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Original Article

Sleep quality and cardiovascular risk factors in nursing students: A cross-sectional study

Qualidade do sono e fatores de risco cardiovascular em acadêmicos de enfermagem: estudo transversal

Calidad del sueño y factores de riesgo cardiovascular en estudiantes de enfermería: Un estudio transversal

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Abstract

Objective: To identify the relationship between sleep and cardiovascular risk (CVR) in nursing students. **Method**: A quantitative, cross-sectional study. The population consisted of undergraduate Nursing students from the metropolitan region of Rio Grande do Sul, Brazil. Variables included sociodemographic data, anthropometric measurements, health conditions, the Pittsburgh Sleep Quality Index, and the Fagerström Test for nicotine dependence. **Results**: A total of 122 students participated, 78 first-year students and 44 final-year students. The final-year students showed higher blood pressure, body mass index (BMI), and waist-to-hip ratio compared to first-year students. They also reported less physical activity, higher alcohol consumption, and fewer hours of sleep. Additionally, they exhibited more significant sleep disturbances and greater daytime sleepiness. **Conclusion**: Final-year students demonstrated higher CVR factors compared to first-year students. No significant relationship was found between overall sleep quality and cardiovascular risk factors.

Descriptors: Cardiovascular Diseases; Students, Nursing; Risk Factors; Sleep; Sleep Quality

Resumo

Objetivo: identificar a relação entre sono e risco cardiovascular (RCV) em acadêmicos de enfermagem. **Método**: estudo quantitativo e transversal. A população foi constituída por acadêmicos de graduação em Enfermagem da região metropolitana do estado do Rio Grande do Sul. As variáveis incluíram dados sociodemográficos, antropométricos, de condições de saúde, questionário de qualidade de sono de Pittsburgh e teste de *Fagerstrom* para a dependência à nicotina. **Resultados**: participaram 122 estudantes, sendo 78 ingressantes e 44 concluintes. Os

concluintes apresentaram maiores níveis de pressão arterial, de índice de massa corporal e de relação cintura-quadril, quando comparados com os ingressantes, bem como informaram realizar menos atividade física, consumir mais bebida alcoólica e dormir menos horas; também possuem maiores alterações no sono e maior sonolência diurna. **Conclusão**: estudantes concluintes apresentam maiores fatores de RCV em relação aos ingressantes. Não houve resultados significativos entre a classificação geral do sono e os fatores de risco cardiovascular.
Descritores: Doenças Cardiovasculares; Estudantes de Enfermagem; Fatores de Risco; Sono; Qualidade do Sono

Resumen

Objetivo: Identificar la relación entre el sueño y el riesgo cardiovascular (RCV) en estudiantes de enfermería. **Método**: Estudio cuantitativo y transversal. La población estuvo constituida por estudiantes de grado en Enfermería de la región metropolitana de Río Grande del Sur, Brasil. Las variables incluyeron datos sociodemográficos, medidas antropométricas, condiciones de salud, el índice de calidad del sueño de Pittsburgh y la prueba de Fagerström para la dependencia a la nicotina. **Resultados**: Participaron 122 estudiantes, 78 de primer año y 44 de último año. Los estudiantes de último año mostraron niveles más altos de presión arterial, índice de masa corporal (IMC) y relación cintura-cadera en comparación con los de primer año. También informaron realizar menos actividad física, consumir más alcohol y dormir menos horas. Además, presentaron mayores alteraciones del sueño y mayor somnolencia diurna. **Conclusión**: Los estudiantes de último año presentaron mayores factores de riesgo cardiovascular en comparación con los de primer año. No se encontró una relación significativa entre la calidad general del sueño y los factores de riesgo cardiovascular.
Descriptores: Enfermedades Cardiovasculares; Estudiantes de Enfermería; Factores de Riesgo; Sueño; Calidad de Sueño

Introduction

Cardiovascular diseases (CVD) include all conditions affecting the heart and blood vessels and are the leading cause of death worldwide.[1] Nearly 40% of deaths in people under the age of 70 are due to CVD, particularly in low- and middle-income countries. In Brazil, in 2020 alone, around 770,000 deaths were caused by circulatory system diseases, accounting for 30% of all deaths in the country.[2]

The most frequent causes of CVD development are lifestyle-related, meaning they are modifiable factors that, over time, have a significant impact on population health and well-being.[3] Sleep is an important factor in cardiovascular risk (CVR), as sleep disorders significantly affect the lives of patients with CVD.[4] Sleep is a natural process of muscle relaxation that occurs in stages, during which the individual maintains cardiorespiratory function at a slower rate and limits sensory and body movement, allowing for physiological recovery.[5]

