Generalized anxiety disorder and prevalence of suicide risk among medical students

Prevalência do transtorno de ansiedade generalizada e do risco de suicídio em estudantes de medicina

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ABSTRACT

Introduction: Generalized anxiety disorder (GAD) is a common pathology in modern life. Furthermore, Brazil ranks among one of the countries in Latin America with the highest increase in the number of suicides. Objective: The goal of this study is to evaluate the prevalence of GAD and suicide risk and their association in medical students from Belém – PA.

Methods: The observational, cross-sectional and quantitative study included undergraduate medical students attending the 1st, 3rd and 5th years of Universidade do Estado do Pará as subjects of this research, totaling 153 students. It used a protocol created by the authors and the Mini International Neuropsychiatric Interview. The software BioEstat® 5.3 was used to perform the statistical analysis.

Results: 52 (32,7%) of the 159 students have GAD and 48 (30,2%) pose a suicide risk, of which 18 have a mild risk (11,3%), 17 a moderate risk (10,7%) and 13 a high risk (8,2%). 46,7% and 50% of the 1st and 3rd-year students, respectively, have higher risk of suicide, which could be related to the competition faced during the University admission process and also during the first years of the clinical cycle. Of the 5th year students who pose a suicide risk, only 21,7% have high risk.

Conclusion: It can be observed that GAD and suicide risk show high prevalence among medical students, which has to be investigated and treated aiming to reduce the impacts of those disorders on health professionals and students.

Keywords: Generalized Anxiety Disorder; Suicide; Medical Students; Mini International Neuropsychiatric Interview.

RESUMO

Introdução: O transtorno de ansiedade generalizada (TAG) é uma patologia comum da modernidade. Além disso, o Brasil figura entre um dos países da América Latina com o maior aumento do número de suicídios. Objetivo: Este estudo teve como objetivo avaliar a prevalência de TAG e risco de suicídio e a associação entre eles em estudantes de Medicina de Belém, no Pará.

Métodos: O estudo observacional, transversal e quantitativo teve como sujeitos da pesquisa graduandos do curso de Medicina que estavam matriculados no primeiro, terceiro e quinto anos na Universidade do Estado do Pará, totalizando 159. Utilizaram-se questionário de autoria dos pesquisadores e o Mini International Neurophsyciatric Interview, sendo a análise estatística feita com o software BioEstat® 5.3.

Resultados: Dos 159 estudantes, 52 (32,7%) apresentaram TAG; e 48 (30,2%), risco de suicídio, dos quais 18 tiveram risco leve (11,3%); 17, risco moderado (10,7%); e 13, risco elevado (8,2%). Dos alunos, 46,7% e 50%, respectivamente do primeiro e terceiro anos, apresentaram risco elevado de suicídio, fato que pode estar associado com a pressão do vestibular e do início do ciclo clínico. Dos alunos do quinto ano com risco de suicídio, somente 21,7% apresentaram risco elevado.

Conclusão: Percebe-se uma importante taxa de TAG e de risco de suicídio entre os estudantes de Medicina, o que precisa ser investigado e trabalhado para minimizar os impactos desses transtornos nos discentes.

Palavras-chave: Transtorno de Ansiedade Generalizada; Suicídio; Estudantes de Medicina; Mini International Neuropsychiatric Interview.

INTRODUCTION

Anxiety consists of a peculiar characteristic inherent to humans, which is important for their surviving process, since it is an anticipation of a future threat. The Generalized Anxiety Disorder (GAD), according to DSM-IV, is currently a common pathology, being characterized by an excessive and broad concern, which is accompanied by physical symptoms, leading to social and working problems[1-3]. Although anxiety disorders have one of the highest incidence rates among mental problems (17.7% per year), GAD still goes underdiagnosed. GAD main symptoms are muscle tension and autonomic hyperactivity[4].

Suicide, according to the World Health Organization (WHO), consists in the act of taking one´s own life on purpose. The main risk factors for suicide are social, psychological, cultural and individual aspects[5]. Brazil ranks fourth in Latin America countries with the highest rate of suicide, with an increase in the number of suicides between 2000 and 2012, showing an average of 4,3 per 100.000 people[6]. It is important to highlight that the suicide rate is higher than death rates in global armed conflicts, increasing by more than 50% in the last five decades, showing the current importance of this problem[7].

