Original Article

Sleep quality in universities in a private institution

Qualidade de sono em universitários de uma instituição privada

Cleane Ribeiro de Oliveira[1]
Brena Costa de Oliveira[2]
Luana Gabrielle França Ferreira[3]

[1]Centro Universitário UNINASSAU (Teresina). Piauí, Brazil. cleaneribeiro.18@gmail.com
[2]Universidade Federal do Piauí (Teresina). Piauí, Brazil. brena_oliveira.5@hotmail.com
[3]Corresponding author. Universidade Federal do Piauí (Teresina), Centro Universitário UNINASSAU (Teresina). Piauí, Brazil. luanagabrielle@yahoo.com.br

ABSTRACT | INTRODUCTION: Sleep is a normal and temporary suspension of the level of consciousness, being part of the sleep-wake cycle, being regulated by a circadian component. College students are likely to get sleep disorders due to lifestyle and environmental factors. **OBJECTIVE:** To investigate the quality of sleep, the presence of excessive daytime sleepiness and associated factors in students of the physiotherapy course at a private college. **METHODOLOGY:** This is a cross-sectional, quantitative field study where volunteers were assessed using the Pittsburgh Sleep Quality Index (PSQI) and Epworth sleepiness scale. Physiotherapy students were included and those who did not completely fill out the instruments and those who took medications that affect sleep were excluded. For the statistical analysis, a 95% confidence interval and a significance level of 5% ($p \leq 0.05$) were used. **RESULTS:** There were 80 students, 71.3% were female, 80% were single and in the morning shift, 63.5% did not work, 46.3% practiced physical activity. As for sleep quality, a mean PSQI score of 9.5 ± 3.6 was observed, with a predominance of poor sleep quality in students with 82.5%. Regarding the presence of excessive daytime sleepiness (SED) in students, an average Epworth scale score of 11.2 ± 4.5 was observed, with 55% of students presenting EDS. There was no difference between the PSQI and Epworth scores between the periods of the course, study shift and working students. **CONCLUSION:** There was a higher prevalence of students with poor sleep, where excessive daytime sleepiness was highlighted in the majority. The poor quality of sleep reached students without differentiating between periods of the course, study shift and work.

KEYWORDS: Students. Sleep. Health.

RESUMO | INTRODUÇÃO: O sono é uma suspensão normal e temporária do nível de consciência, fazendo parte do ciclo sono vigília, sendo regulado por um componente circadiano. Os universitários estão propensos a obter distúrbios do sono devido ao estilo de vida e fatores ambientais. **OBJETIVO:** Investigar a qualidade de sono, presença de sonolência diurna excessiva e fatores associados em estudantes do curso de fisioterapia de uma faculdade privada. **METODOLOGIA:** Trata-se de um estudo de campo de caráter transversal, quantitativo onde os voluntários foram avaliados através do Índice de Qualidade de Sono de Pittsburgh (PSQI) e escala de sonolência de Epworth. Foram incluídos alunos do curso de fisioterapia e excluídos aqueles não preencheram completamente os instrumentos e aqueles que tomaram medicamentos que afetam o sono. Para a análise estatística, foi utilizado um intervalo de confiança de 95% e nível de significância de 5% ($p \leq 0,05$). **RESULTADOS:** Foram 80 estudantes, 71,3% eram do sexo feminino, 80% eram solteiros e do turno da manhã, 63,5% não trabalhavam, 46,3% praticavam atividade física. Quanto à qualidade de sono, observou-se média do escore do PSQI de 9,5 ± 3,6, com predomínio de má qualidade de sono nos estudantes com 82,5%. Em relação à presença de sonolência diurna excessiva (SED) nos estudantes observou-se média de escore da escala de Epworth de 11,2 ± 4,5, com 55% dos estudantes apresentando SED. Não houve diferença entre os escores de PSQI e Epworth entre os períodos do curso, turno de estudo e estudantes trabalhadores. **CONCLUSÃO:** Houve maior prevalência de alunos com sono ruim, onde a sonolência diurna excessiva foi destacada na maioria. A má qualidade de sono atingiu aos estudantes sem diferenciação entre períodos do curso, turno de estudo e trabalho.