For individuals in the learning process, such as university students, sleep disorders and deprivation can be associated with negative health outcomes as well as poorer academic performance.[6] This idea is supported by research conducted in Salvador, which found that approximately 80% of nursing undergraduates analyzed had poor sleep quality, sleeping around 6 hours per night, and had a family history of CVD.[7]

When examining the relationship between sleep quality and CVR in university students in the state of Piauí, Brazil, statistically significant differences were identified when comparing participants with impaired sleep quality to those with normal sleep. Variables such as body mass index, blood pressure, and central fat distribution were higher in those with sleep disturbances. Although there are few studies on this topic among students, there is evidence of an association between sleep quality and CVR, which is relevant for further research. Additionally, it suggests that academic stress may contribute to CVR due to the high workload and limited time for restorative sleep.[8]

Therefore, the aim of this study is to identify the relationship between sleep and cardiovascular risk in nursing students.

Method

This is a quantitative, cross-sectional, census-type study, guided by the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) tool. The research followed the ethical guidelines of Resolution No. 466/2012 from the Brazilian National Health Council, and the project was approved by the Ethics Committee for Research of the Faculdades Integradas de Taquara, under approval No. 5.530.900.

Data recruitment and collection took place between August and October 2022, and again from May to August 2023. Research was conducted in the Nursing program at Faculdades Integradas de Taquara, Rio Grande do Sul (RS), Brazil, using a non-probabilistic sample, meaning that the intent was to include the entire population meeting the established criteria, thus characterizing the study as a census.

The sample consisted of 78 first-year and 44 final-year nursing students. For inclusion criteria, first-year students were those enrolled in the course *Fundamentals of Health Care*, which is part of the first semester curriculum. Final-year students were those who had completed at least 80% of the curriculum. Students under 18 years old,

pregnant women, and those on medical leave or maternity leave were excluded from the study.

Before data collection, a pilot study was conducted with four volunteers, not part of the study, at the nursing lab clinic of the institution to ensure data collection quality.

Initially, students were contacted during an in-person class on campus, where the researcher presented the study and invited them to participate. During this session, the Free and Informed Consent Form (FICF), the questionnaires, and the anthropometric data collection process were explained as well as the risks and benefits of participating in the research. The FICF and questionnaires were made available via a QR code. The questionnaire variables included age, sex, ethnicity, marital status, children, student loans, employment during studies, family and personal history of cardiovascular disease, use of contraceptives, physical activity, smoking and nicotine dependence score, alcohol use, and the Pittsburgh Sleep Quality Index (PSQI).[10] Physically active participants were defined as those engaging in 150 minutes of moderate physical activity or 75 minutes of vigorous activity per week.[11]

The sleep quality questionnaire consists of seven components: subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleep medications, and daytime dysfunction. Each component is scored from 0 to 3, with a maximum total score of 21 points. Scores above 5 indicate poor sleep quality.[10]

After agreeing to participate and completing the questionnaire, participants received a copy of the consent form and their responses via email.

In the second phase, after completing the questionnaire, participants were invited to visit the nursing clinic individually for anthropometric data collection. Variables collected in the clinic included blood pressure (BP), weight, height, and waist-to-hip ratio (WHR).

BP measurement was performed auscultatorily, using a Premium aneroid sphygmomanometer with a cuff circumference of 30 to 38 cm, based on the participant's arm circumference, and a BIC Eternity Adult and Pediatric Inox Dual stethoscope, following the guidelines of the Brazilian Society of Cardiology.[2]

Weight and height were measured using a Welmy electronic scale with a stadiometer, and body mass index (BMI) was calculated using the formula weight (kg)/height (m)^2.[12]

To determine the WHR, a 2-meter inelastic anthropometric tape (Cescorf brand) was used, with the participant standing in front of the researcher. The waist was measured two fingers above the umbilical scar, and the hips were measured at the level of the greater trochanters of the femur. The WHR was calculated by dividing the waist measurement by the hip measurement.[13]

To assess tobacco use, the Fagerström Test for Nicotine Dependence was used. This test includes six questions regarding smoking habits, frequency, and the number of cigarettes smoked per day, with scores ranging from 0 to 10. The results classify nicotine dependence into five levels: very low (0 to 2 points), low (3 to 4 points), moderate (5 points), high (6 to 7 points), and very high (8 to 10 points).[14]

Participants received feedback within a week after data collection via email, including their anthropometric data and its implications for their health.

