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ORIGINAL ARTICLE

Assessment of anxiety and depression among medical students of Sahiwal Medical College: A cross-sectional study.

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ABSTRACT… Objective: To estimate anxiety and depression among medical students and their association with demographic factors. **Study Design:** Cross-sectional study. **Setting:** Sahiwal Medical College, Sahiwal. **Period:** October 2024 to July 2025. **Methods:** Screener instruments like Beck Anxiety Inventory (BAI) and Beck Depression Inventory (BDI) were used to identify anxiety and depression levels. Data was transferred to Excel and SPSS V-23 for descriptive statistics, variance analysis and Chi-square (χ^2) tests to investigate the associations between demographic variables. The significance of the results was compared with p-value ($p \leq 0.05$) to explore sociodemographic's differences. **Results:** The response of 441(74.6%) students (anxiety; 223, depression; 218) out of 591 enrolled at the time of study was recorded. Results reveal that overall anxiety disorders were 88.8% which includes low anxiety 58.3%, moderate anxiety 16.1%, and severe anxiety 14.3%, and 39.9% of students suffered from depression (any level). There was higher rate of moderate to severe anxiety in female students (38.7% as against 21.1% of males) and depression (40.9% as against 38.9% of males). The MBBS 3rd year students also showed most mental distress along with demographics like rural locality and hostelite status. **Conclusion:** The Medical Students suffer from anxiety and depression at an alarming rate with variation among genders and study years. The findings show that there is a need for routine psychological assessment, counseling services, and stress management programs in the medical institutes of Pakistan.

Keywords: Anxiety, Cross-sectional Study, Depression, Medical Students, Mental Health.

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INTRODUCTION

Mental health problems, especially anxiety and depression, are an increasingly important public health problem that affects medical students more than others. The rigorous path of medical education can significantly affect the student's mental health. The time duration, curriculum, increased academic demands and clinical environment can make medical students susceptible to psychological distress.[1,2]

Across the globe, 33.8% of medical students are estimated to have anxiety, which is much higher than that of the general population.[3] According to a meta-analysis of 69 studies involving 40,348 medical students from various continents, nearly one-third of medical students, suffer from clinically significant anxiety.[2] The global prevalence rate of depression among medical students was estimated at about 27-28% which is more than their age peers.[4] Areas differ, but during the COVID-19 pandemic, fears diffused and tagging the local shifted. Recent research data showed that around the world, 45% of medical students had anxiety and 48% depression.[5]

In Pakistan, medical education presents unique obstacles, which result in development of psychological distress in students. The competition for getting into medical college is toxic and this, coupled with familial and social expectations, puts a lot of pressure right from the start.[6] Pakistani medical students deal with multiple forms of academic stress, like; excessive content size, frequent exams, regular assessments, and pressure to score high grades.[7] The studies conducted in Pakistan indicate that high parental expectations are a major stressor.[8] A study showed that many people enter medical education due to family pressures and not by their own desire.[7]

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Financial strain is equally important too, particularly for students coming from less privileged backgrounds.[9] The high cost of private medical colleges and the fear of economic instability in the future add to the psychological burden.[10] A study has shown that female medical students face a gender-related problem when they experience discrimination and bias from faculty, family members, and peers.[11] The female students suffer from anxiety or depression more than their male counterparts may be due to the gender bias affecting the mental health of those ultimately affected.

Sahiwal is a city in the Punjab province of Pakistan that has a public sector medical college. The college welcomes students from different classes and regions. The dearth of data from smaller cities like Sahiwal Medical College (SMC) remains an issue despite increasingly awareness on the issue. Being aware of the mental health status of the pupils of SMC will give an idea of what sort of problems medical students face in non-metropolitan cities. This study aims to determine the frequency and socio-demographic factors affecting anxiety and depression among medical students of SMC.

METHODS

This cross-sectional study for the assessment of anxiety and depression among medical students of SMC was chosen because it can efficiently measure the prevalence of disease and study the association of variables at one point in time. Thus, it is suitable for epidemiological surveys and baseline assessments. It was conducted from 23-10-2024 to 14-07-2025 and encompassed all MBBS students. The study included all MBBS students of five (1st to 5th) years including males and females. Two hundred and twenty three medical students took part in the anxiety assessment of the study while 218 students participated in the depression assessment. All five years' MBBS students of SMC are a part of the sample.

