Assessment of the predictors of lifestyles in university students from the Peruvian Amazon: a cross-sectional study

Evaluación de los predictores de los estilos de vida de los estudiantes universitarios de la Amazonía peruana: un estudio transversal

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Abstract

Introduction: Currently, lifestyles play a key role in physical and mental health, as they influence people's quality of life, well-being, and performance. In the university setting, factors such as depression, anxiety, and stress may negatively affect lifestyle habits, disrupting their balance and overall well-being.
Objective: To determine whether depression, anxiety, and stress predict the lifestyles of university students in the Peruvian Amazon.
Methodology: A quantitative, non-experimental, predictive, and cross-sectional study was conducted. The sample consist-ed of 652 students selected through probabilistic sampling, who were administered the Depression, Anxiety, and Stress Scale (DASS-21) and the Lifestyle Profile (PEPS-I), both with adequate psychometric proper-ties.
Results: It was found that only depression has a significant predictive effect on lifestyles (β = -0.420, $p < 0.01$), indicating that higher levels of depression are associated with poorer lifestyles. Additionally, the model adequately fit the data ($F = 78.218$, $p < 0.01$), explaining 26.2% of the variability in lifestyles ($R^2 = 0.262$).
Discussion: While some studies support these findings, further research is needed to confirm these results and analyze how depression, anxiety, and stress interact with other factors influencing life-styles.

Keywords

Healthy habits; health and well-being; lifestyles; mental health; physical exercise

Resumen

Introducción: actualmente, los estilos de vida cumplen un rol importante en la salud física y mental, ya que influyen en la calidad de vida, el bienestar y el desempeño de las personas. En el ámbito universitario, factores como la depresión, la ansiedad y el estrés podrían tener un efecto negativo sobre los hábitos de vida, alterando su equilibrio y bienestar general.
Objetivo: determinar si la depresión, ansiedad y estrés predicen los estilos de vida de los estudiantes universitarios de la Amazonía pe-ruana.
Metodología: Se realizó un estudio cuantitativo, no experimental, predictivo y transversal. La muestra estuvo conformada por 652 estudiantes seleccionados mediante un muestreo probabilístico a quienes se les administró la Escala de Depresión, Ansiedad y Estrés (DASS-21) y el Perfil de Estilo de Vida (PEPS-I), instrumentos con adecua-das propiedades psicométricas.
Resultados: Se halló que solo la depresión tiene un efecto predictivo significativo en los estilos de vida (β= -0.420, $p< 0.01$), lo que indica que un mayor nivel de depresión se asocia con peores estilos de vida. Además, el modelo ajustó adecuadamente los datos ($F = 78.218$, $p < 0.01$), explican-do el 26.2% de la variabilidad en los estilos de vida ($R^2 = 0.262$).
Discusión: Si bien algunos estudios respaldan estos hallazgos, se requieren más investigaciones para con-firmar estos resultados y analizar cómo la depresión, ansiedad y estrés interactúan con otros factores en los estilos de vida.
Conclusiones: se determinó que la depresión predice significativamente los estilos de vida de los estudian-tes universitarios de la Amazonía peruana.

Palabras clave

Ejercicio físico; estilos de vida; hábitos saludables; salud mental; salud y bienestar.

Introduction

Currently, university education represents an important stage in the comprehensive development of students, characterized by multiple academic, social, and personal demands (Cassaretto et al., 2021). Facing responsibilities such as completing academic assignments, presentations, and evaluations, participating in extracurricular activities, and adapting to new social dynamics could generate pressure that affects not only academic performance but also overall well-being (Montoya et al., 2021). These demands, combined with the transition to greater independence, directly influence how students organize their time, manage stress, and make health and wellness-related decisions (Silva et al., 2020). As a result, the lifestyles of university students may be profoundly impacted, creating patterns that, if not properly managed, could have negative repercussions in the short, medium, and long term (Paricahua et al., 2024).

