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FACTORS ASSOCIATED WITH ANXIETY IN MEDICAL INTERNS AT A PRIVATE UNIVERSITY IN THE CONTEXT OF THE COVID-19 PANDEMIC

FACTORES ASOCIADOS A LA ANSIEDAD EN INTERNOS DE MEDICINA DE UNA UNIVERSIDAD PRIVADA EN EL CONTEXTO DE LA PANDEMIA COVID-19

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ABSTRACT

Objective: To determine the factors associated with anxiety in medical interns at a private university in the context of the COVID-19 pandemic. **Methods:** The study design is quantitative, observational, analytical, retrospective, cross-sectional. The sample was composed of 343 human medicine interns, who were selected by a non-probabilistic snowball type sampling. The Coronavirus Anxiety Scale instrument was used for the diagnosis of anxiety. A Poisson regression model with robust bivariate and multiple variances was used to calculate the prevalence ratio and their respective 95% confidence intervals. **Results:** The prevalence of anxiety and severe depressive symptoms of 22,74% and 6,71% respectively was found. Depressive symptoms aPR 3.27 (95% CI 1,06 - 10,09), having children aPR 2,61 (95% CI 1,26 - 5,38), and the diagnosis of COVID-19 in the last 12 months aPR 2,20 (95% CI 1,25 - 3,87) were associated with the presence of anxiety in the multiple regression model. **Conclusions:** The presence of severe depressive symptoms, having children, the diagnosis of COVID-19 in the last 12 months are associated with the diagnosis of anxiety in medical interns at a private university in Lima, 2021.

Keywords: Medical studentes; Anxiety; Depression;, COVID-19. (Source: MeSH NLM).

RESUMEN

Objetivo: Determinar los factores asociados a la ansiedad en internos de medicina de una universidad privada en el contexto de la pandemia COVID-19. **Métodos:** El diseño del estudio es cuantitativo, observacional, analítico, transversal. La muestra estuvo comprendida por 343 internos de medicina humana, los cuales se seleccionaron por un muestreo no probabilístico tipo bola de nieve. Se empleó el instrumento Coronavirus Anxiety Scale (CAS) para el diagnóstico de ansiedad. Se trabajó con un modelo de regresión de Poisson con varianzas robustas, bivariado y múltiple, para el cálculo de la razón de prevalencia y sus respectivos intervalos de confianza al 95%. **Resultados:** Se encontró una prevalencia de ansiedad y síntomas depresivos severos del 22,74% y 6,71% respectivamente. Los síntomas depresivos RPa 3,27 (IC95% 1,06 – 10,09), la tenencia de hijos RPa 2,61 (IC95% 1,26 – 5,38) y el diagnóstico de la COVID-19 en los últimos 12 meses RPa 2,20 (IC95% 1,25 – 3,87) se asociaron a la presencia de ansiedad en el modelo de regresión múltiple. **Conclusiones:** La presencia de síntomas depresivos severos, la tenencia de hijos, el diagnostico de la COVID-19 en los últimos 12 meses se asocian al diagnóstico de ansiedad en los internos de medicina de una universidad privada de Lima, 2021.

Palabras claves: Estudiantes de medicina; Ansiedad; Depresión; COVID-19. (Fuente: DeCS BIREME).

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INTRODUCTION

The COVID-19 pandemic associated with SARS-CoV-2 has increased and produced changes at the level of the physical and psychological sphere of populations belonging or not[1,4] to the field of health sciences. During this context, medical students at an international level highlight problems such as anxiety, depression, and distress, obtaining prevalence values that vary between 31.6-74% for depression, 28.5-57% for anxiety, and 65% for distress [3,5-8] .

Anxiety is defined as the anticipation of a future threat without compromising the daily activities of the person; when this aspect is compromised, it is considered pathological and is included within anxiety disorders, while [9] major depression is considered a disorder that limits the psychosocial sphere and reduces the quality of life[10].

These conditions can be attributed to various factors [11] , among which, at the national level, family economic problems, being a woman, and fear that their medical training will be delayed or deteriorate stand out. Internationally, a study in[12] Egypt found that having a previous history of psychiatric disorders was statistically associated with depression and anxiety during the pandemic. At the same time [13] in France, it was reported that changes in consumption of alcohol and online learning difficulties were considered statistically significant factors. On the other hand, a study conducted in China found that stressors at school, a negative coping style, and stress were predictors of anxiety symptoms [14]. Similarly, another study conducted in China found that optimal knowledge about COVID 19 was not associated with mental distress among medical students and non-medical students.

