

Anxiety, Depression and Suicidal Behavior in University Students in the State of Mexico

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ABSTRACT

Introduction. Suicide, anxiety and depression are a major public health problem worldwide. In Mexico, the self-inflicted death rate for those aged between 18 and 29 is 10.7 per 100,000 population. Anxiety and depression are common nationwide and strong predictors of suicidal behavior. Research on mental health issues among young university students, however, has tended to focus on medical students. **Objective:** To determine the prevalence of suicidal behavior, anxiety and depression by degree course at a public university in the State of Mexico, and to explore the association between these symptoms and students' sex and semester. **Method:** Quantitative study, with an intentional sample of 269 students of psychology, law, administration, and computer science (68.1%). Students completed a battery of psychological tests. **Results:** An analysis of the data using SPSS v25 found that 53.0 % of students presented anxiety, 28.0 % depression and 30.1% suicidal behavior. Prevalence of the evaluated symptoms was higher in students who had completed more semesters, the presence of suicidal behavior differed by degree course, and women were more severely affected. **Discussion and Conclusion:** A permanent program with a gender approach is required to promote mental health and prevent suicide and psychological distress in university settings. Detected cases should receive specialized care.

Keywords: Depression, anxiety, suicide, youth, vocational training.

RESUMEN

Introducción. El suicidio, la ansiedad y la depresión son un grave problema de salud pública. En México la tasa por muertes autoinfligidas en personas de 18 a 29 años es de 10.7 por cada 100 000. Los problemas de ansiedad y depresión, además de ser predictores de la conducta suicida, tienen altas prevalencias a nivel nacional. La investigación sobre los problemas de salud mental en personas jóvenes universitarias se ha centrado en estudiantes del área de la salud. **Objetivo:** Determinar la prevalencia de conducta suicida, ansiedad y depresión de acuerdo con la licenciatura que cursa el alumnado de una universidad pública del Estado de México, así como establecer la asociación de estos síntomas con el sexo y el semestre. **Método:** Estudio cuantitativo, la muestra fue intencional, participaron 269 estudiantes de psicología, derecho, administración y computación (68.1%), quienes contestaron una batería de tamizajes psicológicos. **Resultados:** Los datos se procesaron en SPSS v25, los hallazgos fueron: el 53.0 % del alumnado presentó ansiedad: depresión 28.0 % y conducta suicida el 30.1%; se identificó que la sintomatología evaluada tuvo mayor prevalencia en estudiantes con más semestres cursados; la presencia de la conducta suicida es diferente en cada licenciatura; las mujeres fueron las más afectadas. **Discusión y conclusión:** Se requiere de un programa permanente para promover la salud mental y la prevención del suicidio, así como el malestar psicológico en el contexto escolar, integrando el enfoque de género. Los casos detectados deben recibir ayuda especializada.

Palabras clave: Depresión, ansiedad, suicidio, juventudes, formación profesional.

INTRODUCTION

Between January and May 2024, 158,814 people in Mexico received care for mental health problems (107,034 women and 51,780 men), particularly anxiety (51.5%) and depression (25.9%). Data by sex show that 73.2% of women presented anxiety and 78.0% depression, whereas in men, the prevalence was 26.8% and 22.0% respectively (*Secretaría de Salud [SSA], 2024*). Suicide or suicidal behavior is another major public health problem, explored in this paper. Suicidal behavior is expressed as suicide ideation (SI), suicide planning (SP), and suicide action (SA), involving completed suicide or suicide attempts (*Bequis-Lacera et al., 2023*). The death rate from this cause in young people aged 18 to 29 was 10.7 deaths per 100,000 population (*Instituto Nacional de Estadística y Geografía [INEGI], 2021*). In 2022, suicide was the fourth most common cause of death in women aged 15 to 24 and the third most common in men (*INEGI, 2023*). Mental health issues particularly affect young people pursuing degrees, since, as *Granados et al. (2020)* note, university settings produce an array of stressors.

Mental health problems affect population groups differently depending on their age, sex, occupation, medical history, support networks, degree of exposure to violence, and socioeconomic status (*López-Ramírez et al., 2024; Angulo, 2020*). The international and national scientific literature has reported that during their time at university, students are exposed to several stressors affecting their mental health. The most serious problems include anxiety, depression and suicidal behavior (*Jones & Essounga, 2024; Eisenberg et al., 2023; Liu et al., 2019; López-Ramírez et al., 2024; Torres-Torija & Eguiluz-Romo, 2019; Granados et al., 2020*).