After data collection, the data were extracted directly from the spreadsheet generated by the Google form, in Excel format. Electronic data were saved on the researcher's hardware and software, with the cloud files being deleted afterward. To preserve participant anonymity, their names were coded as I1, I2, I3, and so on for first-year students, and C1, C2, C3, and so on for final-year students.

Statistical analysis was conducted using the Statistical Package for Social Sciences (SPSS), version 25.0. Descriptive statistics were presented using absolute and relative distributions (n - %) as well as central tendency measures (mean and median) and variability (standard deviation and interquartile range), with symmetry studied through the Kolmogorov-Smirnov test.

For inferential analysis between categorical variables, Fisher's Exact Test was used due to the small sample size and the fact that more than 20% of cells had expected frequencies below 5, which limits the robustness of the chi-square test.[15] Test was complemented by an analysis of adjusted residuals, where cells with adjusted residuals equal to or greater than |1.96| contributed significantly to the relationship between the variables compared.

For continuous variables, when comparing two independent groups, the Student's t-test was applied. A significance level of 5% ($p<0.05$) was adopted for statistical decision criteria.

Results

This section presents five tables with the results obtained from the data cross-analysis, aligned with the study's objectives. Table 1 provides information on the characterization of sociodemographic and health variables in the sample.

Table 1 - Characterization of sociodemographic and health variables of nursing students. Rio Grande do Sul, Brazil, 2023

Sociodemographic variables	Ingressantes (n=78)		Concluintes (n=44)		p[ɤ]
	n	**%**	**n**	%	
Age	20±5.11		25±6.75		**0.00**
Sex					
Female	71	91.0	35	79.5	0.12
Male	7	8.9	9	20.4	
Marital status					p[B]
Single or divorced	71	91.0	24	54.5	**0.00**
Married or in a stable union	7	8.9	20	45.4	
Children					
Yes	8	10.2	14	31.8	**0.00**
Student loan					
Yes	34	43.5	36	81.8	**0.00**
Concomitant work					
Sim	45	57.6	37	84.1	**0.00**

[ɤ] Student's t-test. B: Fisher's Exact Test (Monte Carlo Simulation)

The reference values for blood pressure (BP) were classified according to the Brazilian Society of Cardiology,[2] the body mass index (BMI) according to the World Health Organization (WHO),[12] and the waist-to-hip ratio (WHR) based on a study aimed at predicting WHR cutoff points in the Brazilian population (Table 2).[13]

Table 2 - Classification of BP, BMI, and WHR in nursing students. Rio Grande do Sul, Brazil, 2023

Clinical variables	First-year students (n= 78)		Final-year students (n=44)		
	Mean±standard deviation		Mean±standard deviation		p[ɤ]
Blood pressure (BP)					
Systolic BP (SBP)*	114.68±12.7		116.86±11.08		0.34
Diastolic BP (DBP)**	70.26±8.82		73.39±11.36		0.09
BP Classification	**n**	**%**	**n**	**%**	
Optimal BP	40	51.3	20	45.5	
Normal BP	29	37.2	13	27.5	
Prehypertension	4	5.1	7	15.9	
Stage 1 Hypertension	4	5.1	4	9.1	
Stage 2 Hypertension	1	1.3			
Body Mass Index (BMI)					
BMI[ɤ]	24.62±4.18		27.4±5.91		**0.00**
BMI Classification	**n (78)**	**%**	**n (44)**	**%**	
Underweight	2	2.6	1	2,3	
Normal Range	39	50	17	38,6	

Clinical variables	First-year students (n= 78)		Final-year students (n=44)		
	Mean±standard deviation		Mean±standard deviation		p[ɤ]
Blood pressure (BP)					
Overweight	28	35.9	14	31,8	
Obesity Grade 1	8	10.3	6	13,6	
Obesity Grade 2	1	1.3	3	6,8	
Obesity Grade 3			3	6,8	
Waist-to-Hip Ratio (WHR)					
WHR[ϰ]	0.75±0.09		0.78±0.14		**0.03**

[ɤ] Student's t-test. *SBP = Systolic Blood Pressure. ** DBP = Diastolic Blood Pressure. [ɣ]BMI = Body Mass Index. [ϰ]WHR = Waist-to-Hip Ratio

When analyzing the weight variable individually, the mean and standard deviation were 67.37±13.53 kg for first-year students and 76.77±19.76 kg for final-year students, with a statistically significant difference of 5% ($p<0.05$) according to the t-test for independent samples.

