

Exploring academic anxiety in high school students in Montemorelos, Nuevo Leon

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ABSTRACT

Objective: To determine the level of anxiety in high school students in Montemorelos, Mexico. **Materials and methods:** The study adopted a non-experimental, descriptive, cross-sectional, and quantitative design. The sample included 44 students from a high school in Montemorelos, Nuevo Leon, during the 2023 school year, by means of a census sample. The State-Trait Anxiety Inventory (STAI) was used to measure anxiety. For data analysis, exploratory and association tests were performed using the chi-square test in the JASP statistical software. **Results:** The study shows that 65.9% of participants exhibit high levels of trait anxiety, indicating a significant prevalence of this condition. In addition, 43.2% show high levels of state anxiety. This suggests that many participants experience anxiety both habitually and transiently. **Conclusions:** More than half of the participants showed high levels of trait anxiety, indicating that the majority tend to react anxiously in a habitual manner, regardless of the circumstances. Nearly half of the participants showed high levels of state anxiety, indicating that a considerable proportion experience anxiety in a transient or emotional way.

Keywords: anxiety; students; affective symptoms.

INTRODUCTION

Adolescence is a crucial period in youth development, characterized by biological, physical, psychological and social changes. According to the World Health Organization (WHO), emotional disorders commonly emerge during this stage; a significant percentage of adolescents experience anxiety and depression, which can affect their academic performance and overall well-being (1-3).

Anxiety is a complex emotional response that is activated during cognitive evaluation and reevaluation processes. It allows individuals to assess and analyze important information about the situation, available resources, and expected outcomes to act strategically. Its function is adaptive, enabling effective preparation to deal with situations that are anticipated as aversive (4).

Moreover, mental disorders in adolescence have become a global concern, with depression and anxiety being two of the leading causes of disability among young people (5, 6).

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In education, apart from academic concerns that may trigger anxiety, gender differences can also influence the levels of anxiety experienced (7).

On the other hand, the influence of the social and family environment on adolescents' mental health is evident. The Mental Health Directorate of the Ministry of Health of Peru has highlighted the prevalence of symptoms such as difficulty falling asleep, eating disorders, and suicidal thoughts among young individuals (2, 8). These findings are consistent with evaluations conducted in the Youth Axis of the New Jerusalem Church in the same country, where a significant number of adolescents were observed to experience moderate to severe levels of anxiety (2).

The World Health Organization (9) considers that anxiety can manifest through excessive concerns or panic attacks. According to its estimates, 3.6% of adolescents aged 10 to 14 and 4.6% of those aged 15 to 19 suffer from some form of anxiety disorder.

The Ecuadorian Ministry of Public Health reports that 19.4% of the population exhibits predominant symptoms of anxiety, with severe levels. In 2017, 5.6% of the population suffered from anxiety, but in 2020 this figure increased by 16.0%, affecting more women than men. This rise is attributed to health-related situations stemming from the public health emergency, confinement, and changes in daily life (10). Additional evidence is found in a Peruvian study that concluded that students' anxiety levels were mostly within a mild to moderate range (11).

Adolescents with anxiety disorders, impulse control disorders, and behavioral disorders are at a higher risk of developing somatic symptoms, such as chronic pain. Among them, 10.8% are three times more likely to develop psychiatric comorbidities, particularly those with anxiety or depression, compared to healthy adolescents (3).

To understand anxiety in more detail, it is divided into the concepts of trait anxiety and state anxiety. Trait anxiety reflects behavior that manifests as a response to a threatening situation, in which the person reacts impulsively, restlessly or anxiously. This response pattern tends to persist over time, alerting the individual to develop psychological defenses and cope with dangerous situations. On the other hand, state anxiety is a temporary condition or emotional state experienced in unexpected or surprising situations. It generates feelings of nervousness, worry, fear or dread, which are consciously perceived. The intensity and duration of these anxiety states vary depending on the individual and their biopsychosocial condition,

also known as the stress they experience during this process (12).