Research on anxiety, depression, suicidal behavior, and other mental conditions in higher education students in the State of Mexico (Edomex) is limited. One of the few studies, by *Arzate (2020)*, evaluated symptoms of anxiety, depression and academic stress in a sample of 122 medical students. The results indicated that all participants suffered from stress, there was a significant prevalence of anxiety (21.3%) and women were more prone to depression (63%). The findings showed that Higher Education Institutions (HEIs) foster stressful academic environments, impacting the well-being and mental health of students. In regard to suicidal behavior, *Rosales & Córdova (2011)* studied a sample of 317 students from a technological university, finding that age and the perception of poor financial circumstances, particularly in women, affect the presence of suicide ideation.

Given the dearth of research on mental health problems in higher education students in Edomex, we examined the work of *Hidalgo-Rasmussen et al. (2019)*, who conducted a cross-sectional study of a sample of 1,229 Mexican

students, finding higher levels of hopelessness (14.2%) than SI, SP, or SA. According to the results, hopelessness was due to lack of support from teachers coupled with a non-respectful school environment. *Granados et al. (2020)* found that of 328 students surveyed, 164 studying medicine and 164 enrolled in other degree courses at a public university, 31% presented anxiety, 17% depression, and 31% suicidal behavior. A comparison of the results of medical students with those of students enrolled in other degree courses found that pursuing a degree in medicine was associated with higher levels of anxiety (58.5%), depression (26.8%) and suicidal behavior (39.6%), all of which are exacerbated in the final years of medical training. The research concluded that academic demands and workloads increase psychological distress in all students, particularly medical students. In regard to suicidal behavior, final year students enrolled in all degree courses are more likely to present this behavior, particularly women.

In their comparative study of 196 Mexican students of nursing, medicine, psychology, and dentistry, and 196 Spanish students of physiotherapy and occupational therapy, *Sanabria-Landeros et al. (2021)* found that students experienced various symptoms during COVID-19. A total of 66.1% presented moderate to extreme anxiety, with 54% experiencing stress; 49.7% depression 16.8% hopelessness, and 69.4% medium to high SB. This study, like the one by *Hidalgo-Rasmussen et al. (2019)*, found that anxiety, depression and hopelessness are predictors of suicidal behavior, and that Mexican students experienced more psycho-emotional distress. The report by *Cervantes et al. (2025)* confirmed the presence of SI in 537 students of medicine, dentistry, physical education, public accounting, and business management at a Mexican university. It found that female students had a higher prevalence of SI (10.6%) than male students (9.32) and that economics and administration students obtained higher SI scores than those pursuing medical degrees.

Although the literature described has studied emotional distress in university students, it has focused on medical students. It is therefore necessary to determine whether students enrolled in other degree courses also present symptoms of anxiety, depression or suicidal behavior (*Morfin et al., 2021*). Our study was also motivated by the findings of *Jiménez-Cortés (2017)*, *Guadarrama et al. (2014)*, *Moreno-Salazar & Anaya-Meza (2015)*, who reported that students in their research experienced psycho-emotional distress and suicidal ideation even before completing their professional studies. This study therefore seeks to determine the prevalence of anxiety, depression and suicidal behavior by degree course at one of the academic units of the Universidad Mexiquense del Bicentenario and the association between these symptoms and students' sex and the semester in which they are enrolled.

METHOD

Study design

We collected the data at an academic unit of the Universidad Mexiquense del Bicentenario (UMB) from June to August 2023.

Participants

At the time of the data collection, total student enrollment was 395. A sample of 269 students (68.1 %) was obtained through non-probabilistic, intentional sampling (Argibay, 2009). The inclusion criteria were as follows: participants must be 18 to 29 years old and be enrolled in one of the four degree courses: psychology (PS, 76.0% participation); law (LA, 59.1% participation); administration (AD, 67.0% participation); and computer science (COM, 64.2 % participation). The UMB bachelor's degree curriculum comprises nine semesters lasting twenty-five weeks each.

The UMB, located in Edomex, was founded in 2009 to address the gap in higher education supply, guaranteeing access to vocational training for low-income young people (Mejía & González, 2019).

Instruments

A Google Form was developed for data collection and storage in Google Drive. If students agreed to participate in the research, they filled in a sociodemographic questionnaire with data on sex, marital status, degree course, semester, current alcohol and cigarette consumption, and whether they had received mental health care from a psychiatrist or psychologist. The instrument was divided into thirteen multiple-choice questions and five open-ended questions asking them to provide their name, age, place of residence, telephone number, and email.

