

Original Article

Burnout Prevalence Among Basic Sciences Faculty At A Private Medical College In Sialkot: A Cross-Sectional Survey

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Contributions:

WK SZ SR AI - Conception, Design
 WK SZ SJ SR AI FM - Acquisition, Analysis, Interpretation
 WK SR - Drafting
 WK SZ SJ SR AI FM - Critical Review

All authors approved the final version to be published & agreed to be accountable for all aspects of the work.

Conflicts of Interest: None

Financial Support: None to report

Potential Competing Interests:

None to report

Disclaimer: This study has not been published or submitted elsewhere for publication.

AI Disclosure: Artificial intelligence tools (KIMI, Moonshot AI, 2026) were used solely for language refinement and formatting. No AI tools were used for data analysis, interpretation, or result generation. All scientific content, analyses, and conclusions were developed and verified by the authors, who took full responsibility for the integrity and accuracy of the work.

Data Availability Statement: The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Institutional Review Board

Approval

MRC/IRB/24050

03-06-2024

Sialkot Medical College

Review began 09/08/2025

Review ended 23/06/2026

Published 30/06/2026

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How to cite this article: Khalid W, Zaheer S, Javaid S, Rasool S, Imtiaz A, Mubashar F. Burnout Prevalence Among Basic Sciences Faculty At A Private Medical College In Sialkot: A Cross-Sectional Survey. JRM. 2026 Jun. 30;(30(2)).

<https://doi.org/10.37939/jrm.v30i2.2993>

Abstract

Objective: Extreme exhaustion, inefficiency, and disengagement are hallmarks of burnout, a serious occupational hazard in academia. To determine the prevalence of burnout and its association with sociodemographic factors among basic sciences faculty at a private medical college in Sialkot, Pakistan.

Methods: A cross-sectional survey was conducted from July to October 2024 using a census-based approach. All 56 full-time basic science faculty members were invited to participate in the study, and 48 participated (response rate 85.7%). Burnout was assessed using the Copenhagen Burnout Inventory (CBI), with scores >50 indicating high burnout. The term "client" was modified to "students" in the client-related subscale, following established precedent. Sociodemographic factors, including gender, designation, teaching experience, marital status, number of children, and income, were analysed. Binary logistic regression was performed to calculate odds ratios (OR) with 95% confidence intervals (CI).

Results: The mean age of the participants was 34.23±9.69 years. High burnout was observed in 52.1% (n=25) of the faculty. The mean CBI subscale scores were as follows: personal burnout, 58.16±23.62; work-related burnout, 50.67±27.62; and student-related burnout, 51.74±32.05. Significant associations were found between high burnout and male gender (OR=3.33, 95% CI: 1.02-10.89, p=0.046), less than 5 years teaching experience (OR=8.00, 95% CI: 1.86-34.38, p=0.005), unmarried status (OR=17.50 for no children vs. two or more, 95% CI: 2.99-102.60, p=0.002), and monthly income <200,000 PKR (OR=7.39, 95% CI: 1.39-39.27, p=0.019). Married faculty members demonstrated protective effects (OR=0.08, 95% CI: 0.02-0.36, p=0.001). Senior faculty showed no high burnout compared to 55.6% of junior and 66.7% of mid-level faculty (p=0.019).

Conclusion: Over half of the basic sciences faculty experienced high burnout, with male gender, early career stage, limited teaching experience, unmarried status, childlessness, and lower income identified as significant risk factors. These findings highlight vulnerable populations and underscore the urgent need for targeted institutional interventions to support faculty well-being and ensure quality medical education.

Keywords: Burnout, Professional; Faculty, Medical; Cross-Sectional Studies; Schools, Medical; Pakistan; Stress, Psychological; Prevalence; Risk Factors; Surveys and Questionnaires.

