



ORIGINAL

Assessment the mental health of university students in the Peruvian Amazon: A cross-sectional study

Evaluación de la salud mental de los estudiantes universitarios de la Amazonía peruana: Un estudio transversal

Jimmy Nelson Paricahua-Peralta¹  , Edwin Gustavo Estrada-Araoz²  , Lesy Berly León-Hancco³  , Basilide Avilés-Puma³  , Cesar Elias Roque-Guizada¹  , Percy Amilcar Zevallos-Pollito⁴  , Libertad Velasquez-Giersch¹  , Alhi Jordan Herrera-Osorio⁵  , Dany Dorian Isuiza-Perez⁴  

¹Universidad Andina del Cusco, Filial Puerto Maldonado. Puerto Maldonado, Perú.

²Universidad Nacional Amazónica de Madre de Dios, Facultad de Educación. Puerto Maldonado, Perú.

³Universidad Nacional del Altiplano, Facultad de Ciencias de la Educación. Puno, Perú.

⁴Universidad Nacional Amazónica de Madre de Dios, Facultad de Ingeniería. Puerto Maldonado, Perú.

⁵Universidad Andina del Cusco, Filial Quillabamba. Quillabamba, Perú.

Cite as: Paricahua-Peralta JN, Estrada-Araoz EG, León-Hancco LB, Avilés-Puma B, Roque-Guizada CE, Zevallos-Pollito PA, Velasquez-Giersch L, Herrera-Osorio AJ, Isuiza-Perez DD. Assessment the mental health of university students in the Peruvian Amazon: A cross-sectional study. Salud, Ciencia y Tecnología. 2024; 4:879. <https://doi.org/10.56294/saludcyt2024879>

Submitted: 11-11-2023

Revised: 06-03-2024

Accepted: 29-04-2024

Published: 30-04-2024

Editor: Dr. William Castillo-González 

ABSTRACT

Introduction: the mental health of university students is a growing concern worldwide, as these young individuals face a series of emotional and psychological challenges during their transition to university life. Academic pressure, social demands, and adaptation to a new environment can affect their mental well-being.

Objective: to assess depression, anxiety, and stress in students from two universities providing educational services in the city of Puerto Maldonado, Peru.

Methods: quantitative study, non-experimental design, analytical type. The sample consisted of 307 university students of both genders who were administered the Depression, Anxiety, and Stress Scale, an instrument with adequate psychometric properties.

Results: 42,7 % of students showed symptoms of depression, 52,4 % experienced anxiety, and 28,7 % suffered from stress. High, direct, and significant correlations were also reported between depression and anxiety ($\rho = 0,757$; $p < 0,05$), depression and stress ($\rho = 0,726$; $p < 0,05$), and anxiety and stress ($\rho = 0,811$; $p < 0,05$). Additionally, a statistically significant association was found between anxiety and students' age, as well as between stress and gender ($p < 0,05$).

Conclusions: it was concluded that students from two universities providing educational services in the city of Puerto Maldonado, Peru, presented symptoms of depression, anxiety, and stress. Therefore, it is suggested that universities implement early detection programs and psychological support services to address students' mental health issues.

Keywords: Mental Health; Depression; Anxiety; Psychological Stress; Psychological Well-Being.

RESUMEN

Introducción: la salud mental de los estudiantes universitarios es un tema de creciente preocupación a nivel mundial, ya que estos jóvenes enfrentan una serie de desafíos emocionales y psicológicos durante su transición a la vida universitaria. La presión académica, las demandas sociales y la adaptación a un nuevo entorno pueden afectar su bienestar mental.

Objetivo: evaluar la depresión, ansiedad y estrés en los estudiantes de dos universidades que brindan el

servicio educativo en la ciudad de Puerto Maldonado (Perú).