However, the psychological situation at the level of medicine interns presents other factors such as belonging to the female gender, having a medical condition, working in high-risk departments, and the lack of adequate personal protection equipment (PPE), which is associated with a degree higher of distress. In parallel, adequate training in the use of PPE, difficulty in practicing physical distancing, and indecisiveness in caring for patients were factors that were associated with depression and anxiety in internal physicians in Indonesia[16].

Having established the current situation of mental health in health sciences personnel, we consider it appropriate to determine the factors associated with anxiety in human medicine students at a private university in Lima in the context of the pandemic associated with COVID-19.

METHODS

Study Design

This study had an observational, analytical, cross-sectional design. The data collection was carried out during the months of November to December of the year 2021.

Population and sample

The target population was made up of 521 human medicine interns from the Universidad Privada San Juan Bautista (UPSJB) private university during the year 2021 as selection criteria. It was considered that they had given their informed consent, filled out the questionnaire completely, had not withdrawn from the medical internship, had not presented a previous diagnosis of bipolar disorder,

schizophrenia, obsessive-compulsive disorder, anxiety, or depression, which were asked at the beginning of the questionnaire.

The present work managed to cover 388 participants through a non-probabilistic sampling, of which 29 expressed their refusal to participate in the study through informed consent and 16 participants presented incomplete questionnaires, which left us with a sample size of 343 inmates of human medicine.

Variables and instruments

A virtual questionnaire was distributed via institutional email to all medical interns, which was attached to a database in Excel format; later, the data was transferred to the SPSS v26 format for statistical analysis.

They worked with variables such as age, gender, marital status, having children, access to PPE, diagnosis of COVID-19 in the last 12 months, place of medical hospitalization, and for the measurement of anxiety, they worked with the (CAS) questionnaire, the psychometric analyzes confirmed that the scale has a unidimensional structure and solid reliability, omega coefficient ω = 0.93 and validity by factor analysis [17], which has a cut-off point greater than or equal to at nine points to determine anxiety, in turn, to determine the gradation of depressive symptoms, the Patient Health Questionnaire nine (PHQ-9) instrument was used, which was classified as 0 - 4 none, 5 - 9 mild, 10 - 14 moderate, 15-19 moderately severe and 20-27 severe.

Statistical analysis We

Worked using the statistical package SPSS version 26 to analyze the collected data.

For the univariate statistical analysis, the qualitative variables were taken and summarized in absolute and relative frequency tables, and the quantitative variables reported the mean and standard deviation.

Subsequently, for the inferential statistical analysis, the chi-square test of independence was used. In the case of presenting one or more boxes with expected values less than five, Fisher's exact test was used. In both cases, a statistically significant association was used established with a p-value <0,05.

To determine the strength and direction of the association, the raw and adjusted prevalence ratio was estimated with their respective 95% confidence intervals, using bivariate and multivariate Poisson regression models, wherein the multivariate model, those independent variables were entered whose coefficients will show statistical significance.

Ethical issues

The present study had the approval approved by the ethics committee of the Faculty of Human Medicine of the Universidad San Juan Bautista, with an approval certificate number 1266. To align with the criteria stipulated in the Declaration of Helsinki, this study provided the participants with informed consent explaining the use of the registered data and the confidentiality measures used to safeguard the privacy and anonymity of the individual.

RESULTS

From the population of 531 human medicine interns at the UPSJB, a total of 388 participants were included, of which 29 expressed their refusal to participate in the study through informed consent, and 16 presented incomplete questionnaires, which left us with a target population of 343 students. The reliability of the Covid Anxiety Scale (CAS) and Patient Health Questionnaire (PHQ9) instruments was analyzed using Cronbach's alpha coefficient for internal consistency measurement, with results of 92% and 88.2%, respectively.

Anxiety in human medicine students at a private university in Lima in the context of the pandemic associated with COVID-19.