Introduction

Burnout is becoming more widely acknowledged as a serious occupational hazard in academics.¹ A psychological syndrome known as burnout develops as a protracted reaction to ongoing interpersonal pressures at work. This response's three main components are extreme fatigue, a sense of inefficiency and lack of accomplishment, and sentiments of cynicism and disengagement from work.² According to study, the prevalence of general burnout ranges from 2 to 76%.³ The literature repeatedly shows that burnout is more common in human service professions, such as health care workers, teachers, social workers, and police, even though it is not specific to any one occupation. Teaching was shown to have the highest degree of emotional weariness in a study

evaluating the prevalence of burnout across five distinct occupational sectors in the US and Holland.^{4,5} Burnout has spread outside the healthcare industry and is now recognised to impact everyone, from homemakers to busy professionals, not only physicians and nurses. To our knowledge, few researchers have tried a thorough investigation of the phenomena of burnout among medical teachers, particularly at private medical colleges, despite the fact that there is currently a substantial published literature on the subject, including from Pakistan.^{6,7} Basic sciences include the subjects Physiology, anatomy, biochemistry, pharmacology, pathology, behavioural sciences, community medicine, and forensic medicine. Medical college basic science faculty deal with particular stressors, such as juggling clinical or administrative responsibilities, publishing pressure, and a large teaching load.⁸ Compared to student or resident burnout, teacher burnout is still little understood, despite their critical role in educating future doctors.⁹ By investigating burnout prevalence and associated factors among basic sciences faculty at a private medical college, this study fills this knowledge gap. The results are intended to guide institutional actions that will improve faculty retention and well-being.

Materials And Methods

A cross-sectional study was conducted between July and October 2024 at a private medical college in Sialkot, Pakistan. This study was conducted in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines. The study was approved by the Institutional Review Board (reference No: MRC/IRB/24050) of the same institution where this study was conducted. A census approach was employed, inviting all 56 full-time basic science faculty members. Of these, 48 participated (response rate: 85.7%). Non-respondents comprised five faculty members who were absent during the data collection period and three who refused to participate. Participants provided electronic informed consent. The inclusion criteria were full-time employment in basic science departments (Physiology, Anatomy, Biochemistry, Pharmacology, Pathology, Behavioral Sciences, Community Medicine, and Forensic Medicine). The exclusion criteria were part-time faculty and those on leave during the study period. Junior faculty included Demonstrators, Senior Demonstrators, and Residents; Mid faculty included Assistant and Associate Professors; Senior faculty included full Professors.

Data was collected using a questionnaire comprising two sections. The first portion asked about sociodemographic traits such as age, marital status, gender, and experience level. The second segment contained 19 items from the Copenhagen Burnout Inventory (CBI), which assessed the degree of burnout. These items were broken down into three categories: personal (6 items), work-related (7 items), and client-related (6 items).¹⁰ The questionnaire was deemed incomplete and disregarded for the final analysis if any CBI subsection received less than 50% of the responses. To assess students as a source of burnout, the word "client" was changed to "students" in all questions in the client-related section. The term 'client' in the CBI client-related subscale was replaced with 'students' following the approach of Al-Jehani et al. (2020), who adapted the CBI for medical students by substituting 'client' with 'teachers'.⁽¹¹⁾ This modification is justified as teachers interact with students in a comparable manner to how service providers interact with clients, involving interpersonal demands and emotional labour. The second part of the questionnaire was used to gauge the degree of burnout. Scores were from 0 to 100, respectively, and the responses were based on a five-point Likert-type scale that ranged from "never" to "always" or "a very low degree" to "a very high degree". The average score of each scale's components was used to determine the burnout score, and the average score of the three scales was used to determine the overall burnout score. High burnout was defined as scores greater than 50, and low burnout was defined as the remaining scores.¹¹ The questionnaire was found to have excellent test-retest reliability (>90%) and internal consistency (Cronbach's alpha: 0.96).

Data were analysed using SPSS v26. Descriptive statistics were used to summarise the participant characteristics. The chi-square test was used to compare the burnout levels across groups. The burnout level, coded as high and low, was used as a dependent variable, and significant sociodemographic variables on Chi-square were entered as predictor variables. The significance level was set at $p < 0.05$.

Results

A total of 48 basic science faculty members from a medical college in Pakistan participated in this cross-sectional study. The demographic and professional characteristics of the study population are presented in Table 1.

The mean age of the faculty was 34.23 years (SD = 9.687), with ages ranging from 26 to 66.