Métodos: estudio cuantitativo, diseño no experimental y tipo analítico. La muestra fue conformada por 307 estudiantes universitarios de ambos sexos a quienes se les aplicó la Escala de Depresión, Ansiedad y Estrés, un instrumento con adecuadas propiedades psicométricas.

Resultados: el 42,7 % de los estudiantes mostraron síntomas de depresión, el 52,4 % experimentaron ansiedad y el 28,7 % padecieron estrés. También se reportaron correlaciones altas, directas y significativas entre la depresión y la ansiedad ($\rho = 0,757$; $p < 0,05$), entre la depresión y el estrés ($\rho = 0,726$; $p < 0,05$) y entre la ansiedad y el estrés ($\rho = 0,811$; $p < 0,05$). Además, se encontró una asociación estadísticamente significativa entre la ansiedad y la edad de los estudiantes, así como entre el estrés y el sexo ($p < 0,05$).

Conclusiones: se concluyó que los estudiantes de dos universidades que brindan el servicio educativo la ciudad de Puerto Maldonado (Perú) presentaron síntomas de depresión, ansiedad y estrés. Por ello, se sugiere que las universidades implementen programas de detección temprana y servicios de apoyo psicológico para abordar los problemas de salud mental de los estudiantes.

Palabras clave: Salud Mental; Depresión; Ansiedad; Estrés Psicológico; Bienestar Psicológico.

INTRODUCTION

The transition to college marks a social and academic change that can have a significant impact on mental health. This period involves facing new academic demands, learning challenges, professional development, and self-care.⁽¹⁾ In addition, it is during this time when life projects are defined, which entails assuming new social and academic responsibilities, which can increase pressures and vulnerability, increasing the risk of experiencing high levels of depression, anxiety, and stress.⁽²⁾ Added to this is the fact that university life coincides with the transition from adolescence to adulthood, where previous experiences play a crucial role in the individual's ability to adapt to change.⁽³⁾ Also, students at this stage tend to experience their emotions and feelings with greater intensity, which makes them more susceptible from a mental health point of view.⁽⁴⁾ Moreover, facing new environments different from those they are used to can pose an additional challenge for students in their adaptation process.⁽⁵⁾

Then, it is crucial to recognize the importance of assessing depression, anxiety, and stress, as these factors can both trigger and mitigate their occurrence, having a significant impact on students' health.⁽⁶⁾ The presence of mental health problems, especially when students lack the necessary coping skills, can cause limitations in their academic performance.⁽⁷⁾

Depression is characterized by a series of predominant emotional symptoms, including sadness, apathy, hopelessness, despondency, melancholy, or a sense of helplessness in the face of life's demands.⁽⁸⁾ It is also manifested by a decrease in pleasure and loss of interest in previously enjoyed activities.⁽⁹⁾ Other common symptoms are loss of confidence and self-esteem, irrational feelings of guilt, thoughts of death and suicide, difficulty concentrating, as well as problems with sleep and eating.⁽¹⁰⁾ Major depressive disorder involves an intense disturbance in the ability to work, sleep, study, interact, and enjoy pleasurable activities. In contrast, dysthymic disorder is similar but less severe and of longer duration.⁽¹¹⁾

For its part, anxiety is an emotional state that predisposes people to face adverse life circumstances, making them vulnerable to emotionally destabilizing situations, such as academic overload,⁽¹²⁾ work situations, lack of economic resources, and personal responsibilities.⁽¹³⁾ This can generate significant life changes, such as worry, fear, or excessive fears, as well as tension or activation that cause discomfort,⁽¹⁴⁾ especially in the face of the threat of failure or learning assessment, which are not always identified or addressed by professionals.⁽¹⁵⁾ These feelings can trigger an adverse emotional and behavioral reaction that affects the individual's motor and intellectual functioning as part of their symptomatology.⁽¹³⁾ In addition, women are more likely to suffer from anxiety disorders and, therefore, to experience mental health impairments.⁽⁴⁾

