ORIGINAL ARTICLE

Gender Differences in Anxiety and Depression amongst Bangladeshi Medical Students

Lamia Sanzana[1], Anne Cooke[2], Shamima Parvin[3], Sohaila Ahmed[3], Abu Sadat Mohammad Nurunnabi[4]

ABSTRACT

Background: Evidence suggests that medical students experience higher rates of anxiety and depression than that of general population. ***Objective:*** This study aims to quantitatively assess the level of anxiety and depression amongst male and female medical students of Bangladesh. ***Methods:*** This cross-sectional, descriptive study was conducted in three government medical colleges in Dhaka, Bangladesh, between June 2022 and June 2023. A total of 262 medical students (99 males and 163 females) participated in this study. The Generalized Anxiety Disorder 7-item (GAD-7) was used to assess the level of anxiety, while assessment of the level of depression was done using the Patient Health Questionnaire (PHQ-9). ***Results:*** Among 262 medical students, all of them were between 18 and 22 years; male-female ratio was 1:1.65. Among them, 213(81%) had some level of anxiety. 27(17%) female and 22(22%) male students had minimal level of anxiety (al1). 50(31%) female and 45(45%) male students had mild anxiety (al2), while 44(27%) female and 23(23%) male students had moderate level of anxiety (al3). However, moderately severe level of anxiety (al4) was observed in 42(26%) female and 9(9%) male students. Significant difference was found in the level of anxiety between male and female medical students (p=0.002). A total of 231(88%) had some level of depression. None to minimal level of depression (dl1) was found in 22(13%) female and 9(9%) male students. Mild level of depression (dl2) was observed in 50(31%) female and 39(39%) male students, while moderate level of depression (dl3) was observed in 53(33%) female and 36(36%) male students. Moreover, moderately severe (dl4) level of depression was evident in 30(18%) female and 11(11%) male students. However, severe level of depression (dl5) was detected in only 8(5%) female and 4(4%) male students. However, no significant difference was observed in the level of depression between male and female medical students (p=0.313). ***Conclusion:*** Our data suggests a significant difference in anxiety levels between male and female medical students and no difference in depression levels between them.

Keywords: Anxiety, depression, medical education, medical students, Bangladesh

International Journal of Human and Health Sciences Vol. 09 No. 03 July'25

DOI: http://dx.doi.org/10.31344/ijhhs.v9i3.831

INTRODUCTION

Mental health is important for a productive life; however, research on mental health issues is often neglected and not treated as a public health concern in certain resource-poor countries like Bangladesh[1]. Moreover, mental disorders are prevalent and escalating among various population groups in Bangladesh.[1,2] Continuous exposure to stress in medical education plays a significant role in the mental health issues such as anxiety and depression.[3] Evidence suggests that medical students experience higher rates of anxiety and depression than that of general

1. King's College London, London, UK.
2. British Neuroscience Association, Bristol, UK.
3. Mugda Medical College, Dhaka-1214, Bangladesh.
4. Dalla Lana School of Public Health, University of Toronto, ON, Canada.

Correspondence to: Lamia Sanzana, King's College London, London, UK.
Email: lamiaild98@gmail.com

population.[4] Among medical students of Bangladesh culturally face considerable demands from medical college authorities as well as their families resulting in significant psychological stress leading to anxiety and depression, as reported in several literature[5-8]. As a result, medical students' academic performance, physical well-being and mental health may substantially get worse over the academic years; however, it often could only be detected at an advanced stage. Those conditions sometimes become so grave that it may lead to suicidal ideation and suicide.[4,6,7,9] Apart from that, evidence showed that psychological distress was associated with suboptimal quality of patient care, patient safety and their professional behaviour.[3] Moreover, in recent years an increase in rates of mental health issues including anxiety, depression and sucidality among medical students in the country (in both public and private medical colleges) necessitates more in-depth research correlating to gender.[10] Therefore, we proposed this study to quantitively assess the level of anxiety and depression among male and female medical students of Bangladesh.

METHODS

This cross-sectional, descriptive study was conducted in three government medical colleges in Dhaka, Bangladesh, between June 2022 and June 2023. A total of 262 medical students (99 males and 163 females) participated in this study. We adopted a convenient sampling technique. The participants were given a sheet of paper containing the anxiety assessment questionnaire on one side and the depression assessment questionnaire on the other. We asked the respondents to complete the Generalized Anxiety Disorder 7-item (GAD-7) scale, which is a brief patient-reported tool for screening anxiety[11] based on DSM-IV criteria.[12] Participants' responses of "not at all," "several days," "more than half the days," and "nearly every day" are rated on a 4-point Likert-type scale (0–3). The item scores were then added together to determine the total score (ranging between 0 and 21).[11] We also asked the respondents to complete the Patient Health Questionnaire (PHQ-9) containing nine items, which is a tool for screening, diagnosis and assessment of severity of major depressive disorder (MDD);[13] its scoring versions are related to the DSM-5 indicators.[14] Participants respond "not at all," "several days," "more than half the days," and "nearly every day" to the items (similar to GAD-7), and the questionnaire is scored 0 to 27.[13]

It may be mentioned that the participating medical students were informed that their participation would be voluntary, and in no way it would affect their performance or grades in studies. Besides, due to the sensitive nature of some questions, existing mental health support was provided to them including consultation with a psychiatrist and counseling services, if needed. Moreover, as being vulnerable group of study participants as well as posing risks of suicidal ideation/thoughts, their anonymity, confidentiality and effective care during and after study were strictly ensured[15].

