Original Article

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Depression, Anxiety, and Burnout, Their Association with Academic Dropout Ideation in Medical Residents

Depresión, ansiedad y burnout y su asociación con ideación de deserción académica en médicos residentes

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Summary

Objective: to analyze the association between depression, anxiety, and burnout with the risk of academic desertion, and ideation of academic desertion in medical residents. **Methods:** Cross-sectional study with a sample of 200 medical residents in Mexico City. Maslach, Beck, and Hamilton scales were used to assess burnout, depression, and anxiety, respectively. The main variable was academic desertion. Statistical analysis included descriptive and inferential methods; risk was assessed by odds ratio (OR). Multivariate models were used to explore associations, with statistical significance considered at p <0.05. **Results:** The frequency of depression, anxiety, and burnout was 17% (n= 34), 26.5% (n= 53), and 19.5% (n= 39), respectively. The presence of depression was associated with up to a fourfold and sixfold increase in desertion and desertion ideation, respectively (OR= 4.04, 95% CI 1.41 - 11.5, p= 0.006, OR 6.5, 95% CI 2.9 - 14.6, p= 0.000). Anxiety showed no association with turnover (OR= 1.02, 95% CI 0.26 - 4.01, p= 0.967). The presence of burnout doubled the risk (OR= 2.2, 95% CI 1.07 - 4.52, p= 0.001). In the multiple analysis, depression increased the risk of dropping out up to fourfold. **Conclusion:** The presence of depression was the disorder most associated with dropout and dropout ideation. It is necessary to establish prevention, and detection programs at medical residency sites.

Keywords: Anxiety; Depression; Burnout Syndrome; Academic Dropout; Medical Residency.

Resumen

Objetivo: analizar la asociación entre la depresión, ansiedad y burnout con el riesgo de deserción e ideación de deserción académica en médicos residentes. **Métodos:** estudio transversal con una muestra de 200 médicos residentes en la Ciudad de México. Se aplicaron las escalas de Maslach, Beck y Hamilton para evaluar burnout, depresión y ansiedad, respectivamente. La variable principal fue la deserción académica. El análisis estadístico abarcó métodos descriptivos e inferenciales; el riesgo se evaluó mediante odds ratio (OR). Se emplearon modelos multivariados para explorar asociaciones, considerando significancia estadística con p <0.05. **Resultados**: la frecuencia de depresión, ansiedad y burnout fue de 17% (n= 34), 26.5% (n= 53) y 19.5% (n= 39) respectivamente. La presencia de depresión se asoció con un aumento en la deserción y la ideación de deserción de hasta cuatro y seis veces más respectivamente (OR= 4.04, IC 95% 1.41 – 11.5, p= 0.006, OR 6.5, IC 95% 2.9 – 14.6, p= 0.000). La ansiedad no mostró asociación con la deserción (OR= 1.02, IC 95% 0.26 - 4.01, p= 0.967). La presencia de burnout incrementó el riesgo dos veces más (OR= 2.2, IC 95% 1.07 – 4.52, p= 0.001). En el análisis múltiple la depresión aumentó hasta cuatro veces el riesgo de deserción académica. **Conclusión**: la presencia de depresión fue el trastorno más relacionado con la deserción y la ideación de deserción académica. Es necesario establecer programas de prevención y detección en las sedes de residencias médicas.

Palabras clave: ansiedad, depresión, síndrome de burnout, deserción académica, residencia médica.

Introduction

The term "mental disorder" lacks a consistent operational definition that encompasses all the possibilities involved. It has been used to refer to a variety of concepts such as discomfort, lack of control, limitation, incapacity, and irrationality; it directly affects the integrity of those who suffer from it. In 2020, the World Health Organization (WHO) stated that people with severe mental disorders have a life expectancy 10 to 20 years less than the general population. Depression is one of the world's leading disorders, and is considered a major cause of disability.[1]

Medical students worldwide have a higher prevalence of mental disorders than the general population. Depression, burnout, and anxiety are the most common mental disorders,[2-4] affecting cognitive function and academic, professional, social, and personal performance. In the healthcare setting, the professional and occupational consequences can be devastating, compromising the effectiveness of medical care provided to the patient and their family.[5]

