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Factors that affect inpatients' quality of sleep*

FATORES QUE INTERFEREM NA QUALIDADE DO SONO DE PACIENTES INTERNADOS

FACTORES QUE INTERFIEREN EN LA CALIDAD DEL SUEÑO DE PACIENTES INTERNADOS

Shíntia Viana da Costa¹, Maria Filomena Ceolim²

ABSTRACT

The aim of this study was to identify factors that interfere with the sleep quality of patients admitted to a university hospital in a city in the state of São Paulo, Brazil. This was an exploratory, cross-sectional study using non-probability sampling. Participants were 117 patients (59% men, mean age 48.0 years, standard deviation 16.9) hospitalized for at least 72 hours in stable clinical condition. The data were collected with an identification questionnaire and the Factors Affecting Sleep Quality (FASQ) questionnaire. Data processing was performed with descriptive statistics; each item of the FASQ underwent a test and a retest. The factors most often reported were waking up early (55.6%), disrupted sleep (52.1%), excessive lighting (34.2%), receipt of care by nursing staff (33.3%) and organic disorders such as pain and fatigue (26.5%). It is suggested that nurses should plan interventions to modify factors that require intense noise and lighting at night in order to reduce disruption and, consequently, sleep deprivation among patients.

DESCRIPTORS

Sleep
Inpatients
Nursing care

RESUMO

Este estudo objetivou identificar fatores que interferem na qualidade do sono de pacientes internados em hospital universitário do interior de São Paulo. Trata-se de estudo exploratório, de corte transversal, com amostragem não probabilística. Participaram 117 pacientes (59% homens, idade média de 48 anos, desvio padrão 16,9) internados há pelo menos 72 horas, em condições clínicas estáveis. Os instrumentos utilizados foram: questionário de identificação e Fatores Intervenientes na Qualidade do Sono (FIQS). O tratamento dos dados foi feito com estatística descritiva e cada item do FIQS foi submetido a teste e reteste. Os fatores apontados com maior frequência foram: acordar cedo (55,6%), sono interrompido (52,1%), iluminação excessiva (34,2%), recebimento de cuidados pela equipe de enfermagem (33,3%) e distúrbios orgânicos como dor e fadiga (26,5%). Sugere-se que os enfermeiros planejem intervenções buscando modificar fatores que propiciam ruídos e iluminação intensos à noite, visando reduzir interrupções e, conseqüentemente, a privação de sono.

DESCRIPTORES

Sono
Pacientes internados
Cuidados de enfermagem

RESUMEN

Se objetivó identificar factores que interfieren en la calidad del sueño de pacientes internados en un hospital universitario del interior de São Paulo. Estudio exploratorio, transversal, con muestra no probabilística. Participaron 117 pacientes (59% masculinos, media etaria 48,0 años, desvío estándar 16,9) internados al menos hace 72 horas, en condiciones clínicas estables. Se utilizaron los instrumentos: cuestionario de identificación y Factores Intervenientes en la Calidad del Sueño (FIQS). Los datos se analizaron según la estadística descriptiva, cada ítem del FIQS fue sometido a prueba y contraprueba. Los factores señalados como más frecuentes fueron: despertar temprano (55,6%), sueño interrumpido (52,1%), iluminación excesiva (32,4%), recepción de cuidados de enfermería (33,3%) y disturbios orgánicos, como dolor y fatiga (26,5%). Se sugiere que los enfermeros planifiquen intervenciones buscando modificar factores generadores de ruidos e iluminación intensa por la noche, apuntando a reducir interrupciones y consecuentes privaciones en el sueño.

DESCRIPTORES

Sueño
Pacientes internos
Atención de enfermería

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INTRODUCTION

Sleep is an unconscious state in which a person can be woken up by sensory or other stimuli⁽¹⁾. In human beings, sleep is a cyclical process that is composed of five alternating and mutually different stages or phases. In physiological terms, these differ according to the pattern of brain waves retained through the encephalogram (EEG), to the presence or lack of rapid eye movements and changes in other variables such as muscle tension and cardio-respiratory pattern. The proportions of each stage vary according to age⁽²⁾.

To be in a good state of alertness, adults require an average of seven to eight hours of sleep in a 24-hour period, and waking up during the night represents up to 5% of the total time spent in bed. Sleep cycles in that age range present a pattern in which the person spends approximately 30% in paradoxical sleep, 20% in deep sleep and 50% in superficial sleep⁽³⁾.

