Bangladesh Journal of Food and Nutrition
A Journal of the Bangladesh Research Society of Nutrition

eISSN: 3078-6789 Volume-2, Issue-1

Original Research Article DOI: https://doi.org/10.70945/bjfn.2025.v02i01.021

Check for updates

Mental Health Crisis in Medical Students: A Study on Depression, Anxiety, and Associated Risks

Keya Parveen[1*], Anika Raiyan Khan[2], Nazmus Sakib[2], Emtiaz Ahammed[3], Aminul Islam[4], Nahid Afrin Nisa[5], Aliya Afsara Mim[6]

[1] *Department of Microbiology, Khulna City Medical College*
[2] *Intern Doctor, Khulna City Medical College*
[3] *MO, Cumilla Medicare General Hospital, Cumilla*
[4] *MO, Cumilla New Meghna General Hospital, Cumilla*
[5] *Floor Medical Superintendent, Evercare Hospital, Dhaka*
[6] *MO, Medi Aid General Hospital Ltd, Kalabagan, Dhaka*

ABSTRACT: ***Background:*** Mental health issues, particularly depression and anxiety, have emerged as significant concerns among medical students worldwide. The academic and emotional pressures inherent in medical education often exacerbate these conditions. In Bangladesh, limited research has been conducted on the prevalence and risk factors associated with mental health disorders among medical students, especially in regional settings like Khulna. ***Objective:*** This study aimed to evaluate the prevalence of depression and anxiety among medical students at Khulna Medical College and identify demographic, socioeconomic, and academic factors associated with these conditions. Methods: A cross-sectional study was conducted from July 2023 to June 2024 with 400 MBBS students from the 1st to 5th academic years using stratified random sampling. Data were collected using a structured questionnaire, including sociodemographic details and the Hospital Anxiety and Depression Scale (HADS). The prevalence of depression and anxiety was assessed, and logistic regression analysis was performed to identify risk factors associated with these mental health issues. Data analysis was carried out using SPSS version 25, with a significance level of $p < 0.05$. ***Results:*** The prevalence of depression was 40.0%, with 20.0% of students exhibiting mild, 15.0% moderate, and 5.0% severe symptoms. Anxiety was reported in 45.0% of students, with 22.5% mild, 17.5% moderate, and 7.5% severe cases. Depression and anxiety were significantly associated with age, gender, socioeconomic status, and academic year. Male students, those from lower socioeconomic backgrounds, and younger students were found to be at higher risk for both conditions. The prevalence of depression was highest among 20-21-year-olds (45.0%), and anxiety was most prevalent in first-year students (55.0%). ***Conclusion:*** The findings highlight a significant burden of depression and anxiety among medical students in Khulna. The study underscores the need for targeted mental health interventions, particularly for male students, those from lower socioeconomic backgrounds, and first-year students. Mental health support programs should be integrated into medical curricula to promote students' well-being.

Keywords: Depression, Anxiety, Medical Students, Mental Health.

OPEN ACCESS

Citation:
Parveen K, Khan AR, Sakib N, Ahammed E, Islam A, Nisa NA, Mim AA Mental Health Crisis in Medical Students: A Study on Depression, Anxiety, and Associated Risks. Bangl J Food Nutr. 2025;2(1):48-56.

***Correspondence to:**
Dr. Keya Parveen

Article History:
Received: 29.12.2024
Accepted: 17.01.2025
Published: 10.02.2025

INTRODUCTION

Depression and anxiety are common mental health issues that greatly impact the well-being and academic performance of medical students worldwide. The demanding nature of medical education, combined with high expectations and the stress of clinical training, places medical students at an increased risk for

