




Levels of anxiety in university students during examination periods

Niveles de ansiedad en estudiantes universitarios durante períodos de exámenes

Estefani A. Calvo , Claudia A. Rosso*  

Facultad de Ciencias de la Salud, Universidad Privada Domingo Savio, Bolivia.

**Corresponding author*

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ABSTRACT

This study compared anxiety levels in medical students during midterm and final exams in the second semester of 2024, identifying potential significant differences between the two periods. A quantitative, descriptive-comparative study was conducted with 100 medical students from the Domingo Savio Private University in Bolivia. The Hamilton Anxiety Rating Scale (HAM-A) was administered at three points during the semester (first midterm, second midterm, and final). A randomized sample was used, including students over 18 years of age who participated in all assessments. The majority of students presented mild anxiety, which was more frequent during the final exam (66.97%). However, moderate and severe anxiety were higher during the second midterm (43.06%). The majority of the sample were women (66%), with a mean age of 20.25 years. The results indicated that academic anxiety does not follow a linear pattern but fluctuates, being higher during the middle stages of the semester. This may be related to the accumulation of academic workload and the perception of poor prior performance. It aligns with previous studies in Latin America that point to personal and contextual factors as triggers. It is recommended to implement institutional strategies for emotional support and stress management, especially during the intermediate semesters, to preserve the student's mental health and academic performance.

Keywords: academic anxiety, medical students, midterm exams, final exams, mental health.

RESUMEN

Este trabajo comparó los niveles de ansiedad en estudiantes de Medicina durante los exámenes parciales y finales del segundo semestre de 2024, identificando posibles diferencias significativas entre ambos momentos. Se realizó un estudio cuantitativo, descriptivo-comparativo, realizado con 100 estudiantes de la carrera de Medicina de la Universidad Privada Domingo Savio de Bolivia. Se aplicó el Test de Hamilton de Ansiedad (HAM-A) en tres momentos del semestre (primer parcial, segundo parcial y final). Se utilizó un muestreo aleatorizado, incluyendo estudiantes mayores de 18 años que participaron en todas las evaluaciones. La mayoría de los estudiantes presentaron ansiedad leve, siendo más frecuente en la evaluación final (66,97%). Sin embargo, la ansiedad moderada y severa fue más alta en el segundo parcial (43,06%). La mayoría de la muestra fueron mujeres (66%), con una edad promedio de 20,25 años. Los resultados indicaron que la ansiedad académica no sigue un patrón lineal, sino que fluctúa, siendo mayor en etapas intermedias del semestre. Esto puede estar relacionado con la acumulación de carga académica y la percepción de bajo rendimiento previo. Coincide con estudios previos en Latinoamérica que señalan factores personales y contextuales como desencadenantes. Se recomienda implementar estrategias institucionales de apoyo emocional y manejo del estrés, especialmente durante los periodos parciales intermedios, para preservar la salud mental y el desempeño académico del estudiante.

Palabras clave: ansiedad académica, estudiantes de Medicina, exámenes parciales, exámenes finales, salud mental.

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INTRODUCTION

Anxiety is an emotional response characterized by excessive worry, physical tension, and difficulties in cognitive processing, negatively impacting student performance (Sierra et al., 2003). The WHO defines it as an emotion stemming from worry, nervousness, and fear in the face of future situations (Bassols et al., 2015). Alarming, when cortisol levels develop, it can lead to anxiety disorders, negatively impacting mental health and student well-being by causing low levels of concentration and memory. Cortisol is a cause of concentration problems, jeopardizing academic performance.

In the academic sphere, exam periods are critical due to the high expectations and demands imposed by educational institutions (Teixeira et al., 2022). Recent studies highlight that anxiety levels can vary between different points in the academic cycle, being more intense during final exams (The relationship between anxiety and academic performance in 15-year-old Ecuadorian students). Research in Latin America has documented significant levels of anxiety among university students, reflecting academic pressures (Bassols et al., 2015; Ruiz-Segarra, 2020). For example, a study in Brazil found that 70% of students reported high anxiety during final exams, compared to 50% during midterms (Bassols et al., 2015). While exam anxiety has reasonable grounds, excessive levels of anxiety can negatively impact quality of life (Álvarez et al., 2013). This study aims to compare the levels of anxiety experienced by university students during midterm and final exams in the second semester of 2024 to identify significant differences.

