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Research Paper

Assessment of Stressors in First-Year Undergraduate Medical Students: An Exploratory Study

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ABSTRACT

Medical students face a variety of stressors that may affect their academic performance and emotional well-being. This exploratory study aimed to assess the types and severity of stressors among first-year undergraduate medical students, and to examine gender and residence-based differences. Using a cross-sectional survey design, data were collected on stressors categorized into academic, interpersonal and intrapersonal, teaching-learning, social, drive/desire, and group activity. Results indicated that academic and teaching-learning stressors were most prevalent. Gender differences were observed: males reported higher teaching-learning and desire-related stressors, while females showed higher academic and interpersonal stress. No significant difference was found in relation to type of residence. These findings underline the need for context-sensitive interventions to promote mental health in medical education.

Keywords: *Medical Students, Academic Stress, Gender Differences, Psychosocial Stressors, Mental Health*

Many students enter medical school driven by a strong desire to help others and make a difference. Yet, for most, the initial years bring more stress and pressure than the sense of purpose they expected. First-year students, especially, find themselves navigating a mix of academic intensity, emotional strain, and major life adjustments. They are expected to adapt quickly to intense academic demands, navigate new social and institutional environments, and manage the personal transition from adolescence into professional adulthood. While stress is a near-universal human experience, the kind of chronic, multifaceted stress encountered in the first year of medical education can significantly disrupt both mental health and academic performance (Sharma et al., 2021).

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Medical education has long been recognized as a high-stress environment. Across the world, studies have consistently shown that medical students experience greater levels of depression, anxiety, and burnout compared to their peers in other academic disciplines. In a landmark review, Dyrbye, Thomas, and Shanafelt (2006) reported that nearly half of medical students in North America experience significant psychological distress, a finding that has been echoed by similar research in the UK (Guthrie et al., 1998), Sweden (Dahlin, Joneborg, & Runeson, 2005), and Australia (Henning et al., 2012). A more recent meta-analysis by Rotenstein et al. (2016) found that the global prevalence of depression or depressive symptoms among medical students was approximately 27%, and suicidal ideation was reported by 11%—rates considerably higher than the general population of the same age group. Likewise, Puthran et al. (2016) observed that these symptoms peak during transitions, such as the first year of training or during exams.

These issues are not only widespread but appear early in the academic journey. Even before students begin clinical rotations, the pre-clinical phase is marked by an overwhelming volume of coursework, frequent exams, and a competitive atmosphere that often leaves little room for rest or emotional processing (Hill et al., 2018). Repeated assessments and the pressure to maintain high performance can impair students' sleep, nutrition, and emotional well-being (Wolf, Faucett, & Randall, 2014). Furthermore, the "hidden curriculum"—unwritten social norms and expectations within medical education—often exacerbates feelings of inadequacy and imposter syndrome (Lempp & Seale, 2004).

In the Indian context, these findings take on even greater urgency. Medical entrance exams such as NEET are among the most competitive in the world, and the intense preparation required for admission often leaves students already fatigued when they enter medical school. Once admitted, the academic culture tends to reinforce this stress through rote learning, hierarchical teaching methods, and minimal institutional focus on mental health. A study by Basu et al. (2017) showed that over 60% of undergraduate medical students in India experienced moderate to severe stress levels, with the highest rates reported among first-year students. Gupta, Rani, and Mehta (2020) added to this, noting that high academic expectations, limited support services, and cultural stigma surrounding mental health compound the problem. Meanwhile, Chandavarkar, Azzam, and Mathews (2007) found that female medical students in India were more vulnerable to anxiety and stress-related symptoms due to a combination of academic and interpersonal pressures. Similarly, Rajkumar et al. (2020) emphasized that Indian medical students face unique sociocultural stressors, including family expectations and gender-based role conflicts.

A growing body of literature has also documented how institutional factors like lack of mentorship, poor faculty-student communication, and unresponsive administrative systems worsen student well-being (Singh et al., 2016; Waghachavare et al., 2013). Studies by Mahadevan et al. (2021) and Kumar & Bhukar (2013) further revealed that students in private medical colleges tend to report higher stress than those in government institutions, possibly due to tuition-related financial stressors. These disparities suggest the importance of disaggregating stress data by demographic and institutional context.

