



Research Article

Post-pandemic emotional state in students of Physical Culture and Sport: Differences according to sex

Estado emocional en pospandemia en estudiantes de Cultura Física y Deporte: Diferencias según sexo

Estado emocional pós-pandemia em estudantes de Educação Física e Desporto: Diferenças de acordo com o sexo

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ABSTRACT

The aim of this research was to determine the prevalence of depression, anxiety, and stress among Physical Education and Sports students following the pandemic, as well as to identify a relationship between these disorders and factors from the DASS-21 scale, considering gender differences. A descriptive, correlational, and cross-sectional study was conducted on a non-random convenience sample of 245 participants. The study revealed that 39.2% of participants exhibited symptoms of depression, 53.1% experienced some degree of anxiety, and 42.4% reported feeling some level of stress. Additionally, significant relationships were found between levels of depression and anxiety ($r_s = 0.715$, $p < .01$), depression and stress ($r_s = 0.767$, $p < .01$), as well as anxiety and stress ($r_s = 0.759$, $p < .01$). It was observed that depression and stress affected women more, with 46.6% and 55.7%, respectively, compared to men, where it was recorded at 35% for both cases ($p = .043$ and $p = .002$, respectively). On the other hand, although anxiety affected 56.8% of women and 51% of men, no significant differences were found between the two genders ($p = .110$). It is essential to implement interventions aimed at addressing the mental health of students, both in crisis situations and in more stable contexts.

Keywords: Depression; Anxiety; Stress, University students; Prevalence.

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RESUMEN

El objetivo de esta investigación fue determinar el estado de depresión, ansiedad y estrés en estudiantes de Cultura Física y Deporte posterior a la pandemia, así como detectar una relación entre estos trastornos y los factores de la escala DASS-21, considerando las diferencias de género. Se utilizó un estudio descriptivo, correlacional y transversal en una muestra no aleatoria por conveniencia de 245 participantes. El estudio reveló que el 39.2% de los participantes presentaba síntomas de depresión, el 53.1% experimentaba algún grado de ansiedad, y el 42.4% informó sentir algún nivel de estrés. Además, se encontraron relaciones significativas entre los niveles de depresión y ansiedad ($r_s = 0.715$; $p < .01$), depresión y estrés ($r_s = 0.767$; $p < .01$), así como ansiedad y estrés ($r_s = 0.759$; $p < .01$). Se observó que la depresión y el estrés afectaron más a las mujeres, con un 46.6% y 55.7%, respectivamente, en comparación con los hombres, donde se registró un 35% para ambos casos ($p = .043$ y $p = .002$, respectivamente). Por otro lado, aunque la ansiedad afectó al 56.8% de las mujeres y al 51% de los hombres, no se encontraron diferencias significativas entre ambos géneros ($p = .110$). Es fundamental implementar intervenciones dirigidas a abordar la salud mental de los estudiantes, tanto en situaciones de crisis como en contextos más estables.

Palabras clave: Depresión; Ansiedad; Estrés; Universitarios; Prevalencia.

RESUMO

O objetivo desta pesquisa foi determinar a prevalência de depressão, ansiedade e estresse em estudantes de Educação Física e Desporto após a pandemia, bem como detectar uma relação entre esses distúrbios e os fatores da escala DASS-21, considerando as diferenças de gênero. Foi utilizado um estudo descritivo, correlacional e transversal em uma amostra não aleatória por conveniência de 245 participantes. O estudo revelou que 39,2% dos participantes apresentaram sintomas de depressão, 53,1% experimentaram algum grau de ansiedade e 42,4% relataram sentir algum nível de estresse. Além disso, foram encontradas relações significativas entre os níveis de depressão e ansiedade ($r_s = 0,715$, $p < .01$), depressão e estresse ($r_s = 0,767$, $p < .01$), assim como ansiedade e estresse ($r_s = 0,759$, $p < .01$). Observou-se que a depressão e o estresse afetaram mais as mulheres, com 46,6% e 55,7%, respectivamente, em comparação com os homens, onde foi registrado 35% para ambos os casos ($p = .043$ e $p = .002$, respectivamente). Por outro lado, embora a ansiedade tenha afetado 56,8% das mulheres e 51% dos homens, não foram encontradas diferenças significativas entre os dois gêneros ($p = .110$). É fundamental implementar intervenções direcionadas para abordar a saúde mental dos estudantes, tanto em situações de crise quanto em contextos mais estáveis.