Regarding stress, it can provide students with a sense of competence and motivation that drives learning; however, it can sometimes generate feelings of anxiety and helplessness, resulting in difficulties that affect development in academic settings.⁽¹⁶⁾ Therefore, it is considered an increasingly common emotional reaction, influenced by a variety of factors, and college students may experience it without realizing it.⁽¹⁵⁾

Stress can affect the emotional state, physical health and interpersonal relationships, and its impact may vary according to each individual.⁽¹⁶⁾ This phenomenon affects the functioning of the whole body, manifesting itself through common symptoms such as depression, anxiety, headaches, insomnia, nervousness, and tachycardia.⁽¹⁷⁾ It arises when the demand is perceived to exceed the individual's resources and can originate in various circumstances and contexts, with the university environment being a challenging scenario for students exposed to specific stressful situations and stimuli.⁽¹⁸⁾ The university experience can entail new and more significant responsibilities for students, confronting them with stressors such as uncertainty about career choice, family

separation, and difficulties in establishing effective relationships.⁽¹⁰⁾ It is essential to highlight that stress constitutes a risk factor for symptoms of anxiety and depression associated with academic performance and can affect a person's emotional state, physical health, and interpersonal relationships.⁽¹⁹⁾

Research has identified the presence of depression, anxiety, and stress in university students. For example, in Cuba,⁽²⁰⁾ the mental health of Stomatology students was evaluated, finding severe levels of depression, anxiety, and stress. In Peru,⁽²¹⁾ the presence of SAD was also investigated, revealing that students presented various disorders such as depression, anxiety, and somatization. In another research conducted in Peru,⁽²²⁾ they determined that students showed low levels of depression and anxiety. However, they presented moderate levels of stress. In addition, it was determined that depression, anxiety, and stress were significantly associated with some sociodemographic factors such as gender and age group.

The present research addresses the mental health of university students, an increasingly relevant topic in the academic and social sphere. The transition to university life can affect emotional well-being and academic performance due to challenges and pressures. However, there is a lack of specific studies on depression, anxiety, and stress in university students in the Peruvian Amazon. Understanding the mental health of students is crucial to developing adequate support and prevention strategies. The vulnerability of university students to mental health problems has been highlighted in previous research, which may have long-term consequences on their well-being and personal development.

Finally, the present research aimed to evaluate depression, anxiety, and stress in students of two universities that provide educational services in the city of Puerto Maldonado (Peru).

METHODS

The research adopted a quantitative approach, which focused on numerical measurement and the use of statistics to determine the behavioral patterns of the participants. In terms of design, a non-experimental approach was employed since the variables of depression, anxiety, and stress were not deliberately manipulated but observed. In terms of type, it was a cross-sectional analytical study, given that the characteristics of the variables were analyzed at a single point in time and data were collected on a single occasion.⁽²³⁾

The research was carried out in two universities that offer educational services in the city of Puerto Maldonado (Peru): the Universidad Nacional Amazónica de Madre de Dios (UNAMAD) and the Universidad Andina del Cusco - Filial Puerto Maldonado (UAC). The study population included 1520 students enrolled in both universities. On the other hand, the sample consisted of 307 students, a number determined by probability sampling with a confidence level of 95 % and a significance level of 5 %.

For data collection, a survey structured in two sections was used. In the first part, participants were asked for sociodemographic information (gender, age, university, and socioeconomic status). In the second part, the Depression, Anxiety, and Stress Scale (DASS-21) were applied.⁽²⁴⁾ This scale consists of 21 items evaluated quantitatively by means of a 4-point Likert scale, ranging from 0 (has not happened to me) to 3 (has happened to me a lot), distributed in three dimensions: depression (items 1 to 7), anxiety (items 8 to 14) and stress (items 15 to 21). Previous research conducted in Peru⁽²⁵⁾ determined that the scale had adequate psychometric properties (Aiken's $V = 0,801$; $\alpha = 0,838$).

