Volume 4, Issue 6, 2026

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

ASSESSMENT OF ACADEMIC BURDEN AND STRESS ASSOCIATED WITH ENTRY TEST PREPARATION AMONG PRE-MEDICAL STUDENTS OF HYDERABAD, SINDH

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DOI: https://doi.org/10.5281/zenodo.20675680

Keywords
Academic burden, MDCAT, pre-medical students, Perceived Stress Scale, Pakistan, Hyderabad, stress, entry test preparation.

Article History
Received: 16 April 2026
Accepted: 27 May 2026
Published: 13 June 2026

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Abstract

Background: *Entry test preparation for medical colleges in Pakistan, particularly the Medical and Dental College Admission Test (MDCAT), is associated with intense academic demands. Pre-medical students in Hyderabad, Sindh face significant psychological pressure during this phase, yet this population remains understudied.*

Objective: *This study aimed to assess the level of academic burden and stress among pre-medical students preparing for medical entry tests in Hyderabad, Sindh and to examine the relationship between these two variables.*

Methods: *A cross-sectional descriptive study was conducted among 250 pre-medical students recruited through convenience sampling from coaching academies in Hyderabad. Data were collected using a structured self-administered questionnaire comprising demographic information, an Academic Burden Scale and the Perceived Stress Scale-10 (PSS-10). Data were analyzed using SPSS v26.0. Descriptive statistics, chi-square tests and Pearson correlation were applied.*

Results: *The majority of participants were female (56.8%) and first-time MDCAT candidates (53.6%). A significant proportion studied 7 to 9 hours daily (38.4%) and slept fewer than 7 hours per night (86.0%). Most students reported feeling that the syllabus was too vast (62.4%) and experienced peer competitive pressure (60.0%). The PSS-10 revealed that 55.2% had moderate stress and 32.0% had high stress. A statistically significant positive correlation was found between academic burden and stress scores ($r = 0.61$, $p < 0.001$). Female students showed slightly higher stress levels than males ($p = 0.042$).*

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

Conclusion: *Pre-medical students in Hyderabad experience considerable academic burden that is strongly associated with high psychological stress. Institutional interventions including stress management programs and guided academic counseling are urgently needed.*

1. INTRODUCTION

1.1 Background

The medical profession is one of the most sought-after career paths in Pakistan, drawing thousands of aspiring students each year. However, gaining admission into a public or private medical college is extraordinarily competitive. In Sindh, the gateway to this admission is the Medical and Dental College Admission Test (MDCAT), a high-stakes national examination that tests students across biology, chemistry, physics and English (Pakistan Medical Commission [PMC], 2023). The examination is held annually and the number of available seats across Sindh is considerably limited relative to the number of applicants, often creating acceptance ratios that intensify the pressure on candidates.

The preparation phase for such examinations is notably demanding. Students typically enroll in private coaching academies while simultaneously managing their intermediate board examinations. The dual academic burden preparing for both board exams and an entry test leaves students with limited time for rest, recreation and personal development. Numerous studies from South Asian contexts have documented that high-stakes examination cultures are associated with elevated stress, sleep deprivation and reduced mental well-being (Amir et al., 2020; Chaudhry et al., 2021).

Despite this, the psychological burden of pre-medical students specifically during the MDCAT preparation phase has received very limited empirical attention, particularly in smaller cities like Hyderabad. Most existing research focuses on stress among students already enrolled in medical colleges, leaving a notable gap in understanding the mental health challenges that students face before even crossing the threshold of admission.

1.2 Problem Statement

While institutional stress among medical students in Pakistan has been studied with increasing frequency over the past decade, the pre-entry phase — the period of MDCAT coaching and preparation — has largely been overlooked in academic literature. Students in this phase bear the combined weight of academic workload, family expectations, peer competition and financial investment in coaching fees, yet there is minimal local data quantifying this burden or its psychological impact in Hyderabad, Sindh.

1.3 Rationale

Understanding the specific nature and extent of academic burden and psychological stress among MDCAT aspirants in Hyderabad is important for several reasons. First, it can inform medical educators and coaching institutes about the mental health risks in this population. Second, it can prompt policymakers to develop more humane preparation frameworks. Third, it provides locally relevant data to complement the broader literature on student mental health in Pakistan. The present study was therefore designed to fill this critical gap.