Postgraduate medical students face constant stress from educational, economic, legal, political, cultural, and ideological factors. Obligations and responsibilities vary according to the academic year.[6] For medical residents, exposure to chronic stress is unavoidable, and associated with exhausting work hours. This results in negative attitudinal changes such as isolation, anhedonia, and disinterest in people and life. These elements contribute to depersonalization in those with mental disorders, decreasing enthusiasm and motivation to continue in medical residency, which can lead to academic dropout.[7-9]

In the clinical setting, residents face demanding work hours, poor hospital infrastructure, and little support. Hostile training practices encourage narcissistic behavior. As a result, residents may fail to recognize mistakes or minimize personal problems, reducing the likelihood of seeking timely help. This fosters the development of burnout and other psychological disorders,[10] leading to residency attrition and dropout. Although the association of these factors with academic desertion among medical residents is not fully understood, this study seeks to analyze the relationship between depression, anxiety, burnout, and risk of attrition and ideation of academic desertion.

Methods

The sample size was calculated using the proportional formula, considering a population of analytical cross-sectional study conducted among resident physicians of different medical specialties in a health institution located in the northern area of Mexico City. All participants were in their first to fourth year of residency. The specialties included were Anesthesiology, General Surgery, Geriatrics, Gynecology, Physical Medicine, Family Medicine, Internal Medicine, Pediatrics, Psychiatry, and Emergency Medicine. All participants accepted and signed the informed consent form.

520 residents, an expected desertion rate of 7.5%, a confidence interval of 5%, and a confidence level of 99.9%, yielding a sample of 197 residents. Those with a previous diagnosis of mental pathology, in COVID-19 confinement, or with disabling illnesses were excluded. Incomplete questionnaires or questionnaires with inconsistent responses or random response patterns were eliminated.

The following instruments were used: the Maslach Burnout Question-

naire,[11] which has a Cronbach's alpha reliability of 0.71. A translated and validated version was used, consisting of 22 items with 7 response options on a Likert-type scale from 0 to 6 (0: never; 1: a few times a year or less; 2: once a month or less; 3: a few times a month or less; 4: once a week; 5: a few times a week; 6: every day). The maximum score is 132 points, the minimum is 0. Cut-off points were determined by dividing the total score into three thirds, with the last third (above 88 points) representing burnout. The first two thirds (between 0 and 87 points) without burnout.

The validated Beck Inventory for the Detection of Depression[12] has a reliability with a Cronbach's alpha of 0.83. This instrument consists of 21 items with 4 response options. Scores are classified as follows: 0-13= no depression, 14-19= mild depression, 20-28= moderate depression, and 29-63= severe depression.

Finally, the Hamilton Scale, validated for the detection of anxiety and with a Cronbach's alpha of 0.86, was used. The cut-off points established were: 0-7 no anxiety, 8 to 14 moderate anxiety, and over 25 severe anxiety.[13] The questionnaires were distributed electronically using the "Google Forms"[14] application, and sent to the participants.

The main variables addressed were dropout history, which was investigated in the databases of the Auxiliary Coordination of Institutional Education, and dropout ideation, characterized by the intention to abandon academic studies, expressed through a cynical and distant attitude towards the value of education together with feelings of academic ineffectiveness.[15,16] Ideation was assessed through the direct question: Have you thought about abandoning your residency studies? Other variables considered included age, gender, specialty, academic year, marital status, and the presence of depression, anxiety, and burnout syndrome. The latter was defined as a state of occupational physical and emotional exhaustion after prolonged exposure to work-related problems.[17,18] To define depression, the DSM-V Manual was used, which includes symptoms such as depressed mood, markedly diminished interest or pleasure, changes in weight or appetite, sleep disturbances, agitation or psychomotor retardation, fatigue, feelings of worthlessness and difficulty concentrating.[19] Anxiety is conceptualized as an apprehensive feeling, accompanied by somatic symptoms, and can become pathological when it manifests itself as a state of agitation, and restlessness that affects normal activities.[20]

In the statistical analysis, qualitative variables were summarized by frequencies, and percentages, while quantitative variables were described by measures of central tendency and dispersion. The χ2 test was used to compare proportions of qualitative variables. The Student's t-test was then used to compare means. Statistical significance was considered when the p-value was <0.05. Bivariate analysis and multiple models were performed. The odds ratio (OR) was calculated for measures of association. The study adhered to international ethical standards and was approved by the local research, and institutional ethics committee.

