Factors associated with poor sleep quality in nursing students from a private university in Ceará

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Abstract

Sleep is essential for the physical, psychological, and social well-being of individuals. Its poor quality/quantity may lead to functional impairment in the performance of social activities and interpersonal relationships. In this context, studies have identified poor sleep quality in university students, especially those in healthcare. Despite the literature pointing out that nursing students do not sleep well, factors related to employment or daily commuting are not unanimous. Thus, the objective of the study is to evaluate the sleep quality of nursing students and its association with socioeconomic characteristics, life habits, academic, and extracurricular activities. This is a cross-sectional, descriptive study with quantitative analysis, carried out with 124 Nursing students from a private Higher Education Institution in Ceará. A questionnaire was used with socioeconomic variables, life-style habits, academic and extracurricular activities, and the Pittsburgh Sleep Quality Index. Descriptive and inferential statistical analyses were performed. The results of this study showed a predominance of poor sleep quality for 73 (59%) students and the presence of sleeping disorders for 38 (31%) of the participants. The variables associated with this result were the daily intercity commute (to-and-fro) to attend an undergraduate class or to have a concomitant job. Meanwhile, the other academic, extracurricular, and lifestyle variables did not have a statistically significant association with sleep quality. Therefore, it is necessary to adopt actions aimed at good sleep hygiene, for better use of the available time for sleep, better academic performance, and quality of life.

Keywords: Sleeping disorders. Sleep hygiene. Nursing Students.

INTRODUCTION

Sleep has a restorative function in the reestablishment of organic homeostasis[1], and is essential for the physical, psychological, and social well-being of individuals[2]. Poor sleep quality/quantity can lead to functional impairment in the performance of social roles and interpersonal relationships[2], in addition to being considered a vulnerability factor for cardiovascular health[3]. The assessment of sleep quality can be performed using objective or subjective instruments[1], and is influenced by social, clinical, and cultural aspects[4].

In this context, studies show poor sleep

quality in university students, especially those in the healthcare[1,4-6]. These students, in general, are full-time undergraduate students[1], are encouraged to perform extracurricular activities (clubs, research groups, extension activities, tutoring, extra internships, etc.)[4], and have a high frequency of stress[4] and of psychoactive substance use[7,8]. Such factors can desynchronize the sleep-wake cycle, decreasing their quantity/ quality of sleep[6]. Moreover, it is common among nursing students to work at a technician's level in healthcare, which is characterized as stressful and changes in the quality of sleep occur frequently[6].

Despite the various studies proving that nursing students are bad sleepers, the factors related to this reality are not unanimous in the literature[1,3,9]. Therefore, associations between poor sleep quality and socioeconomic (gender, age, race[8], and low monthly family income[4]), academic (curricular demands[6], period of tests/exams[10]), extracurricular (employment concomitant to graduation[7]), and lifestyle variables (smoking[4,8] and alcohol consumption[6,8]) have been identified.

Furthermore, in educational institutions located in small urban centers, commonly in the interior of the state, a daily commute is observed, which is characterized by the daily displacement between the municipality of residence and that of the educational institution[11]. A pilot study indicated a moderate correlation between the distance covered and the quality of sleep[11], but studies possessing larger samples were not identified, suggesting a gap in the literature on the subject.

Therefore, we proposed testing the following hypothesis: Nursing university students who carry out daily intercity commutes to attend undergraduate courses or are involved in extracurricular activities (including employment contracts) have poor sleep quality, when compared to those who do not perform such a daily commute or extracurricular activities.

It is necessary to investigate how academic, extracurricular, socioeconomic activities and lifestyle habits affect the sleep quality of nursing students. Thus, the objective of the study is to evaluate the sleep quality of nursing students and its association with socioeconomic characteristics, lifestyle habits, and academic and extracurricular activities.

MATERIALS AND METHODS

This is a cross-sectional, descriptive study with quantitative analysis, carried out among undergraduate Nursing students from a private Higher Education Institution, located in the countryside of Ceará, Brazil.

The collection took place from February to March 2020 and the target population corresponded to all Nursing students, over 18 years old, duly enrolled in the institution. Those who were not present in the classroom on the days when the search for participation in the study took place, on three occasions, were excluded; thus, the sample obtained corresponded to 63% of the students.

