



SECTION: ORIGINAL ARTICLE

Emotional exhaustion associated with self-harming thoughts and behaviors and suicidal ideation in medical students at a Peruvian university

Exaustão emocional associada a pensamentos e comportamentos autolesivos e ideação suicida em estudantes de medicina de uma universidade peruana

Christian Renzo Aquino-Canchari¹

orcid.org/0000-0002-7718-5598
christian.aquino.canchari@gmail.com

Diana Maricielo Florez-Soto²

orcid.org/0000-0002-8449-0574
maricielo.dmfs@gmail.com

Adriana Isabel Lorenzo-Roque²

orcid.org/0000-0002-5787-4548
nibby7727@gmail.com

Nicole Stephanie Baquerizo-Quispe²

orcid.org/0000-0002-6998-0284
nicolebaquerizors@gmail.com

Santiago Angel Cortez-Orellana³

orcid.org/0000-0001-7710-3399
d.scortez@upla.edu.pe

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Abstract

Introduction: emotional fatigue and mental disorders have become a growing problem in recent years within the university community. The aim of this research was to determine whether there is an association between emotional fatigue and the presence of self-injurious thoughts and behaviors, as well as suicidal ideation, among medical students at a Peruvian university.

Materials and methods: this was an observational, analytical, cross-sectional study. The diagnosis of fatigue was determined using the Emotional Fatigue Scale (ECE), self-injurious behaviors were assessed with the Self-Harm Questionnaire (SHQ), and suicidal ideation was measured using the Beck Scale for Suicidal Ideation (BSI). The sample consisted of 283 medical students from the Universidad Peruana Los Andes during the 2023-II academic period. The students were surveyed using a probabilistic, stratified sampling method, and all met the inclusion and exclusion criteria. Additionally, the study adhered to the ethical principles of biomedical research, including informed consent and approval from the ethics committee.

Results: a total of 283 medical students were surveyed. The average scores for emotional fatigue and self-injurious thoughts and behaviors were 29.87 (SD=8.98) and 1.18 (SD=1.04), respectively. Moreover, 26.85% of the students reported engaging in self-injurious behaviors. It was found that emotional fatigue was not associated with the presence of self-injurious thoughts and behaviors ($p=0.231$; $R_s=0.100$), but it was associated with the presence of suicidal ideation ($p=0.025$; $R_s=0.134$).

Conclusion: emotional fatigue was not associated with the presence of self-injurious thoughts and behaviors, but it was associated with suicidal ideation.

Keywords: emotional exhaustion, self-harm, suicidal ideation, university students, Peru.

Resumo

Introdução: o esgotamento emocional e os transtornos mentais têm se tornado um problema crescente nos últimos anos na comunidade universitária. O objetivo desta pesquisa foi determinar se existe associação entre exaustão emocional com a presença de pensamentos e comportamentos autolesivos, além da ideação suicida em estudantes de medicina de uma universidade peruana.

Materiais e métodos: trata-se de um estudo observacional, analítico e transversal. O diagnóstico de fadiga foi determinado com a Escala de Exaustão Emocional (ECE), comportamentos autolesivos com o Questionário de Automutilação (SHQ) e ideação suicida com a Escala de Ideação Suicida de Beck (ISB). A amostra foi composta por 283 estudantes de medicina da Universidade Peruana los Andes, durante o período letivo 2023-II, que foram pesquisados de forma probabilística,

¹ Universidad de Huánuco (UDH), Huánuco, Perú.

² Universidad Peruana los Andes (UPLA), Sociedad Científica de Estudiantes de Medicina los Andes (SOCIEMLA), Huancayo, Junín, Perú.

³ Universidad Peruana los Andes (UPLA), Facultad de Medicina Humana, Huancayo, Junín, Perú.

estratificada, que atendeu aos critérios de inclusão e exclusão. Adicionalmente, o estudo atende aos princípios éticos da pesquisa biomédica através da assinatura do termo de consentimento livre e esclarecido e aprovação do comitê de ética.

Resultados: foram entrevistados 283 estudantes de medicina. A pontuação média de exaustão emocional e pensamentos e comportamentos autolesivos foi de 29,87 (DP = 8,98) e 1,18(DP=1,04), respectivamente. Além disso, 26,85% dos participantes apresentaram comportamentos autolesivos. Verificou-se que a exaustão emocional não esteve associada à presença de pensamentos e comportamentos autolesivos ($p=0,231$; $R_s=0,100$), mas sim à presença de ideação suicida ($p=0,025$; $R_s=0,134$).