Univariate Statistics

A prevalence of anxiety was reported through the CAS instrument of 22,74% and mild-moderate, moderate-severe and severe depressive symptoms of 19,83%, 44,31%, 18,37%, and 6,71%, respectively, using the PHQ-9 questionnaires.

The mean and standard deviation of the age was 26,36 +/- 2,37 years, the distribution according to gender was 45,8% and 54,2% for men and women, respectively, the marital status of the respondents was 93,3% in single status and 6,7% married, no separated, divorced, or widowed respondents were reported, in turn, the number of respondents with children was 7,9%.

Regarding the distribution by medical boarding schools, 27,4% were reported for hospitals, 67,1% for health centers, and 5,5% for clinics; In turn, 39,9% of access to PPE was reported by health establishments for inmates, the diagnosis with COVID-19 in inmates was 47,5% in the last eight months, and 79,6% reported presenting family members at risk of severe symptoms due to Sars-Cov-2. Table 1

Table 1. Univariate analysis of the sociodemographic characteristics of human medicine interns at a private university

Variables	n%
Gender	
Male	157 (45,8%)
Feminine	186 (54,2%)
Civil status	
Single	320 (93,3%)
Married	23 (6,7%)
Medical Internship	
Center Clinic	230 (67,0%)
Hospital	94 (27,4%)
Clinic	19 (5,5%)
Sons	
Yes	27 (7,9%)
No	316 (92,1%)
Live with people at risk for severe symptoms from Sars-Cov2	
Yes	273 (79,6%)
No	70 (20,4%)
Diagnosis of COVID-19	
Yes	163 (47,5%)
No	180 (52,%)
Access to PPE	
Yes	137 (39,9%)
No	206 (60,1%)

Table 2. Bivariate and multiple analysis by Poisson regression model with Robust variances

	Anxiety		Crude regression				model Adjuste			
	Yes	No	RPc	CI 95%		p-value	RPa	CI 95%		p-value
Severe										
Moderate	13(56.5%)	10(43.5%)	6.97	2.22	-21.85	<0.001	3.27	1.06	10.09	0.04
severe Moderate	22(34.9%)	41(65.1%)	4.31	1.38	-13.41	0.001	2.39	0.81	7.08	0.12
Mild	36(23.7%)	116(76.3%)	2.92	0.95	-8.97	0.012	2.10	0.74	5.91	0.16
none	4(5.9%)	64(94.1%)	0.73	0.17	-3.07	0.061	0.67	0.17	2.58	0.56
	3(8.1%)	34(91.9%)	.	.		0.663	.	.		
Gender										
Male	22 (14%)	135(86%)	2.15	1.38	3.35	0.001	1.22	0.76	1.95	0.415
Female	56 (30.1%)	130(69.9%)								
Marital Married	13(56.5%)	10(43.5%)	2.78	1.83	4.23	0.001	0.73	0.31	1.72	0.473
Single	65(20.3%)	255(79.7%)								
Children										
Yes	17(63%)	10(37%)	3.26	2.26	4.71	0.001	2.61	1.27	5.38	0.009
No	61(19.3%)	255(80.7%)								
Lives with people at risk for serious symptoms due to Sars Cov2 -										
Yes	64(23.4%)	209(76.6%)	1.17	0.7	1.96	0.55				
No	14 (20%)	56(80%)								
Place of internship Medica										
Hospita	24(25.5%)	70(74.5%)	0.23	0.03	1.56	0.13				
Clinic	1(5.3%)	18(94.7%)	1.11	0.73	1.68	0.23				
Health Center	53(23%)	177(77%)	.							
Diagnosis of Covid-19										
Yes	60(36.8)	103(63.2%)	3.68	2.27	5.96	0.001	2.21	1.26	3.88	0.006
No	103(63.2%)	162(90%)								
Access to PPE										
Yes	20(14.6)	117(85.4%)	0.52	0.33	0.82	0.005	0.75	0.47	1.19	0.224
No	58(28.2%)	148(71.8%)								

Analysis of the Bivariate Regression Model A Poisson

Regression model was performed with variances robust to obtain the crude prevalence ratio with their respective 95% confidence intervals; of the study variables, a statistically significant association was found for the variables, depressive symptoms, gender, marital status, children, living with people with risk for severe symptoms of covid, place of medical internment, diagnosis of COVID-19 and access to PPE. Table 2

Analysis of the multiple regression model Subsequently

A Poisson regression model with multiple robust variances was carried out to obtain the ratio adjusted prevalence with their respective 95% confidence intervals with that The variables whose prevalence ratios have a p-value less than 0.05. Finally, the variables severe depressive symptoms, diagnosis of COVID-19 in the last 12 months and access to PPE were those variables that presented statistical significance. Table 2

DISCUSSION

The present study found a relationship for anxiety with the following characteristics, diagnosis of covid 19 in the last 12 months, having children, and presenting severe grading depressive symptoms.