Results

Two hundred resident physicians were surveyed; 58% (n= 116) were female. The mean age was 30.1 years (± 4.1) with a range of 25 to 52 years. The specialty with the most participants was Family Medicine with 59% (n= 118) of the total. The most frequent academic grade was first year with 49.5% (n= 99). 31.5% (n= 63) of the respondents reported having considered abandoning their medical residency studies, while 8.5% (n= 17) reported having previously experienced academic desertion in medical specialties other than their current one. The academic grade in which the students interrupted their studies the most was the first year, and the main reason was due to personal causes, such as burnout, or poor conflict management, the total demographic data and frequency of desertion can be seen in Table 1.

It was identified that 2% (n= 4) of residents with major depression, 7.5% (n= 15) with moderate depression, 7.5% (n= 15) with intermittent depression, and 19.5% (n= 39 residents) with mild depression. Those who required treatment due to their level of depression accounted for 17% (n= 34), located in the intermittent, moderate and severe levels of depression. No resident with an extreme level of depression was identified.

Moderate anxiety was observed in 14% (n= 28) and severe anxiety in 12.5% (n= 25). The specialty with the highest frequency of anxiety was anesthesiology, followed by geriatrics. Moderate and severe anxiety was observed in 29.4% of women compared to 22.6% of men. The second year was the one where anxiety was the most frequently presented.

The prevalence of burnout was 19.5% (n= 39). A higher rate was observed in men with 23.8% (n= 20), compared to 16% (n= 18) in women. The most affected medical specialty was anesthesiology, followed by geriatrics. The academic year in which the highest frequency of burnout was observed was the fourth year.

No statistically significant differences were observed between depression

Table 1. Sociodemographic Factors and Frequency of Desertion Among Resident Physicians in the Northern Area of Mexico City

Variable	Average	D.E
Age (in years)	30.1	4.1
	(n)	(%)
Gender		
Female	116	58
Male	84	42
Current Specialty		
Anesthesiology	4	2
General Surgery	14	7
Geriatrics	23	11.5
Gynecology and Obstetrics	1	0.5
Physical and Rehabilitation Medicine	5	2.5
Family Medicine	118	59
Internal Medicine	23	11.5
Pediatrics	2	1
Psychiatry	5	2.5
Emergency Medicine	5	2.5
Academic Year		
First	99	49.5
Second	47	23.5
Third	49	24.5
Fourth	5	2.5
Have you thought about dropping out of your medical residency?		
No	137	68.5
Yes	63	31.5
Have you previously dropped out of a residency?		
No	183	91.5
Yes	17	8.5
Year you were attending at the time of dropout		
First year	10	5.0
Second year	4	2.0
Third year	3	1.5
Main reason for dropping out		
Family causes	2	1.5
Personal causes (depression, burnout, workload, poor conflict management)	10	5.5
Personal-vocational causes (prefer another specialty/institution)	3	1.5

levels and age, gender, or academic year. Differences were found by medical specialty, with family medicine and geriatrics having the highest frequency of moderate and severe depression (p= 0.049). Statistical differences were also observed between thoughts of desertion, and the presence of some degree of depression (Table 2).