In this study, the BAI and BDI were used to evaluate the extent of anxiety and depressive symptoms among the medical students of SMC. Self-report measures for assessing psychological distress are most reliable of all the instruments.

The dataset includes sociodemographic information like; gender, locality, mode of study, age groups and MBBS study years along with Beck Anxiety Inventory (BAI) and Beck Depression Inventory (BDI) assessment questionnaires. Data was gathered on Google Forms via online platforms like WhatsApp. The students' data was anonymized to ensure confidentiality and analysed statistically by using Excel and SPSS V-23 to identify anxiety levels and depression indications.

Ethical Approval

The study was conducted by getting Ethical approval from Institutional Review Board of Sahiwal Medical College, dated; 18/10/2024, under the letter number, S. No 153/IRB/SLMC/SWL.

RESULTS

Out of 591(male: 268, female: 323) MBBS students, 441(male: 207, female: 234) responded to this study. A total of 223(37.7%) medical students participated in the anxiety study, with 46.6% males (n=104) and 53.4% females (n=119) whereas, for depression assessment 218(36.9%) medical students comprising of 47.2% males (n=103) and 52.8% females (n=115) participated in the study. Overall, female students' response 234(53.1%) was higher than male 207(46.9%). Complete demographic characteristic of both genders are shown in Table-I.

Results revealed that majority of the participant belonged to urban areas (84.8%), while 15.2% were from rural backgrounds. Most students were hostelite (78.9%), whereas 21.1% were day scholars. The predominant age group was 21-23 years (48.9%), followed by those below 21 years (33.2%) and 24-26 years (17.9%). Distribution across study years showed the highest participation from final year (5th) students (25.1%), followed by 2nd year students (23.8%), while 4th year had the least representation (14.8%).

As for the depression response, most of the participants were from urban areas (83%) and 17% were from rural areas. The higher number of respondents was hostelite (79.8%) while day scholars' representation was just 20.2%. The age distribution indicates that most of the respondents

fall under the 21-23 years' category (51.4%) followed by 30.7% of less than 21 years' students. The greatest number of response was from 5th year MBBS (31.2%) followed by 2nd years (21.1%). The lowest number of response in both categories is from 3rd years (15.2% and 8.7%) students.

Table-II represents the frequency response for anxiety levels where; No Anxiety (NA), Low Anxiety (LA), Moderate Anxiety (MA) and Severe Anxiety (SA) represent different levels of anxiety. Results revealed that, out of 223 participants; 58.3% of students reported low anxiety, while 16.1% had moderate anxiety, 14.3% had severe anxiety, and 11.2% showed no anxiety symptoms. Female student demonstrated higher proportions of overall anxiety (90.8%) that includes; moderate (20.2%) and severe anxiety (18.5%) compared to male (86.5%) students (11.5% and 9.6%, respectively). Students from rural areas exhibited slightly higher levels of moderate and severe anxiety (20.6%) of each level than that from urban localities (15.3% and 13.2%) respectively. Among hostelite, 56.8% showed low anxiety, and 32.4% reported from moderate (18.8%) to severe (13.6%) anxiety. In contrast, day scholars showed slightly lower moderate anxiety (6.4%) but a higher proportion of severe anxiety (17%).

The results indicate that, 21-23 years age group had the highest prevalence of anxiety, with 38.5% experiencing from moderate (18.3%) to severe (20.2%) anxiety. Across study years, the 3rd year students reported the highest severe anxiety (53%), followed by 5th year (10.7%) and 4th year (9.1%) students. Overall, anxiety was prevalent among the majority of respondents, with a notable trend toward higher anxiety levels in final (5th) years (23.8%).

Statistical Analysis of Anxiety

Table-II presents the association between demographic characteristics and different anxiety levels. Chi-square test was conducted to assess statistical significance at a 95% confidence level ($p \leq 0.05$). Gender showed a statistically significant association with anxiety levels ($\chi^2 = 8.165$, $p = 0.043$). Locality ($\chi^2 = 2.256$, $p = 0.521$) and mode of study ($\chi^2 = 4.252$, $p = 0.236$) did not show a statistically significant association with anxiety levels. Age groups ($\chi^2 = 24.757$, $p < 0.001$) demonstrated a highly significant association with anxiety levels whereas, a strong and highly significant association was also observed between MBBS study year and anxiety levels ($\chi^2 = 84.776$, $p < 0.001$).