According to the World Health Organization, we are living in the age of anxiety, where the mental health of the youth population has been affected by the pandemic and other social factors, with one in seven adolescents aged 10 to 19 suffering from mental disorders (13).

In the studied population, potential symptoms of anxiety were identified among students. This is because they are in a stage of life marked by numerous physical and psychological changes. In addition, some students that attend this institution live in a boarding school, far from their relatives, which generates feelings of loneliness and concern. These feelings manifested through symptoms such as restlessness, shaky hands, and difficulty maintaining concentration.

On the other hand, anxiety was also observed in students living with their families, linked to the stage of life they are going through, which is characterized by academic and social pressures. This situation seems to worsen their nervousness, creating a widespread environment of tension and stress among young people. Given this evidence, the aim of this study was to determine the level of anxiety in students from a preparatory school in Montemorelos, Mexico.

MATERIALS AND METHODS

This research was a non-experimental quantitative study with a descriptive scope and cross-sectional design. In chronological terms, it was a prospective study (14). The study population consisted of students from a preparatory school in Montemorelos, Nuevo Leon, Mexico, during the 2023 academic year. A total of 44 adolescents were selected. Although they came from different regions of Mexico, they shared a similar educational and social environment. This homogeneity in context helps minimize the margin of error and bias in the results, as adolescents are immersed in the same characteristics and pressures of their school environment.

The census sample facilitated the collection of relevant data within a specific group. All students who attended their classes regularly and agreed to participate in the study were included.

Data collection was gathered in two stages: on October 31 and November 2, 2023, following a carefully planned process. At first, the permission of the high school director was requested and obtained by a formal letter. Subsequently, parental authorization was requested

through an informed consent form, while the minors signed their assent. This methodology ensured a uniform and coherent approach to data collection, which was essential for the validity of the study.

To measure the study variable, the State-Trait Anxiety Inventory (STAI) by Spielberger, Gorsuch and Lushene, was used. This instrument is divided into two scales designed to assess anxiety from two different perspectives: anxiety as a trait and anxiety as a state. Each scale consists of 20 items answered using a Likert-type scale, with values ranging from 1 to 4, corresponding to “not at all”, “a little”, “quite a lot” and “a lot”, respectively. The construct validity was assessed through expert judgment. The reliability of the state anxiety scale showed a Cronbach’s alpha of .867, while the trait anxiety scale had a value of .889 (15).

For the scoring, the points obtained on each scale were added, providing a range from 20 to 80 points for both trait anxiety and state anxiety. Subsequently, a formula was applied to determine the level of anxiety. The results were classified into different levels for each scale, with the same classification criteria in both cases: high (≥ 45 points), medium (30-44 points) and low (≤ 30 points) (16).

RESULTS

The study included 44 preparatory school students aged 15-21, with an average of 15.7 years. Of the total number of participants, 64.0% ($n = 28$) were women, while 36.0% ($n = 16$) were men. In terms of nationality, 89.0% ($n = 39$) were Mexican, and 11.0% ($n = 5$) were foreigners. A total of 84.0% ($n = 37$) lived off campus, while 16.0% ($n = 7$) resided in campus dormitories, indicating that most participants lived with a family member or acquaintance, whereas a minority group lived away from their family. In addition, 91.0% ($n = 40$) of participants were employed, either on campus or externally.

In relation to trait anxiety, 65.9% of participants exhibited high levels of anxiety, while 25.0% showed moderate levels. Table 1 shows that the majority of female participants experienced high levels of trait anxiety (85.7%), whereas half of male participants showed moderate levels (50.0%). In general, it is evident that women present higher levels of trait anxiety compared to men.

Table 1. Trait anxiety levels by sex.

