

Stress and its Correlates among Medical Students in Gambat Medical College

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Abstract

Background: The immense workload on undergraduate medical students may cause favorable or unfavorable stress, leading to positive or negative consequences. This study was designed to determine the frequency of stress, anxiety, and depression among the undergraduate students of Gambat Medical College.

Methodology: 300 students from various academic years, from the first to the final year of MBBS, were selected from Gambat Medical College, Khairpur, following inclusion and exclusion criteria. The Perceived Stress Scale Questionnaire-10 (PSSQ-10), a widely used tool for measuring perceived stress, was utilized to gather data. Stress levels were categorized as low (0-13), moderate (14-26), or high (27-40). Data Analysis was done using SPSS. Percentage, mean, and standard deviation of stress levels were calculated and compared across different academic years.

Results: Out of 300 MBBS students, 60 (20%) were from each year, that is, first, second, third, fourth, and final year. Females were 100 (33.33), and males were 200 (66.66). The demographic profile showed 4 (1.33%) students were married (all males). The average age of participants was 21.05 years. 109 (36.22%) students had low stress, 171 (56.9%) had moderate, and 20 (6.65%) had high stress. Overall 41.5% males and 25% females had low stress, 44.5% of males had moderate stress compared to 62% of females. High stress was observed in 3.5% of males compared to 13% of females, three times higher than in males. Significant variations were observed in the second year ($p = 0.053$), third year ($p = 0.007$), and fourth year ($p = 0.055$), implying that gender impacts stress levels during those academic years. Conversely, no significant distinctions were observed in the first and fifth years ($p = 0.929$ and 0.329 , respectively).

Conclusion: The data analysis found that students from all academic years reported moderate stress levels. Female students reported considerably greater stress levels than male counterparts, with a pronounced difference ($p = 0.00066$). These findings underscore the need for gender specific interventions to address stress among medical students, which could potentially improve their mental health and academic performance.

Keywords: Educational achievements, stress in medical students, anxiety, mental health.

1. INTRODUCTION

Stress can be defined as a state of psychological or emotional tension caused by various factors, while it can also refer to the body's natural responses aimed at self-protection [1]. Furthermore, stress occurs when an individual perceives incongruence between environmental demands (stressors) and their capacity to handle them [2].

In professional education, medical students often face high stress levels in their curriculum's theoretical and clinical aspects [3]. The immense workload leaves little room for rest, leading to instances where sleep deprivation becomes a serious concern [4, 5].

According to Linn & Zeppa (1984), medical school stress can benefit learning. The authors classified stress into two types: "favorable stress," which aids learning and performance, and "unfavorable stress," which can have negative consequences. There is a variation between students in how they experience stress. One may have considered favorable stress, but it could be unfavorable for others, depending on their experiences and coping

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mechanisms [6]. For many students, the first year of medical school brings about significant changes in their surroundings, accompanied by the realization that achieving complete mastery of education is impossible. This challenges their previous perception of themselves as successful individuals capable of achieving perfection [7].

Moving into the second and third years, these students are occupied with preclinical courses encompassing vast content.

This study aimed to determine the frequency of stress, anxiety, and depression among the undergraduate students of Gambat Medical College.

2. METHODOLOGY

The section thoroughly explains the method used to examine stress levels among medical students at Gambat Medical College, Khairpur, using a cross-sectional study design.

2.1. Study Design

The study employed a cross-sectional approach to gain an understanding of the stressful situations experienced by the 300 MBBS students over several academic years at Gambat Medical College.

2.2. Participants/Sampling

Participant were selected based on specific criteria:

- **Inclusion Criteria:** Students of Gambat Medical College from first to final year.
- **Exclusion Criteria:** Students suffering from mental health disorders, currently using antidepressants or anxiolytics, or recently had a very traumatic incident.
- **Sample Size:** The 300 students sample size for this stress study was selected to provide enough statistical power (>80%) which is required to identify significant effects and correlations related to stress. The wide range of participants' academic backgrounds and specializations allows us to draw valid conclusions relevant to a wide range of pupils. In addition to following ethical guidelines like informed consent and confidentiality of participants, we selected this size for practical reasons such as restricted resources and time. By recruiting 300 students and sticking to accepted standards in stress research, we can compare our findings with other studies and investigate the impact of stress on students' well-being [27-28].