Furthermore, it is relevant to say that there is a proven association between suicide and mental disorders, since those are usually associated to 89%-98% of the cases, including anxiety[8,9]. This fact was corroborated by a study that revealed a 3-fold higher chance of suicide in patients with depression and GAD, when compared to those with depression only[10].

Moreover, it can be observed that there is a high prevalence of suicide risk among professionals and students in the health area, since the stress of the work environment, pressure and excessive demands have a direct influence on their daily life and work. A recent study carried out with medical students in the state of Rio Grande do Norte, Brazil, showed that an exorbitant number of activities and excess anxiety are stressing factors that interfere with college performance, increasing the risk of suicide in this population[11,12].

However, to date, there are no scientific studies carried out in the Amazon region showing the development of anxiety disorders throughout the years of medical school, as well as the association with risk of suicide among those students. That is particularly important, since the presence of GAD can increase by 4-fold the prevalence of suicide risk, with the investigation of this association being relevant in medical students, considering their constant exposure to extreme workloads, demanding evaluations, little time for leisure activities and an overwhelming pressure to reach their excellence, factors which affect students' mental health and their future professional life[13,14].

Therefore, this study aims to assess the prevalence of GAD and suicide risk and their association in medical students from the city of Belém, state of Pará (PA), Brazil.

METHODOLOGY
Ethical aspects

Permission was obtained from the Research Ethics Committee of Universidade do Estado do Pará (Protocol N.3.093.673), before starting this study. The principles of the Declaration of Helsinki were followed. The survey was anonymous, participation was voluntary and consent was obtained from participants beforehand. This was an observational, cross-sectional and quantitative study.

Participants

The participants comprised medical students attending the 1st, 3rd and 5th years of *Universidade do Estado do Pará* (UEPA) Medical School, interviewed from September to November of 2018. Those school years were chosen aiming to assess the mental health of undergraduate students form different cycles, which are the basic, clinic and internship phases of the medical course. There were a total of 159 students, 53 from each cycle, randomly selected by drawing lots using an online tool, from a list of students per year.

The data collection was obtained through an interview during a previously appointed meeting with the students. The researchers obtained the consent term and performed the interview under the supervision of an experienced psychiatrist. It is noteworthy that the researchers went through a two-month training process provided by a psychiatrist teacher, in which the professional explained and submitted them to a questionnaire and also explained to them the appropriate method to interview the students[15].

The students who, for any reason, were not regularly enrolled at the school during the data collection period, underage students, as well as those who filled out the form inappropriately, making it difficult to analyze the data, were excluded.

Materials

This study used a standardized questionnaire, created by the researchers, to collect sociodemographic information. The data collected for the protocol included age, gender, year of medical school, place of origin, marital status, current housing situation, previous psychological and psychiatric therapy, family history of GAD and/or suicide, satisfaction with the course and frequency of leisure activities.

Furthermore, the Mini International Neuropsychiatric Interview (M.I.N.I)[16] was applied, which consists in a standardized diagnostic interview, exploring the most important Psychiatric Disorders of Section 1 of the DSM-IV. Modules C (risk of suicide) and

O (Generalized Anxiety Disorder) of the M.I.N.I. were used, applied to the medical students between September and November of 2018.

Regarding the suicide risk (module C), it can be identified by some questions, which have a specific score, if affirmative: 1 point for question number one, 2 points for question number two, 6 points for question number three, 10 points for questions four and five, and 4 points for question number six. After the scoring, the risk of suicide can be graded as low risk (1-5 points), moderate risk (6-9 points) and high risk (>10 points), as shown in Table 1.

Module O consists of ten questions, in which the GAD diagnosis is determined by only 3 affirmative answers to questions five to ten, once the first four questions aim to exclude other diagnosis that might share similar features with GAD.

Statistical analysis

The sample data was added to a database created in *Microsoft® Office Excel® 2017 software*.

Tables and graphs were created using descriptive statistics from the results and the position and dispersion were calculated as arithmetic mean and standard deviation. Analytical statistics was used to evaluate the results of the sample categorical variables by the adherence chi-square test and dependence by Fisher's exact test.

