training programs, including structured mentorship, reasonable duty-hour regulations, and enhanced well-being initiatives. Addressing burnout is essential not only for resident health but also for sustaining high-quality patient care in Pakistan's healthcare system.

## INTRODUCTION

Burnout represents a critical occupational health concern with significant implications for both individual wellbeing and healthcare system performance. The World Health Organization (2019) formally recognized burnout in the ICD-11 as an occupational phenomenon characterized by energy depletion, increased mental distance from one's profession, and reduced professional efficacy resulting from unmanaged chronic workplace This conceptualization aligns with stress(1). Maslach's seminal framework that defines burnout through three dimensions: emotional exhaustion, depersonalization, and diminished personal accomplishment(2). Healthcare professionals particularly post-graduate residents face an elevated risk of burnout due to inherent occupational stressors including extended work hours, high-acuity patient care, emotional demands, and organizational constraints.

Burnout among postgraduate residents lead to series of detrimental outcome such as poor patient-care, medical errors, reduced patient satisfaction, physician attrition, compromised decision making, deterioration in professional relationships, increased rates of depression and anxiety, substance use, and overall decline in the quality of healthcare delivery(3-8). The prevalence of burnout among medical professionals globally has reached concerning levels, with studies reporting rates between 30-70% depending on specialty, career stage, and geographical location(9). Postgraduate medical residents represent a particularly vulnerable population due to their transitional status between student and independent practitioner. Furthermore, postgraduate residents in Pakistan, also undergo rigorous training across various medical specialties which may impact their overall health and wellbeing(10). Burnout frequently persists beyond medical school and correlates with serious psychological sequelae including major depression and suicidal ideation(11). These findings emphasize the importance of identifying burnout during formative training years when interventions may have the greatest preventive impact.

In Pakistan's healthcare landscape, postgraduate medical residents face unique challenges that



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potentially exacerbate their vulnerability to burnout. These include resource limitations within an overburdened healthcare system, exceptionally high patient-to-provider ratios, hierarchical training structures, and cultural expectations around professional dedication that often subordinate personal wellbeing(12). Furthermore, the nature of their work and the specific demands of different specialties may contribute to varying levels of burnout(13). While several studies have documented burnout among Pakistani healthcare workers broadly, research specifically examining postgraduate residents remains sparse. This represents a significant knowledge gap given residents' critical role in healthcare delivery and their status as the next generation of medical doctors. Given its potential impact on both healthcare quality and the well-being of medical professionals, further research on burnout among postgraduate residents in Pakistan is both timely and necessary.

Existing studies in Pakistan that are often limited to single institutions or specific specialties have highlighted the high prevalence of burnout among postgraduate residents(14-16). For instance, one study found that residents in surgical specialties reported higher levels of burnout compared to those in non-surgical or medical specialties(17). Another study indicated that residents with access to adequate resources and support networks experienced lower levels of burnout, emphasizing the critical role of work-life balance and institutional support in mitigating burnout(18). However, these findings emerge from limited single-center studies with small sample sizes, highlighting the need for more comprehensive, multi-center research across diverse training environments and specialties. To gain a comprehensive understanding of the extent and underlying causes of burnout among postgraduate residents, further research across a broader range of medical disciplines is necessary.

The present study addresses these knowledge gaps through a multi-institutional investigation of burnout among postgraduate medical residents across Pakistan. Using the validated Burnout Assessment Tool (BAT-23), this research examines burnout prevalence while evaluating key



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determinants including workload characteristics, institutional factors, social support networks, and economic considerations. By comparing burnout patterns between public and private healthcare institutions and across medical specialties, this study aims to identify context-specific risk and protective factors. The findings will provide an evidence base to inform targeted interventions at individual, institutional, and policy levels, with the ultimate goal of enhancing resident wellbeing and, by extension, improving healthcare delivery and patient outcomes. The present study will aim to:

(1) assess the prevalence of burnout among postgraduate medical residents

(2) evaluate the determinants of burnout in medical residents

(3) and to assess the frequency of burnout in private versus public sector hospitals of Pakistan.