Burnout Levels (Copenhagen Burnout Inventory - CBI):

Overall, 25 (52.1%) of the faculty members experienced high burnout, while 23 (47.9%) experienced low burnout based on the Copenhagen Burnout Inventory (CBI) scores

Table 1: Socio-demographic and Professional Characteristics of Basic Sciences Faculty (N=48)

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	24	50
	Female	24	50
Designation	Junior Faculty (Demonstrator, Sr. Demonstrator, Resident)	27	56.3
	Mid Faculty (Assistant Professor, Associate Professor)	15	31.3
	Senior Faculty (Professors)	6	12.5
Teaching Experience	Less than 5 years	33	68.8
	More than 5 years	15	31.3
Relationship Status	Married	29	60.4
	Unmarried	19	39.6
Number of Children	None	27	56.3
	One	9	18.8
	Two or more	12	25
Living Arrangement	Within city	42	87.5
	Out of city	6	12.5
Monthly Income	Less than 200,000 PKR	37	77.1
	More than 200,000 PKR	11	22.9
Self-Perceived Burnout	Yes	32	66.7
	No	10	20.8
	Maybe	6	12.5

The mean age of the faculty was 34.23 years (SD = 9.687), with ages ranging from 26 to 66. Burnout Levels (Copenhagen Burnout Inventory - CBI): Overall, 25 (52.1%) of the faculty members experienced high burnout, while 23 (47.9%) experienced low burnout based on the Copenhagen Burnout Inventory (CBI) scores.

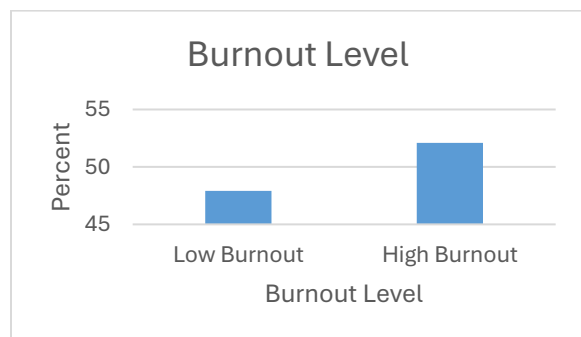


Figure 1: Overall Burnout Level (Low vs. High Burnout)

The mean scores and standard deviations for the CBI subscales and total burnout score are presented in Table 2.

Table 2: Mean Scores for Burnout Subscales and Total Burnout Score (N=48)

Burnout Scale	Mean	Standard Deviation (SD)	Range (Min - Max)
Personal Burnout	58.16	23.62	16.67 - 91.67
Work-Related Burnout	50.67	27.62	3.57 - 100.00
Student-Related Burnout	51.74	32.05	0.00 - 100.00
Total Burnout Score	53.52	26.59	6.75 - 94.44

Association Between Socio-Demographic Factors and Burnout Levels:

Chi-square tests were conducted to assess the association between sociodemographic factors and burnout levels (Table 3).

Table 3: Association between Socio-demographic Factors and Burnout Levels

Variables	Category	Low Burnout (n)	High Burnout (n)	% within Category (Low Burnout)	% within Category (High Burnout)	Total (n)	χ^2	P-Value	Odds Ratio (95% CI)
Gender	Male	8	16	33.30%	66.70%	24	4.09	0.043	3.33 (1.02–10.89)
	Female	15	9	62.50%	37.50%	24			Reference
Designation	Junior Faculty (Demonstrator, Sr. Demonstrator, Resident)	12	15	44.40%	55.60%	27	7.93	0.019	NC*
	Mid Faculty (Assistant Professor, Associate Professor)	5	10	33.30%	66.70%	15			NC*
	Senior Faculty (Professors)	6	0	100.00%	0.00%	6			Reference
Teaching Experience	Less than 5 years	11	22	33.30%	66.70%	33	8.999	0.003	8.00 (1.86–34.38)
	More than 5 years	12	3	80.00%	20.00%	15			Reference
Relationship Status	Married	20	9	69.00%	31.00%	29	13.006	<0.001	0.08 (0.02–0.36) †
	Unmarried	3	16	15.80%	84.20%	19			Reference
Number of Children	None	6	21	22.20%	77.80%	27	16.39	<0.001	17.50 (2.99–102.60) ‡
	One	7	2	77.80%	22.20%	9			1.43 (0.16–12.70) ‡
	Two or more	10	2	83.30%	16.70%	12			Reference
Living Arrangement	Within city	21	21	50.00%	50.00%	42	0.584	0.445	NS
	Out of city	2	4	33.30%	66.70%	6			Reference
Monthly Income	Less than 200,000 PKR	14	23	37.80%	62.20%	37	6.572	0.01	7.39 (1.39–39.27)
	More than 200,000 PKR	9	2	81.80%	18.20%	11			Reference
Self-Perceived Burnout	Yes	10	22	31.30%	68.80%	32	14.442	0.001	—**
	No	10	0	100.00%	0.00%	10			Reference
	Maybe	3	3	50.00%	50.00%	6			—

(Note: OR = Odds Ratio; CI = Confidence Interval; NC = Not calculable; NS = Not significant. Bold values indicate statistically significant associations ($p < 0.05$).

