

Stress, depressive symptoms, sleep quality, resilience and quality of life of medical students

Estresse, sintomas depressivos, qualidade do sono, resiliência e qualidade de vida de acadêmicos de medicina

Estrés, síntomas depresivos, calidad del sueño, resiliencia y calidad de vida de los estudiantes de medicina

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RESUMO

Objetivo: analisar a produção científica referente ao estresse percebido, sintomas depressivos, qualidade do sono, resiliência e qualidade de vida de estudantes de medicina ao longo do curso. **Método:** Trata-se de uma revisão narrativa da literatura cuja coleta de dados foi realizada entre Agosto e Setembro de 2022 no formulário avançado da Biblioteca Virtual em Saúde, na Scientific Electronic Library Online, PubMed e Google Acadêmico. Para a coleta, foram utilizadas duas estruturas de busca, por meio de palavras-chave, a saber: 1) saúde-mental AND estudantes AND medicina; e 2) resiliência AND depressão AND ansiedade AND estresse. **Resultados:** O curso de medicina apresenta situações estressoras específicas e comuns a outros cursos, colocando o aluno em um ambiente propício para o aparecimento de estresse percebido, baixa qualidade de sono, presença de sintomatologia depressiva e queda da qualidade de vida. Por outro lado, percebe-se que a resiliência se fortalece ao longo do curso. **Conclusão:** trabalhos na área acadêmica devem ser desenvolvidos a fim de dar ao estudante a possibilidade de criar mecanismos próprios de enfrentamento e fortalecer seu resiliência dado que os estressores estarão presentes ao longo de toda a sua graduação e carreira. Assim, espera-se melhoria do aprendizado e uma formação de profissionais mais capacitados e aptos para atender a população.

Descritores: Estresse Psicológico; Qualidade de vida; Resiliência.

ABSTRACT

Objective: to analyze the scientific production related to perceived stress, depressive symptoms, sleep quality, resilience and quality of life of medical students throughout the course. **Method:** This is a narrative review of the literature whose data collection was carried out between August and September 2022 in the advanced form of the Virtual Health Library, in the Scientific Electronic Library Online, PubMed and Google Scholar. For the collection, two search structures were used, through keywords, namely: 1) mental health and students AND medicine; and 2) resilience AND depression AND anxiety AND stress **Results:** Results: The medical course presents specific stressful situations common to other courses, placing the student in an environment conducive to the appearance of perceived stress, low sleep quality, presence of depressive symptomatology and drop in quality of life. On the other hand, it is perceived that resilience is strengthened throughout the course. **Conclusion:** work in the academic area should be developed in order to give the student the possibility of creating their own coping mechanisms and strengthen their resilience since stressors will be present throughout their graduation and career. Thus, it is expected to improve learning and a training of professionals more qualified and able to serve the population.

Descriptors: Psychological Stress; Quality of life; Resilience.

RESUMEN

Objetivo: analizar la producción científica relacionada con el estrés percibido, los síntomas depresivos, la calidad del sueño, la resiliencia y la calidad de vida de los estudiantes de medicina a lo largo del curso. **Método:** Se trata de una revisión narrativa de la literatura cuya recolección de datos se realizó entre agosto y septiembre de 2022 en la modalidad avanzada de la Biblioteca Virtual en Salud, en la Scientific Electronic Library Online, PubMed y Google Scholar. Para la colección, se utilizaron dos estructuras de búsqueda, a través de palabras clave, a saber: 1) salud mental y estudiantes Y medicina; y 2) resiliencia Y depresión Y ansiedad Y estrés. **Resultados:** El curso de medicina presenta situaciones estresantes específicas comunes a otros cursos, colocando al estudiante en un ambiente propicio para la aparición de estrés percibido, baja calidad del sueño, presencia de sintomatología depresiva y caída en la calidad de vida. Por otro lado, se percibe que la resiliencia se fortalece a lo largo del curso. **Conclusión:** se debe desarrollar un trabajo en el área académica con el fin de dar al estudiante la posibilidad de crear sus propios mecanismos de afrontamiento y fortalecer su resiliencia, ya que los estresores estarán presentes a lo largo de su graduação y carrera. Así, se espera mejorar el aprendizaje y una formación de profesionales más cualificados y capaces de atender a la población.

