




Anxiety, depression and physical activity in university students from the Peruvian jungle during the Covid-19 pandemic

Ansiedad, depresión y actividad física en estudiantes universitarios de la selva peruana durante la pandemia por Covid-19

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Abstract

Introduction: During the Covid-19 pandemic, university students go through stressful situations that lead to adaptive reactions that generate anxiety and depression; on the other hand, the regular practice of physical activity seems to be related to beneficial effects that influence the reduction of negative emotions. **Objective:** The objective of this research was to determine the relationship between anxiety, depression and physical activity in university students in the Peruvian jungle during the Covid-19 pandemic. **Materials and methods:** This is a cross-sectional, non-experimental and correlational study. With a sample of 321 students of both sexes, selected by non-probabilistic sampling; a virtual survey was applied using the GAD-7 and HPQ-9 to assess the levels of anxiety and depression; and the International Physical Activity Questionnaire (IPAQ) to explore levels of physical activity. Data collection was carried out from September 20 to October 22, 2021. **Results:** The results showed significant inverse correlations between physical activity and anxiety and depression ($Rho = -0.172, p=0.00$), ($Rho = -0.217, p=0.00$). **Conclusion:** The greater the practice of physical activities, the lower the anxiety and depression in students from the Peruvian jungle, which suggests that the practice of physical activity in university students should be promoted.

Keywords: physical activity, anxiety, depression, college students.

Resumen

Introducción: Durante la pandemia por Covid-19, el estudiante universitario atraviesa situaciones estresantes que conducen a reacciones adaptativas generadoras de ansiedad y depresión; por otro lado, la práctica regular de actividad física parece relacionarse con efectos beneficiosos que influyen en la reducción de emociones negativas. **Objetivos:** El objetivo de la presente investigación fue determinar la relación entre ansiedad, depresión y actividad física en estudiantes universitarios de la selva peruana durante la pandemia por Covid-19. **Materiales y métodos:** Se trata de un estudio transversal, no experimental y correlacional. Con una muestra de 321 estudiantes de ambos sexos, seleccionados por muestreo no probabilístico; se aplicaron una encuesta virtual utilizando el GAD-7 y HPQ-9 para evaluar los niveles de ansiedad y depresión; y el Cuestionario Internacional de Actividad Física (IPAQ) para explorar los niveles de actividad física. La recolección de datos se realizó del 20 de setiembre al 22 de octubre de 2021. **Resultados:** Los resultados mostraron correlaciones significativas de forma inversa entre la actividad física con la ansiedad y depresión ($Rho = -0.172, p=0.00$), ($Rho = -0.217, p=0.00$). **Conclusión:** A mayor práctica de las actividades físicas menor será la ansiedad y depresión en estudiantes de la selva peruana, lo que sugiere que la práctica de actividad física en universitarios debe ser promovida.

Palabras Clave: actividad física, ansiedad, depresión, estudiantes universitarios.

Introduction

The majority of young university students live daily stressful situations that lead to adaptive reactions¹ due to the academic overload brought about by the demands of university education², and the preoccupation to obtain good academic results³, especially in the difficult courses that cause them problems to understand the academic content⁴. In the face of these difficulties, many students do not have time to eat well and rest adequately⁵, to this is added the economic problems⁶. Most of them have left home and are far from their families⁷.

These factors can affect mental health and trigger risky behaviors such as anxiety and depression⁸. Which generally alters the quality of life of the university student⁹, mainly affecting academic performance¹⁰, so many students, in these situations, adopt avoidant behaviors such as procrastination, and academic burnout¹¹, and academic burnout¹². The consequences go much further, facing the pressures and feeling unable to adapt to the demands, they may adopt suicidal behaviors or suicidal ideation and in the worst cases, they may even become suicidal¹³, and in the worst case, they may even commit suicide¹⁴, the same that in 2019 was the fourth cause of death of young people in the world between 15 and 29 years old¹⁵.

