

THE QUALITY OF SLEEP OF MEDICAL STUDENTS IN BRAZIL: A SYSTEMATIC REVIEW

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Abstract: Objectives: To analyze, in scientific productions, the quality of academic sleep during the medical course in Brazil. **Methodology:** This is a systematic review, with a search in the PubMed and LILACS databases, using the terms “Students”, “Medical”, “Sleep quality”, “Brazil” and the Boolean operators AND between the terms. **Results:** A total of 48 articles were found between 2018 and 2023, from which 11 articles that met the inclusion criteria were selected, which only dealt with medical students and only in the Brazilian scenario, excluding duplicate articles. **Conclusions:** The quality of sleep is related to the academic performance of medical students, notwithstanding Brazilian students. However, the demands of undergraduate study, as well as academic workloads, take up so much of the student’s time that the already short amount of rest time has to be divided between study, sleep and other daily chores. In view of this, it can be seen that more and more future professionals in this field are suffering from anxiety or depression, which is compounded by the stressful routine, combined with prolonged use of screens, causing greater damage to sleep. In addition to the above, the Covid-19 pandemic has led to an increase in depression and anxiety, which has affected the quality of life of medical students.

Keywords: Students; Medicine; Sleep quality; Brazil

INTRODUCTION

The medical student’s understanding of sleep is a cornerstone of cognitive-practical performance during the undergraduate course.

Understanding the relationship between the demands of the course, within the theoretical framework, combining practices, and the increasing demands of extracurricular activities, with moments of leisure, and especially the quality of sleep is of paramount

importance, since academic achievements are intertwined with cognitive capacity and less cognitive suffering. (EL HANGOUCHE, *et al.* 2018)

Poor sleep quality, from an academic perspective, is detrimental to students. This, among many other things, is one of the biggest challenges in fitness and the pursuit of knowledge. (EL HANGOUCHE, *et al.* 2018)

It is well known that the routine of undergraduates in the health sector, especially those studying medicine, is extremely stressful. Among the compulsory tasks of the course, as well as extracurricular activities and the study period, an enormous amount of time is required to dedicate to academic training. Intrinsic to these aspects is the irregular diet and associated psychological distress. This leads to the development of other pathologies, such as gastroesophageal reflux disease (TEIMOURI & AMRA, 2021).

Technologies are also part of this tangle of problems related to the rest period of students in medical training, among which the main one is the cell phone. The increasing and unbridled use of such technologies, associated with the social status of the student, which is one of the many concerns of this population group, is closely linked to a worse progression in grades, and in sleep latency. (IBRAHIM, *et al.* 2018)

In addition to the pathological perspective associated with a poor quality of rest, there is also a correlation between poor sleep and poor hygiene associated with the rest period. Sleep education often receives less attention in the curriculum, so students don't even know how to proceed in view of their attendance, nor with themselves, when trying to balance a strenuous study load with a better break from their chores, this is a frequent challenge, and one that becomes important within university demands. (MAZAR, GILELES-HILLEL & REITER, 2021)

In Brazil, the subject still suffers from the lack of scientific production correlating sleep during the academic period of the medical course with the reality found in higher education institutions. When such studies do take place, they focus on the unique realities of a particular locality (MEDEIROS, ROMA & MATOS, 2021).

From the above-mentioned context, we can see the importance of a greater involvement of the educational institution, for a better education and awareness of its students, given the fact that a qualitative rest is the foundation for a better use of academic activities. (MAZAR, GILELES-HILLEL & REITER, 2021)