2.3. Data Collection Procedures

Data collection procedures involved administering the Perceived Stress Scale Questionnaire10 (PSSQ-10):

- **Instrument:** The PSSQ-10 is a set of ten statements with both positive and negative wording that are scored on a Likert scale from 0 to 4.

- **Administration:** With faculty permission, questionnaires were handed out during scheduled lectures. Substitutions were set up for students who were unable to participate in order to make sure that every participant who was eligible could finish the questionnaire.

2.4. Variables and Measures

The primary variable of interest was perceived stress levels, assessed using the PSSQ-10:

- **Scoring:** Scores for each student were calculated by summing the ratings across all ten items. The scores of positively worded items (e.g., items 4, 5, 7, and 8) were reversed before calculation. Higher total scores indicated higher perceived stress levels, ranging from 0 to 40.
- **Categorization:** According to total scores, stress levels were regarded as low (0–13), moderate (14–26), or high (27–40), enabling detailed analysis of how students perceive stress.

2.5. Data Analysis

Statistical analyses included:

- **Chi-square Tests:** Used to compare stress levels between male and female students, assessing the association between gender and stress perception.
- **Procedure:** Chi-square tests were conducted to determine if there was a significant relationship between categorical variables (gender and stress levels), with a significance level set at 0.05.
- **Descriptive Statistics:** Additionally, descriptive statistics such as percentages, means, and standard deviations were computed to summarize and compare stress levels across different academic years (Table 5, Fig. 5-6).

2.6. Study Duration

The study was conducted from May 2023 to October 2023, covering the data collection and analysis phases.

2.7. Ethical Considerations

Ethical considerations were of utmost importance throughout the study:

- **Informed Consent:** Before any student participated in the survey, their written informed consent was obtained. The goal of the study, the measures taken to maintain confidentiality, and the option to discontinue participation at any time without facing consequences were explained to the participants.
- **Ethics Approval:** To ensure that every step is in accordance with the ethical standards and guidelines, the study protocol was approved by the Ethics Committee of the Gambat Medical College.

2.8. Limitations

Several limitations were acknowledged:

- *Sample Bias:* Using a convenience sample approach may prevent the results from being applied to all medical students.
- *Self-Reporting Bias:* Individual perceptions or recollections of events may influence participants' answers on the PSSQ-10, which could result in less accurate reports of stress levels.
- *Cross-Sectional Design:* Because the study was cross-sectional, we were unable to explore the relationships between different stress domains and characteristics like gender and study year.
- *Generalizability:* The results may not be generalizable to all medical students or to other regions with different educational systems, as they were based on a sample of only 300 students from a single institution or region (Fig. 1).

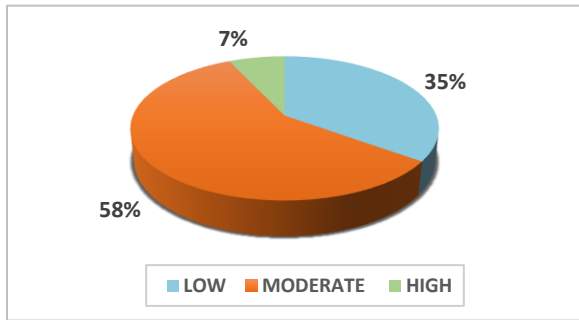


Figure 1: Level of stress in 300 medical students.

3. RESULTS

The response rate was 100%. Out of 300 possible students, the students were divided into five groups, one for each year with 60 students each. Among 300 students, 100 (33.33) were females, and 200 (66.66) were males. Table 1 shows the demographic profile of students; 4 (1.33%) students were married, of which 4 were males and 0 were females. The average age of participants was 21.05 years. 109 (36.22%) students had low stress, 171 (56.9%) students had moderate stress, and 20 (6.65%) students had high stress, as shown in Table 2.

