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Healthy Colleges: The Role of the Environment in Students' Mental Well-Being

Margoth Luliana Berrío-Quispe[1], Angélica Senepo-Gonzales[2], Antony Paul Espíritu-Martinez[3], José Rolando Bedoya-Ávalos[4], María Curro-Urbano[5], Reina Pérez-Vargas[6], Wilman Xavier Ramírez-Rodríguez[7], Galvarino Casanueva-Yáñez[8]

Abstract

This study, conducted at a university in Lima, explores the relationship between the university environment and students' mental health. With a quantitative approach, two Likert-type questionnaires were applied to a non-probabilistic sample of 140 students. The variables analyzed included four dimensions of the environment: campus design and architecture, facilities and resources, physical environment, and safety and well-being, in relation to various facets of mental health, such as emotional, social, academic, and psychological well-being. The results indicated that a well-designed and maintained university environment, with adequate facilities and a safe environment, is associated with greater mental well-being among students. Significant correlations were found between positive perceptions of the environment and better mental health indicators, especially in the reduction of anxiety and the improvement of emotional well-being. The study's conclusion underscores the importance of a comprehensive approach in the design and maintenance of the university environment to promote students' mental well-being, suggesting that universities should prioritize these aspects to foster a healthy and supportive educational environment.

Keywords: *Environment, Mental Health, Students, Healthy Universities.*

Introduction

Today, universities are not only concerned with providing quality education, but also with creating an environment that favors the integral well-being of their students. In this context, the concept of "Healthy Universities" has gained relevance, highlighting the importance of a university environment that promotes the physical and mental health of the student community. The mental health of university students is a crucial aspect that, in many cases, is influenced by environmental factors, both physical and social, present in the academic environment (Johnson et al., 2021).

The central problem of this study is based on the growing concern about the high levels of stress, anxiety, and other mental disorders among university students, which negatively affect their academic performance and general well-being (Smith & Williams, 2020). However, there is still a significant gap in understanding how the university environment, in its broadest sense, directly affects students' mental health (Brown & Green, 2022).

The main objective of this research is to analyze the relationship between the university environment and students' mental health, in order to identify the environmental factors that contribute positively or negatively to their mental well-being. This analysis seeks to provide a scientific basis that can guide the

[1] Universidad Ricardo Palma, Perú https://orcid.org/0000-0002-9676-5571, Email: margoth.berrio@urp.edu.pe
[2] Universidad Peruana Los Andes, Perú https://orcid.org/0000-0002-3645-6224, Email: ansegala@gmail.com.
[3] Universidad Nacional Autónoma Altoandina, Tarma, Perú https://orcid.org/0000-0002-4885-7068, Email: aespiritu@unaat.edu.pe.
[4] Jubilado de Secretaría de Educación, Antioquía, Colombia.
[5] Universidad Nacional San Luis Gonzaga, Perú https://orcid.org/0000-0002-1131-9717, Email: ocurro@unica.edu.pe
[6] Universidad César Vallejo, Lima, Perú
[7] Universidad Técnica Luis Vargas Torres, Esmeraldas, Ecuador https://orcid.org/0000-0003-4838-1175, Email: wilman.ramirez@utelvt.edu.ec
[8] Facultad de Ingeniería y Negocios Universidad de Las Américas, Sede Providencia, Manuel Montt 948, Santiago, Chile

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design of policies and strategies within universities to foster a healthier environment conducive to the integral development of students.

Mental health is defined as a state of well-being in which people can recognize their abilities, cope with daily stresses, work productively, and contribute to their community (World Health Organization [WHO], 2022). In the university environment, students face academic stress and social pressure. Recent studies have shown an increase in mental disorders in students, especially with regard to anxiety and depression, underscoring the need for comprehensive preventive and therapeutic strategies (Gunnell et al., 2020; Lipson et al., 2022).

