Impaired sleep pattern in rotary nursing internships according to the North American Nursing Diagnosis Association (NANDA)

Padrão de sono prejudicado em internos de enfermagem em plantões segundo a Associação Norte-Americana de Diagnóstico de Enfermagem (NANDA)

Deterioro del patrón del sueño en los internos rotativos de enfermería según la Asociación Norteamericana de Diagnósticos de Enfermería (NANDA)

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ABSTRACT

Introduction: Sleep is an indicator of quality of life, so good sleep leads to good academic and work performance, rotating interns, being subject to shifts and academic hours, usually present a deterioration in the sleep pattern since that it is postponed having 5 to 6 hours of rest. Objective: To analyze the deterioration of the sleep pattern in rotary nursing interns according to the North American Nursing Diagnosis Association (NANDA). Methodology: This research is quantitative, non-experimental, descriptive and cross-sectional. It uses the data collection with the application of the Pittsburgh Sleep Quality Index survey in 78 nursing interns and its subsequent analysis in Excel and IBM SPSS 25. Results: it was possible to analyze the results in seven components: 1) subjective sleep quality, 2) sleep latency, 3) sleep duration, 4) habitual sleep efficiency, 5) sleep disturbances, 6) use of hypnotic medication, and 7) daytime dysfunction. Conclusion: there is a deterioration in the sleep pattern in rotating nursing interns with the presence of drowsiness and daytime dysfunction.

Keywords: impaired sleep, nursing, rotating internals, deterioration.

RESUMO

Introdução: O sono é um indicador de qualidade de vida, pelo que um bom sono leva a um bom rendimento académico e laboral, os estagiários rotativos, estando sujeitos a turnos e horas académicas, costumam apresentar uma deterioração do padrão de sono desde que é adiado ter 5 a 6 horas de descanso. Objetivo: Analisar a deterioração do padrão de sono em estagiários de enfermagem em plantões segundo a Associação Norte-Americana de Diagnóstico de Enfermagem (NANDA). Metodologia: Esta pesquisa é quantitativa, não experimental, descritiva e transversal. Utiliza a coleta de dados com a aplicação da pesquisa Pittsburgh Sleep Quality Index em 78 internos de enfermagem e sua posterior análise em Excel e IBM SPSS 25. Resultados: foi possível analisar os resultados em sete componentes: 1) qualidade subjetiva do sono, 2) latência do sono, 3) duração do sono, 4) eficiência habitual do sono, 5) distúrbios do sono, 6) uso de medicação hipnótica e 7) disfunção diurna. Conclusão: há deterioração do padrão de sono em internos de enfermagem em rodízio com presença de sonolência e disfunção diurna.

Palavras-chave: sono prejudicado, enfermagem, plantões, deterioração.

RESUMEN

Introducción: El sueño es un indicador de calidad de vida, por lo que el buen dormir conlleva a un buen rendimiento tanto académico como laboral, los internos rotativos al estar sujetos a turnos y a horas académicas, suelen presentar un deterioro en el patrón del sueño ya que el mismo queda postergado teniendo de 5 a 6 horas de descanso. Objetivo: Analizar el deterioro del patrón del sueño en los internos rotativos de enfermería según la Asociación Norteamericana de Diagnósticos de Enfermería (NANDA). Metodología: La presente investigación es de carácter cuantitativo, no experimental, descriptivo y transversal. Utiliza la recolección de datos con la aplicación de la encuesta del Índice de Calidad de Sueño de Pittsburg en 78 internos de enfermería y su posterior análisis en Excel e IBM SPSS 25. Resultados: se logró analizar los resultados en siete componentes: 1) calidad subjetiva del sueño, 2) latencia de sueño, 3) duración del sueño, 4) eficiencia de sueño habitual, 5) perturbaciones del sueño, 6) uso de medicación hipnótica y 7) disfunción diurna. Conclusión: existe un deterioro de patrón de sueño en los internos rotativos de enfermería con presencia de somnolencia y disfunción diurna.

Palavras-chave: sueño, enfermería, internos rotativos, deterioro, dormir.

INTRODUCTION

Sleep as defined by (de la Portilla Maya et al., 2019) is a natural and physiological rhythmic state that alternates with human wakefulness, it is produced by the presence of melatonin activated by darkness, it is characterized by the decreased consciousness, immobility, muscle relaxation, the heart rate that constitutes the activity-rest cycle during a 24-hour period where there is a maximum and a minimum of activities done (Chamorro et al., 2018) and the adaptation of postures. Sleep is also linked to overall health, a disorder in its pattern or quality leads to physiological and behavioral variations such as changes in mood, which is why property of life also depends on the number of hours you sleep; currently, the use of technological advances at night is also a determining factor at bedtime.