Table 2. Bivariate Analysis Between Depression Scores and Study Variables

Depression Level	Normal (n= 127)	Mild Depression (n= 39)	Intermittent Depression (n= 15)	Moderate Depression (n= 15)	Severe Depression (n= 4)	p
	μ (D.E.)	μ (D.E)	μ (D.E)	μ (D.E)	μ (D.E)	
Age (in years)	29.9 (3.8)	29.9 (4.4)	32.4 (6.4)	29.3 (3.2)	29.2 (0.5)	0.222*
	n (%)	n (%)	n (%)	n (%)	n (%)	
Gender						
Female	70 (35)	25 (12.5)	8 (4)	10 (5)	3 (1.5)	0.717†
Male	57 (28.5)	14 (7)	7 (3.5)	5 (2.5)	1 (0.5)	
Medical Specialty						
Anesthesiology	1 (0.5)	0 (0)	0 (0)	2 (1)	1 (0.5)	
General Surgery	11 (5.5)	2 (1)	1 (.5)	0 (0)	0 (0)	
Geriatrics	10 (5)	6 (3)	2(1)	4 (2)	1 (0.5)	
Gynecology and Obstetrics	1(0.5)	0 (0)	0 (0)	0 (0)	0 (0)	
Physical and Rehabilitation Medicine	5 (2.5)	0 (0)	0 (0)	0 (0)	0 (0)	0.049†
Family Medicine	78 (39)	21 (10.5)	11 (5.5)	7 (3.5)	1 (0.5)	
Internal Medicine	13 (6.5)	7 (3.5)	1 (0.5)	2 (1)	0 (0)	
Pediatrics	1 (0.5)	1 (0.5)	0 (0)	0 (0)	0 (0)	
Psychiatry	4 (2)	0 (0)	0 (0)	0 (0)	1 (0.5)	
Emergency Medicine	3 (1.5)	2 (1)	0 (0)	0 (0)	0 (0)	
Academic Year						
First	64 (32)	19 (9.5)	4 (2)	11 (5.5)	1 (0.5)	
Second	27 (13.5)	12 (6)	4 (2)	2 (1)	2 (1)	0.171†
Third	34 (17)	6 (3)	7 (3.5)	1 (0.5)	1 (0.5)	
Fourth	2 (1)	2 (1)	0 (0)	1 (0.5)	0 (0)	
Have presented academic desertion						
Absent	121 (60.5)	35(17.5)	12(6)	11(5.5)	4(2)	0.019†
Present	6(3)	4(2)	3(1.5)	4(2)	0(0)	
Ideation of desertion						
Absent	102(51)	24(12)	5(2.5)	3(1.5)	3(1.5)	0.000†
Present	25(12.5)	15(7.5)	10(5)	12(6)	1(0.5)	

*= ANOVA. † = χ2. μ= Media

Up to 16% of the residents who considered leaving their residency experienced moderate to severe anxiety. There were no statistically significant differences between the level of anxiety and gender, medical specialty, or academic degree completed. However, statistically significant differences were observed between anxiety level, and intention to drop out of residency (Table 3).

Table 3. Bivariate Analysis Between Anxiety Levels and the Variables Studied

	Normal (n= 81)	Mild Anxiety (n= 66)	Moderate Anxiety (n= 28)	Severe Anxiety (n= 25)	p
	μ (D.E)	μ (D.E)	μ (D.E)	μ (D.E)	
Age (in years)	29.7 (3.7)	30.1 (3.9)	31.1(6.1)	30.1 (3)	0.419*
	n (%)	n (%)	n (%)	n (%)	
Gender					
Female	41 (35.3)	41 (35.3)	17 (14.7)	17 (14.7)	0.336†
Male	40 (47.6)	25 (29.8)	11 (13.1)	8 (9.5)	
Medical Specialty					
Anesthesiology	0 (0)	1 (25)	2 (50)	1 (25)	0.242†
General Surgery	8 (57.1)	4(28.6)	2(14.3)	0 (0)	
Geriatrics	3(13)	9(39.1)	5(21.7)	6(26.1)	
Gynecology and Obstetrics	0 (0)	1 (100)	0 (0)	0 (0)	
Physical and Rehabilitation Medicine	4 (80)	1 (20)	0 (0)	0 (0)	
Family Medicine	50 (42.4)	37 (31.4)	16 (13.6)	15 (12.7)	
Internal Medicine	8 (34.8)	10 (43.5)	3 (13)	2 (8.7)	
Pediatrics	1 (50)	1 (50)	0 (0)	0 (0)	
Psychiatry	4 (80)	0 (0)	0 (0)	1 (20)	
Emergency Medicine	3 (60)	2 (40)	0 (0)	0 (0)	
Academic Year					
First	40 (40.4)	35 (35.4)	15 (15.2)	9 (9.1)	0.550†
Second	19 (40.4)	15 (31.9)	5 (10.6)	8 (17)	
Third	22 (44.9)	14 (28.6)	6 (12.2)	7 (14.3)	
Fourth	0 (0)	2 (40)	2 (40)	1 (20)	
Have presented academic desertion					
Absent	78(39)	59(29.5)	24(12)	22(11)	0.224†
Present	3(1.5)	7(3.5)	4(2.0)	3(1.5)	
Ideation of desertion					
Absent	72(36)	44(22)	10(5)	11(5.5)	0.000†
Present	9(4.5)	22(11)	18(9)	14(7)	

*= ANOVA. † = χ2. μ= Media

In bivariate analysis, no statistically significant differences were found between the presence of burnout syndrome and age, gender, medical specialty, or academic degree completed; however, differences were observed regarding thoughts of desertion, and absence of burnout (Table 4).

