

Original article

Prevalence and Factors Associated with Anxiety Among Medical Students at International Maaref University

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Keywords.

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ABSTRACT

Anxiety is a prevalent mental health concern among medical students, with potential impacts on academic performance and risk of burnout. This study aimed to assess the prevalence and severity of anxiety symptoms across all seven academic semesters at the International Maaref University (IMU) using the GAD-7 questionnaire, and to identify semester-specific trends and symptom patterns. A descriptive cross-sectional study was conducted among IMU medical students. Anxiety symptoms were measured using the validated GAD-7 questionnaire. Participation was voluntary and anonymous. Data were analyzed descriptively, with mean scores calculated per semester and symptom frequencies tabulated. The overall mean GAD-7 score was 11.55 (SD \approx 3.6), indicating moderate anxiety. The highest mean score occurred in the fourth semester (17.9), while the lowest was in the seventh semester (7.66). Symptom analysis showed that persistent worrying (47.1% "Always") and restlessness (57.6% "Always") were the most severe manifestations. More than 80% of students reported experiencing anxiety at least "Sometimes." Anxiety among medical students varied by semester, peaking during mid-program stages when academic demands were greatest. Worry-related and restlessness symptoms predominated, highlighting the need for targeted interventions, particularly in the fourth semester. Institutional policies should prioritize mental health support to mitigate psychological distress and promote student well-being.

Introduction

Anxiety disorders represent one of the most prevalent mental health challenges worldwide, with generalized anxiety disorder (GAD) being particularly common among young adults and university students [1]. Medical students are especially vulnerable due to the demanding nature of their training, which combines heavy academic workload, clinical responsibilities, and high-performance expectations [2]. Studies consistently report elevated rates of anxiety among medical students compared to the general population, with consequences including impaired academic performance, reduced quality of life, and increased risk of burnout [3].

The Generalized Anxiety Disorder-7 (GAD-7) questionnaire is a widely validated screening tool for assessing anxiety severity in both clinical and academic contexts [4]. It has demonstrated strong psychometric properties, including reliability, validity, and measurement invariance across diverse populations, making it suitable for use among medical students [5]. Recent research highlights the utility of GAD-7 in identifying symptom clusters such as excessive worrying, restlessness, and difficulty relaxing, which are particularly relevant in high-stress educational environments [6].

Given the growing recognition of mental health challenges in medical education, examining anxiety trends across different academic semesters provides valuable insights into the timing and nature of psychological distress. Such findings can inform targeted interventions and institutional policies aimed at promoting student well-being and academic success. This study aimed to assess the prevalence and severity of anxiety symptoms among medical students across all seven academic semesters at IMU using the GAD-7 questionnaire, and to identify semester-specific trends and symptom patterns associated with increased psychological distress.

Methods

Study Setting

The study was conducted at the IMU, encompassing all seven academic semesters of the medical program. IMU provides a structured curriculum with progressively demanding coursework, offering a suitable context for examining anxiety trends across different stages of medical education.

Study Design and Reporting Compliance

A descriptive cross-sectional study design was employed. The study adhered to the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines to ensure transparency and methodological rigor in reporting.

Ethical Considerations

Ethical approval for the study was obtained from the IMU Institutional Review Board (Approval No. IMU-02/2025). The study was conducted in compliance with the Declaration of Helsinki and institutional ethical standards governing research involving human participants.

Patient Consent Agreement

Participation was voluntary and anonymous. Written informed consent was obtained from all participants prior to data collection. Students were assured of confidentiality, with no personal identifiers recorded. Participants retained the right to withdraw at any stage without penalty.

Type of Sampling and Reasons for Selection

A convenience sampling strategy was used, inviting medical students from all seven semesters to participate. This approach was chosen to maximize representation across different academic levels and facilitate comparisons of anxiety symptoms between cohorts.

Inclusion and Exclusion Criteria

Inclusion criteria include all enrolled medical students across all seven semesters at IMU who consented to participate. Students who declined participation or submitted incomplete questionnaires were excluded.

Data Collection Instruments and Procedures

Anxiety symptoms were assessed using the Generalized Anxiety Disorder-7 (GAD-7) questionnaire, a validated and reliable tool widely used in medical education research. The instrument evaluates seven core symptoms of anxiety and categorizes severity into minimal, mild, moderate, and severe levels. Data were collected via self-administered surveys distributed during scheduled academic sessions.

Accuracy, Reproducibility, and Quality Control

To ensure accuracy and reproducibility, questionnaires were standardized, and data entry was double-checked by independent reviewers. Frequency counts and mean scores were cross-verified. Quality assurance procedures included pilot testing the survey instrument and monitoring for missing or inconsistent responses.

