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# Prevalence of anxiety among medical students of D.G. Khan Medical College: A cross-sectional study.

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**ABSTRACT… Objective:** To evaluate anxiety levels among medical students of a public medical college by using a self-administered anxiety questionnaire. **Study Design:** Cross-sectional study. **Setting:** Study was conducted on the MBBS students of D.G. Khan Medical College. **Period:** December 2022 to June 2023. **Methods:** A validated questionnaire comprised on Beck Anxiety Inventory (BAI) scale was provided to all MBBS students at D. G. Khan medical college. Sociodemographic variables like; gender, age, locality, and current residential status were included in the questionnaire. The data was transferred to SPSS V-23 to analyze the variance of Anxiety Levels and MBBS study years among both genders. The p-value ($p \leq 0.05$) was used to decide significance of the results. **Results:** The number of respondents was 523 (93.6%) out of 559 enrolled students at the time of the survey. Using the BAI scale, the overall anxiety estimated in MBBS students was 96.4% including male (95.5%) and female (97.0%). However, the prevalence of severe anxiety observed in female (22.2%) students was slightly higher than male (21.9%) students. Moreover, the highest level of severe anxiety (37.1%) was detected in 3rd year students whereas, the peak value of overall anxiety (23.1%) was detected in 2nd year students. The gender comparison test ($p = 0.006$) revealed that females exhibit more anxiety than males. **Conclusion:** The higher levels of anxiety were consistently observed among female students. The severe anxiety was observed among 3rd year students, likely due to their transition into the clinical year facing additional challenges beyond academics.

**Key words:** Anxiety, Academic Years, BAI, D.G. Khan, MBBS Students.

## INTRODUCTION

The prevalence of anxiety and depression in medical students is a common mental disorder in developing countries which leads to morbidity. Anxiety and depression among medical students have a significant impact on their academic performance and quality of life. Medical students perceive more stress, anxiety, and depression as compared to other students[1,2] and, have rates of depression and suicide that are higher than those of general learners.[3] The stressful environment of medical institutions negatively influences the academic performance and health of the students.[4] They are under continuous pressure in their studies and are forced to get good grades. Consequently, they are more prone to major depression.[5] There is a growing concern about emotional distress in medical colleges.[4] On a regular basis, medical students are particularly susceptible to experiencing anxiety due to the challenges they face during their educational journey. These challenges include an overwhelming academic workload, demanding clinical rotations, constant assessments, sleep deprivation, and the fear of making critical medical errors. The studies have reported that emotional disorders are the most common among students studying for examinations[6], which can impair the learning capabilities of these future physicians.[7] Extensive study regarding the investigation of anxiety and depression among medical students of different levels around the globe has been reported.[8-12] In Pakistan, some studies have shown a high prevalence of depression and anxiety in medical students.[13-16] In a remote area of lower Punjab of Pakistan, nearly a decade ago (in 2012), D.G. Khan Medical College was newly established and ranked in bottom merit in

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public medical colleges at the time of this study. The students have to have been there for their lower merit. This is an additional factor that can cause distress among medical students. Unique academic challenges, competitive academic environment, staying away from home, and excessive workload faced by medical students make them more vulnerable to stress and anxiety as compared to other students. The clinical impact of anxiety disorder leads to major depression that further proceeds to other mental disorders.[17] Thus, there is a need to examine anxiety and depression among medical students for their counseling and rehabilitation.[14] So, it's really important to keep an eye on this serious matter. Hence, this study aims to assess one of these issues, that is, existing levels of anxiety among MBBS (Bachelor of Medicine, Bachelor of Surgery) students of D.G. Khan Medical College, Dera Ghazi Khan (DGK). This study might help to develop effective interventions that can trim down the effects of stress persisting in them at present time and aid in the betterment of medical students' performance in the near future.

## METHODS

This study was conducted in D.G. Khan Medical College DGK. Among all medical students only MBBS students were selected as the target apprentices. This cross-sectional study involves census sampling that includes all MBBS ($1^{st}$–$5^{th}$ years) students (both genders) ensuring that every individual has an equal opportunity to be a part of this research. Hence, the total sample comprises 559 students (109 in MBBS $1^{st}$ year, 129 in $2^{nd}$ year, 111 in $3^{rd}$ year, 106 in $4^{th}$ year, and 104 in final year). At the time of the survey, 236 male and 323 female students were enrolled in the college.