Beyond academic factors, medical students frequently face challenges that are interpersonal or psychological in nature. Studies in Malaysia (Al-Dubai et al., 2011), Sri Lanka (Sujatha & Udupa, 2013), and Pakistan (Sadiq et al., 2019) have emphasized that lack of emotional support, strained peer relationships, and homesickness can be significant sources of stress—especially for students who have relocated for their studies. Cultural expectations around

gender also play a role. Research by Yusoff, Rahim, and Yaacob (2011) suggested that male students often internalize stress and hesitate to seek help, whereas female students tend to report greater emotional distress but are more open to social coping mechanisms. Findings from Mousa et al. (2016) supported this, showing that female students, particularly in collectivist societies, are more susceptible to stress related to social judgment and academic perfectionism.

Despite the abundance of studies confirming the presence of stress in medical students, there remains a gap in how this stress is categorized and analyzed. Most prior research has emphasized severity or prevalence but has not fully explored the types of stressors—such as academic, interpersonal, teaching-learning, or intrapersonal—and how they vary across specific student demographics. In the Indian context, there has been limited research exploring how stressors vary based on gender or where students live—whether they stay in hostels or commute from home. Without this insight, it becomes difficult for institutions to create support systems that truly reflect the diverse realities and needs of their student population.

This study sets out to explore the types, intensity, and demographic differences in stress experienced by first-year undergraduate medical students in Kolkata. The study investigates which stressors—academic, interpersonal/intrapersonal, teaching-learning, social, or drive-related—are most prevalent and examines how these stressors differ based on gender and residence type. It also considers whether students living in hostels experience different stress dynamics compared to day scholars who may benefit from family support.

By gaining a deeper and more nuanced understanding of what medical students are going through, this study aims to provide insights that can actually make a difference. When institutions know which groups of students are more vulnerable to certain kinds of stress, they're better positioned to offer tailored academic support, mentorship, mental health resources, and thoughtful changes to the curriculum. This research operates on the belief that effective mental health support begins with a clear understanding of the problem—not just its existence, but its shape, scope, and variation. Through its focus on first-year students, the study draws attention to a critical but often overlooked phase in medical education where early experiences with stress can shape long-term coping strategies and attitudes toward learning.

In this light, the study argues that any attempt to foster student well-being must begin with a nuanced grasp of how stress actually manifests in diverse student populations. Understanding these patterns is not only vital for academic outcomes but is equally important for shaping emotionally resilient and professionally prepared future doctors. The insights drawn from this research can help build institutional cultures that support—not just challenge—students during one of the most formative periods of their medical journey.

METHOD

Objectives

- To assess the type and severity of stressors among first-year undergraduate medical students.
- To examine gender differences in experienced stressors.
- To explore the effect of residence type (hostel vs. day scholar) on perceived stressors.
- Study included the following stressors- Academic, Interpersonal and intrapersonal, teaching and learning, social, drive and desire, group activity.

Design of the study

In this study, we used a cross-sectional, exploratory survey design to assess stressors among first-year undergraduate medical students. The data were collected using a structured self-report questionnaire that captured stress levels across various domains including academic, interpersonal and intrapersonal, teaching and learning, social, drive and desire, and group activity stressors. The participants were recruited from medical colleges in Kolkata, and the survey was administered in person during regular academic hours. The study aimed to explore the differences in stressors based on gender and type of residence (hostel or day scholar). The process involved gathering both general and group-specific stress experiences from the students to understand which stressors were most impactful. Quantitative data analysis was carried out using independent samples t-tests to identify significant differences in stressors across demographic variables.

Participants

Five hundred twenty adults from Kolkata belonging to the age group of 18-21 years 1st Year MBBS students studying in Government medical colleges of West Bengal were selected through multi-stage stratified random sampling strategy to participate in the study. We selected 5 medical colleges from different areas of Kolkata, namely east, west, north, south, and central. Total of 600 students were randomly selected from all medical colleges, with 120 students from each medical college. We got 520 completed forms which were included in final study. The study comprised of both males and females, with 270 males and 250 females in the current sample. Based on the inclusion criteria, the study involved first-year MBBS students (both male and female) who had completed at least six months of their course. The exclusion criteria ruled out students with a history of chronic physical illness, psychiatric disorders, or substance abuse.

Tools Used

1. **Consent form:** A consent form was prepared to seek consent from the medical students for their participation in the present study.
2. **The Medical Student Stressor Questionnaire (Yusoff & Rahim, 2010):** The MSSQ is a standardized tool that measures stress across six domains: academic, interpersonal and intrapersonal, teaching and learning, social, drive and desire, and group activity.

Procedure

Institutional Ethics Committee approval was taken. Through multistage stratified random sampling, total of 520 participants was recruited in the current study. All participants studying 1st years MBBS with no known medical or psychiatric illnesses were included. Assessment tools were administered after taking informed consent. Along with the information schedule, all the scales were administered to the participants individually. Forms were filled by the participants in the presence of a mental health professional to clarify any arising doubts or explanations warranted for any item.