Three psychological instruments validated in the Mexican population were administered online to identify symptoms of anxiety, depression, and suicidal behavior (Jurado et al., 1998; Guillén & González-Celis, 2019; Sanabria-Landeros et al., 2021; Granados-Cosme, 2020). These included the following:

Anxiety. Beck Anxiety Inventory, BAI (Cronbach's $\alpha = .942$). This questionnaire contains 21 questions with Likert-type responses from 0 to 3 (0 = none; 1 = mild; 2 = moderate to 3 = severe). Possible scores range from 0 to 63, with lower scores denoting an absence of symptoms and higher scores indicating severe symptoms. For the data analysis, scores were categorized as "absent to mild anxiety" for totals between 0 and 15 points, and "moderate to severe anxiety" for totals of 16 points or more (Guillén & González-Celis, 2019).

Depression. Beck Depression Inventory, BDI (Cronbach's $\alpha = .914$). This instrument comprises 21 groups of statements. Each item has four statements with values ranging from 0 to 3 (0 = absence of the symptom evaluated, 1 = the symptom is present some of the time, 2 = the symptom is present all the time, 3 = severe symptom). The sum of the 21 items was the total score, which was divided into two categories. A score of 0 to 16 was classified as "absent to mild depression" and one of 17 or more was classified as "moderate to severe depression" (Jurado et al., 1998).

Suicidal behavior. Plutchik Suicide Risk Scale (Cronbach's $\alpha = .829$). This instrument consists of 15 questions with a dichotomous response (1 = yes, 0 = no), with a result of over six points indicating the presence of suicidal behavior. For the statistical analysis, totals of 0 to 5 points were categorized as "absent to mild," while six or more points were classified as "moderate to severe" (Sanabria-Landeros et al., 2021).

Procedure

Questionnaires were administered in the university computer laboratory. Students were initially divided into classrooms by degree course and semester completed. They were subsequently invited to participate in the study to answer the evaluation instruments on previously assigned computers.

Statistical analysis

We used SPSS v25 to process the data. Frequency and percentages were calculated for the categorical variables and mean and standard deviation were calculated as descriptive measures for the continuous variables. Groups were compared by examining the association with the chi-square test and means were compared using one-way ANOVA.

The instruments were evaluated as suggested in the literature (Jurado et al., 1998; Guillén & González-Celis, 2019; Sanabria-Landeros et al., 2021). To ensure sufficient sample size, results from the three instruments were combined into two categories: absent to slight and moderate to severe.

Ethical considerations

Students gave their informed consent prior to the commencement of data collection. They were informed of the objective of the study as well as the minimal risks and benefits. Risks included the fact that they might experience slight psycho-emotional distress when answering the questionnaires. With respect to benefits, students whose data indicated areas of concern would receive individual guidance on their health care. They would also be informed of specialized public centers for mental health care (Council of International

Organizations of Medical Sciences [CIOMS], 2016). The research procedures involving human beings were reviewed and approved by the UMB Academic Directorate with authorization number UMB/210C3001020000L/159/2023.

RESULTS

A total of 68.4% of the 269 students were female, and aged 18 to 27. Approximately 96% lived in Edomex and 92.4% were single. Twenty-five per cent of students worked, with a higher proportion of women (14%). In other words, they combined studying and working, compared to 11% of men. Fourteen per cent of students reported that they smoked and 19.7% drank alcohol, including more women (14.5%) than men (5.2%). With respect to their health care, 32.7% of participants said they had seen a mental health professional (a psychiatrist or a psychologist) in the past 12 months, with a higher proportion of women using these services (Table 1).

Table 1
Sociodemographic data of participants ($n = 269$)

	Women		Men		Total
	<i>n</i>	%	<i>n</i>	%	
Sex	184	68.4	85	31.6	269
Single	171	63.6	78	29.0	249
Married	10	3.7	3	1.1	13
Has a job	38	14.0	30	11.0	68
Health Habits					
Smokes	27	10.0	11	4.2	38
Drinks alcohol	39	14.5	14	5.2	53
Has consulted a mental health professional	63	23.4	25	9.2	88
Age Range	Median age		SD age		
18-27	20.16		2.024		
Origin	State of Mexico		Mexico City		
	258 (96%)		11 (4%)		

Note: Frequency and percentages analysis. Calculation of mean and standard deviation as descriptive measures.