Palavras-chave: Depressão; Ansiedade; Estresse; Estudantes universitários; Prevalência.

INTRODUCTION

Mental health challenges among students represent a major public health problem. This state is defined by a state of well-being in which a person is aware of their abilities, can address everyday challenges, perform effectively at work, and contribute meaningfully to their community (WHO, 2013). The most common mental disorders, such as depression, anxiety, and stress, experienced a 25% increase in 2020 due to the health crisis caused by the COVID-19 pandemic (WHO, 2022). The most affected sector was the university community due to social distancing and the sudden closure of schools (Martínez-Arriaga et al., 2021).

Several countries have found that the extension of confinement caused psychological and physical damage, both temporary and permanent, in the general population. A significant increase in emotional impact was observed, manifested in sleep problems and emotional symptoms such as worry, stress, hopelessness, depression, anxiety, nervousness, and restlessness (Vargas et al., 2023).

Depression is a serious illness that affects various aspects of daily life, such as work, sleep, study, eating, and the ability to enjoy life. Its origin is attributed to a combination of genetic, biological, environmental, and psychological factors (PAHO, 2022). University students show a notable presence of depressive symptoms (Leonangeli et al., 2022). During the initial phase of the COVID-19 outbreak in China, moderate to severe levels of depression were observed, with a prevalence of 16.5% (Huang & Zhao, 2020; Wang et al., 2020). In Peru, a prevalence of these symptoms of up to 66% has been detected (Soto Rodríguez & Zúñiga Blanco, 2021). In Mexico, research has reported a wide range of depression prevalence among college students, ranging from 4.9% (González-Jaime et al., 2020) to a worrying 79% (Torres-Pasillas et al., 2021). The National Self-Reported Well-Being Survey conducted in 2021 noted that 15.4% of the Mexican population suffers from some symptom of depression (ENBIARE, 2021). At the local level, this percentage was lower (11.7%).

Anxiety is a common and widespread emotion that manifests as a normal response to stressful situations in everyday life. However, when this anxiety exceeds a person's ability to adapt, it can become a pathological disorder that causes significant discomfort, affecting both the body and the mind and behavior (Fernández et al., 2012). In Mexico, 30% of university students experience anxiety and stress, while 15.8% have shown suicidal behavior (Health for Better, 2019). According to the ENBIARE report, 19.3% of the Mexican population suffers from severe anxiety, with women being the most vulnerable to this symptom. In the state of Sonora, the prevalence of anxiety reached up to 44.5%.

Stress, referred to by the World Health Organization as the “health epidemic of the 21st century” (WHO, 2020), is characterized by a psychological state in which individuals feel that the demands they face exceed their coping resources (Fink, 2017). College students, due to academic pressure and environmental and social factors, are especially prone to stress compared to the general population (Karaman et al., 2019; Raufelder et al., 2018). This life stage, crucial in the transition from late adolescence to adulthood, exposes students to various stressors related to academic, personal, environmental, and economic circumstances (Mardea et al., 2020). It has been shown that approximately one in five students who access higher education experience some level of stress, with symptoms that are usually associated with anxiety, and it is observed that this tendency is more prevalent in women than in men (Tijerina et al., 2018).

Especially in the student context, stress is recognized as a significant issue at a global level and has been the subject of research for an extensive period due to its impacts on physical health and behavior (Bedoya-Lau et al., 2014). Although studies have been carried out on stress in university students, there is a lack of research that addresses the emotional state of students in careers related to Physical Education and Sport. A special case is that of this discipline, which, despite having didactic tools offered by the profession itself to reduce levels of stress, anxiety and depression, often falls into ignorance about how to apply them in personal life. The objective of this research was to determine the state of depression, anxiety and stress in Physical Culture and Sports students from a university in northwestern Mexico in the post-pandemic, in addition, to determine if there is a relationship between any of the factors on the scale, as well as the association by sex, through the DASS 21 survey.

METHODS

A descriptive, correlational and cross-sectional study was conducted. Descriptive studies focus on obtaining data that describe the phenomenon under study in detail. In turn, correlational studies determine whether there is an association between two or more variables without manipulating them. Since the data was collected on a single occasion, the study is cross-sectional in scope (Hernández et al., 2010).

Participants

The student population of the Bachelor's Degree in Physical Culture and Sports at the University of Sonora is approximately 400 people, of which 160 (40%) are female and 240 (60%) are male.