METHOD

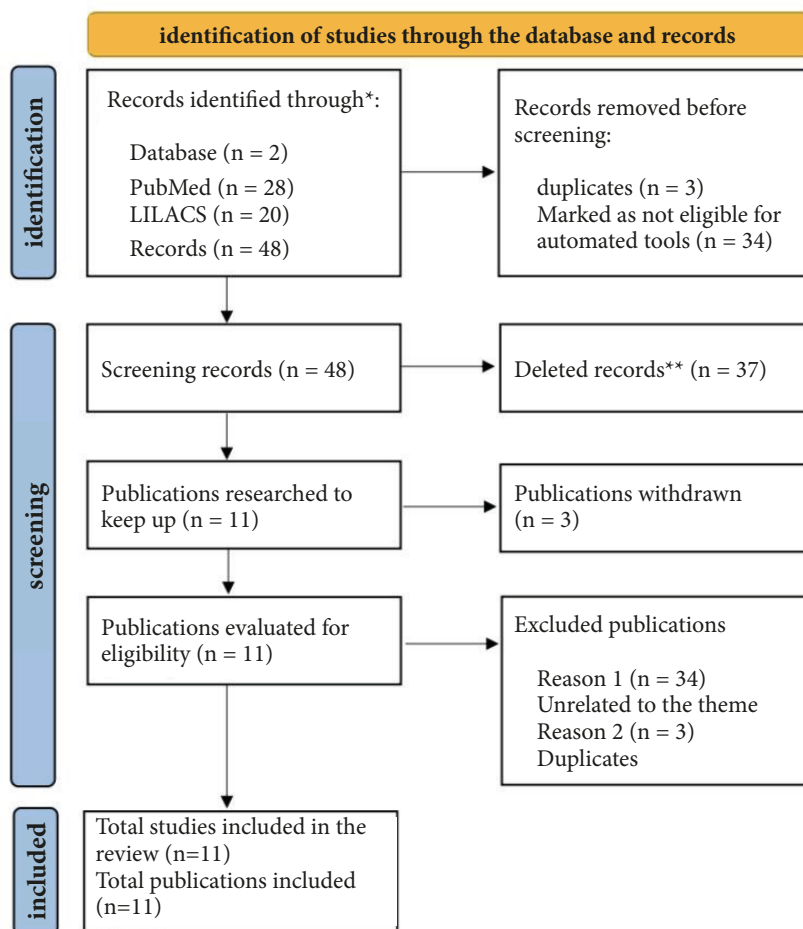
This study is based on a systematic literature review, the function of which is to search primary studies for a source to resolve the proposed questions (GALVÃO & PEREIRA, 2014).

It was carried out using the virtual databases PubMed via the Online Medical Literature Search and Analysis System (MEDLINE) and Latin American and Caribbean Health Sciences Literature (LILACS). The PRISMA criteria were used during the search for this review.

The following keywords were searched: "Estudantes (Students)"; "Medicina (Medical)"; "Qualidade do sono (Sleep quality)"; "Brasil (Brazil)". All the terms are descriptors registered in the Health Sciences Descriptors (DeCS) and are present in the keywords or in the title of this work.

The papers selected were in English, Portuguese and Spanish, filtering the year of publication to within five years prior (2018) to the construction of this material. The articles were selected in October 2023, based on the keywords, which are the Boolean descriptors used.

FLOWCHART



Authors	Country	Sample	Methods used	Impaired sleep quality
MEDEIROS, ROMA & MATOS, 2021	Brazil	269 academics Medicine	Pittsburgh Sleep Quality Index (PSQI) Bioestat 5 and Excel 365 programs for statistical analysis.	Sleep disturbance in 20.5% of students and poor or very poor subjective sleep quality in 40.2% of students.
MAZAR, D.; GILELES-HILLEL, A.; REITER, J 2021	Brazil	87 medical students	Pittsburgh Sleep Quality Index (PSQI), the Epworth Sleepiness Scale (ESS) and the Assessment of Sleep Knowledge in Medical Education (ASKME) questionnaire.	Sleep knowledge was inadequate among medical students, who also had poor sleep quality.
KOBBAZ, T. M. et al 2021	Brazil	548 medical students	The cross-sectional study included demographic data and lifestyle characteristics collected digitally.	The pandemic has had a neutral impact on sleep quality and a predominantly negative impact on interpersonal relationships, exercise and diet.
ALMEIDA, F. V. Q. DE et al. 2021	Brazil	105 academics Medicine	PSQI (Pittsburgh Sleep Quality Index)	80.95% of the students were rated as poor sleepers.
LIMA, D. VON G. et al. 2019	Brazil	425 medical students	PSQI (Pittsburgh Sleep Quality Index)	Poor sleep quality was observed in 61.4% of medical students.