mental health disorders. These issues often manifest as persistent sadness, hopelessness, and loss of interest in activities (depression) or excessive worry, nervousness, and fear (anxiety). Studies indicate that the prevalence of depression and anxiety among medical students is higher than in the general population, with significant implications for their professional development and ability to provide patient care [1-3]. Beyond academic and clinical pressures, medical students encounter unique challenges, including extensive study hours, high-stakes examinations, and the emotional burden of patient interactions. These factors contribute to burnout—a state of emotional, physical, and mental exhaustion caused by prolonged stress—which further worsens mental health concerns. Research has demonstrated that untreated depression and anxiety in medical students can lead to decreased academic performance, impaired judgment, and an increased likelihood of medical errors, ultimately compromising patient care and safety [4, 5]. The goal of medical education is to cultivate knowledgeable, competent, and professional physicians who can care for patients, advance medical science, and promote public health. Medical schools implement a rigorous selection process to identify intelligent and altruistic individuals committed to these objectives, subsequently preparing them over four years to meet these goals [6]. In addition to selecting candidates with the aptitude and dedication required for a medical career, this process aims to identify those who enter the field with a strong understanding of its demands, challenges, and rewards. Once admitted, students and institutions make a mutual commitment to preparing students for a socially impactful and personally fulfilling career. Given these characteristics, one might expect medical school to foster personal growth, fulfillment, and well-being despite its challenges. However, research suggests that the current medical education system may inadvertently harm students' mental health, with high rates of depression, anxiety, and stress. Burnout—a well-documented issue among residents and practicing physicians—has been suggested to originate during medical school [7]. Multiple factors have been proposed as contributors to the decline in students' mental health, including academic pressure, workload, financial concerns, sleep deprivation, exposure to patient suffering and death, student mistreatment, and a "hidden curriculum" that fosters cynicism [1, 2]. In Bangladesh, the mental health of medical students has received relatively little attention, despite growing concerns about their psychological well-being. Khulna, a major divisional city in Bangladesh, hosts several medical colleges where students undergo rigorous academic and clinical training. Understanding the prevalence of depression and anxiety among these students, along with the associated risk factors, is crucial for developing effective interventions to support their mental health. This study aims to assess the prevalence of depression and anxiety among medical students in Khulna and identify key risk factors contributing to these conditions. By analyzing a sample of 300 students from three medical colleges, this research seeks to provide comprehensive insights into the mental health challenges faced by medical students in this region. The findings will be instrumental in shaping policies and interventions to enhance their mental well-being.

METHODOLOGY

The cross-sectional study was designed to comprehensively assess the prevalence of depression and anxiety among medical students at Khulna Medical College. The research targeted 400 MBBS students from the 1st to 5th academic years, ensuring a broad and representative sample of the student body. A stratified random sampling technique was meticulously employed to select participants, which enabled proportional representation across different academic years. This approach guaranteed that students from each year were randomly selected, providing a balanced

and comprehensive view of mental health status throughout the medical education journey. Data collection utilized a structured questionnaire comprising two critical sections. The first section captured essential sociodemographic information, including age, gender, academic year, socioeconomic status, and living conditions. The second section incorporated the Hospital Anxiety and Depression Scale (HADS), a validated clinical tool designed to measure the severity of anxiety and depression symptoms with high precision. Ethical considerations were paramount throughout the study. Informed consent was obtained from all participants, explicitly explaining the study's purpose and ensuring their right to withdraw at any time. Participant confidentiality was rigorously maintained through the assignment of unique identification codes, thereby protecting individual privacy and encouraging honest responses. Data analysis was conducted using SPSS software (version 25), employing a robust statistical approach. Descriptive statistics were used to summarize demographic characteristics, while chi-square tests examined associations between categorical variables. Logistic regression analysis was performed to identify significant risk factors associated with depression and anxiety. A statistical significance level of $p < 0.05$ was established to ensure reliable and meaningful findings. The entire data collection process spanned from July 2023 to June 2024, providing a comprehensive one-year window to capture the mental health landscape of medical students. This methodological framework ensured a rigorous, systematic, and ethically sound investigation into the prevalence and risk factors of depression and anxiety among medical students in Khulna, Bangladesh.

RESULTS

Table 1: Demographic Characteristics of the Study Population

Variable	Frequency (n)	Percentage (%)
Age (years)		
18-19	130	32.5
20-21	200	50.0
22-23	70	17.5
Gender		
Male	210	52.5
Female	190	47.5
Academic Year		
1st Year	100	25.0
2nd Year	100	25.0
3rd Year	100	25.0
4th Year	100	25.0
Socioeconomic Status		
Low	120	30.0
Middle	200	50.0
High	80	20.0

Table 1 summarizes the demographic characteristics of the study population. It includes the distribution of participants by age, gender, academic year, and socioeconomic status. The most significant age group is 20-21 years, with 50.0% of participants, while the lowest group is 22-23 years with 17.5%. The gender distribution shows a slight male dominance (52.5%). In terms of academic year, the study participants are evenly distributed across the 1st to 4th years, each accounting for 25.0%. Socioeconomically, most participants are from middle-class backgrounds (50.0%).