To calculate the sample size, the following formula was used:

$$n = \frac{N * Z_a^2 * p * q}{d^2 * (N - 1) + Z_a^2 * p * q}$$

Where:

N = Total population

Z = 1.96 (for a 95% confidence level)

p = Expected proportion (0.5)

q = 1 - p (in this case 1 - 0.5 = 0.5)

d = Precision or margin of error of 4%

The calculation yielded a sample size of 240 people. An additional 20% was added, anticipating possible data losses due to the elimination of incomplete surveys, in order not to increase the margin of error. Finally, 288 people were invited to participate in the study, of which 245 agreed to participate.

245 students from the morning shift of the Bachelor's degree in Physical Culture and Sports at the University of Sonora participated. Of these, 88 (35.9%) are women and 157 (64.1%) are men. All were between the ages of 18 and 30 (M = 20.48; SD = 1.95). 43.3% of the participants were in their second semester, 25.7% in their fourth, 11.8% in their sixth, and 19.2% in their eighth semester.

Instrument

For data collection, a questionnaire was designed using the Google Forms application. The questionnaire included three socio demographic questions (sex, age and semester), in addition to the items of the DASS-21 instrument.

Depression, Anxiety and Stress Scale (DASS-21)

To assess the emotional state of students, the shortened version of the Depression, Anxiety, and Stress Scale (DASS-21) (Lovibond & Lovibond, 1995) was used in its Spanish version, validated for the Hispanic population by Daza et al. (2002). The scale consists of 21 items that independently measure the presence of symptoms of depression (items 3, 5, 10, 13, 16, 17, and 21), anxiety (items 2, 4, 7, 9, 15, 19, and 20), and stress (items 1, 6, 8, 11, 12, 14, and 18). The items are presented in a Likert-type format with four response options: 0 = It has not happened to me; 1 = It has happened to me a little, or some of the time; 2 = It has happened to me quite a bit, or a good part of the time; and 3 = It has happened to me a lot, or most of the time. To analyze each subscale individually, it is necessary to add up the scores of the corresponding items. The cut-off points commonly used to detect symptoms of depression are: 0 to 6 (mild), 7 to 10 (moderate), 11 to 13 (severe) and 14 to 21 (extremely severe). For anxiety, the cut-off points are: 0 to 4 (mild), 5 to 7 (moderate), 8 to 9 (severe) and 10 or more (extremely severe). Finally, for stress, the cut-off points are: 8 to 9 (mild), 10 to 12 (moderate), 13 to 16 (severe) and 17 or more (extremely severe) (Ruiz et al., 2017). The DASS-21 scale has shown high correlations between its subscales and an acceptable fit for a three-factor model (depression, anxiety, and stress) in Spanish-speaking populations (Daza et al., 2002). Satisfactory levels of reliability have been found, with values between 0.87 and 0.88 for the depression subscale, between 0.72 and 0.79 for the anxiety subscale, and between 0.82 and 0.83 for the stress subscale (Antúnez & Vinet, 2012; Román et al., 2014). In this sample, both the depression and stress subscales presented a Cronbach's alpha of 0.87, while the anxiety subscale showed a value of 0.81.

Procedures

This study was conducted by professors from the Academy of Physical Education and Health of the Bachelor's Degree in Physical Culture and Sports, who were in charge of groups of students from different semesters. Through the teaching staff, an invitation was extended to the students, along with a detailed explanation of the objectives of the research. They were assured that participation in the survey was voluntary and confidential. Those who decided to participate had to read, sign and send the informed consent. The teachers distributed the link to the survey and the informed consent to each student via email. This study was approved by the Research Ethics Committee of the Nursing Department of the University of Sonora (CEI-ENFERMERÍA) and was carried out following the standards of the Declaration of Helsinki. The average time to complete the survey was 10 minutes.

