Comparison of Academic Stress in Students of Public and Private Universities in Peru

José Calizaya-López
Universidad Nacional de San Agustín de Arequipa

Hilda Pinto-Pomareda
Universidad Nacional de San Agustín de Arequipa

Merly Clariza Lazo-Manrique
Universidad Nacional de San Agustín de Arequipa

Rildo Bellido-Medina
Universidad Nacional de San Agustín de Arequipa

Ana Rosario Miaury Vilca
Universidad Nacional de San Agustín de Arequipa

Ferdinand Ceballos-Bejarano
Universidad Nacional de San Agustín de Arequipa

The new processes and changes in education arising from the health situation have increased the number of cases of academic stress in university students. We proposed to compare academic stress in students of public and private universities according to socio-demographic variables. A total of 1463 students from a public university and 5 private universities participated in the study. The study was descriptive-comparative, non-experimental, and a measurement instrument was used to identify the level of academic stress. It was concluded that the level of academic stress presented by the students in general is moderate with a tendency to be high and the self-perception of the university students is high, demonstrating that virtual and blended learning have brought changes to which the students have had to adapt. In conclusion, the study is original and clearly demonstrates the differences in academic stress behavior between public and private universities according to the socio-demographic variables of the students.

Keywords: academic stress, virtual and blended education, university students

INTRODUCTION

Virtual and blended learning in the current healthcare environment (Covid-19) has generated social, psychological, economic, political, cultural, environmental and other problems (Solano et al., 2022, Araoz

et al., 2021); however, education is also affected by this situation, considering that the adaptability to this system has brought new experiences but above all many problems: access and connectivity, adaptation to the virtual learning environment, new pedagogical and methodological strategies, training and above all teacher understanding and tolerance, adverse situations that have influenced the socio-emotional aspect of students, resulting in a higher number of cases of academic stress in Peru (Morán et al., 2022; Talavera et al., 2021).

In this regard, studies related to academic stress in pandemic times state that the number of students under stress has increased due to the process of change from face-to-face to virtual education, causing demotivation and high levels of anxiety, caused by stressors that are associated with academic overload (Luque et al., 2022; León et al., 2022; Berrio-Quispe et al., 2021).

Starting from the theory of systemic modeling (Colle, 2002) based on the systems theory of Bertalanfy (1991) and the transactional model of stress (Cohen and Lazarus, 1979), a systemic-cognoscitivist theoretical model that explains academic stress is involved, emphasizing that stress has evolved from a mechanical scheme (stimulus-response) to a dynamic one (person-environment) explaining that the student creates higher levels of academic stress because of the university environment through its processes, systems, curricula, services, demands and academic relationships (Sidelski & Sidelski, 2004).

Researchers who are interested in the study of academic stress define it as the valuative process of the student facing educational demands with stressful characteristics, which result in an integral disorder that produces unpleasant symptoms, allowing the implementation of strategies to face these situations (Cassaretto et al., 2021; Chávez et al., 2021; Soto et al., 2021).

The main dimensions of study focus first on stressors: these are the academic demands and requirements; second on symptoms: this is the subjective and physical manifestation presented by the student (integral health); and third on coping: which is the student's ability to face educational situations (Chávez et al., 2021; Lezama et al., 2021; Teque-Julcarima et al., 2020).

In relation to academic stress and socio-demographic variables, some contemporary studies have been found in Peru that explain the following: in private universities, according to sex, women have higher levels of stress compared to men; according to employment, there are no differences, both those who study and those who work and study have similar levels of stress; according to the study area, there are also no differences, both students of engineering, health sciences and social sciences have similar levels of stress; the same trend is observed in the university cycle (Quispe et al., 2022).

And in terms of public universities according to sex, no differences were found between men and women; however, differences were found by year of studies, with students in the first years or cycles being more stressed than students in the last years; likewise, students of social sciences are more stressed by the overload of tasks than students of engineering and health sciences, and according to employment, students who share their studies with work are more stressed than those who only study (Calizaya et al., 2021).