The concept of lifestyles has been extensively studied across various disciplines such as psychology, sociology, and public health, due to its direct impact on individuals' well-being and its relationship with behavioral patterns (Brivio et al., 2023). Lifestyles are defined as the set of habits, behaviors, and attitudes that individuals adopt consciously or unconsciously in response to their living conditions, influenced by social, cultural, economic, and personal factors (Veramendi et al., 2020). On the other hand, the World Health Organization (WHO) (1998) defines it as a set of decisions and practices those individuals adopt based on available opportunities, influencing their quality of life and overall health. In the university context, evaluating lifestyles becomes relevant, as this transition and personal autonomy stage is often associated with significant changes in routines and behaviors that can affect both academic performance and physical and mental health (Duche et al., 2020).

Lifestyles are influenced by a variety of determining factors that interact in complex ways (Alothman et al., 2024). At the individual level, characteristics such as age, gender, personality, and health status can be determinants, affecting individuals' preferences and capacities to adopt certain behaviors (Andraus et al., 2023; Martinez et al., 2018). In the social sphere, the influence of family, friends, and social networks is relevant, as they model habits and attitudes toward activities such as diet, exercise, or stress management (Nabors et al., 2024). Additionally, the cultural and technological environment impacts accessibility and opportunities to maintain healthy lifestyles, such as access to nutritious foods or spaces for physical activity (Liu et al., 2023). Likewise, education and socioeconomic level are also determinants, as they condition the knowledge, skills, and resources necessary for making wellness-oriented decisions (Foster et al., 2023; Raghupathi & Raghupathi, 2020).

Currently, social and technological dynamics have significantly transformed the lifestyles of young university students. Constant access to the internet, intensive use of social media, and increasing dependence on digital immediacy influence time organization and the prioritization of daily activities (Kolhar et al., 2021). This reality has led to the relegation of essential habits for well-being, such as physical activity and balanced nutrition, favoring sedentary behavior (Woessner et al., 2021). Consequently, there is an observed increase in the risk of diseases associated with inactivity.

Lifestyles are important in promoting health and well-being, as they represent the set of habits and behaviors that individuals adopt in their daily lives (Rippe, 2018). They directly influence disease prevention, the maintenance of physical and mental balance, and the improvement of quality of life (Farhud, 2015). A healthy lifestyle, which includes practices such as a balanced diet, regular physical activity, stress management, and health responsibility, not only reduces the risk of developing chronic conditions like cardiovascular diseases or diabetes but also strengthens resilience to environmental challenges (Oster & Chaves, 2023). Moreover, healthy lifestyles impact academic, work, and social performance, as they contribute to increased energy, concentration, and emotional stability (Maniaci et al., 2023; Ezzatvar et al., 2021).

University education, characterized by high academic demands and personal challenges, can have a significant impact on students' mental health (Farfán et al., 2023). Research has indicated that this demographic often experiences depression, anxiety, and stress, frequently associated with various stressors such as academic overload, social expectations, and adaptation difficulties (Espinoza & Cárdenas, 2021; Ramón et al., 2020). If these conditions are not adequately addressed, they can negatively influence students' daily habits, affecting key aspects of their lifestyles, such as balanced nutrition, regular physical activity, and adequate rest (Hoying et al., 2020). This scenario highlights the need to understand how

these psychological dimensions can be determinants in shaping healthy or unhealthy lifestyles during this critical stage.

Depression, anxiety, and stress are recognized as indicators of mental health, as they reflect individuals' emotional and psychological well-being (Freitas et al., 2023). These three factors are interrelated and can significantly influence quality of life, academic, work, and social performance, as well as the ability to cope with daily challenges (Sinval et al., 2025; Li et al., 2022). Although each has particular characteristics, their joint or prolonged presence can be a sign of deterioration in emotional balance, underscoring the importance of addressing them comprehensively in prevention, diagnosis, and treatment contexts (Ali & Çerkez, 2020).

Regarding depression, it is considered a mental disorder characterized by a persistent state of sadness, loss of interest or pleasure in daily activities, and a significant alteration in emotional, cognitive, and physical functioning (Agyapong et al., 2023). It is one of the leading causes of disability worldwide, according to the WHO (Zhang et al., 2024), and its diagnosis is based on the presence of symptoms such as fatigue, difficulty concentrating, sleep disturbances, changes in appetite, feelings of guilt or worthlessness, and recurrent thoughts of death (Tolentino & Schmidt, 2018). Contributing factors to its development include imbalances in neurotransmitters, genetic predisposition, stress, past traumas, and adverse social conditions such as isolation or economic problems (Remes et al., 2021).