Both descriptive and analytical statistics were carried out using the *BioEstat® software, version 5.3*. The level of significance was set at $\alpha = 0.05$ or 5%, using the (*) to indicate the significant values.

RESULTS

Table 2 shows the individuals' sociodemographic data. It is evident that the number of women is slightly higher than that of men among the undergraduate medical students (50,9%), besides the fact that the most prevalent age groups were from 19 to 20 (33.3%) and 21 to 22 (26.4%) years. Also, most of the students are from the same place where the institution is located, the city of Belém (78%). Equally important is that most of the students did not have previous psychological or psychiatric treatment (respectively 64.85% and 88.1%).

Table 2. Epidemiological profile of medical students of UEPA, Belém-PA, 2018.

Epidemiological profile	Students	% (N = 159)
Gender		
Female	81	50.9%
Male	78	49.1%
Age group		
≤ 18	22	13.8%
19 to 20*	53	33.3%
21 to 22*	42	26.4%
23 to 24	25	15.7%
≥ 25	17	10.7%
Place of origin		
Belém*	124	78.0%
Another city from the state of Para	21	13.2%
Another state	14	8.8%
Marital status		
Single*	150	94.3%
Married / Common-law marriage	9	5.7%
Housing situation		
Lives with parents*	120	75.5%
Lives with other family members	21	13.2%
Lives alone	8	5.0%
Has a partner	7	4.4%
Others	3	1.9%
Previous psychological treatment		
Yes	42	26.4%
In progress	14	8.8%
No*	103	64.8%
Previous psychiatric treatment		
Yes	11	6.9%
In progress	8	5.0%
No*	140	88.1%
Leisure activities		
Always*	68	42.8%
Sporadically*	66	41.5%
Rarely	25	15.7%

Source: Research protocol *p < 0.01; Adherence chi-square test

Table 1. Classification of suicide risk according to the scores of the questions, based on the MINI.

MINI – Module C	Score
Question	
C1	1
C2	2
C3	6
C4	10
C5	10
C6	4
Risk of suicide classification	
Low	1 - 5
Moderate	6 - 9
High	≥10

Source: Mini International Neuropsychiatric Interview, version 5.0.0

Furthermore, according to the MINI interview used to screen for psychiatric disorders, a significant number of students showed generalized anxiety disorder (32,7%) and risk of suicide (30,2%), as shown in Table 3.

Table 4 shows a higher number of GAD in the first year of medical school (34%), whereas the risk of suicide showed a higher prevalence in the fifth year (43,4%) when compared to the first and the third years (respectively 28.3% and 18.9%). Half (50%) of the students who showed risk of suicide also had associated GAD, while only 25.2% of those without risk of suicide showed that disorder, as shown in Table 6.

DISCUSSION

First of all, it is evident that the female gender was the most prevalent group (50.9%), a fact that confirms other studies carried out in medical students in Brazil, which found that approximately 53% to 56% of the students were women[14,17,18].

Table 3. Prevalence assessment of generalized anxiety disorder and risk of suicide among medical students of UEPA, Belém-PA, 2018.

Generalized anxiety disorder and risk of suicide	Students	% (N = 159)
Generalized anxiety disorder		
Yes	52	32.7%
No*	107	67.3%
Risk of suicide		
Yes	48	30.2%
No*	111	69.8%
Risk of suicide classification		
Low	18	11.3%
Moderate	17	10.7%
High	13	8.2%

Source: Research protocol *p<0.01; Adherence chi-square test

Table 4. Prevalence assessment of generalized anxiety disorder and risk of suicide among students attending the first, third and fifth years of medical school at UEPA, Belém-PA, 2018.

Assessment	Year					
	First		Third		Fifth	
Generalized anxiety disorder *						
Presence	18	34.0%	18	34.0%	16	30.2%
Absence	35	66.0%	35	66.0%	37	69.8%
Risk of suicide**						
Presence	15	28.3%	10	18.9%	23	43.4%
Absence	38	71.7%	43	81.1%	30	56.6%

Source: Research protocol *p = 0.8920; Adherence chi-square test; **p = 0.0213, Adherence chi-square test

Table 5. Risk of suicide classification analysis among medical students with risk of suicide of the first, third and fifth year of UEPA, Belém-PA, 2018.

