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WORK SHIFTS: CHRONOTYPE RELATIONS AND QUALITY SLEEP TURNOS DE TRABALHO: RELAÇÃO COM O CRONÓTIPO E QUALIDADE DO SONO TURNOS DE TRABAJO: RELACIÓN CON EL CRONÓTIPO Y LA CALIDAD DEL SUEÑO

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ABSTRACT

Objectives: classifying the chronotypes of nurses and verifying the relation between shift work and sleep quality. **Method:** an exploratory and descriptive study with a sample of 239 nurses. Questionnaires were used for identification of the sample, the Quality Index Pittsburgh Sleep (PSQI), and Chronotype Horne and Östberg (1976). For data analysis we used the statistical program Excel. The research project was approved by the Research Ethics Committee, Protocol 441/06. **Results:** the female gender was predominant (90,79%); the average age between 20-29 years old (42,68%); and 44,77% are married. 67,36% worked during the day. The predominant chronotype was type Moderately Morning. As the quality of sleep, 83,26% had poor quality. **Conclusion:** the nurses had poor sleep quality, probably by the effect of shift work. It is suggested that those responsible for nursing services consider the particularities of individuals and shifts. **Descriptors:** Nursing; Sleep; Workday; Working Conditions; Occupational Health.

RESUMO

Objetivos: classificar os cronótipos dos enfermeiros e verificar a relação com o turno de trabalho e qualidade do sono. **Método:** estudo exploratório e descritivo, com amostra de 239 enfermeiros. Utilizou-se de Questionários para Identificação da Amostra, do Índice de Qualidade do Sono de Pittsburgh (PSQI), e do Cronótipo de Horne e Östberg (1976). Para a análise dos dados utilizou-se o programa estatístico Excel. O projeto de pesquisa foi aprovado pelo Comitê de Ética em Pesquisa, Protocolo nº 441/06. **Resultados:** o sexo feminino foi predominante (90,79%); a idade média entre 20-29 anos (42,68%); e, 44,77% são casados. 67,36% trabalhavam no período diurno. O cronótipo predominante foi o do tipo Moderadamente Matutino. Quanto à qualidade do sono, 83,26% apresentavam qualidade ruim. **Conclusão:** os enfermeiros apresentaram qualidade de sono ruim, provavelmente pelo efeito do trabalho em turno. Sugere-se que os responsáveis pelo serviço de enfermagem considerem as particularidades dos indivíduos e dos turnos de trabalho. **Descritores:** Enfermagem; Sono; Jornada de Trabalho; Condições de Trabalho; Saúde do Trabalhador.

RESUMEN

Objetivos: clasificar los cronotipos de enfermeras y verificar la relación entre el trabajo por turnos y la calidad del sueño. **Método:** estudio exploratorio y descriptivo, con una muestra de 239 enfermeras. Los cuestionarios se utilizan para la identificación de la muestra, la calidad de sueño de Pittsburgh Índice (PSQI), y el Cronotipo de Horne y Östberg (1976). Para el análisis de los datos se utilizó el programa estadístico Excel. El proyecto de investigación fue aprobado por el Comité Ético de Investigación, Protocolo 441/06. **Resultados:** el sexo femenino fue predominante (90,79%); el promedio de edad entre 20 y 29 años (42,68%); y 44,77% están casados. 67,36% trabajaba durante el día. El cronotipo predominante fue de tipo Moderadamente Mañana. Como la calidad del sueño, 83,26% tenían mala calidad. **Conclusión:** las enfermeras tenían mala calidad del sueño, probablemente por el efecto del trabajo por turnos. Se sugiere que los responsables de los servicios de enfermería consideran las particularidades de los individuos y los turnos. **Descritores:** Enfermería; Sueño; Día de trabajo; Condiciones de Trabajo; Salud Ocupacional.

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INTRODUCTION

Chronobiology is a branch of science that studies the different biological rhythms in living organisms. It is the science that studies the interaction of man and the temporal organization of biological phenomenon. Studies¹⁻² have contributed in an attempt to explain what happens to people who perform activities outside the usual time.