The **Medical Student Stressor Questionnaire (MSSQ)** was administered to all participants. Students were asked to carefully read each item and respond based on their experiences. The questionnaires were distributed and collected during regular academic hours in a controlled classroom environment to minimize distractions and ensure uniformity of administration. Students were instructed to complete the questionnaires independently without discussing with their peers.

Following data collection, responses were tabulated and categorized according to the stressor domains. The percentage of students reporting each type of stressor was calculated to determine the most frequently experienced stress domains. Further, independent samples t-tests were conducted to assess significant differences in stressor scores across gender (male vs. female) and residence type (hostel vs. day scholar). These statistical analyses allowed for comparative insights into subgroup-specific stress patterns.

Based on the results, the key stressors and their variations across demographics were discussed to better understand the psychosocial burden experienced by first-year medical students

Statistical Analysis

The data collected was statistically analysed using SPSS 25. t-tests were conducted to examine gender- and residence-based differences in stressor domains. Percentage was obtained for each stressor in terms of gender and overall total for the study group.

RESULTS

Pie Chart 1: Stressors In Students

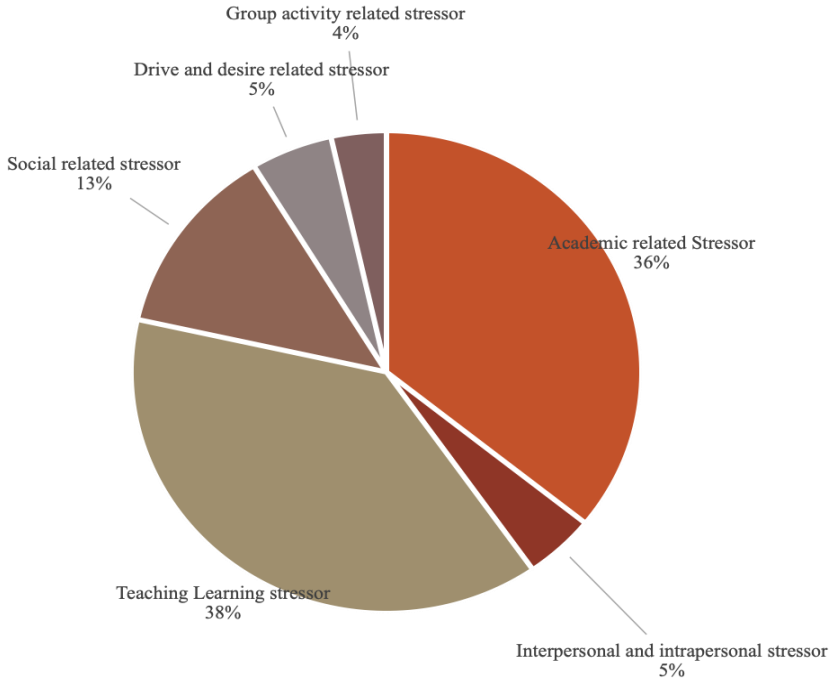

Table 1: Stressors In Students

Stressor Category	Percentage (%)
Academic	28%
Interpersonal & Intrapersonal	18%
Teaching & Learning	22%
Social	10%
Drive & Desire	12%
Group Activity	10%

Academic stress emerged as the most common stressor among first-year medical students, followed closely by teaching and learning pressures. Social and group-related stressors were the least reported.

