

Causes of Academic Stress and Coping Strategies among Undergraduate Medical Students in Pakistan

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ABSTRACT

Objective: To explore the common causes of educational stress and the coping strategies among undergraduate medical students in Pakistan.

Study Design: Descriptive, cross-sectional study.

Place and Duration of the Study: Fatima Jinnah Medical University, Lahore, Allama Iqbal Medical College, Lahore, and Shifa College of Medicine, Islamabad, Pakistan, in November 2024.

Methodology: Data were collected through Google Forms and the students' filling of the forms was considered consent to participate in the study. Causes of educational stress and proposed coping mechanisms were recorded. The association of various demographic factors with various common causes of stress was assessed by applying the chi-square test.

Results: A total of 498 students participated in the study. Among these, 72.7% were females and 27.3% were males. The mean age of all was 21.9 ± 1.7 years. The most common cause of stress was disturbed study-life balance (68.5%) followed by worrying about the future (57.6%) and demanding curriculum (42.4%). The most common coping mechanism was practising faith/religion (65.8%), followed by prioritising sleep (51.4%), pursuing hobbies (49.4%), and engaging in sports and leisure activities (49.0%). Disturbed study-life balance and demanding curriculum were found to be associated with female gender and place of study/institution ($p < 0.001$) and worrying about the future was found to be associated with the higher year of study ($p < 0.001$).

Conclusion: Disturbed study-life balance, demanding curriculum, and worrying about the future are the most common causes of educational stress in Pakistani medical students. Practising faith/religion is the most commonly employed coping mechanism. It is essential to explore the causes of stress and coping strategies in order to ensure the mental and physical well-being of medical students.

Key Words: Undergraduate medical education, Psychological burnout, Exam stress, Medical student, Anxiety.

How to cite this article: Gondal HM, Afzal R, Masood A, Din MBMU, Ahmed A, Iqbal U. Causes of Academic Stress and Coping Strategies among Undergraduate Medical Students in Pakistan. *J Coll Physicians Surg Pak* 2025; **35(02)**:174-179.

INTRODUCTION

The medical profession is regarded as one of the noblest professions in the world. However, it is characterised by numerous challenges which are often unique to this profession. The demanding nature of the medical education curriculum, the rigorous process of examination, high socio-cultural expectations from the family and peers, and disturbed work-life balance pose multiple challenges for the undergraduate medical students of Pakistan.^{1,2}

Educational stress is now recognised as a prevalent issue within the landscape of the undergraduate medical education system of Pakistan and has far-reaching effects on the mental, physical, and emotional health of medical students.^{3,4} If not timely addressed, educational stress can ultimately affect the academic performance and overall well-being of the medical students.⁵ Identification of the causes of academic stress among medical students is important in order to formulate strategies to prevent these stressors.

A local study from the University Medical and Dental College, Faisalabad, Pakistan, showed that the prevalence of educational stress among undergraduate medical students of pre-clinical and clinical classes ranged from 48.6 to 51.5%.⁶ Among the various contributing factors, lack of time for recreational activities, family problems, living conditions in hostels, perceived loneliness, worrying about the future, financial constraints, and high parental expectations were the most common factors.⁶ Previous local and international studies have identified

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Received: December 09, 2024; Revised: January 09, 2025;

Accepted: January 25, 2025

DOI: <https://doi.org/10.29271/jcpsp.2025.02.174>

certain stress management strategies used by medical students to counter stress. These strategies included praying or meditation, pursuing hobbies, indulging in sports and leisure activities, prioritising sleep, and seeking professional help.^{7,8} Considering the high level of educational stress among medical students, the development of effective coping mechanisms is highly imperative as unhealthy activities such as smoking, isolation, or substance abuse can further aggravate the stress level and can have detrimental effects on the mental and physical health of students.⁹ Enhanced stress levels among medical students are linked with the development of anxiety, depression, and burnout.¹⁰

The structure of the medical education system of Pakistan is such that the students admitted to the medical institutions are high achievers and their desire to achieve academic excellence leads to a highly competitive learning environment. This high level of competition along with societal expectations is a recipe for the development of educational stress among students.¹¹ Many local studies have reported the prevalence of educational stress and few have identified the reasons for stress and the coping mechanisms employed by students to counter these stressors. There is a need for a thorough analysis of these factors and coping mechanisms to better understand the reasons for educational stress and provide effective solutions that may help students prevent the development of stress.

This cross-sectional study was designed to explore the common causes of educational stress in undergraduate medical students of Pakistan and to identify coping strategies.