Descritores: Estrés Psicológico; Calidad de vida; Resiliencia.

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Introduction

After enrolling in higher education, students live with situations that are characteristic of the profession and the academic context that can be assessed as stressful.¹ At the national level, situations related to the exam period, to extracurricular tasks and the transition from the pre-university phase to the academic environment.² At the international level, researchers highlight, as stressors, the school activities experienced in the first 12 initial months of entering college; traumatic death experiences; responsibility for the care of the other; demands regarding performance and interpersonal relationships; feeling of unpreparedness for the functions to be carried out in internships and practical classes; and adapting to academic demands.³⁻⁷ Faced with these situations, it is possible that students perceive situations in the academic context as stressful, and it is also possible for other outcomes to occur, such as depressive symptoms, poor sleep quality and a decrease in sleep quality. of life.

In this sense, stress is conceptualized as any stimulus that demands from the external or internal environment and that taxes or exceeds the adaptation sources of an individual or social system⁸, its occurrence among university students has already been verified in different studies.^{2,4, 9-10} Among them, a survey of 456 medical students identified the presence of stress in 60.09% (n = 274) of the sample and extreme stress in 20.83% (n = 95).¹¹

Depressive Symptoms are defined as a set of emotions and cognitions, with consequences for interpersonal relationships.¹² In a cross-sectional study with a sample of 729 US university students, 16.5% had such symptoms, 30.6% moderate depression and 23, 2% severe or moderately severe depression.¹³ In research with university students in Canada, 34.2% were depressed¹⁴ and, in research conducted with high school students in China, 6.4% of them had such symptoms.¹⁵

Sleep quality can also impact the health of health students. Investigations show the occurrence of poor sleep quality in 60% of university students in Chicago¹⁶ and in 71% of students in California.¹⁷ In a survey of 35 university students in Texas (USA), it was found that changes in sleep patterns cause an increase of depressive symptoms, and this relationship is mediated by cognitive control.¹⁸

All the exposed phenomena can directly or indirectly impact the quality of life of students. This is defined as a person's sense of well-being and derives from satisfaction or dissatisfaction with areas of life that are important to them.¹⁹ The relationship between health phenomena and quality of life was identified in research with medical students, in which daytime sleepiness was associated with a decrease in physical, psychological and environmental quality of life scores.²⁰ Also, in an investigation with 1074 university students, those with chronic insomnia reported lower quality of life²¹ Based on the above, it appears that, Upon entering the institution, the student is exposed to stressful situations, and may experience changes in health, including stress, depressive symptoms, quality of sleep and quality of life.

On the other hand, even in the face of a potentially stressful environment, some individuals may have low levels of stress and, thus, less chance of suffering negative outcomes to their health.²²⁻²³ This ability of an individual to recover from adversity and adapt positively to important situations in life is called resilience.²⁴⁻²⁵ This phenomenon is understood as a dynamic process in which emotional, sociocultural, environmental and cognitive aspects interact and allow human beings to face, overcome and strengthen and transform themselves through experiences of adversity and stress.²⁵⁻²⁶

In this sense, the objective of the study was to analyze the scientific production regarding perceived stress, depressive symptoms, sleep quality, resilience and quality of life of medical students throughout the course.

Method

This is a literature review carried out in order to answer the following guiding question: How do health phenomena (perceived stress, depressive symptoms and sleep quality), levels of resilience and quality of life occur in medical students throughout their career? University graduate?

Data collection was carried out between August and September 2022 using the advanced form of the Virtual Health Library (VHL), Scientific Electronic Library Online (SCIELO), PubMed and Google Scholar. For data collection, two search structures were used, using keywords, namely: 1) mental health AND students AND medicine; and 2) resilience AND depression AND anxiety AND stress. Articles written in Portuguese (Brazil), English (USA, England) and Spanish (Spain) available online and in full and involving mental health of students in the health area were included. Those who had no direct relationship with the research theme were excluded.