To obtain the data, two questionnaires were used, the first was composed of socioeconomic, lifestyle, academic and extracurricular activities variables, constructed by the researchers; and the second was the Pittsburgh Sleep Quality Index (PSQI), validated in Brazil[12].

The PSQI consists of a self-administered questionnaire that subjectively assesses sleep quality in relation to the previous month. The instrument contains 19 items, and generates 7 (seven) components, each one is counted into a score that varies from 0 to 3. These components

are respectively: subjective sleep quality; sleep latency; sleep duration; habitual sleep efficiency; sleep interruption; use of sleeping medication; and daytime dysfunction[6].

The sum of the scores of the seven components generates a final score that ranges from 0 to 21 points. An overall PSQI score between 0-4 points indicates good sleep quality, 5-10 points indicate poor sleep quality, and a PSQI above 10 indicates the presence of sleeping disorders[13].

Data were compiled and analyzed using SPSS software, version 20. In the descriptive statistical analysis, relative and absolute frequencies (categorical variables) were calculated. To verify the association between the variables, Pearson's chi-squared test of independence was used, with a statistically significant variance of 5% ($p<0.05$).

The study followed all the precepts of Resolution 466/12 of the National Health Council, receiving approval from the Research Ethics Committee, under No. 3.646.140. All students who agreed to participate signed the Informed Consent Form.

RESULTS

The study sample consisted of 124 nursing students, with a mean age of 22.7 (±5.16) years, 109 (88%) were female, 108 (87%) were single, and 94 (76%) were brown. As for the place of residence, only 44 (36%) lived in the same city where the educational institution is located and 62 (50%) stated that they travel between cities daily (Table 1).

As for work, 37 (30%) had some kind of employment contract. Physical inactivity was reported by 71 (57%) students, 109 (88%) denied alcohol consumption, and none reported smoking (Table 1).

With regards to academic activities, 34 (27%) students were in their final year of graduation. Regarding extracurricular activities, 40 (32%) participated in research groups, 26 (21%) in academic monitoring, 25 (20%) were part of the Academic Center, and 15 (12%) participated in paid or voluntary internships (Table two).

When comparing the students' answers regarding the subjective perception of sleep quality before and during their (current) undergraduate course, an inversion of the prevalence was observed. Before college, 48 (39%) reported the quality of sleep as very good and only 13 (10%) classified it as bad; on the other hand, after entering college, 46 (37%) began to classify the quality of sleep as poor, and only 4 (3%) classified it as very good (Table 3).

According to the PSQI scale, sleep quality was classified as poor for 73 (59%) students. Those who took 31 to 60 minutes to fall asleep predominated [41 (33%)], three or more times a week [46 (37%)], slept from six to seven hours a night [56 (45%)], with a good habitual sleep efficiency (≥ 85%) considered as the ratio between the number of hours slept and the number of hours in bed [79 (64%)] (Table 3).

Among the physiological aspects capable of impairing sleep, the occurrence of sleeping disruption once a week or more was reported by 57 (46%) students, 21 (17%) used medication at least once a week to go to sleep, and 68 (55%) reported having difficulties staying awake during the day in usual activities such as study, work, leisure, etc. As for the enthusiasm to perform these usual activities, 40 (32%) reported having problems with physical disposition to a reasonable degree (Table 3).

In the inferential analysis, the chi-squared test of independence showed that there is an association between worse sleep quality according to the PSQI scale with two variables, having a job [$X2(2)=11.920$; $p<0.003$] and daily commuting [$X2(2)=9.598$; $p<0.008$] (Table 4).

Table 1 – Sociodemographic characteristics and lifestyle habits of nursing students (n=124). Quixadá, CE, 2020.

Variables	n	%
Sex		
Female	109	88
Male	15	12
Marital status		
Single	108	87
Married / Civil union	12	10
Divorced	3	2
Widower	1	1
Race/Color		
Brown	94	76
White	22	18
Black	5	4
Yellow	3	2
Regular physical activity		
Yes	53	43
No	71	57
Alcoholism		
Yes	15	12
No	109	88
Daily intercity travel		
Yes	62	50
No	62	50

Table 2 – Academic and extracurricular activities of nursing students (n=124). Quixadá, CE, 2020.