METHODOLOGY

A descriptive cross-sectional study was conducted among MBBS students of three medical institutions including Fatima Jinnah Medical University, Lahore, Allama Iqbal Medical College, Lahore, and Shifa College of Medicine, Islamabad, in November 2024. Institution names were presented as study site A, B, and C, respectively, to ensure anonymity. Ethical approvals were taken from the Institutional Review Boards (IRBs) of respective institutions. All registered students of any age, gender, or year of study of the concerned institutions were included in the study. Data were collected through Google Forms using non-probability consecutive sampling. A minimum sample size of 384 was calculated using a 95% confidence level, a 5% margin of error, and an expected percentage of stress among medical students of Pakistan as 48.5% as reported by Tariq *et al.*⁶ However, all the forms received within the first seven days of sending the forms were included even if they exceeded the minimum sample size.

The Google Forms contained information about demographic variables, perceived causes of educational stress, and their proposed solutions. These forms were designed based on the evidence gathered through a literature review of previous studies and were pilot-tested before being sent to the study participants. Expert validation was done and feedback from experts was incorporated to make the data collection tool more valid. Information leaflets about the study were sent along with Google

forms. The participants were assured of confidentiality and anonymity. Filling of the forms by students was considered as their consent to participate in the study.

Data from the Google Forms were first entered into Microsoft Excel 2016 and then transferred and analysed using the Statistical Package for Social Sciences (SPSS) (IBM SPSS Inc., Armonk, NY, USA) version 27.0. Quantitative variables such as age were presented as mean and standard deviation. Qualitative variables such as gender, year of study, type of student (day scholar / hostelite), causes of stress, and proposed solutions were presented as frequencies and percentages. Association of demographic factors, such as gender, institution, year of study, and type of student (day scholar / hostelite), was assessed with various common causes of stress by applying the chi-square test. A p-value of ≤ 0.05 was considered statistically significant.

RESULTS

A total of 498 students participated in the study. Among these, 362 (72.7%) were females and 136 (27.3%) were males. The mean age of all participants was 21.9 ± 1.7 years. Out of these, 396 (79.5%) students belonged to the clinical years (third year to final year) and 102 (20.5%) to the pre-clinical classes. Two-hundred and ninety-three (58.8%) students were hostelites and 205 (41.2%) were day scholars. The demographic characteristics of the undergraduate students participating in the study are given in Table I.

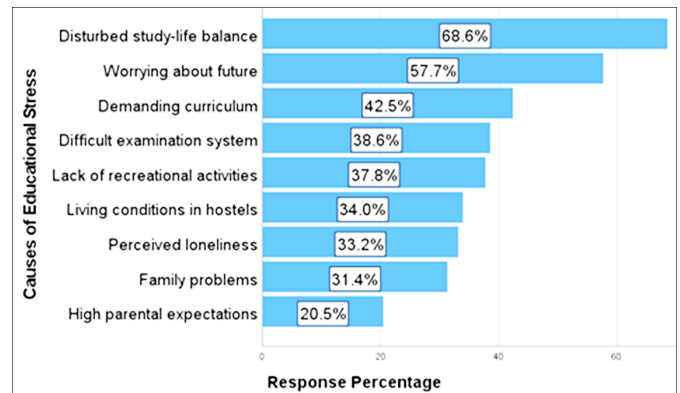


Figure 1: Common causes of educational stress among the undergraduate medical students of Pakistan.

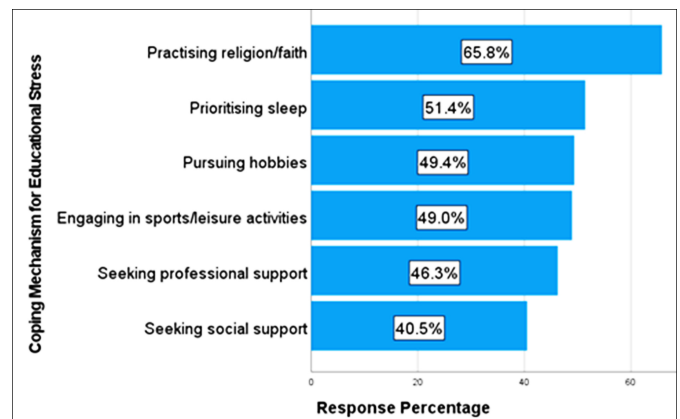


Figure 2: Common coping mechanisms of educational stress among the undergraduate medical students of Pakistan.

Table I: Demographic characteristics of study participants (n = 498).

Characteristics	Mean ± S.D	Range
Age (years)	21.9 ± 1.7	17 - 31
	Frequency (n)	Percentage (%)
Gender		
Male	136	27.3%
Female	362	72.7%
Institution		
Study site A	226	45.4%
Study site B	236	47.4%
Study site C	36	7.2%
Year of study		
MBBS 1 st Year	62	12.5%
MBBS 2 nd Year	40	8.0%
MBBS 3 rd Year	163	32.7%
MBBS 4 th Year	160	32.1%
MBBS 5 th Year	73	14.7%
Type of student		
Day scholar	205	41.2%
Hostelite	293	58.8%

Table II: Association of various characteristics of participants with the common causes of educational stress (n = 498).