Consequently, many studies affirm that physical activity generates an important release of endorphins that help reduce negative emotions such as anxiety and depression¹⁶, as shown by research conducted in Spain, from 2011 to 2018 analyzing 9862 university students the results show that 22.7% of respondents perform intense physical activity and 19.5% moderate physical activity regularly, more frequent in males. The risk of suffering an anxious-depressive disorder is lower in students who perform at least 3 days than in those who do less than 3 days a week. The (83.8%) of the participants who consider that they have a good or very good state of health are those who perform intense physical activity, and this percentage decreases according to the intensity of the exercise they perform¹⁷.

Similarly in 2019, a study was conducted in Spain, with 1055 students from the University of Zaragoza, to analyze the relationship between dietary diet, physical activity habits and quantify their association with anxiety, stress and depression; the results show that students presented prevalence of unhealthy eating (82.3%), to a greater extent in women (84.8%) vs (76.4%) males; unhealthy eating was significantly related to anxiety, depression and stress; furthermore, it can be seen that unhealthy eating patterns are common in the university population as well as low physical activity habits and are related to the presence of anxiety, stress and depression⁷.

Although the existing studies in other populations such as patients with arterial hypertension¹⁸, primary school students¹⁹, older adults¹⁶, have shown that physical activity has a positive influence on the reduction of negative emotions, the subject has not been widely investigated here in Peru and even more so in the San Martin región^{19, 20}. the subject has not been widely investigated here in Peru and even more so in the San Martin region.

Likewise, the current social situation due to Covid 19 has affected all spheres of social functioning²¹. The practice of physical activity has greatly decreased, increasing sedentary lifestyles in all social spheres²². Therefore, the approach of the present research will show results that will serve as proposals regarding the management of anxiety and depression in university students, which will be very useful for future research.

Due to the problems already raised, the present investigation aimed to determine the relationship between physical activity with anxiety and depression in university students from the Peruvian jungle during the Covid-19 pandemic.

Methodology

Design of research

The present research study is a cross-sectional correlational study because it sought to find the relationship between physical activity and anxiety-depression in university students from the Peruvian jungle²³

Participants

The sample consisted of 321 students of both sexes from a private university in the Peruvian jungle, whose ages ranged from 16 to 40 years old, students from all the faculties of the selected university. A non-probabilistic convenience sampling was used. People who were not currently studying were excluded.

Procedures

Initially, authorization was requested from the university authorities to carry out the research work; once obtained, the dates were planned so that the data collection was carried out from September to November 2021.

For this purpose, the virtual survey was used through Google forms, and the link was shared with teachers and class presidents to be shared in the students' WhatsApp groups. Said form initially presented the informed consent, where they were provided with the detailed information of the study, as well as their rights as a participant in the study; only those who agreed to participate in the study could answer the survey. The study ended when there were no more students to present the survey to.

Variables

To evaluate physical activity, the International Physical Activity Questionnaire (IPAQ) has been used and Cronbach's Alpha ($\alpha = 0.786$) was estimated showing good reliability levels; the IPAQ was created in Spain by²⁴. This instrument has already been used in Peru in several investigations: in adolescents in Callao, Peru, and in university students in Tarapoto, Peru²⁵ In university students in Tarapoto - San Martin²⁶

The IPAQ classifies the type of physical activity into three categories: vigorous, moderate and light. At the end, the total

time of physical activity practice of the last 7 days is added up. Vigorous activity is multiplied by 8 METs, moderate activity by 4 METs and light activity by 3.3 METs, obtaining 3 results, these are added to obtain the total physical activity performed by the person during the 7 days. To categorize the results, the total obtained is considered as follows: < 600 = low level, from 600 to 1500 = moderate level and > 1500 = high level and thus place each participant in a weekly physical activity level²⁷

The depression variable was determined through the Patient Health Questionnaire (PHQ-9), of which Cronbach's Alpha ($\alpha = 0.875$) was estimated and showed high levels of reliability. The HPQ9 is unidimensional, has 9 questions and classifies participants into 4 levels from 0 to 4 with no depressive symptoms, 5 to 9 minimal or mild depressive symptoms, 10 to 14 mild major depression, 15 to 19 moderate major depression and ≥ 20 severe major depression.

