

# PREDICTORS OF INSOMNIA IN PUBLIC UNIVERSITY NURSING STUDENTS

## FATORES PREDITORES DE INSÔNIA EM ACADÊMICOS DE ENFERMAGEM DE UNIVERSIDADE PÚBLICA

## FACTORES PREDICTORES DE INSOMNIO EN ACADÉMICOS DE ENFERMERÍA DE UNIVERSIDAD PÚBLICA

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Objective: to identify predictors of insomnia in nursing students. Method: cross-sectional study, conducted with 199 students from the 1<sup>st</sup> to the 10<sup>th</sup> semester of the Nursing course of a Federal University, Brazil. Data were collected from June to September 2019. The sociodemographic and health questionnaire and Antonovsky's Sense of Coherence were applied. Results: income ( $p=0.016$ ), leisure time ( $p=0.021$ ), sufficient sleep ( $p=0.005$ ), use of psychiatric drugs ( $p=0.002$ ), health insurance ( $p=0.006$ ), lower sense of coherence ( $p=0.003$ ), moderate-severe depression ( $p=0.004$ ) were significant. Logistic regression: the variables age ( $p=0.008$ ) and black race ( $p=0.028$ ) were significant. Conclusion: social, individual, academic and health factors influence the outcome of insomnia.

Descriptors: Nursing. Students, Nursing. Sleep Initiation and Maintenance Disorders. Student Health. Quality of life.

*Objetivo: identificar fatores preditores de insônia em estudantes de Enfermagem. Método: estudo transversal, realizado com 199 alunos do 1º ao 10º semestre do curso de Enfermagem de uma Universidade Federal, Brasil. Os dados foram coletados no período de junho a setembro de 2019. Aplicou-se o questionário sociodemográfico e de saúde e o Sense of Coherence de Antonovsky. Resultados: as variáveis renda ( $p=0,016$ ), tempo de lazer ( $p=0,021$ ), horas*

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*suficientes de sono (p=0,005), uso de drogas psiquiátricas (p=0,002), plano de saúde (p=0,006), menor sensação de coerência (p=0,003), depressão moderada-grave (p=0,004) foram significativas. Regressão logística: as variáveis idade (p=0,008) e raça negra (p=0,028) foram significativas. Conclusão: os fatores sociais, individuais, acadêmicos e de saúde influenciam no desfecho da insônia.*

*Descritores: Enfermagem. Estudantes de Enfermagem. Distúrbios do Início e da Manutenção do Sono. Saúde do Estudante. Qualidade de vida.*

*Objetivo: identificar factores predictores de insomnio en estudiantes de Enfermería. Método: estudio transversal, realizado con 199 alumnos del 1º al 10º semestre del curso de Enfermería de una Universidad Federal, Brasil. Los datos se recopilaron entre junio y septiembre de 2019. Se aplicó el cuestionario sociodemográfico, y de salud y el Sense of Coherence de Antonovsky. Resultados: las variables renta (p=0,016), tiempo de ocio (p=0,021), horas suficientes de sueño (p=0,005), uso de drogas psiquiátricas (p=0,002), plan de salud (p=0,006), menor sensación de coherencia (p=0,003), depresión moderada-grave (p=0,004) fueron significativas. Regresión logística: las variables edad (p=0,008) y raza negra (p=0,028) fueron significativas. Conclusión: se evidencia que factores sociales, individuales, académicos y de salud influyen en el desenlace del insomnio.*

*Descriptores: Enfermería. Estudiantes de enfermería. Trastornos del Inicio y del Mantenimiento del Sueño. Salud del estudiante. Calidad de vida.*

## Introduction

Sleep is a basic human need and is related to individual, social and environmental demands that, when balanced, can promote physical and mental well-being<sup>(1)</sup>. Epidemiological studies state that insomnia has increased currently in different age groups, ranging from 6% to 48%, being more prevalent in adults than in adolescents and children<sup>(2)</sup>.

A cross-sectional study conducted with Chilean university students showed that, of the 1,275 students analyzed, 77.9% slept less than recommended, 34.2% had daytime sleepiness and 68.5% insomnia. These data show that sleep changes are a global public health problem and that students correspond to a vulnerable group in relation to adequacy in the quantity and quality of sleep<sup>(3)</sup>.