Immediately after the completion of data collection, collected data were checked and verified. Data cleaning, coding and recording were done. Data analysis was done using the Statistical Package for Social Sciences (SPSS) software version 29.0 for Windows (SPSS Inc., Chicago, IL, USA). Fisher's exact test was applied to determine if there were any non-random associations between levels of anxiety and depression with gender. A p-value of 0.05 or less indicated statistical significance. Data was presented in the tabulated form as well in bar diagrams.

RESULTS

Among 262 medical students, 99 were male and 163 were female (male-female ratio was 1:1.65). All of them were between 18 and 22 years. Among them, 213(81%) medical students had different levels of anxiety. 27(17%) female and 22(22%) male students had minimal level of anxiety (al1). 50(31%) female and 45(45%) male students had mild anxiety (al2), while 44(27%) female and 23(23%) male students had moderate level of anxiety (al3). However, moderately severe level of anxiety (al4) was observed in 42(26%) female and 9(9%) male students. The majority of both female and male students fall under the category of al2 (Table 1, Figure 1). Significant difference was found in the level of anxiety between male and female medical students (p=0.002) (Table 1).

A total of 231(88%) had different levels of depression. None to minimal level of depression (dl1) was found in 22(13%) female and 9(9%) male students. Mild level of depression (dl2) was observed in 50(31%) female and 39(39%) male students, while moderate level of depression (dl3)

was observed in 53(33%) female and 36(36%) male students. Moreover, moderately severe (dl4) level of depression was evident in 30(18%) female and 11(11%) male students. However, severe level of depression (dl5) was detected in only 8(5%) female and 4(4%) male students. The majority of the female students fall under the category of dl3, while most of the male students were in the category of dl2 (Table 2, Figure 2). no significant difference was observed in the level of depression between male and female medical students (p=0.313) (Table 2).

Table 1: Level of anxiety among female and male students (n=262)

Gender	al1	al2	al3	al4	Total
Female	27	50	44	42	163
Male	22	45	23	9	99
Total	49	95	67	51	262
p-value	0.002[S]				

al = anxiety level; P value reached from Fischer's Exact test; S=significant.

Table 2: Level of depression among female and male students (n=262)

Gender	dl1	dl2	dl3	dl4	dl5	Total
Female	22	50	53	30	8	163
Male	9	39	36	11	4	99
Total	31	89	89	41	12	262
p-value	0.313[NS]					

dl = depression level; P value reached from Fischer's Exact test; NS=not significant.

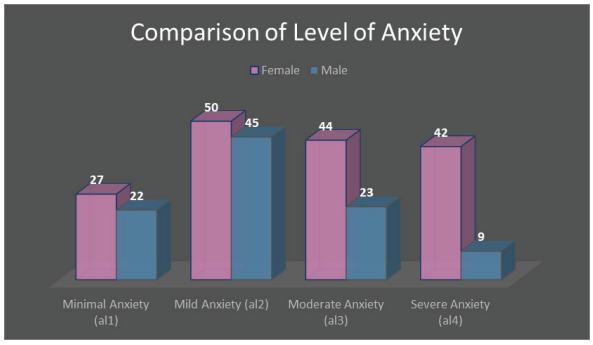

Figure 1: Comparison of level of anxiety between male and female medical students (n=262).

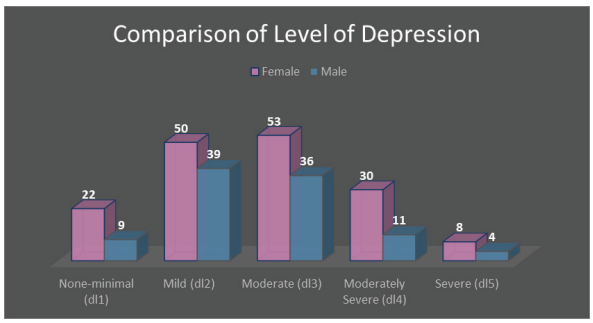

Figure 2: Comparison of level of depression between male and female medical students (n=262).