Risk of suicide classification	Year					
	First (n=15)		Third (n=10)		Fifth (n=23)	
Low	5	33.3%	3	30.0%	10	43.5%
Moderate	3	20.0%	2	20.0%	8	34.8%
High	7	46.7%	5	50.0%	5	21.7%

Source: Research protocol, p < 0.0474; Adherence chi-square test

Table 6. Analysis of generalized anxiety disorder and risk of suicide association in medical students from UEPA, Belém-PA, 2018.

Suicide Risk	Generalized anxiety disorder			
	Presence		Absence	
Yes	24	50.0%	24	50.0%
No	28	25.2%	83	74.8%

Source: Research protocol *p = 0.0023; Fisher's exact test.

Additionally, age was another analyzed factor, showing a statistically predominant presence of students between the age of 19 and 22 years (59.7%). These data is according to the findings of other studies, as one carried out at Escola Superior de Ciências da Santa Casa de Misericórdia, which showed an average age of 21.7 ± 2.6 years[19].

Moreover, most students (78%) were from the same place where the institution was located, confirming the findings

of Paula et al (2014)[20]. In addition, almost all the students were single, given that most of them were young. This fact has be shown in other studies, as the one by Oliveira (2018), which found an 89.7% rate of single individuals[21]. Equally important is the fact that there was a predominance of students living with their parents 75,5%), differing from the students in the study by Cunha and Santos (2018), which found a 26.1% rate of students living in those conditions[22].

Concerning psychological treatment, the study showed that 64.8% of the students had never sought this kind of therapy, and similar data were found by Pereira et al. (2017), in which 69.6% of the interviewed individuals had never used this type of resource[23]. On the other hand, some inconsistencies were found regarding psychiatric treatment: while in a study conducted in the state of Paraíba 89.1% had received therapy, only 19 of the 159 (11.9%) of the students in the present study had received it. It is important to emphasize the significant role of professional health care – which is still precarious – for this population, considering that attending medical school leads to psychological stress[24].

In addition, other studies – such as the one by Rocha et al., 2020 – showed a lower rate of students seeking psychological counseling, as only 87 of 1986 were enrolled to receive psychological treatment. Among those students, 60.9% had received psychological counseling before starting university. According to Marco, 2009, people who seek this type of therapy are those who recognize having a problem associated to the difficulties faced in university. That could be one of the reasons why most of the students, despite facing severe distress before and after entering the university, do not seek any type of help[25,26].

Other studies, such as the one by Taborda, in 2015, also found reasons that kept medical students from seeking psychological or psychiatric treatment, and among them, lack of time, lack of interest – prioritizing the body instead of the mind –, not recognizing the real need for this type of help – denying the problem as a self-defense mechanism –, shame and fear of being exposed were some of the reasons the assessed students gave when asked why they had not sought treatment, even though many of them had depression or anxiety symptoms[27]. It is known that using this kind of defense mechanism is one of the most common characteristics of medical professionals[28].

In addition, there was a large number of students that always or sporadically performed leisure activities. Similar data were found by Pereira et al. (2017), which amounted to nearly 96% [24]. Although it was a high rate, it is important to emphasize that medical students usually deprive themselves of those activities, being necessary to adapt their leisure time to prevent future illness[29,30].

As also found by other researches, there was a high prevalence (80%) of students who considered the course good or excellent. This fact might aid in the prevention of psychological problems and help to improve the quality of life of this population[22,31].

The treatment of mental health disorders in medical students is frequently observed, which is mainly related to a massive theoretical and practical content, high workload, insecurities regarding the professional future and other facts. However, there is still a low adherence to this kind of treatment due to the presence of stigma against this type of therapy. This scenario was corroborated by the collected data, showing that 52 students (32.7%) of the 159 had GAD, which is in accordance with a meta-analysis that assessed 6 studies related to anxiety, disclosing a rate of 32.9%[15,32].

