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Exploring the Impact of Academic, Environmental, and Psychosocial Stressors on the Mental Well-Being of Medical Students

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ABSTRACT

Exploring the multifaceted impact of academic, environmental, and psychosocial stressors on students' overall mental well-being is necessary, identifying key areas for intervention and support. **Objectives:** To see the prevalence of different stressors in medical students. Also, to assess their mental well-being and the correlation of different stressors with it. **Methods:** An analytical cross-sectional study in a private medical college was done from July 2024 to December 2024. A questionnaire was developed through Google Forms and distributed through social media platforms, and quota non-purposive sampling was done. Stressors were assessed through the Likert scale, and mental well-being through the Kessler scale. Chi-square and independent sample T-tests were employed. P-value <0.05 was taken as significant. **Results:** Mild to moderate effects of academic, environmental, and psychosocial stressors were observed. Mostly, students were having severe mental distress, and an equal percentage were likely to be well. A moderate positive correlation between mental well-being and stressors was observed with significant p-values between mental well-being and academic stressors (r=0.497, p=<0.001), environmental stressors (r=0.432, p=<0.001), and psychosocial stressors (r=0.489, p=<0.001); depicting increased distress were associated with higher prevalence of stressors among participants. **Conclusions:** It was concluded that female, and students of final year MBBS were having more mental distress. Stressors were having a mild to moderate effect on participants. Establishing an academic culture that provides a haven for all, normalizes seeking help, and promotes collaboration over competition would go a long way toward alleviating some of the stressors that medical students face.

INTRODUCTION

This relates to the fact that obtaining a degree in medicine is widely considered to be among the most intellectually demanding of all educational achievements. While medical education provides students with the knowledge and expertise necessary to treat complicated health problems, the demands of this training usually encroach into serious stress [1]. Students enrolled in medical colleges or universities face a unique combination of academic, environmental, and psychosocial challenges that can adversely affect their mental health. Therefore, as the forces come into play, there are sufficient reasons to look at this whole issue from a comprehensive perspective of the role that these pressures play toward effective mental well-being for medical students [2]. When compared with other fields, medical students are more susceptible to mental health disorders. A high number of studies present rates that indicate a greater prevalence of depression, anxiety, and burnout in this group. Most importantly, some causes of mental health problems include an overwhelming academic workload, very malicious assessments, and a lot of requirements to do well academically. At the same time, environmental aspects would include inadequate recreation, having to adapt to new circumstances of existence, and lacking social support. The above-stated problems would further increase in levels with psychosocial aspects such as

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societal and family expectations, financial constraints, and strained interpersonal relationships [3]. It is, of course, student life and students' academic environment that is likely to be manifested as stressors in the lives of medical students, as it is the most perceptible aspect of stress. The students are expected to learn so much information in a very short period and mostly without external scrutiny. Frequent examinations and the overall need to perform exceptionally always create an environment of constant stress [4]. Many students have "imposter syndrome," in which even though they are performing, they do not trust their abilities, leading to self-doubt and feeling less worthy. The competition culture firmly infests all medical schools and has further created all the above problems while promoting the experience of competition-isolation among peers. Over time, this has created a strain on the mental health of students, resulting in poor academic performance and personal lives [5]. Environmental 'stressors' are another cardinal dimension in the aspect of mental well-being in medical students. Usually, the transition to medical school comes along with relocation and disruption of any present established support systems. Students also find it challenging to group themselves into unusual environments, thus exacerbating loneliness and homesickness [6]. Besides, students of medical education have a busy schedule, leaving little time for self-care, rest, or recreation. Other inadequacies include poor facilities and overcrowded living quarters, not to mention institutional limitations. The adverse attributes of all these environmental stressors are multiplied by the majority of poor-resource settings, where even more limitations, such as untimely access to mental health services, shall be experienced by students [7]. Psychological stressors are additional layers impeding the struggle toward mental well-being. Many such students come to medical school seeking the fulfilment of societal and family expectations, which do not necessarily correspond with or dovetail with their personal goals and ambitions. Another source of stress is financial since many medical students depend partly on loans or part-time jobs to fund their education. The competitive nature of the training further strains such relationships, alienating one from the other. So, students would rather suffer in silence than seek help from professionals because such help is often stigmatized [8]. The cumulative effect on the mental health of medical students is borne from the interaction of these academic, environmental, and psychosocial stressors. An example of this is the student who is having a challenge with college and maybe financially struggling, possibly even lacking a support system for aggregating the whole load on the student. Multipronged stress would be able to haunt the students as severe mental health outcomes such as anxiety disorders, episodes of depression, and burnout. Hence, these challenges can be ameliorated with a deeper insight into stressors unique to medical students and the inception of interventions aimed at ameliorating the consequences of the stressors [9]. An unattended mental health issue affects not only the well-being of a medical student but also the academic success, professionalism, and care of patients. Chronic stress and mental health disorders lead to burnout, lend themselves to unproductiveness, and hamper decision-making, impairing the operation of a future healthcare provider for quality care delivery. Thus, addressing mental health needs for students is individually concerning but, importantly, a stern public health issue [10]. To this end, the study intends to add to an emerging body of evidence relating to the mental health challenges of medical education. Hence, in establishing well-focused needs for addressing the multidimensional stressors faced by medical students, progress could then be made toward the systemic change that prioritizes well-being as a critical ingredient in medical training. This, therefore, builds resilient healthcare-providing personnel ready to meet the emerging demands of the ever-emerging health environment.

