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Assessment of exam anxiety and associated factors among undergraduate medical students: a cross-sectional study

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Abstract

Introduction: Anxiety is a psychological condition in which people experience extreme distress, and it commonly intensifies among students during examinations, impairing academic performance as well as their mental and physical well-being, and ultimately reducing overall quality of life. Thus, this study aimed to determine the prevalence of exam anxiety and its determinants among undergraduate medical students.

Method: A cross-sectional study was conducted from March 2026 to April 2026 after the Institutional Ethical Committee approval. The study proforma was distributed to first and second year medical students 10 minutes prior to the start of their university practical examinations. A proforma was created with the following sections: (a) Participant consent and General Information, (b) Beck's anxiety inventory questionnaire (BAI).

Result: In our study, among medical students the prevalence of anxiety was 21.51%. Anxiety during exams among female students was higher (37.78%) when compared to male students (15.74%). First year medical students had higher level of anxiety during exams (26.89%) than second years (15.19%). Students staying in hostel had more (22%) anxiety. Among the students who engaged in less than 150 minutes of physical exercise, 27.73% had higher levels of anxiety.

Conclusion: Female students and those reporting lower levels of physical activity had a higher prevalence of exam anxiety. Less physical activity and place of residence also showed higher level of anxiety during exam.

Keywords: Determinants; Exam Anxiety; Medical students; Prevalence

INTRODUCTION

Anxiety is an emotional state characterized by feelings of tension, fear or nervousness, and persistent worried thoughts.¹ Among students, it is commonly experienced before, during or in anticipation of examinations and their outcomes.² A global systematic review has reported that approximately 34% of undergraduate medical students experience anxiety, indicating a higher prevalence compared to the general population.³ Undergraduate students may experience anxiety due to factors such as last minute studying, poor memory, sleep deprivation, ineffective time management and low self-confidence.⁴

Medical students are frequently exposed to high academic workloads, frequent examinations, competitive environments, and pressure to perform good skill, all of this can contribute to high levels of anxiety.⁵ Anxiety is known to influence physiological parameters, including increased heart rate, elevated blood pressure, rapid breathing, sweating, and pupil dilation.⁶

Therefore, the present study aimed to determine the prevalence of exam anxiety among undergraduate medical students and to evaluate the socio-demographic determinants of exam anxiety in this population.

METHOD

This is a cross-sectional study, carried among undergraduate medical students enrolled in first and second year, aged 19 to 30 years in the department of physiology, Kathmandu University School of Medical Sciences, Dhulikhel from March 2026 to April 2026 after taking ethical clearance from Institutional Review Committee of Kathmandu University School of Medical Sciences (IRC, KUSMS 80/26).

Participants not willing to give consent, and with history of psychiatric illness such as depression, schizophrenia, and alcohol abuse were excluded from the study. However, first and second year undergraduate medical students, aged 19 to 30 years, nonsmoker and non-alcoholics, having no previous history of psychiatric illness were included in the study. Sample size was calculated by using following formula, $n = Z^2pq / e^2$ where n is the required sample size, P is prevalence of anxiety among medical students (29.3%),⁷ $Z = 1.96$ at 95% Confidence Interval (CI) and e is the error of margin (5% in this study). Thus, the minimum number of the sample size required was calculated as 165. By adding 5% as a non-response rate, the minimum sample size was 172.

Thus the 172 undergraduate medical students were enrolled in the present study using whole sampling method. First the participants was informed about the research project and the consent was taken. Then the study proforma was distributed to first and second year medical students prior to their university practical examinations. A proforma consists of the following sections: Section "A" - Participant consent and General Information, and Section "B" - Becks anxiety inventory questionnaire (BAI).

Students was evaluated as per standard proforma, section A includes a questionnaire containing following details, age, year of study, family type, type of residence, admission type, frequency of communication with parents, and course selection motivation. Exam anxiety was assessed using Becks anxiety inventory questionnaire (BAI).⁸ It is a self-reported questionnaire of 21 items. Each statement response is recorded on 4 point Likert scale. Response of 21 questions is summed. This summed value is an individual's test anxiety score. Participants are attributed to score of 0 – 21 low anxiety, 22 – 35 moderate anxiety and 36 and above potentially concerning levels of anxiety.