It is possible to observe rhythms that are characterized as functional states which vary periodically in time, for example, circadian 24 hours approximately ranging periods from 22 to 28 hours. The living beings react differently in each period of the day. There are times that some are totally unwilling to certain activities, while in another it does not.³

Chronobiology divides the population into three basic chronotypes to assessing individual differences in the prevalence by hours of wakefulness and sleep. There are those that are classified as type of evening, the morning and kind of indifferent type.⁴ The characteristics of morning and evening chronotypes of individuals are important to determining the periods of best performance and well-being. The alterations can be accentuated, depending on the organization of circadian rhythmicity of each one.¹

At work on a permanent shift the individual is forced to reverse his bedtime, which causes damage to his health. The disorder of the structure of the circadian rhythm causes fatigue, malaise, drowsiness, insomnia, among other symptoms.⁵ And directly affects the quality of life of these professionals and their social relations.⁶⁻⁸

Given the context of chronobiology and individual adaptation to shiftwork differences, should give particular attention to provision of working hours attention, in order to consider not only the economic reasons of the institutions, but also the workers, particularly related to the physiology of the human body, individual differences, adapt to shift work and possible effects on health and wellbeing.

OBJECTIVE

- Sorting the chronotypes nurses.
- Checking the connection with shift work and sleep quality.

METHOD

This study is part of the dissertation << Occupational stress in nurses in the region of Vale do Paraíba Paulista. A research on the influence of working hours and the type of

chronotype in relation to occupational stress of nurses and changes in sleep-wake cycle was performed. This is an exploratory and descriptive study.

As authorized by Health Facility, the study was conducted in the period from March to January 2007/2008, in 26 institutions in 13 cities in the Vale do Paraíba Paulista: Cachoeira Paulista, Campos do Jordao, Cruzeiro, Guaratinguetá, Ilhabela, Jacarei, Paraibuna, Pindamonhangaba, São José dos Campos, São Sebastião, Taubaté, Tremembé and Ubatuba.

The sample comprised 239 nurses, it was divided into two groups according to the day and night shift work: The work regime for daytime shifts consisted of eight and six. For the period of eight hours, working hours comprised the period from 7:00am to 5:00pm, with two days off on weekends, and for the period of 12 hours, from 7:00am to 7:00pm, 36 hours off. The shift of six hours comprised periods: morning and evening. The morning shift is from 7am to 1:00pm, and the evening from 1:00pm to 7:00pm, with a duty of 12 hours every 15 days. The scheme of work for the night shift was 12 hours and 36 hours off, from 7:00pm to 7:00am the next morning. The study included only those who agreed to participate in this study and signed a consent form.

To collect data for the Questionnaire Sample Identification, which aimed to record sociodemographic characteristics, the Quality Index Pittsburgh Sleep (PSQI), to quantify the quality of sleep, and the Identification of Individuals Questionnaire was used Evening and morning - chronotype of HORNE and ÖSTBERG 1976, which consists of questions regarding usual situations of daily life, and the individual must register its preferred schedule for these situations, assuming that there is total time available for choice. The result of the questionnaire is a numerical value, according to which the individual can be classified into one of five chronotypes: extreme morning (9-15 points), moderately morning (16-20 points), indifferent (21-26 points) moderately afternoon (27-31 points) and extreme evening (32-38 points). The statistical program Microsoft Office Excel 2007 software for data tabulation was used.

It was submitted to the University of Taubate Research Ethics Committee and was approved with the number protocol CEP/UNITAU No. 441/06.

RESULTS AND DISCUSSION

This research was predominantly female - 217 (90.79%). A greater number of female



professionals confirms the trend to the predominance of women working in health area.⁹⁻¹¹

As to age, it was observed that: 102 (42.68%) are between 20 and 29 years old; 78 (32.64%), between 30 and 39 years old; 47 (19.67%) between 40 and 49; and 12 (5.02%), over 50 years old. These data show that the majority of nurses are aged between 20 and 39, for a total of 180 (75.32%), which features a group of young adults.

