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Original Article

Academic Procrastination, Depressive Symptoms and Suicidal Ideation in University Students: A look during the Pandemic

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Abstract

Objective: The aim is to determine the relationship between academic procrastination, depressive symptoms and suicidal ideation in students of the Faculty of Health Sciences.
Method: It was a non-experimental and cross-sectional study of correlational scope. The non-probabilistic convenience sample, made up of 578 participants between 16 and 30 years old (69% female), completed the Academic Procrastination Scale, the Positive and Negative Suicidal Ideation Inventory (PANSI) and the Beck Depression Inventory (BDI-II). Frequencies and percentages were estimated at a descriptive level, the partial correlation coefficient and multiple linear regression were utilized to examine the associations between academic procrastination and suicidal ideation.
Results: Subjects with a higher score of academic procrastination and BDI-II reported higher scores for suicidal ideation than those with a lower score ($P < 0.01$). A positive significant relationship was found between total academic procrastination and its subscales and suicidal ideation ($P < 0.01$). This correlation remained significant after controlling for depression ($P < 0.05$). Moreover, multiple linear regression revealed that academic procrastination, its subscales and depressive symptoms could explain about 20% of the total suicidal ideation in university students ($R^2 = 0.198$).
Conclusion: Increased levels of academic procrastination increase suicidal ideation in college students during the pandemic. These results suggest the need to create interventions for the prevention of this problem in the fields of educational and public health.

Key words: *Procrastination; Suicidal Ideation; Students; Suicide Attempt*

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Academic procrastination is the act of postponing academic or administrative tasks such as reading, doing homework, and studying for exams, which directly affect academic performance (1, 2). University students have a tendency to procrastinate regardless of the deadline for handing in an assignment. Likewise, if the professor leaves an academic activity with a deadline of one week or four months, students will still do it a few days before the due date (3).

While it is true that in face-to-face education, university students were more committed to completing their homework, virtual education due to the COVID-19 pandemic has not been able to control distractions at home (watching movies while listening to class, sleeping, playing, other activities) and thus postpone their academic tasks, wasting valuable time that should be invested in their learning (4). Previous literature has linked procrastination to self-esteem, stress, anxiety, depression, fear of failure, among others (5, 6). However, studies related to suicidal ideation are scarce. At present, suicidal ideation is one of the main public health problems in the world (7) and is one of the external factors of death among young people aged 15 to 24 years, especially in university students (5), being the fourth cause of mortality among those aged 17 to 29 years (8-10). However, suicide is still considered to be multifactorial (11, 12).

The World Health Organization, in a report in 2019 and in another in 2021 (12), mentions that about 800,000 people die by suicide every year. In addition, for every suicide there are more than 20 attempts, and every 40 seconds one person commits suicide. In countries such as Portugal there is a 3.9% prevalence of suicidal behavior (13), in Canada 15.6% (14) and in Iran 10% (15); while in developing countries such as Egypt there is a prevalence of 12.7% (16), in Latin American countries such as Mexico there are reports of 5.6% (17) and 9.9% in Brazil (18). Peruvian university students are no strangers to this reality, since the Ministry of Health (MINSA) reported a figure of 1384 suicide attempts in a single year (19). Another study carried out in Peru mentions that 22% of students presented suicidal ideation and 11% attempted suicide. The most frequent ways of attempting suicide were: taking pills, cutting one's veins and hanging. Although there are multiple factors for suicidal ideation, 30% were due to academic problems (11). In addition, there is research that has shown an elevated risk of suicide in health students. As shown in a study conducted by Gómez-Romero *et al.* (20) among 144 university students, 17.4% had a family member who had attempted suicide, 23.1% had thought about suicide at some point and 5.6% had never attempted to take their own life.

Some previous studies have already related academic procrastination with suicidal ideation. For example, one study conducted among 350 university students in Barcelona showed direct correlations between academic procrastination and suicidal behavior (5) and another one conducted among 128 nursing students in Spain found that procrastination correlates with suicidal ideation (21). But to date, this issue has not yet been studied in populations of developing countries such as Peru. Therefore, it is necessary to study in more depth this relationship and the intervention of academic procrastination in suicidal ideation in university students; even more so in the current context of virtuality in which university education is taking place and to which social interaction is limited. Therefore, the aim is to determine the relationship between academic procrastination and suicidal ideation in students of a private university in Lima, Peru.