Data were entered into Microsoft Excel and analyzed using IBM Statistical Package for the Social Sciences version 22 software. The data were analyzed using descriptive statistics and chi square test. Descriptive analysis like frequency and percentage was used for reporting sociodemographic data and distribution of anxiety levels in the study. Chi-Square was used to see the association.

RESULT

Among total 172 participants, 127 (73.8%) were male and 45 (26.2%) were female in this study. The mean age of the participants was 20.85 ± 1.38 years. Regarding academic year, more than half of the respondents were first-year MBBS students (54.1%). The majority of students belonged to nuclear families (69.2%).

Table 1. Socio-demographic details of the study participants (N =172)

Variables	f (%)
Age (Years)	20.85 ± 1.38 (range: 19 - 26 years)
Gender	Male 127 (73.8%)
	Female 45(26.2%)
Year of Study	First year MBBS 93(54.1%)
	Second year MBBS 79(45.9%)
Type of Family	Joint 53(30.8%)
	Nuclear 119(69.2%)
Residence	Hostel 100(58.1%)
	Living with Family 5(2.9%)
	Outside the campus 67(39%)
How frequently do you communicate with your parents?	A few times a week 28(16.3%)
	Almost everyday 139(80.8%)
	Once a month or less 2(1.2%)
	Two or three times a month 3(1.7%)
Relationship Status	In a Relationship 8(4.7%)
	Prefer not to say 22(12.8%)
	Single 142(82.6%)
Motivation for selecting the MBBS course	Persuasion 11(6.4%)
	Self-Interest 161(93.6%)
How much physical activity do you get?	Less than 150 min per week 119(69.2%)
	More than 150 min per week 53(30.8%)

In terms of residence, 58.1% of the participants resided in hostels, 39.0% lived outside the campus, and only 2.9% lived with their families. Most students reported communicating with their parents almost every day (80.8%), followed by a few times a week (16.8). Very few participants communicated with their parents once a month or less or two to three times a month. The majority of participants were single, while 12.8% preferred not to disclose their relationship status and 4.7% reported being in a relationship. Most respondents selected the MBBS course based on self-interest, whereas 6.4% joined due to persuasion from others. Furthermore, 66.9% of the participants reported engaging in physical exercise less than as 150 minutes per week as shown in Table 1.

Table 2. Prevalence of exam anxiety among students

Anxiety	Total f (%)	Male f (%)	Female f (%)
Low Anxiety	135 (78.5%)	107 (84.3%)	28 (62.2%)
Moderate Anxiety	28 (16.3%)	13 (10.2%)	15 (33.3%)
Potentially concerning level	9 (5.2%)	7 (5.5%)	2 (4.4%)
Total	172 (100%)	127 (100%)	45 (100%)

The prevalence of anxiety was 21.51% (37) in our study. The prevalence of anxiety in male was 15.74% (20) and in female was 37.78% (17). Moderate anxiety was 15 (33.33%) in female which was more than 13(10.2%) in male. Similarly, potentially concerning level of anxiety was 7 (5.5%) in male which was more than 2 (4.4%) in female (Table 2). Female students had a higher prevalence of moderate or potentially concerning anxiety than male students (37.8% vs. 15.7%, $p = 0.002$). Students performing less than 150 minutes of physical activity per week also had a higher prevalence of

anxiety than those performing ≥ 150 minutes ($p = 0.003$). No statistically significant associations were observed for year of study, family type, residence, communication with parents, or motivation for choosing medicine (Table 3).

DISCUSSION

In our study, the prevalence of anxiety was 21.51% (37). We found that the moderate anxiety was 16.3% and potential concerning level of anxiety was 5.2%. The study conducted by Yadav et al⁷ in Nobel Medical college and teaching hospital Biratnagar found the prevalence of anxiety was 29.6%, higher than our study. Among them the prevalence of moderate anxiety was 18.4% and severe anxiety was 11.2% which was higher than our study. Another similar study done by Sah et al⁹ in Nepal Medical College and Teaching Hospital Kathmandu found that the prevalence of anxiety 59.3% higher than our study. Among them moderate anxiety was 36.3% and severe anxiety was 23.1%, which was higher than our study. Study conducted by Mandyam, et al.¹⁰ at Sri Padmavati Medical College for Women Tirupati, India found that the prevalence of moderate anxiety was 17% which was similar to our study. A study conducted in Malaysia showed a prevalence of anxiety was 29% which is more compared to our results.¹¹ A systematic review with the global prevalence of anxiety among medical students reported to be 34%, one in three students suffer from exam anxiety.³ Undergraduate students may experience anxiety due to several factors such as last minute studying, poor memory, sleep deprivation, ineffective time management and low self-confidence and stress coping mechanisms among medical students.⁴