This study aims to assess the effects of academic, environmental, and psychosocial stressors on mental well-being among medical students. It would further elucidate the specific factors causing mental health problems in students so that unique stressors experienced in this population can be identified. The findings will direct efforts on efficient and specific strategies to enhance students' well-being, thereby improving the quality of education and the delivery of healthcare.

METHODS

An analytical cross-sectional study was conducted in a private medical college in Faisalabad from July 2024 to December 2024. Ethical approval was obtained from the institutional ethical committee, which had a reference number IEC/316-24. All students currently studying in the institute were included, and those who gave consent, while those who didn't give consent and non-MBBS students were excluded. A sample size of 300 was taken using non-probability quota sampling.[11] An equal percentage of students were taken from each MBBS class (60 each), including 30 males and 30 females. Quota sampling helped ensure proportional representation from each MBBS class. However, stratified random sampling would have introduced greater randomness in the selection process, thereby reducing selection bias. However, practical constraints of the study and the need to ensure representation from all academic years led to the choice of quota sampling. Nonetheless, to enhance the representativeness of our sample, it was ensured that participants within each quota were randomly recruited

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until the predefined sample size was reached. All those questionnaires were excluded from the final data analysis, which came after the 60 number of each class. Therefore, participants were randomly recruited in the study population to reduce any bias. The questionnaire was made on Google Forms after an extensive literature review, and a pilot study was done initially to check for any errors. Then, the questionnaire was distributed through social media platforms.It had five sections; 1st section had demographics; in the 2nd section, the Kessler psychological distress scale was used to assess the mental well-being of students, which is a validated questionnaire used for this purpose; and in the subsequent three sections, questions were asked regarding the academic, environmental, and psychosocial stressors on a Likert scale having scoring from 1(none of the time) to 5(all of the time). The Statistical Package for the Social Sciences (SPSS) version 22.0 was considered to analyze the data. Frequency and percentage were calculated to do scoring of the mental health scale to divide participants from 'likely well' to 'likely to have a severe disorder' category, and then a chi-square test was employed to assess gender-wise differences. Then, as per age group, gender, and class, comparisons were made among them, and mean + SD was calculated using independent sample t-test and ANOVA, and p-value<0.05 was taken as significant.

RESULTS

The sample size of our study was 300. It was divided into five equal halves, i.e. 60 students were taken from each MBBS class from 1st year to final year, having equal percentages of male and female students, i.e. 30 each. The mean age + SD of participants was 22.60 + 1.28 years. For analysis, age groups were made based on below and above 22 years of age, i.e. participants below 22 years of age were 142 (47.3%), and above 22 years were 158 (52.7%). The majority of the participants belonged to urban areas, i.e. 247 (82.3%), while 53 (17.7%) were from rural areas. The mean + SD of academic, environmental, and psychosocial stressors was 2.79 + 0.95, 2.54 + 0.83, and 2.54 + 0.98 depicting mild to moderate stress among participants in respect of these three variables. Table 1 shows the score interpretation of the Kessler Psychological Distress Scale, indicating that the majority, 98 (32.7%) of the participants were likely to have a severe disorder, an equal percentage of participants were likely to be well, followed by 64 (21.3%) were likely to have a moderate disorder. When a gender-wise comparison was made, female were more likely to have a moderate and severe disorder as compared to male, with a significant p-value of 0.002 (Table 1).