Sleep disorders can produce considerable changes in the physical, occupational, cognitive and social functioning of students and substantially compromise the quality of life, and, consequently, decrease the Academic Performance Index<sup>(4)</sup>. A study conducted with university nursing students in Rio Grande do Sul found that 58.4% of students said they slept poorly and 61.7% were easily tired. In addition, the frequency of suspicion of Minor Psychic

Disorders (MPD), which refer to depressive and anxiety disorders, in nursing students was 67.8%<sup>(5)</sup>.

Several factors are able to produce stress and, consequently, promote sleep changes. It is worth mentioning that health academics deal mostly with full-time curriculum, seek to complement training with activities such as internships, shifts, monitoring, scientific initiation, and are more exposed to the use of psychoactive substances<sup>(6)</sup>. These factors can potentiate an overload of activities and impact on sleep quality, and it is important to identify the factors that influence the adequacy of sleep, to propose interventions that help in its quality.

In this perspective, the identification of factors detrimental to the sleep quality of nursing students may contribute to propose preventive measures against sleep disorders in order to provide a better quality of life, academic and professional success.

Given the above, this study aims to identify the predictors of insomnia in nursing students.

## Method

This is a cross-sectional study, based on the Checklist Strengthening the Reporting of Observational Studies in Epidemiology

(STROBE)<sup>(7)</sup>, conducted with 199 students regularly matriculated from the first to the tenth semester in nursing. Data collection was performed from June to September 2019 at the Nursing Department of the *Universidade Federal do Ceará* (UFC), in Fortaleza, Ceará, Brazil.

A simple random sample of the probabilistic type stratified by semester was used. The inclusion criteria were students over 18 years of both genders, regularly matriculated in any semester at the institution. The sample excluded the students who were on leave or in institutional enrollment, which is done when students will not attend the academic semester, but the link with the university is maintained.

A previous training was performed for the use of the instruments. The researchers applied a pre-test with 14 people to test the comprehension of the instruments. Subsequently, the data collection instruments were delivered to the students drawn, in a classroom environment, composed of sociodemographic, academic and health characterization. Students who participated in the pre-test were not included in the sample.

For the analysis of the present study, the following variables were considered predictors: age, gender identity, marital status, semester, income, religion, housing status, ethnicity, work situation, children, physical activity, study environment, use of technologies in studies, time for leisure, complementary academic activity, health plan, illicit and lawful drug use, use of psychotropic drugs, chronic disease, sufficient sleep hours, concern for the future, level of anxiety, depression level and Sense of Coherence (SOC). The outcome variable of the study was the occurrence of self-reported insomnia.

To evaluate the anxiety level variable, the Beck Anxiety Inventory (BAI) with Cronbach's alpha between 0.83 and 0.92 was used, which contains 21 descriptive items of anxiety symptoms. Items should be self-assessed for severity and frequency according to the last week, including the day of testing, on a scale of 0 to 3 points. The maximum overall score corresponds to 63 points, with the following cut-off points: minimum level of anxiety (0 to 10 points), mild

level of anxiety (11 to 19 points), moderate level of anxiety (20 to 30 points), severe level of anxiety (31 to 63 points)<sup>(8)</sup>.

The Beck Depression Inventory (BDI), validated with Cronbach's alpha of 0.82<sup>(8)</sup> was used to evaluate the depression level variable. This questionnaire consists of 21 statements containing a scale ranging from 0 to 3 points. After self-analysis, the score that best describes the feelings according to the last week, including the day of the test. Total scores range from 0 to 63 points, with the following cut-off points: minimum depression/no depression (0 to 13 points), mild depression (14 to 19 points), moderate depression (20 to 28 points) and severe depression (29 to 63 points).

To evaluate the Sense of Coherence, we used the Antonovsky Sense of Coherence Questionnaire (QSCA) with Cronbach's alpha of 0.79. This has 29 items, 11 items intended for understanding the surrounding environment, 10 items to the handling component or even the ability to manage a given situation individually or with the help of other people and 8 items referring to the meaning. The answers are obtained through a seven-point scale, with the extreme values ranging from one to seven. The higher the value, the greater the sense of coherence, therefore, the greater the ability of individuals to deal with stressful situations<sup>(9-10)</sup>.

Then, the acquired data were processed and analyzed by the software Statistical Package for the Social Sciences (SPSS), version 22.0. The median was used for the values categorized in age (above or below 21 years) and income (above or below 2,000.00 BRL); to characterize the semester, the differentiation between basic cycle until the 4<sup>th</sup> semester and the practical cycle, from the 5<sup>th</sup> to the 10<sup>th</sup> semester was used. The chi-square test was performed, with a significance level of 5%, and the Fisher's exact test, to test the association between the self-reported insomnia outcome and the predictor variables. In addition, the Prevalence Ratio (PR) was adopted and the respective 95% Confidence Intervals (CI) were estimated.