Table 4. Bivariate Analysis Between Burnout Presence and Study Variables

Burnout Syndrome	Absent (n= 161)	Present (n= 39)	p
	μ (D.E)	μ (μ (D.E))	
Age (in years)	29.8 (3.5)	31.1 (5.8)	0.071*
	n (%)	n (%)	
Gender			
Female	97 (83.6)	19 (16.4)	0.191†
Male	64 (76.2)	20 (23.8)	
Medical Specialty			
Anesthesiology	2 (50)	2 (50)	
General Surgery	12 (85.7)	2 (14.3)	
Geriatrics	15 (65.2)	8 (34.8)	
Gynecology and Obstetrics	1 (100)	0 (0)	
Physical and Rehabilitation Medicine	5 (100)	0 (0)	
Family Medicine	99 (83.9)	19 (16.1)	0.394†
Internal Medicine	17 (73.9)	6 (26.1)	
Pediatrics	2 (100)	0 (0)	
Psychiatry	4 (80)	1 (20)	
Emergency Medicine	4 (80)	1 (20)	
Academic Year			
First	81 (81.8)	18 (18.2)	
Second	39 (83)	8 (17)	0.593†
Third	38 (77.6)	11 (22.4)	
Fourth	3 (60)	2 (40)	
Have presented academic desertion			
Absent	148(74)	35(17.5)	0.748**
Present	13(6.5)	4(2)	
Ideation of desertion			
Absent	116 (58)	21 (10.5)	0.028**
Present	45 (22.5)	18 (9)	

* = t of Student. **= Pearson χ2. † = χ2

An association was observed between academic dropout ideation and depression, with an OR= 6.5, 95% CI 2.9 - 14.6, p= 0.000; while the presence of burnout showed an OR= 2.2, 95% CI 1.07 - 4.52, p= 0.000. The other main variables of the study showed no association, as detailed in Table 5. An association was also observed between dropout and the presence of depression, with an OR= 4.04, 95% CI 1.41 - 11.5, p= 0.006. However, none of the other variables examined showed an association with dropout (Table 5).

The logistic regression model included the variables that were significant in the bivariate analysis. This model was able to explain up to 22% of the total variance. The most associate variable with the risk of dropping out was depression, with an OR= 3.9, 95% CI: 1.12 - 14.0, p= 0.033. This disorder was associated with up to a 3.9-fold increase in the risk of a resident dropping out of medical school; however, no other variable showed statistical significance in being associated with the risk of dropping out.

Discussion

Work stress, inadequate rest, and sleep deprivation in medical students are drastic changes that occur in a short period of time, requiring residents to adapt quickly. The physical, environmental, organizational, and personal conditions can lead to academic desertion in the first few months of specialty training.

During the study period of our research, we were able to identify factors associated with the idea of academic desertion, such as: depression and anxiety with a frequency of 36.5%, and 59.5% respectively, known as common mental pathologies in medical students. Piscoya et al[21] found a prevalence of anxiety of 61.8%, and depression of 22%, in addition to the presence of burnout syndrome in some residents, which is similar to what was found in our research, where anxiety is the most common psychopathology.

Females tend to be the most affected, with high dropout rates, but this is not associated with grade, or academic performance. Among the residents studied, burnout accounted for up to 30% of attrition,[22,23] similar to that reported by Viegras et al[24] in their study of medical students in Portugal, where the prevalence of burnout reached 39.5%.

