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## **FACTORS AFFECTING SLEEP DISORDERS OF PATIENTS IN THE INTENSIVE CARE UNIT (ICU)**

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### **ABSTRACT**

**Introduction:** There is a tendency for cardiac patients in the intensive care unit (ICU)'s bed to be more disturbed than when they are still at home. The cause of the sleep disorder among these patients are allegedly caused by many factors, including environmental influences such as noise and lighting and also nursing interventions among other reasons.

**Objective:** To investigate the relationship between sleeping disorders and environmental factors, namely noise and lighting, and nursing interventions.

**Methods:** The design used in this research is descriptive analysis with cross sectional approach. The sampling technique is purposive sampling with the sample size of 30 respondents. The analysis of the data is used to determine the frequency distribution and relationships among variables causes of sleeping disorders among cardiac patients in ICU.

**Results:** The results showed that most respondents' sleep is disrupted (60.0%) and interrupted once (40.0%) with the details of each sleeping disturbance factor are as follows: from the noise is disturbed (53.3%) and interrupted once (20.0%), from the lighting is disturbed (40.0%) and interrupted once (33.3%), and from nursing interventions is disturbed (43.3%) and interrupted once (10.0%).

**Conclusion:** In providing nursing care, nurses need to pay attention to factors that affect sleeping disorders among heart patients in the ICU.

**Keywords:** Sleep disorders, cardiac patients, Intensive Care Unit

### **INTRODUCTION**

Sleep is a process required by a person's brain to function properly. Sleep is a state of unconsciousness relative, not just the state of calmness without activity but rather a repeating cycle with minimal characterize their activity, has a varied and there is awareness of physiological processes [1]. Sleep is needed for proper physiological function, because most of the growth hormone needed for healing is secreted during sleep, during sleep also increased immunological activity [2, 3]. Someone who is experiencing a critical illness is a special group that is vulnerable to some effects of sleep deprivation, especially low immune function [4]. While to the healing process required quality and quantity of sleep that exceed the needs of healthy people sleep. Furthermore, to improve the health and recovery of sick individuals needed a good quality sleep [3, 5].

Factors affecting sleep disorders in patients treated in Intensive Care Unit (ICU) is very much compared to the sleep disorder patient time at home[6]. Sleeping patient in the ICU is an abnormal sleep as the bed was dominant in stage I and II, the lack of stage III and IV, shortening the period of REM sleep, frequency of waking up and dissolution of sleep, sleep disorders are caused by several environmental factors including

noise, light level, intervention treatment, diagnostic testing and treatment procedures. The noise level in the ICU came from the alarm telemetry, voice ventilator, ventilator alarm, the sound of the pulse oximetry, communication between staff, the alarm of an intravenous pump, suction sound, the sound of a television or telephone [7].

Environmental noise in the ICU measured between 60 dB to 84 dB for 24 hours. In normal circumstances the sound level of 40 dB, a person can still sleep, and with an increase in sound a person awakens from sleep. In the United States, the Environmental Protection Agency recommended the sound levels in the hospital should not be above 40 dB during the day and 35 dB at night [7]

The prevalence of sleep disorders each year tends to increase in accordance with increasing age and the cause. Reported sleep disturbance in the ICU around 22% - 61% include wake frequency, extended sleep onset latency, wake up earlier and changed from the usual sleep time, sleep quality is low. Patients also reported that their sleep decreases while in hospital than at home, and the disorder causes stress [8].

Factors affecting sleep disorders in cardiac patients admitted to the ICU interesting to study because of possible differences in patients with a true understanding of the field. In this regard, the authors are interested to explore further the factors that influence sleep disorders in cardiac patients admitted to the ICU.

## **METHODS**

The study design used is descriptive quantitative aims to explain and illustrate about sleep disorders and causes of sleep disorders [9, 10]. The research design used is cross sectional method is a study to study the dynamics of the correlation between risk factors with effects, with the approach, observation, or the collection of data at a time at a time [10, 11]. Thirty patients were included as samples, driven from the population of all patients admitted to cardiac in ICU room Public Hospital Dr.R.Soeprapto Cepu.

The instrument used in this study is a questionnaire that includes factors that affect sleep disorders in cardiac patients in the ICU. After the questionnaires were developed, then the questionnaire was consulted on the expert (*Judgment expert*) to examine the *content validity* of three people who are experts in the field to be studied and the questionnaire declared fit for use. The analysis used univariate and bivariate analysis. Univariate analysis conducted on each of the characteristics of respondents and variables of the research results and data obtained are presented in the form of a percentage distribution table [12]. While the bivariate analysis using Spearman correlation test [13]. Values understood confidence in statistical tests was 0.95 and the value of significance  $\alpha = 0:05$  [11, 14].  $H_0$  accepted if the P value of  $<0.05$ .