Conclusão: a exaustão emocional não esteve associada à presença de pensamentos e comportamentos autolesivos, mas sim à ideação suicida.

Palavras-chave: exaustão emocional, automutilação, ideação suicida, estudantes universitários, Peru.

Introduction

Emotional exhaustion in college students has received considerable attention in recent years. The profile of the medical student encompasses competitive and educational qualities (1). Unfortunately, these characteristics can contribute to developing symptoms of fatigue.

Said exhaustion is associated with stressors that can cause demotivation, depression, academic absenteeism and health problems such as chronic non-communicable diseases (for example, obesity) that directly affect their quality of life (2-3).

Within the symptoms of depression resulting from exhaustion, it can lead the medical student to adopt self-harming behaviors and suicidal tendencies (4). Self-harm refers to the action of purposely causing harm to oneself; while suicide involves the effort to voluntarily cause one's own death (5).

Although, self-harm and suicidal ideation is often a consequence of a variety of mental disorders such as depression, anxiety, emotional exhaustion, post-traumatic stress, borderline personality disorder, among others. However, there are people who self-harm or commit suicide without having previous diagnoses of mental disorders (6).

Students who tend to self-harm or have suicidal ideas are a heterogeneous group, with some

being more prone than others. This difficulty in predicting such behavioral alliterations, even though medical evaluations, creates challenges for university authorities, teachers and students (7).

A study of American college students revealed that 85.5% ($n = 17,313$) showed emotional exhaustion. Among these, 0.87%, 0.49% and 0.18% showed self-injurious behaviors, suicide attempts and completed suicides, respectively. It should also be noted that students of rural origin and ethnic origin had a higher probability of suicide with multiple symptoms (8).

Currently, there are no studies that evaluate the variables raised in medical students in Peru. Due to the above, the objective of the present investigation was to determine the association between emotional exhaustion with self-harm and suicidal tendency in medical students at a Peruvian university.

Methods

Observational, analytical, cross-sectional, prospective study. The population consisted of students from the Faculty of Human Medicine who attended between the first and sixth year of the Universidad Peruana los Andes, located in the province of Huancayo, department of Junin. Included were students over 18 years of age, enrolled in the 2023-I academic period and with regular attendance, students without a previous diagnosis of a mental disorder and those who did not agree to participate in the study by signing the informed consent and those who had a physical impediment that prevented them from answering the questions were excluded. The sample was obtained using the stratified sampling technique. First, the students were divided by academic cycles (strata). Then, within each stratum, the students were selected using a simple random sampling method; and it was carried out from July 1 to August 15, 2023.

After obtaining all the corresponding permissions, a questionnaire was prepared containing the variables to be analyzed. All researchers were trained before administering the questionnaire.

Each student who agreed to participate was given the informed consent form and the self-administered questionnaire, after explaining the correct completion of the study instrument. The application was carried out after the end of the class in the selected classrooms, with a duration of approximately 10 minutes, with all researchers being trained.

The anonymously administered questionnaire consisted of two parts; the first contained socio-demographic data (enrollment code, student self-reported sex, age and academic year); and the second part contained the scales described below:

The Emotional Exhaustion Scale (ECE) was created by Ramos-Campos *et al.* (9), and adapted and validated in Spanish by Domínguez *et al.*, in university students (10). The scale aims to quantify the emotional exhaustion variable, to determine its degree in students. This scale is unidimensional and has 10 questions. The responses are in Likert format, with five response options ranging from: "rarely", "a few times", "sometimes", "frequently" and "always". It proved to be valid and reliable with acceptable scores ($r=0.792$, $\alpha=0.853$).

The Self-Harm Questionnaire (SHQ) (11) was used and validated in Spanish by García-Mijares *et al.* (12), which aims to identify the presence of Self-harming thoughts and behaviors in adolescents. This self-administered questionnaire of 15 items contains in its first section three screening questions, the others investigate the characteristics associated with the presence of self-harm such as: "last episode, method used to self-harm, motivation, experience during self-harm, purpose of self-harm, presence of substance consumption during the act, planning and execution of the act, and presence of communication of the episode to another person". The authors found that the sensitivity of the scale to detect self-harm is 98.0%, the specificity is 64.9%, its positive predictive value is 64.9%, and its negative predictive value is 96.9%.