Table 3 shows the variables for family and personal history of cardiovascular disease.

Table 3 - Family and personal history of cardiovascular diseases in nursing students. Rio Grande do Sul, Brazil, 2023

Variable	Ingressantes		Concluintes	
Family history of CVD	**n (78)**	**%**	**n (n=44)**	**%**
Yes	64	82,1	42	95,5
Hypertension (HAS)*	49	62,8	37	84,1
Myocardial infarction (MI)**	16	20,5	14	31,8
Stroke (CVA)[ɣ]	17	21,8	12	27,3
/Diabetes mellitus (DM)[ⱷ]	28	35,9	26	59,1
Kidney disease	5	6,4	2	4,6
Polycystic ovary syndrome (PCOS)'	4	5,1	1	2,3
Preeclampsia	3	3,8	2	4,6
Other	5	6,4	3	6,8
Personal history of CVD				
Hypertension (HAS)	3	3,8	4	9,1
Diabetes mellitus (DM)			1	2,3
Congestive heart failure (CHF)¨				
Other	1	1,3		2,3
Contraceptive method				
Yes	49	62,8	26	59,1
Hormonal contraceptive	46	59	15	34,1
Hormonal IUD[∂]	1	1,3	5	11,4
Copper IUD			4	9,1
Other	4	6,4	2	4,6

* *HAS = Systemic arterial hypertension. **MI = Myocardial infarction. [ɣ]CVA = Cerebrovascular accident (stroke). [ⱷ]DM= Diabetes mellitus. 'PCOS = Polycystic ovary syndrome. ¨ CHF = Congestive heart failure. IUD[∂]: Intrauterine device

Another disease mentioned by participants related to their personal history of CVD was coronary artery obstruction. Regarding contraceptive methods, the six participants who selected “other” did not specify the method.

The variables related to physical activity, tobacco use, and alcohol consumption are presented in Table 4.

Table 4 - Physical activity, tobacco use, and alcohol consumption of nursing students. Rio Grande do Sul, Brazil, 2023

Variable	First-year students		Final-year students	
	n (78)	%	n (44)	%
Physical activity				
Yes	43	62,8	16	36,4
Type of physical activity				
Intense	9	11,5	5	11,4
Moderate	31	39,7	11	25
Weekly Frequency				
1×	7	9	2	4,6
2×	6	7,7	1	2,3
3× or more	29	37,2	13	29,6
Tobacco use				
Yes	6	7,7	2	4,6
Nicotine dependence score		0-2: muito baixa		0-2: muito baixa
Alcohol use				
Yes	35	44,9	31	70,5
Type of drink				
Whiskey	7	9	3	6,8
Vodka	20	25,6	12	27,3

Beer	30	38,5	24	54,6
Cachaça	7	9	2	4,6
Wine	25	32,1	19	43,2
Gin	15	19,2	14	31,8
Tequila	3	3,8	4	9,1
Other distilled beverages			1	2,3
Volume in ML				
100 to 300ml*	7	9	7	15,9
300 to 500ml*	11	14,1	10	22,7
900 to 1L¨	3	3,8	4	9,1
Weekly Frequency				
1×	18	23,8	13	29,6
2×	13	16,7	9	20,5
3× or more	4	5,1	6	13,6

*ml= mililiters. ¨L= liters

Table 5 shows the component variables of the Pittsburgh Sleep Quality Index (PSQI):

Table 5 - Pittsburgh Sleep Quality Index (PSQI) for nursing students. Rio Grande do Sul, Brazil, 2023

Pittsburgh Scale Components	First-year students (n=78)		Final-year students (n=44)		p[B]
	n	%	n	%	
Subjective Sleep Quality					0,31
Very good	22	28,2	12	27,3	
Good	14	17,9	12	27,3	
Bad	15	19,2	11	25,0	
Very bad	27	34,6	9	20,4	
Sleep Latency					**0,00**
≤ 15 minutes	16	20,5	15	34,1	
16 to 30 minutes	28	35,9	29	65,9	
31 to 60 minutes	33	42,3			
> 60 minutes	1	1,3			
Sleep duration					**0,00**
> 7 hours	21	26,9			
6 to 7 hours	38	48,7			
5 to 6 hours	16	20,5			
< 5 hours	3	3,8	44	100	
Habitual sleep efficiency					**0,00**
> 85%		92,3	17	38,6	
75 to 84%	51	65,4	27	61,4	
65 to 74%	19	24,4			
< 65%	8	10,3			
Sleep disturbances					0,86
None in the past month	3	3,8	3	6,8	
Less than once a week	48	61,5	22	50	
1 or 2 times a week	27	34,6	17	38,6	