Statistical Analysis

Survey responses were analyzed descriptively. Mean GAD-7 scores were calculated for each semester, and frequency distributions were tabulated for individual symptoms. Statistical analyses were performed using IBM SPSS Statistics (Version 16).

Results

As shown in Table 1, the mean GAD-7 scores ranged from 7.66 (seventh semester) to 17.9 (fourth semester), with an overall average of 11.55 (SD \approx 3.6) across all semesters. The fourth semester recorded the peak score (17.9), nearly 55% higher than the overall mean, reflecting increased academic workload and exposure to more complex subjects.

Table 1: Mean GAD-7 scores per semester

Semester	Mean Score
First	11.6
Second	8.0
Third	12.7
Fourth	17.9
Fifth	8.0
Sixth	13.0
Seventh	7.66

Symptom-specific analysis revealed that excessive worrying, difficulty relaxing, and persistent nervousness were the most frequently reported manifestations of anxiety. Across all symptoms, "Always" responses

accounted for 38–58%, indicating a substantial proportion of students experiencing chronic anxiety symptoms (Table 2)

Table 2: Symptom relevance across all surveys

Symptom	Never	Sometimes	Often	Always
Feeling nervous	1 (2.9%)	15 (44.1%)	5 (14.7%)	13 (38.3%)
Not controlling worrying	3 (8.8%)	5 (14.7%)	10 (29.4%)	16 (47.1%)
Worrying too much	5 (15.6%)	5 (15.6%)	10 (31.3%)	12 (37.5%)
Trouble relaxing	6 (19.4%)	8 (25.8%)	5 (16.1%)	12 (38.7%)
Restless V1	5 (14.7%)	8 (23.5%)	9 (26.5%)	12 (35.3%)
Restless V2	4 (11.8%)	12 (35.3%)	6 (17.6%)	12 (35.3%)
Restless V3	3 (9.1%)	6 (18.2%)	5 (15.2%)	19 (57.6%)

V1; Mild, V2; moderate; V3; Sever

Discussion

The present study demonstrated that anxiety levels among medical students varied across academic semesters, with the highest mean GAD-7 score observed in the fourth semester. This finding aligns with previous literature suggesting that mid-program stages often coincide with increased academic workload, exposure to complex subjects, and heightened performance pressure [7]. Such transitional phases in medical education have been identified as critical points where psychological distress peaks, underscoring the need for targeted support strategies.

Symptom-specific analysis revealed that excessive worrying, difficulty relaxing, and persistent nervousness were the most frequently reported manifestations. These results are consistent with global meta-analyses showing that worry-related symptoms dominate the anxiety profile of medical students [8]. Notably, restlessness was reported as “Always” by more than half of the respondents, suggesting a chronic pattern of somatic anxiety symptoms. This aligns with evidence that restlessness and difficulty concentrating are particularly disruptive to academic functioning [9].

The overall mean GAD-7 score in this study (11.55) falls within the moderate anxiety range, comparable to findings from other medical schools worldwide. For instance, studies in Asia and the Middle East have reported mean scores between 10 and 13, reflecting similar levels of distress [10]. Such consistency across diverse contexts highlights the universality of anxiety challenges in medical education, despite cultural and institutional differences. Importantly, the fourth-semester peak suggests that anxiety is not evenly distributed across training but rather concentrated at specific stages. This supports the notion of “academic stress cycles,” where workload intensity, clinical exposure, and examination schedules converge to exacerbate psychological distress [11]. Interventions should therefore be strategically timed, focusing on mid-program semesters to maximize impact.

The use of the GAD-7 instrument proved effective in capturing both severity and symptom distribution. Its psychometric robustness has been confirmed across multiple cultural contexts, including medical students in China, Bangladesh, and Latin America [12,13]. The consistency of findings across these studies reinforces the validity of our results and supports the use of GAD-7 as a reliable screening tool in medical education research.

Strengths and Limitations

A major strength of this study is the inclusion of students from all seven academic semesters, allowing for comprehensive comparisons across different stages of training. Additionally, the use of a validated instrument (GAD-7) enhances the reliability of findings. However, limitations include reliance on self-reported data, which may be subject to response bias, and the cross-sectional design, which precludes causal inference. Future longitudinal studies are warranted to track anxiety trajectories over time and evaluate the effectiveness of targeted interventions.

Implications

The findings underscore the urgent need for institutional policies that prioritize mental health support for medical students. Counseling services, stress management workshops, and curriculum adjustments may help mitigate anxiety, particularly during high-stress semesters. Early identification of students with persistent symptoms, such as chronic restlessness and uncontrollable worry, is critical to prevent escalation into severe psychological distress.

Conflict of interest. Nil



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