The presence and risk levels of suicidal ideation were evaluated using the Beck Suicidal Ideation Scale (ISB) (13), and validated in Spanish by Gonzales *et al.*, in Mexican university students (14),

which consists of 19 items, where the intensity of specific attitudes, behaviors and plans to commit suicide is evaluated. It is divided into the following dimensions: attitude towards life/death, suicidal thoughts or desires, planned suicide attempt, realization of the planned attempt. Each question consists of 3 options, with a range of 0 to 2 points, which are added to obtain a total score. The total score range is 38.

This study had the approval of the institutional ethics committee of the Faculty of Human Medicine of the Universidad Peruana los Andes (UPLA). Likewise, the research complied with the bioethical principles of the Declaration of Helsinki, the students were previously consulted about their willingness to participate in the research by signing the informed consent. Additionally, the data collected were coded to ensure the anonymity of the participants.

Since the study deals with sensitive information related to mental health, educational talks were held under the supervision of a psychologist. During these sessions, students who identified with the topics discussed were invited to approach the student welfare area for psychological support.

The data from the questionnaires were collected in a spreadsheet of the Microsoft Office Excel 2019 program, subsequently, the statistical quantification was carried out through the STATA 16 statistical software.

To evaluate the general characteristics, a univariate analysis was carried out through measurements of frequencies and percentages for the categorical variables, and numerical data through measures of central tendency and dispersion. Regarding the bivariate analysis, the Student's *t* test, one-way analysis of variance (ANOVA), and Spearman's correlation coefficient were used, depending on the normality of the variables, and for the analysis multivariate, generalized linear Poisson-type models with robust variance were used, estimating crude and adjusted models with their regression coefficients (β) and respective 95% confidence intervals (95% CI). The statistically significant association was considered to be those confidence intervals that do not contain unity and

a significance value ($p < 0.05$).

Results

The population consisted of 749 medical students, of which a total of 301 were surveyed, 11 incomplete questionnaires and 7 with multiple answers to the same question were detected, leaving a total of 283 questionnaires for analysis. It was found that the students had an average age of 21.1 ± 3.4 years, being mostly women 164 (58.0%) versus men 119 (42.0%) and basic sciences

146 (51.6%).

In Table 1, a higher average value of Emotional Exhaustion was found in female students, in the age group of 21 to 23 years and belonging to clinical-surgical courses. In addition, the bivariate analysis found an association between emotional exhaustion and sex and age group. Additionally, basic science students were less likely to present high values of emotional exhaustion in relation to those who were enrolled in clinical-surgical courses.

TABLE 1 – Emotional exhaustion in medical students at a Peruvian university.

Emotional exhaustion	Univariate analysis		Bivariate analysis	Multivariate analysis	
	n	Mean \pm SD	p	crude β (95% CI)	adjusted β (95% CI)
Sex					
Male	119	27.2 \pm 8.4	0.000*	Ref.	Ref.
Female	164	31.8 \pm 8.9		1.170 (1.091-1.255)‡	1.159 (1.079-1.245)‡
Age group					
18-20 years	143	30.2 \pm 8.4		1.130 (1.020-1.251)‡	1.211 (1.001-1.255)‡
21-23 years	98	30.7 \pm 9.9	0.044†	1.149 (1.028-1.285)‡	1.127 (1.008-1.261)‡
24 years or more	42	26.7 \pm 8.2		Ref.	Ref.
Graduate School					
Basic sciences	146	29.8 \pm 9.1	0.808*	0.991 (0.924-1.063)‡	0.976 (0.899-1.060)‡
Clinical-Surgical	137	30.0 \pm 8.9		Ref.	Ref.
Total	283	29.9 \pm 9.0			

*Student's t-Test, †ANOVA Test; ‡Poisson regression.

In Table 2, a higher number of cases of presence of self-harming thoughts and behaviors were evident in female university students, in the age group 18 to 20 years and in basic sciences. Regarding the bivariate analysis, differences were found between the presence of self-harming thoughts and behaviors with the academic year

and age group. In addition, in the multivariate analysis, women were more likely to have self-harming thoughts and behaviors compared to men in both the crude model and the adjusted model. Regarding age, students aged 18 to 20 years were less likely to present self-harming thoughts and behaviors in the adjusted model.

TABLE 2 – Presence of self-harming thoughts and behaviors in medical students from a Peruvian university.