As for anxiety, it is considered an emotional response characterized by feelings of fear, nervousness, or worry in response to situations perceived as threatening or difficult to control (Abend, 2023). In the context of university students, anxiety is common and can manifest both emotionally and physically, including symptoms such as excessive worry, catastrophic thinking, palpitations, sweating, difficulty sleeping, and muscle tension (Fell et al., 2023). The causes of anxiety in university students may include academic stress, pressure to achieve good results, adaptation to a new environment, time management, and interpersonal relationships (Tan et al., 2023). The consequences of untreated anxiety can be severe, as they affect academic performance, concentration, and the ability to manage daily demands, potentially leading to more complex mental health issues such as depression or generalized anxiety disorder (Sahin & Tuna, 2022). Given that anxiety can hinder students' ability to fully benefit from the university experience, it is essential to address this issue through psychoeducational interventions (Moreno et al., 2020).

Regarding stress, it is considered an important component of mental health (Slimmen et al., 2022). It is defined as a physiological and psychological response to demands perceived as challenging or threatening (Valencia et al., 2023). In the university context, stress is prevalent, as students face multiple academic, social, and personal pressures (Córdova et al., 2023). These demands can impact their well-being, affecting aspects such as sleep quality and interpersonal relationships (Ruiz et al., 2023). Additionally, stress manifests not only through emotional responses but also through physical symptoms, such as headaches, fatigue, and gastrointestinal issues, as well as behavioral changes, such as alterations in eating habits or sleep patterns (Attia et al., 2022). Furthermore, chronic stress at this stage can interfere with academic performance and cognitive development, affecting essential skills such as concentration, decision-making, and problem-solving (Almarzouki, 2024). Therefore, it is necessary to understand the dynamics of stress in university students for the prevention of mental health issues.

There is limited research investigating whether psychological variables such as depression, anxiety, and stress predict the lifestyles adopted by university students (Valentim et al., 2022; Ruiz et al., 2022; Hoying et al., 2020; Whatnall et al., 2020). These studies corroborated that mental health, expressed through indicators of depression, anxiety, and stress, significantly influences students' lifestyles. In particular, it has been observed that high levels of depression and anxiety can lead to unhealthy habits, such as poor diet, lack of exercise, and sleep problems, while stress can exacerbate these issues and contribute to a general decline in well-being.

This research is justified by the need to understand how certain psychological factors like depression, anxiety, and stress predict the lifestyles of university students. University life, characterized by increased responsibilities and significant changes, can have a profound impact on mental health and, consequently, on lifestyles. By determining whether these psychological variables affect their lifestyles, more effective strategies can be implemented to promote overall well-being and prevent related health issues. Furthermore, this study will not only contribute to the existing literature on mental health and

lifestyles in the university context but will also provide data for the design of support programs and educational policies aimed at improving students' quality of life.

Finally, the objective of this research was to determine whether depression, anxiety, and stress predict the lifestyles of university students in the Peruvian Amazon.

Method

The present research adopted a quantitative approach, as it allowed for the collection and analysis of numerical data to describe phenomena related to the lifestyles of university students. Additionally, the design was non-experimental because the variables were not manipulated, but rather observed as they occurred in their natural environment. Similarly, a cross-sectional predictive design was chosen, as the aim was to identify whether psychological variables (depression, anxiety, and stress) can predict lifestyles at a specific moment in time.

Participants

The population consisted of students enrolled in the academic cycle 2024 – II at universities located in the Amazon region of Madre de Dios (Peru). These institutions include the Universidad Nacional Amazónica de Madre de Dios (UNAMAD) and the branches of the Universidad Andina del Cusco (UAC) and the Universidad Nacional de San Antonio Abad del Cusco (UNSAAC). On the other hand, the sample consisted of 652 students, a number determined using a stratified probabilistic sampling method, ensuring adequate representation from each university. For this calculation, a confidence level of 95% and a significance level of 5% were used, which guarantees the accuracy and statistical validity of the results. According to Table 1, the majority of participants were women, aged between 16 and 24 years, from UNAMAD, unemployed, and without a stable partner.