Trait anxiety level	Female		Male		Total	
	n	%	n	%	n	%
High	24	85.7	5	31.3	29	65.9
Moderate	3	10.7	8	50.0	11	25.0
Low	1	3.6	3	18.7	4	9.1
Total	28	100.0	16	100.0	44	100.0

In relation to state anxiety, 43.2% of participants exhibited high levels of anxiety, while 38.6% showed moderate levels. Table 2 shows that the majority of women (57.1%)

reported high levels of state anxiety, whereas the majority of men exhibited moderate levels (43.8%). Women show higher levels of state anxiety than men.

Table 2. State anxiety levels by sex.

State anxiety level	Female		Male		Total	
	n	%	n	%	n	%
High	16	57.1	3	18.7	19	43.2
Moderate	10	35.8	7	43.8	17	38.6
Low	2	7.1	6	37.5	8	18.2
Total	28	100.0	16	100.0	44	100.0

Table 3 shows that trait anxiety levels are predominantly high across all age groups. In the 14 to 15-year-old group, 60.0% exhibit high anxiety levels, while in the 16-year-old or older group, this percentage increases to 73.7%. Moderate anxiety

levels are less frequent, with 36.0% in the 14 to 15-year-old group and only 10.5% in the 16-year-old or older group. On the other hand, low anxiety levels are most commonly observed in the 16-year-old or older group (15.8%).

Table 3. Trait anxiety levels by age.

Trait anxiety level	14-15 years		16 years or more		Total	
	n	%	n	%	n	%
High	15	60.0	14	73.7	29	65.9
Moderate	9	36.0	2	10.5	11	25.0
Low	1	4.0	3	15.8	4	9.1
Total	25	100.0	19	100.0	44	100.0

Table 4 shows that state anxiety levels are predominantly high in the 14-15-year-old group (48,0%). In the 16-year-old or older group, high and moderate anxiety levels are equally distributed, each reaching 36.8%. Similarly, in

the 14 to 15-year-old group, the moderate anxiety level is close to the high level, representing 40.0%. As for the low state anxiety level, this is more frequent in the 16-year-old or older group (26.4%).

Table 4. State anxiety levels by age.

State anxiety level	14-15 years		16 years or more		Total	
	n	%	n	%	n	%
High	12	48.0	7	36.8	19	43.2
Moderate	10	40.0	7	36.8	17	38.6
Low	3	12.0	5	26.4	8	18.2
Total	25	100.0	19	100.0	44	100.0

DISCUSSION

The objective of this research was to determine the level of anxiety in students from a preparatory school in Montemorelos, Nuevo Leon, Mexico. The results show that more than half of the evaluated students exhibit high levels of trait anxiety, and nearly half present high levels of state anxiety. This is consistent with various global research studies that indicate that anxiety is a widely prevalent psychological issue, especially among children and adolescents (2, 16).

Adolescence is a critical period in which most mental health disorders emerge due to adolescents' emotional vulnerability, which can lead to anxiety or depression (9).

This research study suggests differences between state anxiety and trait anxiety. Most women experience a high level of trait anxiety, while state anxiety is more frequently observed at moderate and low levels among them. Regarding men, they tend to exhibit more balanced levels of trait and state anxiety, with a higher prevalence of moderate and low levels compared to women.

These results are consistent with other studies that also observe higher levels of anxiety in women. For example, a study on emotional regulation in institutionalized adolescents in Mexico City found

that women exhibit higher levels of anxiety compared to men (17). A study conducted with Peruvian adolescents showed that 51.5% presented high levels of state anxiety, while 58.6% exhibited moderate levels of trait anxiety (18). Similarly, another study found moderate levels of state anxiety (44.81%) and trait anxiety (42.92%) in adolescents (19).

At the same time, the study by Álvarez-Pérez (20) in students from a school in Colombia identified high levels of anxiety in the psychological dimension (33.0%) and the somatic dimension (21.0%), concluding that the predominant level of anxiety is high. Another study with adolescents in Ecuador reported elevated symptoms of depressive disorder, with a significant percentage (44.0%) exhibiting a moderate level of anxiety (21).

