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ASSESSMENT OF MENTAL STRESS AMONG UNDERGRADUATE MEDICAL STUDENTS USING GHQ-12

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ABSTRACT

Background: Medical education is one of the most demanding academic fields, often linked with high levels of mental stress among students. Early detection and management of psychological distress are essential to ensure the well-being of future healthcare professionals. **Aim:** To assess the prevalence of mental stress among undergraduate medical students using the 12-item General Health Questionnaire (GHQ-12) and to identify associated socio-demographic and academic factors. **Materials and Method:** A cross-sectional study was conducted among 150 undergraduate medical students of Enam Medical College from July 2025 to October 2025. Data were collected through a structured questionnaire including socio-demographic information, academic stress factors, and the GHQ-12 scale. Scoring was done using the 0-0-1-1 method, with scores ≥3 indicating psychological distress. Data were analyzed using SPSS, applying descriptive and chi-square tests. **Results:** Among the respondents, 73.3% were classified as psychologically distressed scoring ≥3 in GHQ-12 scale. Most students were aged 20–22 years (56%), and 58% were female. Major stress-related factors included heavy academic workload (68.6%), inadequate sleep (63.3% slept <6 hours/night), and lack of regular physical activity (44% reported none). Only 39% participated in extracurricular activities, and 40% reported having no access to mental health services in their institution. No significant association was found between stress levels and age or academic year ($p > 0.05$). **Conclusion:** A high prevalence of psychological distress was observed among medical students, driven mainly by academic burden, sleep deprivation, and limited recreational opportunities. Institutional measures such as accessible counseling, stress management programs, and supportive mentorship are urgently needed to promote student well-being.

Keywords: Medical students, Mental stress, GHQ-12, Psychological distress, Bangladesh

INTRODUCTION

Medical education is one of the most demanding academic programs, requiring sustained cognitive, emotional, and psychological endurance from students. The combination of intensive coursework, frequent examinations, and clinical responsibilities exposes medical students to chronic stress from the early stages of their education [1-3].

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According to the World Health Organization (WHO), stress is a psychological and physiological response to perceived threats or challenges that, if prolonged, can lead to burnout, anxiety, and depressive disorders[4].Multiple studies have confirmed that the prevalence of psychological distress among medical students is significantly higher than in the general population[5,6].

Globally, between 30% and 60% of medical students experience moderate to severe stress during their studies[6,7]. Stress not only affects academic performance but also impairs concentration, decision-making, and interpersonal relationships, increasing the risk of long-term mental health issues[7,8].In low- and middle-income countries such as Bangladesh, medical students may experience additional stressors related to overcrowded classrooms, limited resources, and strong societal expectations for academic excellence[9]. Despite the high burden, mental health screening and support systems in most medical institutions remain inadequate[10].

The stigma surrounding psychological disorders further discourages students from seeking help. The General Health Questionnaire-12 (GHQ-12), developed by Goldberg and Williams[11], is one of the most widely validated tools for assessing psychological distress in both general and student populations[12]. It screens symptoms such as anxiety, insomnia, and social dysfunction, offering a brief and reliable measure of overall mental well-being[11,13].

Given the increasing evidence of mental health challenges among medical students, assessing stress using standardized instruments like GHQ-12 is critical for early identification and intervention.

This study aims to determine the prevalence of mental stress among undergraduate MBBS (Bachelor of Medicine, Bachelor of Surgery) students at Enam Medical College using the GHQ-12 scale and to explore associated socio-demographic and academic factors. By identifying key stressors and vulnerable groups, this research seeks to provide evidence-based recommendations for mental health promotion and institutional policy development[14,15] .

MATERIALS AND METHOD

Study Type:
A cross-sectional study.

Study Period:

The duration of study was 4 months (July 2025 to October 2025).

Study Place:

Enam Medical College

Study Population

Undergraduate students from Enam Medical College (1st year to 5th year)

Selection Criteria:

Inclusion criteria:

- Only undergraduates medical students were included.
- Student's willingness to participate in this study.
- Students were included irrespective of sex.

Exclusion criteria:
Students who did not want to take part in the interview willingly.