Table 1. Sociodemographic characteristics of the sample

Variables		n= 652	%
Gender	Male	306	46.9
	Female	346	53.1
Age	Aged 16 and 24 years	558	85.6
	Aged over 24 years	94	14.4
University of origin	UNAMAD	382	58.6
	UAC	241	37.0
	UNSAAC	29	4.4
Employment status	Employed	255	39.1
	Unemployed	397	60.9
Marital status	With a stable partner	123	18.9
	Without a stable partner	529	81.1

Instrument

The instruments used for data collection were structured in a Google Forms questionnaire. The first section asked students to provide sociodemographic information, including variables such as gender, age, university of origin, employment status, and marital status. Subsequently, the Depression, Anxiety, and Stress Scale (DASS-21) and the Lifestyle Profile (PEPS-I) were administered.

Depression, Anxiety, and Stress Scale (DASS-21)

This scale provides a comprehensive measure of negative emotional states that affect individuals' psychological well-being. It consists of 21 items that are quantitatively rated on a 4-point Likert scale, where 0 indicates "never" and 3 means "very often." The items are structured into three dimensions: depression, anxiety, and stress, each containing 7 items. The psychometric properties of the scale have been validated in a previous study conducted in Peru (Becerra et al., 2024).

Lifestyle Profile (PEPS-I)

This questionnaire evaluates various aspects of a person's lifestyle, focusing on factors that influence their physical, emotional, and social health. It consists of 48 Likert-type items, with response options ranging from "never" (1) to "routinely" (4). Furthermore, it assesses six dimensions: nutrition (6 items),

exercise (5 items), health responsibility (10 items), stress management (7 items), interpersonal support (7 items), and self-actualization (13 items). A study determined that this instrument possesses adequate psychometric properties (Carranza et al., 2019).

Procedure

Data collection was carried out through a structured and systematic process. First, the necessary authorizations were obtained from the relevant university authorities to conduct the research. Subsequently, students were invited to participate via the WhatsApp messaging platform. The invitation message included a link to the survey, along with an explanation of the study's purpose and detailed instructions for its proper completion. Once the required number of 652 participants was reached, access to the survey was disabled.

Data analysis

Regarding data analysis, it was conducted using SPSS V.25 software. First, descriptive statistics for the study variables were calculated, including mean, standard deviation, kurtosis, and skewness. Then, the Student's t-test for independent samples was used to compare the variables according to sociodemographic characteristics. The effect size was evaluated using Cohen's d coefficient, interpreting values of 0.20, 0.50, and 0.80 as small, medium, and large, respectively (Domínguez, 2018). Subsequently, Pearson's correlation analysis was conducted to determine if there was a statistically significant relationship between the variables, considering a significance level of $p < 0.05$. Finally, multiple linear regression analysis was performed to identify whether depression, anxiety, and stress are significant predictors of lifestyles.

Ethical aspects

This study was conducted in accordance with the principles established in the Helsinki Declaration. Students were provided with clear and detailed information about the study's objective and nature, ensuring that they fully understood its purposes, as well as the potential risks and benefits of their participation. Additionally, informed consent was obtained voluntarily, respecting their autonomy and their right to withdraw at any time. Measures were implemented to protect the privacy and confidentiality of the data, ensuring the anonymity of the participants and secure handling of the collected information.

Results

Table 2 shows the descriptive results of the study variables and dimensions. The means for the variables of depression, anxiety, and stress were 18.35 (SD = 4.858), 16.46 (SD = 5.612), and 18.48 (SD = 5.362), respectively. For the lifestyle variable, the mean was 108.61 (SD = 20.054). It is also noted that the skewness and kurtosis coefficients for the variables and dimensions are within the ±2 interval, suggesting that the data distribution is close to normality (Gravetter & Wallnau, 2014).

