

DEPRESSION AND ANXIETY TRAITS AMONG MEDICAL STUDENTS¹

DEPRESSÃO E TRAÇOS DE ANSIEDADE EM ESTUDANTES DE MEDICINA

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SUMMARY

Objective: to assess depressive and anxiety traits incidence and frequency among medical students at the State University of Pará (UEPA). **Method:** a cross-sectional study was performed with a sample of 160 medical students from UEPA, who responded to the Beck Depression Inventory (BDI) and State-Trait Anxiety Inventory (STAI-T), which measures trait anxiety components. **Results:** it was found that 70% of the students surveyed had some degree of depression. In addition, approximately 77% of respondents had moderate or severe anxiety. The median BDI score was 8 points, corresponding to moderate depression, while the median STAI-T was 40 points, corresponding to the average anxiety. It was found that there is a strong positive relationship between levels of anxiety and depression. The results of the 2nd, 3rd and 4th grades of the course showed marked difference in the BDI score, so that the 4th grade level got higher than the other series. Significant difference was found between anxiety levels of women and men. **Conclusion:** in view of this result, it is concluded that there is need for institutional support and extension to existing programs of psychological support to medical students at the State University of Pará.

Keywords: Depression; Anxiety; Medical Students; Undergraduate Medical Education; Incidence.

INTRODUCTION

Medical school is recognized as a stressor that negatively affects academic performance, health and psychological well-being of medical students, and emotional disorders reported in the literature may be present in 50% of the population.¹

A study conducted in Chile, with students from Odontology, Nursing, Psychology and Medicine, showed a prevalence level of academic stress 36.3% higher in women than in men. Medicine appears as a career with higher levels of stress, which are stronger in the first and last years of graduation.² However, comparative studies showed no differences between the level of anxiety of medical students

and students from other graduate programs, suggesting that higher levels of anxiety were associated with the life period at university and not specifically with the medical course.³

During the first year of medical course, students have significant lifestyle changes to adapt to medical school, especially in the first semester.¹

Losses encountered during the course, as the reduction of leisure time and contact with old friends, end of course idealization and the growing awareness of the problems in medical profession, combined with a demanding personality, can explain the high depression incidence among students.^{4,5}

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Possible factors associated with the development of depressive symptoms and depressed agitation in medical students are the following: personality characteristics, female gender, race, experiences in childhood, family history of mental disease and alcohol and drugs abuse, as well as medical training, academic load and the change in the basic sciences to clinics.^{6,7,8,9}

Then, there are anxiety disorders that could be related to intense competition among students for the highest grades and vacancies in overseas internships and medical residency,⁵ as well as the experience with patients, especially those terminally ill.¹⁰

Researches also show that experiences lived by medical students change levels of anxiety throughout the stages of the course, with differences between the basic and clinical training.³ These data suggest that the curriculum characteristics could also interfere with the anxiety level of students. Some research with a large sample of students from the University of Chile showed that 34.8% of them presented nonspecific signs of emotional malaise.¹¹

Andrews and Wilding¹² investigated if anxiety and depression increased after ingress into university among 351 students from United Kingdom. They answered the questionnaires one month before entering into university and in the middle of the first year of the course. Results showed that 9% of students without previous symptoms became depressed in the middle of the year, and 20% became anxious at a significant clinical level. However, control group absence in this research prevents exclusive allocation of this increase to ingress into university, but it's suggestive.

It is important to consider that depression is common among young adults, but it's not part of the normal maturation process, neither is part of normal medical training.⁷

Due to association of depressive symptoms with consequences such as withdrawal of medical school, suicide ideation and suicide, early identification of individuals at risk is extremely important for public health and preventive psychiatry, because it can reduce the impact on academic performance and skills of patient care.¹³ Some researches a useful guide to determine prevalence and associated factors.^{14,15}

Depression and its consequences, such as suicide, are common disorders^{4,6} usually associated with anxiety states, and more frequent in medical students than in general population.¹⁷ In an urban society with high competitiveness characteristics, young population is more exposed to a stressful life, and it's related to psychiatric disorders,

including high prevalence of depressive disorders.⁴

Depressive disorders studies in childhood and adolescence have reported their presence is common and serious enough to merit the clinicians and researchers care. If it's not identified and treated properly, it may lead to a high degree of morbidity, problematic individuals, and mortality, especially through suicide.^{18,19}