Data analysis

Percentage tables were presented for levels of depression, anxiety and stress. Spearman's rho correlation coefficient was used, since normality was not achieved, confirmed by the Kolmogorov-Smirnov test, to investigate the possible correlation between the scores of each subscale. In addition, the Chi-Square test was applied to explore the association between the prevalence of depression, anxiety and stress according to gender. The thresholds to determine the prevalence were as follows: for depression, a score of 7 or more indicates the presence of the characteristic, while a score of 0 to 6 does not present it; for anxiety, a score of 5 or more indicates the presence of the characteristic, while a score of 0 to 4 does not present it; and for stress, a score of 10 or more indicates the presence of the characteristic, while a score of 0 to 9 does not present it. When necessary, the Bonferroni test was applied to identify which groups presented significant differences. To assess the reliability of each subscale, Cronbach's alpha coefficient was used, considering a value equal to or greater than 0.70 as acceptable (Nunnally, 1978). A significance level of 0.05 was considered. All statistical calculations were performed using SPSS software version 24.0.

RESULTS

Prevalence of Depression, Anxiety and Stress

39.2% of the respondents presented some level of depression, 53.1% showed symptoms of anxiety, and 42.4% reported some degree of stress. When analyzing only those who presented depressive, anxious, and stress symptoms, it was observed that a moderate level of depression (37.5%) and anxiety (36.2%) predominated among the students. Regarding stress, the majority reported a mild level of this symptom. In general terms, 31.3%, 49.2%, and 27.9% of the people participating in this study reported severe to extremely high levels of depression, anxiety, and stress, respectively (Table 1).

Table 1.
Post-pandemic levels of depression, anxiety and stress in students of Physical Culture and Sport

	Depression	Anxiety	Stress
Levels	n (%)	n (%)	n (%)
Mild	30 (31.3%)	19 (14.6%)	47 (45.2%)
Moderate	36 (37.5%)	47 (36.2%)	28 (26.9%)
Severe	18 (18.8%)	28 (21.5%)	20 (19.2%)
Extremely severe	12 (12.5%)	36 (27.7%)	9 (8.7%)
Total	96	130	104

Relationship between the factors of the DASS-21 scale

To identify the relationship between the factors (depression, anxiety, and stress), the numerical score of each of them was considered. Due to the non-compliance with the normality assumption, the Spearman correlation coefficient was used. High and significant correlations were found between the scores of the depression and anxiety scale ($r_s = 0.715$; $p < .01$), depression and stress ($r_s = 0.767$; $p < .01$), and anxiety and stress ($r_s = 0.759$; $p < .01$). In the qualitative analysis, it was observed that 59.6% of the students in this sample presented some level of depression combined with anxiety. Only 0.4% manifested both symptoms at a severe level, while 4.1% experienced them at an extremely severe level. Regarding the combination of stress and anxiety symptoms (58.8%), it was found that 2.9%, 0.8% and 3.7% presented both symptoms at moderate, severe and extremely severe levels, respectively (Table 2).

Table 2.
 Depression and stress levels combined with anxiety levels in Physical Education and Sport students

Depression	Without anxiety	Anxiety				Total
		Mild	Moderate	Severe	Extremely severe	
Without depression	40.4%	5.3%	11.0%	3.3%	0.8%	60.8%
Mild	3.7%	0.4%	3.7%	2.9%	1.6%	12.2%
Moderate	2.0%	2.0%	1.6%	4.5%	4.5%	14.7%
Severe	0.8%	0.0%	2.4%	0.4%	3.7%	7.3%
Extremely severe	0.0%	0.0%	0.4%	0.4%	4.1%	4.9%
Stress	Without anxiety	Mild	Moderate	Severe	Extremely severe	Total
Without stress	41.2%	4.5%	7.8%	3.7%	0.4%	57.60%
Mild	4.9%	2.0%	6.5%	4.1%	1.6%	19.20%
Moderate	0.8%	1.2%	2.9%	2.9%	3.7%	11.40%
Severe	0.0%	0.0%	2.0%	0.8%	5.3%	8.20%
Extremely severe	0.0%	0.0%	0.0%	0.0%	3.7%	3.7%
Total	46.9%	7.8%	19.2%	11.4%	14.7%	100%

When analyzing the combination of symptoms of depression and stress, it was found that 48.8% of the people surveyed presented a combination of these symptoms. 3.7% presented a combination of depression and stress at a moderate level, 2.9% at a severe level and 2% at an extremely severe level (Table 3).

Table 3.