Sample size
150 students

Sampling Technique:

Simple random sampling used to include students from all academic years.

Data Collection Instruments:

Data were collected using a structured questionnaire divided into three sections:
1. Socio-demographic data (age, gender, income, living arrangement, etc.)
2. Academic stress factors (workload, assignments, exam pressure, teacher support, sleep, extracurricular activity)
3. GHQ-12 scale for mental stress assessment.

Each GHQ-12 item was scored using the 0-0-1-1 method, with total scores ≥3 indicating psychological distress.

Data Collection Techniques:
Researchers themselves collected data by face-to-face interview

Data Analysis:
Data were analyzed in SPSS using descriptive statistics and chi-square tests.

Ethical consideration:
Ethical approval from the institutional review board of the institution and informed consent were obtained prior to participation.

RESULTS

A cross-sectional study was conducted among 150 undergraduate students at Enam Medical College to assess mental stress using the GHQ-12 scale.

The mean age was 21.8 ± 1.7 years; most participants (56%) were aged 20–22 years, and 58% were female. Hostel residence was most common (71.3%), followed by rented accommodation (14.6%) and family residence (12.6%). (Table 1)

Approximately 73.3% of respondents scored ≥3 on GHQ-12, indicating psychological distress (Figure 1). No significant association was found between stress level and age ($\chi^2 = 2.34$, $p > 0.05$) or academic year ($\chi^2 = 1.82$, $p > 0.05$).

Major stress-related factors included: heavy academic workload (46%) and very heavy workload (22.6%); sleep deprivation, as 63.3% slept only 4–6 hours per night; lack of physical exercise (44%); and absence of extracurricular involvement (60.6%). Low awareness of mental-health services was also evident-40% reported no access, and 20.6% were unsure. (Figure 2).

Most students (48%) "sometimes" felt pressure to excel, and 29.3% had seriously considered leaving the MBBS course. Only 30% always received academic or emotional support from mentors.

Table 1: Socio-demographic Characteristics of Respondents (N=150)

Variable	Category	Percentage (%)
Age	Under 20 years	10
	20–22 years	56
	23–25 years	32
	Above 25 years	2
Gender	Male	42
	Female	58
Living Arrangement	Hostel/Dormitory	71.3
	Rented	14.6
	With Family	12.6
	Alone	1.3