Likewise to evaluate anxiety symptoms was determined through the Generalized Anxiety Disorder Scale (GAD-7) (GAD 7) of which Cronbach's Alpha ($\alpha = 0.898$) was estimated and showed high levels of reliability. The GAD 7 is unidimensional and consists of 7 questions and classifies participants into 3 levels, from 0 to 5 mild, from 6 to 10 moderate and from 11 to 21 severe.

In addition, the following independent variables were collected: gender (male and female), age (in stages: adolescents, youth and adults), study cycle (from I cycle to X cycle) and how long have you been studying virtually and continuously (2 cycles in a row, 3 cycles in a row, more than 3 cycles, stopped studying last cycle, stopped studying 2 cycles, stopped studying during the pandemic, this is my first cycle).

Analysis plan

For data analysis, descriptive and correlation statistical techniques were used at a significance level of $p < .05$. At the univariate level, absolute and relative frequencies were estimated for categorical variables, while measures of central tendency and dispersion were calculated for numerical variables. In addition, the normality test was performed using the Kolmogorov Smirnov statistical assumption, which showed that the data did not follow a normal distribution. At the bivariate level, nonparametric statistics were used to determine the independence of the variables using Spearman's correlation coefficient. All analyses were performed using the IBM Statistical Software IBM Static SPSS.

Ethical Aspects

For the development of the research, permission was requested from the ethics committee of the University selected for our research; for the application of the instruments. The principle of autonomy was considered through informed consent, respecting the free acceptance and consent of the students to participate in a voluntary and informed manner. Complete confidentiality was maintained with respect to the data collected, and the anonymity of the participants' identity was preserved²⁸

Results

A total of 328 young students were approached, of which five did not agree to participate in the study, two were excluded because of missing data, so that data were finally collected from 321 students. The majority of the participants were female 205 (63.9%), were aged between 18 and 26 years 230 (71.7%), were from the second cycle 211 (65.7%) (Table 1).

Table 1. Characteristics of students from the Peruvian jungle.

Variables	n	%
Genre		
Male	116	36.1
Female	205	63.9
Age		
16 to 17 years old	68	21.2
18 to 26 years old	230	71.7
27 to 40 years old	23	7.1
Study cycle		
I cycle	4	1.2
II cycle	211	65.7
IV cycle	53	16.5
VI cycle	2	0.6
VIII cycle	14	4.4
IX cycle	31	9.7
X cycle	6	1.9

With respect to the outcomes of the depression variable, it was found that 176 (54.9%) students reported mild to severe major depression; while 157 (48.9%) reported mild to severe anxiety symptoms and 67 (20.9%) reported low levels of physical activity (Table 2).

Table 2. Anxiety and depression levels in Peruvian jungle students.

Depression	n	%
No symptoms	145	45.2
mild symptoms	111	34.6
Mild major depression	41	12.8
Moderate major depression	16	5.0
Severe major depression	8	2.5
Anxiety		
Slight	164	51.1
Moderate	113	35.2
Severo	44	13.7
Physical activity		
Under	67	20.9
Moderate	66	20.6
High	188	58.6

Regarding the correlation between the variables physical activity and depression: the data show a statistically significant relationship ($p = 0.002$) in an inverse and weak way ($\rho = -0.172^{**}$), as for physical activity and anxiety, there is a statistically significant relationship ($p = 0.000$) in an inverse and low way ($\rho = -0.217^{**}$) (Table 3).

Table 3. Spearman correlation between physical activity and depression and anxiety variables.

	Physical Activity	
	Rho	p
Depression	-0.172**	0.002
Anxiety	-0.217**	0.000

Discussion

Among the most common problems faced by college students are anxiety and depression, which generally alter the quality of life of the college student⁹. On the other hand, some studies have shown that the regular practice of physical activity provides an important release of endorphins, which help to reduce the levels of anxiety and depression¹⁶, that help to reduce the levels of anxiety and depression in the person²⁰. In this sense, the main objective of this research was to determine the relationship between anxiety, depression and physical activity in university students from the Peruvian jungle^{21,22}.