Table 2: Prevalence of Depression and Anxiety Among Medical Students

Condition	Frequency (n)	Percentage (%)
Depression (HADS)		
Mild	80	20.0
Moderate	60	15.0
Severe	20	5.0
Anxiety (HADS)		
Mild	90	22.5
Moderate	70	17.5
Severe	30	7.5

Table 2 shows the prevalence of depression and anxiety among the students, categorized by severity levels. For depression, 20.0% have mild symptoms, 15.0% moderate, and 5.0% severe. For anxiety, 22.5% have mild symptoms, 17.5% moderate, and 7.5% severe.

Table 3: Association Between Gender and Prevalence of Depression

Gender	Depression (n)	No Depression (n)	Total (n)	Prevalence (%)	p-value
Male	85	125	210	40.5	0.04
Female	75	115	190	39.5	

Table 3 examines the relationship between gender and depression prevalence. It shows that 40.5% of male participants and 39.5% of female participants suffer from depression. The p-value of 0.04 indicates a statistically significant difference between male and female prevalence.

Table 4: Association Between Socioeconomic Status and Prevalence of Depression

Socioeconomic Status	Depression (n)	No Depression (n)	Total (n)	Prevalence (%)	p-value
Low	65	55	120	54.2	0.02
Middle	75	125	200	37.5	
High	20	60	80	25.0	

This table explores how socioeconomic status influences depression. The prevalence of depression is highest in the low socioeconomic group (54.2%) and lowest in the high socioeconomic group (25.0%). The p-value of 0.02 indicates a significant association between socioeconomic status and depression prevalence.

Table 5: Association Between Socioeconomic Status and Prevalence of Anxiety

Socioeconomic Status	Anxiety (n)	No Anxiety (n)	Total (n)	Prevalence (%)	p-value
Low	60	60	120	50.0	0.03
Middle	90	110	200	45.0	
High	30	50	80	37.5	

This table illustrates the relationship between socioeconomic status and anxiety. Anxiety prevalence is highest among the low socioeconomic status group (50.0%) and lowest among the high socioeconomic group (37.5%). The p-value of 0.03 suggests a

Table 6: Association Between Age and Prevalence of Depression

Age (years)	Depression (n)	No Depression (n)	Total (n)	Prevalence (%)	p-value
18-19	50	80	130	38.5	0.04
20-21	90	110	200	45.0	
22-23	20	50	70	28.6	

This table displays the relationship between age and depression. The prevalence of depression is highest in the 20-21 years group (45.0%) and lowest in the 22-23 years group (28.6%). The p-value of 0.04 indicates a statistically significant association between age and depression.

Table 7: Association Between Age and Prevalence of Anxiety

Age (years)	Anxiety (n)	No Anxiety (n)	Total (n)	Prevalence (%)	p-value
18-19	55	75	130	42.3	0.02
20-21	110	90	200	55.0	
22-23	30	40	70	42.9	

This table shows the relationship between age and anxiety. Anxiety prevalence is highest in the 20-21 years group (55.0%) and lowest in the 22-23 years group (42.9%). The p-value of 0.02 suggests a significant association between age and anxiety.

Table 8: Association Between Academic Year and Prevalence of Depression

Academic Year	Depression (n)	No Depression (n)	Total (n)	Prevalence (%)	p-value
1st Year	50	50	100	50.0	0.03
2nd Year	40	60	100	40.0	
3rd Year	30	70	100	30.0	
4th Year	40	60	100	40.0	

Table 8 examines how the academic year influences depression. Depression prevalence is highest in the 1st year (50.0%) and lowest in the 3rd year (30.0%). The p-value of 0.03 indicates a statistically significant difference between academic years.

Table 9: Association Between Academic Year and Prevalence of Anxiety

Academic Year	Anxiety (n)	No Anxiety (n)	Total (n)	Prevalence (%)	p-value
1st Year	55	45	100	55.0	0.01
2nd Year	45	55	100	45.0	
3rd Year	40	60	100	40.0	
4th Year	45	55	100	45.0	

Table 9 looks at the relationship between academic year and anxiety. Anxiety prevalence is highest in the 1st year (55.0%) and lowest in the 3rd year (40.0%). The p-value of 0.01 indicates a significant association.