It is because of these situations that, in accordance with what has been described, the interest emerges in knowing the behavior of academic stress in the current health situation, comparing the public university environment with the private one to better understand the difficulties of virtual and blended learning.

Therefore, we proposed to compare academic stress in students of public and private universities according to socio-demographic variables.

METHODOLOGY

A descriptive-comparative, quantitative, non-experimental, cross-sectional study; the information was collected during the months of March to July of this year in the city of Arequipa, Peru.

Participants

The purposive sample was composed of 1463 students from one public university and 5 private universities, including students with current enrollment for 2022 and attending virtual and blended classes, and students from all university cycles from the first to the twelfth year.

Instrument

The instrument used was the Cognitive Systemic Inventory for the Study of Academic Stress second version (SISCO, SV-21) by Barraza (2018) adapted for the Peruvian sample by Olivas-Ugarte et al., (2021). The scale evaluates the level of academic stress according to 3 dimensions, Stressors, Symptoms and Coping Strategies (each dimension is composed of 7 items), the values are between 0 and 5 Likert-type responses where 0 is "never" 1 "almost never" 2 "rarely" 3 "sometimes" 4 "most of the time" and 5 is "always", the correction key indicates that the mean is transformed into a percentage and the indicative scale reports a mild level of stress (0 to 33%), a moderate level (34% to 66%) and a severe level (67% to 100%). In addition, socio-demographic characteristics such as age, gender, place of origin, economic dependence, employment and cohabitation were added to the instrument, as well as the informed consent data.

For the version of the local sample, the reliability levels of the scale were obtained through the internal consistency method with McDonald's ω test, therefore, the instrument has good reliability when the ω values ≥ 0.700 (Revelle, 2019) for the case a ω= 0.815 was obtained according to the measurement the instrument is quite reliable.

Procedure

For the implementation of the instrument, authorization was obtained from the universities, then the instrument was adapted to the Google Forms format and applied individually to the student through social networks and institutional email after being informed of the research objective, the instructions of the inventory and the confidentiality of the data provided, accepting to participate voluntarily (admitting the respective informed consent).

Data Analysis

The distribution, skewness, kurtosis and normality of the data were analyzed with the Shapiro-Wilk test, showing that there is no normal distribution ($p<0.001$). In addition, tests for variance homogeneity (not equal) were performed. Taking into account the use of non-parametric tests, a descriptive and comparative analysis of academic stress was carried out according to the university type, study area, university cycle, gender, employment, economic dependence and age.

In order to compare two independent samples, the Mann-Whitney U was used with its respective effect size (TE), the calculation of the probability of superiority (PSest) was performed, obtaining that the interpretive standards are no effect (PSest ≤ = 0.0), small (PSest ≥ 0.56), medium (PSest ≥ 0.64) and large (PSest ≥ 0.71) (Ventura, 2016). Comparison of k independent samples was performed with Kruskal Wallis H and Pos Hoc tests, their effect size used was epsilon squared (ε2) (Tomczak & Tomczak, 2014), their interpretive standards being small for ε2 ≥ 0.01, medium for a ε2 ≥ 0.06 medium and large for a ε2 ≥ 0.14 (Cohen, 1992). The JAMOVI 1.2.27 program was used for statistical analysis.

RESULTS

Once the information was collected, the data were processed. These were carefully addressed and analyzed. The descriptive statistical analysis of the socio-demographic variables of the students was performed, observing that the average age of the students was 20.9 years with a standard deviation of 3.11 years; according to gender, 66.5% are women and 33.5% men; according to employment, 69.9% only study and 30.1% study and work; the economic dependence described, 82.6% depend economically on their parents, 13.9% are self-financed and 3.5% depend on other family members. 62.4% study in a public university and 37.6% in a private university; 30.5% belong to the area of science and engineering, 17.8% to health sciences and 51.7% to social sciences.

