

Stress levels and academic performance: an analysis in medical students during departmental exams

Nivel de estrés y rendimiento académico: un análisis en estudiantes de medicina frente a exámenes departamentales

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Abstract

Stress is a natural response of the body to situations that require adaptation, and in the academic context, particularly among medical students, it can become a persistent phenomenon that impacts emotional well-being and academic performance. This study aimed to analyze the relationship between stress levels and academic performance in students at the "Dr. Alberto Romo Caballero" Faculty of Medicine during departmental exams. A quantitative, descriptive, cross-sectional, and correlational study was conducted with a sample of 240 students selected through stratified random sampling. The stress subscale of the DASS-21 scale, validated in the Mexican population, was used, and academic performance data were obtained from the official averages provided by the Student Services. The results showed that women had significantly higher stress levels than men. Additionally, a significant positive correlation was observed between stress levels and academic performance ($Rho = 0.131, p = 0.04$), suggesting that moderate levels of stress may act as a stimulus to improve effort and concentration. However, elevated stress levels may have negative effects. These results underscore the importance of implementing stress management strategies, especially for women and students with high stress levels, to improve both their emotional well-being and academic performance.

Keywords: academic stress; academic performance; medical students; stress management; mental health

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Resumen

El estrés es una respuesta natural del organismo ante situaciones que requieren adaptación, y en el contexto académico, particularmente en los estudiantes de Medicina, puede convertirse en un fenómeno persistente que impacta el bienestar emocional y el rendimiento académico. Este estudio tuvo como objetivo analizar la relación entre el nivel de estrés y el rendimiento académico en estudiantes de la Facultad de Medicina "Dr. Alberto Romo Caballero" durante los exámenes departamentales. Se llevó a cabo un estudio cuantitativo, descriptivo, transversal y correlacional, con una muestra de 240 estudiantes seleccionados mediante muestreo aleatorio estratificado. Se utilizó la subescala de estrés de la Escala DASS-21, validada en población mexicana, y los datos de rendimiento académico fueron obtenidos de los promedios oficiales proporcionados por Servicios Escolares. Los resultados mostraron que las mujeres presentaron niveles de estrés significativamente más altos que los hombres. Además, se observó una correlación positiva significativa entre el nivel de estrés y el rendimiento académico ($Rho = 0.131, p = 0.04$), sugiriendo que un grado moderado de estrés puede actuar como un estímulo para mejorar el esfuerzo y la concentración. Sin embargo, niveles elevados de estrés pueden tener efectos negativos. Estos resultados subrayan la importancia de implementar estrategias de manejo del estrés, especialmente en mujeres y estudiantes con altos niveles de estrés, para mejorar tanto su bienestar emocional como su desempeño académico.

Palabras clave: estrés académico; rendimiento académico; estudiantes de medicina; manejo del estrés; salud mental



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INTRODUCTION

Stress is a natural response of the body to situations that require adaptation or effort. In the academic environment, this reaction can become a persistent phenomenon that affects both the emotional well-being and performance of students. Among medical students, stress is a frequent phenomenon due to the high level of commitment required to meet academic and professional goals. Analyzing the relationship between stress levels and academic performance among students of the Faculty of Medicine "Dr. Alberto Romo Caballero" is essential to understand the impact that departmental examinations have on their mental health and academic performance. This knowledge will allow not only the magnitude of the problem to be understood, but also the proposal of preventive and coping strategies that promote emotional balance and effective learning, which are necessary to achieve academic and professional goals.

OBJETIVE

General Objective:

To determine the relationship between the level of stress and the academic performance of students of the Faculty of Medicine "Dr. Alberto Romo Caballero" during departmental examinations.

Specific Objectives:

- To identify the sociodemographic characteristics of the students.
- To determine the level of stress among students during the departmental examination period.
- To determine the existing relationship between stress levels and academic performance.

METHODOLOGY

Study design: Quantitative, descriptive, cross-sectional, and correlational. It seeks to identify the relationship between stress level and academic performance during departmental examinations, without manipulating variables.

Population: Students enrolled in the Medical Degree program (UAT) during the August-December 2023 period. Estimated universe: 1500 students. **Sample:** 240 participants, selected through stratified random sampling by semester.

Instrument: The stress subscale of the DASS-21 (Depression Anxiety Stress Scales) will be used (Lovibond & Lovibond, 1995), validated in the Mexican population (González-Ramírez et al., 2020), with a Cronbach's alpha of 0.89. A total of 7 items (1, 5, 8, 11, 14, and 18) will be applied, rated on a Likert scale from 0 to 3, with interpretative ranges classified as mild, moderate, severe, and extremely severe stress.

Data collection: A digital survey administered through Google Forms, distributed via QR codes and social media. A digital informed consent form will be included prior to participants.

Academic performance: Official grade averages provided by the School Services Department, with guaranteed anonymity.

Analysis: SPSS v.27. Descriptive and inferential statistics will be used (Spearman or Pearson correlation, Student's t-test or Mann-Whitney U test depending on normality and group).

RESULTS

Differences in the diagnosis of stress according to gender

Variable	n	m	W	p-value	1-β power	Effect size
Male	54	89.17				
Female	147	113.33	.3527	0.007	0.48	0.41

The median stress level was higher in women (m = 113.33) compared with men (m = 89.17), which shows that there is a significant difference in the diagnosis of stress according to gender. The statistical power of the analysis was 0.48, representing a limited capacity to detect effects.

Differences in the diagnosis of stress according to place of origin

Variable	n	m	W	p-value	1-β power	Effect size
Local	139	101.47				
Non-local	72	114.75	4374.00	.128	.71	.23

The comparison of stress diagnosis using the Mann-Whitney U test did not reveal significant differences. The statistical power of 71% suggests a moderate capacity to detect existing effects.

Differences in the diagnosis of stress according to the period

Variable	n	m	W	p-value	1-β power	Effect size
1-8	41	97.73				
9-18	170	107.98	3146	.322	.47	.30

Students in higher semesters obtained a slightly higher mean stress level compared with those in earlier semesters; however, this difference was not statistically significant. The effect size and statistical power are low, representing a limitation in detecting existing effects.

Correlation between stress diagnosis and academic performance

Variable	Academic performance	p-value
Stress diagnosis	0.131	0.04

Note: statistical significance < 0.05*.

CONCLUSIONS

The results obtained in this study confirm that academic stress is a variable present in the majority of medical students. It was observed that women presented significantly higher levels of stress compared to men. However, no significant differences were found between groups according to age, place of origin, or academic semester. The positive and statistically significant correlation between stress levels and academic performance (Rho = 0.131, p = 0.04) suggests that a moderate level of stress may act as a stimulus that promotes effort and concentration, although higher levels could generate the opposite effect. In conclusion, understanding the relationship between stress and academic performance allows progress toward a more humane medical education, one that values not only technical knowledge but also the overall well-being of students as future healthcare professionals.

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