Pie Chart 2: Stressors In Male Students

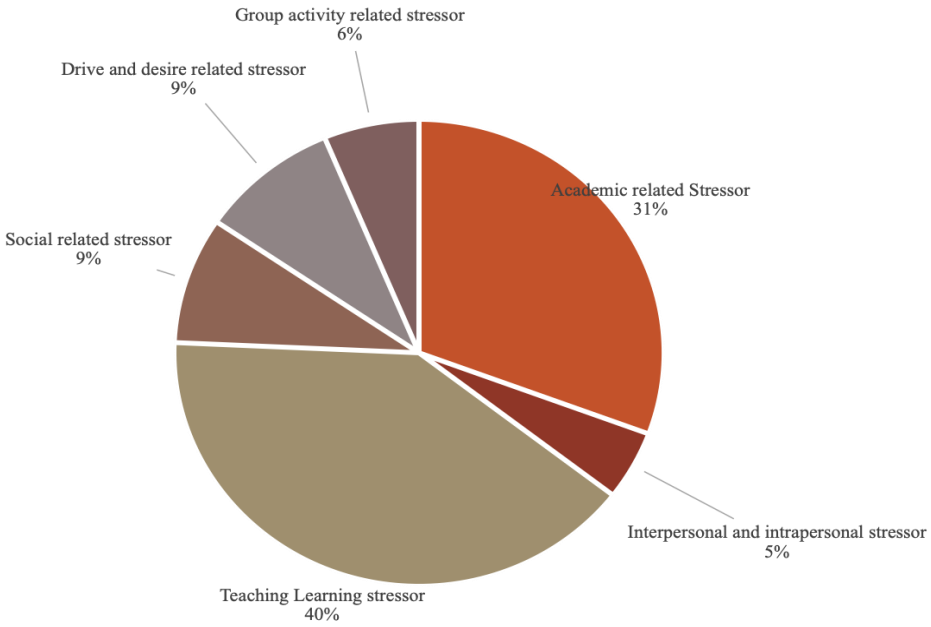

Table 2: Stressors In Female Students

Stressor Category	**Percentage (%)**
Academic	22%
Interpersonal & Intrapersonal	15%
Teaching & Learning	27%
Social	12%
Drive & Desire	16%
Group Activity	8%

Male students reported the highest stress in the teaching-learning domain, with drive/desire stress also prominent. Group activity stress was least among them.

Pie Chart 3: Stressors In Female Students

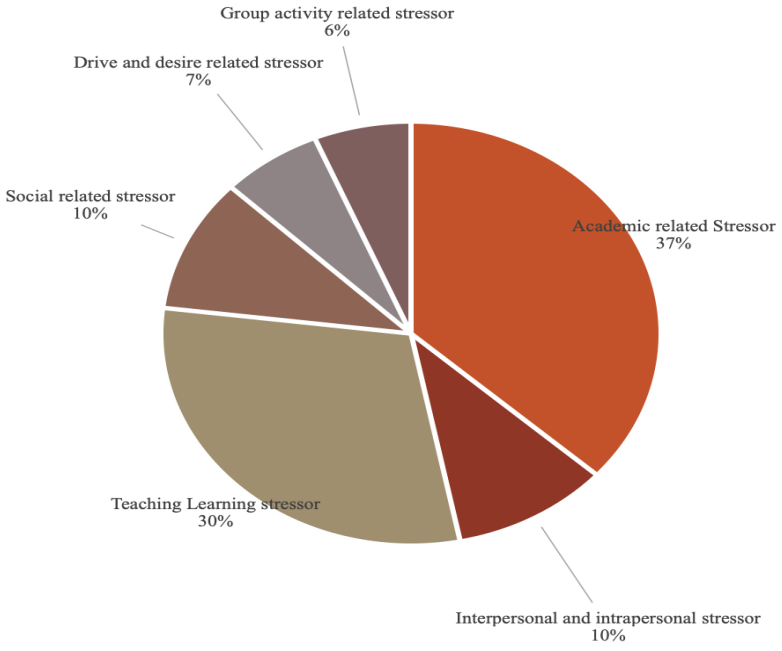

Table 3: Stressors In Female Students

Stressor Category	Percentage (%)
Academic	32%
Interpersonal & Intrapersonal	22%
Teaching & Learning	18%
Social	9%
Drive & Desire	11%
Group Activity	8%

For female students, academic and interpersonal stress were dominant, suggesting a blend of performance pressure and emotional adjustment challenges. Social and group stress remained lower.

Table 4: t-Test Showing Differences for Stressors in Terms of Gender

STRESSORS	GENDER	MEAN	SD	t	SIG
Academic	Male	1.88	0.39	3.890	.023*
	Female	2.16	0.19		
Interpersonal and Intrapersonal	Male	1.10	0.11	4.123	.004*
	Female	2.12	0.29		
Teaching and learning	Male	3.10	0.30	3.940	.005*
	Female	2.11	0.32		
Social related	Male	1.88	0.23	.719	.423
	Female	1.76	0.11		
Drive and desire	Male	2.10	0.18	1.123	.049*
	Female	1.72	0.51		
Group activity	Male	1.10	0.24	.315	.219
	Female	1.16	.18		

There is a significant effect of gender in student stressors. Males tend to have significantly high teaching/learning stressor and drive/desire stressor. Females tend to have significantly high academic stressor and interpersonal/intra-personal stressor.