TABLE 1
STUDENT PRESENCE AND SELF-PERCEPTION OF ACADEMIC STRESS

Presence of academic stress			Self-perception		
Presence	f(x)	%	Level	f(x)	%
YES	1408	96.2%	Low	104	7.1%
NO	55	3.8%	Middle	360	24.6%
			High	999	68.3%
Total	1463	100%	Total	1463	100.0%

The table describes the consideration presented by the student regarding the presence of academic stress during the current year, as well as the self-perception of the stress level, according to the information collected, it is specified that for 96.2% there is the presence of stress in the current academic year and the stress level is perceived as high for a significant percentage of surveyed students.

TABLE 2
LEVEL OF ACADEMIC STRESS

Level	N	Mean	Standard deviation	Range	Minimum	Maximum	Calculated mean	%
General stress	1463	65.99	14.057	105	0	105	0.62849	63%
Stressors	1463	22.42	6.603	35	0	35	0.64057	64%
Symptoms	1463	20.69	7.429	35	0	35	0.59114	59%
Coping	1463	22.88	6.010	35	0	35	0.65371	65%

In Table 2, the level of academic stress was measured considering the scores and cut-off points of the instrument, obtaining as a result a moderate level with a tendency to be high in the general scale and in the study dimensions (stressors, symptoms and coping).

TABLE 3
COMPARISON OF THE LEVEL OF ACADEMIC STRESS ACCORDING TO UNIVERSITY TYPE

Level	University	N	Average Range	*U*	*Z*	*p*	*PSest*
Academic stress	Public	913	726.37	245935.5	-0.657	0.511	0.021
	Private	550	741.34				
Stressors	Public	913	706.47	227762.0	-2.982	0.003	0.093
	Private	550	774.39				
Symptoms	Public	913	750.47	234214.0	-2.156	0.031	0.067
	Private	550	701.34				
Coping	Public	913	724.15	243911.0	-0.917	0.359	0.029
	Private	550	745.03				

Note. N= sample; U= Mann Whitney U statistic; Z= Statistic value; p= significance (0.005); PSest= Probability of superiority.

When comparing the academic stress levels according to the university type, no statistically significant differences were found in general stress and in the coping dimension considering that both students from public and private universities have similar levels of academic stress and coping, however, in the stressors dimension it is the students from private universities who are more stressed than students from public universities due to academic requirements and demands (overload); and in the symptoms dimension the opposite happens, students from public universities have more symptoms than those from private universities (small effect size for both dimensions).

TABLE 4
COMPARISON OF THE LEVEL OF ACADEMIC STRESS BY STUDY AREA

Level	Study area	N	Average Range	*H*	*gl*	*p*	ε²
Academic stress	Sciences and Engineering	446	764.60	8.097	2	0.017	0.06
	Health Sciences	260	670.98				
	Social Sciences	757	733.75				
Stressors	Sciences and Engineering	446	780.79	10.284	2	0.006	0.07
	Health Sciences	260	681.11				
	Social Sciences	757	720.73				
Symptoms	Sciences and Engineering	446	734.87	11.683	2	0.003	0.08
	Health Sciences	260	653.64				
	Social Sciences	757	757.22				
Coping	Sciences and Engineering	446	754.90	3.855	2	0.145	0.02
	Health Sciences	260	753.59				
	Social Sciences	757	711.09				

Note. N= sample; H= Kruskal Wallis statistic: gl= Degrees of Freedom; p= significance (0.005); ε2= Epsilon squared.

When comparing the levels of academic stress according to the study area, statistically significant differences were found in general stress, with science and engineering students presenting higher levels of stress than health sciences and social sciences students; similarly, according to the stressors dimension, science and engineering students also presented higher levels of stressors compared to the other groups; in the symptoms dimension, students from the social sciences area present greater symptoms than the other comparison groups (medium effect size); in the case of coping, no statistically significant differences were found by area, presenting similar levels of coping strategies.