### METHODOLOGY:

#### Study Design

This cross-sectional study was conducted in two stages across multiple healthcare institutions in Pakistan. In the first phase data was collected through self-administered questionnaire through convenience sampling from both public sector facilities (Pakistan Institute of Medical Sciences, Islamabad; Combined Military Hospital, Rawalpindi; PAF Hospital, Islamabad) and a private sector hospital (Madinah Teaching Hospital Faisalabad). In the second stage data was collected through online questionnaire employing voluntary sampling from post-graduate residents working at various hospitals across Pakistan. This diverse sampling was implemented to achieve а comprehensive understanding of the burnout levels among postgraduate medical residents across various subspecialties. Data was collected between November 2024 and March 2025.

#### Participants

Based on a pilot study conducted at PAF Hospital that indicated a 36.95% to be at very high risk of burnout, we calculated the required minimum sample size of 181 participants using the formula for finite populations with a 95% confidence level and 5% margin of error. To enhance statistical power and account for potential non-responses, we

expanded our recruitment to achieve a final sample of 335 participants. The distribution of participants reflected the healthcare landscape in Pakistan, with 276 (82.4%) from public sector hospitals and 59 (17.6%) from private sector hospitals. This proportional representation allows for meaningful comparison between the two sectors while acknowledging the predominance of public healthcare institutions in the country's medical education system.

We employed a mixed, non-probability sampling approach, utilizing convenience sampling in the first stage and voluntary response sampling in the second to recruit participants. Eligible participants included medical residents currently enrolled in postgraduate training programs at the selected hospitals. Exclusion criteria consisted of residents who had completed their training or those who had left their programs before completion. The use of non-probability sampling allowed inclusion of participants from varied institutional settings, specialties, programmes and levels of postgraduate training

#### Survey Instruments

Post graduate trainees working as residents in private and public were requested to fill a questionnaire consisting of three sections. Section one collected demographic information including age, gender, ethnicity, marital status, training program, stipend range, call frequency and duration, and perceived supervisor support.

Section two assessed determinants of burnout previously identified in the literature. These included interpersonal factors (colleague support, family understanding), career-related concerns (financial stability, future career prospects, job security), and organizational factors (workload, interpersonal demands, resource availability, and specialty-specific challenges). These determinants were measured using a 5-point Likert scale ranging from 'strongly disagree' to 'strongly agree'.

Section three incorporated the validated Burnout Assessment Tool (BAT-23), which has demonstrated strong psychometric properties across different cultural contexts, with Cronbach's alpha values ranging from 0.89-0.96 in previous validation studies(19). The BAT-23 evaluates burnout through three core dimensions: Emotional Exhaustion -



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feelings of being emotionally depleted by work demands; Mental Distance - psychological detachment from work and reduced empathy toward patients; and Cognitive Impairment - diminished ability to concentrate and process complex information. The tool classifies respondents into three categories: 'no burnout,' 'at risk of burnout,' and 'high risk of burnout.'

To ensure a more accurate and contemporary assessment of burnout, this study employs the Burnout Assessment Tool (BAT) instead of the Maslach Burnout Inventory (MBI), which has been criticized for its age, conceptual limitations, and primary focus on research rather than practical application(20,21). The BAT offers a more comprehensive and updated evaluation of burnout symptoms. Specifically, the BAT-23 was chosen for its robust assessment of multiple burnout dimensions and its validation among healthcare professionals in diverse cultural contexts(19).

## **Ethical Considerations**

Ethical approval was taken prior to data collection form ethical Review Committee of all included institutes. After getting ethical approval, an online survey link was distributed to postgraduate residents through social media platforms and organizational networks. Each survey form had an option for respondents to remain anonymous, and anonymity was upheld throughout the process. Informed consent statement indicating that participants are completing the survey voluntarily and without any external incentives or coercion was taken.

## Statistical Analysis

Data was entered and analyzed using SPSS Version 23.0. Quantitative variables were summarized as means and standard deviations (SD), while qualitative variables were presented as frequencies and percentages. The chi-square test was employed to assess the significance of differences between independent categorical variables. The t-test was used to evaluate mean differences between two independent samples. A p-value of 0.05 or less was considered statistically significant. To assess the risk of burnout odds ratio test was used, keeping  $\geq 1.0$  value as positive risk of outcome.

## **RESULTS:**

A total of 335 respondents participated in the study, with a mean age of 27.8  $\pm$  5.2 years. The sample consisted of 195 (58.2%) males and 140 (41.8%) females, with 170 (50.7%) being married and 140 (41.8%) singles. The majority of participants (276, 82.4%) were from public sector hospitals, while 59 (17.6%) were from private hospitals. Second-year residents represented the largest group (108, 32.2%), followed by first-year residents (86, 25.7%).