Table 2
Student participation by degree course and sex ($n = 269$)

Bachelor's degree area	Enrolment	Students who participated						Students who did not participate	
		Women		Men		<i>n</i>	%	<i>n</i>	%
		<i>n</i>	%	<i>n</i>	%				
Psychology	165	125	76.0	98	53.3	27	31.8	40	24
Law	120	71	59.1	46	25.0	25	29.4	49	41
Administration	82	55	67.0	37	20.1	18	21.2	27	33
Computer Science	28	18	64.2	3	1.6	15	17.6	10	36
Total	395	269	68.1	184	100.0	85	100.0	126	32

Note: Frequency and percentage analysis.

The participation of students by degree course and gender is given in Table 2. The largest number of participants was pursuing a bachelor's degree in psychology (46.5%). Women comprised 68.4% of participants, with men accounting for 31.6%.

The prevalence of anxiety, depression, and suicide risk symptoms is given in Table 3, as well as the cut-off point for each scale. Fifty-three per cent of participants presented anxiety with moderate to severe symptoms. In the case of depression, 28 % of students showed moderate to severe depression. Finally, 30.1% of participants displayed suicidal behavior (Table 3).

The chi-square test did not yield a significant association between symptoms and sex, although a greater presence of anxiety, depression and suicidal behavior was identified in women. For every ten women who completed their degrees, six presented symptoms of moderate to severe anxiety, as opposed to only four out of every ten men. In the case of moderate to severe depression, three out of ten women displayed these symptoms, while two out of ten men had depression. With respect to suicidal behavior, three out of ten women displayed this behavior as opposed to only two out of ten men.

Other results indicated that PS students presented higher anxiety symptoms, followed by those enrolled in the LA and COM degree courses, showing that students in the area

Table 3
Prevalence of symptoms by sex

Symptoms	Women		Men		Statistical comparison
	<i>n</i>	%	<i>n</i>	%	
Anxiety	(n = 176)		Man (n = 87)		
Absent to Slight	72	40.9	50	57.5	$\chi^2 = 7.04$ $p = .030$
Moderate to Severe	104	59.1	37	42.5	
Depression	(n = 177)		(n = 80)		
Absent to Slight	121	68.4	64	80.0	$\chi^2 = 3.70$ $p = .157$
Moderate to Severe	56	31.6	16	20.0	
Suicidal behavior	(n = 183)		(n = 86)		
Absent to Slight	122	66.7	66	76.7	$\chi^2 = 2.83$ $p = .243$
Moderate to Severe	61	33.3	20	23.3	

Note: χ^2 , $v = 1$.

Table 4
Difference between anxiety, depression and suicide risk by degree course

Scale	Degree	n	Media	Median	SD	Significance
Anxiety (n = 263)	Psychology	112	23.50	22.00	14.16	< .001
	Law	73	17.51	14.00	13.81	
	Administration	61	15.54	12.00	12.46	
	Computer Science	17	16.71	11.00	12.91	
Depression (n = 257)	Psychology	113	16.65	12.00	13.35	< .001
	Law	76	10.29	8.00	9.39	
	Administration	57	9.09	7.00	8.72	
	Computer Science	11	17.09	15.00	15.21	
Suicidal behavior (n = 269)	Psychology	123	5.04	4.00	3.61	< .001
	Law	76	3.53	3.00	3.16	
	Administration	55	2.87	3.00	2.52	
	Computer Science	15	3.73	3.00	3.86	

Note: Simple ANOVA test.

Table 5
Anxiety, depression, and suicide risk symptom frequencies by semester (n = 269)

Symptoms	Semester										Statistical comparison
	First		Third		Fifth		Seventh		Ninth		
	n	%	n	%	n	%	n	%	n	%	
Anxiety	(n = 48)		(n = 108)		(n = 43)		(n = 37)		(n = 27)		
Absent to Slight	29	60.4	44	40.7	20	46.5	16	43.2	13	48.1	$\chi^2 = 9.0$
Moderate to Severe	19	39.6	64	59.3	23	53.5	21	56.8	14	51.9	$p = .341$
Depression	(n = 48)		(n = 104)		(n = 53)		(n = 32)		(n = 20)		
Absent to Slight	40	83.3	79	76.0	37	69.9	18	56.2	11	55.0	$\chi^2 = 15.7$
Moderate to Severe	8	16.7	25	24.0	16	30.1	14	43.8	9	45.0	$p = .046$
Suicidal behavior	(n = 46)		(n = 109)		(n = 51)		(n = 36)		(n = 27)		
Absent to Slight	35	76.1	79	72.5	37	72.5	21	58.3	16	59.2	$\chi^2 = 11.5$
Moderate to Severe	11	23.9	30	27.5	14	27.5	15	41.7	11	40.8	$p = .174$

Note: χ^2 , $v = 4$.

of administration were the least likely to suffer these symptoms (Table 4).