In addition, as previously mentioned (Cordero et al., 2020), sleep patterns may be affected by various reasons throughout our lives, such as stress, anxiety, drug use or hormonal changes. Insomnia, which is more common in the general population, is defined as "persistent difficulty with the onset, duration, consolidation, or quality of sleep despite ample opportunities" (Hernández et al., 2019).

Similarly, sleep disorders are associated with anxiety and depression in the population, therefore, as highlighted (Vasco Gómez et al., 2018) "Depression is a mental disorder characterized by sadness, guilty feeling, complex of inferiority, sleep or appetite disturbances, fatigue, and difficulty on concentration. He also defines anxiety as "a terrible anticipation of imminent danger, accompanied by a strong sensation in any geographical area of the body that indicates something serious."

This research was part of the deterioration of Impaired sleep patterns of rotary nursing internships of the Faculty of Health Sciences of the Technical University of Ambato and aims to analyze the deterioration of sleep patterns of rotating nursing students according to the North American Nursing Diagnosis Association (NANDA).

THEORETICAL FRAMEWORKS

However, as previous studies have highlighted, those who work in the health sector are disproportionately affected, as they are subject to on-call systems, long working hours and shift work and are a group with various health problems, such as digestive disorders, work issues, family problems, premature aging, etc. It is influenced by sleep habits in terms of quality, quantity and time (Díaz-Ramiro et al., 2020). Subsequently, with respect to sleep patterns, it was decided to label the previous problem as NANDA, therefore " Impaired sleep patterns", since it more reflects the loss of quantity and quality of sleep (Martil Marcos et al., 2019). It is possible that some exogenous variables such as COVID vaccination may also have effects on the quality of sleep of a few health professionals (Pullupaxi & Cusme, 2022).

Thus, historically Latin America is one of the regions most affected by catastrophic diseases and epidemics, and both nurses and interns experience sleep problems, with rates of sleep disorders ranging from 51.9% to 79.52% for rotating interns (Burga, 2018). On the other hand, Asian epidemiological data shows that in China, Hong Kong and Malaysia, about 50% of rotary interns are sleep deprived, resting only 6 hours, and the prevalence is higher in men. This is due to the theoretical and practical burden of time, as well as certain beliefs, such as willpower, that sleep can be overcome. (Villavicencio Gallego et al., 2020).

Regarding Mexico, the results of the research work showed that at the end of the internship, the quality of sleep of rotary nursing internships due to the level of service, the guards, the patients and their rotating workday, thus becoming clinical manifestations during the day drowsiness (Gómez Landeros et al., 2019). Also, according to a National Sleep Foundation study in the United States, 40 percent of people ages between 18 to 29, including nursing students or trainees, sleep less than six hours a day, according to Sleep Hour Alert. (Carrillo-Esper et al., 2019). Similarly, research in Chile showed that a large proportion of rotary nursing internships had disturbed sleep patterns due to the demands of certain rotations or workload (Flores et al., 2021).

Then, in Ecuador, the quality of sleep among the students in Manabí is reduced, since sleep is currently delayed, which many see as a waste of time, and the consumption of substances such as energy drinks, alcohol, coffee or the bad eating habits can somehow contribute to this affect sleep, it can cause not only lethargy, but also cause conditions such as hypertension, obesity or other cardiovascular diseases (Cobacango Villavicencia et al., 2019). Similarly, in Guayaquil, rotary nursing internships patterns got worse during rotation, suggesting that daytime sleepiness is often present to cause stress, anxiety, and memory impairment (Zúñiga- Vera et al., 2021).

METHODS

The study was developed according to the quantitative approach of (Collado & Lucio, 1997). It is sequential and follows a strict sequence, it uses statistical methods and reaches a series of conclusions, and the research design is based on non-experimental models, because it is a model where the variables are not deliberately manipulated, because the situation and its effects exist, the phenomenon is observed and thus can be analyzed. In this way, it is descriptive because the data is collected at the same time when it comes to the amount of research, it is eloquent because it acquires data to achieve the phenomenon described by the variables in our sample research.