Based on the BAT assessment, 126 participants (37.6%) showed no signs of burnout, while 101 (30.1%) were identified as being at risk of burnout, and 108 (32.2%) reported burnout symptoms.

When analyzing demographic factors associated with burnout, no significant differences were found for age categories (p=0.826), gender (p=0.373), or marital status (p=0.137). However, ethnicity showed significant association with burnout (p=0.049), with Punjabi participants reporting higher burnout rates. Year of residency, program type, call frequency, night duties, and weekly duty hours did not show statistically significant associations with burnout (p>0.05). Sub categorization of public versus private sector hospitals residents reporting burnout symptoms indicated higher frequency of risk and burnout in public sector residents. Assessment of determinants of burnout reported higher risk of burnout inpatients with poor work life balance (OR 1.82), increased expectation of excessive workload (OR1.92), poor family support (OR 1.33), Compromised supervisor support (3.41), poor colleague support (OR 4.41) and, underappreciated working environment (OR 1.82) while poor health benefits are supposed to increase risk of burnout (OR 1.99) lesser optimism of future, weak spiritual connection and weak financial conditions are not positively associated with burnout state. (Table 01)

 Table 01: Significant associations of BAT categories with variables

Variables		Mean (St dev)	Sig	OR	CI 95%
Work-life balance	No Burnout	$1.09 \pm 0.88$	<0.0005	0.04	0.05-0.99



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	At risk	2.19 ± 0.73		0.38	0.01-1.07
	Very high risk	2.5 ± 0.50		1.82	0.88-2.41
	No Burnout	0.9 ± 0.52		0.39	0.061-1.21
Supervisor support	At risk	2.7 ± 1.22	<0.0005	0.64	1.09-2.11
	Very high risk	3.2 ± 1.16		3.41	2.18-5.99
	No Burnout	1.99 ± 0.81		0.08	0.01-0.61
Colleagues support	At risk	2.19 ± 0.34	0.001	0.39	0.09-0.73
	Very high risk	3.4 ± 0.92		4.41	2.1-9.22
	No Burnout	1.99 ± 0.52		0.93	0.31-2.17
Being appreciated	At risk	$2.10 \pm 0.73$	<0.0005	0.33	0.09-0.88
	Very high risk	3.0 ± 1.10		1.82	1.08-3.41
	No Burnout	1.22 ± 0.09		0.06	0.01-0.57
Optimism about	At risk	$1.9 \pm 0.23$	0.013	0.17	0.09-0.64
Tuture III I akistan	Very high risk	2.9 ± 1.25	0.015	0.25	0.01-0.88
	No Burnout	$2.1 \pm 0.77$		0.591	0.26-10.48
Financially Stability	At risk	1.99 ± 0.73	0.026	0.379	0.371-13.8
	Very high risk	2.2 ± 1.15		0.955	0.18-602
II 1.1.1 ().	No Burnout	$1.9 \pm 0.87$		0.148	0.08-1.44
Health-benefits	At risk	3.12 ± 0.81	<0.0005	1.995	0.19-5.29
from nospital	Very high risk	2.6 ± 1.35		0.973	0.23-4.55
	No Burnout	2.49 ± 1.13		0.025	0.19-4.06
Spiritual/ religious	At risk	2.11 ± 0.72	0.057	0.22	0.160-1.54
	Very high risk	3.7 ± 1.03		0.87	0.131-0.872

Departmental differences with burnout risk and burnout are reported in Figure 01, indicating highest frequency of burnout in medicine department residents followed by surgery department residents. While risk of burnout was reported in gynecology residents, ENT residents and psychiatry residents respectively. (Fig 01)







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Open-ended questions were asked to understand the factors that contributed to burnout(figure 2).

Participants identified multiple sources of burnout spanning interpersonal, workload, and organizational domains. Excessive workload emerged as the primary

factor, causing both physical and emotional exhaustion. Taking on responsibilities beyond standard expectations intensified feelings of being overwhelmed. Financial insecurity due to inadequate compensation exacerbated feelings of being undervalued and contributed to emotional fatigue.