Data collection was carried out virtually after obtaining permission from the corresponding university authorities. Subsequently, through the WhatsApp messaging application, students were invited to participate and sent the survey link. The messages were sent to all WhatsApp groups of the courses in which they are enrolled. This procedure aimed to achieve as much student participation as possible. The objective of the research was explained to them, and instructions were provided so that they could develop the items. This procedure lasted approximately 15 minutes, and after corroborating the participation of the 307 students, access to the instrument was disabled.

The data analysis was performed at a descriptive and inferential level. For the descriptive analysis, a figure obtained with SPSS V.25 software was used. Subsequently, an inferential analysis was performed using Spearman's rho correlation coefficient to determine whether there were significant relationships between the study variables. In addition, the Chi-Square test (X^2) was used to examine whether depression, anxiety, and stress were significantly associated with the proposed sociodemographic and academic variables. Statistically significant results were considered when the p-value was less than 0,05.

In accordance with the ethical principles established in the Declaration of Helsinki, this research was conducted with strict adherence to ethical standards. Informed consent was obtained from all participating students, who were fully informed about the purpose and procedures of the research. The confidentiality of the data collected was guaranteed, and the welfare of the participants was protected at all times.

RESULTS

Table 1 shows the characterization of the sample. Of the total number of participants, 53,4 % were women and 46,6 % were men. Regarding age, 44 % were between 17 and 19 years old, 24,1 % between 20 and 22 years

old, 20,5 % between 23 and 25 years old and 11,4 % over 25 years old. Regarding the university of origin, 57,7 % studied at UNAMAD and 42,3 % at UAC. Regarding economic status, 63,2 % were dependent, while 36,8 % were dependent on their family.

Table 1. Characterization of the sample in terms of sociodemographic variables			
Variables		n= 307	%
Gender	Male	143	46,6
	Female	164	53,4
Age	Between 17 and 19 years old	135	44,0
	Between 20 and 22 years old	74	24,1
	Between 23 and 25 years old	63	20,5
	More than 25 years old	35	11,4
University	UNAMAD	177	57,7
	UAC	130	42,3
Economic status	Dependent	194	63,2
	Independent	113	36,8

Figure 1 shows the percentages of students according to the level of symptoms of depression, anxiety, and stress. Regarding depression, 57,3 % of the students showed no symptoms, while 21,2 % presented a moderate level, 10,7 % a mild level, 7,2 % an extremely severe level, and 3,6 % a severe level. Regarding anxiety, 47,6 % of the students had no symptoms, followed by 17,6 % with a moderate level. In addition, 14,3 % experienced an extremely severe level, 13,7 % a mild level, and 6,8 % a severe level. In relation to stress, 71,3 % of the students showed no symptoms; in contrast, 10,1 % experienced a severe level, 9,4 % a mild level, 7,8 % a moderate level, and 1,3 % an extremely severe level.