Table-III shows that among 218 participants, 40% of students experienced some levels of depression, ranging from borderline to extreme. The distribution is: borderline (6.4%), moderate (14.7%), severe (8.7%), and extreme (10.1%). Depression was slightly more common among females (40.9%) compared to males (38.8%), with females showing a particularly higher rate of moderate depression (20.9%). Students from urban areas reported a higher prevalence of depression (42.5%) than those from rural areas (27%). In rural students, moderate (13.5%) and extreme depression (13.5%) were notable; whereas extreme depression in urban students was lower (9.4%). Importantly, extreme cases (13.5%) were seen only among rural students. Hostelite students showed a higher depression burden (43.6%) compared to day scholars (25%). Hostelite also exhibited borderline (5.8%), moderate (18.4%), severe (8%), and extreme (11.5%) depression, whereas day scholars showed borderline (9.1%), severe (11.4%), and extreme (4.5%). The highest rate in hostelite students was observed in the moderate depression (18.4%).

The 21-23 years age group showed the highest overall prevalence (43.7%), particularly in moderate to extreme depression: borderline (6.2%), moderate (13.4%), severe (11.6%), and extreme (12.5%). Regarding academic year, 3rd-year students showed the highest severe to extreme depression levels (74%), with severe (37%) and extreme (37%). Fourth-year students also had elevated rates (56.4%), mainly moderate (15.4%), severe (12.8%), and extreme (28.2%). In contrast, 1st-year students had the lowest prevalence (13%), with borderline (8.7%) and extreme (4.3%).

Statistical Analysis of Depression

Table-III reflects the association between demographic characteristics and varying levels of depression. A statistically significant association was observed between gender ($\chi^2 = 14.123$, $p = 0.007$), mode of study ($\chi^2 = 12.866$, $p = 0.012$) and depression levels. Whereas, a highly significant

association was found between MBBS study year and depression levels (χ^2 = 95.043, p < 0.001). The association between locality (χ^2 = 8.535, p = 0.074), and age groups (χ^2 = 10.142, p = 0.255) did not show a statistically significant association with depression levels.

DISCUSSION

This study found a remarkably higher prevalence of anxiety in the Sahiwal cohort compared to the global pooled estimated prevalence of 33.8% reported in meta-analyses of medical students worldwide.[2] The observed prevalence rate of 39.9% at SMC indicates a substantial elevation.

TABLE-I

Gender wise demographic characteristics of the respondents

Variable	Items	Anxiety Response (N = 223)			Chi-sq. test (χ^2)	Depression Response (N = 218)			Chi-sq. test (χ^2)
		Male f (%)	Female f (%)	Total (%)		Male f (%)	Female f (%)	Total (%)	
Locality	Urban	88(46.6)	101(53.4)	189(84.8)	χ^2=0.003 P=0.957	87(48.1)	94(51.9)	181(83)	χ^2=0.287 P=0.592
	Rural	16(47)	18(53)	34(15.2)		16(43.2)	21(56.8)	37(17)	
Mode of study	Hostelite	67 (38)	109(62)	176(78.9)	χ^2=24.636 P=0.00	73(41.9)	101(58.1)	174(79.8)	χ^2=9.693 P=0.002
	Day scholar	37(78.7)	10(21.3)	47(21.1)		30(68.2)	14(31.8)	44(20.2)	
Age groups	<21 years	32(43.2)	42(56.8)	74(33.2)	χ^2=3.086 P=0.214	33(49.3)	34(50.7)	67(30.7)	χ^2=3.735 P=0.155
	21-23 years	57(52.3)	52(47.7)	109(48.9)		57(50.9)	55(49.1)	112(51.4)	
	24-26 years	15(37.5)	25(62.5)	40(17.9)		13(33.3)	26(66.7)	39(17.9)	
MBBS Study years	1st year	20(42.6)	27(57.4)	47(21.1)	χ^2=50.254 P=0.00	23(50)	23(50)	46(21.1)	χ^2 =50.635 P=0.00
	2nd year	30(56.6)	23(43.4)	53(23.8)		33(71.7)	13(28.3)	46(21.1)	
	3rd year	12(35.3)	22(64.7)	34(15.2)		13(68.4)	6(31.6)	19(8.7)	
	4th year	31(93.9)	29(6.1)	33(14.8)		25(64.1)	14(35.9)	39(17.9)	
	5th year	11(19.6)	45(80.4)	56(25.1)		9(13.2)	59(86.8)	68(31.2)	

TABLE-II

Frequency distribution of demographic characteristics verses different Anxiety Levels (N = 223).