The environment encompasses the set of natural and artificial elements that surround and affect living beings, including abiotic factors such as air, water and soil, as well as biotic factors, such as the living organisms that interact in these systems. Recent research has highlighted the importance of environmental regulation in improving air and water quality, as well as in mitigating pollutant emissions, demonstrating the interconnectedness between environmental policies and economic and social well-being (Greenstone et al., 2021; Geng et al., 2021). This holistic approach to environmental protection and management is critical to addressing global challenges such as climate change and biodiversity loss.

The urban environment, especially green and blue spaces, has a significant impact on people's health and well-being. These natural environments are associated with psychological benefits, such as stress reduction and improved mood (Markevych et al., 2017). Restoration theory suggests that exposure to nature facilitates recovery from mental fatigue, thereby improving overall well-being (Kaplan & Kaplan, 1989). In addition, recent research indicates that proximity to these spaces can decrease symptoms of anxiety and depression and strengthen social cohesion (Nieuwenhuijsen, 2021).

The study by Baik et al. (2019) addressed the challenge of the increasing incidence of mental health problems among university students, collecting 2776 responses on how to improve their well-being. Students suggested improvements in areas such as teaching, student support, the university environment, course design, administration, assessment, and student activities. These findings offer universities valuable guidance to better support student well-being and reduce psychological distress.

Dzhambov's (2018) study investigated the relationship between green and blue spaces and mental health in 109 university students at the University of Plovdiv, Bulgaria, over the course of a year. Using the Normalized Differential Vegetation Index (NDVI) to assess green spaces and considering the presence of blue spaces, it was found that these environments were associated with improvements in mental health, particularly in the reduction of symptoms of anxiety and depression. The psychological benefits were attributed to an increase in physical activity and the perception of a restorative environment. In addition, the study identified mediating variables such as noise, pollution, social cohesion and sleep disorders, which help explain how these natural spaces influence mental health. The results support the idea that green and blue spaces offer restorative benefits in urban settings and suggest the need for further research to confirm these effects in broader populations.

Bil and Pawłowski (2016) examined the relationship between built environment quality and mental health at Andrzej Frycz Modrzewski University in Krakow, Poland, finding that poorly designed urban spaces and deteriorated infrastructure are associated with an increase in the prevalence of mental disorders. Using an analysis of existing data and reviewing previous studies, they identified that although poor urban environments negatively affect mental health, bipolar affective illness is more common in socially attractive areas and areas of higher socioeconomic status. The study concludes that it is crucial to integrate mental health considerations into architectural and urban design, recommending improved infrastructure in disadvantaged areas to prevent mental disorders and promote well-being.

Methodology

The present study adopts a quantitative approach with a non-experimental, correlational and cross-sectional design. The research was carried out with a non-probabilistic sample of 140 students from a university in Lima. Two Likert-type questionnaires were applied, each consisting of 20 questions. The variable

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"Environment" covered aspects such as campus design and architecture, facilities and resources, physical environment, and safety and well-being. For its part, the variable "Mental health" included dimensions such as emotional, social, academic and psychological well-being.

The data collected were analyzed using statistical, descriptive and correlational techniques to determine the relationship between the variables studied. Tests such as Spearman's correlation coefficient (Rho) were used to identify the strength and direction of the relationships between the university environment and students' mental health, as well as regression analyses to explore possible predictors within the dimensions evaluated.

Results

In this part of the study, the results obtained from the analysis of the data collected are shown. Statistical techniques were used, including descriptive and inferential methods.

Reliability

Table 1. First Variable Reliability Test

Variable/Dimension	Items	Cronbach's alpha	Level
Var 1: University environment	20	0.949	Very high
D1: Campus Design and Architecture	20	0.844	Very high
D2: Facilities and Resources	20	0.860	Very high
D3: Physical Environment	20	0.723	Loud
D4: Safety and well-being	20	0.901	Very high

According to Tupanta et al., (2017), when examining Table 1, it is denoted that the university environment and its four dimensions show high reliability in a pilot group of 20 participants. This indicates that the instrument used is reliable.