Extended working hours significantly diminished overall wellbeing while causing emotional and

physical exhaustion. Frequent on-call duties resulted in chronic stress, heightened anxiety, and sleep deprivation. Night shifts disrupted work-life balance, sleep patterns, and cognitive functioning. Toxic workplace dynamics characterized by office politics and strained interpersonal relationships elevated stress levels. Self-doubt regarding professional decisions fostered feelings of resentment and isolation.

The challenge of balancing academic requirements with clinical responsibilities created overwhelming pressure. Unequal distribution of tasks among team members generated frustration and exhaustion.



question)

Participants proposed several key interventions to address burnout among medical residents, emphasizing improvements in resource allocation, compensation, institutional support, and work-life balance (figure 3). A substantial number of participants (n=32) highlighted the critical need for adequate stipends to alleviate financial stress-a significant contributor to burnout. Many (n=21) recommended increasing resident numbers to distribute workload and reduce individual strain. Enhancing support staff (n=20) was suggested to decrease non-clinical responsibilities, allowing residents to focus more on patient care.

Limiting call shifts to 12-hour durations (n=19) was frequently proposed to prevent fatigue and ensure sufficient recovery time. Additional recommendations included implementing fair work allocation systems (n=9), improving work-life balance (n=8), and providing post-call off days (n=5). Several participants emphasized the importance of creating a respectful work environment (n=4) and increasing recognition of human needs (n=3). Less frequently mentioned but still notable suggestions included more flexible leave options (n=3), balanced scheduling (n=2), implementation of a 40-hour workweek (n=2), and expanded surgical practice opportunities (n=1) to enhance job satisfaction.



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#### question)

Among the secondary symptoms reported among participants, palpitations emerged to be the only symptom highly prevalent among residents with high burnout scores (Fig 05)

Risk estimation indicated young age residents (OR 2.17, 0.32-14.5), lower stipend (OR 4.34, 0.06-29.7), poor work life balance (OR1.6, 0.17-3.61), poor

colleague	support	(OR	3.25,	1.09-6.21)	) and
supervisor	support (	(OR 1.	82, 0.9	9-2.34) inc	cluding
poor finan	icial stabil	ity (OR	<b>x</b> 4.91, 1	2.34-8.67),	health
benefits (C	DR 2.83, 1	.91-5.3	4) and s	spiritual lin	ık (OR
1.51, 0.72	-3.21) wer	e assoc	iated wi	ith higher	risk of
burnout. (	Table 02)			0	

Table 02: Risk es	timation of burr	nout in determi	nants.

Variable	Mean ± st.dev	St. error mean	OR	95% CI		t	df	P.
				Lower	Upper			value
Age	1.7 ± 0.7	.06160	2.17	.32	14.50	13.05	208	.000
Stipend	3.5 ± 0.09	.09873	4.34	.06	29.71	-10.52	207	.000
Work life	$2.2 \pm 0.06$	.08104	1.69	.17	3.61	2.89	208	.004
Colleagues	$3.2 \pm 0.07$	.08368	3.25	1.09	6.21	-8.39	207	.000
Supervisor	$2.9 \pm 0.08$	.09379	1.82	.99	2.34	-4.74	206	.000
Financial stability	$1.9 \pm 0.07$	.08753	4.91	2.34	8.67	5.99	207	.000
Health benefits	$2.2 \pm 0.08$	.09580	2.83	1.91	5.34	2.80	208	.006
Spiritual link	3.6 ± 0.07	.07548	1.51	.72	3.21	-14.64	208	.000

## DISCUSSION:

This study provides a comprehensive assessment of burnout among postgraduate medical residents across different specialties and healthcare sectors in Pakistan. Our findings revealed that 32.2% of residents exhibited burnout symptoms, with an additional 30.1% at risk for developing burnout, indicating a substantial occupational health concern in this population. Several key demographics, institutional, and psychosocial factors were identified as significant determinants of burnout, offering important insights for targeted interventions.



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Our analysis of demographic characteristics revealed that marital status and ethnicity significantly influenced burnout prevalence, while age and gender did not show statistically significant associations. Married residents reported higher burnout rates (p=0.137), aligning with previous studies, which attributed this phenomenon to the competing demands of professional responsibilities and family life(22). This suggests that married residents may benefit from additional support systems that address work-family balance concerns.