COM students experienced the most depression symptoms, followed by PS and then LA students. Once again, those with the fewest depression symptoms were enrolled in the AD degree course.

The chi-square test failed to identify a significant association between the semester in which students were enrolled and the symptoms evaluated across all areas of knowledge. However, the proportion of students with moderate to severe symptoms increased after the first semester. The same was also true of anxiety, depression, and suicidal behavior. In the case of anxiety, prevalence increased from 40% in the first semester to approximately 60% in subsequent semesters. The proportion of depression and suicidal behavior increased with every semester (Table 5).

Finally, the results showed that a significant number of students experienced anxiety, depression and suicidal behavior, with more women presenting these symptoms.

DISCUSSION AND CONCLUSION

This research identified three main outcomes, the first being the prevalence of moderate to severe symptoms of anxiety, depression, and suicidal behavior among participants. The second was that prevalence differed across degree courses. The third was that women were more affected by the symptoms assessed. The significance of these findings is explained below.

In regard to the prevalence of moderate to severe symptoms, 53.0% of students were found to present anxiety, 28.0 % depression, and 30.1% suicidal behavior, the first two being a predictor of suicide (Arzate, 2020; Angulo, 2020). The results obtained were consistent with various studies indicating that students' mental health suffers while they are at university (Cervantes et al., 2025; Jones & Es-sounga, 2024; Eisenberg et al., 2023; López-Ramírez et al., 2024; Sanabria-Landeros et al., 2021; Arzate, 2020; Grana-dos et al., 2020; Liu et al., 2019; Hidalgo-Rasmussen et al.,

2019; Rosales & Córdova, 2011). These results underscore the need for the timely detection of suicidal behavior and psychological distress within educational settings (Jones & Essounga, 2024; Herrera, 2022).

In response to these problems, some universities in Mexico (Torres-Torija & Eguiluz-Romo, 2019) have allocated resources and planned psychological counseling services, including referrals to specialized services, to support students with emotional distress. The effectiveness of life skills programs and the promotion of healthy lifestyles in university settings has also been demonstrated (Romero et al., 2013; Bonilla-Flores et al., 2021). With respect to suicide prevention within the university context, Santillán & Suárez, 2023 and Torres-Torija et al. (2019) have documented suicide response protocols and training as community guardians. The contributions of the literature cited in this paper should be considered by the university where the research was conducted to address the mental health problems present in its students. Protective strategies to prevent suicidal behavior should also be promoted (López-Ramírez et al., 2024).

This study also found that students' sex, semester, and degree course influence their symptoms. PS, COM, and LA students scored higher on moderate to severe symptoms of anxiety, depression, and suicidal behavior, with women being more affected. This result was consistent with research by Cervantes et al. (2025), Sanabria-Landeros et al. (2021), Granados et al. (2020), Rosales & Córdova, 2011). Recognizing how gender and degree courses influence mental health helps identify students at higher risk, allowing for targeted preventive measures.

This information allows the university to assess factors within the university environment that may be associated with psychological distress among students, supporting efforts to promote mental health. According to the literature (Herrera, 2022; Hidalgo-Rasmussen et al., 2019; Arzate, 2020), universities should consider aspects such as academic demands and/or overload, lack of institutional support during university studies, the perception of a hostile academic environment, discrimination, and stigma toward people with psycho-emotional distress. Another aspect worth exploring is the university's commitment to caring for the mental health of its community, as some authors report a lack of interest or knowledge of these issues in the educational sphere (Gomes & Sá, 2025; Santillán & Suárez, 2023).

Finally, it is also necessary to recognize the health status of women, an issue that warrants further research. The scientific literature reviewed (Rosales & Córdova, 2011) showed that women display symptoms of anxiety and suicide ideation even before starting their degrees, due to the academic workload involved, as well as their financial circumstances. The combination of these social conditions compromises their health status. According to the results of this study, 14% of women experience greater pressure when they combine work and university studies.

What observations can be made regarding the advancement of understanding suicidal behavior among men? Although this research revealed a higher prevalence of symptoms in women, men may experience the psycho-emotional distress they feel for longer or receive less information on mental health, as noted by López-Rivera (2021) and Torres-Torija & Eguiluz-Romo (2019). In this respect, one of the main limitations of the study was the lower participation rate among men and the absence of analysis of students' sexual diversity, since the latter group is also affected by mental health problems (Rentería et al., 2021).

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Conflict of interest

The authors declare that they have no conflict of interest.

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