Therefore, the authors aimed to assess anxious and depressive symptoms frequency in medical students and their distribution characteristics during the course, using instruments that assess anxiety and depression, often used by medical students.^{1,3,4,20,21}

METHODS

Ethics

Study protocol was approved by the Ethics Committee of the State University of Pará (process number 73/2009) and written informed consent terms were obtained from all participating students. Forms were processed anonymously. Work with human subjects reported here complies with the guiding policies and principles for experimental procedures of the World Medical Association Declaration of Helsinki.

Design, setting and participants

The research was a cross-sectional study by applying questionnaires in medical students. The study population consisted of students enrolled at 1st, 2nd, 3rd and 4th years at the Faculty of Medicine of State University of Pará in 2009 (n = 160). Students in the internship (5th and 6th years) were excluded from the sample.

Collected data

The questionnaire was anonymous and consent was obtained. Information on age and gender was also obtained. Questionnaires applied were Beck Depression Inventory (BDI) and State-Trait Anxiety Inventory (STAI-T), both self-report inventories.

BDI consists of a subjective depression indicator which does not have a diagnosis purpose, however possible to be used as a complement of the assessment, is comprised of 21 depression manifestations characteristic symptom categories. Each category consists of a series of manifestation intensity different degrees, so as to reflect the symptom intensity (from neutral to maximum severity), through a numeric scale ranging from 0 to 3 points.

Results are classified in four different scoring levels:

from 0 to 3 points, absence or minimum of depression symptoms; 4 to 7 points, mild depressive symptoms; 8 to 15 points, moderate depressive symptoms; and 16 or more points indicates severe depressive symptoms.

STAI-T measures trait anxiety components and contains 20 statements. Responses are in a 1-4 scale. Anxiety-trait refers to how they “generally feel”. Scores indicate low (0-32), medium (32-49) or high (50 or more) anxiety levels.

Statistical analysis

The statistical package used for configuration database, statistical analysis and graphics was BioEstat, version 5.0 for Windows. Descriptive and analytical statistics were performed by applying the following tests: Boxplot of median and quartiles, Mann Whitney test, Kruskal Wallis completed with the post hoc Dunn method as necessary and Pearson’s correlation. The significance level used was $p < 0.05$.

RESULTS

Table I – Descriptive statistics of Beck Depression and State-Trait Anxiety Inventories among medical students from UEPA

	Age	Year	BDI		STAI-T	
			Scores	Category	Scores	Category
Minimum	17	1st	0	Neutral/ minimum	21	Low
Maximum	28	4th	58	Severe	77	High
Median	20	3rd	8	Moderate	40	Medium
Mean	20.68	---	9.28	---	41.37	---
Variance	4.46	1.03	78.5	1.17	129	0.44
Standard deviation	2.11	1	8.86	1.08	11.36	0.66
Standard error	0.17	0.08	0.7	0.08	0.9	0.05
Coefficient of variance	10.21%	41.49%	95.46%	45.48%	27.46%	33.38%

Table II – Statistical analysis of Beck Depression Inventory according to gender, age and year of study

	Depression				p value
	Neutral/ minimum	Mild	Moderate	Severe	
Gender					0.1856 ^{MW}
Female	20 (12.5%)	20 (12.5%)	25 (15.7%)	16 (10%)	
Male	28 (17.5%)	10 (6.2%)	31 (19.4%)	10 (6.2%)	
Age					0.2264 ^{MW}
Adolescent	18 (11.2%)	7 (4.4%)	20 (12.5%)	6 (3.8%)	
Adult	30 (18.7%)	23 (14.4%)	36 (22.5%)	20 (12.5%)	
Year					0.0162 ^{KW}
1st	10 (6.2%)	7 (4.4%)	17 (10.6%)	3 (1.9%)	
2nd	15 (9.4%)	6 (3.8%)	15 (9.4%)	4 (2.5%)	2nd e 4th (< 0.05) ^{MD}
3rd	20 (12.5%)	13 (8.1%)	16 (10%)	9 (5.6%)	3rd e 4th (< 0.05) ^{MD}
4th	3 (1.9%)	4 (2.5%)	8 (5%)	10 (6.2%)	