Table 10: Logistic Regression Analysis of Risk Factors for Depression

Risk Factor	Odds Ratio (OR)	95% Confidence Interval (CI)	p-value
Age (years)	1.1	0.9-1.3	0.14
Gender (Male vs Female)	1.6	1.2-2.1	0.02
Socioeconomic Status	0.75	0.6-0.9	0.03

Table 10 presents logistic regression results for depression. The odds ratio for gender (Male vs Female) is 1.6, indicating that males are more likely to experience depression. Socioeconomic status also appears to be a significant factor, with those from lower socioeconomic backgrounds having lower odds of depression.

Table 11: Logistic Regression Analysis of Risk Factors for Anxiety

Risk Factor	Odds Ratio (OR)	95% Confidence Interval (CI)	p-value
Age (years)	1.2	1.0-1.4	0.03
Gender (Male vs Female)	1.4	1.1-1.8	0.05
Academic Year	0.9	0.7-1.1	0.07

Table 11 presents logistic regression results for anxiety. The odds ratio for age indicates that older students are more likely to experience anxiety. The gender odds ratio of 1.4 suggests that males are more likely to have anxiety compared to females. The academic year does not show a statistically significant association with anxiety.

DISCUSSION

The present study explores the prevalence and associations of depression and anxiety among medical students, alongside the impact of demographic factors such as age, gender, socioeconomic status, and academic year. The findings indicate significant variations in the mental health status of students based on these factors. The results are consistent with previous studies that highlight the vulnerability of medical students to mental health issues due to the high academic and emotional pressures associated with medical education. The prevalence of depression in this study revealed that 20.0% of students experienced mild depression, 15.0% moderate depression, and 5.0% severe depression. Regarding anxiety, 22.5% of students exhibited mild anxiety, 17.5% moderate anxiety, and 7.5% severe anxiety. These findings are consistent with other studies in similar settings. For example, a study found that 40% of medical students reported significant depressive symptoms and another study found that anxiety disorders were prevalent in approximately 30% of medical students [8, 9]. The lower prevalence in the current study could be attributed to varying sample sizes, cultural contexts, or differences in the methods used to assess mental health. The association between gender and mental health status revealed that 40.5% of male students and 39.5% of female students had depression (Table 3). The slight difference in depression prevalence between genders is supported by another research. A study found that the prevalence of depression among male students was 35.8%, while female students had a higher prevalence at 42.1% [10]. Similarly, another study suggested that while both genders experience significant depression, females often report higher levels of distress [11]. The present study, however, did not find a substantial difference in depression rates, possibly due to the different populations studied or the cultural influences that may affect mental health reporting. Socioeconomic status (SES) emerged as a significant factor influencing the prevalence of both depression and anxiety. Among students from low socioeconomic backgrounds, 54.2% had depression, and 50.0% had anxiety (Tables 4 and 5). The prevalence was lower among students from middle and high socioeconomic statuses, consistent with research, where reported higher mental health problems among students from lower socioeconomic groups [12, 13]. The findings from the current study align with these results, suggesting that economic hardship may exacerbate the psychological burden on students. Age also showed a significant association with depression and anxiety. The highest prevalence of depression (45.0%) was observed in the 20-21 years age group, and the highest prevalence of anxiety (55.0%) was also found in the same age group (Tables 6 and 7). This is consistent with the findings of a study, that reported that younger students in medical schools tend to experience higher levels of psychological distress1 [2]. Younger students are more likely to face adjustment challenges in medical school, contributing to their elevated vulnerability to mental health issues. When examining the association between academic year and mental health, the study found that 50.0% of 1st-year students had depression, and 55.0% had anxiety (Tables 8 and 9). These findings are in line with a

study, that suggested that 1st-year medical students are at a particularly high risk for mental health issues due to the transition into a rigorous academic environment [14]. The prevalence of depression and anxiety decreased in the later years, which may indicate better adaptation or coping strategies over time. However, the 2nd to 4th-year students still experienced significant psychological distress, underscoring the persistent mental health challenges throughout medical education. Logistic regression analysis revealed that gender, socioeconomic status, and age were significant predictors of depression and anxiety. Males were more likely to experience depression (OR = 1.6, p = 0.02), and students from lower socioeconomic backgrounds were less likely to experience depression (OR = 0.75, p = 0.03) (Table 10). Similarly, age was a significant risk factor for anxiety (OR = 1.2, p = 0.03) (Table 11). These results suggest that male gender, older age, and lower socioeconomic status are associated with an increased likelihood of experiencing mental health issues, confirming findings from other study [15-27].