Residents of Punjabi ethnicity reported higher levels of burnout than residents of other ethnic groups, suggesting cultural factors may influence burnout risk. This finding was unexpected, as Punjabi residents represent the majority ethnic group in Punjab province. Several explanations might account for this disparity. First, cultural expectations within Punjabi communities may place additional pressure on medical professionals to demonstrate high achievement and financial success. Second, Punjabi residents might be disproportionately represented in high-stress medical specialties or busier hospital settings within our sample. Third, there may be cultural differences in how burnout is recognized and reported among different ethnic groups. While our study identified this correlation, the specific mechanisms behind it were not thoroughly examined and merit further research. Studies have highlighted how cultural factors and community expectations can influence burnout rates among healthcare professionals, though more research is needed to understand the specific dynamics within Pakistan's medical community(23).

## Public Versus Private Sector

A striking finding of our study was the marked difference in burnout prevalence between public and private healthcare sectors. Residents in public hospitals demonstrated significantly higher burnout rates, consistent with previous research(24,25). This disparity likely stems from systemic challenges prevalent among the public healthcare system in Pakistan, including higher patient volumes, greater case complexity, resource constraints, and inadequate staffing. Public sector residents often face demanding expectations without commensurate support structures, creating conditions conducive to burnout development.

In contrast, private sector residents typically benefit from better resource allocation, more manageable patient loads, and potentially higher compensational factors that may serve as buffers against burnout. However, our findings suggest that institutional culture and supervisory quality significantly moderate burnout risk across both sectors, highlighting the importance of organizational climate beyond mere resource availability. Healthcare administrators should recognize that addressing burnout requires attention to both structural resources and psychosocial aspects of the work environment.

### Workload Factors and Burnout

The findings further demonstrated a strong association between workload characteristics and burnout, particularly regarding call frequency, night duty requirements, and extended work hours. Residents working more than 60 hours weekly showed significantly higher burnout rates, corroborating findings by Shanafelt et al (2022) that excessive work hours represent a critical determinant of professional burnout(26). Similarly, frequent oncall responsibilities and night shifts were associated with increased burnout risk (OR 1.92, 95% CI 1.4-4.99), consistent with previous research stating that residents were more likely to experience burnout symptoms if they were expected to work excessive hours or frequently worked night shifts(27,28).

These findings emphasize the need for more stringent work-hour regulations in Pakistani residency programs. While the implementation of duty-hour restrictions has been contentious in medical education globally, our results suggest that reasonable limits on consecutive work hours and adequate recovery periods between shifts could substantially mitigate burnout risk without compromising educational quality or patient care continuity.

## Psychosocial Determinants of Burnout

Our study identified several psychosocial factors strongly associated with burnout risk. Poor work-life balance emerged as a significant predictor (OR 1.82, 95% CI 0.88-2.41), supporting Shanafelt et al.'s



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(2020) findings on the protective effect of maintaining personal pursuits and relationships outside of medicine. The quality of interpersonal support systems—particularly supervisor support (OR 3.41, 95% CI 2.18-5.99) and colleague support (OR 4.41, 95% CI 2.1-9.22)—showed the strongest associations with burnout risk. This aligns with Laird et al.'s (2024) research emphasizing that constructive mentorship and a supportive environment creates psychological safety and enhance professional fulfillment(29).

Financial concerns also emerged as significant burnout predictors, with inadequate stipends and limited health benefits associated with increased burnout risk (OR 2.83, 95% CI 1.91-5.34). These results are in line with numerous studies which discovered that burnout rates were higher among residents in financially precarious situations, especially those in programs with smaller stipends(30,31). Similarly, by attending to residents' physical and mental health needs, health benefits were found to be a factor that could lessen the strain of burnout.

An intriguing but less studied aspect is the connection between spiritual beliefs and burnout. An unexpected finding was the potential protective role of spiritual well-being, which showed an inverse relationship with burnout symptoms, though with modest statistical significance. This relationship has been previously documented in studies, who found that religious or spiritual practices may enhance resilience in high-stress occupations(32,33). While our study found relatively low frequencies of residents reporting strong spiritual connections, this dimension warrants further exploration as a potential resource for burnout mitigation.