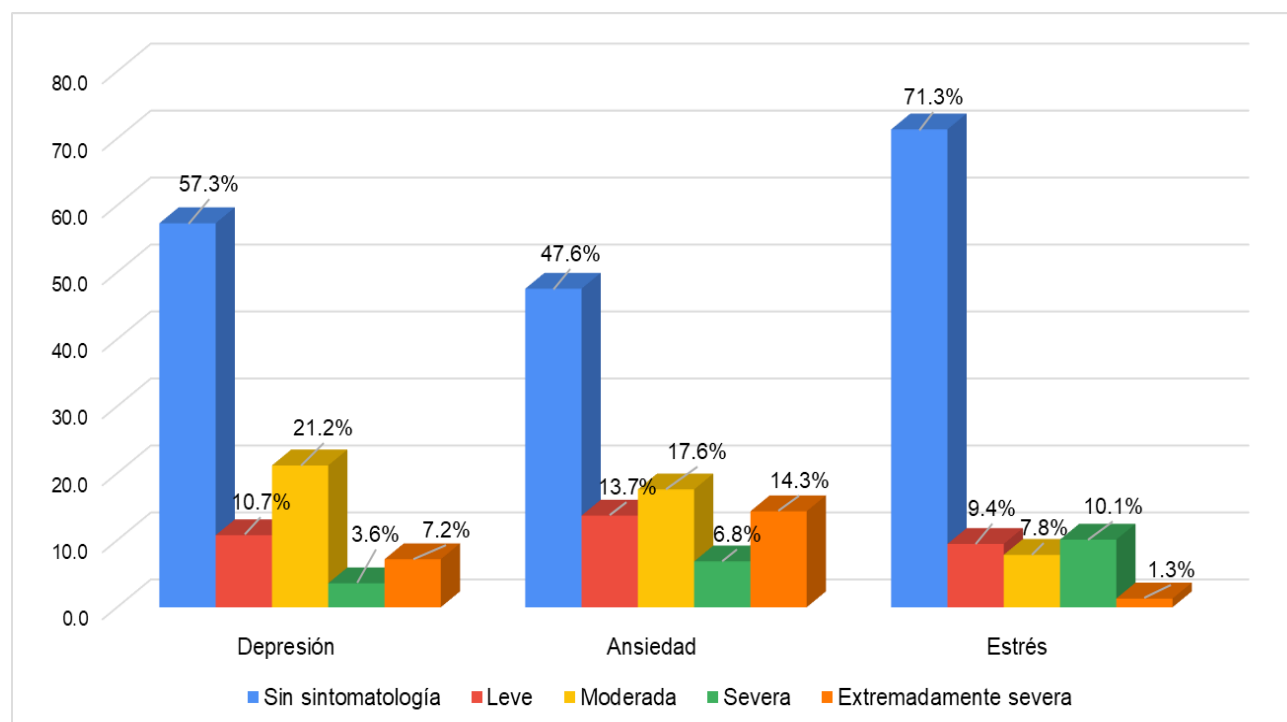


Figure 1. Distribution of percentages of the variables depression, anxiety and stress

Source: Surveys.

Table 2 reveals a direct and significant correlation ($p < 0,05$) between the variables depression, anxiety, and stress. Spearman's Rho correlation coefficients show that depression was positively correlated with anxiety ($\rho = 0,757$) and with stress ($\rho = 0,726$), while anxiety was also positively correlated with stress ($\rho = 0,811$).

Table 2. Correlation between depression, anxiety and stress			
Variables	Depression	Anxiety	Stress
Depression	1	-	-
Anxiety	0,757**	1	-
Stress	0,726**	0,811**	1
** p<0,01			

Table 3 shows that no sociodemographic or academic variable was significantly associated with the students' levels of depression ($p>0,05$). This could indicate that aspects such as gender, age, university of origin, or economic status did not have a significant impact on the levels of depression observed in the sample studied.

Table 3. Association between depression and sociodemographic and academic variables							
Variables		Depression					P-value
		SS	L	M	S	ES	
Gender	Male	77 (53,8 %)	18 (12,6 %)	35 (24,5 %)	5 (3,5 %)	8 (5,6 %)	p>0,05
	Female	99 (60,4 %)	15 (9,1 %)	30 (18,3 %)	6 (3,7 %)	14 (8,5 %)	
Age	Between 17 and 19 years old	77 (57,0 %)	15 (11,1 %)	30 (22,2 %)	5 (3,7 %)	8 (5,9 %)	p>0,05
	Between 20 and 22 years old	42 (56,7 %)	8 (10,8 %)	16 (21,6 %)	3 (4,1 %)	5 (6,8 %)	
	Between 23 and 25 years old	36 (57,1 %)	7 (11,1 %)	14 (22,2 %)	2 (3,2 %)	4 (6,4 %)	
	More than 25 years old	21 (60,0 %)	3 (8,6 %)	5 (14,3 %)	1 (2,9 %)	5 (14,3 %)	
University	UNAMAD	95 (53,7 %)	20 (11,3 %)	40 (22,6 %)	6 (3,4 %)	16 (9,0 %)	p>0,05
	UAC	81 (62,3 %)	13 (10,0 %)	25 (19,2 %)	5 (3,9 %)	6 (4,6 %)	
Economic status	Dependent	105 (54,1 %)	22 (11,3 %)	43 (22,2 %)	7 (3,6 %)	17 (8,8 %)	p>0,05
	Independent	71 (62,8 %)	11 (9,7 %)	22 (19,5 %)	4 (3,5 %)	5 (4,4 %)	
Note: SS= No symptoms; L= Mild; M=Moderate; S= Severe; ES= Extremely severe.							
Source: Surveys.							