Variables	n	%
Ongoing semester		
1st year (1st and 2nd semester)	25	20
2nd year (3rd and 4th semester)	22	18
3rd year (5th and 6th semester	17	14
4th year (7th and 8th semester)	26	21
5th year (9th and 10th semester)	34	27
Participation in research groups		
Yes	40	32
No	84	68
Participation in academic monitoring program		
Yes	26	21
No	98	79
Member of the academic center		
Yes	25	20
No	99	80
Participation in paid or voluntary internship		
Yes	15	12
No	109	88

Table 3 – Distribution of responses from nursing students in relation to the components of the Pittsburgh Sleep Quality Index (n=124). Quixadá, CE, 2020.

Variables	n	%
Subjective sleep quality before college		
Very good	48	39
Good	54	44
Bad	13	10
Very bad	9	7
PSQI Components	**n**	**%**
Current Subjective Quality of Sleep		
Very Good	4	3
Good	54	44
Bad	46	37
Very bad	20	16
Sleep Latency • Time (in minutes) for sleep onset		
≤15 minutes	20	16
16 to 30 minutes	32	26
31 to 60 minutes	41	33
>60 minutes	31	25
• Failed to fall asleep within 30 minutes		
Never	28	23
Less than 1x a week	20	16
1 or 2x a week	30	24
3 or more x week	46	37
Sleep duration		
> 7 hours	22	18
6 to 7 hours	56	45
5 to 6 hours	30	24
< 5 hours	16	13
Sleep Efficiency		
> 85%	79	64
75 to 84%	19	15

...continuation - Table 3

Variables	n	%
65 to 74%	11	9
< 65%	15	12
Sleep Interruption		
None in the last month	2	2
Less than 1x a week	65	52
1 or 2x a week	50	40
3 or more x week	7	6
Use of sleeping pills		
None in the last month	95	77
Less than 1x a week	8	6
1 or 2x week	11	9
3 or more x week	10	8
Daytime Dysfunction • Difficulty staying awake during usual activities		
None in the last month	56	45
Less than 1x a week	25	20
1 or 2x a week	25	20
3 or more x week	18	15
• Degree of difficulty in maintaining enthusiasm (excitement) during usual activities		
No difficulty	17	14
A mild problem	38	31
A reasonable problem	40	32
A big problem	29	23
PSQI rating		
Good sleep quality (PSQI 0 – 4)	13	10
Poor sleep quality (PSQI 5 – 10)	73	59
Sleep disorder (PSQI > 10)	38	31

Table 4 – Inferential analysis of the Pittsburgh Sleep Quality Index classification with sociodemographic characteristics, lifestyle habits, academic and extracurricular activities (n=124). Quixadá, CE, 2020.

	Sleep Quality		Sleep Interruption	P value*
	Good	Bad		
Sex				
Female	12	66	31	
Male	1	7	7	
Total	13	73	38	0.350
Alcohol consumption				
Yes	1	6	8	
No	12	67	30	
Total	13	73	38	0.126
Performs physical activity				
Yes	5	35	13	
No	8	38	25	
Total	13	73	38	0.361
Is Employed				
Yes	1	17	19	
No	12	56	19	
Total	13	73	38	0.003**
Daily intercity travel				
Yes	3	33	26	
No	10	40	12	
Total	13	73	38	0.008**
Is in the final year of college				
Yes	3	18	13	
No	10	55	25	
Total	13	73	38	0.526
Participation in research group				
Yes	4	26	10	
No	9	47	28	
Total	13	73	38	0.605
Academic supervision				
Yes	3	15	8	
No	10	58	30	
Total	13	73	38	0.979
Performs extracurricular internship				
Yes	2	10	3	
No	11	63	35	
Total	13	73	38	0.625

* Chi-squared test for independence; ** p<0.05.

DISCUSSION

The results of this study corroborate the literature[1,4,5] by identifying a high prevalence of poor sleepers and the presence of sleeping disorders in nursing students, according to the overall PSQI score. The proposed hypothesis was partially confirmed, as participants who commuted daily between cities to attend class or had a concomitant job had poor sleep quality, when compared to those who did not have such characteristics. Meanwhile, the other academic, extracurricular, and lifestyle variables did not have a statistically significant association with sleep quality.

This information reinforces the need for nursing students to receive guidance on how to manage their academic activities, and on the possible damage that poor sleep quality can bring, both in terms of academic performance and quality of life. Therefore, characterizing the sleep of the participants and identifying factors that impair its quality help in the elaboration of plans of action.