DISCUSSION

Undergraduate medical education in Bangladesh comprises strenuous study and training for a minimum of 5 to 6 years.[5-8] Academic demands and other related factors in medical education often affect their physical and mental health,[5-8] which is also true for other countries.[3,4,9,16-25] In the present study, among 262 medical students, 99 were male and 163 were female (male-female ratio was 1:1.65). We observed that prevalence of anxiety and depression is high among medical students; 213(81%) medical students had some level of anxiety, while 231(88%) had some level of depression. A significant difference was found in anxiety levels between male and female medical students; however, no difference was found in depression levels between them.

Most of the previous studies from Bangladesh showed a high prevalence of anxiety and depression among medical students.[5-8] Tareq et al. interviewed 399 medical students studying in 6 government medical colleges of the country and showed that overall 39.1% students were suffering from different levels of depression – more in female students (45.6%) than male

students (31.3%).[6] Magfur et al. examined 546 students from 7 medical colleges (3 government and 4 private) in Sylhet division of the country and found that 37.5% had anxiety symptoms, while 28.9% had depression. They also reported that females had more depression than males ($p<0.05$); however, no difference was found in anxiety levels between them ($p>0.05$).[8] Similar to our study, an evidence from Odisha state of India (on 353 medical students) showed that female medical students reported higher scores of anxiety and depression as compared to their male counterparts ($p<0.05$).[16] Two other studies from Brazil (on 1650 students from 22 medical schools) and Spain (on 5216 medical students across the country) showed a high coexistence of anxiety and depression among medical students along with high prevalence among females ($p<0.001$).[17,18] Similar evidence from Egypt (on 597 medical students) reported that the mean anxiety scores were significantly higher among female medical students ($p<0.001$). However, no difference was observed in depression scores between them ($p>0.05$).[19] Another evidence from the eastern part of India (on 183 medical students) showed a higher prevalence of anxiety among females than males ($p<0.05$); no gender association was observed in depression ($p>0.05$).[20]

Most of the research reported that female students remain more anxious and depressed than male students, whereas a previous study from Bangladesh reported that male students were more prone to be depressed than females.[7] Similarly, an evidence from Nepal reported male predominance in prevalence of anxiety and depression.[21] However, a study done in Khulna division of Bangladesh and four other from Pakistan (on 437 medical students from 6 medical schools), Saudi Arabia (on 575 medical students in a multiethnic setting), Iran and the northern Thailand reported that gender did not appear to be associated with anxiety or depression ($p>0.05$).[5,22-25] Comparing to those study findings from different parts of the world, we observed that those results are mostly in congruence with our findings except few. The discrepancies observed with those findings might be attributable to variations in tools used for measurement of anxiety and depression, living environment, ethnic and cultural differences and choice of sample cohorts among medical students (ranging from year 1 to year 5).

Our study has some limitations. Firstly, we selected only 3 medical colleges from an urban region of the country, which may limit the generalizability of our data in whole population. The results from medical colleges situated in semi-urban and remote areas might vary to some extent. Secondly, a cross-sectional design was employed, which could evaluate levels of anxiety and depression only at a specific point in the students' academic journey. In this context, longitudinal research is necessary to examine the ongoing and significant relationships between the independent and dependent variables associated. Finally, using the above-mentioned questionnaires (as mostly self-reported) might have introduced bias. This could be addressed in future research by incorporating in-depth interviews and observations to improve data accuracy and provide more nuanced insights into anxiety and depression status of medical students.

CONCLUSION

Our data suggests a significant difference in anxiety levels between male and female medical students and no difference in depression levels between them. In recent years, awareness of mental illness among medical students has increased, so have initiatives to provide mental health resources and support to the students. Many of the medical colleges have increased mental health support through educating their students about lifestyle wellness, and how to cope with stress, anxiety and depression as well as initiating free counseling services to them. However, medical college authorities must evaluate and monitor the service and elucidate the factors that lead to higher levels of anxiety and depression in different stages of medical education and address those in the mitigation policies.

Conflict of Interest: The authors declared no financial or personal competing interest.

Funding Statement: Self funding.

Ethical Approval: This study was approved by the Institutional Review Board (IRB) of Mugda Medical College, Dhaka, Bangladesh

Authors' Contribution: Concept and design: LS, AC; Data collection and compilation: LS, SP, SA, Data analysis: LS, ASMN; Manuscript writing, revision and final submission: LS, AC, SP, SA, ASMN.