After initial reading of the titles and abstracts of the materials found, those that met the eligibility criteria were selected. Subsequently, the pre-selected articles were read in full and evaluated again regarding the inclusion and exclusion criteria, thus obtaining the final sample of this review.

Results and Discussion

Stress

In the 1920s and 1930s, Selye used the term stress for the first time in the health area²⁷⁻³⁰ Considered the forerunner of the stress theory, his concern was with the "Syndrome of being sick". Therefore, he found that patients, regardless of etiology, had common signs and symptoms, which included weight loss, loss of appetite and decreased muscle strength.²⁸

Later, Selye described the stages of biological stress and the General Adaptation Syndrome (GAS) or Biological Stress. Such syndrome was defined as the body's physiological defensive reaction in response to any aversive stimulus, having been divided into three

phases: alarm reaction, resistance and exhaustion.²⁹ The first of them occurs immediately after the confrontation with the stressor and can be conscious or not. It is defined as a chemical mobilization, a common reaction of the body that needs to meet the requirements, considered as a basic mechanism to defend the organism both from challenges and threats to its integrity. In a short period of time, if the stressor persists, resistance occurs. In this phase, the body works for survival and adaptation. If the stressor persists or balance does not occur, the exhaustion phase begins, in which adaptation does not occur and diseases, with a risk of death, may appear.²⁸

In the 20th century, Lazarus and Folkman defined stress, based on the interactionist model, as any stimulus that demands from the external or internal environment and that taxes or exceeds the adaptation sources of an individual or social system. Currently, it is the most popular model in the scientific literature, since it considers the interaction between the environment and the person or group as responsible and active in the process.^{8,31}

In the interactionist model, it is understood that stress involves, in addition to organic changes, a phase in which cognitive, emotional and behavioral functions participate. It is noteworthy that, in this model, a cognitive assessment takes place, which is understood as a mental process of locating the event or situation in a series of evaluative categories that are related to the meaning of the person's well-being.⁸

In this categorization process, primary and secondary assessments that produce responses are possible. In the first, the individual identifies the demands of a given situation and defines the meaning of the event, which can result in an action. Such an event may be challenging, threatening, or irrelevant to the individual. The result of this first assessment will depend on the nature of the stimulus and its intensity, the individual's previous experience and his response to the emotion experienced.⁸ If the stressor is defined as a threat or challenge, the stress reaction occurs and the secondary assessment will be performed. In this, strategies for coping with the stressor are verified.⁸

Specifically in medical graduation, the student constantly experiences too many stressful situations. In addition to the exhaustive routine and the dense content that are inherent to the course, the student has an extra concern due to the pressure exerted by the course colleagues themselves, by the professors and, mainly, by society, since it is a profession that demands extreme responsibility and inevitable competitiveness.⁵⁷

Sleep Quality

Since ancient times, sleep has aroused human curiosity. Hippocrates already associated insomnia with boredom and sadness and Aristotle believed that sleep was necessary to maintain perception, which would be exhausted if used uninterruptedly. Despite the interest aroused by sleep and its disorders, it was only in the second half of the 20th century that it ceased to be an object of interest exclusively for

philosophers and poets and began to be studied by scientists.³²⁻³³ In this sense, the first records of electrical potentials in the human cerebral cortex were observed in 1929 and given the name electroencephalogram (EEG). In the 1930s, Loomis, Harvey and Hobart found that sleep was composed of recurrent stages (named by letters), which would later form non-rapid eye movement sleep (NREM). The identification of sleep with rapid eye movements (REM) only occurred in 1953 by Aserinsky and Kleitman, a fact that inaugurated the understanding of sleep.³²

