

Anxiety in medical students: an integrative review

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ABSTRACT

Anxiety is classified, through the Diagnostic and Statistical Manual of Mental Disorders, into normal and pathological anxiety, pathological anxiety occurs when this emotion causes an unpleasant sensation in the sufferer, while normal anxiety is evolutionarily developed in the individual. According to the World Health Organization (WHO), it is estimated that a rate of 3.7% of the world's population suffers from this disorder. This feeling, when characterized as pathological, generates a negative impact on the quality of life of patients, influencing physical and psychological health, living conditions and social relationships, thus, the quality of life of individuals is negatively impacted. In this sense, the present study seeks to highlight the presence of this disorder in medical students, through the literature published in recent years. In a selection of 10 works on the subject, we found that the WHO highlights that 3.7% of the world's population suffers from this disorder; However, through studies it is possible to notice a rate of more than 3.7%. In addition, research has shown that in addition to anxiety, medical students have sleep deprivation that can negatively impact students' quality of life. In summary, it is important to understand and classify pathological anxiety in medical students, in order to avoid the development of this disorder in this population that suffers from the disorder and faces factors external to its formation, in order to obtain an improvement in the quality of life of these individuals.

Keywords: Anxiety. Anxiety Disorders. Medical students.

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INTRODUCTION

The American Psychiatric Association (APA) classifies, through the Diagnostic and Statistical Manual of Mental Disorders – 5th Revised Edition (DSM-5), anxiety disorders into: Panic Disorder; Agoraphobia; Specific Phobias; Social Anxiety Disorder or Social Phobia; Generalized Anxiety Disorder; Separation Anxiety Disorder. In this sense, it is important to conceptualize normal anxiety, which is the evolutionarily developed emotion that signals situations of danger or real threat to the individual. On the other hand, pathological anxiety occurs when this unpleasant and bothersome emotion arises without a defined or proportional threatening external stimulus to explain it (APA, 2014).

This unexplained anxiety and excessive fear are common symptoms of anxiety disorders, although each has its own characteristics. In addition to psychological symptoms, physical manifestations are often associated with anxiety. Among which, symptoms such as palpitations, flushing, tremor, diarrhea, muscle tension and sweating are mainly observed (Pereira; Lourenço, 2012).

In the foreground, it is possible to glimpse the potential negative impact on the quality of life of patients with these disorders. This is due to the fact that the concept of quality of life is multidimensional and influenced by several factors, such as physical health, psychological state, level of independence, living conditions, and social relationships. Thus, quality of life presupposes, among other aspects, mental health and emotional well-being, the ability to perform daily activities and maintain autonomy, as well as the quality and support of a person's social connections and interactions (Ruidiaz-Gómez; Cacante-Caballero, 2021).

It is therefore known that higher levels of anxiety are associated with poorer sleep quality, lower quality of life, and higher levels of depression (Wen et al., 2022). Finally, it can be inferred that pathological anxiety is related to a decrease in quality of life, since it influences, among other things, directly on the sociability of people with anxiety disorders (Ruidiaz-Gómez; Cacante-Caballero, 2021).

In this bias, it is possible to affirm that the reverse is true, since low quality of life directly influences the development of psychiatric disorders. With regard to this aspect, it is noteworthy that the lack of social support and the decrease in quality of life are significantly related to the emergence of anxiety. Therefore, cause-and-effect relationships are intertwined, triggering a pathological cycle of distress and suffering for patients, which is difficult to break (Mutepfa et al., 2021).

In addition, it is known that pathological anxiety affects a large portion of the population around the world. According to the World Health Organization (WHO), the global prevalence is

3.6% and Brazil has the highest number of cases among all countries in the world, with a prevalence of 9.3% (WHO, 2017). However, some groups are more susceptible to developing these disorders, such as adolescents and young adults (Lakasing; Mirza, 2020). In the context of the university environment, for example, the expanded stratification reveals worldwide prevalence rates with a median of 32%, ranging between 7.4% and 55% (Tan et al., 2023).