Regarding suicide, many studies have shown an elevated prevalence in medical students when compared to other students in general. This is related mainly to the increase in depressive disorders, as well as drug abuse. In this study 30.2% of the students had suicide risk, corresponding to 48 students, of which 18 with low risk, 17 with moderate risk and 13 with high risk. There is a disagreement between the elevated rate of suicide risk found in this study and other studies, as in a meta-analysis showing that 11.1% of the students had suicidal ideation, an important item to be considered when analyzing the presence of high risk of suicide[33,34].

In this study, the first-year students had a GAD rate of 34%, which is similar to the findings observed in the study by Pint et al., in 2018, which showed a rate of 32.1%. Regarding the risk of suicide, 15 (28,3%) of the students had this problem, of which 7 were high risk (46.7%). That is an alarming rate, considering that almost half of the students showed suicide risk. The presence of suicide risk among the first-year students is associated to stressing factors, such as competition during the process of entering the university, as well as the difficulties faced in this environment, new challenges and expectations, which can lead to insecurity, fatigue and sadness[35,36].

On the other hand, the third-year students had a GAD prevalence of 34% but a lower rate of suicide risk, as only 18.9% had it, of which 50% were high risk. Those conditions might be mainly associated to the beginning of the clinical years, a period that allows a bigger contact with the patients during the ambulatory practices in hospitals and basic health units. Those practices require a great deal of attention and responsibility from the students when facing the course demands, overburdening and leading them towards the possible development of mental health disorders[37,38].

The fifth-year students showed a numerically inferior GAD rate (30.2%) when compared to the first- and third-year

students, even though there was no statistical difference. However, 23 (43.3%) of the 53 students showed risk of suicide, what is twice the number compared to the third-year students, with a predominance of low risk (43.5%). This is due to factors related to the last years of the medical course, such as the insecurity concerning knowledge, increase in workload, as well as the stress related to the medical specialization exams. On the other hand, the lower rate of GAD found can be justified by the students' maturity in adapting to the last years of medical school and also the medical treatment, as it seems to provide a better response to anxiety[37-39].

Furthermore, the recent changes in the medical course to the Problem-Based Learning (PBL) method, considered as a risk factor regardless of the course year, is a new teaching method at Universidade Federal do Pará, which leads to insecurity concerning the efficiency of the active methodologies and the knowledge acquired by the students, as well as the higher responsibilities and commitment to their own learning[40,41].

Finally, it is important to emphasize the association between GAD and risk of suicide, since both have the same risk factors, with anxiety being the main trigger to suicide. In this study, of the 48 students that showed a risk of suicide, 50% also had GAD, which reinforces the strong association between those problems. Many studies also found similar data, confirming that the presence of GAD is enough to increase the suicide risk, although the risk is higher if other mental disorders overlap, such as major depressive disorder (the most frequent diagnosis behind suicide)[10,42].

The lack of information about other aspects concerning the students' life, such as drug and alcohol abuse, sleep disorders, family problems and other factors that may implicate possible psychological distress, such as GAD or suicide risk, can be considered some of the limitations found in this study. On the other hand, the collected data showed the main prevalence of two important mental illnesses among medical students, who constantly experience stressful situations on a daily basis.

CONCLUSION

It is concluded that there were significant high rates of GAD (32.7%) and suicide risk (30.2%) among medical students, as shown by the elevated rates of severe suicide risk among first- and third-year students (46.7% and 50%, respectively), which might be related to the beginning of the medical course or the previous competition they face during admission to the university, which leads to a high rate of mental disorder.

More investigations are needed to identify the most common pattern among students with generalized anxiety disorder and/or risk of suicide; moreover, subsequent plans

to minimize these rates and improve quality of life must be carried out.

Regarding this problem, it is important to establish and treat mental illness, expanding the university psychological support system so that more students can be reached, by implementing support groups – with professors/psychologists – which would result in significant help in an attempt to reduce or prevent the physical and psychological consequences of those problems, which can bring serious consequences to their personal and professional life.

AUTHORS' CONTRIBUTION

Sérgio Cunha Trindade Júnior and Luis Fernando Freitas de Sousa conceived and designed the experiments, performed the data collection, analyzed data and wrote the manuscript. Luciana Brandão Carreira conceived and designed the experiments, performed the data collection and reviewed the manuscript.

CONFLICTS OF INTEREST

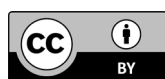The authors report no conflicts of interest.

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