MOTA ALBUQUERQUE; RIBEIRO FRANCO; SAMPAIO ROCHA-FILHO, 2023	Brazil	41 medical students	The Pittsburgh Sleep Quality Index, the Sleep Consensus Diary, the Montreal Cognitive Assessment, the Psychomotor Vigilance Test and the Wisconsin Sorting Cards Test.	Fewer hours slept and significantly worse performance during the school term compared to the vacation period.
PEROTTA, B. et al 2021	Brazil	1,350 medical students	ESE (Epworth Sleepiness Scale)	46.5% of the students showed signs of daytime sleepiness.
ROCHA, E. P. C. et al 2021	Brazil	523 medical students	PSQI (Pittsburgh Sleep Quality Index)	9.2% of students with three-dimensional diagnostic criteria for Burnout Syndrome.
MACHADO, L. et al. 2018	Brazil	417 academics Medicine	Duke Religiosity Scale (DUREL), Satisfaction with Life Scale (SWLS), Positive and Negative Affect Scale (PANAS), Penn State Worry Questionnaire (PSWQ).	Sleep quality, as well as other factors, were associated with higher BES (subjective well-being) scores.
FERNANDES, A. C. A. et al 2022	Brazil	142 medical students	PSQI (Pittsburgh Sleep Quality Index)	Altered sleep patterns in 83% of students, mainly due to anxiety symptoms (38%).
BELTRAME, K. W. S. et al 2022	Brazil	200 medical students	Scores on the Epworth Sleepiness Scale, Pittsburgh Sleep Quality Index (PSQI).	Sleep deprivation was accompanied by a drop in self-perceived sleep quality from 8 to 6 (on a Likert scale) during the COVID-19 pandemic. 76.50% slept poorly and 40.00% were sleepy, especially women.

Table 1: Identification and characteristics of the included studies

We included studies with medical students from all over Brazil, with no distinction between the age of the participants or other associated factors, such as screen use or the pandemic period experienced by Covid-19, as well as studies dealing with the quality of life of students that included sleep quality as one of the evaluation criteria. On the other hand, we excluded studies involving other courses, not including Medicine, or studies that reported experiences in universities with Medicine courses outside Brazil, and studies that were repeated on the selected research platforms.

The data and materials researched were evaluated by identifying the descriptors in the titles, abstracts and/or keywords. After this initial analysis, the *abstracts* were read and possibly characterized according to the eligibility criteria described above. Therefore, after the classification, the selected studies were read in full and the data was extracted by the team working on this study.

Following on from the above, after the careful analysis described above, 11 references were selected from both platforms (with a total of 28 pre-selected studies), consisting of cohort and case-control clinical trials, case reports, systematic literature reviews and meta-analyses.

RESULTS

A total of 48 articles were found between 2018 and 2023, 28 of them in PubMed and 20 articles in the LILAC database. Of these, 11 articles that met the inclusion criteria were selected, which only dealt with medical students, and only in the Brazilian scenario, excluding duplicate articles. Of the articles selected through PubMed, 7 were used. With regard to LILACS, 4 of the 20 articles were included. The others were excluded for two reasons: duplication and lack of relation to the topic explained in this summary.

DISCUSSION

A qualitative analysis of the sleep of medical students in Brazil today raises a wide range of issues. When it comes to the qualitative perception of sleep, we are talking about quality of life, and the rest period is a key element. Risk factors for problems in this regard include the consumption of energy drinks and being female (ALMEIDA *et al*, 2021).

Some parameters can be used to assess sleep quality, such as the Pittsburgh Sleep Quality Index. A study carried out using this instrument at a medical university in Minas Gerais found that around 80.95% of students were poor sleepers. This figure is closely related to all the psychological stress involved in carrying out curricular obligations (ALMEIDA *et al*, 2021).