The sleep-wake cycle, under natural conditions, synchronizes with environmental factors and oscillates over a 24-hour period. Among the environmental factors, the alternation between day and night (light-dark), school, work, leisure and family activities stand out. In addition to this environmental synchronization, the sleep-wake cycle is endogenously regulated by the suprachiasmatic nucleus, located in the hypothalamus, considered the biological clock for mammals.³²⁻³³ Furthermore, sleep can be divided into NREM (NonRapid Eye Movement) and REM (Rapid Eye Movement, so a young adult's sleep includes four to six REM-NREM cycles. The first cycle is usually shorter than the early morning sleep, lasting approximately 90 minutes. The individual passes from relaxed wakefulness to stage 1 and then to stage 2, gradually sleep becomes deeper, with the onset of stages 3 and 4, stages of slow-wave sleep. After approximately 90 minutes of sleep onset, REM sleep begins, which lasts on average from 2 to 10 minutes and marks the end of the first sleep cycle. Then, the second cycle begins from stage 2 and other stages.³²⁻³³

Sleep has a fundamental biological role in memory consolidation, binocular vision, thermoregulation, conservation and restoration of energy, as well as restoration of brain energy metabolism. In addition, it acts as a restorative and homeostatic agent, influencing the individual's state of wakefulness.³³ Under natural conditions, human beings need a certain regularity in their sleep-wake cycle pattern, but there are two groups of factors that act antagonistically in the process of synchronizing the light-dark cycle, namely: endogenous factors, which tend to synchronize the sleep-wake cycle at a regular pace within a 24-hour period; and the individual's demands, which make up the exogenous factors and tend to synchronize the sleep-wake cycle in a pattern different from the light-dark cycle, which leads to sleep disorders.³³

Sleep disorders bring with them several repercussions for humans, which include autonomic dysfunction, decreased professional or academic performance, higher incidence of psychiatric disorders and decreased vigilance, with greater risk to personal safety and accidents. Bad sleepers tend to have more morbidities, shorter life expectancy and premature aging.³³ Therefore, great advances in the diagnosis and treatment of sleep disorders have been made, many of them obtained by centers of sleep studies that have expanded and conducted research in the field of sleep physiology, its regulation mechanisms and its alterations.³²

In the academic field, the balance between endogenous and

exogenous factors in synchronizing the light and dark cycle is a challenge, because, although the former naturally control the basal metabolism for periods of sleep and wakefulness, academic and hospital demands tend to reduce sleep and desynchronize the day-night cycle.³²⁻³³ In this sense, in addition to full-time curricular activities, students of courses in the health area are exposed to other situations, such as the search for a good professional qualification, extracurricular tasks, complementary courses and extracurricular activities, such as academic leagues, shifts, internships, scientific initiations and tutoring.³³

Due to the high academic and professional demand, students in the health area are very susceptible to sleep disorders, especially in terms of sleep quality, daytime sleepiness and the use of sleeping pills. In a survey conducted with students in the area, applying the Pittsburgh Sleep Quality Index (PSQI) and the Epworth Sleepiness Scale (ESS), 61.8% of students believe that their sleep quality is poor, 37.5% complained of moderate drowsiness and 7.4% reported using medication to sleep.⁵⁸

Faced with this, students need to decide between maintaining the regularity of the sleep-wake cycle and meeting individual sleep needs or meeting academic demands, whether theoretical or practical. Often, it is observed that they opt for the last option and, therefore, have an irregular sleep-wake cycle pattern, generally characterized by changes in the time of onset and end of sleep. Thus, the period of sleep during the week is usually shorter compared to the weekends due to sleep deprivation during class or work days³³⁻³⁴, which impacts the quality of sleep of university students.

Depressive Symptoms

In addition to changes in the pattern and quality of sleep, one of the reactions in response to stressors may be depression. Remarkable importance is attributed to heredity and genetic factors, which can have a biochemical expression at the level of synapses, as well as environmental or psychological factors. In the cognitive model of depression, despite the importance of biological factors, such as the decrease of certain neurotransmitters, depressive symptoms are understood as a result of cognitive distortions of negative content. These symptoms alone may not cause depression, but they are key aspects in maintaining the disorder.³⁵