Variables	Self-harming thoughts and behaviors		Bivariate analysis	Multivariate analysis	
	Yes n (%)	No n (%)	<i>p</i>	crude OR (95% CI)	adjusted OR (95% CI)
Sex					
Male	27(22.7)	92(77.3)	0.073*	Ref.	Ref.
Female	49 (29.9)	115(70.1)		1.452 (0.843-2.501) ‡	1.501 (0.865-2.604) ‡
Age group					
18-20 years	35 (24.5)	108(75.5)	0.000†	0.810 (0.375-1.750) ‡	0.652 (0.262-1.584) ‡
21-23 years	29 (29.6)	69(70.4)		1.051 (0.473-2.333) ‡	0.982 (0.439-2.199) ‡
24 years or more	12(28.6)	30(71.4)		Ref.	Ref.
Graduate School					
Basic sciences	39 (26.7)	107(73.3)	0.000*	0.985 (0.582-1.667) ‡	1.273 (0.656-2.469) ‡
Clinical-Surgical	37(27.0)	100(73.0)		Ref.	Ref.
Total	76 (26.9)	207(73.1)			

*Student's t-Test, † ANOVA Test; ‡Poisson regression.

In Table 3, a higher average of suicidal ideation was found in female students, in the age group of 21 to 23 years and from basic sciences. In the bivariate analysis, no significant differences were observed between the risk of suicidal ideation and sex, age group and academic cycle. In rela-

tion, the multivariate analysis showed that male students were more likely to suffer from risk of suicidal ideation in the adjusted model in relation to men, students aged 24 years or older and from clinical-surgical sciences cycles; respectively.

TABLE 3 – Suicidal ideation in medical students at a Peruvian university.

Suicidal ideation	Univariate analysis		Bivariate analysis	Multivariate analysis	
	n	Mean±SD	<i>p</i>	crude OR (95% CI)	adjusted OR (95% CI)
Sex					
Male	119	1.1±1.1	0.198*	1.386 (0.843-2.281) ‡	1.399 (0.844-2.318) ‡
Female	164	1.2±1.0		Ref.	Ref.
Age group					
18-20 years	143	1.1±1.0	0.631†	1.346 (0.664-2.730) ‡	0.984 (0.436-2.222) ‡
21-23 years	98	1.2±1.1		1.541 (0.727-3.267) ‡	1.462(0.686-3.118) ‡
24 years or more	42	1.2±1.2		Ref	Ref
Graduate School					
Basic sciences	146	1.2±1.0	0.313*	1.290(0.787-2.115) ‡	1.533 (0.818-2.872) ‡
Clinical-Surgical	137	1.2±1.1		Ref	Ref
Total	283	1.2±1.0			

*Student's t-Test, † ANOVA Test; ‡Poisson regression.

Discussion

Our study found a lower mean score than a study carried out on university students from a Spanish university (29.4 ± 7.0) (15) and a multicenter study carried out on nursing students from three Catalan and one Chilean universities (31.2 ± 8.0) (16).

It should be noted that our study showed that the degree of emotional exhaustion is greater in students in the clinical and surgical area. On this point, it should be considered that the medical student is constantly evaluated by his teachers, his peers and even in sometimes by the patients themselves with whom he develops his practices in the clinical field and who on numerous occasions become spectators of his performance, which generates in them that the clinical field and the presentation of the cases in their hospital practice generate different degrees of stress and exhaustion to the extent that you manage to overcome the demands placed on you; It must be taken into account that the stage of clinical-surgical practices is the stage of integration of the knowledge acquired in the pre-clinical stage which is raised to a level of applicability for which not everyone is prepared to the same extent (17-21).

Our study found a higher presence of suicidal ideation compared to a study conducted on medical students at a university in Guatemala 24.0% (n=600) (22). Additionally, women presented greater suicidal ideation compared to men, which is similar to what was reported by Pinzón-Amado et al., in Colombian students from three different universities (23).

Suicidal tendency encompasses a series of thoughts and ideations on the part of a person in relation to taking their own life, whether structured or not and expressed openly or not, they represent a risk on the part of the person who presents them to complete the interruption of their existence through suicide; To this we must add that, in many cases, the presentation of these tendencies does not occur suddenly, but, on the contrary, they are part of a progressive spiral of emotional alterations that pass through self-harming behaviors and that, in many cases

begin with the presentation of emotional fatigue (17, 18, 23-26).