Homo sapiens is a day species that is adapted to perform activities during the light period of the light/dark cycle and rest during the dark period. The development of the human visual system and its dependence on light information is what makes it a day species. The main sleep period for the human species is, therefore, during the dark phase⁽⁴⁾.

In addition to the physiologic parameters, sleep quality is an important factor to be assessed for two reasons. Firstly, complaints about sleep quality are common. Difficulty in falling or staying asleep is the main factor affecting sleep quality and affects approximately 15% to 35% of cases. Secondly, poor quality sleep is an indication of various illnesses. Sleep quality disorders can negatively affect people's feelings, ideas and motivation.

The physical and cognitive symptoms of people with poor sleep quality are the following: tiredness, loss of concentration, fatigue, increase in pain sensibility, anxiety, distress, irrational ideas, hallucinations, loss of appetite, constipation and increased risk of accidents. It is known that sleep problems cause tension, delay wound healing, increase the perception of pain and also contribute to the difficulty in performing daily tasks⁽⁵⁾.

Hospitals are usually environments where having high-quality sleep is a challenge. The reasons why sleeping in a hospital might not be a restful or restorative experience can be classified into the following three groups of factors: environmental (for example, loud noises and excessive lighting), physiological or organic (such as pain and nausea) and psychological (for example, distress and anxiety)⁽⁵⁻⁶⁾.

In a study undertaken at a specialized women's health service at a teaching hospital located in Campinas (SP), the author observed that the main factors patients

mentioned as being responsible for the interruption of their night sleep were environmental factors, such as the care health professionals provided to them (92%) and their fellow patients (84%). In addition to these factors, among female patients, 44% referred to the noise caused by equipment placed near the bed, the noise caused by patients who were generally in poor health or who were agitated and the need to use the bathroom or the urinal. Excessive lighting was cited as an influential factor by 52%, and environment noises were cited by 36%⁽⁷⁾.

However, it is known that in a hospitalization situation, patients' intrinsic factors can also negatively affect their night sleep. Amongst them, organic factors related to their clinical situation and treatment, such as pain and emesis, and psychological factors related to their own stressful situation, such as fear, concern, distress and anxiety can be involved. In the above mentioned study⁽⁷⁾, 52% of the women referred to psychological factors as being harmful to their sleep quality during their hospital stay, and 44% of them referred to organic disorders, such as gastrointestinal disorders, fatigue and pain.

This set of intrinsic and extrinsic factors can seriously compromise the sleep quality of hospitalized patients. Based on the identification and analysis of these factors, and seeking to assess which are the most frequent and relevant in their daily practice, nurses can plan interventions to assist patients in achieving better sleep quality during their hospital stay.

The objective of this study is to identify the factors that most frequently affect the sleep quality of patients staying in wards at a teaching hospital located in a country town in the state of Sao Paulo.

METHODS

Type of study: Exploratory and observational cross-sectional study with non-probability sampling.

Research field: Developed at clinical and surgical hospitalization units for adults (except for the neurology, neurosurgery and psychiatry clinics) at a university hospital of a country town in the state of Sao Paulo.

Subjects: One hundred seventeen patients hospitalized at selected units who complied with inclusion and exclusion criteria. The sampling size was based on the duration of data collection, which was from September 2009 to February 2010.

Inclusion criteria: Minimum age of 18; hospitalized for at least 72 hours; stable clinical conditions; preserved notion of time, space and their own self; capacity to verbally communicate.

Exclusion criteria: Recently post-operative (up to 24 hours); anticipated hospital discharge on the day of the data collection; serious visual disability with non-tolerance to light; serious hearing disability (deafness); previous participation in the same study (cases of re-admission to the hospital during the data collection period).

Instruments: Identification Questionnaire (IQ); Factors Affecting Sleep Quality Questionnaire (FASQ).

The IQ contains questions about demographic information (gender, age, marital status), lifestyle, hospitalization, clinical and health conditions, and it was specifically developed by the authors for this study. The FASQ was adapted⁽⁷⁾ according to a questionnaire used in a study about sleep quality and noises undertaken at a hospital in Belo Horizonte in the state of Minas Gerais⁽⁸⁾. Such change was considered necessary because the original questionnaire was aimed at assessing patients' sleep during the last night of their hospital stay, while the present study sought to cover a period of up to one week before the use of this questionnaire. It was submitted to judges before being used by the author⁽⁷⁾, who authorized its use in this study. It is aimed at identifying changes in sleep habits and frequency in the occurrence of sleep disorders during hospitalization that are caused by factors related to the hospital environment and the clinical condition of the patient.