To assess the anxiety level among MBBS students, the Beck Anxiety Inventory (BAI) scale, a well-known prominent tool of self-administrated report[18] was applied. The BAI scale consists of 21 items (symptoms) and their rating is labeled as; not at all = 0; mildly, but it didn't bother me much = 1; moderately-it wasn't pleasant at times = 2; and severely- it bothered me a lot = 3. The total score was calculated by finding the sum of all 21 items.

The score zero indicates "No Anxiety" whereas, anxiety levels are ranked as; Low Anxiety (below 22), Moderate Anxiety (22-35), and Severe Anxiety (potentially concerning level of anxiety) for 36 and above. The BAI questionnaire was transferred to a Google Doc along with the required sociodemographic information. The aim of the study was mentioned in the questionnaire. Furthermore, institutional ethical approval was also obtained. (27/MED/DKMC{10-01-23)

A Web-Based Survey Sampling Technique was adopted. The survey form was shared among all MBBS students at D.G. Khan Medical College on WhatsApp groups, E-mails, Twitter, and by personal contacts. Students were approached two weeks before the scheduled professional examination of all batches separately. All the respondents were kept in touch personally on cells, e-mails, and WhatsApp groups numerous times to get a response of 93.6 % at a rate of 2.5 per day. The study spanned all five professional examinations and their results from December 2022 to June 2023.

The data was transferred to 'SPSS V-23' for statistical and descriptive analysis. To investigate the potential influence of MBBS Academic Years (classes: $1^{st}$ –$5^{th}$ years) on anxiety levels, SPSS (gender comparison) test was performed. The dependent variables were: Anxiety levels (No Anxiety, Low Anxiety, Moderate Anxiety, and Severe Anxiety) and Academic Years, and the independent variable included both genders.

## RESULTS

Out of the 559 (male = 236, female = 323 ) enrolled students at the time of the survey, 523 (male = 224, female = 299) respondents participated in this research, constituting 93.6% of the total student population. The outcomes of this research show that the overall response from male students (95%) is larger than female students (93%). The mean age of respondents was 21.43 ± 1.5 years. Demographic characteristics of the respondents are placed in Table-I.

| Variables | Items | Gender | | Total (%) |
|---|---|---|---|---|
| | | Male (%) | Female (%) | |
| Locality | Urban | 111 (49.6) | 173 (57.9) | 284 (54.3) |
| | Rural | 113 (50.4) | 126 (42.1) | 239 (45.7) |
| Mode of Study | Hostelite | 179 (79.9) | 256 (85.6) | 435 (83.2) |
| | Day scholar | 45 (20.1) | 43 (14.4) | 88 (16.8) |
| Age Groups | <20 years | 65 (29.0) | 56 (18.7) | 121 (23.1) |
| | 20-22 years | 119 (53.2) | 138 (46.2) | 257 (49.1) |
| | 23-24 years | 24 (10.7) | 84 (28.1) | 108 (20.7) |
| | >24 years | 16 (7.1) | 21 (7.0) | 37 (7.1) |
| Study Years | MBBS 1st year | 40 (17.9) | 61 (20.4) | 101 (19.3) |
| | MBBS 2nd year | 58 (25.9) | 63 (21.1) | 121 (23.1) |
| | MBBS 3rd year | 48 (21.4) | 57 (19.1) | 105 (20.1) |
| | MBBS 4th year | 49 (21.9) | 53 (17.7) | 102 (19.5) |
| | MBBS 5th year | 29 (12.9) | 65 (21.7) | 94 (18.0) |
| | Total | 224 (42.8) | 299 (57.2) | 523 (100) |

**Table-I. Gender wise demographic characteristics of the respondents**

The anxiety levels and demographic characteristics of respondents is shown in Table-II along with their mean values (M) and standard deviations (SD).