Combination of depression and stress levels in post-pandemic students of Physical Culture and Sport

Depression	Stress					Total
	Without stress	Mild	Moderate	Severe	Extremely severe	
Without depression	50.2%	6.9%	3.7%	0.0%	0.0%	60.8%
Mild	4.1%	4.5%	2.0%	1.2%	0.4%	12.2%
Moderate	2.4%	6.5%	3.7%	1.6%	0.4%	14.7%
Severe	0.8%	1.2%	1.6%	2.9%	0.8%	7.3%
Extremely severe	0.0%	0.0%	0.4%	2.4%	2.0%	4.9%
Total	57.6%	19.2%	11.4%	8.2%	3.7%	100.0%

Symptoms of depression, anxiety and stress by sex

A prevalence of depression was identified in 46.6% (N = 41) of women and 35% (N = 55) of men ($\chi^2(1) = 4.136$; $p = .043$). Among women, the most common symptoms were feeling sad and depressed (61%) and having difficulty initiating activities (53.6%). These same symptoms were frequent among men, although to a lesser extent; in them, sadness or depression occurred in 51%, and difficulty initiating activities in 49%.

Anxiety affected 56.8% (N = 50) of women and 51% (N = 80) of men. This difference was not statistically significant ($\chi^2(1) = .778$; $p = .378$). The most common symptom in women was worry about situations in which they might panic or make a fool of themselves (68%), while in men it was dry mouth (47.6%). On the other hand, stress was more prevalent in women, with 55.7% (N = 49), compared to 35% (N = 55) of men ($\chi^2(1) = 9.843$; $p = 0.002$). Anger and restlessness were the most frequent symptoms among both men and women, occurring in more than 60% of both groups.

Considering only those who presented some depressive symptoms, an association was detected between the levels of depression and sex ($\chi^2(3) = 8.199$; $p = .043$). The Bonferroni test (Table 4) revealed significant differences at the moderate level, where men (40%) outnumbered women (34.1%), and at the severe level, where women reported this level in greater proportion (22%) compared to men (16.4%). Regarding anxiety levels, an extremely severe level predominated among women (34%), while a moderate level prevailed among men (40%). No significant difference was detected between anxiety levels according to sex ($\chi^2(3) = 6.026$; $p = .110$). Finally, an association was detected between stress symptoms and sex ($\chi^2(3) = 8.582$; $p = .036$). The Bonferroni test identified significant differences at all levels except the mild level. It was observed that women outnumbered men at the moderate (30.6% vs. 23.6%) and extremely severe (12.2% vs. 5.5%) levels (Table 4).

Table 4.
Levels of depression, anxiety and stress by sex.

Depression level	Gender		Total
	Female	Male	
Mild	29.3 _a %	32.7 _a %	31.30%
Moderate	34.1 _a %	40.0 _b %	37.50%
Severe	22.0 _a %	16.4 _b %	18.80%
Extremely severe	14.6 _a %	10.9 _b %	12.50%
Total	100%	100%	96 (100%)
Anxiety Level			
Mild	8.00%	18.80%	14.60%
Moderate	30.00%	40.00%	36.20%
Severe	28.00%	17.50%	21.50%
Extremely severe	34.00%	23.80%	27.70%
Total	100%	100%	130 (100%)
Stress level			
Mild	42.9 _a %	47.3 _a %	45.20%
Moderate	30.6 _a %	23.6 _b %	26.90%
Severe	14.3 _a %	23.6 _b %	19.20%
Extremely severe	12.2 _a %	5.5 _b %	8.70%
Total	100%	100%	100%

Each subscript letter denotes a subset of Student Sex whose column proportions differ significantly at the 0.05 level.

DISCUSSION

Statistical analyses revealed that 39.2% of Physical Education and Sports students present some level of depression, while a higher percentage show a state of anxiety (53.1%) and 42.4% present some symptoms of stress. Costa et al. (2024) observed that Physical Education university students in northern Brazil presented higher scores according to the DASS-21 scale in the stress and depression variables compared to high school students. Another study, carried out in the post-pandemic period using the same instrument, reported lower levels of anxiety and depression in Chilean student athletes, highlighting that they showed a favorable and enthusiastic mental state due to the return to a new academic and sports semester in person (Hernández & Hernández, 2023). These results contrast with the findings of the present research, where more than half of the students reported feeling sad, depressed and angry most of the time. These discrepancies could be due to cultural differences, socioeconomic context, specific characteristics of the studied samples, or even the subjective perception of psychological distress in different populations.