Table 1: Likelihood of Having a Psychological Distress

K10 Score	Frequency (%)	Interpretation			
10–19	98 (32.7%)	Likely to be Well			
20–24	40 (13.3%)	Likely to Have A Mild Disorder			
25–29	64 (21.3%)	Likely to Have A Moderate Disorder			
30–50	98 (32.7%)	Likely to Have A Severe Disorder			
Gender-Wise Comparison					
Variables	**Male**	**Female**	**Total**	**p-value**	
No Distress	59 (19.7%)	39 (13%)	98 (32.7%)	0.002*	
Mild	26 (8.7%)	14 (4.7%)	40 (13.3%)		
Moderate	28 (9.3%)	36 (12%)	64 (21.3%)		
Severe	37 (12.3%)	61 (20.3%)	98 (32.7%)		

The finding shows the age-group comparisons of mental well-being and stressors using an independent sample t-test. A significant association was seen between academic stressors and age groups. Also, the age group >22 years depicted more stress and was likely to have more distress as compared to those who were younger than 22 years (Table 2).

Table 2: Age-Group Comparisons with Mental Well-Being and Stressors

Variables	Age group	n	Score Range	Mean ± SD	95% Confidence Interval	p-value
Mental Wellbeing	<22 Years	142	10–50	2.45 + 1.21	-0.45–0.11	0.24
	>22 Years	158		2.62 + 1.28	-0.45–0.11	
Academic Stressors	<22 Years	142	1–5	2.67 + 0.87	-0.45–-0.02	0.02*
	>22 Years	158		2.91 + 1.01	-0.45–-0.02	
Environmental Stressors	<22 Years	142	1–5	2.47 + 0.81	-0.33–0.04	0.14
	>22 Years	158		2.61 + 0.84	-0.33–0.04	
Psychosocial Stressors	<22 Years	142	1–5	2.51 + 0.96	-0.28–0.16	0.59
	>22 Years	158		2.57 + 0.99	-0.28–0.16	

Note: *Significant p-value at <0.05

Results show gender comparisons with mental well-being and stressors using an independent sample T-test. A significant association was seen between gender and mental well-being; also, significant associations were seen with all stressors. Also, female depicted more stress and were likely to have more distress than male (Table 3).

Table 3: Gender Comparisons with Mental Well-Being and Stressors

Variables	Gender	n	Score Range	Mean ± SD	95% Confidence Interval	p-value
MentalWell being	Male	150	10-50	2.29 + 1.22	2.29 + 1.22	<0.001**
	Female	150		2.79 + 1.23	2.79 + 1.23	
Academic Stressors	Male	150	1–5	2.63 + 0.94	2.63 + 0.94	0.002*
	Female	150		2.97 + 0.93	2.97 + 0.93	
Environmental Stressors	Male	150	1–5	2.41 + 0.83	2.41 + 0.83	0.004*
	Female	150		2.68 + 0.81	2.68 + 0.81	
Psychosocial Stressors	Male	150	1–5	2.38 + 0.93	2.38 + 0.93	0.005*
	Female	150		2.7 + 1.01	2.7 + 1.01	

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Note: *Significant p-value at <0.05. ** Significant p-value at <0.01

This study shows class-wise comparisons with mental well-being and stressors using the ANOVA test. A significant association was seen between MBBS classes and mental well-being. Also, students of final year MBBS showed more psychological distress and stress than students of other classes. Post-hoc tests have been conducted to identify which class pairs differ significantly after checking the homogeneity of variance tests. The Games-Howell test was employed, and the following pairs differ significantly, i.e. 1st and 5th year, 3rd and 5th year, 4th and 5th-year MBBS students.Pearson correlation test was employed, and a moderate positive correlation between psychological distress and stressors was observed with significant p-values between distress and academic stressors (r=0.497, p=<0.001); environmental stressors (r=0.432, p=<0.001); and psychosocial stressors (r=0.489, p=<0.001); depicting increased distress were associated with higher prevalence of stressors among participants.

Table 4: Class-Wise Comparisons with Mental Well-Being and Stressors

Variables	Class	n	Score Range	Mean ± SD	95% Confidence Interval	p-value
Mental Wellbeing	1st Year	60	10–50	2.32 + 1.22	2 + 2.63	<0.001*
	2nd Year	60		2.62 + 1.12	2.33 + 2.91	
	3rd Year	60		2.37 + 1.27	2.04 + 2.7	
	4th Year	60		2.25 + 1.23	1.93 + 2.57	
	5th Year	60		3.15 + 1.2	2.84 + 3.46	
Academic Stressors	1st Year	60	1–5	2.78 + 0.97	2.51 + 2.92	0.1
	2nd Year	60		2.72 + 0.82	2.82 + 3.34	
	3rd Year	60		2.63 + 1.02	2.36 + 2.89	
	4th Year	60		2.78 + 0.85	2.56 + 3	
	5th Year	60		3.08 + 1.02	2.82 + 3.34	
Environmental Stressors	1st Year	60	1–5	2.58 + 0.76	2.38 + 2.77	0.21
	2nd Year	60		2.54 + 0.71	2.36 + 2.72	
	3rd Year	60		2.34 + 0.84	2.13 + 2.56	
	4th Year	60		2.54 + 0.85	2.33 + 2.76	
	5th Year	60		2.7 + 0.94	2.46 + 2.95	
Psychosocial Stressors	1st Year	60	1–5	2.47 + 1.01	2.22 + 2.74	0.23
	2nd Year	60		2.47 + 0.93	2.23 + 2.72	
	3rd Year	60		2.51 + 1.01	2.25 + 2.77	
	4th Year	60		2.44 + 0.89	2.21 + 2.66	
	5th Year	60		2.8 + 1.03	2.54 + 3.07	