MW: Mann Whitney; KW: Kruskal Wallis; MD: Dunn method

Table III – Statistical analysis of State-Trait Anxiety Inventory for traits according to gender, age and year of study

	Anxiety Trait			<i>p</i> value
	Low	Medium	High	
Gender				0.0166 ^{MW}
Female	15 (9.4%)	42 (26.3%)	24 (15%)	
Male	21 (13.1%)	48 (30%)	10 (6.2%)	
Age				0.2210 ^{MW}
Adolescent	13 (8.1%)	29 (18.1%)	9 (5.6%)	
Adult	23 (14.4%)	61 (38.1%)	25 (15.7%)	
Year				0.0619 ^{KW}
1st	6 (3.8%)	25 (15.7%)	6 (3.8%)	
2nd	12 (7.5%)	23 (14.4%)	5 (3.1%)	
3rd	16 (10%)	28 (17.5%)	14 (8.7%)	
4th	2 (1.2%)	14 (8.7%)	9 (5.6%)	

MW: Mann Whitney; KW: Kruskal Wallis; MD: Método de Dunn

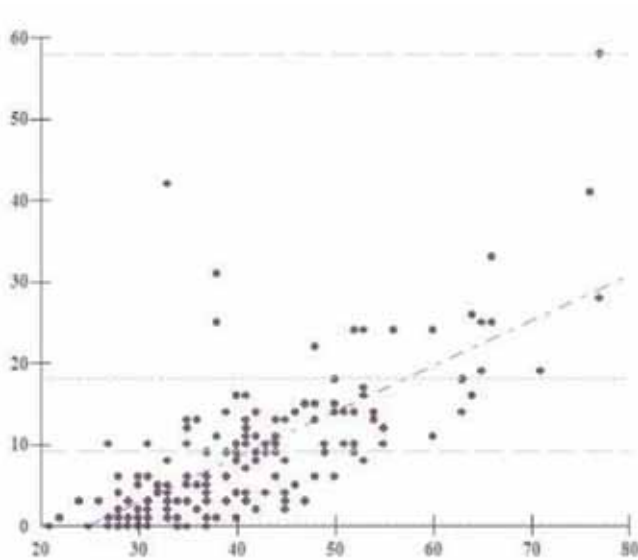


Figure 1 – Dispersion between BDI and STAI-T among medical students from UEPA

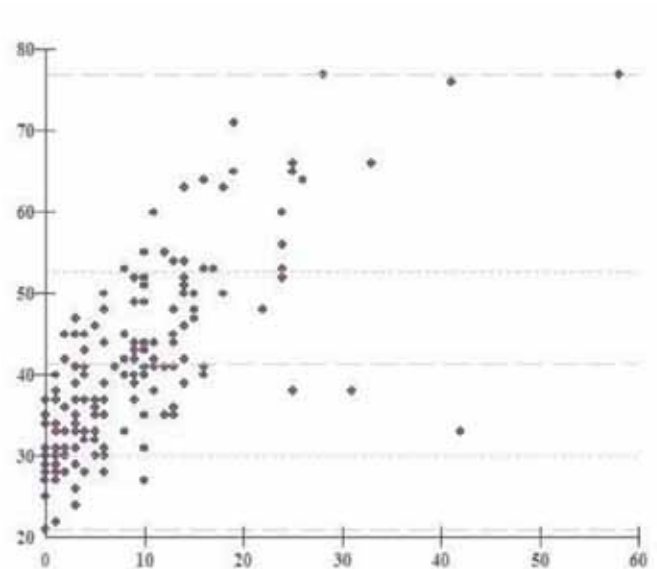


Figure 2 – Pearson's correlation between BDI and STAI-T among medical students from UEPA.
 $p < 0.0001$