Table 2. Second Variable Reliability Test

Variable/Dimension	Items	Cronbach's alpha	Level
Var 2: Salud mental	20	0.812	Very high
D1: Emotional well-being	20	0.755	Loud
D2: Social welfare	20	0.843	Very high
D3: Academic well-being	20	0.780	Loud
D4: Psychological well-being	20	0.769	Loud

Tupanta et al., (2017), when reviewing the results in Table 2, shows that the data on the mental health variable and its four dimensions, obtained from a pilot group of 20 participants, exhibit high reliability. This suggests a high reliability in the instrument used.

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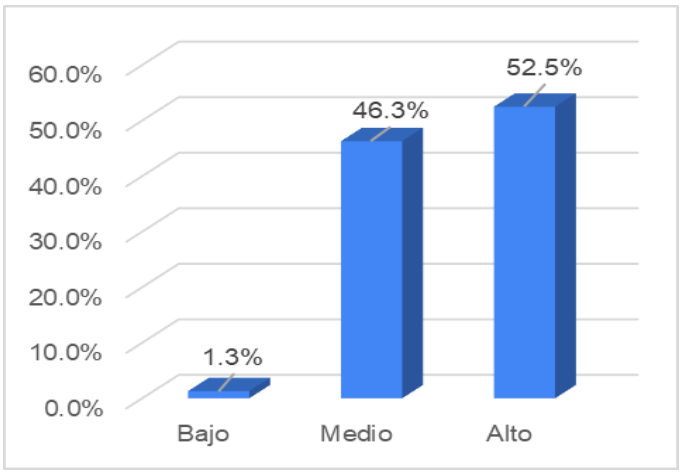
Results of the Variable University Environment

Table 3. University Environment Levels

Levels	Frequency	Percentage
Low	2	1.3%
Middle	74	46.3%
High	84	52.5%
Total	160	100%

Figure 1. Percentages of the Variable University Environment. in Original Language Spanish



At the low level, 2 cases were recorded, which represented the lowest number of participants. In contrast, the medium level showed a frequency of 74 cases, constituting approximately half of the sample. The high level was the most represented, with 84 cases, which corresponded to 52.5% of the total sample, which consisted of 160 participants in total.

Table 4. Levels of the Dimensions of the University Environment

	Campus design and architecture	Facilities and Resources	Physical Environment	Safety and well-being
Low	5.6%	2.5%	1.3%	2.5%
Middle	43.8%	46.3%	37.5%	51.9%
High	50.6%	51.2%	61.2%	45.6%
Total	100%	100%	100%	100%

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Figure 2. Percentages of the Dimensions of the Variable University Environment. in Original Language Spanish