According to gender, 41.5% of males had low stress compared to females (25%). 44.5% of males had moderate stress compared to 62% of females. 3.5% of males had high stress, while females had thrice higher stress compared to males, i.e., 13% (Table 3-4, Fig. 2-4).

This calculation is based on PSSQ scoring, which says female students have more stress than male students. The p-value calculated on the chi-square calculator is (0.000666) which is less than the significant value (0.05) also supporting our study's result which show a substantial difference between two variables compared.

Table 1: Demographic data of all MBBS years.

	1 st year	2 nd year	3 rd year	4 th year	5 th year
Males	40	40	40	40	40
Females	20	20	20	20	20
Average age (years)	19.13	20.15	20.93	22	23.04
Married	0	0	0	2	2

Table 2: Year wise level of stress among all students.

Year of Study	Low Stress	Moderate Stress	High Stress
1st year	23(7.6%)	34(11.3%)	03(1%)
2nd year	25(8.3%)	30(10%)	05(1.66%)
3rd year	17(5.66%)	40(13.3%)	03(1%)
4th year	25(8.3%)	33(11%)	2(0.66%)
5th year	19(6.33%)	34(11.3%)	07(2.33%)
Total (n) (%)	109(36.22%)	171(56.9%)	20(6.65%)

Table 3: Level of stress among female and male students.

Undergrad Level	FEMALES N=20			MALES N=40			P- Value
	Low Stress	Moderate Stress	High Stress	Low Stress	Moderate Stress	High Stress	
1 st year (n=60)	8	11	1	14	24	2	0.929
2 nd year (n=60)	6	10	4	19	20	1	0.053
3 rd year (n=60)	2	15	3	15	25	0	0.007
4 th year (n=60)	4	15	1	21	18	1	0.055
5 th year (n=60)	5	11	4	14	23	3	0.329

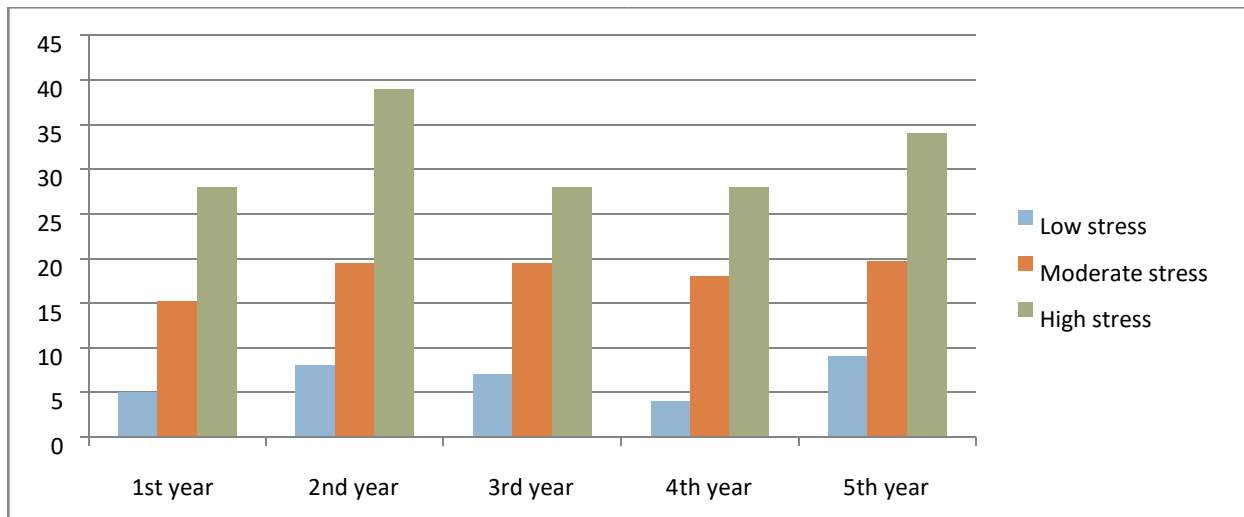


Figure 2: Variation in stress levels among students over five years.

Table 4: Overall stress levels for females and males.