Variables	Items	NA (%)	LA (%)	MA (%)	SA (%)	Total (%)	Chi sq. Test (χ^2)
Gender	Male	14(13.5)	68(65.4)	12(11.5)	10(9.6)	104(46.6)	χ^2=8.165 P=0.043
	Female	11(9.2)	62(52.1)	24(20.2)	22(18.5)	119(53.4)	
Locality	Urban	22(11.6)	113(59.8)	29(15.3)	25(13.2)	189(84.8)	χ^2=2.256 P=0.521
	Rural	3(8.8)	17(50)	7(20.6)	7(20.6)	34(15.2)	
Mode of study	Hostelite	19(10.8)	100(56.8)	33(18.8)	24(13.6)	176(78.9)	χ^2=4.252 P=0.236
	Day scholar	6(12.8)	30(63.8)	3(6.4)	8(17)	47(21.1)	
Age groups	<21 years	5(6.8)	58(78.4)	6(8.1)	5(6.7)	74(33.2)	χ^2=24.757 P=0.00
	21-23 years	18(16.5)	49(45.0)	20(18.3)	22(20.2)	109(48.9)	
	24-26 years	2(5.0)	23(57.5)	10(25)	5(12.5)	40(17.9)	
MBBS Study years	1st year	5(10.6)	39(83)	3(6.4)	0	47(21.1)	χ^2=84.776 P=0.00
	2nd year	7(13.2)	36(68)	5(9.4)	5(9.4)	53(23.8)	
	3rd year	3(8.8)	3(8.8)	10(29.4)	18(53)	34(15.2)	
	4th year	7(21.2)	21(63.6)	2(6.1)	3(9.1)	33(14.8)	
	5th year	3(5.4)	31(55.3)	16(28.6)	6(10.7)	56(25.1)	

TABLE-III

Frequency distribution of demographic characteristics verses depression levels (N = 218).

Variables	Items	No f(%)	Borderline f(%)	Moderate f(%)	Severe f(%)	Extreme f(%)	Total (%)	Chi sq. Test (χ^2)
Gender	Male	63(61.1)	7(6.8)	8(7.8)	15(14.6)	10(9.7)	103(47.2)	χ^2=14.123 P=0.007
	Female	68(59.1)	7(6.1)	24(20.9)	4(3.5)	12(10.4)	115(52.8)	
Locality	Urban	104(57.5)	14(7.7)	27(14.9)	19(10.5)	17(9.4)	181(83)	χ^2=8.535 P=0.074
	Rural	27(73)	0	5(13.5)	0	5(13.5)	37(17)	
Mode of study	Hostelite	98(56)	10(6)	32(18)	14(8.0)	20(12)	174(79.8)	χ^2=12.866 P=0.012
	Day scholar	33(75)	4(9.1)	0	5(11.4)	2(4.5)	44(20.2)	
Age groups	<21 years	45(67.2)	6(9)	10(15)	4(5.9)	2(2.9)	67(30.7)	χ^2=10.142 P=0.255
	21-23 years	63(56.3)	7(6.2)	15(13.4)	13(11.6)	14(12.5)	112(51.4)	
	24-26 years	23(59)	1(2.6)	7(17.9)	2(5.1)	6(15.4)	39(17.9)	
MBBS Study years	1st year	40(87)	4(8.7)	0	0	2(4.3)	46(21.1)	χ^2=95.043 P=0.00
	2nd year	28(60.9)	4(8.7)	8(17.4)	6(13.0)	0	46(21.1)	
	3rd year	5(26)	0	0	7(37)	7(37)	19(8.7)	
	4th year	17(43.6)	0	6(15.4)	5(12.8)	11(28.2)	39(17.9)	
	5th year	41(60.3)	6(8.8)	18(26.5)	1(1.5)	2(2.9)	68(31.2)	