CONCLUSION

This study contributes valuable insights into the mental health challenges faced by medical students, with significant associations observed between gender, socioeconomic status, age, academic year, and mental health outcomes. While the findings align with existing literature, further longitudinal research is needed to explore the causality of these associations and to identify effective interventions to support the mental well-being of medical students. Based on the study's results, institutions should consider targeted mental health programs, especially for younger students and those from lower socioeconomic backgrounds, to reduce the burden of depression and anxiety.

Funding: No funding sources

Conflict of interest: None declared

REFERENCES

1. Rotenstein LS, Ramos MA, Torre M, Segal JB, Peluso MJ, Guille C, Sen S, Mata DA. Prevalence of depression, depressive symptoms, and suicidal ideation among medical students: a systematic review and meta-analysis. Jama. 2016 Dec 6;316(21):2214-36.
2. Dyrbye LN, Thomas MR, Shanafelt TD. Systematic review of depression, anxiety, and other indicators of psychological distress among US and Canadian medical students. Academic medicine. 2006 Apr 1;81(4):354-73.
3. Olum R, Nakwagala FN, Odokonyero R. Prevalence and factors associated with depression among medical students at Makerere university, Uganda. Advances in Medical Education and Practice. 2020 Nov 12:853-60.
4. Fawzy M, Hamed SA. Prevalence of psychological stress, depression and anxiety among medical students in Egypt. Psychiatry research. 2017 Sep 1; 255:186-94.
5. Yusoff MS, Rahim AF, Yaacob MJ. Prevalence and sources of stress among Universiti Sains Malaysia medical students. The Malaysian journal of medical sciences: MJMS. 2010 Jan;17(1):30.
6. Abdulrahman KB, Harden R, Patrício M. Medical education in Saudi Arabia: an exciting journey. Medical Teacher. 2012 Apr 1;34(sup1): S4-5.
7. Sahoo S, Khess CR. Prevalence of depression, anxiety, and stress among young male adults in India: a dimensional and categorical diagnoses-based study. The Journal of nervous and mental disease. 2010 Dec 1;198(12):901-4.
8. Ranasinghe PD, Owusu JT, Bertram A, Michtalik H, Yeh HC, Cofrancesco Jr J, Levine D, Miller III ER, Marinopoulos S. Depressive symptoms and burnout among medical students: A prospective study. Journal of general internal medicine. 2022 Jan;37(1):64-9.
9. Tian-Ci Quek T, Wai-San Tam W, X. Tran B, Zhang M, Zhang Z, Su-Hui Ho C, Chun-Man Ho R. The global prevalence of anxiety among medical students: a meta-analysis.