This study was calculated over 98 rotary nursing internships Technical University of Ambato cohort 2022-2023, a random sampling was carried out in order to obtain valid results, selecting 78 rotating interns from the different hospitals.

Included:

• Rotating nursing interns from the Technical University of Ambato.

• Interns who agreed to be part of the study.

• Rotating interns belonging to the cohort September 2022- August 2023.

Excluded:

•Rotating nursing interns that do not belong to the Technical University of Ambato.

•Rotating nursing interns who do not belong to the study cohort.

Data collection plan:

The technique by which information was obtained was the survey, thus using the Pittsburgh Sleep Quality Index (PSQI) in its Spanish version, with a Cronbach's alpha of 0.84, guaranteeing its reliability. Thus, the survey has 19 self-assessed questions and 5 questions evaluated by the patient's room attendant if available, where the components are: subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleeping medications, and daytime dysfunction. The score for each component is from 0 to 3, where 0 is very good and 3 is very bad, only self-applied questions are included in this score.

The instrument was applied by the Google Forms survey, obtaining the results that were processed in Excel and in the statistical program IBM SPSS 25, which allowed obtained descriptive statistics, enabling the preparation of frequency tables. In the present study, ethical aspects were taken into account according to the Declaration of Helsinki, fulfilling with the principles of confidentiality, autonomy and respect (Carreño Rimaudo et al., 2021).

RESULTS AND DISCUSSION

Analyzing a group of rotating nursing interns of the September 2022-August 2023 cohort of the Technical University of Ambato, 56.4% have an average age between 20 and 22 years, 42.3% an age between 23 and 26 years and 1.3% older than 27 years. The marital status of the study subjects is 94.9% single, 3.8% are married and 1.3% are divorced. Thus, 21.8% are male and 78.2% are female. Table 1 summarize the main sociodemographic variables.

Table 1 Sociodemographic variables of rotating nursing interns

Sociodemographic Variables			
		N	**%**
Age	**20-22 years old**	44	56,4
	23-26 years old	33	42,3
	27 years and +	1	1,3
	Total	78	100
Status	**Single**	74	94,9
	Married	3	3,8
	Divorced	1	1,3
	Total	78	100,0
Gender	**Male**	17	21,8
	Female	61	78,2
	Total	78	100,0

Note: Prepared by authors with research data

The average of the study group on the seven components of the Pittsburgh Sleep Quality Index responses (PSQI) shows that regarding the first component, 42.3% of the study group have reduced subjective sleep quality. Then, the second component, sleep latency in the study group shows a majority of 41% with a feeling of difficulty sleeping at least once a week, while the average normal time to fall asleep is between 16 to 30 minutes with 46.2%.

The third component shows that the average sleep period of the majority of the study group is 6 to 7 hours in 33.3% followed by 5 to 6 hours with 30.8%. The fourth component shows that 59% of rotating nursing interns have a sleep efficiency greater than 85%. The fifth component shows that 61.5% of the interns have sleep disturbances at least once a week. The sixth component presents that 82.1% of the rotating nursing interns have not taken sleeping medicine on any occasion during the last month.

Finally, the seventh component shows that 44.9% of the study subjects had daytime sleep dysfunction at least once a week while 41% had sleepiness at least once a week, in the same way 55.1% of the interns had a slightly problem in their attitude to perform daily activities such as driving or eating. Table 3 summarize the main components of PSQI survey responses.

Table 2 Average Pittsburgh Sleep Quality Index (PSQI) responses

Average Pittsburgh Sleep Quality Index responses. (PSQI)

		N	%	N	%	N	%	N	%	N	%
C 1	Global	Very Good		Fairly Good		Fairly bad		Very bad		Total	
		12	15.4%	29	37.2%	33	42.3%	4	5.1%	78	100.0%
C 2	Global	Less than 15 minutes		Between 16-30 minutes.		Between 31-60 minutes		More than 60 minutes		Total	
		23	29,5%	36	46,2%	11	14,1%	8	10,3%	78	100.0%
	Feeling of difficulty falling asleep	None the last month		Less than one a week		Once or twice per week		Three or more times per week		Total	
		10	12,8%	32	41,0%	27	34,6%	9	11,5%	78	100.0%
C 3	Global	> 7 hours		6-7 hours		5-6 hours		< 5 hours		Total	
		13	16,7%	26	33,3%	24	30,8%	15	19,2%	78	100.0%
C 4	Global	>85%		75-84%		65-74%		<65%		Total	
		46	59,0%	11	14,1%	8	10,3%	13	16,7%	78	100.0%
C 5	Global	None the last month		Less than one a week		Once or twice per week		Three or more times per week		Total	
		3	3,8%	48	61,5%	23	29,5%	4	5,1%	78	100.0%
C 6	Global	None the last month		Less than one a week		Once or twice per week		Three or more times per week		Total	
		64	82,1%	8	10,3%	6	7,7%	0	0,0%	78	100.0%
C 7	Global	None in the last month		Less than one a week		Once or twice per week		Three or more times per week		Total	
		12	15,4%	35	44,9%	26	33,3%	5	6,4%	78	100.0%
	Drowsiness	15	19,2%	32	41,0%	21	26,9%	10	12,8%	78	100.0%
	Attitude problem to perform activities	No problem		Slighthy problem		Problem		Serious problem		Total	
		21	26,9%	43	55,1%	13	16,7%	1	1,3%	78	100.0%