The factors assessed as possibly causing disorders include the following: noises, lighting, temperature, bed comfort, psychological and organic problems, and interruptions of night sleep due to the assistance provided to patients or other patients in the same room. The frequency of their occurrence was assessed based on how many days per week such factors had occurred, and the patients were given the following response options: zero, once to twice a week, three to four times a week, and five times a week or more. The patients answered the IQ and the FASQ, and the researcher registered their responses.

Ethical Aspects: The study received approval from the Research Ethics Committee of the institution (Registration number 037/2009, homologated on March 17th 2009). All participants signed the informed consent form.

Data Collection: Data collection began with the choice of the approach sequence in relation to the hospitalization units and was followed by data collection from all patients who matched the inclusion and exclusion criteria. The FASQ was used twice with 51 patients, with a 24-hour-interval between interviews, in order to assess the consistency of the answers (test and re-test). Then, data collection continued until the completion of the intended sample of 120 individuals. After this, due to incomplete information, three individuals were excluded, yielding a total sample of 117 participants.

Data analysis: The analysis of the data was undertaken through descriptive statistics (position measures, central trends and variability, frequencies and proportions). The

FASQ was submitted to test and re-test (after 24 hours) in order to assess the consistency of the answers, using the intra-class correlation coefficient (ICC). The following classification was used: very good (ICC 0.81 to 1.00), good (ICC 0.61 to 0.80), moderate (ICC 0.41 to 0.60), poor (ICC 0.21 to 0.40), and bad (ICC less than 0.20)⁽⁹⁾. The factors assessed by the FASQ were organized according to the proportion of responses of "five times a week or more". The items with higher proportions of this response were evaluated as the ones that most affected the participants' sleep quality.

RESULTS

The 117 participants in this study were staying in one of the 13 hospitalization units studied. On average, they were 48 years old (standard deviation 16.9, median 48.9) and possessed 7.3 years of formal education (standard deviation 3.9, median 7.0). On average, they had been in the hospital for 10 days (standard deviation 8.4, median 7.0). Other characteristics of the participants are described in Table 1.

Table 1 – Characteristics of the hospitalized participants - Campinas, SP, 2009/2010

Variables	F	%
Male	69	59.0
Caucasian	75	64.1
Married/De facto relationship	72	61.5
Alcohol intake	22	18.8
Coffee intake	87	74.4
Cigarette intake	13	11.1
Physical exercise	42	35.9
Use of medication at home	87	74.4
Use of medication during hospitalization	117	100.0

Note: (n=117)

The analysis of the consistency in the responses to the FASQ among 51 participants, undertaken through the use of the intra-class correlation coefficient (ICC), did not have significant results ($p > 0.05$) for all items, thus showing its consistency.

The results obtained through the FASQ, as well as the ICC coefficients for each item, are shown in Table 2.

It was verified that a high proportion of patients reported waking up earlier in the hospital than at home, having interrupted sleep, sleeping less than they had wished and sleeping earlier than at home. The factors most frequently mentioned as being responsible for disturbed sleep were the following: excessive lighting, care provided by the nursing staff and organic disorders like pain and fatigue. However, there were few complaints about the care provided to other patients in the room, the room temperature and the uncomfortable hospital bed.

Table 2 – Frequency of the participants' responses regarding the factors affecting sleep quality during their hospital stay and the ICC coefficients – Campinas, SP, 2009/2010

Factors affecting sleep quality during the hospital stay	Number of times per week								ICC
	zero		1 to 2		3 to 4		5 or more		
	f	%	f	%	f	%	f	%	
Sleeping earlier	45	38.5	18	15.4	12	10.3	42	35.9	0.743
Waking up earlier	21	17.9	13	11.1	18	15.4	65	55.6	0.520
Interrupted sleep	32	27.4	10	8.5	14	12.0	61	52.1	0.681
Sleeping less than wished	31	26.5	22	18.8	19	16.2	45	38.5	0.796
Waking up suddenly	66	56.4	11	9.4	12	10.3	28	23.9	0.342
Nice sleep	30	25.6	29	24.8	19	16.2	39	33.3	0.324
Remembering dreams	49	41.9	23	19.7	11	9.4	34	29.1	0.796
Disturbed sleep caused by									
Excessive lighting	52	44.4	08	6.8	17	14.5	40	34.2	0.699
Uncomfortable bed	81	69.2	05	4.3	10	8.5	21	17.9	0.794
Nursing routine	64	54.7	12	10.3	13	11.1	28	23.9	0.783
Care provided to patients	56	47.9	08	6.8	14	12.0	39	33.3	0.657
Noise in the ward	59	50.4	19	16.2	11	9.4	28	23.9	0.563
Organic disorders	43	36.8	24	20.5	19	16.2	31	26.5	0.689
Care provided to other patients in the room	74	63.2	16	13.7	12	10.3	15	12.8	0.229
Fear and concern	55	47.0	20	17.1	18	15.4	24	20.5	0.521
Room temperature	71	60.7	21	17.9	08	6.8	17	14.5	0.597