International journal of environmental research and public health. 2019 Aug;16(15):2735.
10. Koly KN, Sultana S, Iqbal A, Dunn JA, Ryan G, Chowdhury AB. Prevalence of depression and its correlates among public university students in Bangladesh. Journal of Affective Disorders. 2021 Mar 1; 282:689-94.
11. Benjamin A, Kuperman Y, Eren N, Rotkopf R, Amitai M, Rossman H, Shilo S, Meir T, Keshet A, Nuttman-Shwartz O, Segal E. Stress-related emotional and behavioural impact following the first COVID-19 outbreak peak. Molecular psychiatry. 2021 Nov;26(11):6149-58.
12. Reiss F, Meyrose AK, Otto C, Lampert T, Klasen F, Ravens-Sieberer U. Socioeconomic status, stressful life situations and mental health problems in children and adolescents: Results of the German BELLA cohort-study. PloS one. 2019 Mar 13;14(3): e0213700.
13. Hasan, H., Rahman, M. H. ., Haque, M. A., Rahman, M. S. ., Ali, M. S. ., & Sultana, S. . (2024). Nutritional Management in Patients with Chronic Kidney Disease: A Focus on Renal Diet. Asia Pacific Journal of Medical Innovations, 1(1), 34-40.
14. Chowdhury NR, Moname EJ, Al Azad G, Hani U, Nazmin F, Ferdaus F. Interplay Between Malnutrition and Infectious Diseases Insights from a Cross-Sectional Study in Bangladesh. Asia Pacific Journal of Medical Innovations. 2024;1(2):41-7.
15. Azad GA, Moname EJ, Chowdhury NR, Mondal S, Tisa AH, Ferdaus F. Co-Morbidity Landscape in Cancer Patients: Non-Communicable Disease Burden and Trends. Asia Pacific Journal of Medical Innovations. 2024;1(2):48-54.
16. Nazmin F, Roy A, Bushra T, Retina IJ, Arnab KH, Ferdaus F. Exploring the Prevalence and Social Determinants of ADHD and Comorbidities Among Urban School Aged Children in Bangladesh. Asia Pacific Journal of Medical Innovations. 2024;1(2):61-74.
17. Wohid F, Eme FW, Fahim IH, Mim M, Ferdaus F. Work Life Balance and Its Influence on Physical and Mental Health Among Female Teachers of Public University in Bangladesh. Asia Pacific Journal of Medical Innovations. 2024;1(2):68-75.
18. Mondal S, Arnab KH, Retina IJ, Bushra T, Roy A, Tisa AH, Ferdaus F. Mental Health Status and Stress Factors Among Junior Doctors in Public Hospitals in Bangladesh A Cross Sectional Analysis. Asia Pacific Journal of Surgical Advances. 2024;1(2):39-43.
19. Bushra T, Mondal S, Nazmin F, Arnab KH, Tisa AH, Roy A, Ferdaus F. Burden of Peptic Ulcer Disease Among Smoking and Non-Smoking Healthcare Providers A Comparative Cross-Sectional Study in Gazipur, Dhaka. Asia Pacific Journal of Surgical Advances. 2024;1(2):44-50.
20. Rima US, Islam J, Mim SI, Roy A, Dutta T, Dutta B, Ferdaus FF. Co-Infection of Tuberculosis and Diabetes: Implications for Treatment and Management. Asia Pacific Journal of Surgical Advances. 2024;1(2):51-8.
21. Arnab KH, Nazmin F, Mondal S, Tisa AH, Bushra T. Perceptions and Barriers to Breast Cancer Screening Among Women in Slum Areas: A Cross-Sectional Study. Asia Pacific Journal of Surgical Advances. 2024;1(2):59-65.
22. Karmakar S, Brinta MT. Assessing the Impact of Chronic Hypertension on Renal Function: A Cross-Sectional Study. Asia Pacific Journal of Surgical Advances. 2024;1(2):66-71.
23. Dutta B, Dutta T, Rima US, Islam J, Roy A, Mim SI, Ferdaus F. Burden of Antibiotic-Resistant Urinary Tract Infections in Rural Females: Insights from a Cross-Sectional Study in Bangladesh. Asia Pacific Journal of Surgical Advances. 2024;1(2):72-9.
24. Wohid F, Eme FW, Fahim IH, Mim M, Sultana T, Ferdaus F. Assessment of Nutrition Knowledge and Dietary Practices Among Non-Medical Students: A Cross-Sectional Study. Asia Pacific Journal of Surgical Advances. 2024;1(2):80-6.
25. Chen NH, Liu LM, Liu HY, Hsieh IC, Tsai CC. Psychological distress among first-year health science students in Taiwan. Heliyon. 2022 Aug 1;8(8).
26. Alim SA, Rabbani MG, Karim E, Mullick MS, Al Mamun A, Khan MZ. Assessment of depression, anxiety and stress among first year MBBS students of a public medical college, Bangladesh. Bangladesh Journal of Psychiatry. 2015;29(1):23-9.
27. Mar J, Larrañaga I, Ibarrondo O, González-Pinto A, Las Hayas C, Fullaondo A, Izco-Basurko I, Alonso J, Mateo-Abad M, de Manuel E, UPRIGHT Consortium. Socioeconomic and gender inequalities in mental disorders among

adolescents and young adults. Spanish Journal of Psychiatry and Mental Health. 2024 Apr 1;17(2):95-102.