The term depression has been used to designate both a normal affective state and a symptom, a syndrome and one or more diseases. As a syndrome, depression includes not only mood changes (sadness, irritability, lack of ability to feel pleasure, apathy), but also cognitive, psychomotor and vegetative changes. In terms of illness, depression has been classified in different ways depending on the historical period, the authors' preference and the point of view adopted. In the current literature, depression is mentioned as major depressive disorder, melancholia, dysthymia, depression that is part of bipolar disorder types I and II, depression as part of cyclothymia, etc.³⁶ As a symptom,

depression can appear in different clinical conditions, such as post-traumatic stress disorder, dementia, schizophrenia, alcoholism and medical illnesses, as well as in response to stressful situations.³⁶

In this sense, depressive symptoms can lead to suffering and important social and occupational impairments and, together with clinical evaluation, can configure a depressive disorder, which is the fourth leading cause of disabling in the world.³⁷ This symptomatology is evaluated with emphasis on the affective components and behavioral, which include: depressed mood; feelings of guilt and worthlessness; feeling of lack of support and hopelessness; psychomotor retardation; loss of appetite; and sleep disorders.³⁸

In the academic context, different studies have already highlighted the occurrence of depressive symptoms in university students and their impact on cognitive components, such as sleep.¹³⁻¹⁵ The researchers attribute this phenomenon in this population to the fact that students in the health area live with some characteristics that make up an academic/professional environment of intense emotional stimuli that lead to illness. This includes intimate and frequent contact with pain and suffering; with other people's bodily and emotional intimacy; with terminal patients; with difficult, non-adherent, hostile, demanding and chronically depressed patients; and with the uncertainties and limitations of medical knowledge and the care system that do not meet the demands and expectations of patients.³⁹ In addition, this greater predisposition in university students in the health area seems to be related to different stressors throughout the course, such as loss of personal freedom, high level of demand of the course, feeling of dehumanization, lack of time for leisure and competition between colleagues.⁴⁰ The intensity of depressive symptoms is directly related to the lower performance of physical activity and leisure activities in students of the Health area.⁴⁰

Quality of life

Quality of life has become a worldwide concern. It was and remains a challenge for scholars who are interested in seeking mechanisms that can be implemented in everyday life, aiming to point out suggestions in search of satisfactory results in which the well-being of the professional, the patient and the family, becomes paramount in the ethical, social, cultural and financial aspects. With this theme in mind, a group of specialists in quality of life from the World Health Organization developed a generic instrument to assess quality of life, using a cross-cultural approach.⁴¹

In the university context, the quality of life of students has been researched since the 1980s and is defined as the student's perception of satisfaction and happiness in relation to multiple domains of life in the light of relevant psychosocial and contextual factors and structures of personal meanings. In this population, the life domains used as an indicator of quality of life are: social; individual; academic; genre; finance; home; university services; university administration, among others.⁴²

Despite existing studies, new investigations are still being

developed in an attempt to better understand the QLV concept, which will only be possible in the face of multiple investigation scenarios.⁴² This occurs because different factors lead to a lack of consensus on the definition of quality of life, such as the multidisciplinary use of the term, the difficulty in choosing which components or dimensions of the concept would be most important in the definition, the differences in relation to the cultural environment and the multiplicity of evaluation measures. Despite these difficulties, it seems clear that quality of life is interdisciplinary, requiring the contribution of different areas of knowledge for methodological and conceptual improvement.⁴³

Despite these considerations, quality of life is defined as a physical, functional, emotional and mental well-being, including important elements of people's lives such as work, family, friends and other everyday circumstances. This WHO definition implies the idea that the concept of quality of life is subjective, multidimensional and includes evaluation elements, both positive and negative.^{41,44} Quality of life concerns the way in which the individual interacts with the environment. external world, how it is influenced and how it influences it. Well-being is a condition that emerges from a global state of physical and psycho-emotional balance.⁴⁵

A good or excellent quality of life is considered to be that which offers a minimum of conditions so that the individuals involved can develop their maximum potential, whether these are: living, feeling and loving, working, producing goods and services, doing science or arts .⁴⁶

In a study that applied the World Health Organization Quality of Life (WHOQOL-bref) instrument from the World Health Organization (WHO) with students in the health area, it was shown that the environment and the physical domain were unsatisfactory in terms of quality of life. life, which is closely linked to the place of residence/study and the lack of physical activity.⁶⁰