GENDER	LOW STRESS	MODERATE STRESS	HIGH STRESS	TOTAL
MALE	83	110	7	200
FEMALE	25	62	13	100

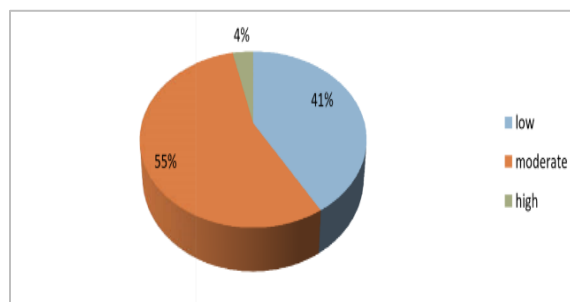


Figure 3: Stress levels among male students over five years: low, moderate, high.

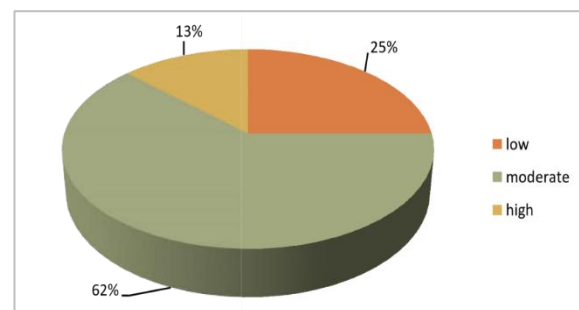


Figure 4: Stress levels among female students over five years: low, moderate, high.

Table 5: Mean and standard deviation with perceived stress scale.

	1 st year	2 nd year	3 rd year	4 th year	5 th year
Males	19.2 ± 1.06	13.7 ± 5.53	14.87 ± 5.5	13.6 ± 6.59	14.97 ± 7.62
Females	15.15 ± 6.85	19.4 ± 8.33	19.47 ± 5.84	18.04 ± 5.86	19.65 ± 8.16

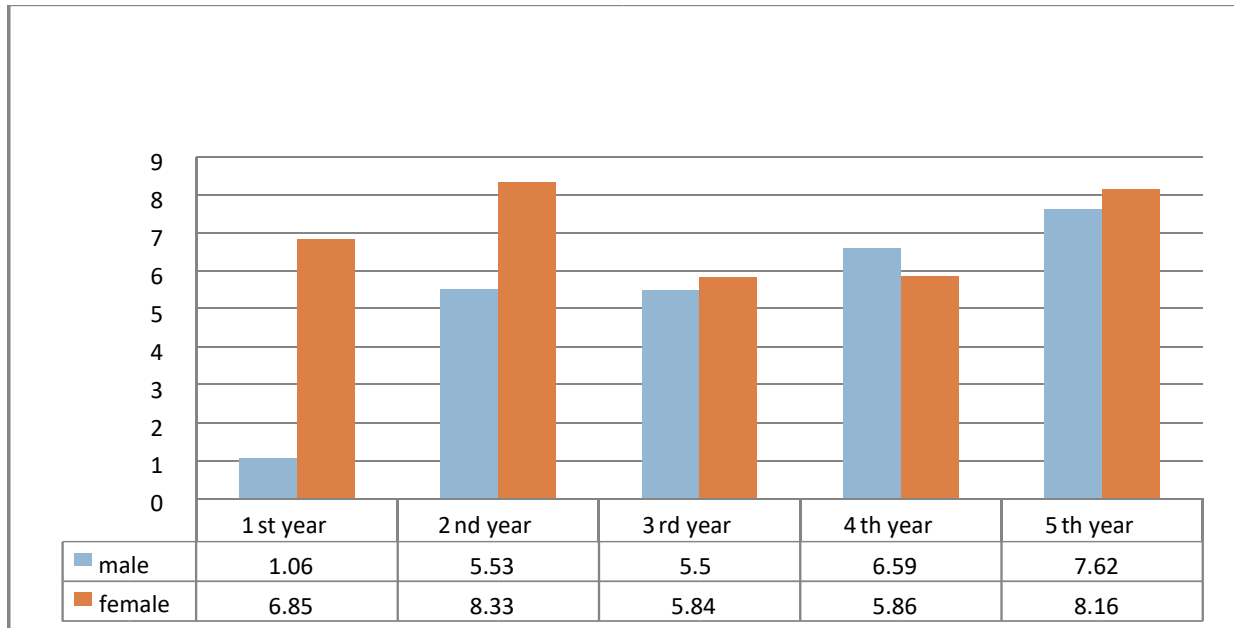


Figure 5: Comparative standard deviation of stress in male and female students.