In addition, binary logistic regression models (Enter method) were run with all variables whose  $p < 0.2$  were: age, income, religion, physical activity, study environment, sufficient time for leisure, sufficient sleep hours, use of psychotropic drugs, health plan, chronic disease, SOC, ethnicity. The result of the Omnibus test was 0.033, which indicates that the regression model was significant. To verify the adequacy of the regression models, the Hosmer-Lemeshow test was used, whose value was 0.209, indicating that the model can adequately explain the dependent variable. The prediction was 67.3%. Adjusted regression ( $R^2$ ) showed a value of 0.229 (this regression model explains 22.9% of the outcome variability).

The study was approved by the Research Ethics Committee of the *Universidade Federal do Ceará*, by the Brazil platform, with Opinion n. 3.284.038, Certificate of Presentation of Ethical Assessment (CAAE) 13365519.0.0000.5054.

## Results

The insomnia outcome was more prevalent in students over 21 years old, who have an income of up to 2,000.00 BRL, do not have leisure time, use drugs, do not have health insurance, have a lower sense of coherence, have moderate to severe depression and are of black ethnicity. Table 1 shows the sociodemographic variables associated with the occurrence of insomnia.

**Table 1** – Association of sociodemographic variables with the occurrence of insomnia. Fortaleza, Ceará, Brazil, 2019. N=199

Variables	Insomnia				P-value	Prevalence Ratio	95% Confidence
	Yes		No				
	n	%	n	%			
<b>Age</b>					0.130(1)	0.7	(0.512-0.93)
Up to 21 years	31	30.7	70	69.3			
Over 21 years	39	41.1	56	58.9			
<b>Income</b>					<b>0.016(1)</b>	1.6	(1.080-2.384)
Up to 2,000.00 BRL	42	47.2	47	52.8			
Over 2,000.00 BRL	25	29.4	60	70.6			
<b>Religion</b>					0.109(1)	0.6	(0.451-1.051)
Yes	55	33.3	110	66.7			
No	15	48.4	16	51.6			
<b>Living situation</b>					0.563(1)	1.2	(0.645-2.303)
Living alone	6	42.9	8	57.1			
Living with someone	64	32.2	118	64.8			
<b>Marital status</b>					0.218(2)	2.2	(0.617-7.968)
No partner	68	37	116	63			
With partner	2	16.7	10	83.3			
<b>Gender</b>					0.736(1)	1.0	(0.675-1.748)
Male	13	38.2	21	61.8			
Female	57	32.2	105	65.8			
<b>Ethnicity</b>					0.119(1)	1.9	(0.831-4.646)
Black	12	50	12	50			
Non-black	58	33.7	114	66.3			

Source: created by the authors.

Notes:

(1)Fischer's Chi-Square Test.

(2)Fischer's Test.

Table 1 shows that the income variable showed statistical significance and academics

with income up to 2,000.00 BRL had a prevalence

of 1.6 times higher for self-reported insomnia than academics with higher incomes.

Table 2 shows the association between academic variables and the occurrence of insomnia.

**Table 2** – Associations between academic variables and the occurrence of insomnia. Fortaleza, Ceará, Brazil, 2019. N=199

Variables	Insomnia				p-value	Prevalence Ratio	95% Confidence Interval
	Yes		No				
	n	%	n	%			
<b>Semester</b>					0.215(1)	0.7	(0.533-1.156)
Basic Cycle	28	31.1	62	68.9			
Practical Cycle	42	39.6	64	60.4			
<b>Worried about the future</b>					0.386(2)	1.7	(0.616-4.751)
Yes	66	36.7	114	63.3			
No	3	21.4	11	78.6			
<b>Study environment</b>					0.150(1)	0.6	(0.352-1.175)
Yes	40	32	85	68			
No	30	42.3	41	57.7			
<b>Use of Technologies in the studies</b>					0.618(2)	0.7	(0.261-1.922)
Yes	68	35.4	124	64.6			
No	2	50	2	50			
<b>Leisure time</b>					<b>0.021(1)</b>	0.5	(0.350-0.954)
Yes	14	23.7	45	76.3			
No	55	41	79	59			
<b>Enough hours of sleep</b>					<b>0.005(1)</b>	0.4	(0.227-0.844)
Yes	8	17.8	37	82.2			
No	61	40.7	89	59.3			
<b>Complementary academic activity</b>					0.629(1)	0.8	(0.554-1.423)
Yes	57	35	106	65			
No	13	39.4	20	60.6			

Source: created by the authors.