Considering the above, the presence of several undergraduate courses in various areas of knowledge stands out. In this sense, university students face a varied range of contexts and challenges. In the field of health, undergraduate medicine is chosen as the object of this research due to the intrinsic characteristics of the challenging process of medical education, highlighting academic pressure, high workload, and sleep deprivation (Shao et al., 2020). In addition, there is frequent contact with illness and death, scarce free time for study, leisure, and rest, in addition to an environment marked by competitiveness and insecurity related to the professional future (Castadelli-Maia et al., 2019; Romo-Nava et al., 2019; Tempski et al., 2012).

In addition, anxiety disorders can significantly affect some essential functions for medical students, who need to develop empathy, communication, and even motor skills during their training. Depending on the individual and the type of disorder, anxiety can impair attention and concentration, memory consolidation and some perceptual-motor functions. Thus, students who suffer from anxiety disorders may develop serious impairments related to these social or motor skills, causing significant impacts for their future medical practice (Quek et al., 2019).

In view of the above, it is necessary to understand aspects of anxiety disorders and relate them to the quality of life level of university students, specifically undergraduate medical students. Considering that this association can interfere unfavorably in the academic environment and harm the adequate training of medical professionals, this study aims to review the literature on the subject. The review is justified by the increasing prevalence of anxiety disorders among medical students and by the significant impact that these disorders can have on the mental health and quality of life of these individuals. In addition, this review seeks to identify gaps in current knowledge, offer a synthesis of available evidence, and provide a basis for future research and interventions. By better understanding the challenges faced by these students, it is expected to contribute to the development of more effective support strategies, promoting a healthier academic environment that is conducive to the training of well-prepared and resilient physicians.

METHODOLOGY

This is an integrative literature review, whose objective is to systematize the analysis of

the results and understand the theme from relevant studies. To this end, criteria were established for data collection, analysis and presentation of results.

Data were collected through the search for publications in the area, using the MEDLINE/PubMed and Latin American and Caribbean Literature on Health Sciences (LILACS) platforms, in the second half of 2024. The descriptors "Anxiety", "Anxiety Disorders" and "Medical Students" – and their counterparts in English – were extracted from the BIREME Health Science Subject Descriptors (DeCS) and the *Medical Subject Headings* (MeSH). The search in the databases followed the following structure: ("Anxiety" OR "Anxiety Disorder") AND ("Medical Students").

Articles from the last five years were selected, in order to obtain recent advances and promote the updating of knowledge on the subject. In addition, papers published in English, with full text available, from all categories were included. The search resulted in a total of 170 studies, 125 from PubMed and 45 from LILACS.

A total of 150 articles were excluded after reading the titles, abstracts and discussions, because they did not present relevant data for this research or because they were tangential to the theme. After a thorough reading of the remaining 20 papers, those that contemplated the research theme were highlighted in order to organize and tabulate the data. A total of 10 studies were selected for analysis and inclusion in this review. Chart 1 presents the specifications of each of these studies.

Chart 1 – Articles selected from the MEDLINE and LILACS databases

Database	Article Title	Authors	Newspaper	Year
MEDLINE	The Global Prevalence of Anxiety Among Medical Students: A Meta-Analysis	Quek TT, Tam WW, Tran BX, Zhang M, Zhang Z, Ho CS, Ho RC	International Journal of Environmental Research and Public Health	2019
MEDLINE	Sleepiness, sleep deprivation, quality of life, mental symptoms and perception of academic environment in medical students	Perotta B, Arantes-Costa FM, Enns SC, Figueiro-Filho EA, Paro H, Santos IS, Lorenzi-Filho G, Martins MA, Tempiski PZ	BMC Medical Education	2021
MEDLINE	Prevalence of mental health problems among medical students in China: A meta-analysis	Zeng W, Chen R, Wang X, Zhang Q, Deng W	Medicine (Baltimore)	2019