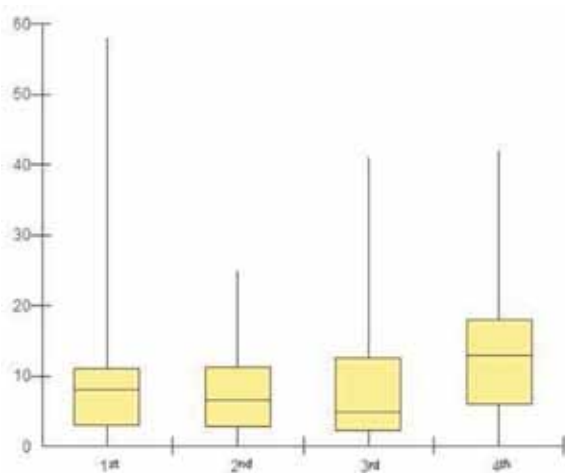


Figure 3 – BDI median and quartiles Boxplot among medical students from UEPA according to year of study

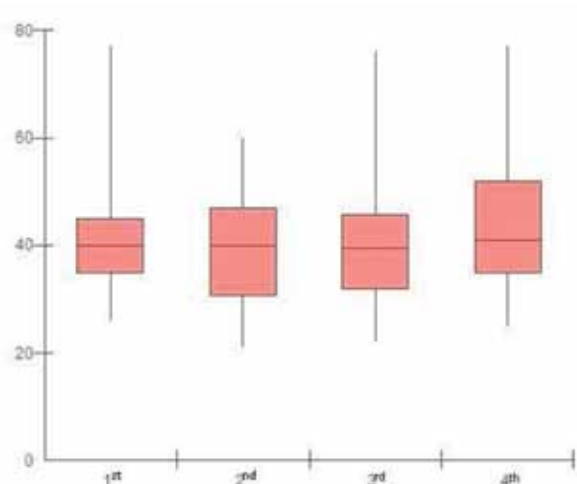


Figure 4 – STAI-T median and quartiles Boxplot among medical students from UEPA according to year of study

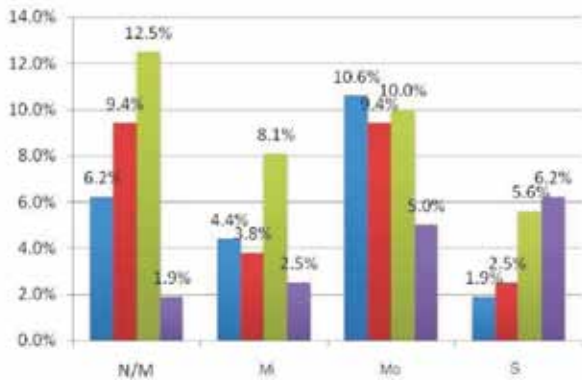


Figure 5 – Depression level among medical students from UEPA according to year of study

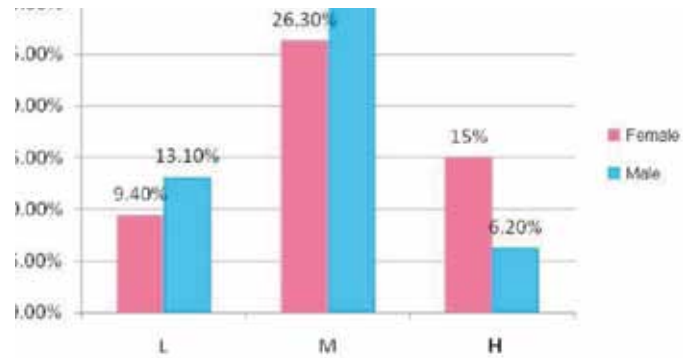


Figure 6 – Anxiety level among medical students from UEPA according to gender

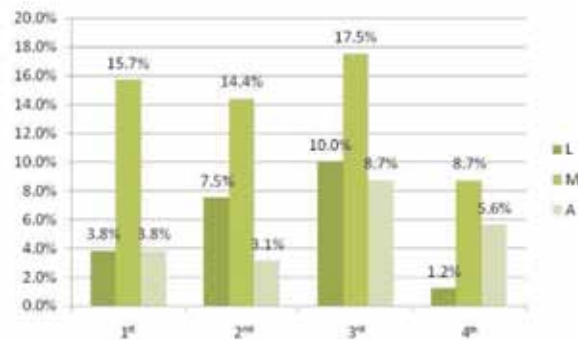


Figure 7 – Anxiety level among medical students from UEPA according to year of study