The literature reports that the prevalence of burnout in students may be higher, a study conducted in 4696 residents in the United States of America reported burnout symptoms in 45.2% (95% CI 43.6 - 46.8), related to medical specialty, training in urology, neurology, emergency medicine, and general surgery was associated with higher relative risks (RR) of burnout symptoms (RR range, 1.24 to 1.48) compared to training in internal medicine.[25]

When anxiety levels were examined by medical specialty, anesthesiology (n= 4), and geriatrics (n= 20) were found to have residents with higher levels of anxiety in the first (n= 59), and second (n= 28) academic years. There was no statistically significant association between academic attrition and anxiety (p= 0.224). Factors such as burnout, and other mental disorders have been associated with the desire to leave residency.[26]

On the other hand, Fowler et al.[25] found that the specialties of internal medicine (F= 4.44, p= 0.004), and neurosurgery (F= 4.15, p= 0.04) were the most affected, with a positive Pearson correlation between burnout and optimism (r= -0.39, p= 0.001), in this study women obtained higher scores (r= -0.59, p=0.00), and when comparing all groups, it was found that they were negatively correlated.

Regarding depression, a greater number of cases were observed in women (n= 46; 36.2%) with some degree of depressive symptoms compared to men (n= 27; 21.25%), the most frequently affected academic grades were: first (n=

Table 5. Residents at Risk for Academic Disengagement and Depression, Anxiety, Burnout, or Poor Academic Performance

Academic Desertion	Sig.	OR	CI 95%		Sig.	OR	CI 95%	
			Lower	Superior			Lower	Superior
Presence of Depression	0.006	4.04	1.41	11.5	0.06	3.7	0.91	15.3
Presence of Anxiety	0.967	1.02	0.26	4.01	0.60	0.64	0.12	3.28
Presence of Burnout	0.661	1.30	0.40	4.23	0.72	0.77	0.19	3.08
Low Academic Performance	0.478	1.47	0.50	4.34	0.85	1.12	0.30	4.11
Ideation of Academic Desertion								
Presence of Depression	0.000	6.5	2.95	14.6	0.007	4.18	1.49	11.7
Presence of Anxiety	0.230	1.7	0.70	4.18	0.83	0.888	0.29	2.68
Presence of Burnout	0.028	2.2	1.07	4.52	0.62	0.805	0.33	1.92
Low Academic Performance	0.427	0.7	0.39	1.48	0.41	0.70	0.30	1.63

OR= odds ratio. CI95%= Confidence Interval 95%. Sig.= Significance with Pearson χ2.

35; 43%) and second (n= 20; 15.74%).

Statistical differences were observed between depressive symptoms and academic desertion (p= 0.019), mainly in the women (60.5%), also the residents who had depressive symptoms presented more desertion ideation (p= 0.000), and also they had more desertion ideation (n= 102, 51%).

No significant evidence was found between attrition and burnout, or an association between burnout, and depression or anxiety. In contrast, Govêia et al[27] reported an association between burnout, depersonalization, and anxiety in anesthesiology residents.

In our study, the most important risk factor for dropout was depression. This disorder increased the resident's risk of dropping out of residency up to fourfold. The variable most associated with the risk of dropping out (or thinking about dropping out) was the presence of depression (p= 0.033), which is consistent with the results of Marzouk et al,[28] in which anxiety accounted for 43.6%, and 30. 5% of depression, age (or= 1.014, 95% ci 1.006 to 1.0023, p= 0.001), female gender (or= 1.114, 95% ci 1.083 to 1.145, p= 0.0001), night shifts (or= 1.008, 95% ci 1.005 to 1.011, p= 0.0001), and highest in the surgical area with (or= 1.459, 95% ci 1.172 to 1.817, p= 0.0001) for third year residents.

In a multi-center study conducted in China with 441 residents from eight hospitals, Bai et al.[29] identified that 9.9% presented significant anxiety risks, since the associated factors were a high level of exhaustion and poor sleep quality.

Reyna et al.[30] found that low self-esteem represents a risk factor for not completing medical residency, or= 2.30 (95% ci 1.26-4.17 p= 0.008) with a predictive capacity of resignation with a sensitivity of 60%, and a specificity of 25%. Depression in non-family physicians of the imss was described by Mejía et al.[31] as a non-significant relationship between depression and gender (p>0.05), in which the relationship between specialties was also non-significant.

In this study, 17 residents (8.5%) had a history of previous academic desertion, and 7 (5.5%) residents of this group presented moderate, and severe degrees of anxiety, although the association may not be directly related to the levels of anxiety, depression, or burnout, it can be considered alarming data that merit follow-up, and multidisciplinary treatment.