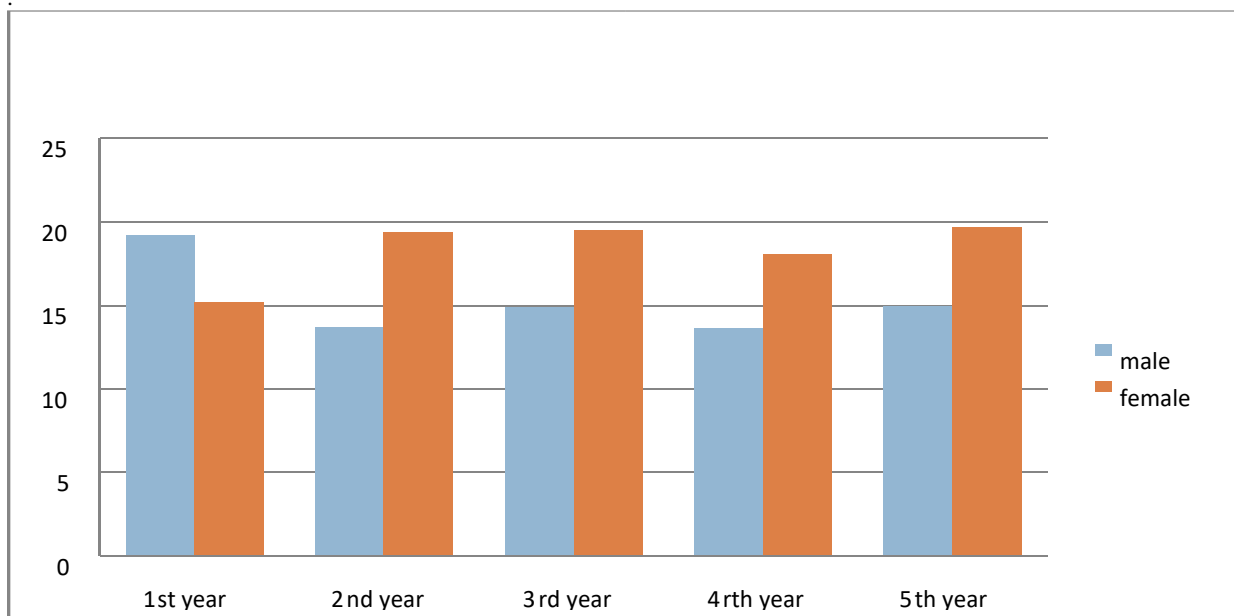


Figure 6: Comparative mean stress levels in male vs. female students over five years.

4. DISCUSSION

In this study, the stress level in female students was significantly high ($p=0.00066$) compared to male students. Many gender comparative studies have shown higher levels of stress in females compared to their male counterparts. Graves *et al.* [8] observed gender differences in strategies used for individual coping and coping dimensions. Utilization of the emotion-focused coping dimension was

more common with females, who endorsed using the 4-coping strategy, such as venting, instrumental support, emotional support, and self-distraction, more often than males.

Generally, students of all years were found to be under moderate stress. In medical school, numerous factors contribute to the occurrence of stress. These include academic pressures, managing time effectively, experiencing peer pressure, making significant career

decisions, and grappling with financial constraints [9, 10]. Regrettably, these stressors often lead to medical students struggling to devote ample time to their families and friends. It becomes increasingly challenging for them to engage in healthy activities such as sports, exercise, and meditation. Unfortunately, Pakistan's medical colleges do not prioritize the promotion of sports or co-curricular activities [11]. Instead of recognizing their importance in one's life and incorporating them accordingly throughout the year, they are limited to being annual events only. Consequently, our upcoming healthcare professionals severely lack mental health support and a sense of overall well-being [12].