Table 2. Descriptive results of the variables and dimensions

Variables and dimensions	N	Minium	Maximum	Mean	Standard Desviation	Skewness	Kurtosis
Depression	652	7	35	18.35	4.858	-0.020	0.194
Anxiety	652	7	35	16.46	5.612	0.207	-0.300
Stress	652	7	35	18.48	5.362	-0.133	-0.066
Lifestyle	652	50	192	108.61	20.054	0.744	1.733
Nutrition	652	6	24	13.83	3.287	0.596	0.539
Exercise	652	5	20	10.06	3.099	0.569	0.399
Health responsibility	652	10	40	18.99	4.833	0.986	1.406
Stress management	652	7	28	14.51	3.459	0.623	1.303
Interpersonal support	652	7	28	16.95	3.421	0.429	0.356
Self-actualization	652	15	52	34.27	6.954	0.325	-0.325

The comparative results in Table 3 indicate that women scored higher than men in depression, anxiety, and stress, with statistically significant differences ($p < 0.05$) and effect sizes ranging from small to moderate. Regarding lifestyles and their dimensions, men scored significantly higher in exercise, health responsibility, and stress management, although with small effect sizes. However, no significant differences were found between both genders in the dimension of interpersonal support ($p > 0.05$).

Table 3. Comparative results for variables and dimensions by gender

Variables and dimensions	Male		Female		t	p	d
	M	SD	M	SD			
Depression	17.74	4.646	18.88	4.983	-3.033	0.003	0.237
Anxiety	15.24	5.213	17.55	5.736	-5.350	0.000	0.422
Stress	17.17	5.249	19.64	5.198	-6.031	0.000	0.473
Lifestyle	111.60	19.810	105.96	19.924	3.618	0.000	0.284
Nutrition	14.15	3.288	13.54	3.265	2.349	0.019	0.186
Exercise	10.78	2.940	9.43	3.103	5.670	0.000	0.447
Health responsibility	19.62	5.049	18.43	4.567	3.160	0.002	0.247
Stress management	15.04	3.571	14.04	3.293	3.714	0.000	0.291
Interpersonal support	17.11	3.316	16.81	3.511	1.126	0.261	0.088
Self-actualization	34.91	7.002	33.71	6.873	2.206	0.028	0.173

The comparative results in Table 4 show that participants aged between 16 and 24 scored significantly higher in depression, anxiety, and stress compared to those older than 24 years ($p < 0.05$), with effect sizes ranging from small to moderate. In contrast, participants older than 24 years obtained significantly higher scores in lifestyle, nutrition, health responsibility, interpersonal support, and self-actualization ($p < 0.05$), although with small effect sizes. No significant differences were found in the dimensions of stress management or exercise ($p > 0.05$).

Table 4. Comparative Results for variables and dimensions by age

Variables and dimensions	Aged 16 and 24 years		Aged over 24 years		t	p	d
	M	SD	M	SD			
Depression	18.63	4.752	16.65	5.153	3.694	0.000	0.400
Anxiety	16.87	5.607	14.03	5.017	4.611	0.000	0.534
Stress	18.82	5.237	16.52	5.694	3.879	0.000	0.421
Lifestyle	107.43	19.315	115.62	22.865	-3.697	0.000	0.387
Nutrition	13.64	3.232	14.91	3.413	-3.500	0.000	0.382
Exercise	9.98	3.045	10.55	3.378	-1.660	0.097	0.177
Health responsibility	18.75	4.697	20.38	5.388	-3.042	0.002	0.322
Stress management	14.44	3.381	14.89	3.892	-1.174	0.241	0.123
Interpersonal support	16.80	3.428	17.89	3.241	-2.894	0.004	0.327
Self-actualization	33.82	6.707	36.98	7.774	-3.719	0.000	0.435

The comparative analysis in Table 5 reveals that students who work obtained significantly higher scores in lifestyle, exercise, health responsibility, and self-actualization compared to those who do not work ($p < 0.05$), although the effect sizes were small. On the other hand, no significant differences were observed in depression, anxiety, stress, nutrition, stress management, and interpersonal support ($p > 0.05$), indicating that employment status did not have a relevant impact on these variables.