Materials and Methods

Study design

The present research corresponds to a non-experimental design, since it was carried out without deliberately manipulating the variables, through observing phenomena as they occur in their natural context, in order to analyze them. It is cross-sectional, since information was collected at a single moment. It is also analytical in scope, since the purpose is to determine the role played by academic procrastination and depression in suicidal ideation.

Participants

The sample consisted of 612 students of psychology (43.2%), nursing (28%2) and human nutrition (28.6%). The mean age was 22 years, with a range of 16 to 30 years. 69.0% were female and 31.0% were male. The sampling used was non-probabilistic convenience, since it allowed the selection of those most suitable for the research team. Inclusion criteria were: a) enrolled in the 2021-2 academic semester, b) studying in the first to fifth years, c) accepting voluntary participation through informed consent, d) being both male or female. The exclusion criteria were: a) failure to complete all sociodemographic data.

Instruments for data collection

The Academic Procrastination Scale (EPA), created by Busko and adapted for use in Peru by Domínguez, Villegas & Centeno (22), was used to evaluate the academic procrastination variable. It was applied to a sample from Lima, with ages ranging from 16 to 40 years. The questionnaire consists of 12 Likert-type items with response options: "Never", "Almost never", "Sometimes", "Almost always" and "Always", and the questions are related to the two dimensions of procrastination of activities (items 1, 6, 7) and academic self-regulation (items 2, 3, 4, 5, 8, 9, 10, 12). Construct validity, through an exploratory factor analysis (KMO = 0.812; Bartlett's sphericity $P < 0.01$; Eigen value = 1.81 for the first factor, Eigen value = 4.13 for the second factor) and confirmatory analysis (GFI = 0.97; RMSEA = 0.078; RMR = 0.064), proved the validation of this scale. Furthermore, internal consistency through the alpha and omega coefficients acquired an $\alpha = 0.821$ and $\omega = 0.829$ for the academic self-regulation factor, and an

$\alpha = 0.752$ and $\omega = 0.794$ for the activity procrastination factor.

The Positive and Negative Suicidal Ideation Inventory (PANSI), created by Osman *et al*. and adapted for use in Peru by Rodas-Vera *et al.* (23), was used to evaluate the variable of suicidal ideation. The scale has two dimensions, consisting of 14 items, six for positive suicidal ideation (protective factors) and eight for negative suicidal ideation (risk factors), and is applied to people between the ages of 17 and 32. Its response options vary from 0 (never) to 4 (always). Its reliability was confirmed through internal consistency. Before the COVID-19 pandemic the alpha of the negative and positive factors was 0.93 and 0.91, respectively; while the omega of these factors was 0.96 and 0.93, respectively. During the pandemic, the alpha values of the negative and positive factors were 0.95 and 0.85; while the omega values were 0.97 and 0.90, respectively.

The Peruvian version of Beck Depression Inventory-second edition (BDI-II) was administered to assess depressive symptoms among study samples. It includes 21 Likert type items, with a total score ranging from 0 to 63. A higher score shows more severe depressive symptoms. An appropriate reliability value, test-retest reliability coefficient and internal consistency have been reported for this questionnaire in Peru (24) and other countries such as Iran (25).

Procedures

For data collection, a non-probabilistic convenience sampling was carried out where teachers from the psychology, nursing, and human nutrition careers were asked for a space in their class schedule to present the research project to the students and request their participation. Then they were sent the Google form link to the chat room in the virtual classes (meet and zoom). At the end, the participants and the teachers were thanked for their time and support. It should be noted that participants were informed that their participation is voluntary and anonymous. Likewise, the purposes of the research were explained to them, and they were asked to declare their consent in the first part of the online questionnaire. Also, non-probabilistic snowball sampling was used, and the participants were urged to share the Google form link with their classmates from other students of the same faculty.

Data analysis

The data were analyzed using Microsoft Excel statistical package and SPSS version 24 statistical software. Descriptive analyses were performed using absolute and relative frequencies for categorical variables. The partial correlation coefficient and multiple linear regression were utilized to examine the associations between academic procrastination and suicidal ideation. Analysis of variance was computed to compare PANSI and BDI-II scores of subjects with a higher level of suicidal ideation to those with a lower level.

Ethical aspects

The present research work was approved by the Ethics Committee of the Faculty of Health Sciences of the Universidad Peruana Unión, with report N° 2021-CE-FCS - UPeU-00315. It respected all the ethical principles of research in humans of the Helsinki declaration, such as justice, autonomy and confidentiality.