The statistical analysis allowed determining the existence of statistically significant correlations, inversely between physical activity and anxiety, (Rho -0.217, $p=0.000$) and inverse and weak correlation with the depression variable (Rho -0.172, $p=0.000$). Given this, it can be assumed that to the extent that students engage in physical activity, then the lower the levels of anxiety and depression they experience in the fulfillment of tasks and challenges at the university and vice versa^{24,25}.

Anxiety could be considered a normal and healthy emotion, however, it can become a worrying problem when the levels of anxiety are disproportionate and frequent coming to alter the emotional process and the behavior, this can cause physical symptoms and affect the daily life²⁹. Among the students evaluated, 13.7% present severe anxiety and 35.2% present moderate anxiety, i.e. these students feel nervous with fear to the point of not being able to control the worry, they cannot relax and this makes them sometimes get angry easily³⁰. These results are similar, although a little lower, to those reported by the study conducted in Brazil³¹, where it found that 41.1 % of the students reported anxiety symptoms. Likewise, when the levels of depression were evaluated, only 2.5% of the students evidenced the presence of severe symptoms of depression; other study³², conducted in students of 11 Peruvian universities, where it was found that 8.8% reported high levels of depression. It is striking that the percentages of depression are not very high in students, despite the implications of education in times of Covid; this could mean that university students focused their attention and energy to respond to academic demands, which could have contributed to reduce their levels of depression during the quarantine measures³².

Physical activity is a simple and easy strategy that can be used by the person to reduce the disorders produced by anxiety and depression and thus be able to improve their physical and mental wellbeing³³. Among the students evaluated, 58.6% showed a high level of physical activity, it is important to highlight that 66.2% of this group reported not having depressive symptoms and 64.4% showed mild symptoms of anxiety. These results are supported with what was reported in the research conducted in Spain, from 2011 to 2018 which 9862 university students were analyzed, where the (83.8%) of the participants who consider that they have a good or very good state of health are those who perform intense physical activity, and this percentage decreases according to the intensity of the exercise they perform¹⁷.

There is clear evidence of the positive results of physical activity, so it would be interesting for governments and educational institutions to seek methods for promotion and motivation so that the practice of physical exercise becomes a habit and lifestyle for people, and thus achieve better mental health³⁴ and a better perception of stress, anxiety and depression³⁵.

Although the Peruvian government has enacted some laws and implemented some plans and programs to encourage and support the practice of physical activity and sport in the Peruvian population, the following are some of the most important ones^{36,37,38,39}. These actions are still not enough and some of them have shown certain deficiencies such as not having a specific population and a defined characterization of it⁴⁰. Therefore, it is suggested to establish more aggressive laws and programs that involve the construction of sports centers with free access for students, that is, not only to talk about the importance of practicing physical activity, but also to offer them an adequate place to do it.

The study has limitations because due to its nature (cross-sectional design and correlational scope), it was not possible to examine causal relationships. In this sense, it is recommended that in future research, sources of causality or longitudinal studies can be analyzed; likewise, the study considered students from only one university in the city of Tarapoto, so it would be pertinent to conduct studies that include students from other universities to compare results and also to analyze and compare the types of programs used by other universities to promote physical activity in students. Another limitation of the research is the difference in age groups; in this context, it would be advisable for future research to consider the participation of samples from a single age group with similar characteristics.

Conclusion

It is concluded that there is a statistically significant inverse relationship between physical activity and anxiety and depression, i.e. the more physical activity, the less anxiety and depression among university students in the Peruvian jungle. Therefore, it would be advisable to establish programs that allow the promotion, motivation and awareness of the practice of physical activity in the student population. Execute projects for the construction and implementation of sports centers in educational institutions. Give greater importance to the subject of physical activity in educational institutions.

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