MEDLINE	Prevalence of common mental disorders among medical students in China: a systematic review and meta-analysis	Wang J, Liu M, Bai J, Chen Y, Xia J, Liang B, Wei R, Lin J, Wu J, Xiong P	Frontiers in Public Health	2023
MEDLINE	Sleep disorders and associated factors among medical students in the Middle East and North Africa: a systematic review and meta-analysis	Chaabane S, Chaabna K, Khawaja S, Aboughanem J, Mittal D, Mamtani R, Cheema S	Scientific Reports	2024
LILACS	Prevalence and factors associated with depression and anxiety among medical students in an inland university in Brazil	Costa, Tales Gabriel da; Simon, Laura; Mocellin, Lucas Pitrez; Wottrich, Shana; Pase, Camila Simonetti	USP Ribeirão Preto Journal of Medicine	2022
LILACS	Association between anxiety and depression in Medical students at Universidad Ricardo Palma during the year 2021	Leiva Nina, Mashiel; Indacochea Cáceda, Sonia; Cano, Luis A; Medina Chinchon, Mariela	Journal of the Faculty of Human Medicine	2022
LILACS	Association between Anxiety and Sleepiness in Medical Students of the University of Guadalajara (Mexico)	González-Heredia, Omar Nahum; Hernández-Corona, Diana Mercedes; González-Ramírez, Leivy Patricia; Vazquez Jáuregui, Adriana Iveth; Valle Reyes, Araceli; Aguilar Alarcón, Mónica Daniela; González-Heredia, Tonatiuh.	HealthSciences Magazine	2022
LILACS	Generalized anxiety disorder and prevalence of suicide risk among medical students	Trindade Júnior, Sérgio Cunha; Sousa, Luis Fernando Freitas de; Carreira, Luciana Brandão.	Brazilian Journal of Medical Education	2021
LILACS	Prevalence of and Factors Associated with Depression and Anxiety in Brazilian Medical Students	Ribeiro, Christiane Fernandes; Lemos, Carolina Martins Cabrita; Alt, Nina Nogueira; Marins, Rulliany Lizia Tinoco; Corbiceiro, Weydler Campos Hottz; Nascimento, Maria Isabel do.	Brazilian Journal of Medical Education	2020

Source: Prepared by the authors

RESULTS AND DISCUSSION

All ten articles analyzed demonstrate the high prevalence of anxiety disorders among medical students worldwide. Chart 2 shows the main approaches associated with the integrative review found in the literature. The rates found are much higher than the WHO estimates, which point to a worldwide prevalence of pathological anxiety of 3.6% (WHO, 2017). Quek et al. (2019) analyzed the global prevalence of anxiety in medical students, in a large survey, which involved 40,348 students and demonstrated a prevalence of 33.8%.

Table 2 – Main results of the integrative review

Article	Objective	Results
QUEK et al., 2019	To study the global prevalence of anxiety among medical students and the associated factors that predispose medical students to anxiety.	Analysis of data from sixty-nine studies involving 40,348 medical students. The overall prevalence rate of anxiety among medical students was 33.8%.
PEROTTA et al., 2021	To assess the relationship between sleep deprivation, sleep quality and daytime sleepiness and quality of life, perception of environmental academic performance, and symptoms of depression and anxiety.	This was a multicenter study with 1,350 medical students from 22 schools in Brazil. 37.8% of the medical students had mild daytime sleepiness and 8.7% had moderate/severe values.
ZENG et al., 2019	Summarize the prevalence of mental health problems in Chinese medical students.	Analysis of ten cross-sectional studies involving a total of 30,817 Chinese medical students. The prevalence of depression, anxiety, suicidal ideation, and eating disorders was 29%, 21%, 11%, and 2%, respectively.
WANG et al., 2023	To estimate the prevalence of common mental disorders (CMD), including depression, anxiety, and suicidal behaviors, among medical students in China.	Analysis of 197 studies conducted in 23 provinces of China. The pooled global crude prevalence for depression was 29%; anxiety, 18%; suicidal ideation, 13%; suicide attempt, 3%; and suicide plan, 4%.
COSTA et al., 2022	OBJECTIVE: To investigate the prevalence of anxiety and depression symptoms and factors associated with them among medical students at a public university in southern Brazil.	The prevalence of depressive symptoms was 65.1%, state anxiety was 98.6%, and trait anxiety was 97.4%.
MASHIEL et al., 2022	To determine the association between anxiety and depression in medical students at Ricardo Palma University during the 2021-II academic year.	Study with a sample of 110 students. Of the medical students, 85.46% manifested some degree of anxiety and 50% manifested some degree of depression. Higher frequency in females, those of low socioeconomic status, and those who had a clinical course.
GONZÁLEZ-HEREDI et al., 2022	To identify the association between anxiety and excessive daytime	Of the 173 students, 27.2% had sleepiness, of which 15 students were