When comparing the results with previous studies conducted during the pandemic, one would expect to find lower figures, considering the additional challenges introduced by the COVID-19 crisis, such as the sudden transition to virtual classes, social distancing, and concern for personal health and that of loved ones. These factors had a great impact on the emotional state of students (Bautista-Jacobo et al., 2023a; Bautista-Jacobo et al., 2023b; González-Jaime et al., 2020; Martínez-Arriaga et al., 2021). However, the National Survey of Self-Reported Well-Being (ENBIARE, 2021) reported a lower prevalence of depression of 15.4%. At the state level, this percentage was 11.7%, almost 28 percentage points lower than that found in this post-pandemic study. Regarding anxiety, the national survey reported 50.6%, with the state percentage (Sonora, Mexico) being 8.6 percentage points lower than that reported in this sample. The observed differences could be attributed to additional pressures related to physical and athletic performance, or to a possible gradual adaptation to the new normal after the most intense period of the pandemic, in which the level of physical activity decreased considerably.

Pre-pandemic studies have shown that university students, in general, face significant challenges in their mental health. For example, the study by Trunce et al. (2020) found that 29% of health sciences students had some depressive disorder, 53% anxiety, and 47.8% stress. In comparison, the current results show higher percentages of depression (39.2%), but similar percentages of anxiety (53.1%) and stress (42.4%). In another study, where the levels of depression, anxiety and stress were compared before and during the first three months of social isolation, it was observed that more than half of the respondents reported some psychological discomfort in both periods (Leonangeli et al., 2022), which is similar to what was reported in this research regarding the anxiety symptom, and not very different from the prevalence of stress. These results indicate that Physical Culture and Sports students experience significant levels of anxiety and stress, even in a non-pandemic context. There is evidence indicating that students majoring in health-related fields have experienced significant levels of anxiety, depression and stress due to factors such as work overload, exposure to trauma and uncertainty about the future of work in a globally challenging environment (Quek et al., 2019).

In this study, a predominance of moderate levels of depression (37.5%) and anxiety (36.2%) and mild levels of stress (45.2%) was observed. A previous study carried out in the same population during the pandemic (Bautista-Jacobo et al., 2023b) found a lower proportion of moderate levels of anxiety (32.2%), although the prevalence of severe anxiety was slightly higher (24.3%) compared to the results of this study (21.5%). Partially similar results were found in university students in Zacatecas during confinement, where moderate anxiety also predominated, but in a higher proportion (44.7%), while depression remained at low levels in the majority of students (Torres-Pasillas et al., 2021). It is important to highlight that, although a low level of stress predominated among Physical Culture and Sport students, the percentage of severe to extremely high levels (27.9%) is relevant, as this can have a cumulative impact on long-term well-being, especially in a demanding academic and sporting environment. In other populations, the figures for moderate to extremely high levels of stress skyrocketed to 85% during the pandemic (Estrada et al., 2021), reflecting the magnitude of the emotional impact on that population during that period. On the other hand, the present research reveals that a significant percentage of students experience severe to extremely high symptoms of depression (31.3%) and anxiety (49.2%). These findings indicate that psychological distress among students remains a constant concern, suggesting that the factors influencing their emotional state

have persisted before, during and after the pandemic. There is evidence to support the hypothesis that university students, particularly in their final year, are exposed to stressors that may originate in the academic environment (Alves de Souza et al., 2022). These results underline the importance of implementing interventions aimed at addressing students' mental health, both in crisis situations and in more stable contexts. Furthermore, they highlight the need to identify and address the underlying factors that contribute to students' emotional burden in order to promote their long-term well-being.

In this study, significant and high correlations were detected between depression, anxiety, and stress. More than 50% of students showed the combination of two of these symptoms, although the combination of depression and stress was present in slightly less than half of the students (48.8%). In contrast, the study by Tijerina et al. (2018) in health sciences students, before the pandemic, revealed lower values, especially in the combination of depression and stress symptoms (28.6%). In the present research, it was observed that between 4% and 5% of students manifested both symptoms with severe to extremely high levels, a figure much higher than that reported in the study by Tijerina et al. (2018), where these values ranged between 0.4% and 0.8%. These discrepancies can mainly be attributed to the context in which the studies were carried out and how this can influence the results. The post-pandemic has generated significant changes in daily life, including the way in which classes, sports training and social interactions are carried out.