DISCUSSION

World Health Organization (WHO) estimates that in 1990 depression was main cause of “years lived with disability” in developed countries, and in 2020 will be the major cause of illness in women and in developing countries.²²

Depressive symptoms and depressive disorder prevalence in medical student population ranges from 7.3-25%, while anxiety or stress associated with depressive symptoms is between 35-64.5%.^{6,7} In addition, reported stress levels among medical students range from 25 to 75%.²³ STAI-T median was 40 points, corresponding to medium anxiety level, while BDI score median was 8 points, corresponding to moderate depression level (Table I).

Students majority presented some degree of depression (Table II). A similar result was obtained by Abram et al²¹ that found 79% depressive symptoms prevalence, predominantly moderate. 56.3% presented moderate anxiety and severe anxiety 21.2% (Table III), similar to previous researches.^{1,3}

The authors observed that students who had higher levels of anxiety, had a greater risk factor to develop

depressive episodes (Figure 2). Fioravanti²⁰ suggest that although anxiety and depression are distinct entities, they express themselves in a very similar way. He also recognized that the diagnosis of depression is for anxiety in 2% of cases and in the opposite direction, from anxiety to depression in 24% of cases.

Epidemiological studies point to a classic comorbidity of 40 to 75% of anxiety and depression typical symptoms.^{24,25} This comorbidity could be caused by the presence of symptoms in common to anxiety and depression, being related to negative affect.

Studies have shown significant differences in BDI scores between men and women, they have earned higher scores, which indicates sex as a determining factor for the characteristic distribution of depression among medical students.^{4,21}

Surprising, therefore, it was not observed any significant difference in BDI score between the genders, which could be explained by the low sample size. Another limitation was the exclusion of students from 5th and 6th grade, due to the fact that they were not anymore at school and contacting them became difficult.

The comparison between the results obtained

by adolescent students and adults, with respect to the BDI score, obtained by Mann Whitney test showed no significant difference in test scores in both single and bilateral (Table II), corroborating the analysis of other studies.^{4,21}

According to older literature, starting age of depressive disorders is between 20 and 40 years, and social factors may place younger people at increased risk.²⁶

A survey conducted in 2008 at the Federal University of Uberlandia, revealed that as students progressed through the course, there was a greater tendency for the presentation of depressive symptoms.²¹ This could be explained by changes in lifestyle over the course and disappointments as originally anticipated.

Thus, it was found by Kruskal Wallis correlation between grades and BDI scores (Table II). There was a more significant score between 2nd and 4th grades and 3rd and 4th grades, median grade of 4th was found in higher level than the other grades (Figure 3).

Although, only 16.2% of students presented severe depressive symptoms. These symptoms have been related to several critical moments of stress and anxiety throughout the medical course, especially in the first year, characterized by euphoria, which may be followed by moments of disappointment. In the last years, there is greater contact with disease and death when the transition to boarding, training and more demanding curriculum and the pressure to be approved in medical residency.^{10,27}

Medical students feel anxious when facing the reality, and this could have an important negative impact on their physical and especially mental, especially when there is not an adequate psychological assistance early. Factors such as curriculum characteristics also interfere with the students anxiety level.³

Among men, mild and moderate anxiety levels were predominant, while among women, severe anxiety was predominant (Figure 6). Recent studies have shown the occurrence of higher levels of anxiety and stress among women.^{1,4} Bassols et al²⁷ suggests that women still suffer prejudice medical, family and social barriers in their profession, and it reflects on their health. Moreover, recent neuroimaging studies suggest that the anterior cingulate cortex was more active and larger among women with high fear response and higher scores of harm avoidance compared with men with similar characteristics.^{28,29}