PALAVRAS-CHAVE: Estudantes. Sono. Saúde.

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Introduction

Sleep can be defined as normal and temporary suspension of the level of consciousness, it is part of the wakefulness-sleep cycle, and it is regulated by a circadian component determined by the biological clock and by a homeostatic process that is characterized by its pressure[1]. It is composed of two important phases, the rapid eye movement phase (REM) and non-rapid eye movement phase (NREM), representing different neural components. Sleep has an influence on endocrine functions, thermoregulation, energy conservation, and has a fundamental biological function in memory consolidation[2].

Highlighting sleep in university students, it is known that they are prone to sleep disorders, because their routine life and environmental factors can lead to these occurrences, the needs imposed by society such as class and working hours can lead to a poor quality of sleep and consequently a reduction in academic and professional performance[3].

This population, which in its majority is young, may present greater sleep deprivation with a tendency to excessive daytime sleepiness, which may result to memory problems, decreased academic performance, irritability, behavioral problems such as stress and anxiety[4].

Besides studies, university students who work can have this factor as an aggravating factor in the poor quality of sleep, which has an impact on poor productivity at work and poor performance in studies5. Sleep deprivation includes poor cognitive performance, non-restoration of memory, also resulting in negative mood states, feeling of fatigue, sleepiness during daily activities and mental confusion[6].

In order to meet demands in the academic environment, university students adjust their sleep according to curricular activities, making their sleeping schedules irregular and non- repairing to the body6. In this context, the objective is to investigate the quality of sleep, the presence of excessive daytime sleepiness and associated factors in physiotherapy students of a private college.

Methodology

This is a cross-sectional and quantitative field study, the university students were evaluated on the quality of sleep. The study was carried out in a college in Teresina-PI, during the period of October and November 2019, with the population of 255 students enrolled in the degree program in Physiotherapy. The sample was for simple random convenience. The inclusion criteria were students enrolled in the course program and who agreed to participate in the study. Students who did not completely fill out the data collection instruments and students who reported using drugs that affect sleep, such as hypnotics and antidepressants, were excluded.

Data collection was by means of the Pittsburgh Sleep Quality Index (PSQI) questionnaire developed by Buysse et al. (1989)[7] and validated in Brazil, in adult population, by Bertolazi et al. (2011)[8]. The PSQI is an instrument that was created to evaluate the quality of sleep in relation to the last month, composed of 24 questions, four subjectives and twenty objectives. The seven domains in this questionnaire are: 1- Sleep subjective quality; 2- Sleep latency; 3- Sleep duration; 4- Usual sleep efficiency; 5- Sleep disorders; 6- Medicine use; 7- Daytime sleepiness and daytime disturbances. The PSQI has final score ranging from 0 to 21. From the final score it is possible to classify the individual in good (<6) or bad (>5) sleep quality[8].

The other instrument was the Epworth9 sleepiness scale, used to assess daytime sleepiness. It consists of eight questions describing daily situations that can induce sleepiness. Each question is graduated from 0 to 3 points and can reach a total score of 24. The score > 10 ranks the individual with excessive daytime drowsiness[9].

The information obtained through the questionnaire on the open questions was classified and grouped for a better data analysis, the application time of the instruments lasted on average 30 minutes.

The data were organized in spreadsheet in Microsoft Excel version 8.0 and later exported to the Statistical Package for the Social Sciences (SPSS) version 22.0, and the variables described using percentage, mean, median and standard deviation. The analysis of categorical data such as gender and marital status was made by the Chi-square based measures of association and presentation in percentages (descriptive). Analysis of continuous variables (as age) was carried through the verification of normality of the data by the Kolmogorov-Smirnov test for later determination of the comparative analysis tests (t test). A 95% confidence interval and 5% significance level were considered ($p \leq 0.05$).

The data collection occurred after approval by the Researched Ethical Committee (CEP) under No. 3.501.694 (CAAE 15768619.7.0000.5210). Volunteers were informed and they authorized their participation in the research by means of the Term of Free and Informed Consent (TCLE).