Table 5. Comparative results for variables and dimensions by employment status

Variables and dimensions	Employed		Unemployed		t	p	d
	M	SD	M	SD			
Depression	18.00	4.925	18.56	4.808	-1.438	0.151	0.115
Anxiety	16.01	5.637	16.75	5.584	-1.648	0.100	0.132
Stress	18.19	5.911	18.68	4.976	-1.090	0.276	0.090
Lifestyle	111.23	22.717	106.93	17.969	2.552	0.011	0.210
Nutrition	14.07	3.471	13.67	3.158	1.545	0.123	0.121
Exercise	10.42	3.310	9.83	2.937	2.329	0.020	0.189
Health responsibility	19.70	5.512	18.53	4.287	2.862	0.004	0.237
Stress management	14.72	3.914	14.37	3.130	1.193	0.233	0.099
Interpersonal support	17.14	3.589	16.84	3.308	1.096	0.273	0.087
Self-actualization	35.18	7.149	33.69	6.771	2.676	0.008	0.214

The analysis of Table 6 shows that participants with a stable partner obtained significantly higher scores in the dimension of interpersonal support compared to those without a stable partner ($p < 0.05$), with a small to moderate effect size. Additionally, a significant difference was found in the dimension of nutrition ($p < 0.05$), although with a small effect size. No significant differences were observed in depression, anxiety, stress, lifestyle, exercise, health responsibility, stress management, and self-actualization ($p > 0.05$), suggesting that marital status does not have a relevant impact on these variables and dimensions.

Table 6. Comparative results for variables and dimensions by marital status

Variables and dimensions	With stable partner		Without stable partner		t	p	d
	M	SD	M	SD			
Depression	17.59	4.860	18.52	4.846	-1.909	0.057	0.192
Anxiety	15.98	5.588	16.57	5.617	-1.052	0.293	0.105
Stress	18.47	5.304	18.49	5.380	-0.030	0.976	0.004
Lifestyle	111.46	19.393	107.95	20.165	1.749	0.081	0.177
Nutrition	14.38	3.434	13.70	3.241	2.086	0.037	0.204
Exercise	9.86	3.028	10.11	3.116	-0.799	0.425	0.081
Health responsibility	19.72	4.838	18.82	4.820	1.854	0.064	0.186
Stress management	14.63	3.486	14.48	3.456	0.426	0.670	0.043
Interpersonal support	17.88	2.887	16.74	3.502	3.776	0.000	0.355
Self-actualization	34.99	6.493	34.10	7.052	1.276	0.202	0.131

Table 7 presents the Pearson correlation matrix between the study variables and dimensions. It is observed that the lifestyle variable is negatively correlated with depression (r = -0.507), anxiety (r = -0.400), and stress (r = -0.399). Additionally, depression, anxiety, and stress are positively correlated with each other, with the strongest correlations between anxiety and stress (r = 0.784) and stress and depression (r = 0.685).

Table 7. Correlation matrix between variables and dimensions

	DE	AN	ST	LI	NU	EX	HR	SM	IS	SA
DE	1									
AN	0,657**	1								
ST	0,685**	0,784**	1							
LI	-0,507**	-0,400**	-0,399**	1						
NU	-0,332**	-0,298**	-0,306**	0,771**	1					
EX	-0,329**	-0,274**	-0,310**	0,770**	0,588**	1				
HR	-0,327**	-0,229**	-0,260**	0,822**	0,591**	0,710**	1			
SM	-0,388**	-0,239**	-0,274**	0,859**	0,600**	0,680**	0,781**	1		
IS	-0,307**	-0,219**	-0,182**	0,706**	0,417**	0,378**	0,433**	0,561**	1	
SA	-0,589**	-0,505**	-0,460**	0,831**	0,573**	0,479**	0,478**	0,574**	0,598**	1

** p < 0.01

NotE: DE= Depression; AN= Anxiety; ST = Stress; LI = Lifestyle; NU= Nutrition; EX = Exercise; HR = Health responsibility; SM = Stress management; IS = Interpersonal support; SA = Self-actualization

Table 8 shows the results of the multiple linear regression to predict lifestyles based on depression, anxiety, and stress. The results reveal that only depression had a significant predictive effect on lifestyles (β = -0.420, p < 0.01). Although anxiety (β = -0.097) and stress (β = -0.035) also show negative effects, these were not statistically significant (p > 0.05). Finally, it was determined that the model as a whole fit the data adequately (F = 78.218, p < 0.01) and explains 26.2% of the variability in lifestyles (R^2 = 0.262).