The limitations of this study are that the research was conducted in a single imss region, so the results cannot be generalized, in the understanding that the factors associated with the presence of mental disorders are diverse, and may be related to the social determinants of health, so it can be said that the conditions are heterogeneous. In addition, the design of the study (cross-sectional) does not allow establishing with certainty the temporal association between the variables.

Conclusions

Residents with depression and high levels of burnout were found to be up to four times more likely to drop out of medical school, making it necessary to implement mental health prevention, containment, and mitigation strategies at our institution to ensure that residents successfully complete their studies and complete their comprehensive training.

Authors' Contribution:

Search for information: gd q-c, ci g-m, je a-p

Research methodology: d p-l, e l-r, s h-c, d p-l

Statistical analysis: vm c-n

Analysis, discussion, and conclusions: vm c-n, e l-r, d p-l, c l-m

Conflicts of Interests

The authors declare that they have no competing financial interests or personal relationships that may have influenced the work reported in this paper.

References

1. Organización Mundial de la Salud. No hay salud sin salud mental [Internet]. [Citado 2022 Mar 7]. Disponible en: https://www.paho.org/es/noticias/8-10-2020-no-hay-salud-sin-salud-mental
2. Buck K, Grace A, Runyan T, Brown-Berchtold L. Addressing Mental Health Needs among Physicians. South Med J. 2019;112(2):67-69.
3. Zeng W, Chen R, Wang X, Zhang Q, Deng W. Prevalence of mental health problems among medical students in China: A meta-analysis. Medicine. 2019;98(18):e15337.
4. 4. Mihailescu M, Neiterman E. A scoping review of the literature on the current mental health status of physicians and physicians-in-training in North America. BMC Public Health. 2019;19(1):1363.
5. Blanco E, Solís P, Robles H. Caminos desiguales: trayectorias educativas y laborales de los jóvenes en la Ciudad de México [Internet]. [citado 2021 Ago 19]. Disponible en: https://libros.colmex.mx/wp-content/plugins/documentos/descargas/P1C230.pdf
6. Pinilla RAE, Cárdenas SFA. Evaluación y construcción de un perfil de competencias profesionales en medicina interna. Acta Médica Colombiana. 2014;39(2):165-173.
7. Arab JP, Véliz D, Díaz LA, Riquelme A, González M. Carga laboral horaria en residentes de especialidad y subespecialidad. Investig Educ Médica. 2015;4(14):e21–2.
8. Mascarúa-Lara E, Vázquez-Cruz E, Córdova-Soriano JA. Ansiedad y depresión en médicos residentes de la especialidad en Medicina Familiar. Aten Fam. 2014;21(2):55–57.
9. Jiménez-López JL, Osuna JA. Programa de prevención del suicidio, tratamiento de trastornos mentales y promoción de la salud mental para médicos residentes. Rev Colomb Cienc Soc. 2017;8(1):227–241.
10. Guízar-Sánchez D, Yoldi-Negrete M, Robles-García R, López-Ortiz G, Rivero-López C, Castro-

Valdes I, Tovilla-Zárate CA, Fresán Orellana A. Self-Perceived Mental Health and Perceived Discrimination in Family Physicians and Residents: A Comparative Study Between Men and Women. J Am Board Fam Med. 2022;35(5):912-920.

11. Maslach C. Maslach burnout Inventory Manual. Consulting Psychologists Press; 1997.

12. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. Arch Gen Psychiatry. 1961;4(6):561–571.

13. Hamilton M. A rating scale for depression. J Neurol Neurosurg Psychiatry. 1960;23(1):56-62.

14. Google Forms: Sign-in [Internet]. Google.com. [citado el 19 de agosto de 2021]. Disponible en: https://docs.google.com/forms

15. Marôco J, Assunção H, Harju-Luukkainen H, Lin SW, Sit PS, Cheung KC, et al. Predictors of academic efficacy and dropout intention in university students: Can engagement suppress burnout? PLoS One. 2020;15(10):e0239816.

16. Szlyk HS. Suicidal ideation among youths at risk of school dropout: Impact of student demographics, stressors, and academic self-concept. Health Soc Work. 2021;45(4):240–248.