Table 5: t-Test Showing Differences for Stressors in Terms of Residence type

STRESSORS	GENDER	MEAN	SD	t	SIG
Academic	Home	2.88	0.29	.695	.123
	Hostel	2.76	0.17		
Interpersonal and Intrapersonal	Home	1.10	0.15	.303	.284
	Hostel	1.12	0.19		
Teaching and Learning	Home	2.10	0.27	.814	.282
	Female	2.11	0.22		
Social related	Home	.90	0.13	.828	.314
	Hostel	.78	0.09		
Drive and desire	Home	1.80	0.09	.545	.289
	Hostel	1.72	0.10		
Group activity	Home	1.12	0.14	.941	.218
	Hostel	1.16	.023		

There was no significant effect of residence type on student stressors.

DISCUSSION

Stress emerged as a prominent theme in the experiences of first-year medical students, as revealed through the present study. The findings indicated that academic demands were not only the most frequently mentioned but also the most severe form of stress reported. Students described feeling overwhelmed by the volume of coursework, tight schedules, and continuous evaluations. These patterns of academic strain were consistent across responses and set the foundation for deeper emotional and psychological impacts throughout their training. Medical education in India—and globally—requires students to absorb vast amounts of material in limited time, leaving little room for rest or reflection. Frequent exams, practical sessions, and the constant fear of underperforming can affect their emotional state over time. Studies across different settings have repeatedly shown that academic stress is a leading contributor to burnout and poor mental health among medical students (Dahlin et al., 2005; Yusoff et al., 2011).

Another important finding from this study was that stress patterns differ by gender. Male students experienced higher stress related to teaching and learning, as well as goal-directed or desire-related areas. This might reflect deeper issues around expectations—both internal and external. Many male students may feel pressured to maintain a performance-driven image, particularly in competitive environments like medical school. Teaching methods that are rigid or overly focused on criticism may intensify their anxiety, especially if they feel they have little room to express confusion or seek support. This is echoed in international research showing that men often report stress linked to performance and evaluation (Al-Dubai et al., 2011).

Female students, on the other hand, reported more academic and interpersonal stress. While academic stress was high across genders, for females it seemed to coexist with relational stress—feeling disconnected from peers or teachers, or lacking emotional support in a new environment. For many students who move away from home for the first time, especially in the context of traditional family-centered Indian culture, the absence of familiar support systems can make the medical school transition feel more isolating. Some international studies have also found that female students are more likely to experience emotional exhaustion and interpersonal conflict under academic stress (Ishak et al., 2013).

Interestingly, this study found no major difference in stress levels based on residence type—whether the student lived in a hostel or with family. This is a useful insight because it challenges the common assumption that staying away from home adds significantly to stress. It suggests that the stress is more tied to academic demands and internal factors rather than location. It also underlines the idea that simply changing the living situation won't solve deeper stress-related problems. What is needed are institutional changes in how education is delivered and how students are supported.

One strength of this research lies in how it breaks down stress into specific types—academic, interpersonal/intrapersonal, teaching-learning, social, drive-desire, and group activity stressors. Rather than treating stress as a broad, vague issue, the study points to the exact areas where interventions may be most effective. For instance, improvements in the way material is taught, with more flexibility and empathy, might lower teaching-related stress. Programs that support communication skills and emotional adjustment might help with interpersonal stress. Counseling services tailored for enhancing motivation and goal-setting can reduce stress in such domains.

The present study has certain limitations which if considered would have led to higher degrees of sophistication. Since the sample was taken only from medical colleges in Kolkata, the findings may not represent the experiences of students in other parts of India or in different countries.

This research adds to the idea that stress in medical education is multi-layered. Academic overload is a universal issue, but when combined with gender-specific and interpersonal factors, the experience of stress becomes even more complex. Institutions need to look beyond general wellness campaigns and start offering more personalized and targeted support systems. Medical students would benefit from mentors, mental health check-ins, and flexibility in the learning environment. As noted by Dyrbye et al. (2006), long-term stress without intervention can lead to burnout, depression, and dropout—outcomes that hurt not just the student but also the healthcare system they are preparing to enter.

Medical colleges must treat stress not just as an individual weakness, but as a structural challenge. This study offers a small but important step in that direction.

CONCLUSION

This study highlights the high levels of stress among first-year medical students, with academic demands emerging as the most intense source. Patterns of stress varied by gender—male students reported greater difficulties related to teaching approaches and achievement-driven pressures, while female students were more affected by academic load and interpersonal challenges. Living arrangements didn't seem to make much of a difference in how stressed students felt, which suggests that the root of the stress may lie more in how medical education is structured than in where students stay. What really matters is how the system supports them. To truly help students manage stress better, medical institutions need to look closely at the pressures built into their programs and find ways to make the environment more manageable and student-friendly.

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Conflict of Interest
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