The framework of sleep deprivation is directly related to the effects on memory and learning. In addition to the above, electronic devices have entered the reality of society, and nevertheless, of medical science undergraduates. The massive use of such devices, especially at night, causes the body to take longer to start sleeping, and consequently reduces the total period of rest. (ALMEIDA *et al*, 2021) (LIMA *et al*, 2019)

The performance of undergraduates, so widely questioned, during their academic career is closely correlated with sleep deprivation. In a study carried out on a prospective cohort, it was found that during the school term, students have fewer hours of sleep, and this affects their academic achievements, when compared to the vacation period. (MOTA ALBUQUERQUE; RIBEIRO FRANCO; SAMPAIO ROCHA-FILHO, 2023)

It is also known that sleep deprivation is more prevalent in medical students than in students from other undergraduate programs. In addition to the above, the long hours of classes, clinical internships (which may or

may not include night work), the inherent emotional burden of the individual and the consequent academic process are all allies in sleep deprivation (PERROTA *et al*, 2021).

When analyzing the emotional intricacies involved in the process of graduating in Medicine, it can be understood that sleep deprivation is correlated with depressive and anxious conditions, according to a cohort study involving twenty-two universities in Brazil, using the Beck Depression Inventory (BDI) and the State-Trait Anxiety Inventory (IDATE) (PERROTA *et al*, 2021).

The relationship between depression and anxiety and the quality of rest is closely related to quality of life. Poor rest triggers physical and chemical processes, which consequently influences the circadian cycle, and this leads to a metabolic response that promotes the emergence of psychopathologies (PERROTA *et al*, 2021).

In addition to the above, burnout syndrome is intrinsically linked to the excessive workload of classes and clinical internships, another factor that directly influences the student's perception of sleep. (MACHADO *et al*, 2018) (ROCHA *et al*, 2021)

It is interesting to note that in a qualitative study carried out with undergraduate medical students, well-being and quality of sleep may be linked to religiosity, and the latter, associated with the practice of medicine, has generated anguish in students, resulting in rest problems and a worsening quality of life in general (MACHADO *et al*, 2018).

Among the many variables that accompany the subject, we can highlight the COVID-19 pandemic period, which is still very present in the majority of recent medical graduates and many current medical students. During the restrictive measures, studies have shown that sleep worsens, due to adaptation to a new lifestyle, as well as the uncertainties of the moment. It is worth noting that many

higher education institutions held remote classes during the *lockdown*, further increasing psychological stress. (FERNANDES *et al*, 2022)

It is clear from the above that there are limitations in terms of studies that are able to address sleep quality in a more uniform way across the vast Brazilian territory. There is also a need for better emphasis on possible solutions that add to the current university curriculum, respecting the diverse socio-cultural perspectives of each region of the country.

The aim of this review was to understand the quality of sleep among medical students in Brazil. The perception of the studies analyzed is that students' sleep is impaired by academic demands, thus compromising their academic performance and quality of life.

CONCLUSION

The findings of this review suggest that the quality of medical students' sleep in Brazil is affected by a range of factors, including the demands of the course curriculum, clinical internships and the use of screens. In addition, the deleterious effects of sleep on quality of life and the emergence of psychopathology can be related. Another relevant factor was the COVID-19 pandemic, which is present in the lives of many academics, and in the lives of doctors who have recently graduated from university, changing their lifestyles, their perception of sleep, and generating negative consequences for them.

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DECS : Brazil Students; Medicine; Sleep quality

PUBMED TOTAL: 28

(21 unrelated)

USED: 07

<https://pubmed.ncbi.nlm.nih.gov/33596885/>

<https://pubmed.ncbi.nlm.nih.gov/36419809/>

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LILACS: 20

(13 unrelated)

USED: 04

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<https://pesquisa.bvsalud.org/portal/resource/pt/mdl-30234885>

http://scielo.iec.gov.br/scielo.php?script=sci_arttext&pid=S1679-49742014000100018#:~:text=As%20revis%C3%B5es%20sistem%C3%A1ticas%20s%C3%A3o%20consideradas,sistem%C3%A1ticas%20de%20ensaios%20cl%C3%ADnicos%20randomizados.