2. LITERATURE REVIEW

Academic stress is a well-documented phenomenon across educational settings worldwide, but its manifestation in high-stakes examination contexts in South Asia is particularly pronounced. Cohen et al. (1983) originally developed the Perceived Stress Scale (PSS-10), which has since become one of the most widely used instruments for measuring psychological stress in educational and clinical populations. Its validity and reliability in Pakistani populations have been confirmed by multiple studies (Khalid et al., 2019).

Sohail (2013) conducted an early study on academic stress among students at a Pakistani university and found significant stress levels related to examination pressure, workload and competitive academic environments. More

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ISSN: (e) 3007-1607 (p) 3007-1593

recently, a study by Jadoon et al. (2020) among MBBS students in Lahore reported that over 75% experienced moderate to severe stress, with workload and examination fear as the primary drivers. While this study focused on enrolled medical students, it underscores the psychological climate that begins at the pre-admission stage.

In the Indian context, which shares many structural similarities with Pakistani medical admissions, Kumar et al. (2021) found that pre-medical students preparing for the NEET (National Eligibility cum Entrance Test) reported significantly elevated stress scores on the PSS, with sleep deprivation being a strong mediating factor. Similarly, Saraswat and Gaur (2019) reported that 68% of pre-medical coaching students in Rajasthan experienced moderate to severe psychological distress during their preparation period.

Globally, the World Health Organization (WHO, 2021) has recognized student mental health as a public health priority, noting that academic stress in adolescents and young adults is a major contributor to anxiety disorders, depression and in extreme cases, suicidal ideation. In Pakistan specifically, Noman et al. (2022) demonstrated that academic burden in competitive exam preparations was significantly associated with anxiety and poor sleep quality among 18 to 22-year-old students.

Several studies have also documented gender differences in stress levels during academic preparation. Amir et al. (2020) found that female students in competitive pre-medical programs reported higher stress than their male counterparts, attributed partly to societal expectations and perceived lack of support structures. Conversely, Ahmad and Riaz (2023) found no significant gender difference in PSS scores among MDCAT aspirants in Punjab, suggesting that findings may vary by geographic context and social setting.

Regarding academic burden specifically, the literature consistently identifies excessive syllabus volume, inadequate sleep, poor time management and peer competition as the primary contributors (Chaudhry et al., 2021; Khan et al., 2022). A recent multi-center study by Ali et al. (2023) from five Pakistani cities documented that 60% of pre-medical students reported skipping meals regularly and reducing recreational activities to accommodate their study schedules — findings consistent with the academic burden items used in the present study.

Despite this growing body of evidence, no published study to date has specifically focused on MDCAT aspirants in Hyderabad, Sindh, making the present study a necessary addition to the regional literature on student mental health in Pakistan.

3. METHODOLOGY

3.1 Study Design

This was a cross-sectional, descriptive study conducted to assess academic burden and psychological stress in a defined population at a single point in time. This design was chosen for its feasibility in capturing data efficiently from a large group of students without requiring longitudinal follow-up.

3.2 Study Setting

The study was conducted at major private coaching academies in Hyderabad, Sindh, that offer MDCAT preparation programs. These centers collectively enroll a large proportion of pre-medical aspirants from both urban and rural areas of Sindh.

3.3 Study Duration

Data collection was carried out over approximately four months, from February 2025 to May 2025.

3.4 Sample Size and Sampling Technique

A sample of 250 pre-medical students was recruited using convenience sampling, a non-probability technique appropriate for exploratory research in accessible institutional settings. Participants were approached during regular classes at the coaching academies with the permission of the institute administration.

3.5 Inclusion and Exclusion Criteria

Inclusion criteria comprised pre-medical students of either gender who were currently enrolled in MDCAT preparation programs at coaching

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ISSN: (e) 3007-1607 (p) 3007-1593

institutes in Hyderabad and provided written informed consent. Students already enrolled in MBBS or BDS programs, those with a pre-existing diagnosed psychiatric illness and those who submitted incomplete questionnaires were excluded.

3.6 Data Collection Tool

A structured, self-administered questionnaire was used, comprising three sections:

Section A (Demographics): This section collected basic information including gender, age, residential background (urban or rural), MDCAT attempt number, average daily self-study hours and average sleep duration per night.