| Variables | Items | NA(%) | LA(%) | MA(%) | SA(%) | Total (%) | M | SD |
|---|---|---|---|---|---|---|---|---|
| Gender | Male | 10 (4.5) | 137 (61.2) | 28 (12.5) | 49 (21.9) | 224 (42.2) | 0.428 | 0.4953 |
| | Female | 9 (3.0) | 131 (43.8) | 92 (30.8) | 67 (22.4) | 299(57.8) | | |
| Locality | Urban | 13 (4.6) | 164 (57.7) | 73 (25.7) | 34 (12.0) | 284 (29.3) | 1.457 | 0.4986 |
| | Rural | 6 (2.5) | 104 (43.5) | 47 (19.7) | 82 (34.3) | 239 (70.7) | | |
| Mode of Study | Hostelite | 15 (3.4) | 217 (49.9) | 97 (22.3) | 106 (24.4) | 435 (91.4) | 1.168 | 0.3745 |
| | Day scholar | 4 (4.5) | 51 (58) | 23 (26.1) | 10 (11.4) | 88 (8.6) | | |
| Age Groups | <20 years | 6 (5.0) | 72 (59.5) | 39 (32.2) | 4 (3.3) | 121 (23.1) | 2.117 | 0.8418 |
| | 20-22 years | 8 (3.1) | 138 (53.7) | 59 (49.2) | 52 (23) | 257 (49.1) | | |
| | 23-24 years | 4 (3.7) | 55 (50.9) | 18 (16.7) | 31 (28.7) | 108 (20.7) | | |
| | >24 years | 1 (2.7) | 3 (8.1) | 4 (10.8) | 29 (78.4) | 37 (7.1) | | |
| MBBS Study Years | 1st year | 4 (4.0) | 56 (55.4) | 30 (29.7) | 11 (10.9) | 101 (19.3) | 2.937 | 1.3847 |
| | 2nd year | 5 (4.1) | 64 (52.9) | 34 (28.1) | 18 (14.9) | 121 (23.1) | | |
| | 3rd year | 3 (2.9) | 40 (38.1) | 23 (21.9) | 39 (37.1) | 105 (20.1) | | |
| | 4th year | 3 (2.9) | 55 (53.9) | 20 (19.6) | 24 (23.5) | 102 (19.5) | | |
| | 5th year | 4 (4.3) | 53 (56.4) | 13 (13.8) | 24 (25.5) | 94 (18.0) | | |
| | Total | 19 (3.6) | 268 (51.2) | 120 (23.0) | 116 (22.2) | 523 | 1.64 | 0.865 |

**Table-II. Demographic characteristics Vs Anxiety Levels' Frequency (%) of respondents where, No Anxiety (NA), Low Anxiety (LA), Moderate Anxiety (MA) and Severe Anxiety (SA) represents different levels of anxiety.**

This study indicates that the prevalence of anxiety among MBBS students was 96.4% (504) out of which 51.2% (268) of the students had low anxiety, 23.0% (120) had moderate anxiety, and 22.2% (116) had severe anxiety. Overall anxiety in male 214 (95.5%) and female 290 (97.0%) students was observed in this study. The Severe Anxiety (SA) in female students (22.4%) was greater than in males (21.9%). Students from rural backgrounds perceived more severe anxiety (34.3%) as compared to urban (12.0%). Moreover, SA in hostelite students (24.4%) was also higher compared to day-scholars (11.4%). Furthermore, the prevalence of SA was at its peak (78.4%) in students of age higher than 24 years. This SA was followed (28.7%) in the age group 23-24 years. The students of age less than 20 years only comprise 3.3%. As for concern of study year, the highest prevalence of SA (37.1%) was found in MBBS 3rd year students. However, the highest level of overall anxiety (23.1%) was observed among students in their second year of

the MBBS.

Statistical analysis from Table-II indicates that female students exhibit higher anxiety levels (M = 0.428) compared to male students. A mean of 1.457 suggests that students from rural areas experience more anxiety than their urban counterparts. Additionally, hostelite students (M = 1.168) report greater anxiety compared to day scholars. The overall mean anxiety level (M = 1.64) indicates that, in general, anxiety among MBBS students at DG Khan Medical College is approaching a moderate level. The study reveals that the standard deviation (SD) ranges from lowest (0.3745) in "Mode of study" to highest (1.3847) in "MBBS Study years".

To estimate the significant difference between males and females regarding their Anxiety Levels gender-comparison test was conducted and shown in Table-III. This test (p = 0.006, confidence interval: 0.059-0.357) suggests that there is statistically significant difference in perceiving Anxiety Levels between both genders. It reveals that female students exhibit more anxiety than males. On the other hand, our analysis of Gender and Academic Years (p = 0.282, confidence interval: -0.109 to 0.372) showed no significant difference in anxiety levels across different Academic Years, indicating that Academic Years do not have a significant impact on anxiety.

| Dependent Variable | (I) Gender | (J) Gender | Mean Difference (I-J) | Std. Error | Sig.[b](p) | 95% Confidence Interval for Difference[b] | |
|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound |
| Anxiety Levels | Female | Male | 0.208* | 0.076 | 0.006 | 0.059 | 0.357 |
| | Male | Female | -0.208* | 0.076 | 0.006 | -0.357 | -0.059 |
| Academic Years | Female | Male | 0.132 | 0.122 | 0.282 | -0.109 | 0.372 |
| | Male | Female | -0.132 | 0.122 | 0.282 | -0.372 | 0.109 |
| Based on estimated marginal means | | | | | | | |
| *. The mean difference is significant at the .05 level. | | | | | | | |
| b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments). | | | | | | | |