## Specialty-Specific Burnout Patterns

Our analysis revealed significant variation in burnout prevalence across medical specialties. Internal medicine residents demonstrated the highest burnout rates, followed by surgical residents. This departmental variance is in line with earlier studies that indicate the prevalence of burnout might vary greatly based on the specialty. Specialties like internal medicine and surgery have regularly reported greater rates of burnout, as indicated in previous studies(34– 37). This is probably because of the demanding workloads, large patient volumes, and the emotional toll of the work. The researchers noted that in highstress professions like medicine and surgery, burnout is largely caused by lengthy work hours, emotional depletion, and a lack of autonomy.

We also found that psychiatry residents exhibited elevated risk of burnout. This might reflect challenges in psychiatric training, including stigma surrounding mental health, limited resources for psychiatric care, and the emotional burden of treating severely underserved populations.

## Secondary Symptoms of Burnout

A notable finding of this study was the high prevalence of palpitations among Pakistani medical residents experiencing burnout, surpassing more commonly expected emotional symptoms such as worry, anxiety, and sleep disturbances. This highlights the significant somatic burden of burnout, suggesting that for many residents, psychological distress may manifest as physical symptoms. These findings are consistent with somatization theory, which posits that emotional distress is often expressed through bodily sensations. In the highpressure environment of medical training, where mental health stigma and institutional norms may discourage open discussion of emotional strain, residents might be more inclined to report physical complaints. Prior research supports this, showing that in South Asian contexts, including Pakistan, psychosomatic symptoms are often a more socially acceptable way to express psychological distress(38,39). Palpitations, therefore, may serve as a culturally influenced and early physiological marker of burnout, emphasizing the need for holistic and culturally sensitive screening approaches that address both physical and emotional dimensions of resident well-being.

## Limitations and Future Directions

Several limitations warrant consideration when interpreting our findings. First, the cross-sectional design precludes causal inferences about the relationships between identified factors and burnout. Second, while our sample size was adequate, the representation of residents from private sector hospitals (17.6%) was disproportionately smaller than those from public institutions (82.4%), potentially limiting the generalizability of comparative analyses. Third, self-reported data may be subject to response bias, particularly regarding sensitive topics like burnout symptoms and workplace satisfaction.

Future research should address these limitations through longitudinal designs tracking burnout trajectories throughout residency training. A mixed methods approach incorporating qualitative interviews could provide deeper insights into residents' lived experiences. Additionally, intervention studies testing targeted burnout prevention strategies such as work-hour modifications, enhanced mentorship programs, or financial support mechanisms would help translate our findings into actionable improvements for resident well-being.

## Implications for Practice and Policy

Our findings carry meaningful implications for both medical education and healthcare administration in Pakistan. Firstly, residency programs should incorporate regular screening for burnout and ensure that mental health support is readily accessible to all trainees. There's also a pressing need to revisit workhour policies, making sure residents are given adequate rest and manageable call schedules. Creating a culture of supportive supervision and strong mentorship is equally important, as it can significantly ease the emotional burden of training. In addition, financial support such as fair stipends and comprehensive health benefits should be standardized across all training programs to reduce stress and promote well-being.

At the policy level, the results highlight the urgent need for increased investment in public healthcare institutions, especially to tackle the systemic issues driving higher burnout rates in these settings. Regulatory bodies that oversee medical education must also take active steps to enforce standards for resident well-being, treating it as an essential component of clinical training.

## CONCLUSION:

This study offers a comprehensive exploration of the multifaceted factors contributing to burnout among postgraduate medical residents in Pakistan, highlighting significant variations across departments,



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healthcare sectors, and individual demographic and institutional contexts. Burnout was found to be shaped by a complex interplay of personal characteristics, workplace conditions, and broader systemic issues ranging from inadequate supervisor and peer support to excessive workloads, insufficient financial compensation, and lack of health benefits.

These findings highlight the urgent need for a holistic and multi-level approach to address resident burnout. Interventions should include institutional reforms to ensure fair workload distribution, improved mentorship structures, and the provision of mental health and financial support systems. Additionally, sector-specific strategies are essential, particularly in public healthcare settings where burnout prevalence is highest. Notably, the association between burnout and factors such as ethnicity and spiritual well-being also calls for culturally sensitive approaches in both assessment and intervention.

Given the profound impact of burnout on both resident well-being and patient care, healthcare organizations and training institutions must prioritize resident support as a central component of medical education and service delivery. Future research should focus on longitudinal assessments and the implementation of targeted interventions, particularly those that improve support networks, promote work-life balance, and address structural inequities in training environments

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