Using the PHQ-9, differences were found between the frequency of moderate to severe depressive symptoms in our results, 69.4%, with those published by García-Iglesias et al.[18], whose systematic review study conducted on health professionals reviewed a total of 13 articles, found a frequency of 50.7%, this being lower than ours, within the population differences we can identify as probable factors of said difference, the limited access to PPE reported by medical students, coupled with the coexistence of these with relatives at risk of developing severe symptoms from Sars-Cov-2.

The anxiety results in our study were 22.7%, which were lower than those reported by García-Iglesias et al., who reported that the percentage of anxiety in health professionals ranged between 26,5% and 44,6% 14; these differences are probably due to the legal responsibility that the doctor must bear towards his patients, a situation that is not the same with medical students since they do not have any type of responsibility related to the management or treatment of the patient.

The cross-sectional study carried out by Zheng et al.[19] which was carried out in a sample of 3 228 nurses in China reported a total incidence of depression of 34,3% and anxiety of 18,1%, respectively. Likewise, it was found that working in areas of high and low risk for COVID-19 is associated with depression. In contrast, our study found a prevalence of anxiety of 22.7% as well as depressive symptoms (Mild, moderate, moderate-severe, and severe) with values of 19.8%, 44.3%, 18.4%, and 6.7%, respectively. The disparity of the data can be attributed to the sample size, level of knowledge, types of exposure areas, number of working hours, and the health center's preventive management.

Another cross-sectional study conducted by Zheng et al.[20] evaluated the factors associated with depression, anxiety, and stress in a population of nurses, using multivariate logistic regression analysis. Working in an isolation ward or in a fever clinic was an independent risk factor associated with depression, anxiety, and stress. Likewise, having suspected or confirmed patients with COVID-19 in the departments, coming into contact with body fluids and having less than 10 years of work were considered independent risk factors with OR values of 1 554 (95% CI: 1.469 and 1.678), respectively. These data may show an overestimation due to the use of the Odds Ratio (OR), due to a prevalence greater than 10% in both depression (15.4%), anxiety (32.6%), and stress (18%). On the other hand, our study, using the prevalence ratio (PR) as a measure of association, determined that severe depression ($p<0.039$), children ($p<0.009$), and diagnosis of COVID-19 ($p<0.006$) were associated statistically with anxiety.

However, at the national level, a study by Huarcaya Victoria et al. used the Patient Health Questionnaire-9 (PHQ-9), Generalized Anxiety disorder 7 (GAD-7), and Impact of event scale-revised (IES-R) questionnaire, which is already greater than 5-10% in this population.

through logistic regression analysis, they determined factors associated with anxiety, depression, and stress. Among these the female sex, being in preclinical years (aOR=2.35), not having family economic stability (aOR=2.05) and the fear of damaging medical training

since the pandemic (aORr=2,46), [21] were statistically significant.

Our results align with those published by Liu et al.[22] and Nayak et al. [23], identifying an association by bivariate regression model between anxiety and married marital status. However, when performing the regression model multiple ours finds no association. The loss of association in our study could be because the main anxiety-generating factor is the presence of children, which remains in our multiple regression model. At the same time, it is important to mention that these studies use a logistic regression model whose odds ratios was only carried out in medical interns from a single faculty, which could affect the moment of extrapolating the data to the population of interns in metropolitan Lima and National, non-probabilistic convenience type sampling could affect the representativeness of the sample, which could affect the precision of the statistics that are proposed to be presented as population estimators.

CONCLUSIONS

There is an association between the presence of severe depressive symptoms, having children, the diagnosis of covid-19 in the last 12 months with the diagnosis of anxiety in medical interns at the UPSJB during the year 2021.

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