Table 4 shows that age was the only sociodemographic variable that was significantly associated with students' anxiety levels ($p<0,05$). In that sense, it was observed that younger students experienced higher anxiety levels compared to their older counterparts.

Table 4. Association between anxiety and sociodemographic and academic variables							
Variables		Anxiety					P-value
		SS	L	M	S	ES	
Sex	Male	69 (48,3 %)	19 (13,3 %)	25 (17,5 %)	9 (6,3 %)	21 (14,7 %)	p>0,05
	Female	77 (47,0 %)	23 (14,0 %)	29 (17,7 %)	12 (7,3 %)	23 (14,0 %)	
Age	Between 17 and 19 years old	66 (48,9 %)	18 (13,3 %)	22 (16,3 %)	9 (6,7 %)	20 (14,8 %)	p<0,05
	Between 20 and 22 years old	35 (47,3 %)	9 (12,2 %)	13 (17,6 %)	5 (6,8 %)	12 (16,2 %)	
	Between 23 and 25 years old	30 (47,6 %)	8 (12,7 %)	10 (15,9 %)	4 (6,3 %)	11 (17,5 %)	
	More than 25 years old	15 (42,9 %)	7 (20,0 %)	9 (25,7 %)	3 (8,6 %)	1 (2,9 %)	
University	UNAMAD	86 (48,6 %)	23 (13,0 %)	31 (17,5 %)	12 (6,8 %)	25 (14,1 %)	p>0,05
	UAC	60 (46,2 %)	19 (14,6 %)	23 (17,7 %)	9 (6,9 %)	19 (14,6 %)	
Economic condition	Dependent	95 (49,0 %)	28 (14,4 %)	35 (18,0 %)	14 (7,2 %)	22 (11,4 %)	p>0,05
	Independent	51 (45,1 %)	14 (12,4 %)	19 (16,8 %)	7 (6,2 %)	22 (19,5 %)	
Note: SS= No symptoms; L= Mild; M=Moderate; S= Severe; ES= Extremely severe.							
Source: Surveys.							

Table 5 shows that sex was the only sociodemographic variable that was significantly associated with stress levels ($p<0,05$). In that sense, it was observed that women experienced higher stress levels than men.

Table 5. Association between stress and sociodemographic and academic variables

Variables		Estrés					P-valor
		SS	L	M	S	ES	
Sex	Male	111 (77,6 %)	15 (10,5 %)	5 (3,5 %)	11 (7,7 %)	1 (0,7 %)	p<0,05
	Female	108 (65,9 %)	14 (8,5 %)	19 (11,6 %)	20 (12,2 %)	3 (1,8 %)	
Age	Between 17 and 19 years old	100 (74,1 %)	11 (8,1 %)	7 (5,2 %)	15 (11,1 %)	2 (1,5 %)	p>0,05
	Between 20 and 22 years old	55 (74,3 %)	7 (9,5 %)	2 (2,7 %)	9 (12,2 %)	1 (1,4 %)	
	Between 23 and 25 years old	41 (65,1 %)	7 (11,1 %)	9 (14,3 %)	5 (7,9 %)	1 (1,6 %)	
	More than 25 years old	23 (65,7 %)	4 (11,4 %)	6 (17,1 %)	2 (5,7 %)	0 (0,0 %)	
University	UNAMAD	128 (72,3 %)	16 (9,0 %)	14 (7,9 %)	17 (9,6 %)	2 (1,1 %)	p>0,05
	UAC	91 (70,0 %)	13 (10,0 %)	10 (7,7 %)	14 (10,8 %)	2 (1,5 %)	
Economic condition	Dependent	143 (73,7 %)	16 (8,3 %)	14 (7,2 %)	18 (9,3 %)	3 (1,5 %)	p>0,05
	Independent	76 (67,3 %)	13 (11,5 %)	10 (8,8 %)	13 (11,5 %)	1 (0,9 %)	