N=Number of participants

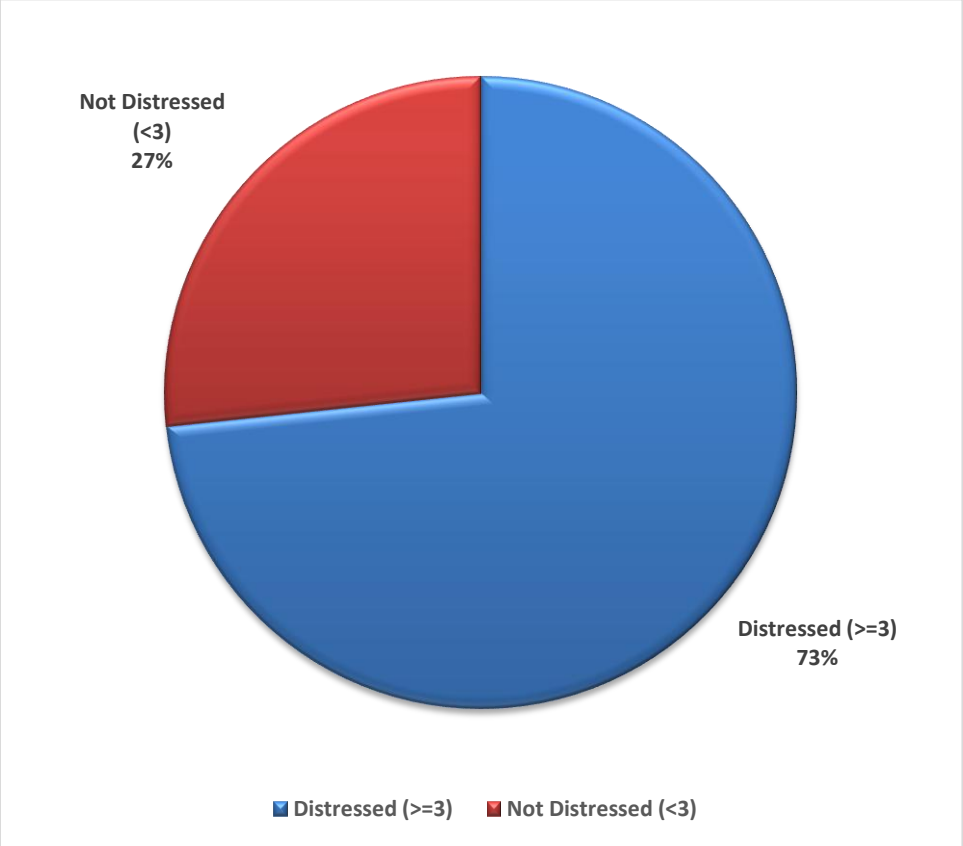

Figure 1: Distribution of GHQ-12 Stress Levels

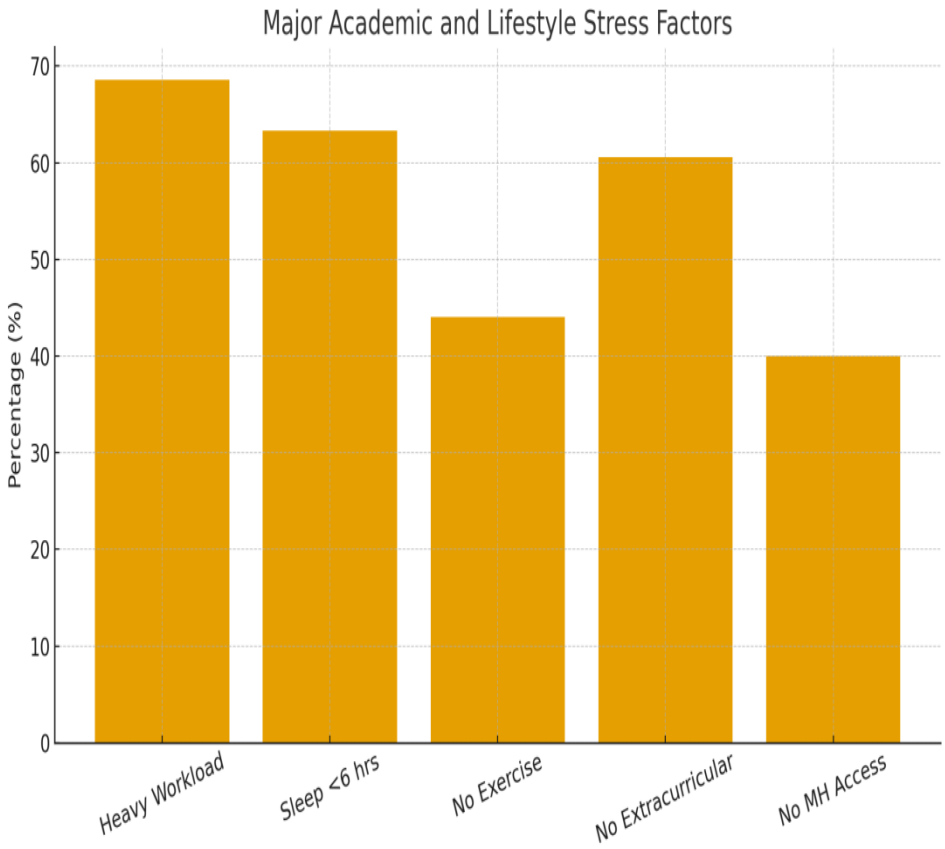

Figure 2: Major Academic and Lifestyle stress factors

DISCUSSION

This cross-sectional study evaluated the prevalence and determinants of psychological stress among undergraduate medical students using the General Health Questionnaire (GHQ-12). The findings revealed that approximately 73.3% of the participants were distressed, indicating a

high prevalence of mental stress within the study population. This aligns with previous research conducted in Bangladesh and other countries, where 50%–70% of medical students were found to experience significant stress or depressive symptoms [16-18]. The frequency observed in our study was higher than that reported by Eva et al.[19] and Ovi et al.[20] but were consistent with regional findings in India and Nepal [21,22].