The results obtained in this study reveal a significant association between the levels of depression and the sex of the surveyed students, where men tend to have more moderate levels and women to higher levels of depression. These results corroborate the trend observed in other studies that indicate a higher incidence of depressive symptoms in women compared to men, especially at severe levels of depression (Martínez-Arriaga et al., 2021; Wang et al., 2019), which could be due to the fact that men tend to exhibit depressive symptoms differently, showing a lower propensity to report negative emotions or seek help. On the other hand, the higher proportion of women at the severe level of depression is consistent with the idea that women may experience a greater burden of stress and emotional difficulties related to multiple sociocultural and biological factors (Yoon & Kim, 2018). Sociocultural factors such as role restriction and discrimination in the workplace, certain traumas that occur more frequently in women such as sexual assault (Galvao et al., 2014; Skoog et al., 2016), and coping style (e.g., rumination) appear to interact and contribute to the female predominance of depression. Likewise, hormonal changes during the menstrual cycle, pregnancy, childbirth, and menopause appear to play a key role in some female-specific depressive syndromes (Yoon & Kim, 2018).

Regarding anxiety status, no association with the variable sex was observed. Although a higher incidence was detected in women (56.8%) compared to men (51%), this disparity did not reach statistical significance. The results indicate that both men and women experience anxiety levels ranging from moderate to extremely high. These findings are consistent with those reported in a previous study with students in Zacatecas (Torres-Pasillas et al., 2021), where no significant differences between genders were found. However, it is relevant to mention that, in this population, women showed a higher prevalence of moderate levels of anxiety, while in the present study, men predominated at that level. On the other hand, women stand out in extremely high levels of anxiety.

There is evidence that the prevalence of anxiety tends to be higher in women (Bautista-Jacobo et al., 2023a; Ebrahim et al., 2024; Quek et al., 2019). However, the evidence remains inconsistent, with some reports highlighting that men have higher levels of anxiety than women (González-Jaime et al., 2020), while others do not detect gender-based differences (Chávez Márquez, 2021; Torres-Pasillas et al., 2021), as reported in this study. This suggests that attention and educational strategies on how to address anxiety should be focused equally on both sexes.

In this study, a significant association was found between sex and stress level, with a higher prevalence among women (55.7%) compared to men (35%). A trend towards extremely high levels of stress was observed in women, although the proportion of men exceeded that of women at severe levels. These findings coincide with the research carried out on students from Durango (Mar-Aldana et al., 2023), where significantly high levels of stress were reported in the female group. However, it is important to note that in this research a different instrument was used than in this study. The authors mentioned that returning to the previous routine, exposure to large groups of people, and the risk of contagion were the most stressful situations for students, and the main symptoms were tiredness and despair. In contrast, in this research, the most common symptoms among students were anger and restlessness. As in the case of anxiety, there is evidence suggesting that women majoring in the health field have a higher susceptibility to stress compared to men (Awadalla et al., 2022; Ragab et al., 2021). This disparity could be attributed to the limited learning and recreational opportunities available to women compared to men (Khalil et al., 2020). In the specific case of female students of Physical Culture and Sport, they may experience greater insecurity regarding their abilities and sporting performance compared to male students. This was reflected in the observation that the most recurrent symptom among them was concern about situations in which they might panic or make a fool of themselves. However, it is crucial to consider that these results may vary depending on the specific cultural and social context of the population studied.

Limitations of this research include the cross-sectional design and non-random sampling. Nevertheless, the results obtained are relevant and coincide with other studies that highlight a problem of international scope in young people, who represent the productive future of countries. Therefore, institutions must consider strategies to reduce symptoms before they reach critical stages in most cases.

CONCLUSION

It is concluded that Physical Culture and Sport students show a significant prevalence of depression, anxiety and stress, with moderate levels of anxiety and depression standing out in a post-pandemic period, in which emotional symptoms rose significantly. These results underline the importance of

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implementing interventions aimed at addressing students' mental health, both in crisis situations and in more stable contexts. In addition, they highlight the need to identify and address underlying factors that contribute to emotional burden, in order to promote their long-term well-being. A significant association was found between the combination of symptoms and sex, particularly in depression and stress, where women reported more extreme symptoms. These results emphasize the importance of considering gender differences when addressing the emotional state of students, without neglecting men. It is recommended to implement practical, recreational and socializing interventions, in addition to continuously encouraging institutional support services and educational programs. Likewise, the culture of "asking for help" should be promoted, recognizing symptoms, and considering physical and sports activity as a means to reduce levels of anxiety, depression and stress, adhering to a scientific method to measure its impact.

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