	sleepiness in medical students at the University of Guadalajara (Mexico).	classified as having excessive sleepiness. On the other hand, 59.5% of the students suffered from anxiety, with 33 students having moderate anxiety and 17 having severe anxiety.
TRINDADE JÚNIOR et al., 2021	OBJECTIVE: To evaluate the prevalence of GAD and suicide risk and its association in medical students in Belém - PA.	52 (32.7%) of the 159 students have GAD and 48 (30.2%) are at risk of suicide, of which 18 are at mild risk (11.3%), 17 are at moderate risk (10.7%) and 13 are at high risk (8.2%).
RIBEIRO et al, 2020	OBJECTIVE: To estimate the prevalence of indicative scores for anxiety, depression, and simultaneous anxiety and depression, and to analyze factors associated with these conditions in medical students at a federal university in Brazil.	This study was conducted with 355 students evaluated with the Hospital Anxiety and Depression Scale (HADS). Anxiety was the most common condition (41.4%), followed by depression (8.2%) and anxiety and depression simultaneously (7.0%).

Source: Prepared by the authors

Studies that analyze anxiety in Brazilian universities also corroborate the WHO data, although they show higher rates among medical students compared to the general population. The analysis of sleep deprivation by PEROTTA et al. (2021) showed alarming values of daytime sleepiness, both considered mild and moderate and severe. COSTA et al. (2022) and MASHIEL et al. (2022) analyzed anxiety symptoms and also demonstrated alarming values. When it comes to the diagnosis of GAD, TRINDADE JÚNIOR et al. (2021) demonstrated that 32.7% of students had GAD at a university in Belém.

The difference between the prevalence of anxiety between genders among medical students does not seem to be a consensus yet. Four of the ten studies analyzed found significant differences in the prevalence of anxiety between genders, and three found no significant differences. The rest of the studies did not analyze differences between genders. PEROTTA et al. (2021) found significantly higher prevalence values in females in the sleepiness analysis. As well as RIBEIRO et al (2020), COSTA et al. (2022) and TRINDADE JÚNIOR et al. (2021), who also demonstrated significant differences, with a higher prevalence in the female gender. On the other hand, QUEK et al. (2019), CHAABANE et al. (2024) and ZENG et al. (2019) although they found some differences in prevalence between genders, these differences were not statistically significant.

The analysis of studies to understand the prevalence of anxiety among medical students was hampered by the difference in standardized criteria in the studies carried out. Some studies have researched the presence of GAD diagnoses among students, such as TRINDADE JÚNIOR et al. (2021). Others looked for the presence of anxious symptoms, such as COSTA et al.

(2022). Finally, there have also been studies on sleep deprivation, PEROTTA et al. (2021) and CHAABANE et al. (2024), which have anxiety as one of the main consequences or even as its cause.

The differentiation between the types of anxiety is very important, since not all anxiety is pathological and that anxiety disorders often have very different causes, consequences and treatments. Non-pathological anxiety, in fact, is a feeling that can be part of the training of medical students in a healthy way, especially considering issues such as academic pressure, high workload, and sleep deprivation. And, therefore, it is essential that studies develop appropriate methodologies for identifying anxiety as a pathology.

Considering the worldwide prevalence of anxiety, especially in young people, and the constant increase of this pathology in recent years, there are still few studies to allow a broad understanding of the problem. Medical students face several situations that are intrinsic to their training, and most studies do not seek to understand these issues and relate them to pathology. In addition, there are also factors external to training that can influence the prevalence of anxiety, such as social problems and quality of life. A complete understanding of these mechanisms can allow an adequate confrontation of this problem.

CONCLUSION

Pathological anxiety represents an important emotion in the lives of undergraduate medical students, as this feeling negatively impacts the quality of life of these young students. This disorder affects all aspects of the individual's life, including physical and psychological health, living conditions and social relationships, in addition, studies show that along with the symptom of anxiety comes sleep deprivation that negatively impacts quality of life. In summary, according to the WHO, the anxiety rate among the world population is 3.7%, with Brazil being the country that leads this statistic. In view of this, it is possible to note that pathological anxiety represents an important disorder in the population, however there are few studies that allow a broad understanding of the problem that medical students face daily during graduation, in addition there are no studies that relate intrinsic factors that young people face during graduation with anxiety disorder.

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