METHODOLOGY

This quantitative, descriptive-comparative study was designed to measure and analyze anxiety levels in medical students at the Domingo Savio Private University during three key periods: two midterm and final evaluation periods, in the second semester of 2024. The study population included all students enrolled in the medical program during the second semester of 2024. A sample was selected using random sampling, the size of which depended on the total number of students available.

Inclusion criteria were as follows: students enrolled in the medical program during the study period, who participated in all three evaluation periods (midterm and final), who signed the informed consent form, and who were over 18 years of age. Exclusion criteria included those who

did not complete all three evaluation periods, did not sign the informed consent form, or withdrew from the study. Participants with a prior diagnosis of anxiety disorders or those receiving psychological/psychiatric treatment were excluded, as were those experiencing exceptional situations that could alter anxiety levels, such as serious illnesses or critical personal events.

The Hamilton Anxiety Rating Scale (HAM-A), a validated 14-item questionnaire that evaluates both psychic and somatic anxiety, was used to assess anxiety levels. The data collection procedure was divided into two assessments. During the midterm assessments, the HAM-A was administered immediately after the midterm exams. Similarly, for the final assessments, the same procedure was repeated after the final exams, thus ensuring consistency in anxiety measurement at both points in the academic period.

RESULTS AND DISCUSSION

Table 1 presents information on the demographic composition of the university students in the study. The mean age of the participants was 20.25 years, with a standard deviation of 3.08, reflecting moderate dispersion around the mean. The minimum recorded age was 18 years, and the maximum was 32 years, suggesting a relatively broad sample in terms of age range.

Table 1. Age distribution of university students participating in the study

Parameter	Value
n	100
Total	2025
Mean	20.25
Variance	95.025
Standard deviation	3.0826
Min	18
25%	18
Median	19
75%	21
Max	32
Mode	18

The median age of 19 and the mode of 18 indicate that most students are in the early stages of their university studies, with a notable peak at age 18, which may be related to newly enrolled students. Furthermore, 50% of participants are between 18 and 21 years old, highlighting a

significant concentration of students in the younger age bracket, which is relevant for the design of educational interventions and strategies targeting this group. Future research could explore whether this age distribution is related to other academic or social factors of the students.

The sample showed a gender distribution in which women predominated, representing 66% of the sample, while the remaining 34% were men (Table 2). This difference in gender participation is consistent with the trend observed in various health sciences programs, where female enrollment is typically higher.

Table 2. Gender distribution in the university student sample

Gender	Frequency	Percentage	Cumulative Percentage	Exact 95% LCL	Exact 95% LCL
Male	34	34	34	24.82	44.15
Female	66	66	100	55.85	75.15
Total	100	100	100		

Analyzing this variable is important, as previous studies suggest that gender can influence how individuals experience and express anxiety, which could have implications for the design of interventions or support programs.

Table 3 shows the distribution of anxiety levels (mild, moderate, and severe) experienced by university students at three assessment points during the semester: first midterm, second midterm, and final. Overall, mild anxiety was the most frequent at all stages, reaching a peak of 66.97% during the final assessment.

Table 3. Distribution of anxiety levels in university students during three assessment points of the semester

Stage	Mild (n)	Moderate (n)	Severe (n)	Total (n)	Mild (%)
First partial	66	16	18	100	66
Second partial	41	18	13	72	56.94
Final	73	21	15	109	66.97

Regarding moderate anxiety, an increase was recorded in the second exam (25.00%) compared to the first (16.0%), suggesting that students may have experienced an increased

emotional burden as the semester drew to a close. Severe anxiety, on the other hand, remained relatively constant, fluctuating between 13.76% in the first exam and 18.06% in the second, without significant variations.

These data allow us to identify patterns of emotional variation among students, suggesting that anxiety does not increase linearly, but rather appears to fluctuate according to the specific demands of each assessment stage. This analysis provides important insights into the relationship between academic stages and student anxiety, which could be useful for implementing emotional support strategies tailored to students' needs at different times during the semester.