Results

A total of 612 university students were approached, of which 34 did not agree to participate in the study; so, data were finally collected from 578 students. The median age was 22 years (range: 16 to 30 years), 399 (69%) participants were female, 250 (43.2%) were studying psychology, 260 (44.9%) were in the VI-cycle, and 363 (62.8%) had been studying in the virtual modality for 2 years. Regarding the levels of suicidal ideation and its dimensions, of the total number of university students (n = 578), 24.3% reported a high level of negative suicidal ideation, and 23.6% had a high level of positive suicidal ideation. With respect to the levels of academic procrastination and its dimensions, 28.6% reported a low level of academic self-regulation, and 18.3% reported a high level of postponement of activities.

Mean, standard deviation and the results of Kolmogorov-Smirnov test are shown in Table 1. According to the Kolmogorov-Smirnov test, the assumption of normal distribution of variables was confirmed. To investigate the relationship between suicidal ideation and PANSI subscales, partial correlations were administered (Table 2). This test revealed that the academic procrastination (total score and its subscales) was positively correlated to PANSI total score ($P < 0.01$). Partial correlation analyses controlling for depression were also conducted to ensure that these results would not relate to shared variance with this variable. Suicidal ideation remained significantly correlated to academic procrastination and its subscales ($P < 0.05$).

Table 1. Characteristics of the Academic Procrastination, Depressive Symptoms and Suicidal Ideation in University Students during the Pandemic (n = 578)

Variables	Mean	Standard deviation	Kolmogorov-Smirnov test	
			Statistic	P-value
Age	22.64	6.32		
Suicidal ideation total score	30.79	5.32	0.209	0.393
Negative suicidal ideation	17.91	5.64	0.175	0.604

Positive suicidal ideation	12.88	4.36	0.182	0.417
Total academic procrastination	24.01	4.17	0.164	0.584
Academic self-regulation	17.59	6.10	0.211	0.381
Postponement of activities	6.42	3.12	0.219	0.433
Depressive symptoms (BDI-II)	12.49	8.76	0.277	0.169

Table 2. Correlations between Suicidal Ideation and Academic Procrastination in University Students, Controlling and Not Controlling for Depression

Variables	Suicidal ideation	Total academic procrastination	Academic self-regulation	Postponement of activities
Suicidal ideation	1	0.367** (0.280**)	0.334** (0.216*)	0.356** (0.261**)
Total academic procrastination		1	0.852**	0.723**
Academic self-regulation			1	0.410**

*P < 0.05; **P < 0.01; parentheses indicate partial intercorrelations between variables when controlling for depression.

Multiple regression analysis was administered to explore the relative contributions of academic procrastination and depression in predicting suicidal ideation in the university students more fully. Academic procrastination and its subscales were utilized in this test as they were significant predictors of suicidal ideation after controlling for depression in the previous analysis. Also, univariate regression analysis revealed that academic procrastination and its subscales as well as depressive symptoms were associated with suicidal ideation at $P \leq 0.2$. As shown in Table 3, academic procrastination, its subscales and depressive symptoms could explain about 20% of the total suicidal ideation in university students ($R^2 = 0.198$). Univariate ANOVA revealed that Subjects with a higher score of academic procrastination and BDI-II reported higher scores for suicidal ideation than those with a lower score ($P < 0.01$) (Table 4). Based on previous studies, the score of 17 in the academic procrastination questionnaire is considered as the cut-off point (23).

Table 3. Multiple Linear Regression Examining the Relationship between Academic Procrastination, Depressive Symptoms and Suicidal Ideation in University Students, Controlling for Gender

Variables	Total suicidal ideation							
	Unstandardized coefficients		Standardized coefficients	t	P-value	R	R^2	Adjusted R^2
	β	SE	β					
Academic self-regulation	0.079	0.018	0.318	3.16	0.006**	0.534	0.198	0.102
Postponement of activities	0.066	0.026	0.395	3.48	0.005**			
Total academic procrastination	0.062	0.054	0.399	3.67	0.001**			
BDI-II	0.070	0.012	0.487	4.21	0.0001**			

**P < 0.01.

Table 4. Differences in Total Academic Procrastination and Depressive Symptoms among University Students Above and Below the Suicidal Ideation Cutoff Score