TABLE 5
COMPARISON OF THE LEVEL OF ACADEMIC STRESS ACCORDING TO YEAR OR UNIVERSITY CYCLE

Level	University cycle	N	Average Range	*H*	*gl*	*p*	ε²
Academic stress	1st Year (Cycle 1 or 2)	405	653.52	30.378	5	0.000	0.02
	2nd Year (Cycle 3 or 4)	293	722.16				
	3rd Year (Cycle 5 or 6)	327	741.85				
	4th Year (Cycle 7 or 8)	224	829.27				
	5th Year (Cycle 9 or 10)	181	793.36				
	6th Year (Cycle 11 or 12)	33	688.14				

Stressors	1st Year (Cycle 1 or 2)	405	617.70	50.817	5	0.000	0.04
	2nd Year (Cycle 3 or 4)	293	737.24				
	3rd Year (Cycle 5 or 6)	327	770.02				
	4th Year (Cycle 7 or 8)	224	830.20				
	5th Year (Semester 9 or 10)	181	803.23				
	6th Year (Cycle 11 or 12)	33	654.24				
Symptoms	1st Year (Cycle 1 or 2)	405	680.19	13.241	5	0.021	0.09
	2nd Year (Cycle 3 or 4)	293	750.49				
	3rd Year (Cycle 5 or 6)	327	727.04				
	4th Year (Cycle 7 or 8)	224	798.77				
	5th Year (Cycle 9 or 10)	181	753.42				
	6th Year (Cycle 11 or 12)	33	682.08				
Coping	1st Year (Cycle 1 or 2)	405	748.35	7.369	5	0.195	0.005
	2nd Year (Cycle 3 or 4)	293	690.17				
	3rd Year (Cycle 5 or 6)	327	709.04				
	4th Year (Cycle 7 or 8)	224	766.38				
	5th Year (Cycle 9 or 10)	181	767.32				
	6th Year (Cycle 11 or 12)	33	703.18				

Note. N= sample; H= Kruskal Wallis statistic: gl= Degrees of Freedom; p= significance (0.005); ε2= Epsilon squared.

When comparing the levels of academic stress according to year or university cycle, statistically significant differences were found in the general measurement, with students in 4th year (cycle 7 or 8) being more stressed than other students in the other cycles (small effect size); regarding the stressors dimension, the same tendency was also found in students in 4th year (cycle 7 or 8) compared to the other groups (small effect size); a similar situation was found in the symptoms dimension (moderate effect size); and in the coping dimension, no statistically significant differences were found in the comparison groups.

TABLE 6
COMPARISON OF THE LEVEL OF ACADEMIC STRESS ACCORDING TO SOCIO-DEMOGRAPHIC VARIABLES

Stressors	*%*	*p(sig)* *	*p(sig)* **	*p(sig)* ***	*p(sig)* ****
Task and work overload	71%	0.000	0.006	0.537	0.005
The personality and character of the teacher	57%	0.167	0.015	0.450	0.000
Teacher evaluations	64%	0.006	0.005	0.686	0.000
The level of demand from teachers	62%	0.001	0.882	0.346	0.003
The type of work requested by teachers	64%	0.002	0.029	0.115	0.002
Limited time to get the job done	69%	0.000	0.003	0.621	0.062
The lack of clarity about what teachers want	61%	0.001	0.178	0.905	0.006
Symptoms	*%*	*p(sig)* *	*p(sig)* **	*p(sig)* ***	*p(sig)* ****
Chronic fatigue	60%	0.000	0.481	0.069	0.118
Depressed or sad feelings	60%	0.000	0.290	0.772	0.002
Anxiety, anguish or despair	63%	0.000	0.008	0.625	0.017
Concentration problems	66%	0.001	0.676	0.377	0.009
Feeling of aggressiveness or irritability	51%	0.006	0.045	0.642	0.019
Tendency to argue or discuss	49%	0.057	0.070	0.879	0.127
Unwillingness to perform academic tasks	64%	0.000	0.025	0.569	0.033