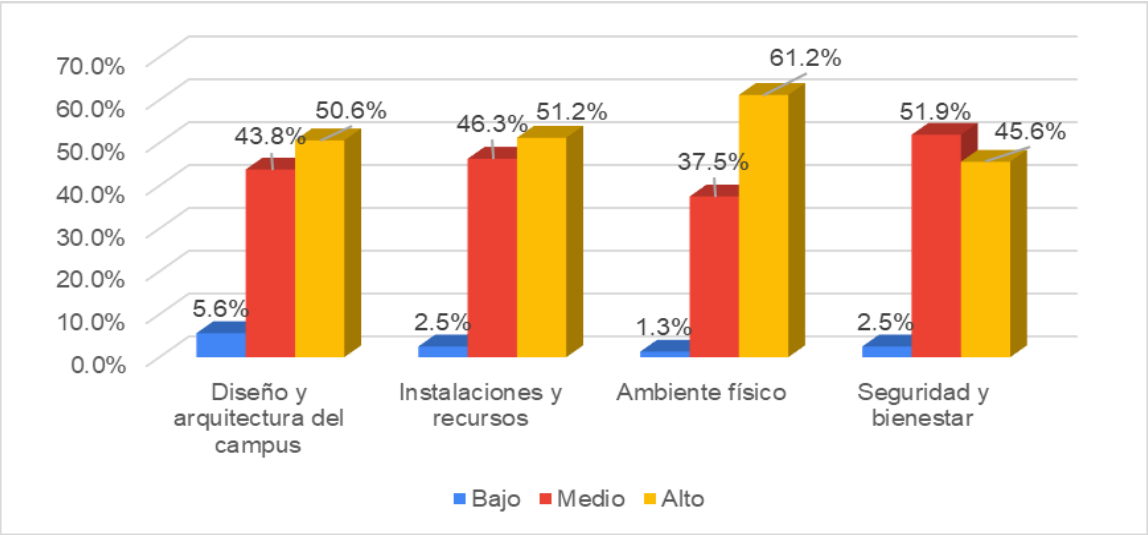

Figure 2 shows that, at the low level, the lowest percentages were recorded in campus design and architecture with 5.6%, facilities and resources with 2.5%, physical environment with 1.3%, and safety and well-being with 2.5%. At the middle level, more balanced evaluations were observed, with campus design and architecture reaching 43.8%, facilities and resources with 46.3%, physical environment with 37.5%, and safety and well-being with 51.9%. In contrast, the high level stood out for the highest ratings in all categories: campus design and architecture with 50.6%, facilities and resources with 51.2%, physical environment with 61.2%, and safety and well-being with 45.6%.

Results of the Mental Health Variable

Table 5. Levels of Mental Health

Levels	Frequency	Percentage
Low	0	0.0%
Middle	121	75.6%
High	39	24.4%
Total	160	0.0%

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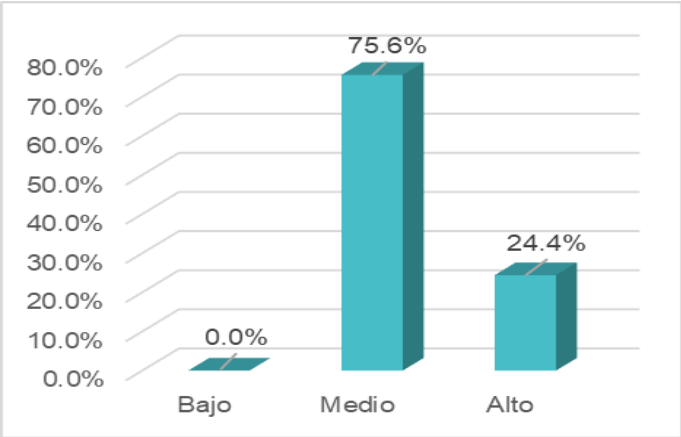
Figure 3. Percentages of the Mental Health Variable. in Original Language Spanish

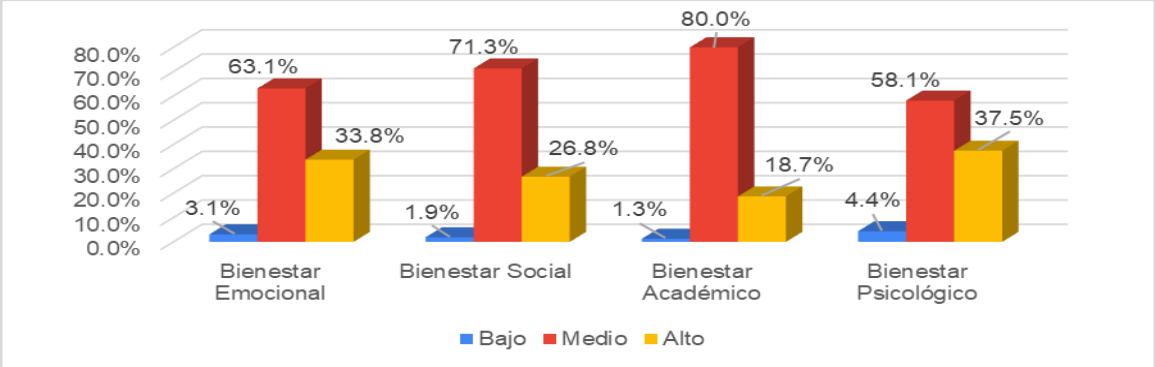


In the reading of Table 5, the low level did not register cases, which represented a percentage of 0.0% of the total sample. The medium level was the most common, with a frequency of 121 cases, covering 75.6% of the total sample of 160 participants. On the other hand, the high level showed a frequency of 39 cases, equivalent to 24.4% of the sample.