17. Guseva-Canu I, Marca SC, Dell'Oro F, Balázs Á, Bergamaschi E, Besse C, et al. Harmonized definition of occupational burnout: A systematic review, semantic analysis, and Delphi consensus in 29 countries. Scand J Work Environ Health. 2021;47(2):95–107.

18. Daniel SS, Walsh AK, Goldston DB, Arnold EM, Reboussin BA, Wood FB. Suicidality, school dropout, and reading problems among adolescents. J Learn Disabil. 2006;39(6):507-514.

19. Asociación Americana de Psiquiatría. Manual diagnóstico y estadístico de los trastornos mentales DSM-5. 5a. ed [Internet]. [citado el 19 de agosto de 2021].]. Disponible en: https://www.federaciocatalanatdah.org/wp-content/uploads/2018/12/dsm5-manualdiagnsticoyestadisticodelostrastornosmentales-161006005112.pdf

20. Flores, R, Navarrete K. Razones de la deserción de residentes a los programas de especialidades médicas en un hospital escuela en el salvador. Investig Educ Médica. 2015; 4(14):e20.

21. Piscoya-Tenorio JL, Heredia-Rioja WV, Morocho-Alburqueque N, Zeña-Ñañez S, Hernández-Yépez PJ, Díaz-Vélez C, et al. Prevalence and Factors Associated with Anxiety and Depression in Peruvian Medical Students. Int J Environ Res Public Health. 2023;20(4):2907.

22. Plata GM, Flores CL, Curiel HO, Juárez OJR, Rosas BJV. Depresión y ansiedad en la residencia médica. Rev Esp Med Quir. 2011;16(3):157–162.

23. Rana T, Hackett C, Quezada T, Chaturvedi A, Bakalov V, Leonardo J, et al. Medicine and surgery residents' perspectives on the impact of COVID-19 on graduate medical education. Med Educ Online. 2020;25(1):1818439.

24. Viegas da Cunha Gentil Martins MH, Martins Lobo V, Dos Santos Florenciano MS, Benjamim Morais MA, Barbosa M. burnout in medical students: A longitudinal study in a Portuguese medical school. Glob Ment Health (Camb). 2023;10:e72.

25. Fowler JB, Fiani B, Kiessling JW, Khan YR, Li C, Quadri SA, et al. The Correlation of burnout and Optimism among Medical Residents. Cureus. 2020;12(2):e6860.

26. Dyrbye LN, Burke SE, Hardeman RR, Herrin J, Wittlin NM, Yeazel M, et al. Association of Clinical Specialty With Symptoms of burnout and Career Choice Regret Among US Resident Physicians. JAMA. 2018;320(11):1114-1130.

27. Govêia CS, Cruz TTMD, Miranda DB, Guimarães GMN, Ladeira LCA, Tolentino FDS, et al. Associação entre síndrome de burnout e ansiedade em residentes e anestesiologistas do Distrito Federal [Association between burnout syndrome and anxiety in residents and anesthesiologists of the Federal District]. Braz J Anesthesiol. 2018;68(5):442-446.

28. Marzouk M, Ouanes-Besbes L, Ouanes I, Hammouda Z, Dachraoui F, Abroug F. Prevalence of anxiety and depressive symptoms among medical residents in Tunisia: a cross-sectional survey. BMJ. 2018;8(7):e020655.

29. Bai S, Chang Q, Yao D, Zhang Y, Wu B, Zhao Y. Anxiety in Residents in China: Prevalence and Risk Factors in a Multicenter Study. Acad Med. 2021;96(5):718-727.

30. Reyna-Figueroa J, Romero-Colin L, Colmenares-Bermudez E, Castro-Perez L, Parra-Albertos R, Amador-Rodríguez E, et al. Asociación de la baja autoestima de médicos residentes con la renuncia a sus estudios de especialización en medicina. Educ Médica. 2021;22(Supl. 2): 130-135.

31. Mejía LA, Palmer MLY, Quiñones MKA, Medina RMC, López PDA. Frecuencia de depresión en médicos no familiares del Instituto Mexicano del Seguro Social. Rev Cubana de Salud y Trabajo. 2017;18(1):48–51.