3 or more times per week			2	4,6	
Sleep medication use					0,46
None in the past month	55	70,5	25	56,8	
Less than once a week	8	10,3	7	15,9	
1 or 2 times per week	9	11,5	7	15,9	
3 or more times per week	6	7,7	5	11,4	
Daytime dysfunction/sleepiness					0,25
No difficulty	10	12,8	3	6,8	
Very mild difficulty	31	39,7	12	27,3	
Moderate difficulty	22	28,2	16	36,4	
Severe difficulty	15	19,2	13	29,5	
Total Pittsburgh classification					0,11
Good (0 to 4)	11	14,1	1	2,3	
Poor (5 to 10)	40	51,3	24	54,5	
Presence of disorder (>10)	27	34,6	19	43,2	

*Percentages are based on the total number of students in each group. B: Fisher's Exact Test (Monte Carlo Simulation)

In the analysis of the total sleep quality classification using the Pittsburgh Sleep Quality Index and variables related to cardiovascular disease (CVD), no significant results were found for BP in comparison to sleep (p = 0.42, Fisher's Exact Test). Similarly, no significant associations were found between sleep and the mean BMI scores in both groups (p = 0.86), nor between sleep and the mean waist-to-hip ratio (WHR) scores in both groups (p = 0.94).

Discussion

Regarding the participants' profile, in terms of age, the students are classified as young adults of productive age. A similar pattern was found in a study conducted at the Federal Fluminense University in Niterói, Rio de Janeiro (RJ), which investigated risk factors for coronary artery disease in nursing students, with the average age of participants being 22 years.[16]

In terms of gender and ethnicity, the majority of participants were white and female, both among first-year and final-year students. This profile is not only prevalent among nursing students but also in the Brazilian nursing profession as a whole, according to a study conducted by the Federal Nursing Council (COFEN) in partnership with the Oswaldo Cruz Foundation.[17] Nursing is a predominantly female profession, though there has been a trend towards increasing male participation since the 1990s, as noted in the same research.[17] In southern Brazil, the highest percentage of white individuals in the country is found, with 72.8% of the population identifying as white, which aligns with the results of this study.[18]

In terms of marital status, most first-year students reported being single and childless, a finding consistent with other research that has evaluated the sociodemographic characteristics of nursing students.[19] Among final-year students, there is an increase in participants who are married or in stable relationships and have children, suggesting that as they progress through their studies, students may develop relationships and start families. Additionally, considering that over 80% of final-year students are employed while pursuing their degree, it is likely that their work, family, and academic responsibilities overlap, potentially impacting both academic performance and overall health.

Regarding employment while study, about half of first-year students are not employed. However, this number increases significantly among final-year students, which may indicate that as students' progress through their degree, they seek sources of income. This could affect household income, which in Brazil averages R$1,625.00 per capita.[20] In this context, the financial contributions of working-age family members are important for household budgets.

Regarding student loans, the percentage of students using them nearly doubles among final-year students. This is consistent with Brazilian Higher Education Expansion Policy. Since higher education in Brazil is heavily linked to the private sector, government-provided loans play a crucial role in expanding access to students who might otherwise struggle to pursue a professional education.[21]

Concerning variables related to cardiovascular risk (CVR), the first indicators analyzed were blood pressure (BP), body mass index (BMI), and waist-to-hip ratio (WHR).

BP levels did not show statistically significant differences between first-year and final-year students, and the average remained within normal limits in both groups. A similar finding was observed in a study conducted in Piauí, Brazil, which investigated sleep quality and risk factors for hypertension among university students. BP levels in both groups corresponded to optimal BP, with an average of 111 × 64 mmHg among first-year students and 109 × 71 mmHg among final-year students.[22]

In the same study, BMI was also investigated, and the participants had an average within normal parameters (first-year students: 21.5 kg/m²; final-year students: 22.7 kg/m²).[22] In the present study, although the first-year students were classified within the normal range, the average BMI of the final-year students placed them in the overweight category. Nutritional status data from adults living in southern Brazil show that this population has the highest percentage of overweight individuals in the country, while the northeastern population has the lowest. Furthermore, the state of Piauí has the lowest average salary in Brazil (R$1,100), compared to Rio Grande do Sul, which has an average salary of R$2,087.[20] These factors may suggest a possible link between overweight and average salary. When considering these aspects in this study, other factors may have contributed to the increase in BMI over the course of the students' academic journey, such as stress, multiple responsibilities, and sleep deprivation, all of which increase the risk of cardiovascular diseases.