Table 6. Levels Of Mental Health Dimensions

	Emotional Well-Being	Social Welfare	Academic Well-Being	Psychological Well-Being
Low	3.1%	1.9%	1.3%	4.4%
Middle	63.1%	71.3%	80.0%	58.1%
High	33.8%	26.8%	18.7%	37.5%
TOTAL	100%	100%	100%	100%

Figure 4. Percentages of the Dimensions of the Mental Health Variable. in Original Language Spanish



The results obtained denote that, at the low level, the lowest percentages were observed in all dimensions: emotional well-being with 3.1%, social well-being with 1.9%, academic well-being with 1.3%, and psychological well-being with 4.4%. At the middle level, higher percentages stood out in all dimensions: emotional well-being with 63.1%, social well-being with 71.3%, academic well-being with 80.0%, and psychological well-being with 58.1%. In contrast, the high level showed more balanced evaluations with emotional well-being reaching 33.8%, social well-being with 26.8%, academic well-being with 18.7%, and psychological well-being with 37.5%.

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Table 7. Intersection Between University Environment and Mental Health

Mental health	University environment							
	Low		Middle		High		Total	
Levels	f	%	f	%	f	%	f	%
Low	0	0	0	0	0	0	0	0
Middle	1	0.8	69	57	51	42.1	121	100
High	1	2.6	5	12.8	33	84.6	39	100
Total	2	1.3	74	46.3	84	52.5	160	100

- "Low" Mental Health: There are no people who are classified as having low mental health in relation to the three categories of the university environment. All values are 0.
- Mental Health "Medium": There is 1 person with a low university environment, 69 people with a medium university environment, and 51 people with a high university environment. In total, 121 people have average mental health.
- "High" Mental Health: There is 1 person with a low college environment, 5 people with a medium university environment, and 33 people with a high university environment. In total, 39 people have high mental health.
    - Overall Totals: In total, there are 160 people in the study. Of these, 2 have low mental health, 74 have medium mental health, and 84 have high mental health.

In short, almost no one has low mental health relative to the university environment. Most people with average mental health have an average college environment. Most people with **high mental health** have a high college environment.

Hypothesis Test Results

According to Hernández-Sampieri et al., (2017), the analysis carried out is based on the evaluation of variables through hypothesis tests using Spearman's correlation coefficient (Rho). This statistical approach facilitates the determination of the relationships between the hypotheses raised and the variables investigated.

Table 8. Degree of Correlation and Level of Significance Between the University Environment and Students' Mental Health

			Mental health
Rho de Spearman	University environment	Correlation coefficient	0.411
		Sig. (bilateral)	0.000
		N	160

According to Hernández-Sampieri et al., (2017), the results in Table 8 indicate a Spearman correlation coefficient (Rho) of 0.411**, which represents a mean positive correlation. This value is accompanied by a statistical significance level p_valor ($0.001 < 0.05$).

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Table 9. Degree of Correlation and Level of Significance of Campus Design and Architecture with Students' Mental Health

			Mental health
Rho de Spearman	Campus design and architecture	Correlation coefficient	0.389
		Sig. (bilateral)	0.000
		N	160

According to Hernández-Sampieri et al., (2017), the results in Table 9 show a Spearman correlation coefficient (Rho) of 0.389**, indicating a mean positive correlation. This value is accompanied by a significant level of p_valor (0.001 < 0.05). Therefore, there is a relationship between the variable under study and the dimension analyzed.