Section B (Academic Burden Scale): Five statements assessed perceived academic burden, including feelings about syllabus volume, pressure from regular tests, skipping of meals, difficulty managing dual academic responsibilities and peer competition. Each item was scored on a three-point scale: Yes, No, or Sometimes. A higher frequency of "Yes" responses was indicative of greater burden.

Section C (Perceived Stress Scale-10): The PSS-10 is a validated, globally used tool measuring the degree to which life situations are perceived as stressful. Items are rated on a 5-point Likert scale (0 = Never to 4 = Very Often). Four items are reverse-scored (items 4, 5, 7 and 8). Total scores range from 0 to 40, with scores of 0–13 indicating low stress, 14–26 moderate stress and 27–40 high stress (Cohen et al., 1983).

3.7 Data Analysis

Data were entered and analyzed using SPSS version 26.0 (IBM Corp., Armonk, NY). Descriptive statistics (frequencies, percentages, means and standard deviations) were calculated for all variables. Chi-square tests were used to compare stress categories across gender and attempt number. Pearson correlation was used to examine the association between academic burden scores and PSS-10 scores. A p-value of ≤ 0.05 was considered statistically significant.

3.8 Ethical Considerations

Ethical approval was obtained from the institutional review board prior to data collection. All participants provided written informed consent before participation. The questionnaire was anonymous; no names were collected. Students were informed of their right to withdraw at any point without consequence.

4. RESULTS

4.1 Demographic Characteristics

A total of 250 pre-medical students participated in the study. The mean age of participants was 18.4 ± 1.2 years. The majority were female (n = 142, 56.8%) and from urban backgrounds (n = 168, 67.2%). More than half of participants (53.6%) were appearing in their first MDCAT attempt. Nearly 38.4% of students studied 7 to 9 hours daily in addition to academy classes and 86.0% slept fewer than 7 hours per night, with 28.8% sleeping less than 5 hours. These findings are summarized in Table 1.

Table 1. Demographic and Academic Background Characteristics of Participants (n = 250)

Variable	Frequency (n)	Percentage (%)
Gender		
Male	108	43.2
Female	142	56.8
Residential Background		
Urban	168	67.2
Rural	82	32.8

Volume 4, Issue 6, 2026

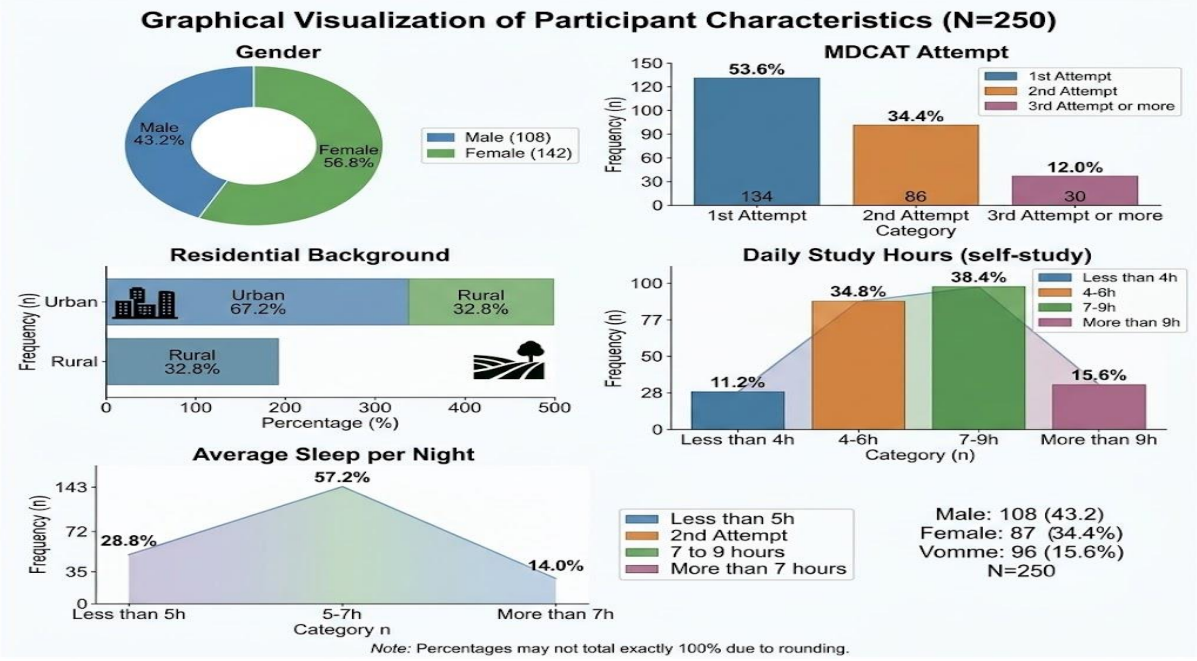
Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