Results

80 students participated in the survey, 71.3% (57) were female, 80% (64) were single and studied in morning, 67.5% (54) do not work, 46.3% (37) practice physical activity, as shown in Table 1.

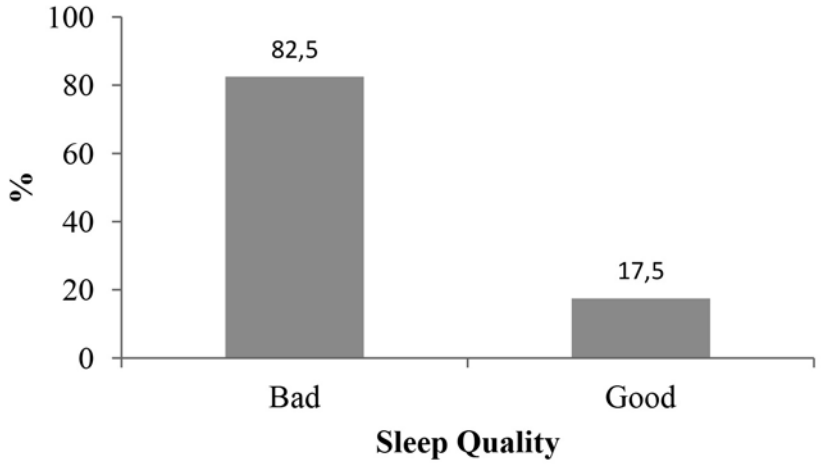
Table 1. Sociodemographic characterization of physiotherapy students participating in the research. Teresina-PI, 2019

Variables	N (%)
Sex	
Female	57 (71,3%)
Male	23 (28,7%)
Marital status	
Single	65 (81,2%)
Married	15 (18,8%)
Work	
Yes	26 (32,5%)
No	54 (67,5%)
Study shift	
Morning	64 (80%)
Night	16 (20%)
Semester	
4º	20 (25%)
6º	26 (32,5%)
8º	16 (20%)
10º	18 (22,5%)
Physical activity	
Yes	38 (47,5%)
No	42 (52,5%)

Source: Research data.

Regarding the evaluation of sleep quality, we observed a mean IQP score of 9.5 ± 3.6, with a predominance of poor sleep quality in the investigated students (82.5%), Figure 1.

Figure 1. Characterization of the quality of sleep of physiotherapy students. Teresina-PI, 2019



Source: Research data.

By means of the PSQI instrument, one can also characterize the domains that make up the quality of sleep, observing the domains "sleep duration" and "sleep efficiency" with higher averages contributing to the final score of the PSQI.

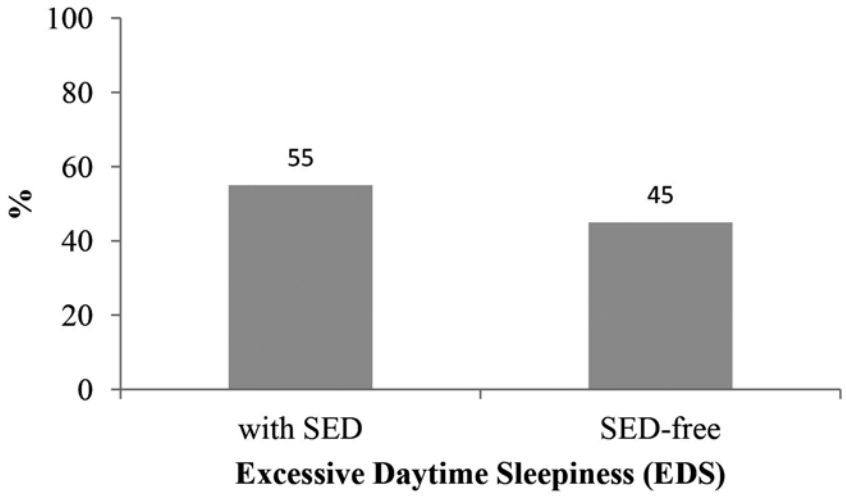
Table 2. Sleep quality domains of physiotherapy students. Teresina-PI, 2019

PSQI Domains	Average (SD)
C1 - quality of sleep	1,4 ± 0,8
C2 - sleep latency	1,4 ± 0,8
C3 - night sleep duration	1,7 ± 1,1
C4 - sleep efficiency	1,7 ± 1,4
C5 - night sleep disorder	1,6 ± 0,6
C6 - sleeping medication	0,3 ± 0,7
C7 - sleepiness and sleep disturbances	1,4 ± 0,9
PSQI score	9,5 ± 3,6

Source: Research data.