Notes:

(1)Fischer's Chi-Square Test.

(2)Fischer's Test.

As observed in Table 2, leisure time,  $p=0.021$ , is a protective factor for insomnia, in which students who have satisfactory leisure time had a 50% lower prevalence of developing insomnia.

Enough hours of sleep also constitute a significant variable,  $p=0.005$ , because students who claimed to have sufficient hours of sleep had a prevalence of 60% of not having insomnia. Regarding the use of drugs,  $p=0.002$ , students

who claimed to use medications have a 90% higher prevalence of insomnia. Table 3 shows the association between health variables and the occurrence of insomnia.

**Table 3** – Associations between health variables and the occurrence of insomnia. Fortaleza, Ceará, Brazil, 2019. N=199

Variables	Insomnia				p-value	Prevalence Ratio	95% Confidence Interval
	Yes		No				
	n	%	n	%			
<b>Physical activity</b>					0.170(1)	0.7	(0.503-1.137)
Yes	47	39.5	72	60.5			
No	23	29.9	54	70.1			
<b>Use of licit drugs</b>					0.609(1)	1.1	(0.757-1.090)
Yes	36	37.5	60	62.5			
No	34	34	66	66			
<b>Use of illicit drugs</b>					0.795(1)	0.9	(0.508-1.685)
Yes	8	33.3	16	66.7			
No	62	36	110	64			
<b>Use of psychotropic drugs</b>					<b>0.002(1)</b>	1.9	(1.325-2.742)
Yes	20	58.8	14	41.2			
No	50	30.9	112	69.1			
<b>Health insurance plan</b>					<b>0.006(1)</b>	0.5	(0.377-0.867)
Yes	22	25.9	63	74.1			
No	48	45.3	58	54.7			
<b>Carrier of chronic disease</b>					0.126(1)	1.4	(0.934-2.220)
Yes	14	48.4	15	57.7			
No	56	33.5	111	66.5			
<b>Sense of Coherence</b>					<b>0.003(1)</b>	1.8	(1.206-2.687)
Lower	45	45.9	53	54.1			
Greater	25	25.5	73	74.5			
<b>Level of anxiety</b>					0.069(1)	0.6	(0.249-1.049)
Moderate	19	26.4	53	73.6			
Severe	46	39.3	71	60.7			
<b>Level of depression</b>					<b>0.004(1)</b>	1.7	(1.182-2.633)
Moderate and severe	45	45.5	54	54.5			
Mild and minimum	25	25.8	72	74.2			

Source: created by the authors.

Note:

(1)Fisher's Chi-Square Test.

The variable “health insurance plan” was statistically significant  $p=0.006$  and respondents who affirmed positively having health insurance plan had a 50% lower prevalence of insomnia. Regarding the association of SOC, which reflects the way the individual perceives their health and faces the stressors, this variable presented statistical significance, with  $p=0.003$ , and students who had lower SOC had a prevalence of 80% higher insomnia.

To assess the level of depression by the Beck Depression Inventory, statistical significance was observed,  $p=0.004$ , evidencing the relationship between insomnia and depression levels, because those who had moderate or severe depression had 70% higher prevalence of insomnia when compared to those who had mild/minimal depression. Next, Table 4 contains the associations that demonstrated significance in the binary logistic regression model.

**Table 4** – Variables associated with the occurrence of insomnia through binary logistic regression. Fortaleza, Ceará, Brazil, 2019. N=199

Variables	Odds Ratio	95% Confidence Interval	p-value
Above 21 years	3.869	1.421-10.534	<b>0.008</b>
Income up to 2,000.00 BRL	3.917	1.276-12.023	<b>0.017</b>
Religion	2.288	0.605-8.650	0.222
Physical activity	0.764	0.284-2.058	0.594
Study environment	1.962	0.728-5.287	0.183
Enough leisure time	1.356	0.456-4.031	0.584
Enough hours of sleep	9.917	2.326-42.275	<b>0.002</b>
Use of psychotropic drugs	2.357	0.714-7.776	0.159
Health insurance plan	2.680	0.854-8.410	0.091
Chronic disease	2.010	0.543-7.442	0.296
Lower Sense of Coherence	14.312	4.543-45.088	<b>&lt;0.001</b>
Black ethnicity	4.612	1.179-18.035	<b>0.028</b>

Source: created by the authors.