MDCAT Attempt		
1st Attempt	134	53.6
2nd Attempt	86	34.4
3rd Attempt or more	30	12.0
Daily Study Hours (self-study)		
Less than 4 hours	28	11.2
4 to 6 hours	87	34.8
7 to 9 hours	96	38.4
More than 9 hours	39	15.6
Average Sleep per Night		
Less than 5 hours	72	28.8
5 to 7 hours	143	57.2
More than 7 hours	35	14.0

Note. Percentages may not total exactly 100% due to rounding.

Figure 1. *Graphical representation of demographic, academic background, and lifestyle characteristics of the participants ($n = 250$).*



4.2 Academic Burden

The majority of students reported high levels of perceived academic burden across all five items (Table 2). Most participants (62.4%) felt that the MDCAT syllabus was too vast to cover adequately within the available preparation

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ISSN: (e) 3007-1607 (p) 3007-1593

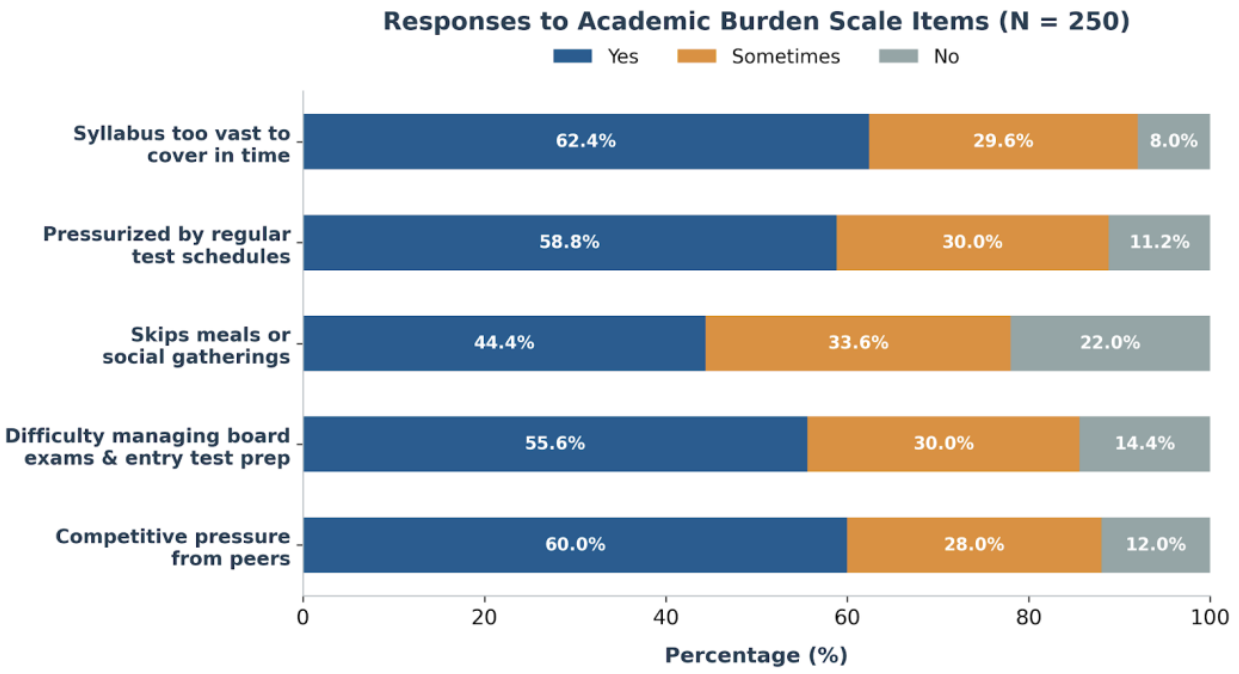
period. Similarly, 60.0% reported competitive pressure from classmates and peers and 58.8% felt pressurized by the regular test schedules at their academies. More than half (55.6%) experienced difficulty managing both board exams and MDCAT preparation simultaneously. Additionally, 44.4% of students reported frequently skipping meals or social gatherings due to study pressure.