*Zero high burnout events in senior faculty preclude OR calculation.

†OR interpreted as married vs unmarried (protective effect).

‡OR for no children vs two or more; one child vs two or more not significant.

**Self-perceived burnout is a validation measure, not a risk factor.)

A statistically significant association was found between sex and burnout levels ($\chi^2 = 4.09$, $p = 0.043$). Specifically, 66.7% of male faculty experienced high burnout compared to 37.5% of female faculty. The mean total burnout score for male faculty was 59.89 (SD = 28.31), which was higher than that for female faculty (mean = 47.16, SD = 23.63). Designation was also significantly associated with burnout levels ($\chi^2 = 7.93$, $p = 0.019$). While 55.6% of junior faculty and 66.7% of mid-faculty experienced high burnout, all senior faculty members (100.0%) reported low burnout. Correspondingly, senior faculty exhibited the lowest mean total burnout score (Mean = 17.26, SD = 6.41) compared to junior faculty (Mean = 56.40, SD = 23.86) and mid-level faculty (Mean = 62.77, SD = 27.21).

Teaching experience was significantly associated with burnout levels ($\chi^2 = 8.999$, $p = 0.003$). A larger proportion of faculty with less than 5 years of experience (66.7%) experienced high burnout compared to those with over 5 years of experience (20.0%). The mean total burnout score was also notably higher for faculty with less than 5 years of experience (Mean = 61.92, SD = 21.83) than for those with more than 5 years (Mean = 35.05, SD = 27.42).

Relationship status was significantly associated with burnout levels ($\chi^2 = 13.006$, $p < 0.001$). A substantial 84.2% of unmarried faculty experienced high burnout, whereas the majority of married faculty (69.0%) reported low burnout levels. Unmarried faculty had a higher mean total burnout score (Mean = 69.17, SD = 21.32) than married faculty (Mean = 43.27, SD = 24.88).