Coping	%	p(sig) *	p(sig) **	p(sig) ***	p(sig) ****
Focus on resolving the situation of concern	65%	0.194	0.349	0.181	0.227
Establishing solutions to resolve the concern	65%	0.624	0.442	0.374	0.051
Analyze the (+) and (-) of the solutions given for the concern.	66%	0.842	0.040	0.068	0.166
Maintaining control of emotions without affecting stressors	66%	0.088	0.472	0.106	0.817
Recalling past situations and thinking about solutions	64%	0.938	0.122	0.089	0.545
Develop a plan to deal with stressors	61%	0.137	0.133	0.390	0.614
Focus on or try to get the positive out of the situation of concern.	67%	0.721	0.190	0.129	0.110

Note: * comparison between genders. ** comparison by employment. ***Comparison by economic dependence. **** comparison by age. p= significance (0.005).

When comparing the level of stress according to socio-demographic variables, statistically significant differences were found in the gender variable, with women being more stressed than men in the stressors dimension due to the overload of tasks, evaluations, level of demand, type of work, limited time and lack of clarity about what the teachers want; Similarly, by employment, students who work and study feel stressed due to task overload, teacher's character, evaluations, type of work and limited time; by economic dependence, no differences were found between the groups; and by age, students older than 21 years old are more stressed by all the indicators except limited time to do the task.

Regarding the symptoms dimension according to gender, women present more symptoms than men, such as: fatigue, sadness, depression, anxiety, anguish, concentration problems, feelings of aggressiveness and listlessness; in terms of occupation, working students present some symptoms such as anxiety, anguish, irritability and listlessness; in terms of economic dependence, no differences were found between the groups; and in terms of age, students under 18 years old present more symptoms such as: depression, sadness, anxiety, anguish, concentration problems, irritability and listlessness.

And regarding the coping dimension, no statistically significant differences were found according to socio-demographic variables in any of the groups, with similar levels of coping with adversity.

CONCLUSIONS

Academic stress in students of public and private universities was compared according to socio-demographic variables, it was found that the level of academic stress presented by students in general is moderate with a tendency to be high and the self-perception of the university student is high, demonstrating that virtual and blended education caused changes to which the student must adapt. However, what most stresses the student is the overload of tasks, the demands of the teachers, the type of work they order, the limited time to complete them, and the lack of clarity at the time of assigning the tasks, finding similar results to those of Morán et al., (2022) and Talavera et al., (2021).

Concerning the level of academic stress according to the type of university, it can be specified that in private universities the academic requirements and demands are stressors that students perceive as limitations due to the overload of work assigned to them, and in the case of public universities it is observed that students have greater symptoms such as anxiety, depression, concentration problems and listlessness caused by the stress they have developed in virtual classes (Berrio-Quispe et al., 2021).

In terms of study area, science and engineering students generate higher levels of stress than students in other areas due to the fact that the nature of the subjects are more related to pure science and teachers do not use an adequate methodology in virtual environments, limiting learning, in addition, the overload of tasks and the limited time for presentation generates high levels of stress; on the other hand, students of social sciences have greater symptoms caused by stress, understanding that in this area there are more women than in other areas, noting that the female student in this context has generated high levels of stress compared to male students (Quispe et al. , 2022).

According to the university cycle and age, it was observed that students from the 4th year (cycle 7 or 8) show greater academic stress and greater symptoms in comparison to students in the other cycles, results that are ratified with age, with students over 21 years old showing the same characteristics of stress.

Regarding the variables employment and economic dependence, no differences were found, specifying that students who are economically dependent and only study have similar levels of academic stress as those who are self-financed and study and work.

Finally, the coping dimension did not show differences according to socio-demographic variables, where students use similar coping strategies such as concentrating and establishing solutions that concern them within the academic environment. In conclusion, the study is original and clearly demonstrates the differences in the behavior of academic stress between public and private universities according to the socio-demographic variables of the students, being a significant contribution to the sciences and disciplines that are interested in the different problems that appear in the educational environment.

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