Table 2. Responses to Academic Burden Scale Items (n = 250)

Academic Burden Statement	Yes (%)	No (%)	Sometimes (%)	n
Syllabus too vast to cover in time	62.4	8.0	29.6	250
Pressurized by regular test schedules	58.8	11.2	30.0	250
Skips meals or social gatherings	44.4	22.0	33.6	250
Difficulty managing board exams and entry test prep	55.6	14.4	30.0	250
Competitive pressure from peers	60.0	12.0	28.0	250

Note. Figures represent percentage of total respondents selecting each option.

Figure 2. ***Distribution of student responses to Academic Burden Scale items ($n = 250$).***



4.3 Perceived Stress Levels (PSS-10)

The mean PSS-10 score for the total sample was 24.6 ± 6.8. Table 3 presents the item-level response distribution for all 10 PSS items. Items reflecting perceived loss of control and feeling overwhelmed by tasks received the highest frequency of "Fairly Often" and "Very Often" responses. Notably, 38.4% of participants reported feeling nervous and stressed "Fairly Often," and 32.8% reported this "Very Often." Based on established PSS-10 scoring categories, 55.2% of students had moderate stress, 32.0% had high stress and only 12.8% showed low stress

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(Table 4). Combined, 87.2% of participants demonstrated moderate or high stress levels.

Table 3. Item-Level Response Distribution for PSS-10 (n = 250)

PSS-10 Item	0-Never (%)	1-Almost Never (%)	2-Sometimes (%)	3-Fairly Often (%)	4-Very Often (%)
Upset by unexpected events	4.0	8.8	24.0	37.6	25.6
Unable to control important things	5.6	10.4	26.4	36.0	21.6
Felt nervous and stressed	2.4	6.4	20.0	38.4	32.8
Felt confident handling personal problems*	28.8	36.4	22.4	8.8	3.6
Felt things going your way*	26.0	34.4	24.4	10.4	4.8
Could not cope with all tasks	4.8	11.2	28.0	34.4	21.6
Able to control irritations*	25.6	32.8	26.0	11.2	4.4
Felt on top of things*	22.4	36.8	26.4	10.4	4.0
Angered by things out of control	4.0	9.6	26.4	36.8	23.2
Difficulties piling up too high	3.6	8.4	22.0	38.0	28.0

*Note. Items marked with * are reverse-scored in the PSS-10 total calculation. Figures represent column percentages.*

Figure 1 shows that the sample has more females (56.8%) and urban residents (67.2%). Most participants (53.6%) were on their 1st MDCAT attempt, usually studied for 7 to 9 hours daily (38.4%), and slept for 5 to 7 hours per night (57.2%).

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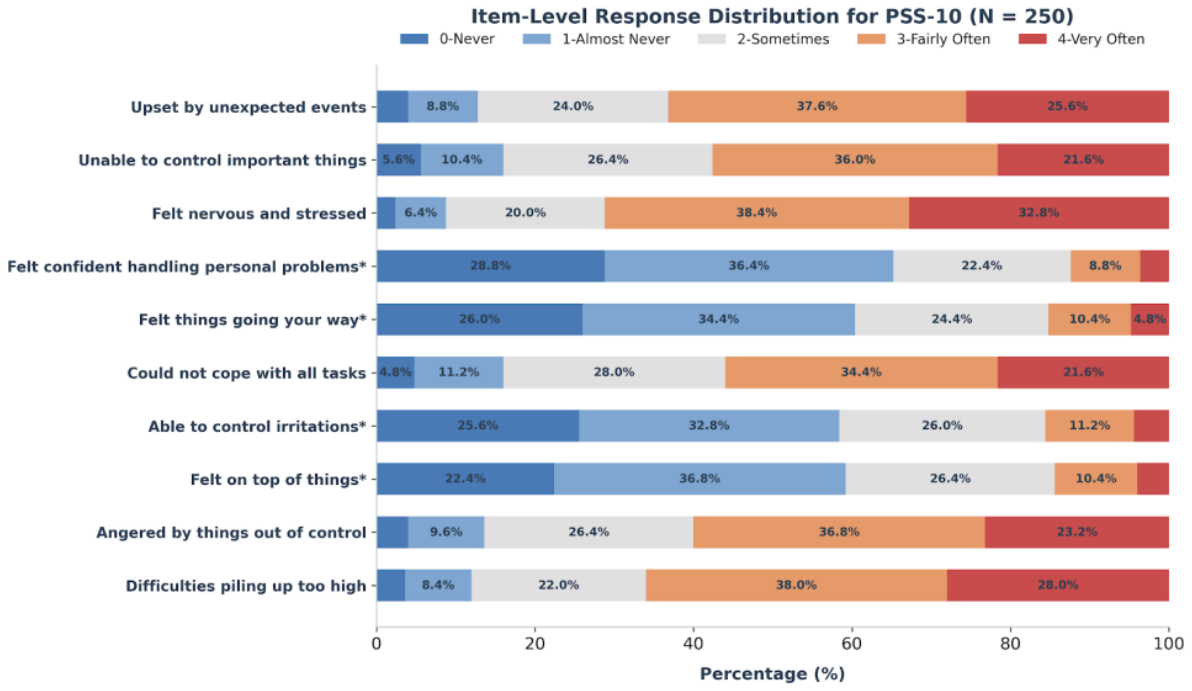