Although these findings have not been studied in

any specific anxiety disorder, they could explain, partly, the greater susceptibility of women to anxiety disorders. The literature revealed that among medical students with anxiety symptoms, about 23.1% reported having experienced a panic attack, 15.4% reported symptoms of agoraphobia, 62.8% reported symptoms of anxiety limiting to a task and 65.4% say they feel nervous or anxious in the last 6 months. Therefore, the higher prevalence of panic symptoms among distressed students indicates association between anxiety to stress.²⁷

The authors observed no significant relationship between age and academic levels of anxiety obtained by STAI-T (Table III), confirming results presented by previous studies on anxiety traits.^{1,4}

It is believed, however, that adolescence is identified as a crisis, a important organic and mental changes experience that can provide unique manifestations of normal behavior for the age group. Thus, they may, be confused with mental illness or inadequate behavioral manifestations, as noticed by Peres and Rosenburg.³⁰

Perks and Jameson³¹ believe that some changes may contribute to increased risk for developing a depressive disorder, which is observed more in adolescents compared with children. A study conducted at the Medical School of Marília in 2005 showed that periods of increased stress varies along the course, detecting lower levels of stress in the 1st year of the course compared to others.³²

When reviewing anxiety symptoms development during the medical course, we noted that there is no significant difference between the series, which medians were around 40, setting moderate anxiety (Figure 4). However, different studies have revealed the important relationship between time course and anxiety level, and the 4th, 5th and 6th grades has the largest values.^{1,27}

It is known that anxious and depressive symptoms promote behaviors such as alcohol and drugs abuse is very prevalent among university students, as well as related difficulties and even suicide. They may also affect academic performance through the reduction in attention, concentration and ability to make decisions and establish a proper physician-patient relationship.^{4,9,17,21,27}

Millan and Alvarez⁵ also warned about students' prejudgment in relation to psychiatric illness or psychological difficulties. Medical students care services or programs designed to address attitudes towards mental health are important tools to change students' perceptions about psychiatric disorders in general, proved to be promising in the prevention and

early identification of changes in themselves.¹

Therefore, there is need for greater institutional support and extension to existing programs of psychological student support. Losses with which medical students encounter during the course because of their demanding personality and excessive working hours, should receive more attention in curriculum change process at Medical Schools.

CONCLUSION

The authors concluded that there is a high positive relationship between depression and anxiety traits, and students coursing last grades are more at risk to develop psychiatric disorders such as depression. Female students were more predisposed to develop disorders than male ones.

RESUMO

DEPRESSÃO E TRAÇOS DE ANSIEDADE EM ESTUDANTES DE MEDICINA

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Objetivo: avaliar a incidência e frequência de quadros depressivos e traços de ansiedade entre os estudantes de medicina da Universidade do Estado do Pará (UEPA). **Método:** foi realizado um estudo transversal com 160 estudantes de medicina da UEPA, que responderam ao Inventário de Depressão de Beck (IDB) e o Inventário de Ansiedade enquanto Traço (IDATE-T). **Resultados:** verificou-se que 70% dos acadêmicos pesquisados apresentavam algum grau de depressão. Além disso, aproximadamente 77% dos pesquisados apresentavam ansiedade moderada ou grave. A pontuação mediana do IDB foi de 8 pontos, correspondendo à depressão moderada, enquanto que a mediana do IDATE-T foi de 40 pontos, correspondendo à ansiedade média. Verificou-se que há forte relação positiva entre os níveis de ansiedade e os de depressão. Os resultados obtidos com as 2ª, 3ª e 4ª séries do curso apresentaram diferença acentuada da pontuação do IDB, de modo que a 4ª série obteve nível mais elevado que as demais séries. Foi encontrada diferença importante entre os níveis de ansiedade das mulheres e os dos homens. Conclusão: frente a esse resultado conclui-se que, há necessidade de apoio institucional e ampliação aos programas existentes de apoio psicológico ao estudante de medicina da Universidade do Estado do Pará.

Descritores: Depressão; Ansiedade; Estudantes de medicina; Educação de Graduação em Medicina; Incidência.

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Conflicts of interest: none

Financial source: none

Recebido em 25.08.2010 – Aprovado em: 21.03.2011