Gender-based analysis indicated that female students reported higher distress levels compared to males, consistent with the findings of Eva et al.[19] and Ovi et al.[20], who observed higher odds of psychological distress among Bangladeshi female university students. This pattern mirrors global literature showing that females are generally more vulnerable to stress and depression due to socio-cultural expectations, emotional sensitivity, and gender role pressures[23].

The study found that most participants lived in hostels (71.3%), and these students exhibited higher stress levels, in line with the findings of Das et al. [24], who identified hostel residence as a significant stress-related factor among Bangladeshi medical students. They sighted thatlimited privacy, lack of family support, and intense peer competition in hostel environments may contribute to elevated distress.

Sleep deprivation also emerged as a key factor, with 63.3% of students sleeping less than six hours per night. Similar results were found by Alim et al.[25] and Comotti et al.[26], who highlighted inadequate sleep as a strong predictor of anxiety, poor concentration, and burnout. Chronic sleep loss impairs learning and emotional regulation, thereby exacerbating psychological distress[27].

Participation in physical and extracurricular activities was low, with 44% of students reporting no physical exercise and 60.6% lacking extracurricular engagement. Previous research supports this observation, showing that regular participation in sports or creative activities is inversely correlated with GHQ-12 stress scores[17,28]. Such activities serve as effective coping mechanisms by promoting relaxation and social interaction.

Academic workload was the leading stressor (68.6%), consistent with previous research[29,30]. Nearly 30% considered discontinuing their studies, comparable to Pakistani data[28]. GHQ-12 item analysis revealed cognitive and emotional strain—impaired concentration, loss of confidence, and reduced self-worth—similar to trends reported by Rotenstein et al.[16].

A concerning finding was that 40% of respondents lacked access to mental health services, while 20.6% were unaware of their availability. Comparable patterns have been documented across South Asia, including Sri Lanka[18], where medical students faced barriers such as stigma, lack of institutional support, and insufficient counseling resources. By contrast, universities in developed countries have established proactive mental health frameworks, significantly improving student outcomes[31].

While some students in this study showed resilience, many lacked effective coping strategies, supporting the stress-appraisal model proposed by Lazarus and Folkman[32]. The high distress prevalence underscores systemic issues in medical education—excessive workload, inadequate mental-health infrastructure, and insufficient mentoring[33,34]. Comprehensive interventions incorporating peer-support, counseling,

physical-activity programs, and flexible curriculum are recommended to enhance mental well-being among future healthcare professionals[28].

CONCLUSION

This study found a high prevalence of psychological stress among medical students, with nearly three out of four respondents scoring distressed on GHQ-12. Academic workload, sleep deprivation, inadequate physical activity, and lack of extracurricular involvement emerged as key contributing factors. Although some students received academic or emotional support from teachers, a considerable proportion reported little to no such support, reflecting gaps in the support structure. Despite significant stress, most students remained committed to continuing their MBBS studies. Importantly, statistical analysis demonstrated no significant association between stress levels and age or academic year, indicating that distress is widespread and not limited to specific subgroups. Overall, the results highlight that stress among medical students is a pervasive issue with multifactorial causes, requiring comprehensive attention from educators and policymakers.

RECOMMENDATIONS

There is a need for establishing on-campus counseling centers and peer support groups. Stress management workshops and physical activity programs need to be organized for students. The teachers have to be trained to recognize the symptoms and signs of distress in students. Mental health awareness has to be incorporated into the medical curriculum.

LIMITATIONS

This study was conducted in a single institution with a limited sample. Self-reported data may introduce bias. Future studies should include multiple colleges and longitudinal follow-ups.