Resilience

In the 1970s and 1980s, some American and English researchers began to investigate why some individuals experience certain mobilizing situations and, in a way, have little or no apparent impact, a phenomenon that was called resilience.⁴⁷

The conceptual trunk of resilience originates from the Latin, *resílio*, which means "to be elastic". The term appeared in 1807, in the modern scientific scenario composing the vocabulary of Physics and Engineering, with the English scientist Thomas Young being one of its forerunners.⁴⁷ In the human sciences, the term was used in 1960 and an interrelation between biological and psychological forces to achieve desired goals. In this sense, the individual capable of identifying his problems, opposing difficulties and capable of adaptively solving problems would be resilient. In the area of psychology, initially, resilience was defined as invulnerability, and this definition was replaced due to the maturation of research in the field of resilience.⁴⁸ In addition, for a certain time, it was considered that the resilient personality was genetically inherited, which gave

the resilient a supposed invulnerability, however, over the decades, this perspective became limited.

Currently, it is still considered that, because it is broad, conflicting, dynamic, the concept of resilience is still being structured in Psychology.⁴⁷ In general, currently, resilience is understood as the ability of the individual to recover from adversity and adapt positively to life situations is called resilience.²⁴ Thus, even in the face of a potentially stressful environment, these individuals may have low levels of stress and, therefore, less chance of suffering negative impacts on their health.²⁴ Still, resilience it is a dynamic process in which emotional, sociocultural, environmental and cognitive aspects interact and allow the human being to face, win, strengthen and transform from experiences of adversity.²⁵⁻²⁶

Since it is influenced by external factors, researchers point out that resilience cannot be judged as a protective shield, making the person rigid, invulnerable and resistant to adversity. Thus, resilience consists of a state of resistance that depends on the reciprocal interaction between the influences of the environment and the individual, which leads the individual to identify the best attitude to be taken in a given context.⁴⁹⁻⁵⁰

In this context, there are protective and risk factors for the resilient personality. Protective factors are characterized by influences that modify or improve the individual response to a given situation and that, therefore, predispose to change or reversal of potentially negative circumstances.⁵¹ As an example, satisfactory parental relationships, presence of sources of social and family support, positive self-image and spirituality. Risk factors, on the other hand, are those that increase the possibility of the subject's maladjustment in the face of a dangerous situation, which includes socioeconomic disadvantage, lack of social and family support, low self-esteem.⁵¹ Although essential to the compression of resilience, it is important to understand that risk factors are not a sentence for non-adaptation and that protective factors can reduce the impact of the former, facilitating the identification of opportunities to reverse the effects of stress.⁵¹ In this sense, resilience is not a fixed characteristic or only a product. It can appear or disappear at certain times depending on the individual-environment relationship and be present only in certain areas of the person's life. In this way, resilience has been understood as an individual skill capable of promoting health as it opposes stress, anxiety and feelings of anger.²⁵⁻²⁶

Faced with these benefits, the field of study of resilience has expanded as a reflection of the need to invest in disease prevention and health promotion.²⁴ Currently, research has encompassed the university environment, as this is a place where students begin to most of their day, establish relationships and acquire new learning. Depending on how each one relates to this environment, it can act as a risk factor – a hostile place, in which there is no space to speak your mind, where you do not feel welcome and do not have satisfactory relationships. – or a protection factor – when there is a harmonious place, in which he finds welcoming people, who listen to him and show

positive feelings.^{47,51} When the student's relationship with the university space is positive and the protection factors are strengthened, the possibility of resilient attitudes and the development of resilience personality is greater, with positive effects on the health and quality of life of these individuals, a fact already verified in the scientific literature.

Conclusion

The medical course presents stressful situations that differ from other graduations, placing the student in an environment conducive to the appearance of phenomena that can directly or indirectly interfere with their mental health. In this way, it becomes important that studies are carried out in the academic area that address such phenomena in a comprehensive way, with the objective of giving the student the possibility of creating their own coping mechanisms and strengthening resilience, given that the stressors will be present throughout throughout your degree and career. Thus, an improvement in learning and training of professionals who are more qualified and able to serve the population is expected.

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