C1: Subjective Sleep Quality, C2: Sleep Latency, C3: Sleep lapsus, C4: Sleep efficiency C5: Sleep disturbances, C6: Use of sleep medication, C7: Daytime dysfunction, Global: Category result.

Note: Prepared by authors with research data

On the other hand, the global score of the sample evidences that 19.2% of the rotating nursing interns of the

September 2022-August 2023 cohort of the Technical University of Ambato, got good sleep while 80.8% of the interns have a poor quality in sleeping with severe difficulties in at least 2 fields, and moderate difficulties in at least 3 fields. In the Table 3, overall results are summarized.

Table 3 Sleep Quality overall results

PSQI Results		
	N	**%**
Good sleeping	15	19.2
Poor sleep quality with severe issues in 2 or 3 moderated fields at least.	63	80.8
Total	78	100

Note: Prepared by authors with research data.

It was examined whether there is a statistically significant relationship among the seven constituents of the PSQI questionnaire and the variables age, marital status and gender. The outcomes demonstrate that the fourth component "sleep efficiency" has a statistically significant association with the gender of nursing interns, this is evidenced by a p-value of 0.006 at a confidence level of 99%, adding a negative correlation is seen moderated established by a Spearman test of -0.309. The following table shows that women have a higher quality of sleep, this determined because 65.6% of women have a sleep efficiency greater than 85% while in men 29.4% have an efficiency higher than 85%. of sleep less than 65%.

It is evidenced that the sixth component "Use of sleep medications" is statistically linked to marital status p-value 0.001 at a significance level of 99% with a moderate positive confirmation power given by a Spearman's rho of 0.364, equally the way drug consumption is statistically related to gender, this with a p-value of 0.007 at a significance level of 99% and with a moderate negative correlation power given by Spearman's rho of -0.304. There results are presented in the Table 4.

Table 4 Statistical Correlation 1

	Normality test	Age		Status		Gender	
	K-S	Spearman Rho	p-value	Spearman Rho	p-value	Spearman Rho	p-value
C 1: Sleep efficiency quality	0,000	0,016	0,888	0,082	0,478	0,222	0,051
C 2: Sleep latency	0,000	0,214	0,060	0,017	0,882	0,112	0,329
C 3: Sleep period	0,000	0,078	0,498	-0,004	0,975	-0,070	0,545
C 4: Sleep efficiency	0,000	0,106	0,358	-0,104	0,363	-,309**	0,006
C 5: Sleep disturbances	0,000	0,103	0,368	0,072	0,533	-0,001	0,994
C 6: Use of sleeping medicine	0,000	0,199	0,080	,364**	0,001	-,304**	0,007
C 7: Daytime dysfunction	0,000	0,032	0,778	0,149	0,192	0,048	0,676

**. correlation is significative at 0.01 level (bilateral)

K-S Kolmogorov-Smirnov

Note: Prepared by authors with research data.

In addition, in the following Table 5, it can be evidenced that women have a lower ingesting of sleep medications than men, this determined by 88.5% of women who have not ingested any medication in the last month in relation to with 58.8% of men. And for marital status, it is evidenced that 100% of the divorced people took medication less than once a week, and 85.1% of singles have not ingested any medication in the last month, and 66.7% of married people auto-

medicated once or twice in a week. The Box 1 presents a summarize of this gender insights.