CONFLICT OF INTEREST

There is no conflict of interest

REFERENCES

1. Dyrbye LN, Thomas MR, Shanafelt TD. Systematic review of depression, anxiety, and other indicators of psychological distress among U.S. and international medical students. Acad Med. 2006;81(4):354-73.doi:10.1097/00001888-200604000-00009
2. Fares J, Al Tabosh H, Saadeddin Z, El Mouhayyar C, Aridi H. Stress,burnout and coping strategies in preclinical medical students. N Am J Med Sci. 2016;8(2):75.doi:10.4103/1947-2714.177299
3. Kumar S, Dagli RJ, Mathur A, et al. Perceived sources of stress amongst Indian dental students. Eur J Dent Educ. 2009;13(1):39–45.
4. World Health Organization. Occupational health: Stress at the workplace. WHO; 2020 [cited 2025 Jul 22]. Available from: https://www.who.int/news-room/q-a-detail/occupational-health-stress [(Accessed on 22 July 2025)]
5. Ibrahim AK, Kelly SJ, Adams CE, Glazebrook C. A systematic review of studies of depression prevalence in university students. J Psychiatr Res. 2013;47(3):391-400.doi:10.1016/j.jpsychires.2012.11.015
6. Shah M, Hasan S, Malik S, Sreeramareddy CT. Perceived stress, sources and severity of stress among medical undergraduates in a Pakistani medical school. BMC Med Educ. 2010;10:2. doi: 10.1186/1472-6920-10-2.
7. 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):2214-2236. doi: 10.1001/jama.2016.17324.

8. Ishak W, Nikravesh R, Lederer S, Perry R, Ogunyemi D, Bernstein C. Burnout in medical students: a systematic review. Clin Teach. 2013;10(4):242-5. doi: 10.1111/tct.12014.

9. Begum A. The Prevalence of Mental Distress and the Role of Social Support among Medical Students in Bangladesh: A Cross-Sectional Study. Scholars J Appl Med Sci.2024; 12(11): 1458-1466. https://doi.org/10.36347/sjams.2024.v12i11.005

10. Khurshid S, Khurshid S, Toor HK. Burnout as a mental health challenge among medical students in pakistan: a qualitative study of its triggers, impacts, and support needs. BMC Med Educ. 2025;25(1):1190. doi: 10.1186/s12909-025-07762-y.

11. Goldberg DP, Williams P. A User's Guide to the General Health Questionnaire. Windsor: NFER-Nelson; 1988.

12. Benoni R, Sartorello A, Mazzi M, Berti L, Sorina M, Paiola E, et al. The use of 12-item General Health Questionnaire (GHQ-12) in Ukrainian refugees: translation and validation study of the Ukrainian version. Health Qual Life Outcomes. 2024;22(1):6. doi: 10.1186/s12955-024-02226-1.

13. Montazeri A, Harirchi AM, Shariati M, Garmaroudi G, Ebadi M, Fateh A. The 12-item General Health Questionnaire (GHQ-12): translation and validation study of the Iranian version. Health Qual Life Outcomes. 2003;1(1):66.doi:10.1186/1477-7525-1-66

14. Dyrbye LN, Thomas MR, Shanafelt TD. Medical student distress: causes, consequences, and proposed solutions. Mayo Clin Proc. 2005;80(12):1613-22. doi: 10.4065/80.12.1613.

15. Yusoff MS, Abdul Rahim AF, Baba AA, Ismail SB, Mat Pa MN, Esa AR. The impact of medical education on psychological health of students: a cohort study. Psychol Health Med. 2013;18(4):420-30. doi: 10.1080/13548506.2012.740162.

16. 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):2214-2236. doi: 10.1001/jama.2016.17324.

17. Paudel U, Parajuli A, Shrestha R, Kumari S, Adhikari Yadav S, Marahatta K. Perceived stress, sources of stress and coping strategies among undergraduate medical students of Nepal: a cross-sectional study. F1000Res. 2024;11:167. doi: 10.12688/f1000research.75879.3.