Table 4. Distribution of Stress Categories Based on PSS-10 Total Scores (n = 250)

Stress Category (PSS-10 Score)	Frequency (n)	Percentage (%)
Low Stress (0–13)	32	12.8
Moderate Stress (14–26)	138	55.2
High Stress (27–40)	80	32.0
Total	**250**	**100.0**

Figure 4 **indicates that the majority of the students experience significant psychological pressure, with** 55.2% **falling into the moderate stress category and** 32.0% **suffering from high stress. Only a small minority** (12.8%) **reported low stress levels.**

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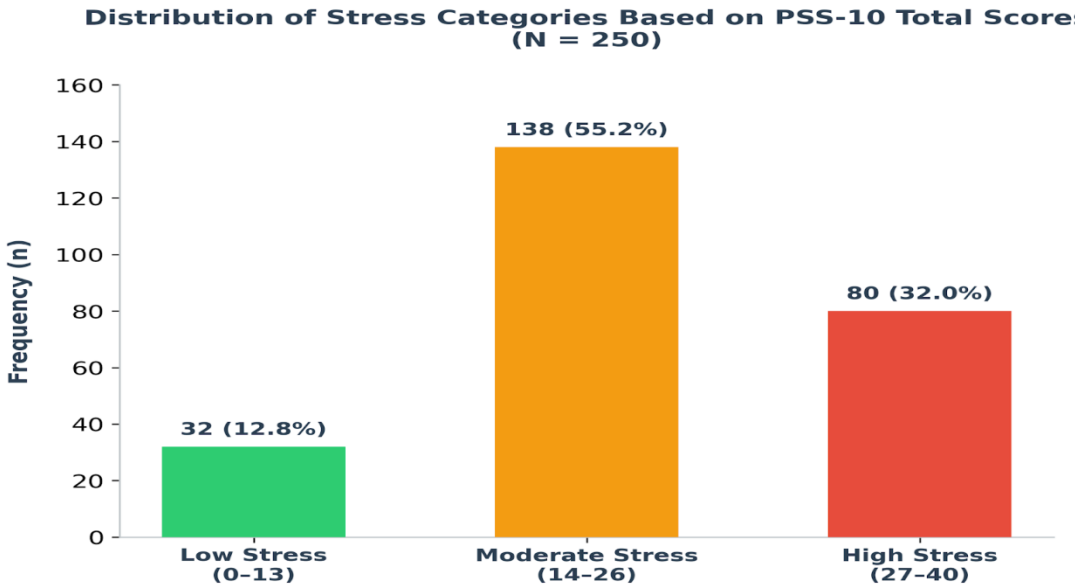
ISSN: (e) 3007-1607 (p) 3007-1593



4.4 Gender Differences in Stress

A chi-square test was performed to assess the association between gender and stress category. Female students showed slightly higher levels of moderate and high stress (57.0% and 33.1%, respectively) compared to male students (52.8% and 30.5%). This difference was statistically significant ($\chi^2 = 6.41$, df = 2, $p = 0.042$), as shown in Table 5.