Another CVR-related variable included in this research was WHR. This parameter assesses the predisposition to develop CVD by measuring waist circumference relative to hip circumference, which indicates the amount of adipose tissue concentrated in this area.[12] A WHR above 0.80 for women and 0.95 for men, typically associated with physical inactivity and overeating, suggests a risk for developing CVD.[23] In this study, there was a significant difference in WHR between the two groups, with final-year students showing an increase compared to first-year students; however, the average in both groups remained within normal limits. Excess weight is one of the factors associated with sleep quality disturbances.[24] In this investigation, although 11% of first-year students and 27% of final-year students were classified as obese, no association was found between BMI or WHR and sleep disorders.

Regarding family and personal history of CVD, the majority of both first-year and final-year students reported a family history of diseases from this group. However, despite this non-modifiable risk factor, personal history of CVD was observed in only a small portion of the students. Among the cited variables, systemic arterial hypertension (SAH) stands out, present in more than 80% of family histories in both groups, similar to findings in another study conducted with nursing students, which also identified SAH as a common family history factor for cardiovascular risk.[25] In that study, a large number of nursing graduates had a family history of SAH.

Among female participants, the use of hormonal contraceptives was relatively common, a finding also reflected in the current sample. Hormonal contraceptive therapy can result in various short- and long-term side effects, including alterations in blood properties, which can promote the development of deep vein thrombosis (DVT).[26]

Regarding modifiable CVR factors, particularly physical activity, this study identified a profile of students who engage in physical activity three or more times a week, mainly in moderate-intensity activities. A different pattern was found in a study at a private university in Rio Grande do Sul (RS), which aimed to analyze the association between health, stress, overweight, and obesity in nursing students. That study found that most students did not have a habit of engaging in physical activity.[27] However, as in this research, most participants were classified as having a normal weight (eutrophic).

Smoking is directly linked to CVR and is one of the few entirely preventable risk factors for CVD.[2] In this analysis, less than 10% of the sample smoked, and among these participants, nicotine dependence was classified as very low. Compared to a study that assessed cardiovascular health measures among nursing and medical students, the percentage of smokers was similar, although the level of nicotine dependence was different, with that study classifying it as moderate to severe.[28]

Regarding alcohol consumption, final-year students had approximately double the percentage of alcohol consumers compared to first-year students, with beer being the most consumed beverage. The frequency of consumption was one to two times per week, with a volume between 300 and 500 ml in both groups. At a university in Ribeirão Preto, São Paulo, a study aimed to determine whether alcohol consumption affected the performance of 274 students. Over 80% had consumed alcohol in the past three months,

and almost 90% had consumed it at some point in their lives, but there was no association between alcohol use and academic performance.[29]

Regarding the Pittsburgh Sleep Quality Index (PSQI), although a higher percentage of first-year students were classified as having "good" sleep quality, no statistically significant difference was found in the overall score between the two groups. However, there were significant differences in sleep latency, duration, and habitual sleep efficiency between the groups. These findings suggest that final-year students fall asleep faster and sleep fewer hours. However, they seem to make better use of their sleep time compared to first-year students, likely because they have less time available for rest. This contrasts with a study conducted with nursing students at different stages of their course in Natal, Rio Grande do Norte, where most of the sample demonstrated good sleep quality.[30]

As for sleep disturbances, medication use, and daytime sleepiness according to the Pittsburgh scale, no significant differences were found between first-year and final-year students. However, it was observed that, in both groups, more than half of the participants had poor sleep quality, often accompanied by sleep disorders.

Regarding the limitations of this research, they include potential recall bias from participants when answering the questionnaire, possible difficulties in interpreting the data collection tool, the difference in the number of first-year versus final-year students, and data loss during collection. Although a census-type study was conducted, the generalizability of the findings is limited due to the sample size.

One of the key contributions of this research to the scientific community is its emphasis on investigating the negative impacts that academic life can have on students' health. This understanding can help develop projects aimed at preserving and promoting the health and well-being of this population.

Conclusion

This study identified that final-year nursing students exhibit higher blood pressure, sleep less, consume more alcohol, and engage in less physical activity compared to first-year students.

The results of this research suggest that final-year nursing students are at a higher risk of developing CVDs, especially with respect to modifiable risk factors. Thus, attention is needed from the healthcare system and higher education institutions to implement strategies aimed at promoting health and preventing further complications.