Note: SS= No symptoms; L= Mild; M=Moderate; S= Severe; ES= Extremely severe.

Source: Surveys.

DISCUSSION

Mental health is now considered an essential component of people's overall well-being and quality of life. It is recognized as a fundamental aspect of health as a whole since it is not limited only to the absence of mental disorders but also encompasses emotional balance, the ability to cope with life's challenges, and the development of skills to manage stress and difficulties. In this sense, the present research focused on evaluating depression, anxiety, and stress in students of two universities that provide educational services in the city of Puerto Maldonado (Peru).

When assessing depression, it was found that 57,3 % of the students did not present symptoms of depression; however, 42,7 % showed symptoms associated with this mental health problem. This suggests that, although more than half of the students did not show evident symptoms of depression, almost half of the student population evaluated presented symptoms related to this disorder. This result is congruent with that reported in Argentina,⁽²⁶⁾ in which university students were found to have low levels of depression in the context of face-to-face education. Furthermore, it is related to what was also reported in Argentina,⁽¹⁾ where they found that there were low levels of depression among university students.

Regarding anxiety, it was found that 47,6 % of the students had no symptoms; however, 52,4 % experienced anxiety symptoms. This indicates that, although a significant group of students did not manifest symptoms of anxiety, the majority did experience some degree of discomfort related to this disorder. The above results coincide with the findings of a study conducted in Spain,⁽²⁷⁾ where they determined that the prevalence of anxiety was 23,6 %. Similarly, it is related to research conducted in Peru,⁽²⁸⁾ where it was found that 63,7 % of the total number of students did not report symptoms associated with anxiety, and 36,3 % did present symptoms of anxiety.

In relation to stress, it was identified that 71,3 % of the students did not show symptoms, while 28,7 % did show symptoms related to this condition. The presence of cognitive, emotional, and physiological reactions could affect the emotional state of university students. These results coincide with those reported in a study conducted in Mexico,⁽²⁹⁾ where it was determined that the stress level of the students during the post-pandemic period was considerable. Similarly, in Bolivia,⁽³⁰⁾ they evaluated the emotional situation of university students at the end of the pandemic and also found a predominance of moderate levels of stress.

An interesting finding reveals a direct and significant relationship between depression, anxiety, and stress. Similarly, anxiety was also found to be directly and significantly related to stress. These results are consistent with those reported in Malaysia,⁽³¹⁾ where researchers evaluated the mental health of university students and found that the three variables were directly and significantly related. Also, two studies conducted in Peru^(22,32) analyzed the emotional state of university students and found that there was a direct and significant relationship between depression, anxiety, and stress.

When associating mental health with sociodemographic and academic variables, it was found that younger students showed higher levels of anxiety compared to adult students. This phenomenon could be attributed to the fact that many young students are adapting to the transition from primary to higher education and the continuous academic demands generated in this context.⁽³³⁾ On the other hand, adult students may have developed, either formally or informally, some strategies to cope with the difficulties inherent to university education, which are the primary sources of anxiety. Similar results were obtained in some research^(34,35,36) where they determined that age was a factor determining the level of anxiety.