Note: *Significant p-value at <0.01

The study finds evident indications of a difference in experience of moderate to severe psychological distress between the two genders: female was more likely than male to report having them. However, close observation of the stress and psychological distress from the correlation meanings leads to the conclusion that psychological distress increases when exposure to stressors increases because a moderate positive correlation exists between both variables. However, this does not ascertain resilience; it reflects the mere association between distress levels and stressors. Resilience is adaptability and recovery under stressors. The correlation does not directly assess resilience; it seems possible that higher levels of distress in female reflect increased exposure to stressors or better perception of stressors, perhaps from challenges peculiar to such female (for example, societal expectations, dual responsibilities, or barriers in medical education). All this connects, however, under the fact that resilience as a psychological construct may not have been the understood core of this study: the reflection of correlation was that of stressors with distress, leaving out delineation of protective factors that make resilience through the application of coping mechanisms, social support, or personality traits. Hence, having high levels of distress for women does not mean a lack of resilience; it can be indicative of a greater burden of stressors.

DISCUSSION

The study evaluated the mental well-being of medical students in a private medical institute and the different stressors that students faced in their lives. In our study, most students were having severe stress, and an equal percentage were likely to be well. A study done by Bartlett and Fowler al., showed that participants had significantly higher distress and among them, female showed more distress, which is similar to the results of our study, but in contrast, in our study, an equal percentage of students were also likely to be well [12]. A study by Al-Tammemi *et al.*, showed severe distress among participants, which is similar to the results of our study [13]. A study conducted by Noreen *et al.*, showed higher psychological distress as in our study, but in contrast, the mental well-being was more compromised in male students as compared to female in our study [11]. A study by Alfayez and AlShehri *et al.*, also showed severe stress among medical students, more prevalent in females, which is similar to our study results [14]. A study by Alotaibi *et al.*, also showed that severe distress was more prevalent in medical students than in our study [15]. All these studies showed a higher prevalence of stress among participants, signifying the role of different stressors in medical students, which need to be addressed. In our study, students of higher MBBS classes, i.e. final year, showed more distress and stress, but a study by Al-Rouq showed that stress decreased with each senior year, which is in contrast to our results [16]. A study by Slimmen *et al.*, showed that academic and psychosocial stressors were acting negatively on mental well-being, similar to our results [17]. Research by Li *et al.*, showed that academic stressors had a positive correlation with mental health, in contrast to our study results [18]. A study by Srivastava *et al.*, showed that various demographics like age and year of

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study and academic, environmental, and psychosocial stressors had a distress effect on students, affecting their mental well-being similar to our study [19]. A study by Tran *et al.*, showed that academic satisfaction had a significant role in improving students' mental well-being, while in our study, similar results were seen where less academic stress was associated with better mental well-being [20]. Research by Satpathy *et al.*, showed that academic and psychosocial stressors were associated with better students' mental well-being, in contrast to our study results [21]. A study by Ragab *et al.*, showed that female students of senior MBBS classes were having more mental distress as compared to male and junior MBBS class students, similar to our results [22].

CONCLUSIONS

It was concluded that mild to moderate academic, environmental, and psychosocial stress was found in students; also, an equal percentage of students had moderate mental distress, and the same percentage was also likely to be well. One must incorporate mental health and wellness programs in medicine curricula to mitigate the challenge. Programs such as stress management workshops, peer mentoring systems, counselling services, and other such provisions may help access resolution. Establishing an academic culture that provides a haven for all, normalizes seeking help, and promotes collaboration over competition would go a long way toward alleviating some of the stressors that medical students face.

Authors Contribution

Conceptualization: AA
Methodology: HA, I, QB, FA
Formal analysis: MUD
Writing review and editing: MUD, HA, I, FA

All authors have read and agreed to the published version of the manuscript

Conflicts of Interest

All the authors declare no conflict of interest.

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