From the total number of nurses surveyed, 107 (44.77%) were married; 93 (38.91%), single; 23 (9.62%), widowed; and 16 (6.69%), divorced. These figures corroborate the results of other studies^{10,12}, where the authors obtained similar numbers, with a predominance of married nurses.

As for the schedule of working hours, 161 (67.36%) work in the daytime and 78 (32.64%) shift work night shift. This fact occurs due to a common practice nowadays, due to the institutional needs that require ongoing development, in order to service the demand for care.¹³

It appears that the 78 (32.64%) nurses night shift, 32 (41.03%) work a year to three years in that period; 16 (20.51%) from four years to six years; 13 (16.67%) of seven to 10 years; 10 (12.82%) less than one year; 4 (5.13%) 11-19 years; and 3 (3.85%), for more than 20 years. It can be observed that 36 (46.16%) work the night shift for more than four years. Much of life, the professional working in shifts is opposite to the society, and benefits such as additional wages, do not compensate for the restrictions they face in their lives. Thus, the shift can lead individuals to poor performance in activities in the personal and professional life and your health and expose patients to greater risks.¹⁴

Is it possible raising hypotheses that the choice for working hours in night shift be given by the individual needs, including better wages, since the professionals receive additional nightly.

The results showed that 178 (74.48%) have only one activity and 61 (25.52%) have more of a professional activity. Regarding the type of other activities, 29 (45.90%) of nurses act as teachers in nursing; 21 (34.43%), and nurses at another institution; 7 (11.48%) reported

other activity such as housework; 3 (4.92%) working on trade; and 2 (3.28%) and safety. Of the 61 nurses who have other activity, 36 (59.02%) work the day shift, and 25 (40.98%), the night shift.

In addition to the needs of businesses, other issues that show the frequency of shift work and double shifts are linked to their studies, the children and the wage issue.^{6,15} Nurses tend to seek new sources of income and need to face dual activity, which can cause problems with regard to their quality of life.

The Quality Index Pittsburgh Sleep (PSQI) was used to assess sleep quality. To score, the scale ranges from zero to 21 points, and scores greater than five imply poor sleep quality.¹⁶

The data observed in this study indicate that 199 (83.26%) nurses had scores above 5, which represents a poor quality of sleep, and 40 (16.74%) nurses had scores below 5, which is a good quality sleep.

In the survey on the perception of sleep quality among nursing professionals, it was observed that the quality of sleep for night shift workers showed statistically significant differences between the means of the episodes of nocturnal sleep and daytime sleep, being daytime sleep considered the worst quality. For workers the day shift, differences were found only between the quality of daytime sleep on rest days, compared to the quality of sleep in days of labor, as in the days of rest people could sleep more.¹⁷

Table 1 shows that 22 (55.00%) of nurses with good quality sleep refer doze and 18 (45.00%) reported no napping. Nurses with poor quality of sleep, 113 (56.78%) reported that nap, and 86 (43.22%), which do not.

Table 1. Distribution of responses about the quality of sleep and the habit of naps - Vale do Paraíba Paulista - 2007/2008.

Nap	Sleep quality			
	Good		Bad	
	n	%	n	%
Yes	22	55.00	113	56.78
No	18	45.00	86	43.22
Total	40	100	199	100



In the study about the analysis of the characteristics of sleep¹², it was observed that the sleep patterns of nurses of the morning could be generating a sleep debt, characterized by shorter duration of total sleep time and the habit of napping to offset fatigue.

Of the 135 nurses who doze, 89 (65.93%) stated that they intentionally do, and 46 (34.07%) report no. One can also verify that 57 (42.22%) nap for pleasure; 70 (51.85%), by necessity; and 8 (5.93%), by other reasons not specified.