Furthermore, excessive stress from training in medicine can tempt students into resorting to unfair means during exams while also causing difficulty in resolving interpersonal conflicts. This increased pressure may result in decreased attention span and reduced concentration levels, leading to compromised objectivity and escalation of errors. Moreover, improper behavior, including negligence, is commonly witnessed among stressed medical students [13].

As students leap from preclinical to clinical training, they acquire valuable skills in approaching and interacting with patients, which helps alleviate tension [14]. However, many students still harbor concerns about their level of knowledge and competencies necessary for practicing medicine. As they progress through the final year of their education, students gradually assume greater responsibility for patient care. Even though there is an expectation for their competence to increase, feelings of ignorance and anxiety persist. To handle these emotions, some students may show overconfidence while others strive to read everything available and engage in intellectual debates [15]. A study conducted by Sreeramareddy *et al.* 2007 identified several common stressors medical students face: demanding parental expectations, extensive course content that often overwhelms them, overcrowded lecture halls impeding effective learning environments, and dissatisfaction with instructional lectures provided [16].

Moreover, the presence of stress in students contributes to impaired decision-making abilities, frequent absences from school, tendencies towards self-medication, and addictive behaviors such as indulging in khat chewing, smoking cigarettes, and consuming alcohol [17]. Prolonged exposure to stressful circumstances further leads to a decline in academic performance, memory loss issues, and strained relationships with both peers and family members. Consequently, this causes an overall dissatisfaction with life itself [18]. Continual exposure to these distressing conditions can also result in severe health complications such as high blood pressure, heart attacks, or strokes. Additionally, making one susceptible to diabetes mellitus and obesity, which accelerate the aging process [19]. Stress has likewise been associated with sleep disturbances and lower academic achievements [20]. Additionally, stress has been associated with substance abuse and the development

of addiction [21]. Studies investigating prevalence rates of stress among medical students have determined it to be 41.9% in Malaysia, 31.2% in British universities, and remarkably high at 61.4% in Thailand [22-24]. The findings from a study conducted at King Saud University in Saudi Arabia reported an even higher prevalence rate of stress among medical students at 57% [25]. Furthermore, other research highlighted that 2.7% of Swedish medical students had attempted suicide as a result of overwhelming stress [26].

5. CONCLUSION

Generally, students of all years were found to be under moderate stress. The stress level in female students were significantly high ($p=0.00066$) compared to male students. By revealing the level of stress acquired during studies, this study adds to the existing literature. The university faculty may need to draw attention to understanding various factors that could affect student's well-being. To address these issues, public and health policymakers should consider this study specially the policymakers of Gambat Medical College and design the policy according to it, except that further study should be conducted to know the underlying causes of stress, especially among female students, and to address them in a better way. Different wellness programs should be initiated to reduce the tension among medical students, such as the following:

- Time management and study skill workshops (how to study effectively)
- Counseling and supportive services (peer supportive group and access to mental healthcare professionals)
- Physical wellness programs (fitness classes, sports, events)
- Social events and outdoor activities to improve social interaction and build skills and confidence
- Stress reducing therapies like meditation classes
- Workshops on sleep Importance
- Easily bent academic schedule and academic counseling
- The health care policymakers should screen ultra-carefully for stress-related issues among medical students, teachers, and patients and address the underlying issues

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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CONSENT TO PARTICIPATE

Written informed consent was obtained from the participants for publication and any accompanying images.

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AUTHOR'S CONTRIBUTION

- VK: data collection, formal analysis, project administration, writing— original draft preparation.
- STF: methodology, data collection, project administration, writing— original draft preparation.
- UA: conceptualization, visualization, data collection, writing—original draft preparation.
- SK: formal analysis, methodology, data curation, writing, editing, and review.
- SJ: resources, data collection, data curation, formal analysis, study design.
- KN: Assisted in Data Collection, and Data Analysis. Also assisted in review and editing.
- AI: resource finding, literature review, assistance in data collection, and interpretation of results.
- Memon.MA: supervised the Project.

All authors read and approved the final manuscript.

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