REFERENCES

1. Alam F, Hossain R, Ahmed HU, Alam MT, Sarkar M, Halbreich U. Stressors and mental health in Bangladesh: current situation and future hopes. BJPsych Int. 2021;18(4):91-4.
2. Hossain MD, Ahmed HU, Chowdhury WA, Niessen LW, Alam DS. Mental disorders in Bangladesh: a systematic review. BMC Psychiatry. 2014;14:216.
3. Mirza AA, Baig M, Beyari GM, Halawani MA, Mirza AA. Depression and anxiety among medical students: a brief overview. Adv Med Educ Pract. 2021;12:393-8.
4. Rotenstein LS, Ramos MA, Torre M, Segal JB, Peluso MJ, Guille C, et al. Prevalence of depression, depressive symptoms, and suicidal ideation among medical students: a systematic review and meta-analysis. JAMA. 2016;316(21):2214-36.
5. Alim SMAHM, Rabbani MG, Karim E, Mullick MSI, Al-Mamun A, Fariduzzaman, et al. Assessment of depression, anxiety and stress among first year MBBS students of a public medical college, Bangladesh. Bangladesh J Psychiatr. 2017;29(1):23-9.
6. Tareq SR, Likhon RA, Rahman SN, Akter S, Basher MS, Hasan MS, et al. Depression among medical students of Bangladesh. Mymensingh Med J. 2020;29(1):16-20.
7. Chomon RJ. Depression and suicidal ideation among medical students in a private medical college of Bangladesh: a cross sectional web based survey. PLoS One. 2022;17(4):e0265367.
8. Magfur I, Hasan MM, Imam R, Mamun AA, Islam MM, Singha ST. Depression, anxiety and stress among first year medical students in Sylhet division. Bangladesh J Psychiatr. 2023;37(2):25-31.
9. Dyrbye LN, Thomas MR, Shanafelt TD. Systematic review of depression, anxiety, and other indicators of psychological distress among U.S. and Canadian medical students. Acad Med. 2006;81(4):354-73.
10. Mamun MA, Misti JM, Griffiths MD. Suicide of Bangladeshi medical students: risk factor trends based on Bangladeshi press reports. Asian J Psychiatr. 2020;48:101905.
11. Spitzer RL, Kroenke K, Williams JB, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. Arch Intern Med. 2006;166(10):1092-7.
12. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. Fourth Edition, DSM-IV™. Washington, DC: American Psychiatric Publishing; 1994.
13. Kroenke K, Spitzer RL. The PHQ-9: a new depression diagnostic and severity measure. Psychiatr Ann. 2002;32(9):509-15.
14. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. Fifth Edition, DSM-5®. Washington, DC: American Psychiatric Publishing; 2013.
15. Mozaffor M, Nurunnabi A, Shahriah S. Ethical issues in suicide research. J Psychiatr Assoc Nepal (JPAN). 2020;9(1):5-9.
16. Iqbal S, Gupta S, Venkatarao E. Stress, anxiety and depression among medical undergraduate students and their socio-demographic correlates. Indian J Med Res. 2015;141(3):354-7.
17. Brenneisen Mayer F, Souza Santos I, Silveira PS, Itaqui Lopes MH, de Souza AR, Campos EP, et al. Factors associated to depression and anxiety in medical students: a multicenter study. BMC Med Educ. 2016;16(1):282.
18. Capdevila-Gaudens P, García-Abajo JM, Flores-Funes D, García-Barbero M, García-Estañ J. Depression, anxiety, burnout and empathy among Spanish medical students. PLoS One. 2021;16(12):e0260359.
19. Abed HA, Abd-Elraouf MSE. Stress, anxiety, depression among medical undergraduate students at Benha University and their socio-demographic correlates. Egypt J Hosp Med. 2022;86:27-32.
20. Nath A, Ropmay AD, Slong D, Patowary AJ, Damu DAR, Jonpelly A, et al. A cross sectional study on scaling the depression, anxiety and stress level of medical students during COVID-19 in a tertiary level medical institution in India. Int J Hum Health Sci (IJHHS). 2022;6(2):161-7.
21. Thapa B, Sapkota S, Khanal A, Aryal BK, Hu Y. Predictors of depression and anxiety among medical students. J Nepal Health Res Counc. 2023;21(1):63-70.
22. Hashmi AM, Aftab MA, Naqvi SH, Sajjad W, Mohsin M, Khawaja IS. Anxiety and depression in Pakistani medical students: a multi-center study. HealthMED. 2014;8(7):813-20.
23. Kulsoom B, Afsar NA. Stress, anxiety, and depression among medical students in a multiethnic setting. Neuropsychiatr Dis Treat. 2015;11:1713-22.
24. Aghajani Liasi G, Mahdi Nejad S, Sami N, Khakpour S, Ghorbani Yekta B. The prevalence of educational burnout, depression, anxiety, and stress among medical students of the Islamic Azad University in Tehran, Iran. BMC Med Educ. 2021;21(1):471.
25. Phomprasith S, Karawekpanyawong N, Pinyopornpanish K, Jiraporncharoen W, Maneeton B, Phinyo P, et al. Prevalence and associated factors of depression in medical students in a northern Thailand university: a cross-sectional study. Healthcare (Basel). 2022;10(3):488.