The higher prevalence of moderate and severe anxiety recorded in the second exam (43.06%) supports the hypothesis that academic anxiety does not follow a linear, progressive pattern, but rather fluctuates according to multiple contextual and personal factors.

This trend coincides with the findings reported by Memon et al. (2023), who observed high levels of anxiety in medical students during demanding assessment periods, especially during midterm exams. Similarly, a study conducted at a university in Chiclayo revealed that medical students presented mild and moderate anxiety at a higher rate than students in other majors, reaching a combined prevalence of up to 62% (Cruz & Aragón, 2020). Furthermore, previous research conducted in similar contexts reports a high incidence of moderate and high anxiety in health sciences students, associated with academic overload, perfectionism, and fear of failure (Chávez-Márquez & De los Ríos, 2023). These factors can intensify during the second term, where the accumulated academic workload and pressure to improve performance significantly influence the student's emotional state.

However, other authors have documented that anxiety increases toward final exams, suggesting that individual variables and the institutional environment may also play a role (de La Rosa-Rojas et al., 2015). Regarding the gender component, the majority of women (66%) in this study is consistent with previous research reporting a higher incidence of anxiety among female university students (Ferrante et al., 2018).

A study revealed an alarming prevalence of depression (64%) and anxiety (55%) among medical students, highlighting a structural problem in medical training, where academic stress and high demands negatively impact mental health. The use of validated scales such as the GAD-7 and

the Zung Self-Rating Depression Scale reinforces the seriousness of the findings. These results should encourage institutions to implement psycho-emotional support strategies, as the mental health of future physicians is fundamental to both their well-being and their professional performance (de Alencar & Montiveros, 2023).

Another study revealed a high prevalence of anxiety among its students, especially trait anxiety (77.87%) and, to a lesser extent, state anxiety (37.70%), which was more frequent in women. Despite these high levels, most students reported normal academic performance, suggesting that although anxiety is present, it does not always translate into poor performance. The findings highlight the need to monitor and address mental health in the university setting, given that a considerable percentage already had a prior diagnosis of anxiety (Donato et al., 2024).

Research conducted with first- and fifth-year medical students at the Universidad del Pacífico, Pedro Juan Caballero campus, revealed a 14.4% prevalence of depression, high levels of anxiety, mostly in women (79.4%), and 72% of participants experiencing some degree of stress. Using the DASS-21 scale, it was identified that these emotional conditions could be related to the demands and adaptation process of university life, especially in a demanding field like Medicine, highlighting the importance of providing early and continuous psychological support to students (Ayala et al., 2022).

Although mild anxiety can be adaptive in fostering adequate academic preparation, the presence of moderate or severe anxiety can affect students' mental health and academic performance. This has been widely documented in Latin American studies, which indicate that high levels of anxiety interfere with memory, concentration, and critical thinking (Álvarez et al., 2013; Teixeira et al., 2022). The results of this study, therefore, reinforce the need to design institutional strategies for emotional support and management of academic stress, especially in contexts such as the second partial exam, where students seem to be more vulnerable to exhibiting more intense anxious manifestations.

CONCLUSIONS

Anxiety levels in university students vary depending on the assessment period, with the second exam showing the highest proportion of combined moderate and severe anxiety (43.06%). This result suggests that academic anxiety does not follow a linear progression, but rather can

fluctuate depending on the context, the accumulated academic workload, and the perceived difficulty of each assessment.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

AUTHOR CONTRIBUTIONS

Conceptualization: Estefani A. Calvo and Claudia A. Rosso. **Data curation:** Estefani A. Calvo and Claudia A. Rosso. **Formal analysis:** Estefani A. Calvo and Claudia A. Rosso. **Investigation:** Estefani A. Calvo and Claudia A. Rosso. **Methodology:** Estefani A. Calvo and Claudia A. Rosso. **Writing – original draft:** Estefani A. Calvo and Claudia A. Rosso. **Writing – review & editing:** Estefani A. Calvo and Claudia A. Rosso.

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