Table 3. Socio demographic determinants of exam anxiety among students

Variables		Anxiety Level		Chi square & p value
		Low	Moderate / Potentially Concerning	
Gender	Male	107 (84.3%)	20 (15.7%)	0.002
	Female	28 (62.2%)	17 (37.8%)	
Year of Study	First year MBBS	68 (73.1%)	25 (26.9%)	0.063
	Second year MBBS	67 (84.8%)	12 (15.2%)	
Type of Family	Joint	43 (81.1%)	10 (18.9%)	0.573
	Nuclear	92 (77.3%)	27 (22.7%)	
Residence	Hostel	78 (78%)	22 (22%)	0.548
	Living with Family	3 (60%)	2 (40%)	
	Outside the campus	54 (80.6%)	13 (19.4%)	
How frequently do you communicate with your parents?	A few times a week	23 (82.1%)	5 (17.9%)	0.222
	Almost everyday	109 (78.4%)	30 (21.6%)	
	Once a month or less	2 (100%)	0 (0%)	
	Two or three times a month	1 (33.3%)	2 (66.67%)	
Relationship Status	In a Relationship	7 (87.5%)	1 (12.5%)	0.05
	Prefer not to say	13 (59.1%)	9 (40.9%)	
	Single	115 (81.0%)	27 (19.0%)	
Motivation for selecting the MBBS course	Persuasion	7 (63.6%)	4 (36.4%)	0.078
	Self-Interest	128 (79.5%)	33 (20.5%)	
Do you do physical exercise	Less than 150 min/week	86 (72.3%)	33 (27.8%)	0.003
	More than 150 min/week	49 (92.5%)	4 (7.5%)	

Our study reported anxiety during exams among female students was higher when compared to male students. Similar studies conducted by Yadav⁷, Yadav BK¹², Stober J.¹³ and Khalid, et al.¹⁴ described anxiety levels more among female students. In contrast to our study, a study conducted by Roy, et al.,¹⁵ showed male students had higher levels of anxiety compared to female students. Yadav et al.⁷ found the prevalence of anxiety in female was 45.7% which was higher than our finding and in male 12.9% that was lower than our finding. No specific gender difference in anxiety were seen in a study done by Zhang Z, et al.¹⁶

The present study showed that students staying in hostel and those came from nuclear family had higher level of anxiety. In a study conducted by Roy SK¹⁵ et al., reported that students coming from a nuclear family and staying at home during exams had greater levels of anxiety than their counterparts.

Our study reported that, 27.8% of the students doing less than 150 minutes of physical activity have higher level of anxiety. Study results conducted by Roy SK¹⁵ et al., showed that 51% of the students were engaged in indoor or outdoor games, 54% of the students involved in music or dance like extracurricular activities, more than 50% of the students were involved in reading books who had less exam anxiety. Similar studies conducted by Sharma¹⁷ et al., and Patil V¹⁸ et al. Rodger S et al.¹⁹ reported that students generally involved in yoga, games, reading books, and music had lower anxiety levels. Physical activity and extracurricular activities played an important role in alleviating anxiety level.

The limitation of our study is that it was conducted exclusively among first and second year undergraduate medical students from a single medical college, thereby limiting the generalizability of the findings to medical students in other academic years and institutions across Nepal. Furthermore, factors such as genetic predisposition, family history, academic stress, and pre-existing mental health disorders were not taken into consideration. In addition, the coping strategies employed by students were not assessed. Future studies are recommended to include larger sample sizes and multicenter settings while incorporating the aforementioned factors to provide more comprehensive and generalizable findings.

CONCLUSION

The prevalence of exam anxiety is high among students, with female students experiencing it more than male students. First-year medical students experienced more anxiety during exams when compared to second-year students. Less physical activity and place of residence also showed a higher prevalence of exam anxiety. The findings suggest that interventions promoting psychological well-being and regular physical activity may help reduce exam anxiety among medical students. Further multicenter studies are required to evaluate effective preventive strategies.

DECLARATIONS

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Conflict of Interest

None

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None

Ethical Clearance

Received from Institutional Review Committee, Kathmandu University School of Medical Sciences (IRC, KUSMS 80/26).

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