However, it is essential that further studies be conducted on this topic within the academic environment to enhance students' awareness of their health status and risks. This would also encourage them to adopt and maintain habits that promote their well-being, ultimately reducing modifiable cardiovascular risk factors.

References

1. Roth GA, Mensah GA, Johnson CO, Addolorato G, Ammirati E, Baddour LM, et al. Global burden of cardiovascular diseases and risk factors, 1990-2019: Update From the GBD 2019 Study. J Am Coll Cardiol. 2020;76:2982-3021. doi: 10.1016/j.jacc.2020.11.010

2. Barroso WKS, Rodrigues CIS, Bortolotto LA, Mota-Gomes MA, Brandão AA, Feitosa ADM, et al. Brazilian Guidelines of Hypertension - 2020. Arq Bras Cardiol. 2021;116:516-658. doi: 10.36660/abc.20201238

3. Ribeiro ATD, Dias FER, Ferreira JMS, Ribeiro APL, Damaceno MBCM, Lemos TP, et al. Rastreamento de fatores de riscos cardiovasculares comportamentais em universitários: uma revisão de literatura. Braz J Health Rev;4(6):23875-92. doi: 10.34119/bjhrv4n6-021

4. Drager LF, Lorenzi-Filho G, Cintra FD, Pedrosa RP, Bittencourt LRA, Poyares D, et al. 1º posicionamento brasileiro sobre o impacto dos distúrbios de sono nas doenças cardiovasculares da Sociedade Brasileira de Cardiologia. Arq Bras Cardiol 2018;111(2):290-340. doi: 10.5935/abc.20180154

5. Fernandes RMF. O sono normal. Medicina (Ribeirão Preto). 2006;39:157-68. doi: 10.11606/issn.2176-7262.v39i2p157-168

6. Costa ALS, Silva RM, Sena ARAS, Silva GV, Mussi FC, Gonçalves AKP, et al. Estresse, má qualidade do sono e desfechos negativos a saúde em estudantes de enfermagem. J Health NPEPS; 2021 jul-dez;6(2):164-84. doi: 10.30681/252610105355

7. Ferreira SC, Jesus TB, Santos AS. Qualidade do sono e fatores de risco cardiovasculares em acadêmicos de enfermagem. Rev Gest Saúde (Brasília). 2015;6:390-404. doi: 10.37689/acta-ape/2020AO0144

8. Oliveira JPR, Gonçalves JHP, Rossi FE. Relação da qualidade do sono com fatores de risco cardiovascular em universitários. Rev Form@re Parfor/UFPI [Internet]. 2019 [acesso em 2024 abr 12]. Disponível em: https://revistas.ufpi.br/index.php/parfor/article/view/8690/5484

9. BRASIL. Ministério da Saúde. Conselho Nacional de Saúde. Resolução nº 466, de 12 de dezembro de 2012. Brasília, DF: Ministério da Saúde, 2012. Disponível em: https://conselho.saude.gov.br/resolucoes/2012/Reso466.pdf. Acesso em: 28 nov. 2023.

10. Passos MHP, Silva HA, Pitangui ACR, Oliveira VMA, Lima AS, Araújo RC. Reliability and validity of the Brazilian version of the Pittsburgh Sleep Quality Index in adolescents. J Pediatr 2017; 93:200-6. doi: 10.1016/j.jped.2016.06.006

11. Camargo EM, Añez CRR. Diretrizes da OMS para atividade física e comportamento sedentário. Genebra (CH): Organização Mundial da Saúde; 2020.

12. World Health Organization (WHO). Obesity: preventing and managing the global epidemic: report of a WHO consultation. Geneva (CH): World Health Organization; 1999.

13. Pereira RA, Sichieri R, Marins VMR. Razão cintura/quadril como preditor de hipertensão arterial. Cad Saúde Pública. 1999;15:333-44. doi: 10.1590/S0102-311X1999000200018

14. Meneses-Gaya IC, Zuardi AW, Loureiro SR, Crippa JA. Psychometric properties of the Fagerström Test for Nicotine Dependence. J Bras Pneumol 2009;35:73-82. doi: 10.1590/S1806-37132009000100011

15. O'Rourke N, Hatcher L, Stepanski EJ. A Step-by-Step approach to using SAS for univariate & multivariate statistics. 2 ed. Wiley-SAS; 2008.