Another finding shows that women experienced higher levels of stress than men. This finding could be explained from two perspectives. On the one hand, there is a tendency among women to externalize emotional and physiological manifestations in stressful contexts, which may influence the occurrence of higher levels of stress compared to men.⁽³⁷⁾ On the other hand, in addition to their academic responsibilities, women often assume a disproportionate burden of additional tasks at home, including family responsibilities, childcare, and other domestic activities, which increases their mental and emotional burden.⁽³⁸⁾

Mental health problems related to emotional states, such as depression, anxiety, and stress, are common during youth, coinciding with the college period.⁽³⁹⁾ However, students often lack support to address these conditions.⁽⁴⁰⁾ These problems are associated with a higher incidence of medium- and long-term physical and emotional problems, marginalization from the labor market, sleep disorders, and dysfunctional relationships, among other challenges.⁽⁴¹⁾ Therefore, it is crucial to promote timely screening and treatment campaigns that help students overcome the various stressors they face during their professional training and in daily life.⁽⁴²⁾

This research has some limitations that may affect the interpretation of the results. The sample was small and geographically specific, which limits the generalizability of the findings. In addition, the use of self-administered questionnaires could have introduced social desirability biases. For future research, it is recommended to use more extensive and more diversified samples and to complement quantitative data with qualitative methods for a deeper understanding.

CONCLUSIONS

In the university environment, students face a series of academic, social, and emotional demands that can generate mental health problems, such as depression, anxiety, and stress, due to pressure for academic performance, competition among peers, and adaptation to new responsibilities.

The results of the present investigation confirm these concerns by finding that students from two universities that provide educational services in the city of Puerto Maldonado (Peru) presented symptoms of depression, anxiety, and stress. These mental health problems usually manifest themselves in various forms, such as feelings of persistent sadness, excessive worry, nervousness, irritability, and difficulty concentrating, among others. They can have a significant impact on their emotional well-being and academic performance. Similarly, the three variables were found to be directly and significantly related. Finally, it was found that some socio-demographic variables, such as the age and gender of the students, were associated with anxiety and stress levels, respectively.

Therefore, university authorities must implement concrete measures, such as early detection programs and psychological support services, to provide the necessary support in dealing with these problems. In addition, awareness of the importance of mental health should be actively promoted throughout the university community. These actions will not only benefit students in their personal development but will also contribute to creating a healthier educational environment conducive to learning and personal and academic growth.

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FINANCING

The authors received no funding for the development of this research.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

conceptualization: Jimmy Nelson Paricahua-Peralta, Edwin Gustavo Estrada-Araoz.

Data curation: Jimmy Nelson Paricahua-Peralta, Edwin Gustavo Estrada-Araoz.

Formal analysis: Edwin Gustavo Estrada-Araoz, Percy Amilcar Zevallos-Pollito.

Acquisition of funds: Percy Amilcar Zevallos-Pollito, Libertad Velasquez-Giersch.

Research: Jimmy Nelson Paricahua-Peralta, Libertad Velasquez-Giersch.

Methodology: Percy Amilcar Zevallos-Pollito, Libertad Velasquez-Giersch.

Project administration: Jimmy Nelson Paricahua-Peralta, Alhi Jordan Herrera-Osorio.

Resources: Percy Amilcar Zevallos-Pollito Lesy Berly León-Hancco.

Software: Edwin Gustavo Estrada-Araoz, Lesy Berly León-Hancco.

Supervision: Edwin Gustavo Estrada-Araoz, Dany Dorian Isuiza-Perez.

Validation: Basilide Avilés-Puma, Percy Amilcar Zevallos-Pollito.

Visualization: Basilide Avilés-Puma, Dany Dorian Isuiza-Perez.

Writing - original draft: Jimmy Nelson Paricahua-Peralta, Cesar Elias Roque-Guizada.

Writing - proofreading and editing: Edwin Gustavo Estrada-Araoz, Cesar Elias Roque-Guizada.