Table 5. Comparison of Stress Categories by Gender (n = 250)

Gender	Low Stress n (%)	Moderate Stress n (%)	High Stress n (%)	Total
Male	18 (16.7)	57 (52.8)	33 (30.5)	108 (100)
Female	14 (9.9)	81 (57.0)	47 (33.1)	142 (100)
p-value (Chi-square)	0.042			

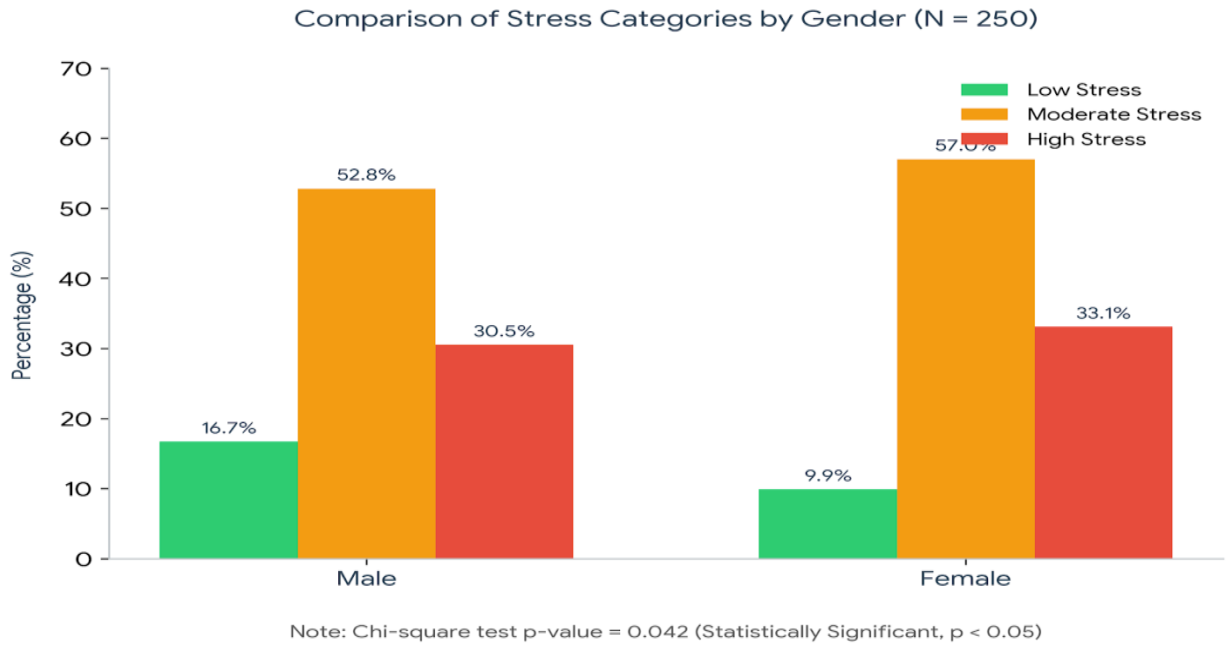
Note. Chi-square test applied. $p < 0.05$ considered statistically significant.

Figure 5 shows a statistically significant difference in stress levels between genders ($p = 0.042$). Female participants reported higher rates of both moderate stress (**57.0**% vs 52.8%) and high stress (**33.1**% vs 30.5%), whereas males had a higher percentage in the low stress category (**16.7**% vs 9.9%).

Volume 4, Issue 6, 2026

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593



4.5 Correlation Between Academic Burden and Stress

A Pearson correlation analysis was conducted to examine the relationship between aggregate academic burden scores (range 0–10, based on Yes = 2, Sometimes = 1, No = 0 coding) and PSS-10 total scores. A strong positive correlation was found ($r = 0.61$, $p < 0.001$), indicating that students with higher academic burden also had significantly higher stress levels. Students appearing in their 3rd or subsequent MDCAT attempt had higher mean PSS scores (27.4 ± 5.2) compared to first-time candidates (23.1 ± 6.4), a difference that was statistically significant ($t = 3.89$, $p < 0.001$).

5. DISCUSSION

This study provides important insights into the psychological burden borne by pre-medical students in Hyderabad, Sindh, during the MDCAT preparation period. The overall findings are both alarming and consistent with the broader literature on academic stress in competitive examination cultures across South Asia.