Box 1: Gender Insights

		Gender			Civil Status:					
		Male	Female	Total	Single	Married	Divorced	Widowed	Concubinage	Total
		%	%	%	%	%	%	%	%	%
Component 4	>85%	35,3%	65,6%	59,0%	----	----	----	----	----	----
	75-84%	0,0%	18,0%	14,1%	----	----	----	----	----	----
	65-74%	35,3%	3,3%	10,3%	----	----	----	----	----	----
	<65%	29,4%	13,1%	16,7%	----	----	----	----	----	----
	Total	100,0%	100,0%	100,0%	----	----	----	----	----	----
Component 6	None in the last month	58,8%	88,5%	82,1%	85,1%	33,3%	0,0%	0,0%	0,0%	82,1%
	Less than one a week	29,4%	4,9%	10,3%	9,5%	0,0%	100,0%	0,0%	0,0%	10,3%
	Once or twice per week	11,8%	6,6%	7,7%	5,4%	66,7%	0,0%	0,0%	0,0%	7,7%
	Three or more times per week	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
	Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	0,0%	0,0%	100,0%

Note: Prepared by authors with research data.

Main implications of the results

In this study, it is evident that the major part of rotating nursing interns are female. In recent decades there has been greater interest in the condition of sleep, increasing consciousness according to good sleep (López Alegría et al., 2020). This condition in the young population becomes significant and attributable to the habits they have currently, thus arising the intention of expanding the length of sleep at night, also being linked with health aids (Ramar et al., 2021).

In this context, rotating nursing interns time of sleep is 6 to 7 hours a night, a greater pattern than the general residents of Chile, who sleep 5:49 hours a night (López Alegría et al., 2020). Thus, our population has a low range of what the National Sleep Foundation of the United States suggest, which is 7 to 9 hours in individuals among 18 and 64 years old. Then, comparing the sleep patterns of college students studied from other institutes, there is the research by (Flores et al., 2021), done with 147 participants that had an average of 4 to 6 hours. In addition, we have the research done by (Ara et al., 2022), with a total of 278 people getting an average of 7.3 sleeping hours. Thus, the literature points that the tendency in this study have inadequate sleep patterns.

Regarding the presence of drowsiness, it was presented in 41% of the individuals in our research, similar to the report by (Ortiz López, 2021), with a total of 85 individuals, indicating that 73.5% have an elevated level of daytime sleepiness. Although, the examination done by (Bravo et al., 2021), obtains 33.6% sleepiness. Thus, the self-evaluation of sleep by our individuals ranks as 42.3% poor sleep quality, very comparable to the results got by (Miniguano & Mayorga, 2022), who reported 42% very poor. Considering sleep latency, the average time to fall asleep is 16 to 30 minutes with 46.2%, despite the fact that in the research by (Bravo et al., 2021), results evidence that 27.8% took a minority time than 15 minutes to fall asleep at nighttime. Hence, in relation to gender, it can be distinguished that men have a sleep poor quality in relation to women, like the study done by (Villavicencio Gallego et al., 2020) which agrees that men usually present a higher rate of sleep poor quality.

CONCLUSIONS

Finally, in the current research it is concluded that the rotating nursing interns of the September 2022-August 2023 cohort of the Technical University of Ambato have a depreciation in the sleep pattern with few rest hours, interruption among it and presence of drowsiness; giving outcomes a slight problem in his attitude to perform daily activities such as driving or eating. Consequently, the individuals have difficult when sleeping, a problematic phase that could present self-medication, the present study shows that results were obtained from taking medication to sleep and more evidenced in divorced individuals and male rotating nursing interns, capable to cause drug dependence in the coming days or the beginning of self-medication in rotating nursing interns.

The results found over this research permitted us to value that the decline of the sleep pattern showed a vital aspect in the daily life activities of rotating nursing interns, subsequently with this research it was demonstrate that the existence of drowsiness when doing their daily activities could be a risk in their job and academic performance. One of the main limitations of this study, was the homogeneity and size of the sample, in addition to this the lack of counterfactuals for hard comparison and generalization of results. Future research can direct their efforts to comparative studies between regions of Ecuador itself and internationally in Latin America. In the same way, we suggest that more advanced inferential methods such as impact evaluations and randomized experiments be conducted to evaluate the present results.

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Contribution of each author to the manuscript:

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	A1	A2
A. theoretical and conceptual foundations and problematization:	80%	20%
B. data research and statistical analysis:	90%	10%
C. elaboration of figures and tables:	90%	10%
D. drafting, reviewing and writing of the text:	50%	50%
E. selection of bibliographical references	90%	10%
F. Other (please indicate)	-	-