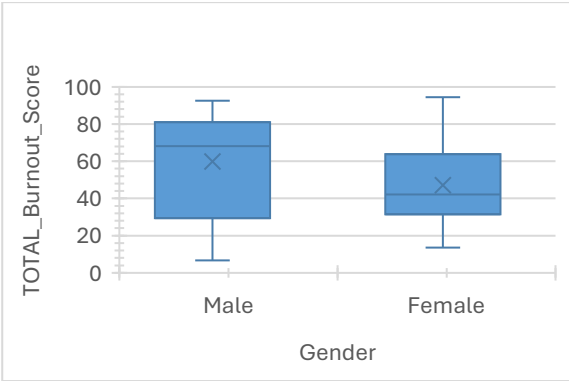


Figure 2: Boxplot of Average Burnout Score by Gender

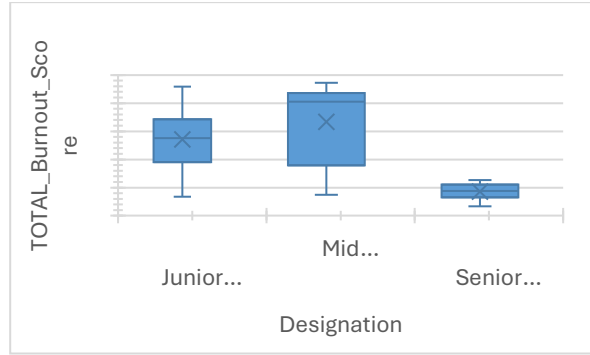


Figure 3: Boxplot of Average Burnout Score by Designation

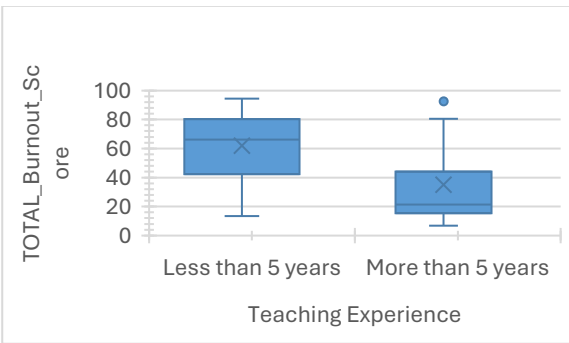


Figure 4: Boxplot of Total Burnout Score by Teaching Experience

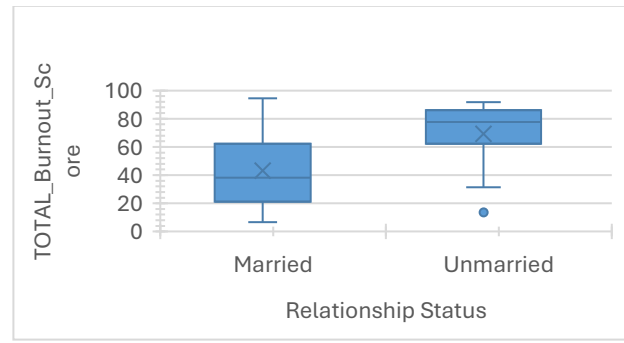


Figure 5: Boxplot of Total Burnout Score by Relationship Status

The number of children was also found to be highly significantly associated with burnout levels ($\chi^2 = 16.39$, $p < 0.001$). Faculty members with no children predominantly reported high burnout (77.8%), with a mean total burnout score of 66.12 (SD = 21.20). In contrast, those with one child (77.8% low burnout; Mean = 37.04, SD = 26.68) and those with two or more children (83.3% low burnout; Mean = 35.05, SD = 29.64) were more likely to experience low burnout.

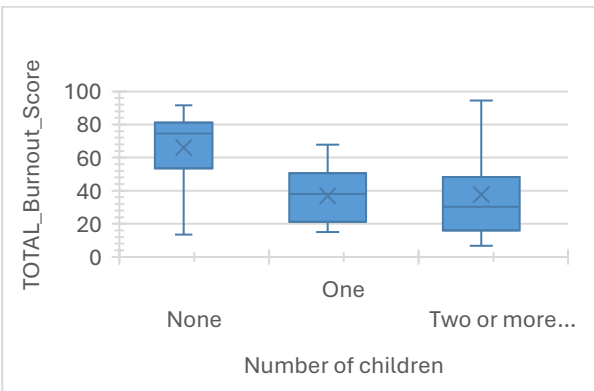


Figure 6: Boxplot of Total Burnout Score by Number of Children

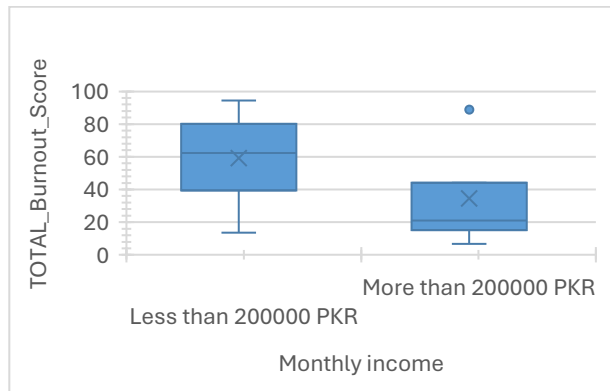


Figure 7: Boxplot of Total Burnout Score by Monthly Income

A statistically significant association was observed between monthly income and burnout levels ($\chi^2 = 6.572$, $p = 0.010$). Faculty earning less than 200,000 PKR per month had a higher proportion of high burnout (62.2%), with a mean total burnout score of 58.83 (SD = 25.43). Conversely, 81.8% of those earning more than 200,000 PKR reported low burnout, with a mean total burnout score of 35.05 (SD = 24.89).

As expected, self-perceived burnout was significantly associated with the calculated burnout levels ($\chi^2 = 14.442$, $p = 0.001$). Among those who answered "Yes" to feeling burnt out, 68.8% were categorised as having high burnout, and their mean total burnout score was 64.42 (SD = 22.45). All faculty members who answered "No" to feeling burnt out were categorised as having low burnout (100.0%), with a mean total burnout score of 23.51 (SD = 10.47).