Rate: (n=117)

Sixteen participants (13.3%) mentioned the occurrence of other factors, such as the noise made by the bin lid when closed by the cleaning staff, loud talking, abrupt entry into the room by the nursing staff who turned on the light, and being away from family and from domestic chores. The existence of a sleep preparation routine at home was reported by 62 (51.7%) participants and, amongst them, 39 (32.5%) missed this routine in the hospital.

DISCUSSION

The sleep quality of the patient who is frequently hospitalized is not a cause of concern for the health professional except when it is obviously lacking or poor and when it results in complaints from the patient. Generally, patients seem to sleep well according to professional assessment; however, from the patient's perspective, sleep may not be restorative or relaxing. This divergence may affect the planning of nursing interventions in a way that the patients are able to have balanced sleep and that adequate supervision during falling and staying asleep is maintained^(6,10).

The majority of participants in this study were male, between the ages of 40 and 60, of Caucasian origin, married, and with fewer than eight years of formal education. Most participants reported drinking coffee daily and most claimed not to smoke or consume alcohol. Approximately one-third of the participants reported doing

regular physical exercise. All patients used medication in the hospital, and most of them stated that they also used medication at home.

It is important to note that nurses should consider socio-demographic and lifestyle factors whilst advising patients in relation to sleep quality because, according to the literature, these factors may influence the counseling required. As for gender, for example, a study undertaken with 150 patients in a hospital concluded that men had better sleep quality than women because women are always more concerned about not performing their home duties and caring for their families during their stay in the hospital⁽⁵⁾.

In the present study, approximately 25% of the participants were over the age of 60. The elderly deserve special attention, as they almost always suffer from multiple illnesses that may affect sleep quality, such as diabetes, arthritis, cardiovascular diseases and dementia^(11,12). Furthermore, sleep quality could decrease with increased age, leading to an increase in the alertness period during the night^(3,5).

Many patients reported consuming coffee, and a smaller proportion reported the use of alcohol and cigarettes. These substances cannot be used during the hospital stay, which provides a unique opportunity for the nurse to counsel the patient on how the use of these substances can affect sleep quality. The literature regarding sleep hygiene mainly suggests that caffeine

consumption should be reduced because the higher the intake, the worse the quality of sleep⁽¹³⁾. In addition, caffeine can damage REM sleep⁽⁶⁾. Nicotine also causes a delay in falling asleep but, at the same time, sudden abstinence may cause sleep disorders for one or two nights. Therefore, smokers may have poor quality sleep in their first nights spent in the hospital. Alcohol, although initially assisting with falling asleep, has a contrary effect when metabolized. This causes more frequent sleep interruptions that can be accompanied by heart palpitations, intense perspiration and nightmares⁽⁶⁾.

Physical activity positively affects sleep quality. Particularly for the elderly, physical exercise has been shown to be beneficial for sleep problems related to disorder of the circadian rhythm, such that regular physical activity seems to increase the depth and duration of sleep⁽³⁾.

Whilst analyzing the reports related to sleep characteristics during hospitalization, patients reported waking up earlier in the hospital than at home, having interrupted sleep, sleeping less than they wished and going to sleep earlier than at home. Regarding the factors affecting the night sleep, a large number of patients cited the following environmental factors: excessive lighting and the care provided by the nursing staff. Physiological factors were also frequently cited, and they were represented by organic disorders like pain and fatigue. A small proportion of patients complained about the care provided to other patients in the room, room temperature and the uncomfortable hospital bed.

It was also shown that a high proportion of patients stated that their sleep was disturbed by environmental factors, such as excessive lighting and the assistance provided during the night, by physiological factors (organic disorders) and psychological factors such as fear, concern and anxiety.