Investigating the presence of excessive daytime sleepiness (EDS) in students, a mean Epworth scale score of 11.2 ± 4.5 was observed, with 55% (44) of students presenting EDS.

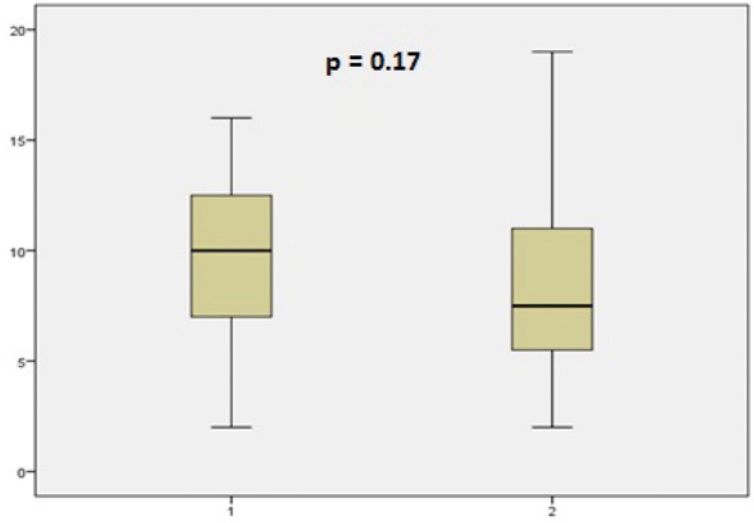
Figure 2. Characterization of the presence of excessive daytime sleepiness in physiotherapy students. Teresina-PI, 2019



Source: Research data.

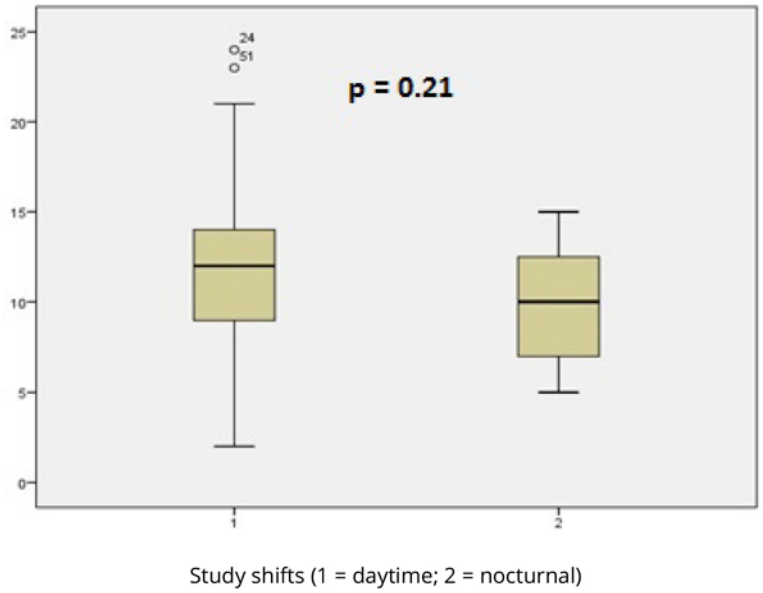
It should be noted that there was no statistical difference (p > 0.05) between the sleep quality scores (morning = 9.8 ± 3.5 versus night = 8.3 ± 4.2, p = 0.17) and excessive daytime sleepiness scores (morning = 11.5 ± 4.8 versus night = 9.9 ± 3.2, p = 0.21) when comparing the study shifts of college students. There was also no difference (p > 5) between IHS and Epworth scores with respect to course semesters and working students. Figures 3 and 4 below show the comparison of sleep quality and EDS between shifts.