This higher burden is consistent with findings from other Asian countries, where anxiety levels among medical students tend to be comparatively higher.[12] During the COVID-19 pandemic, global anxiety prevalence among medical students increased to 45%; however, the elevated rates observed in the present study may reflect differences in screening instruments or threshold criteria used for assessment.[1]

In Pakistan, medical students seem to have a lot of mental health problems. Numerous studies have recorded elevated prevalence rates of anxiety and depression within Pakistani medical institutions.[13] For instance, a study at Combined Military Hospital Lahore Medical College reported extremely severe anxiety in 34.6% of students[6], while a Karachi-based study documented anxiety prevalence as high as 92% among medical students.[14] In the present study, 3rd year MBBS students exhibited the highest levels of severe anxiety (53%), a finding that aligns with results from D.G. Khan Medical College, where 3rd year students were reported to experience the greatest anxiety burden.[15] Students from rural areas showed slightly higher proportions of moderate (20.5%) and severe anxiety (20.5%) compared to urban students (15.3% and 13.2%); however, this difference did not reach statistical significance (p = 0.521). Although hostelite demonstrated greater overall psychological distress, comparable rates of moderate anxiety among day scholars (6.4%) and a slightly higher proportion of severe anxiety among day scholars (17% vs. 13.6%) suggest that residential status alone does not fully account for variations in anxiety levels.

Regarding depression, Pakistani medical students continue to exhibit high rates of depressive symptoms, as reported in previous study.[13] A cross-sectional study conducted at Combined Military Hospital Lahore Medical College reported extremely severe depression in 26.9% of students[6], while a study from Peshawar found a depression prevalence of 19.4%, with an additional 26.2% categorized as borderline cases.[14] Similarly, senior MBBS students (5th year), particularly those in the third and fourth years, reported higher levels of depression, reflecting the cumulative academic and clinical pressures associated with medical training. The significant association between mode of study and depression highlights the importance of the residential environment, as hostelite are more likely to experience residential-related stressors, including isolation and limited familial support. This observation is supported by a February 2024 mixed-methods study emphasizing that feelings of

loneliness and lack of safety substantially affect students' psychological wellbeing.[16] In contrast, day scholars benefit from immediate family presence and familiar routines, which may offer some protective effect.

Gender-based differences were evident across both anxiety and depression outcomes. Females constituted a slightly larger proportion of the sample, particularly among rural residents and older age groups (24-26 years). A 2017 meta-analysis reported significantly higher odds of depression among females (OR = 1.95) across multiple countries[17], and similar trends have been consistently observed in broader college populations worldwide.[18] In Pakistan, female medical students face gender-based discrimination and bias from faculty, family members, and peers, which may adversely influence their mental health trajectory.[6]

Inferential analysis further demonstrated that gender, age, and MBBS study year were significantly associated with anxiety levels, while locality and mode of study were not. Conversely, gender, mode of study, and MBBS study year showed significant associations with depression, whereas locality and age group did not. Collectively, these findings align with global trends while also offering context-specific insights into the evolving patterns of anxiety and depression among Pakistani medical students.

CONCLUSION

The study shows that 90% of the students are suffering from anxiety and around 40% are suffering from depression in Sahiwal Medical College. The female students, hostelite and those studying in final year show more mental distress. Rural locality students also show somewhat elevated symptoms of mental distress. The associations have been found with respect to gender, year of study, residential status, locality, age groups and study year. These factors are considered when analysing the issue of anxiety and depression in students. The results emphasize the importance of mental health screening and the availability of counselling services to medical students and the establishment of institutional stress-management initiatives in medical colleges in Pakistan.

LIMITATIONS

This study uses a cross-sectional methodology to give an overview of anxiety and depression among Sahiwal Medical College MBBS students. Given the existing situation, a cohort research would likely be more useful for gaining a more thorough understanding.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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3	**Ajeeha Malik:** Data entry.
4	**Sara Ehsan Bhutta:** Data collection.
5	**Muhammad Ihsan Ur Rehman:** Results writing.
6	**Areeba Rashid:** Draft writing.
7	**Tania Ijaz:** Revisions.