**Table-III. Gender comparisons test for anxiety levels and academic years**

## DISCUSSION

In our outcomes, students seem to be more vulnerable in their 3rd year of studies. A study reported[1] aligns with aligns with our findings indicating that third-year students encounter more anxiety due to the reason that they transition into clinical year by facing additional hurdles beyond academics. Hostelite students and students from rural backgrounds are tolerating more "Severe anxiety" as compared to day-scholars and students from urban areas respectively. It is obvious that students living away from home have the tendency to develop mental disorders more easily. Similarly, students belonging to rural areas may confront additional financial burdens, increasing their susceptibility to mental health issues. Moreover, students of ages group 20-22 years have more overall anxiety as compared to all other age groups. In authors view, this age group hypothetically coincides with the 3rd year students who are already said to have more anxiety.

The inferential statistical results suggest that females are more affected by anxiety throughout the medical journey, showing a statistically significant difference compared to males. Our results are consistent with other findings[16,19] which suggest the possible reasons for this; the female gender is more vulnerable to anxiety due to the lack of coping strategies and less exposure to the outdoor environment as compared to males. Likewise, severe anxiety is also higher in females as compared to males in all phases except 4th year of their study. It's notable that females secure the majority of seats in many colleges in Pakistan. If they experience heightened anxiety, it raises serious concerns. A similar issue was highlighted in a study in Sweden[7] where females were found to be more prone to anxiety, making up over half of the students in that medical institute.

Our study reveals that only 3.6% of medical students in the target population show no symptoms of anxiety. Other than that, almost

all students show symptoms of anxiety either low, moderate, or severe. The lowest SD value of 0.3745 suggests relatively low variability in anxiety levels between Hostelite students and Day scholars. In contrast, the highest SD value of 1.3847 indicates considerable variability in anxiety levels across Study Years, implying that students in different years of the MBBS program experience significantly different anxiety levels. The overall SD of 0.865 indicates moderate variability, suggesting that while many students are near the "Moderate Anxiety" range, a significant number also experience either low (LA) or high (SA) anxiety levels. A study conducted in Pakistan at a private university reported anxiety in 66.3% of MBBS students.[20] Neighboring countries such as Bangladesh (64.8%)[21] and India (66.9%)[12] also reported anxiety in more than half of targeted students. Our finding of the prevalence of severe anxiety (22.2%) is comparable to a study conducted at a public university in Pakistan (19%).[13] Moreover, our results combined show that moderate to severe anxiety of 45.2% that are comparable to the prevalence of moderate to severe anxiety reported in Turkey (47.1%)[22] which validates our research findings.

In general, among all academic years, 3rd years students tolerate anxiety the most. Among the socio-demographic factors such as residence and locality; hostelites and students of rural areas are more vulnerable to develop anxiety respectively. The most vulernable age group is 20-22 years. Furthermore, higher levels of anxiety were consistently reported among female students.

## LIMITATIONS

By utilizing a cross sectional approach, we were able to provide a snapshot of anxiety prevailing among MBBS students of D.G. Khan Medical College. A cross-sectional study reports the current scenario of the studied parameters. For more detailed and better understanding, a cohort study approach should be adopted.

## CONCLUSION

Female students exhibit higher anxiety levels than male students. A significant level of severe anxiety was observed among third-year MBBS students. This significant prevalence of anxiety among medical students requires early intervention. Proper guidelines and training for medical staff, along with adequate psychiatric services, are essential to address these mental health issues and prevent severe outcomes, such as mental breakdowns and suicidal thoughts.[23] Moreover, individuals should adopt behavioral changes to manage anxiety, such as controlling overthinking and stress.[24] Raising awareness about mental health and addressing stressors like work overload and long duty hours can help to reduce anxiety levels among medical students.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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## AUTHORSHIP AND CONTRIBUTION DECLARATION

| No. | Author(s) Full Name | Contribution to the paper | Author(s) Signature |
|---|---|---|---|
| 1 | Areeba Rashid | Study design, Data collection and drafting. | |
| 2 | Areesha Rashid | Contribution to research design and data analysis. | |
| 3 | Saad Ali | Critical input, review of manuscript, editing and finalizing. | |