Concerning the characterization of the participants' sleep, specifically the usual time to fall asleep or latency, there was a divergence from other studies[14,15], in which most participants reported falling asleep in a period of less than 30 minutes and even within 15 minutes. In the investigated sample, latency was higher with a prevalence of the period from 31 to 60 minutes, which can confirm the lower quality of sleep identified.

There is a relationship between sleeping disorders and sleep efficiency, because in the absence of such disorders, the individual has greater amounts of sleep and better sleep quality[16]. In the sample, 6 to 7 hours of sleep per night predominated, with good sleep efficiency. The quality of sleep achieved at these times, associated with individual needs, determine the normality of this function[2].

Regarding the physiological aspects that influence sleep quality, awakening in the middle of the night or early in the morning was highlighted. Frequent episodes of awakenings during the night of sleep end up reducing deep sleep and its efficiency, resulting in inadequate quantity and quality, in addition to having a negative influence on the regulation of reactions that occur in the body and on the proper rest of the body[14,17].

When investigating aspects such as: needing to get up in the middle of the night to go to the bathroom, breathing problems during sleep, and reports of coughing or strong snoring, only the need to urinate in the middle of the night was the more evident sleep interrupter. Regarding respiratory problems, they can cause repercussions and behavioral damage, change the physical and functional health of individuals, and cause deficits in daily activities, malaise, fatigue, and incapacity on several occasions[18].

Among the aspects considered as sleep-disturbing factors, not listed in the PSQI, but which were reported by the students, insomnia, anxiety, and worries stood out; the latter being the main factor responsible for keeping the mind active during the night, which causes difficulties falling asleep and triggers major episodes of insomnia[2]. Many sleep-disturbing factors can be addressed in adequate psycho-pedagogical support programs for university students, reducing anxiety and its systemic effects on the individual's body, such as tiredness and indisposition during the day[4].

In the present study, most students reported having difficulties staying awake during usual activities, which is justified, since insomnia directly impacts the individual's social life, corroborating daytime dysfunctions such as difficulty staying awake during usual day-to-day activities[15].

Moreover, there was reference to physical indisposition and a lack of enthusiasm to perform usual activities, which may be associated with episodes of insomnia. Thus,

a continuous circle is formed, as insomnia generates indisposition, it impairs the performance of usual activities, triggering anxiety that causes more frequent episodes of insomnia[2,17], in addition to impairing the performance of academic activities.

Regarding these activities, it is noteworthy that the investigated undergraduate course is configured as a biannual serial system, lasting five years in a full-time regimen, totaling 4,000 hours. In addition to the mandatory workload, nursing students must complete 200 hours in complementary activities (academic monitoring, research projects, teaching and community outreach, volunteer internships and events) and two optional subjects. To carry out these activities, students must receive guidance on the organization of time to perform them without harming their quality of sleep[19]. Despite these characteristics, only two variables were associated with poor sleep quality or sleeping disorders, namely the existence of a job and daily commuting.

Students who have a job work as nursing technicians after graduation, in order to supply their financial resources. These individuals, in general, are exposed to a high workload and work in shifts[6], conditions that worsen the sleep quality of the participants.

Only one pilot study[11] was identified that points to the association between the daily commute, to-and-fro, with the worst quality of sleep. This reinforces the need for broad studies in populations of students who carry out this daily commuting activity, especially among those with less financial resources, or who live far from the largest urban centers, where the offer of transportation for commuting is wide and unrestricted. The reality of the smaller urban centers, where this study was carried out, exists a restricted supply of free intercity travel, which contributes to a lower quantity and quality of sleep among students.

Regarding the limitations of the present study, despite the questionnaire being validated and widely used in clinical practice, this type of collection may favor the occurrence of omissions or inaccurate answers. In addition, memory bias is considered, as the answers should refer to the last month. Moreover, the sample corresponds to only one undergraduate course from a single private higher education institution, which may compromise the generalization of the findings.

CONCLUSION

The results of this study showed a predominance of poor sleep quality and the presence of sleeping disorders among the participants. The variables associated with this result were the daily intercity commute (to-and-fro) to attend an undergraduate class or to have a concomitant job. Meanwhile, the other academic, extracurricular, and lifestyle variables did not have a statistically significant association with sleep quality.

Therefore, broader research is needed to understand the influence of commuting on sleep quality. In addition to promoting activities among nursing students, aiming at good sleep hygiene, in order to contribute to a better use of the available time for sleep, better academic performance, and quality of life.

CRediT author statement

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