This evidence showed that there was a statistically significant association between the occurrence of insomnia and age above 21 years (0.008), income up to 2,000.00 BRL (0.017), having a studies environment (0.183), having enough hours of sleep (0.002), use of psychotropic drugs (0.159), having health insurance plan (0.091), lower SOC (0.000) and black ethnicity (0.028).

The analysis revealed that students were more likely to have insomnia in the following situations: 3.8 times more likely students over 21 years; 3.9 times those who had income up to 2,000.00 BRL; 1.9 times those who had a study environment; 9.9 times those who had enough sleep; 2.3 times those who used psychotropic drugs; 2.6 times those who had health insurance. In addition, it was also found 14.3 times more chance of having insomnia students who had lower SOC and 4.6 times more chance related to black ethnicity.

## Discussion

When analyzing university students, a study conducted with 1,865 students in southeastern Brazil showed that 32% had insomnia on school days, 12.7% nighttime awakenings and 32.2% daytime sleepiness, which shows the prevalence of sleep disorders in this public<sup>(11)</sup>. This data shows the risk to which many students are subjected, failing to reconcile sleep and

rest to perform basic daily activities, and may compromise academic training, since many students said they did not have enough sleep.

Concerning the epidemiological profile, it was possible to observe a higher prevalence of insomnia in students over the age of 21 years, which goes against a study<sup>(12)</sup> that evaluated the quality of sleep in in which the average age of the students with insomnia analyzed was 23.48 years (SD = 4.421). However, it is worth mentioning that the female sex was the most affected in both studies. Still in this study, it was observed that most participants with insomnia had low sleep quality (81.5%), had a monthly family income lower than four minimum wages (47.2%), and considered this income unsatisfactory (65%)<sup>(12)</sup>. Family income is an important factor, since a satisfactory financial condition can provide better quality of life, with less time to devote to a double work and studies, which sometimes makes in addition to providing greater access to specialized health services to treat insomnia.

The socioeconomic issue proved to be relevant in a review study that found the influence of socioeconomic determinants on sleep quality, noting that a low socioeconomic condition is related to poor sleep quality, as well as with shorter rest duration and greater daytime sleepiness, characterizing sleep as not restorative<sup>(13)</sup>.

Socioeconomic status is also related to obtaining health insurance. This association could be evidenced in the study that analyzed the data of the National Health Survey conducted in two editions, in the years 2013 and 2019, in which the health insurance coverage in Brazil was analyzed, demonstrating a correlation between the coverage of the education and per capita income. Among the findings, the highest coverage was associated with higher education and income, reaching 88% in 2019, among those with per capita income higher than five minimum wages. In addition, among the findings of the research, there was an association between health insurance and the presence of insomnia, being a protective factor, which enables the health plan to favor specialized consultations and specific treatments to deal with insomnia and improve the clinical picture<sup>(14)</sup>.

A study<sup>(15)</sup> conducted in a public university in southern Brazil with nursing students investigated the basic human needs in disharmony in students, in which it was possible to observe that “sleep and rest” are among the predominant that the two most hegemonic nursing diagnoses in nursing students were “Fatigue” and “Insomnia”. Both are related to stress and anxiety, which are characteristics commonly perceptible in university students, especially in the health area. Moreover, stress and anxiety provide insufficient hours of sleep, identified as the main responsible for insomnia, which consequently generate fatigue, which discourages students to perform academic activities<sup>(15)</sup>. In this context, in a survey of 540 university students from the Middle East, it was found that reduced sleep time and variation in sleep time between weekdays and weekends contribute significantly to poor sleep quality<sup>(16)</sup>.

Regarding leisure time, it is important to mention that health academics have a high workload of both theoretical and practical activities, so they have less time to develop leisure activities. This enables the association between leisure periods and sleep quality, since having leisure periods has a protective effect<sup>(17)</sup>.

A study conducted at the *Universidade Federal de Goiás* also identified the greater presence of

insomnia in students with symptoms of moderate to severe depression with demonstration of symptoms, since 100% of nursing students were classified as depressive<sup>(17)</sup>. Similar results were found in a survey conducted amid the COVID-19 pandemic, with university health students from Kunming, China, published in early 2021, in which 50.6% of students were aged 19-21, 22.5% presented depressive symptoms associated with insomnia<sup>(18)</sup>.