Table 8. Predictors of lifestyle

Predictores	B	SD	β	t	p
(Constant)	148,530	2,757		53,879	0,000
Depression	-1,732	0,198	-0,420	-8,761	0,000
Anxiety	-0,348	0,201	-0,097	-1,728	0,084
Stress	-0,131	0,218	-0,035	-0,602	0,547
R^2			0.266		
Adjusted R^2			0.262		
F			78.218 (p<0.01)		

Discussion

Currently, healthy lifestyles are a determining factor for overall well-being, especially in the university context. Physical activity, balanced nutrition, stress management, and social support play a fundamental role not only in promoting health but also in improving academic performance and the quality of life of students. Adopting healthy habits at this stage positively impacts both physical and mental development and contributes to the formation of sustainable behavioral patterns throughout life. In this sense, the present research focused on determining whether depression, anxiety, and stress predict the lifestyles of university students in the Peruvian Amazon.

Preliminarily, it was observed that women exhibited higher levels of depression, anxiety, and stress, which could be attributed to their greater emotional vulnerability, a more intense reactivity to stress due to hormonal and psychosocial factors, and the additional burden of academic and domestic responsibilities (Arilha et al., 2024). Various studies support these findings (Martínez et al., 2023; Rezende & Nihei, 2021; Ramón et al., 2020). It was also found that males scored higher regarding lifestyles compared to females. This could be partly due to men participating more frequently in physical and recreational activities, having less restrictive dietary habits, and reporting lower levels of stress, which may be related to a lower burden of domestic responsibilities and a different perception of self-care. Some studies have reported results consistent with our findings (Saintila et al., 2024; Santana et al., 2023; Alzahrani et al., 2019).

Another finding indicates that younger students, between 16 and 24 years, exhibited higher levels of depression, anxiety, and stress compared to their older peers. This pattern, reported in previous research (Rabanal et al., 2023; Hoang & Nguyen, 2022; Usher & Curran, 2019), could be attributed to greater academic demands, uncertainty about the future, and changes in personal identity characteristic of this stage. In contrast, students over 24 years have developed more effective coping strategies, allowing them to manage these symptoms better (Farfán et al., 2023). Additionally, it was found that students older than 24 years scored higher in lifestyles and dimensions such as nutrition, health responsibility, interpersonal support, and self-actualization. This could be due to greater autonomy, awareness of the importance of healthy habits, and the development of more structured routines, as well as better time and self-care management. In line with these findings, a previous study in Colombia also identified that younger students tended to adopt less healthy lifestyles (Herazo et al., 2020).

It was also determined that students who work obtained higher scores in the lifestyle variable, specifically in the dimensions of exercise, health responsibility, and self-actualization, compared to those who only study. This suggests that the combination of study and work may foster greater discipline, organization, and a sense of responsibility, positively impacting the adoption of healthy habits. Similar findings were reported by Paricahua et al. (2024), who identified that individuals with economic independence exhibited healthier lifestyles, characterized by higher levels of vitality and more frequent physical activity. On the other hand, it was found that students with a stable partner showed higher scores in interpersonal support than those without a stable partner. This indicates that a stable emotional relationship can promote emotional and social support, favoring psychological well-being and the perception of backing during stressful times. This finding was also reported by Gómez et al. (2019).

An interesting finding shows that only depression significantly predicted the lifestyles of students. This means that higher levels of depressive symptoms are associated with less healthy habits, suggesting that lack of energy, demotivation, and negative mood characteristic of depression may influence the reduction of physical activity, inadequate nutrition, and less concern for self-care. Furthermore, this link could be explained by the impact of depression on emotional regulation and decision-making, making it difficult to adopt behaviors beneficial for health. Persistent fatigue and loss of interest in pleasurable activities can reinforce a sedentary and neglectful lifestyle, creating a cycle in which the deterioration of habits contributes to the worsening of depressive symptoms.