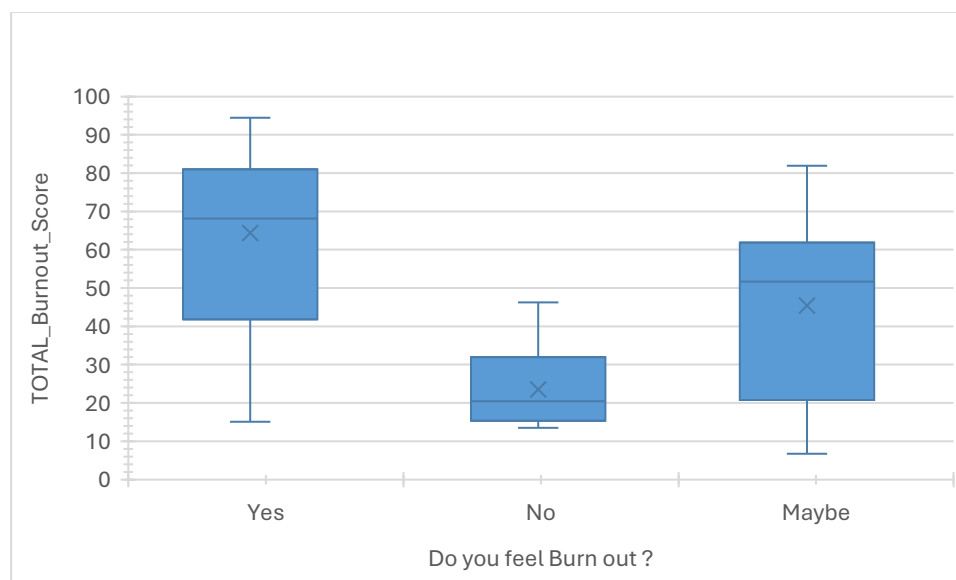


Figure 8: Boxplot of Total Burnout Score by Self-Perceived Burnout

No statistically significant association was found between living arrangement (within city vs. out of city) and burnout levels ($\chi^2 = 0.584$, $p = 0.445$).

Binary logistic regression analysis revealed significant associations between high burnout and several sociodemographic factors (Table 3). Faculty with less than 5 years of teaching experience had 8.00 times higher odds of burnout compared to those with ≥ 5 years (95% CI: 1.86-34.38, $p=0.005$). Male faculty had 3.33 times higher odds of burnout than female faculty (95% CI: 1.02-10.89, $p=0.046$). Married faculty demonstrated 92% lower odds of burnout compared to unmarried colleagues (OR=0.084, 95% CI: 0.020-0.364, $p=0.001$). Conversely, 84.2% of unmarried faculty experienced high burnout, compared to 31.0% of married faculty. Faculty members with no children had 17.50 times higher odds of burnout than those with two or more children (95% CI: 2.99-102.60, $p=0.002$). Those earning <200,000 PKR monthly had 7.39 times higher odds of burnout than higher earners (95% CI: 1.39-39.27, $p=0.019$).

Discussion

This study revealed a high prevalence of burnout (52.1%) among basic sciences faculty at a private medical college in Pakistan, with significant associations identified for gender, career stage, teaching experience, marital status, parenthood, and income level. This prevalence exceeds the rates reported for US university faculty (35% in 2022) and US physicians (45.2% in 2023-2024), though it aligns with regional findings of severe occupational stress among Pakistani academics and the 61.8% burnout reported among Pakistani healthcare workers during the COVID-19 pandemic.¹²⁻¹⁵ The elevated mean scores across all three CBI domains indicate that burnout permeates multiple dimensions of faculty functioning, corroborating Maslach and Leiter's conceptualisation of burnout as a multifaceted syndrome rather than unidimensional stress.²

The finding that male faculty experienced significantly higher burnout than female colleagues contradicts the predominant Western literature, where women in healthcare and academic medicine report higher emotional exhaustion.^{16,19} However, this aligns with studies from Saudi Arabia and Pakistan, where male medical educators demonstrated greater burnout susceptibility.^{10,17} This divergence may reflect sociocultural contextual factors: in Pakistan's patriarchal society, male faculty often bear disproportionate financial responsibilities as primary breadwinners, while female faculty in medical education, typically from higher socioeconomic backgrounds, may possess greater job security and institutional support networks. Additionally, male faculty may underreport emotional distress due to stigma, making the observed difference potentially conservative.²⁰