## **RESULTS**

### *Characteristics of respondents*

Characteristics of respondents in this study include: age, gender, medical diagnostics, longer ICU, how many times in the ICU as the table below:

Table 1 Frequency Distribution Characteristic of Respondents in ICU Public Hospital .Dr.R.Soeprapto Cepu

No.	Characteristics	F	Percent (%)
1	<i>Age</i>		
	25-35 yrs	2	6.7
	36-45 yrs	3	10.0
	46-55 yrs	8	26.7
	56-65 yrs	7	23.3
	66-80 yrs	10	33.3
2	<i>Gender</i>		
	Male	19	63.3
	Female	11	36.7
3	<i>Medical Diagnostics</i>		
	Acute Myocardial Infarct	17	56.7
	Old Myocardia Infarct	4	13.3
	Congestive Heart Failur3	8	26.7
	Angina pectoris	1	3.3
4	<i>Duration of treatment in ICU</i>		
	1-2 days	9	30.0
	3-4 days	10	33.3
	5-6 days	6	20.0
	7-8 days	3	10.0
	9-10 days	2	6.7
	<i>Frequency of emergency treatment</i>		
	Once	22	73.3
	Twice	5	16.7
	More than twice	3	10.0

Table.1 describes the characteristics of the 30 respondents. Most of the respondents age 66-80 years (33.3%), and a small percentage of respondents aged 25-35 years (6.7%). According to the sex, most of the respondents were male (63.3%). For most (56.7%) of the medical diagnosis was AMI (acute myocardial infarct) and a small portion is Angina pectoris (3.3%).

Based on the length of ICU, most respondents admitted for 3-4 days (33.3%), and the smallest portion was admitted for 9-10 days (6.7%). For the frequency of emergency treatment in ICU, most respondents were admitted in ICU at the first time (73.3%), and a small portion experienced a retreatment (10.0%).

Table. 2 Distribution of respondents by type and category of sleep disorders in cardiac patients admitted to the ICU Public Hospital Dr.R.Soeprapto Cepu (n = 30)

Question	Percentage (%)
<i>The type of sleep disorder</i>	
Difficult start sleeping	83.3
Frequent waking from sleep	70.0
up early	60.0
Still sleepy	53.3
<i>Categories of sleep disorders</i>	
Uninterrupted	0.0
Impaired	60.0
Disturbed once	40.0

Table. 2 shows the proportion of patients who answered "yes" on the questions of sleep disorders. Difficult to start was reported by 25 people (83.3%), often awakened was experienced by 70.0%, whilst those who suffered an altered sleep than usual as much as 20 people (66.7%). Waking up earlier than usual was reported by 18 people (60.0%) and still sleepy by 16 people (53.3%). Restful sleep disorder patients obtained the following results: not disrupted is 0, disturbed were 18 (60.0%) and interrupted once were 12 people (40.0%).

Table. 3 Distribution of respondents based on the cause and degree of sleep disorders in cardiac patients admitted to the ICU Public Hospital Dr.R.Soeprapto Cepu (n = 30)

<b>Question</b>	<b>Percentage (%)</b>
<i>The causes of sleep disorders based on the source of the noise</i>	
Bed side monitor	56.7
Visitor arrivals	56.7
Other patients	60.0
Conversation	66.7
Alarm infusion pump	53.3
O2 Regulator	53.3
Television	40.0
Phone	40.0
<i>Categories of sleep disturbance due to noise</i>	
Not disturbed	26.7
Disturbed	53.3
Very disturbed	20.0
<i>Causes of sleep disorders due to lighting</i>	
The room is too bright	53.3
Glare	50.0
Quick dry eyes	50.0
Frequent narrowing des	50.0
<i>Category of sleep disturbance due to lighting</i>	
Not disturbed	26.7
Disturbed	40.0
Very disturbed	33.3
<i>The cause of sleep disorders as a result of nursing interventions</i>	
Installation electrode body	56.7
Measurement of blood pressure	56.5
Measurement pulse	20.0
Temperature measurement	46.7
Sampling	16.7
Routine Care	
<i>Category of sleep disorders as a result of intervention</i>	
Not disturbed	46.7
Disturbed	43.3
Very disturbed	10.0