Characteristics	Disturbed study-life balance			Worrying about future			Demanding curriculum		
	Yes	No	p-value	Yes	No	p-value	Yes	No	p-value
Gender									
Male	81 (59.6%)	55 (40.4%)	0.009	83 (61.0%)	53 (39.0%)	0.347	40 (29.4%)	96 (70.6%)	<0.001
Female	260 (71.8%)	102 (28.2%)		204 (56.4%)	158 (43.6%)		171 (47.2%)	191 (52.8%)	
Institution									
Study site A	169 (74.8%)	57 (25.2%)	0.006	127 (56.2%)	99 (43.8%)	0.091	116 (51.3%)	110 (48.7%)	<0.001
Study site B	145 (61.4%)	91 (38.6%)		133 (56.4%)	103 (43.6%)		80 (33.9%)	156 (66.1%)	
Study site C	27 (75.0%)	9 (25.0%)		27 (75.0%)	9 (25.0%)		15 (41.7%)	21 (58.3%)	
Year of study									
MBBS 1 st Year	42 (67.7%)	20 (32.3%)	0.196	25 (40.3%)	37 (59.7%)	<0.001	25 (40.3%)	37 (59.7%)	0.065
MBBS 2 nd Year	33 (82.5%)	7 (17.5%)		25 (62.5%)	15 (37.5%)		23 (57.5%)	17 (42.5%)	
MBBS 3 rd Year	105 (64.4%)	58 (35.6%)		86 (52.8%)	77 (47.2%)		58 (35.6%)	105 (64.4%)	
MBBS 4 th Year	114 (71.3%)	46 (28.7%)		96 (60.0%)	64 (40.0%)		76 (47.5%)	84 (52.5%)	
MBBS 5 th Year	47 (64.4%)	26 (35.6%)		55 (75.3%)	18 (24.7%)		29 (39.7%)	44 (60.3%)	
Type of student									
Day scholar	144 (70.2%)	61 (29.8%)	0.447	128 (62.4%)	77 (37.6%)	0.069	94 (45.9%)	111 (54.1%)	0.188
Hostelite	197 (67.2%)	96 (32.8%)		159 (54.3%)	134 (45.7%)		117 (39.9%)	176 (60.1%)	

Chi-square test was applied. p-values in bold represent statistical significance.

The most common cause of stress was disturbed study-life balance in 341 (68.5%) students. This was followed by worrying about future in 287 (57.6%), and 211 (42.4%) students identified demanding curriculum as a cause of stress (Figure 1). The most common coping mechanism was practising faith/religion proposed by 320 (65.8%) students. The other common solutions proposed included prioritising sleep in 250 (51.4%), pursuing hobbies in 240 (49.4%), and engaging in sports and leisure activities in 238 (49.0%) students (Figure 2).

The association of gender, institution, year of study, and type of student (day scholar or hostelite) was assessed with the common causes of stress (Table II). Disturbed study-life balance was associated with female gender ($p = 0.009$) and place of study/institution ($p = 0.006$). More female students reported disturbed study-life balance as compared to male students (71.8% vs. 59.6%). Worrying about future was associated with the year of study ($p < 0.001$) and the highest prevalence of 75.3% was found in final year students. Demanding curriculum as a cause of educational stress was associated with female gender ($p < 0.001$) and institution ($p < 0.001$).

DISCUSSION

The present study was conducted among the undergraduate medical students of Pakistan to understand the common causes of educational stress and coping mechanisms employed by the students to deal with stress. The mean age of all participants was 21.9 ± 1.7 years. A study on medical students of the Agha Khan University (AKU), Karachi, Pakistan, showed that the mean age of all participants was 20.9 ± 1.9 years, which is very similar to the present study.¹² There is a very narrow range for age difference between medical students due to the set criteria for admission and the system of higher education in Pakistan. More than 70% of the participants in the present study were females. A large-scale study on more than 2,500 medical and dental students across various medical institutions in Pakistan showed that >65% of the participants were females.¹³ There are more female students in medical colleges in Pakistan due to their preference for this profession.¹⁴ Also, in the present study, one of the study sites was a women-only medical university which serves as a plausible reason for a higher ratio of female participants in this study.

Disturbed study-life balance was the most common cause of educational stress in the students, which was present in >68% of the students. The demanding nature of the medical education system leads to a poor balance between study time and personal life. In a local study conducted by Asghar *et al.*, more than 18% of the medical students were found to have burntout. Among these students, 48% reported that they do not find time to do what they like to do, almost 50% reported that they have no time for vacations, and 14% agreed that they find it difficult to find time for praying.¹⁵ Worrying about future was reported by >57% of the students in the present study. In a study by Joseph *et al.*, worrying about future was a common reason for academic stress among medical students and was found to be independently associated with stress ($p = 0.023$).¹⁶ It was believed that this worry may be due to the difficult postgraduate entrance exams and selection of speciality of choice in such a competitive environment.¹⁶ This also explains the reason why worrying about the future was most commonly reported by final-year students as they were approaching the post-graduate entrance examinations.