Our study showed that women are more likely to present self-harming thoughts and behaviors, which is similar to a study carried out on university students from Canada and Mexico (27, 28).

That said, it is known that in the case of human medicine students, entering or accessing this study program constitutes a great challenge, to the extent that they begin a path of high academic demand in its different components, since cognitive level they are forced to incorporate increasingly complex information at the same time that they link it with their previous knowledge, in the procedural sphere they are faced with the requirement to develop clinical and surgical skills that increasingly pose higher and higher levels. of complexity as well as difficulty and finally at an attitudinal level, they must integrate into their personality traits of thought and action framed in respect for life and its environment in a global way; This panorama, according to some researchers, would largely be a breeding ground for the emergence among this student population of self-harming ideas and even suicidal ideation associated with the emotional exhaustion generated by the stress to which they are exposed every day (17-21).

Finally, it became evident that despite presenting cases of emotional exhaustion, these were more associated with suicidal ideation than with self-harming behaviors, this probably due to other associated factors beyond emotional exhaustion at a personal level, such as depressive states or the socio-economic situations that in many cases they must face, which would act as an enhancer for the alteration of their emotional health, pushing them towards suicidal ideation as a way to get out of the state in which they find themselves, it is necessary in this sense to keep in mind the need for university authorities to implement strategies for identifying probable cases of suicidal ideation in order to carry out timely interventions that keep young medical students safe, who – as already noted before – are exposed by the demands to which he is subjected to higher levels of personal

pressure in the academic field (18-21, 25,26).

Within the limitations of the present study, it was the methodological design since the study variables were observed and analyzed during an academic cycle since when analyzed for a longer period of time these could differ, and in addition causality cannot be determined. Another limitation is that it was carried out at a single university, preventing comparisons with other universities and having a broader vision of the observed findings. Finally, the study was subject to students not responding truthfully or accurately (information bias).

In conclusion, emotional exhaustion was not associated with the presence of self-harming thoughts and behaviors. In contrast, the presence of emotional exhaustion was associated with the presence of risk of suicidal ideation.

Notes

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Conflicts of interest disclosure

The authors declare no competing interests relevant to the content of this study.

Authors' contributions

All the authors declare to have made substantial contributions to the conception, or design, or acquisition, or analysis, or interpretation of data; and drafting the work or revising it critically for important intellectual content; and to approve the version to be published.

Availability of data and responsibility for the results

All the authors declare to have had full access to the available data and they assume full res-

ponsibility for the integrity of these results.

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-
- Christian Renzo Aquino Canchari**
- Master's degree in Stomatology from the Universidad Peruana Cayetano Heredia (UPCH), Lima, Peru; medical surgeon graduated from the Peruvian University Los Andes (UPLA). Dentist from the Inca Garcilaso de La Vega University (UIGV), Lima, Peru. Professor at the Universidad Peruana Los Andes (UPLA), Huancayo-Junin, and Universidad Privada Franklin Roosevelt, Huancayo, Peru, and research professor at the Universidad de Huánuco (UDH), Huánuco, Peru.
-
- Diana Maricielo Florez-Soto**
- Student at the School of Human Medicine at the Universidad Peruana los Andes (UPLA), Huancayo-Junin, Peru. Member of the Scientific Society of Medical Students Los Andes (SOCIEMLA), Huancayo, Peru.
-
- Adriana Isabel Lorenzo-Roque**
- Student at the School of Human Medicine at the Universidad Peruana los Andes (UPLA), Huancayo-Junin, Peru. Member of the Scientific Society of Medical Students Los Andes Huancayo (SOCIEMLA), Peru.
-
- Nicole Stephanie Baquerizo-Quispe**
- Student at the School of Human Medicine at the Universidad Peruana los Andes (UPLA), Huancayo-Junin, Peru. Member of the Scientific Society of Medical Students Los Andes Huancayo (SOCIEMLA), Peru.

Santiago Angel Cortez-Orellana

Doctor of Medicine from the Universidad Peruana Los Andes, Huancayo, Peru; surgeon specialist in Forensic Medicine. Professor at the Universidad Peruana Los Andes (UPLA) and Universidad Continental, Huancayo-Junín, Peru.

Mailing address

Christian Renzo Aquino Canchari

University of Huánuco

Jirón Hermilio Valdizan 859-885, Huánuco

Postal code: 10001

Huánuco, Peru

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