Anxiety, as an emotion, manifests in subjective experience, psychophysiological activation, and behavior. Although it is an adaptive response, its occurrence at inappropriate times or with excessive intensity can be disruptive, affecting cognitive processes, interfering with environmental adaptation, and impairing academic performance (22).

Nevertheless, Jarrin (23) mentions that anxiety is a natural part of human life and serves the function of anticipating responses to potential real or imagined

dangers. There is an adaptive and natural state of anxiety, as well as a pathological and maladaptive anxiety trait that can cause difficulties in daily life and interfere with productivity.

When evaluating anxiety results by age group, it was found that high trait anxiety is evident mostly in those aged 16 and older, while, in general, trait anxiety is higher in adolescents aged 14 to 15. At the same time, the group of 16 years and older shows higher percentages of low levels of both trait and state anxiety compared to those aged 14 to 15.

A study conducted with adolescents from Spain showed that cognitive, psychological and behavioral anxiety was lower in early adolescents (mean = 557), compared to late adolescents (mean = 618) (24).

Another study conducted with children and adolescents from the United States showed that as age increased, young individuals were more likely to be affected by anxiety or depression, considering that the vast majority had a history of previously experiencing these disorders (25).

Analyzing age anxiety is an important aspect, especially when diagnosing and treating it. In the diagnosis, for example, the weight and inclusion of interviews with parents and teachers vary according to the age of the adolescent. Similarly, follow-up and treatment approaches should be adjusted based on the characteristics and needs of the adolescent (26).

The findings of this study suggest the need for priority interventions to reduce anxiety in women (2) and adolescents in general, regardless of age. Apart from that, they highlight the importance of family support in adolescents. In this regard, Morales-Rodríguez & Bedolla-Maldonado (4) highlighted that adolescence is a critical period in which mental disorders emerge due to the emotional fragility of young people, which can lead to anxiety or depression. They demonstrated an inverse relationship between parental involvement and levels of anxiety and depression, emphasizing that expressive parental involvement had a significant impact on the mental health of adolescents. It was evidenced that the emotional involvement of the father can act as a protective factor against depression and anxiety in adolescents, contributing to the development of healthy behaviors and effective coping strategies.

In general, the results obtained highlight the need to implement intervention and support strategies to address this long-term predisposition, aiming to improve emotional well-being and reduce the negative impact of anxiety on the daily lives of

affected individuals. It is essential to promote health through programs that encourage the educational community to adopt healthy lifestyles, both physical and emotionally.

Regarding the limitations of the study, obtaining parental consent to work with minors under 18 was a challenge, as some did not give consent. At the same time, the study sample limited the possibility of conducting a statistical analysis to assess the significance of the differences observed. Future studies should consider larger sample sizes.

CONCLUSIONS

The study reveals that more than half of participants exhibit high levels of trait anxiety, which indicates a significant prevalence of this condition in the studied population. This suggests that the majority tend to react anxiously as a habitual response, regardless of the circumstances. On the other hand, nearly half of the participants show high levels of state anxiety, indicating that a considerable proportion experiences anxiety as a transient or emotional response.

It is also relevant to note that women are the group with the highest levels of both trait and state anxiety. This phenomenon could be related to various factors, including a potential bias, given that most participants were women.

It is recommended that the educational institution develop preventive programs for teachers, based on the results of the study, enabling them to acquire knowledge on the subject and provide better support to their students. In addition, it is suggested to implement emotional support spaces where students and teachers can express their feelings with confident individuals. These spaces should include quick assessments to identify levels of anxiety and allow for more detailed intervention by psychologists.

For future researchers, we suggest the incorporation of new variables related to anxiety in adolescents in order to generate new areas of research and further explore the topic. Similarly, it is suggested to conduct more detailed studies on the factors that contribute to anxiety in adolescents to enhance the understanding and management of this issue.

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Authorship contribution:

DRCB: conceptualization, formal analysis, research, methodology, visualization, writing of original draft, writing - review & editing.

MMMD: data curation, research, methodology.

ARDA: research, writing - original draft.

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