The facts suggest that sleep disturbance is more likely to happen due to a combination of intrinsic and extrinsic factors that affect hospitalized patients in different ways according to individual circumstances, which can include the patient's personal illness and previous experiences together with the variable gravity of the illness impacting the patient's life⁽¹⁴⁾. Furthermore, the impact of environmental factors, as shown in the present study, should also be considered.

A study recently undertaken in Brazil with patients admitted to medical clinic units showed that 55.8% of the participants stated that their sleep was interrupted two to four times per night. This finding is consistent with the results obtained in the present study, in which the patients reported that their sleep was frequently interrupted during their hospital stay. Similarly to the present study, the study mentioned above showed that environmental factors also had a relevant effect in relation to these interruptions and were cited by 34.6% of the participants⁽¹⁵⁾.

Nursing interventions were cited by 13.5% of the participants; however, the authors assessed only the interventions related to medication administration⁽¹⁵⁾, which contributed to the difference in relation to the present study, where this factor was cited by 33.3% of the participants. In general, sleep interruptions occur as a result of hygiene and other care provided by the nursing staff, as well as the administration of medication to patients.

Interrupted sleep is directly related to the difficulty in having enough sleep, a fact that varies depending on the individual. This was a frequent complaint in the present study, where the participants stated that they slept less than they wished to. It is important to note that many patients find it hard to fall asleep again once woken up at night.

The patients often have difficulty in falling asleep and having an effective sleep, and this is shown by their complaints about waking up during the night and not having a restorative sleep. Sleep disturbance, as mentioned, can be caused by multiple factors, such as patient illness, medical treatment and the hospital environment. However, these factors may not be recognized as causing sleep disturbance or as capable of causing sleep deprivation during hospitalization, and consequently, as causes of a chronic lack of restorative sleep⁽¹⁶⁾.

Noises resulting from loud talking, the activities of the cleaning staff, nursing staff walking into the room abruptly and turning on the light, and missing their families and home duties were other factors that patients mentioned as disturbing, although less often than the other factors assessed.

The activities of the nursing staff, such as a change in bed positioning, dressing change, administration of medication, hygiene and others, need adequate lighting in order to be safely performed. Such activities, however, should be planned in a way such that they do not disturb patients' sleep with frequent interruptions. For example, these activities should be concentrated in certain periods in order to allow uninterrupted rest periods⁽¹⁷⁾.

The regulation of sleep is the balance between the organism's homeostatic requirement and the circadian pacemaker or biological clock. The circadian pacemaker is located in the suprachiasmatic nucleus, and it determines the beginning and the end of sleep. It is partially regulated by environmental stimuli, such as light, noise and room temperature. The hormone melatonin, a promoter of physiological sleep, is secreted mainly in the beginning of the night, and it is inhibited by the light, such that its circulation in the organism is reduced during the day. The excretion of cortisone by the adrenal gland, which is associated with alertness, follows the circadian pattern, as the cortisone peak excreted in the beginning of the morning is regulated by the hypothalamic axis in preparation for the increase in the metabolic needs during the period of alertness⁽¹⁷⁾. Therefore, light during the night not only interrupts sleep, but it can also cause disorders in the circadian organization of the alertness/sleep cycle, consequently disrupting melatonin excretion and thus affecting the whole organism.

It is essential that nurses understand that poor quality sleep, which was reported by a large number of patients during hospitalization, can have negative effects on patients' recovery. In a study undertaken in a coronary unit, lack of sleep was the second most frequent factor patients cited amongst the 42 possible stressors that occurred during hospitalization⁽¹⁸⁾.

Sleep is an important process of energy preservation, and its deprivation can cause sleepiness during the day, fatigue, altered mood and periods of disorientation⁽⁵⁾. It can also reduce pain tolerance due to the increase of fatigue in the sympathetic central nervous system, which may lead to increased use of pain control drugs, which can themselves contribute to sleep deprivation⁽¹⁴⁾. Sleep, therefore, constitutes a basic human need that deserves full attention and intervention by nurses⁽⁵⁾.

CONCLUSION

This study, undertaken with 117 patients admitted at clinical and surgical hospitalization units at a teaching hospital of a country town in the state of Sao Paulo, during the period between July 2009 and May 2010, led to the following conclusions:

A high proportion of patients cited waking up earlier in the hospital than at home (55.6%), having interrupted sleep (52.1%), sleeping less than they wished (38.5%) and going to sleep earlier than at home (35.9%).

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