18. Fernando BMS ,Samaranayake DL. Burnout among postgraduate doctors in Colombo: prevalence, associated factors and association with self-reported patient care. BMC Medical Education.2019;19(1):Article 347. https://doi.org/10.1186/s12909-019-1810-9

19. Eva EO, Islam MZ, Mosaddek AS, Rahman MF, Rozario RJ, Iftekhar AFMH, et al. Prevalence of stress among medical students: a comparative study between public and private medical schools in Bangladesh. BMC Res Notes. 2015;8:327.doi:10.1186/s13104-015-1295-5

20. Ovi MR, Siddique MAB, Ahammed T, Chowdhury MAB, Uddin MJ. Assessment of mental wellbeing of university students in Bangladesh using Goldberg's GHQ-12: A cross-sectional study. Health Sci Rep. 2024;7(3):e1948. doi: 10.1002/hsr2.1948.

21. Sreeramareddy CT, Shankar PR, Binu VS, Mukhopadhyay C, Ray B, Menezes RG. Psychological morbidity, sources of stress and coping strategies among undergraduate medical students of Nepal. BMC Med Educ. 2007;7:26.doi:10.1186/1472-692026

22. Gupta S, Choudhury S, Das M, Mondol A, Pradhan R. Factors causing stress among students of a medical college in Kolkata, India. Educ Health (Abingdon). 2015;28(1):92-5. doi: 10.4103/1357-6283.161924.

23. Di Benedetto MG, Landi P, Mencacci C, Cattaneo A. Depression in Women: Potential Biological and Sociocultural Factors Driving the Sex Effect. Neuropsychobiology. 2024;83(1):2-16. doi: 10.1159/000531588.

24. Das T, Rimti FH, Fahid HA, Uthso NA, Hossain Hawlader MD. Prevalence of IBS and its association with academic stress and dormitory lifestyle among medical students of Bangladesh: A cross-sectional study. Heliyon. 2024;10(16):e36259. doi: 10.1016/j.heliyon.2024.e36259.

25. Mamun A, Khan MZR. Assessment of depression, anxiety and stress among first year MBBS students of a public medical college, Bangladesh. Bangladesh J Psychiatry. 2015;29(1):23–29.https://doi.org/10.3329/bjpsy.v29i1.32748.

26. Comotti, A., Barnini, T., Fattori, A., Paladino, M.E., Riva, M.A., Bonzini, M., Belingheri, M. "Rethinking students' mental health assessment through GHQ-12: evidence from the IRT approach." BMC Psychology.2024;12:308. doi: 10.1186/s40359-024-01808-4

27. Hershner SD, Chervin RD. Causes and consequences of sleepiness among college students. Nat Sci Sleep. 2014;6:73–84.doi:10.2147/NSS.S62907

28. Abdulghani HM, AlKanhal AA, Mahmoud ES, Ponnamperuma GG, Alfaris EA. Stress and its effects on medical students: a cross-sectional study at a college of medicine in Saudi Arabia. J Health Popul Nutr. 2011;29(5):516-22. doi: 10.3329/jhpn.v29i5.8906.

29. Alim SMAHM, Rabbani MG, Karim E, Mullick MSI, Al-Mamun A, Fariduzzaman, Khan MZR. Assessment of depression, anxiety and stress among first year MBBS students of a public medical college, Bangladesh. Bang J Psychiatry. 2015;29(1):23-29.

30. Solanky P,Desai B,Kavishwar A,Kantharia SL.Study of psychological stress among undergraduate medical students of Government Medical College, Surat.Int J Med Sci Pub Health.1(2):38.doi:10.5455/ijmsph.2012.1.38-42

31. Sakız H, Jencius M. Inclusive mental health support for international students: Unveiling delivery components in higher education. Glob Ment Health (Camb). 2024;11:e8. doi: 10.1017/gmh.2024.1.

32. Lazarus RS, Folkman S. Stress, appraisal, and coping. New York: Springer; 1984.

33. Frei E, Stamm M, Buddeberg-Fischer B. Mentoring programs for medical students—a review of the PubMed literature 2000–2008. BMC Med Educ. 2010;10:32.doi:10.1186/1472-6920-10-32

34. Sambunjak D, Straus SE, Marušić A. Mentoring in academic medicine: a systematic review. JAMA. 2006;296(9):1103–15.doi:10.1001/jama.296.91103.