The finding that 87.2% of participants demonstrated moderate or high stress on the PSS-10 is particularly striking. This rate is higher than that reported by Jadoon et al. (2020), who found 75% moderate-to-severe stress among enrolled MBBS students in Lahore, suggesting that the pre-admission phase may in fact be more psychologically taxing than the post-admission period for many students. The mean PSS-10 score in the current study (24.6 ± 6.8) is notably elevated compared to general population norms reported in Pakistani validation studies (mean ≈ 17.5; Khalid et al., 2019), further underscoring the severity of stress in this population.

The high prevalence of sleep deprivation is a noteworthy finding. With 86.0% of participants sleeping fewer than 7 hours per night, the sample falls well below the 8 to 10 hours recommended for adolescents by the American Academy of Sleep Medicine (Paruthi et al., 2016). Research consistently demonstrates that sleep deprivation worsens cognitive function, emotional regulation and academic performance — a cycle that may paradoxically undermine the very goal students are sleep-deprived to achieve (Noman et al., 2022).

The strong positive correlation between academic burden and PSS-10 scores ($r = 0.61$, $p < 0.001$) observed in this study mirrors findings from

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ISSN: (e) 3007-1607 (p) 3007-1593

Indian studies on pre-medical coaching students (Kumar et al., 2021; Saraswat & Gaur, 2019) and confirms that academic burden is not merely a time-management issue but a direct contributor to psychological distress. This relationship is likely bidirectional: high stress can reduce study efficiency, which in turn amplifies the perception of burden.

The gender difference observed — with female students showing significantly higher stress levels ($p = 0.042$) — is consistent with the findings of Amir et al. (2020), who attributed this to a combination of gender-specific societal pressures and a potentially narrower social support network for young women in competitive academic settings in Pakistan. However, the gap in the current study was relatively modest and future research should explore whether this reflects genuine psychological differences or varying response tendencies on self-report instruments.

The finding that students on their 3rd or subsequent attempt had significantly higher PSS scores is clinically meaningful. Repeated failure, combined with the social stigma of being a "repeater" in Pakistani society, creates compounded stress that may require targeted psychological support. Coaching academies and families should be sensitized to the particular vulnerability of repeat candidates.

The academic burden items that scored highest — syllabus vastness (62.4%) and peer competitive pressure (60.0%) — point to both structural and social dimensions of the problem. While the MDCAT syllabus is standardized nationally, its sheer volume relative to the available preparation time creates a fundamental imbalance that individual effort alone cannot fully resolve. Structural interventions at the level of examination design and coaching methodologies are therefore warranted.

6. CONCLUSION

This study demonstrates that pre-medical students in Hyderabad, Sindh, preparing for the MDCAT bear a substantial academic burden that is strongly associated with elevated psychological stress. An overwhelming majority 87.2% experienced moderate to high levels of stress, with mean PSS-10 scores well above general population norms. Academic burden was significantly and positively correlated with stress levels. Female students and repeat candidates were disproportionately affected. These findings underscore the urgent need for mental health support, structured counseling and evidence-based academic reform in the pre-medical preparation landscape of Sindh.

7. RECOMMENDATIONS

Based on the findings of this study, the following recommendations are proposed:

1. Coaching academies should integrate stress management workshops and mental health awareness sessions into their regular academic schedules.
2. The Pakistan Medical Commission and Sindh boards should consider periodic curriculum reviews to address the disproportionate volume of the MDCAT syllabus relative to preparation time.
3. Parents and families should be educated about the psychological toll of competitive exam culture and encouraged to provide emotional support rather than solely performance-based pressure.
4. Targeted psychological support programs should be established specifically for repeat MDCAT candidates, who represent a high-risk group for severe stress.
5. Coaching institutes should establish a minimum recommended sleep policy and educate students on the relationship between sleep and academic performance.
6. Future research should employ longitudinal designs to track the mental health trajectories of these students from the preparation phase into medical college, if admitted.

8. LIMITATIONS OF THE STUDY

Several limitations should be noted when interpreting the findings of this study. First, convenience sampling was employed, which limits the generalizability of results to the broader population of MDCAT aspirants in Sindh. Second, the cross-sectional design precludes

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ISSN: (e) 3007-1607 (p) 3007-1593

causal inferences about the relationship between academic burden and stress. Third, data were collected through self-report questionnaires, which are susceptible to social desirability bias and recall errors. Fourth, the study did not assess additional variables such as family income, parental education, or prior mental health history, which could confound the observed associations. Finally, the study was restricted to Hyderabad; findings may not fully represent the experiences of students in other cities or rural areas of Sindh.

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