Demanding curriculum was reported as a cause of academic stress in >42% of the students. In a Saudi study by Gazzaz *et al.*, a demanding curriculum was the most common cause of academic stress along with frequent examinations and sub-optimal performances in examinations. The length of the curriculum, difficult examinations, and language barrier due to teaching in a non-native language (English) were believed to be the reasons why many students find the curriculum demanding.¹⁷ Among the various coping mechanisms of academic stress, practising faith/religion was the most common coping mechanism reported by >65% of the students. More than half of the students reported prioritising sleep as their coping mechanism. Other common coping mechanisms were pursuing hobbies and engaging in sports and leisure activities, which were practised by almost half of the students. Religious coping has been found to be a common coping mechanism in a number of local and international studies.^{10,18} Understanding that there is an external locus of control, reduces stress; however, negative religious coping, i.e., belief that one has been punished by God has been found to significantly enhance stress levels among medical students.^{18,19}

Prioritising sleep is a common stress-coping mechanism among medical students. Mugford *et al.*, surveyed medical students from the Wake Forest School of Medicine, who had undergone active resilience training (ART) for the management of educational stress, and found that paying close attention to sleep was adopted as a coping mechanism by 77.4% of the students.²⁰ Poor sleep quality not only leads to chronic inflammation and poor immunity in students but also causes stress, anxiety, and depression due to various mechanisms such as enhanced activity of the amygdala and activation of the sympathetic system. These mechanisms can be reversed by improving sleep quality.²¹ Physical activity has

been found to reduce stress levels. In a local study by Siddiq *et al.*, stress levels were significantly reduced in medical students after one week of sports activities.²² Those medical students who perform regular physical activity have less level of stress than those who do not perform physical activity and this reduction in stress scores is found to be independently associated with the duration of physical activity.²³

The present study also assessed the association of various demographic factors with the causes of educational stress. Gender, year of education, and place of study/institution were significantly associated with various causes of stress. In a large-scale meta-analysis involving data from more than 40,000 medical students, place of study was found to be significantly associated with the prevalence of anxiety ($p = 0.04$), whereas, no statistical significance was observed with gender and year of study ($p > 0.05$).²⁴ Another meta-analysis of published literature on Chinese medical students showed that higher years of study, rural residence, and having other siblings were found to be associated with higher levels of anxiety among medical students ($p < 0.001$).²⁵ The authors hypothesised that increased pressure of study in senior years, financial and family burden in rural areas, and division of parental attention towards other siblings were the probable reasons.²⁵ Thus, the causes of stress among medical students appear to be multi-factorial and a detailed discussion of these factors will be beyond the scope of this article. Further studies are recommended in order to explore these factors.

The present study has certain limitations. The study was conducted in three medical colleges from the same province of Pakistan. The situation in other provinces may be different. The study did not objectively assess the presence and level of stress among the students. The study subjectively assessed the prevalence of various causes and coping mechanisms, thus giving rise to chances of classification bias. Although complete anonymity was ensured, still the possibility of participant bias cannot be totally excluded.

CONCLUSION

Disturbed study-life balance, worrying about the future, and demanding curriculum are the most common causes of educational stress among medical students in Pakistan. The most common coping mechanisms employed by the students included practising religion/faith, prioritising sleep, pursuing hobbies, and engaging in sports and leisure activities. Gender, year of studies, and place of study/institution are associated with various causes of stress. As educational stress can negatively affect the physical health and academic performance of medical students, it is important to conduct further studies in order to explore the causes of academic stress in medical students and to identify strategies for the prevention of stress. The mental and physical well-being of medical students should be ensured in order to improve the future of healthcare in the country.

ETHICAL APPROVAL:

Ethical approvals were taken from the Institutional Review Boards of Fatima Jinnah Medical University (FJMU), Lahore, Allama Iqbal Medical College (AIMC), Lahore, and Shifa College of Medicine (SCM), Islamabad, Pakistan.

PARTICIPANTS' CONSENT:

Information leaflets regarding the study were sent along with the Google Forms. The participation was voluntary and filling out the forms was considered consent to participate.

COMPETING INTEREST:

The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:

HMG, RA, AM, MBMUD: Literature review, data collection, and write-up

AA: Conceptualisation of the study, data analysis, and write-up.

UI: Conceptualisation of the study and technical guidance.

All authors approved the final version of the manuscript to be published.

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