The protective effect of senior academic rank observed in this study, where senior faculty demonstrated low mean burnout compared to high levels among junior and mid-level faculty, mirrors the international patterns identified by Wray and Kinman.¹ This gradient likely reflects cumulative resilience development through career navigation, enhanced autonomy in senior roles, and reduced exposure to high-stakes performance evaluations.^{8,18} Paradoxically, mid-level faculty (Assistant and Associate Professors) exhibited the highest burnout, potentially reflecting the "squeeze" between administrative burdens, research productivity demands, and unresolved tenure pressures.⁽¹⁵⁾

Teaching experience was the strongest associated factor with burnout in this cohort. Faculty with less than five years of experience exhibited eightfold higher odds of burnout than experienced colleagues. This finding resonates with Pakistani studies demonstrating early career vulnerability among university academics and international research on academic socialisation, where novice faculty confront unrealistic workload expectations without adequate mentoring infrastructure.^{1,8,17} The absence of structured faculty development programs at many Pakistani private medical colleges likely exacerbates this transition shock, as junior faculty navigate heavy teaching loads, assessment responsibilities, and institutional bureaucracy, without sufficient guidance.^{6,7}

The protective effects of marriage and parenthood observed in this study were particularly pronounced. These findings extend Smith and Lee's observations on work-life balance buffers to the Pakistani context, where extended family networks and spousal support systems provide emotional scaffolding against occupational stress.²⁰ However, this interpretation requires nuance: parenthood in Pakistan often involves multigenerational household support that is unavailable to unmarried faculty living independently, particularly those residing outside their home cities. The high burnout among childless faculty (77.8%) may thus reflect compounded social isolation rather than the intrinsic benefits of parenthood.^{7,20}

Financial insecurity emerged as a significant burnout predictor, with faculty earning below 200,000 PKR monthly demonstrating 7.4 times higher odds of burnout than higher-earning faculty. This finding must be contextualised against Pakistan's 2022 economic inflation crisis, where academic salaries stagnated while the cost of living increased substantially.²¹ The Pakistan Bureau of Statistics reported that 70% of academics struggled with financial insecurity during this period,²¹ rendering this finding externally valid but institutionally concerning. Private medical colleges in Pakistan often operate on profit-driven models with compressed faculty compensation structures, particularly for junior appointments, creating structural vulnerability to burnout among faculty members.^{6,14}

The strong concordance between self-perceived burnout and CBI scores (68.8% of self-identified burnt-out faculty scoring high on the CBI) validates the instrument's utility in this population and suggests reasonable burnout awareness among faculty. Self-awareness is clinically significant because unrecognised burnout impedes help-seeking behaviour and early intervention.⁹ However, the 31.2% discrepancy—faculty experiencing high burnout without self-recognition—indicates a potential stigma or normalisation of occupational stress within the medical education culture, where excessive workload is often valorized as professional dedication.⁹

Using the validated CBI, this study is one of the few to specifically examine burnout among fundamental science faculty members in a private medical college in Pakistan. A noteworthy strength of this study is its high response rate (85.7%). However, it is important to recognise a few limitations. Causality inference is limited by the cross-sectional design of the study. Because only one private college was used for the study, the results might not apply to colleges in the public sector or other private institutions with possibly different organizational climates and resources. Additionally, the convenience sampling method used by the institution restricts generalisability. The potential to identify more subtle relationships may be impacted by the small sample size (N=48), even though the response rate from the invited academics was good. Further mixed-methods studies may shed more light on the contextual factors that contribute to burnout. Similar to research on student stress at Pakistani medical campuses, efforts to identify and reduce stressors in the local academic environment may also benefit the faculty.


Institutions must take immediate action to address the high frequency of burnout and related risk factors among basic science faculty. Burnout can affect faculty retention, research productivity, and teaching quality. Drawing from our findings, institutions should consider developing specialised support networks, including workload assessments, stress management courses, and mentorship, for junior and mid-career faculty and those with less experience. Investigating the causes of unmarried faculty members' and childless individuals' greater levels of burnout to pinpoint their support requirements. Reviewing pay packages to ensure that people, particularly those in lower wage groups, believe they are reasonable and fair. Fostering a supportive and appreciative work environment.

Conclusions

More than half of the basic sciences faculty members at this private medical institution in Sialkot suffered from severe burnout. Higher levels of burnout were substantially correlated with male gender, junior or mid-level classification, little teaching experience, being single, childless, and having a lower monthly salary. These findings ensure the quality of medical teaching and research, highlighting vulnerable groups and the urgent need for proactive, context-specific institutional interventions to promote faculty well-being.

Author Information

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