Our findings align with those reported by Çelik & Haney (2023), who found that elevated levels of depression are negatively associated with healthy lifestyles. Additionally, their analyses suggest that factors such as spiritual growth may influence the presence of depressive symptoms, indicating a potential predictive relationship between mental health and well-being-related behaviors. Similarly, this is related to the results of Taques et al. (2021), who determined that depressive symptoms predict the adoption of unhealthy lifestyles, characterized by poor nutrition, lack of physical activity, and irregular sleep patterns. Their study demonstrated that students with higher levels of depression were more likely to develop these behaviors, suggesting that mental health directly influences overall well-being. Finally, this is consistent with Estrada et al. (2024), who found that depression predicts enjoyment of physical activity among this sample of Peruvian university students. This finding indicates that depressive symptoms not only affect participation in physical activity but also influence the perception of enjoyment, which directly impacts the quality of the lifestyles adopted by students.

In this regard, there are several theories about depression that explain how this condition can influence lifestyles. Beck's Cognitive Theory of Depression (1967) posits that individuals with depression tend to experience distorted and negative thoughts about themselves, their environment, and their future,

which may lead them to adopt self-destructive behaviors such as physical inactivity and poor diet. This pattern of thoughts and behaviors contributes to a less healthy lifestyle. On the other hand, the Hopelessness Theory by Abramson et al. (1989) proposes that individuals with depression develop a generalized sense of hopelessness, believing they have no control over their situation and that their efforts to improve are futile. This feeling of helplessness can result in lower motivation to care for their health and well-being, translating into more harmful lifestyle habits, such as social isolation and inadequate stress management.

This study's strength lies in its contribution to the study of lifestyles among university students from a comprehensive perspective, analyzing the predictive role of depression, anxiety, and stress—a topic that has been little addressed in the scientific literature. Its strength is based on methodological rigor, supported by the use of validated instruments and precise statistical analysis that allows for identifying how emotional factors predict students' habits. Furthermore, by integrating psychological and behavioral variables, the study provides empirical evidence for formulating intervention strategies aimed at improving well-being and health in the university context.

Finally, it is important to note that this research has some limitations. First, the sample size is relatively homogeneous, which requires caution in generalizing the results. Second, the findings are based solely on self-reported data, which could generate social desirability biases. Therefore, future research should be multicentric and consider a broader and more diverse sample, including students from different universities and sociocultural contexts. Additionally, it would be advisable to employ complementary data collection methods that provide greater objectivity and robustness to the analysis. Furthermore, conducting longitudinal studies would be important to track the sample group over significant periods to analyze whether psychological predictors influence the evolution of lifestyles throughout their time at university. This would allow for determining whether these habits tend to improve or, conversely, deteriorate.

Conclusions

Based on the obtained results, it can be concluded that depression significantly predicts the lifestyles of students. This indicates that students with higher levels of depression adopt habits that adversely impact their physical and emotional health. The lack of energy and motivation characteristic of depression may lead to a reduction in physical activity, an unbalanced diet, and difficulties in stress management. In particular, the decrease in physical exercise is an important factor, as scientific evidence has demonstrated that regular physical activity has a positive effect on mental health, reducing depressive symptoms and promoting greater psychological well-being.

Therefore, it is recommended to address depression not only from a psychological perspective but also by considering strategies that promote physical activity as an essential component in improving student well-being. Implementing intervention programs that encourage regular exercise, along with balanced nutrition and stress management techniques, can be crucial in counteracting the negative effects of depression. Additionally, in the university context, sports and physical education can play a fundamental role in promoting healthy habits, strengthening both mental health and academic performance among students.

Furthermore, it is necessary to design intervention strategies that reinforce healthy habits among university students, considering the impact of the transition from high school to university, especially for younger individuals. In this sense, the formulation of institutional policies that help mitigate the challenges associated with this change is suggested. These policies should promote the implementation of intervention programs that integrate sports, physical education, and mental well-being as key axes for adaptation and academic success among students.

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