Table. 3 explain the causes of sleep disorder patients based on sources of noise in the ICU. The most disturbing is the conversation, reported by 20 people (66.7%) while the lowest is a television and a telephone which was reported by each 12 persons (40.0%). Category of sleep disorders as a result of the noise obtained results were not disturbed 8 (26.7%), disturbed 16 people (53.3%), very disturbed once 6 (20.0%). Of the causes of sleep disturbance due to the lighting in the ICU, the most important is the room

too bright, was reported by 16 people (53.3%), glare, eye dries quickly and frequently narrowed eyes respectively was experienced by 15 patients (50.0%). The causes of sleep disorders can be derived from nursing interventions. The installation of electrodes annoyed 22 patients (73.3%) whilst routine care was reported as disturbance by 5 people (16.7%).

The correlation of test results obtained noise R of 0.858. This shows that the noise and sleep disorders are closely related, the more noise the greater the sleep disorder. The results obtained for  $\alpha$  0.034, next on lighting R result for 0.826. This shows that the lighting and sleep disorders are closely related, the more exposure the greater the sleep disorder. The results obtained for  $\alpha$  0.042 and intervention R obtained amounted to 0.930 which shows that the nursing intervention and sleep disorders are closely related. The greater the nursing interventions sleep disorders.

## **DISCUSSION**

The results of the study of sleep disorders can be described as follows, the majority of respondents, 18 (60.0%) answered sleep is disturbed and 14 respondents (40.0%) answered his sleep disturbed once. Rest and sleep patterns usually from someone in the hospital or other health care easily affected by disease or routine health services that are not known [15]. From the results of noise as a cause of sleep disorders can be described that the average patient as much as 16 respondents (53.3%) interrupted while 6 respondents (20.0%) interrupted once. According to [7], although the noise environment including the part responsible for waking sleep disorders but is not responsible for the majority of sleep disorders [16]. From the correlation made between noise and sleep disturbance results obtained  $\alpha = 0.034$  or  $0.034 < 0.050$  and R of 0.858.

The cause of sleep disorders because the lighting can be described that most of that 12 respondents (40.0%) interrupted and 10 respondents (33.3%) interrupted once were undisturbed 8 respondents (26.7%). Someone is going to stay awake or asleep depending on the balance of impulses received from the higher centers (eg the mind), peripheral sensory receptors (such as sound or light stimulus) and the limbic system (emotional) [17]. When people try to sleep, they will close their eyes and be in a relaxed position [15]. The results of the test conducted correlation results obtained  $\alpha = 0.042$  or  $0.042 < 0.050$  and R of 0.826.

The results of the nursing interventions can be described as follows, 14 respondents (46.7%) are not disturbed while 13 respondents (43.3%) is disturbed and 3 respondents (10.0%) interrupted once. Most of the interventions leading to pain, according [19] pain is a reaction or response on the patient's body either occurring due to physical and mental stimulation [18]. Pain that causes physical discomfort will cause sleep disturbances [5]. One of the factors that affect sleep are pain [16, 17, 20]. The results of correlation tests performed the result  $\alpha = 0.017$  or  $0.017 < 0.050$  and R of 0.930.

## **CONCLUSION**

From the results of research conducted in the ICU of Public Hospital Dr. R Soeprapto Cepu against some of the factors that cause sleep disorders in cardiac patients who were treated obtained the following results: Overall respondents answered ICU the average disturbed that disturbed 18 respondents (60.0%), answered very disturbed once 12 respondents (40.0%). Of the causes of sleep disorders respondents, noise is the most dominant conversation 20 respondents (66.7%) and patients with other 18 respondents (60.0%). From the lighting which stated the room is too bright is 16 respondents (53.3%), for the most dominant nursing intervention is mounting electrode 22 respondents (73.3%), followed by blood pressure and pulse measurement each 17 respondents (56.7%). The results of this study can answer the hypothesis proposed by the researchers that there are environmental influences (noise, light level, nursing intervention) to the sleep disorders in cardiac patients in the ICU.

Suggestions from this research is very important for the nurse on duty in the ICU to determine the factors that cause sleep disorders in patients treated, so that the nurses can minimize sleep disturbances coming

from the ICU itself, eg: shrink alarm bed side monitor, reduce lighting when hours of sleep, minimize maintenance actions or do not perform repetitive actions, turn down the volume of telephone and television and all parties in the hospital to participate in controlling the noise environment of the hospital, especially visitors, because patients with heart disease requires bed rest and rest to accelerate the process of convalescence.

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