Table 10. Degree of Correlation and Level of Significance of Campus Facilities and Resources with Students' Mental Health

			Mental health
Rho de Spearman	Campus Facilities and Resources	Correlation coefficient	0.344
		Sig. (bilateral)	0.000
		N	160

According to Hernández-Sampieri et al., (2017), the results in table 10 show a Spearman correlation coefficient (Rho) of 0.344**, indicating a mean positive correlation. This value is accompanied by a significant level of p_valor (0.001 < 0.05). Therefore, there is a relationship between the variable under study and the dimension analyzed.

Table 11. Degree of Correlation and Level of Significance of the Physical Environment and the Mental Health of the Students

			Mental health
Rho de Spearman	Physical Environment	Correlation coefficient	0.332
		Sig. (bilateral)	0.000
		N	160

According to Hernández-Sampieri et al., (2017), the data in Table 11 indicate a Spearman correlation coefficient (Rho) of 0.332**, which represents a mean positive correlation. This result is supported by a significant level of p-value (0.001 < 0.05). Therefore, there is a relationship between the third variable and the dimension analyzed.

Table 12. Degree of Correlation and Level of Significance of Campus Safety and Well-Being and Student Mental Health

			Mental health
Rho de Spearman	Campus Safety and Wellbeing	Correlation coefficient	0.381
		Sig. (bilateral)	0.000
		N	160

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According to Hernández-Sampieri et al., (2017), the results in table 12 show a Spearman correlation coefficient (Rho) of 0.381**, indicating a mean positive correlation. This value is supported by a significant level of p-value (0.001 < 0.05). Therefore, there is a relationship between the fourth study variable and the dimension analyzed.

Discussion

The present research has revealed a significant positive correlation between the university environment and students' mental health, which is consistent with the findings of other studies. For example, Koning et al. (2022) and Kaplan & Kaplan (1989) showed that students who have a greater connection to nature and make frequent use of outdoor spaces have better mental health indicators. This finding parallels the results of this study, which point to how aspects of the physical campus environment, such as facilities and safety, positively impact students' emotional and psychological well-being.

Likewise, the research of Nieuwenhuijsen (2021), Dzhambov (2018) and Markevych et al. (2017) on the effects of green and blue spaces on mental health coincide with the results of this study, which show the importance of a well-maintained physical environment endowed with natural elements to reduce symptoms of anxiety and depression. These studies underscore that the quality of the physical environment in universities not only contributes to a better mood, but can also play a crucial role in mitigating mental health issues.

Finally, the relationship between campus architecture and mental health, identified both in this study and in the work of Bil and Pawłowski (2016), reinforces the need to consider architectural design and the quality of the built environment as key factors for student well-being. Evidence suggests that a well-designed and maintained university environment not only promotes better academic performance, but also prevents the onset of mental disorders, highlighting the importance of a holistic approach in campus planning and management.

Conclusion

This study confirms that proper design and architecture on the university campus have a positive influence on students' mental health. Well-planned spaces that promote interaction and accessibility contribute to emotional and social well-being, reducing stress and fostering a more positive learning environment.

Campus facilities and resources, such as sports areas, health services, and technology, are critical to students' academic and psychological well-being. Those who perceive that their needs are well met tend to experience better mental health, highlighting the importance of having adequate and accessible infrastructure.

A well-maintained physical environment, with good lighting, cleanliness and maintenance, is associated with lower levels of anxiety among students. This study shows that a pleasant and well-maintained physical environment is essential to support mental well-being, facilitating a more comfortable and effective study environment.

The perception of safety on campus is crucial for students' mental health. A safe environment, with adequate safety and wellbeing measures, not only reduces anxiety, but also allows students to focus better on their studies and activities, improving their overall well-being.

Taken together, the results of this study underscore the importance of a well-designed, safe, and well-equipped university environment to promote students' mental health. By strengthening these four dimensions—design and architecture, facilities, physical environment, and safety—universities can create environments that not only improve academic achievement, but also support the holistic well-being of their students.

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