Variables	Above PANSI cutoff		Below PANSI cutoff		F-value
	Mean	SD	Mean	SD	
Total academic procrastination	34.59	12.21	27.34	13.97	7.23**
BDI-II	16.84	9.32	10.79	7.51	8.45**

PANSI: positive and negative suicidal ideation inventory; BDI-II: Beck depression inventory-second edition; SD: standard deviation; **P < 0.01

Discussion

The objective of this research was to determine the influence of academic procrastination on suicidal ideation in students of the Faculty of Health Sciences of a private university in East Lima. In this regard, it was found that about 20% of the variance of suicidal ideation is explained by the predictor variable of academic procrastination. In that sense it can be considered that the higher the score of academic procrastination, the higher the probability of presenting suicidal ideation. This was already identified in previous studies, where it was stated that academic procrastination can act as a risk factor that can lead to suicidal ideation (5), but the degree of influence was not known. A possible explanation for the influence of academic procrastination on suicidal ideation is the fact that academic procrastination generates stress problems, feelings of guilt, and anxiety or negative feelings that can lead to suicidal behaviors (26-30). Other researchers suggest that lack of self-control or difficulties in managing frustration when desired goals are not achieved cause unhealthy attitudes that can lead to suicidal ideation (31). In this sense, it is necessary to implement psychological programs in universities that seek to identify students who have a tendency to increase their levels of procrastination and to attend to them; since this can reduce the risk of suicidal ideation.

Regarding academic procrastination (18.3% with a high level of procrastination), our results showed lower levels of this variable as compared to that shown by the study conducted in Peru with 290 health students in which 39.5% showed academic procrastination (32, 33). This behavior may be due to lack of financial resources, negative reaction to environmental demands and lack of encouragement to start an activity, which cause physical symptoms of discomfort (32). Previous studies such as the one conducted in the United States of America reported that insufficient self-control, low self-discipline and frustration tolerance influence, as mediators, the relationship between academic procrastination and the propensity to suicide (31). A main factor in the procrastination of academic activities is the increase in time spent on social networks and video games, which increased rapidly after the declaration of COVID-19 as a pandemic by the WHO (34, 35). In addition, several studies mentioned that procrastination has a relationship with personality, low self-confidence and self-esteem, and elevated tendencies of depression due to not completing tasks on time, anxiety, impulsivity and lack of energy in performing academic activities (36).

In relation to the variable of negative suicidal ideation, a high prevalence of 24.3% was found in university students in our study. Previous studies confirm the high risk of suicidal ideation in young university students, characterized by a greater tendency to commit suicide (7). Similar results were observed in university students in Barcelona, where 16% of the participants showed a prevalence of suicidal behaviors and almost one third of the total participants had never thought of committing suicide. This public health problem is triggered by stressful, psychological, situational, economic and other factors (5, 20). Another study conducted in the same city showed that 11.8% of participants were at risk of suicide and 5.6% had previously attempted suicide. Possible factors that lead to suicide ideation include: the first years of university; transition from an adolescent to a young person; and adapting oneself to assume new roles, which will lead to an academic overload that, in turn, lead to stress (20). Also, in Spain, Garrido *et al.* (21) showed that the more students procrastinate and have a low level of personal satisfaction, the more vulnerable they are to suicidal behavior. This problem has become more persistent during the COVID-19 pandemic, which has caused problems of anxiety, depression and deterministic thoughts, probably provoked by loneliness and stress of quarantine (37), which can in turn cause suicide to become a global psychological pandemic (38). That is why it has become a threat to the university population and has thus made it necessary to take preventive measures to reduce such behaviors.

Limitation

The results of this research had the following limitations: first, the data collection was done virtually, due to the current situation of the COVID-19 pandemic, which makes it difficult to access more participants from the study population. Second, the results are not generalizable due to the type of sampling employed; however, this does not detract from the scientific value of the results obtained from this sample. Another limitation was the inclusion of procrastination alone as an independent variable in the model, despite the existence of other variables. Future studies may include more variables.

Conclusion

Academic procrastination influences suicidal ideation. as Also, procrastination was positively and highly significantly correlated with suicidal ideation. University authorities could implement psychological programs to identify and provide care to students with high levels of academic procrastination to reduce suicidal ideation. In addition, the results confirm a great need for further research on this public health problem that affects the population of university students.

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Conflict of Interest

None.

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