Observe desynchronization between biological rhythms and environmental cycles, therefore the conditions and work organization significantly influence tolerance to shiftwork and night.¹⁸ Individuals who work the night shift are forced to reverse its pattern normal sleep-wake, and try to keep their social and family activities during free time and days off.

As to the damage and impact on the lives of nursing, there is a need for managers to be sensitive to effects of sleep deprivation in this health professional. Although the night nursing work is necessary, the institutions must create mechanisms and interventions

that minimize the effects of this shift in health workers'.¹⁹

The results of this research show that the most frequent chronotypes were the moderately morning type (41.42%) and the indifferent type (37.24%). With smaller percentages, moderately evening (9.21%), extreme morning (7.95%) and extreme evening (4.18%). These findings are corroborated by the results of research conducted on the influence of the work shift and chronotype on quality of life of nursing. Which showed that the chronobiological agreement with the shift can be constituted as a factor of quality of life for nursing staff.²⁰⁻²¹

In Table 2 we observe that the day shift nurses: 50 (31.06%) were indifferent sort; 18 (11.18%), morning extreme; 73 (45.34%), moderately morning; 14 (8.70%), moderately evening; and 6 (3.72%), extreme afternoon.

Among the night shift nurses, 39 (50%) are classified as the type indifferent; 1 (1.28%) as extreme morning; 26 (33.33%), moderately morning; 8 (10.26%), moderately evening; and 4 (5.13%), extreme afternoon.

Table 2. Classification of Chronotype in shifts - Vale do Paraíba Paulista - 2007/2008.

Chronotype	Day		Night		Total
	n	%	n	%	
Indifferent	50	31.06	39	50.00	89
Extreme morning	18	11.18	1	1.28	19
Moderately early	73	45.34	26	33.33	99
Moderately vespertine	14	8.70	8	10.26	22
Vespertine extreme	6	3.72	4	5.13	10
Total	161	100	78	100	239

The moderately morning individuals work mostly in the morning, while the indifferent types worked the afternoon shift. As they age, they become more morning.¹ Individual differences in adaptation to shiftwork vary with each individual, and continuous exposure to irregular work schedules affect biological rhythms, sleep disturbances and mood may

occur, gastrointestinal and cardiovascular problems.

In Table 3, the results indicate that among the 89 nurses with indifferent chronotype, 14 have good quality sleep and 75 have poor sleep quality as assessed made by the PSQI. The morning type extreme nurses was observed in 19; 6 have good sleep quality; and 13, poor sleep quality.

Table 3. Classification of chronotype and its relation with sleep quality by PSQI - Vale do Paraíba Paulista - 2007/2008.

Chronotype	Sleep Quality (PSQI)	
	Good	Bad
Indifferent	14	75
Extreme morning	6	13
Moderately early	16	83
Moderately vespertine	3	19
Extreme vespertine	1	9
Total	40	199



For moderately morning type, it is observed that out of 99 nurses, 16 have good quality of sleep, and 83, poor sleep quality. Of the 22 nurses moderately evening type, three have good sleep quality, and 19, poor sleep quality. And the 10 nurses extreme evening type, one has good quality sleep, and 9, poor sleep quality.

The quality of daytime sleep after a night of work is poor when compared to the quality of nocturnal sleep after daytime work. This occurs for several reasons, and the main one is the lack of synchronization between daytime sleep and biological rhythms.²²

CONCLUSION

The predominance of females confirmed trend towards feminization of activities in nursing. It was also found predominance of married professionals, in full production.

The predominant chronotype was type Moderately Morning. As referred to the sleep quality of nurses, it was observed mostly had scores above five, which represented a poor quality of sleep. The hypotheses about poor sleep quality of these nurses could be related to time of the work shift, the general conditions of work and the type of individual preference.

The results of this research should instigate studies of nurses from other institutions that have the same working conditions they offer, those responsible for the health and the heads of the nursing staff, an evaluation of the importance of organizational culture and its effects institutions. Consequently, these institutions, to consider the particularities of individuals and work shifts, promote better quality of care to their customers.

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