Figure 3. Comparison of students' PSQI score between study shifts. Teresina-PI, 2019



Study shifts (1 = daytime; 2 = nocturnal)

Figure 4. Comparison of students' Epworth score between study shifts. Teresina-PI, 2019



Discussion

This study revealed that a high number of physiotherapy students exhibited poor sleep quality and excessive daytime sleepiness. It was also observed that the domains "sleep duration" and "sleep efficiency" impacted the sleep quality score. In this research no association of sleep quality was observed with study shift, academic period and work.

The prevalence of poor quality sleep observed in this study was higher than that found in a survey of nursing students where 67.0% had poor quality sleep[10]. In another study[11] with medical students from southern Brazil, there was an average of 7.2 ± 3.0 PSQI and 70.6% of the students reported poor quality sleep. However, the sample size of this study was 143 medical students, on average they slept 6.0 (±1.1) hours, and showed latency of 21.3 (±17.5) minutes and sleep efficiency 91.9% (±11.9), indicating a lower values when compared that presented in this research. The research with students of the first semester was carried out with students of the first semester who study during the day, which differs from the profile of this research. Regarding the course semester, there were no significant results that could cause a change among them, corroborating the present research.

On the domains that impacted the quality of sleep, the study carried out with medical students reported that bedtime and sleep latency were significantly higher in the group with poor quality sleep compared to the group with good quality sleep. Furthermore, the domains duration and sleep efficiency were significantly lower in the group with poor sleep quality[11], corroborating the present research. A relevant aspect is that, the research with medical students was carried out at the beginning of the course semester, showing that they were not yet being exposed to rigorous study loads, and concluded as soon as students have bad sleeping habits where sleeping late and being exposed to TV and cell phones during the night disrupts t healthy sleep routine[11].

Regarding the difference in sleep quality score and excessive daytime sleepiness when comparing the study shifts, academic semesters and working students, there was no difference between the study participants. However, the Paraná-Brazil study of physiotherapy students with poor sleep quality showed a higher prevalence of EDS in students and they worked in one or two shifts[4].

Another study also conducted at a private university involving physiotherapy students showed that students from the last academic period had 66% EDS compared to the first periods which was 32.6%. This difference was probably obtained due to the high task demand carried out by students of the last semester[12]. On the other hand, this research highlights that there was no statistical difference between sleep quality scores and excessive daytime sleepiness scores when comparing study shifts.

One of the causes of EDS is short duration of sleep, and this deprivation of sleep in most university students had negative impacts on health perception than those with a higher sleep rate. Andrade et al. (2017)[13] pointed out in their study that the more days of insufficient sleep, the greater the negative perception of health.

It is noteworthy that interventions can be implemented by educational institutions with actions to improve or minimize effects that are linked to sleep deprivation. For example, programs of hygiene and awareness of sleep habits can greatly contribute in bringing awareness to university students on the importance of sleeping well and to have the autonomy in adhering to healthy habits[4].

The limitations of this study were related to the subjectivity of the instruments used and the impossibility of detecting sleep disorders that would explain the poor quality of sleep by means of the study methods that were evaluated using the self-administered questionnaire, which can lead to underestimation of the problems presented, with the possibility of filling errors or memory bias. It is essential that other studies are carried out with interventions such as sleep hygiene and the stimulation of healthy habits in the search for a better quality of sleep.

Conclusion

This study indicates a higher percentage of university students with poor sleep quality and excessive daytime sleepiness. There was no association between sleep quality and daytime sleepiness regarding study shift, work or academic period, showing that poor sleep quality affects students in general.

Author contributions

Oliveira CR participated in the conception, design, search, data collection, tabulation, interpretation of results, writing of the scientific article. Ferreira LGF participated in the conception, design, search and statistical analysis of the research data, interpretation of the results, writing of the scientific article. Oliveira BC participated in the interpretation of data and writing of the scientific article.

Competing interests

No financial, legal or political competing interests with third parties (government, commercial, private foundation, etc.) were disclosed for any aspect of the submitted work (including but not limited to grants, data monitoring board, study design, manuscript preparation, statistical analysis, etc.).

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