16. Moraes HDSC, Flores PVP, Cavalcanti ACD, Figueiredo LS, Tinoco JMVP. Risk factors for coronary artery disease in nursing students. Rev Bras Enferm. 2021;74(1):e20190824. doi: 10.1590/0034-7167-2019-0824

17. Conselho Federal de Enfermagem (COFEN); Machado MH, Oliveira ES, Lemos WR, Wermelinger MW, Vieira M, Santos MR, et al. Perfil da enfermagem no Brasil: relatório final [Internet]. Rio de Janeiro: NERHUS - DAPS - ENSP/Fiocruz. 2017 [acesso em 2023 nov 22]. Disponível em: https://www.cofen.gov.br/perfilenfermagem/pdfs/relatoriofinal.pdf.

18. Instituto Brasileiro de Geografia e Estatística (IBGE). IBGE Educa Jovens. Conheça o Brasil - População - Cor ou raça [Internet]. 2023 [acesso 2023 nov 22]. Disponível em: https://educa.ibge.gov.br/jovens/conheca-o-brasil/populacao/18319-cor-ou-raca.html

19. Saho M, Lomanto GA, Salviano ICB, Reis ES, Anjos KF, Rosa DOS. Características sociodemográficas e acadêmicas de estudantes de enfermagem em formação profissional. Rev Enferm Contemp. 2021;10(2):280-8. doi: 10.17267/2317-3378rec.v10i2.3892

20. Instituto Brasileiro de Geografia e Estatística (IBGE). Diretoria de Pesquisas, Coordenação de Pesquisas por Amostra de Domicílios, Pesquisa Nacional por Amostra de Domicílios Contínua - PNAD Contínua - 2022. Rendimento nominal mensal domiciliar per capita da população residente, segundo as Unidades da Federação - 2022 [Internet]. Brasília (DF): IBGE; 2023 [acesso em 2023 out 25]. Disponível em: https://painel.ibge.gov.br/pnadc/

21. Chaves VLJ, Amaral NC. Política de expansão da educação superior no Brasil - o PROUNI e o FIES como financiadores do setor privado. Educ Rev. 2016;32:49-72. doi: 10.1590/0102-4698162030

22. Silva KR, Costa JJ, Sousa RRC, Sousa BR, Oliveira ASS. Quality of sleep and risk factors for arterial hypertension between university members Revista Enferm UFPI. 2019;8:55-63. doi: 10.26694/2238-7234.8355-63

23. Gill D, Zuber V, Dawson J, Pearson-Stuttard J, Carter AR, Sanderson E, et al. Risk factors mediating the effect of body mass index and waist-to-hip ratio on cardiovascular outcomes: Mendelian randomization analysis. Int J Obes. 2021;45:1428-38. doi: 10.1038/s41366-021-00807-4

24. Gajardo YZ, Ramos JN, Muraro AP, Moreira NF, Ferreira MG, Rodrigues PRM. Problemas com o sono e fatores associados na população brasileira: Pesquisa Nacional de Saúde, 2013. Ciênc saúde Colet. 2021;26(2):601-10. doi: 10.1590/1413-81232021262.08412020

25. Souza CAP, Gonçalves JA, Monteiro CAS, Silva AF. Caracterização dos fatores de risco cardiovasculares entre graduandos de enfermagem. Rev Expr Cat Saúde. 2020;5(1). doi: 10.25191/recs.v5i1.3738

26. Lago ACV, Marques RS, Santana SC, Cardoso VL. Risk of venous thrombosis related to the use of oral contraceptives. Res Soc Dev. 2022;11:e158111638150. doi: 10.33448/rsd-v11i16.38150

27. Urbanetto JS, Rocha PSD, Dutra RC, Maciel MC, Bandeira AG, Magnago TSBS. Stress and overweight/obesity among nursing students. Rev Lat Am Enferm. 2019;27:e3177. doi: 10.1590/1518-8345.2966.3177

28. Alves MG, Nascimento JSG, Rosário R, Komatsu AV, Dalri MCB, Silva JLD. Saúde cardiovascular em estudantes de enfermagem e medicina. Rev Gaúcha Enferm. 2023;44:e20230004. doi: 10.1590/1983-1447.2023.20230004

29. Souza J, Hamilton H, Wright M GM. Academic performance and consumption of alcohol, marijuana, and cocaine among undergraduate students from Ribeirão Preto - Brazil. Texto Contexto Enferm. 2019;28:e315. doi: 10.1590/1980-265X-TCE-CICAD-3-15

30. Silva KKM, Martino MMF, Bezerra CMB, Souza AML, Silva DM, Nunes JT. Stress and quality of sleep in undergraduate nursing students. Rev Bras Enferm. 2020;73:e20180227. doi: 10.1590/0034-7167-2018-0227

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