The use of psychotropic drugs during the graduation process may or may not be linked to the experiences during the course, either for the purpose of improving concentration or as an escape valve mechanism. In this context, a study at the University of São Paulo showed the use of psychoactive substances as a behavioral measure in the face of the consequences of sleep deprivation. Among them, caffeine, amphetamines, Ritalina, Adderall, venvanse, in which 62.50% of the students reported using them<sup>(19)</sup>. A study conducted in the Netherlands found similarities, in which such substances have adverse effects such as insomnia, palpitations and headache. These findings, however, did not prove to be an obstacle for part of the students, since 41% of them reported having increased the frequency of use with the advance of the course time<sup>(20)</sup>.

In addition, high levels of stress can cause poor sleep quality and influence a number of somatic symptoms, incidence of anxiety, depressive disorders, psychosis and cardiovascular changes that cause health risks<sup>(21-22)</sup>. Thus, the non-refilling sleep pattern interferes in many organic processes, causing damage to the physical and mental health of individuals.

Regarding the ability to cope measured by the Sense of Coherence, a cross-sectional study conducted with 310 participants in Spain showed that higher SOC is associated with high sleep quality and lower levels of depression, showing the protective effect of a higher SOC and high sleep quality<sup>(23)</sup>. Thus, OCS can be an important tool to identify the risks of sleep disorders and depression.



In addition, a study conducted in Sweden to assess the relationship between sleep quality and the sense of coherence of airplane pilots showed that 13% did not recover from work during free time, 61.9% had fatigue and 70.6% had insomnia symptoms. In this context, a high sense of coherence was evidenced as a protective factor, with high SOC and manageability associated with better work recovery ( $p < 0.001$ ), less fatigue ( $p < 0.001$ ) and less insomnia ( $p < 0.001$ )<sup>(24)</sup>. Although the research was not with the public of students, this data reflects that the manageability capacity associated with high SOC are important to ensure the recovery of the work of individuals who deal with great responsibilities and tensions in the daily routine.

When logistic regression was performed, it was observed that, among the variables selected for the model, there was an association between age, income, lower SOC and black ethnicity with insomnia. As a counterpoint to the black ethnicity, a study conducted in Campinas (SP) reported that the problem of insomnia among students did not differ statistically significantly between racial segments<sup>(25)</sup>.

As for the limitations of the study, it is necessary to highlight that the observational and cross-sectional character of the study hindered establishing a causal association between the dependent and independent variables for other contexts, which may be different in other locations. In addition, data collection was carried out before the Covid-19 pandemic. This reality may have triggered changes or aggravations related to sleep disorders, which requires further studies for evaluation. In addition, many studies that worked with sleep disorders presented as a target audience the medical students, which is also a limitation and reinforces the need for further studies with the nursing academics.

The study contributes to assist in understanding the factors related to insomnia in the academic environment and can provide the direction of effective strategies for health promotion in teaching environments, to avoid negative health outcomes resulting from the damage caused by sleep disorders.

## Conclusion

Among the predictors of insomnia in nursing students, it was noticed that the income of up to 2,000.00 BRL, not having time for leisure, not having enough sleep, using psychotropic drugs, not having health insurance, lower SOC and moderate to severe depression level showed greater association with the incidence of insomnia in these students.

The association was evident in relation to age over 21 years and black ethnicity evidenced in logistic regression, demonstrating that these factors influence the outcome of insomnia. In this context, sleep plays a key role in the physical, psychological and social well-being of individuals. Sleep disorders, such as insomnia, cause problems that interfere with the quality of life of students.

Thus, it is evident that social, individual, academic and health factors influence the quality of patterns related to sleep and rest, which may lead to the outcome of insomnia in these individuals. Thus, it is valid to deepen the factors associated with this outcome, given that it is essential to have an adequate sleep pattern to perform activities of daily living.

## Collaborations:

1 – conception and planning of the project: Raquel Alves de Oliveira, Nirvana Magalhães Sales, Anne Santiago do Nascimento, Giovanna Evelyn Luna Silveira, Samila Gomes Ribeiro and Priscila de Souza Aquino;

2 – analysis and interpretation of data: Raquel Alves Oliveira, Nirvana Magalhães Sales, Anne Santiago do Nascimento, Giovanna Evelyn Luna Silveira, Samila Gomes Ribeiro and Priscila de Souza Aquino;

3 – writing and/or critical review: Raquel Alves Oliveira, Nirvana Magalhães Sales, Anne Santiago do Nascimento, Giovanna Evelyn Luna Silveira, Samila Gomes Ribeiro and Priscila de Souza Aquino;

4 – approval of the final version: Raquel Alves Oliveira, Nirvana Magalhães Sales, Anne

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### Conflicts of interests

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