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Implementation of Evidence-Based Nursing Guidelines and Sleep Quality in Patients With Acute Coronary Syndrome

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Abstract

Background: Sleep disorder is a common problem in patients hospitalized in cardiac care unit (CCU) and it may lead to irreversible consequences. Evaluating sleep quality is an important indicator in care quality. A new method to improve quality of nurses' clinical practice is implementation of evidence-based nursing guidelines.
Objectives: This study aimed to evaluate the effect of implementation of evidence-based nursing guidelines on quality of sleep in patients with acute coronary syndrome (ACS) admitted to the coronary care unit.
Patients and Methods: This before and after clinical trial was performed in Hazrat Fatima (sa) hospital in Kerman city, Iran, during 2012 - 2013. Interventions included training evidence-based nursing guidelines to nurses working in CCU and the implementation of these guidelines. Sampling was done through the convenience nonprobability method and 45 patients were placed in the before group and 45 in the after group. Patients' quality of sleep was evaluated using the Pittsburgh sleep quality standardized questionnaire before and after the interventions and data were analyzed using SPSS software version 19, mean descriptive statistics, standard deviation statistics, inferential statistics, an independent t-test and chi-square test
Results: The total mean score of adequate sleep was 6.71 (3.54) in the intervention group and 5.26 (2.58) in the control group. The difference was statistically significant (P = 0.03).
Conclusions: Implementation of evidence-based nursing guidelines improved the quality of sleep; therefore, it is recommended to administrators and managers of hospitals and health education centers to consider educating evidence-based nursing guidelines in their agenda.

Keywords: Acute Coronary Syndrome, Sleep, Evidence-Based Nursing, Guideline

1. Background

Cardiovascular diseases are very common among the human societies and the number of these patients has been increased in recent decades (1). About 3.6 million people are hospitalized in ministry of health and medical education hospitals every year; a remarkable number of these patients are suffering from cardiovascular diseases (2). Many patients who are hospitalized in cardiac care unit (CCU) experience reduced sleep quality (3).

Sleep deprivation is very common in these patients and it is due to environmental change and medical equipment noise specifically after surgery. Different studies have shown that acute sleep disorders are related to poor health consequences such as cardiovascular diseases, respiratory diseases, overall mortality and worse prognosis (4).

Sleep is one of the basic human needs, which is necessary for energy conservation and having a good appearance and physical well-being; sleep deprivation can cause damage to a person's mind and body (5).

Problems such as monitoring, unit lamps, noise due to other patients' care, mechanical ventilation, frequent waking by the nurses, using tranquilizers and inotropes, disease severity and patients' waking early in the morning make it hard for the patients to sleep comfortably and it is while patients need more sleep at this time (6). Sleep deprivation and change in sleep duration lead to inappropriate prognosis in cardiovascular diseases (7). Recent studies have shown that there is a significant relationship between sleep disorders and cardiovascular diseases such as chronic heart failure and coronary heart diseases. Most of the cardiac patients have experienced inappropriate sleep quality (8). Poor sleep quality and quantity as a stressful situation causes epinephrine and norepinephrine release and it leads to increased heart rate, respiratory rate, the level of blood pressure and the level of myocardial need to oxygen, cardiac dysrhyth-

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mia and renal hypo perfusion disorder (9); so that the risk of ischemic heart attacks is more in people who have disturbed sleep frequently (10). Acute sleep deprivation may increase atrial fibrillation (11). Sleep disorder can also lead to irreversible consequences and complications such as catecholamines release, cardiac arrhythmias, high blood pressure, delirium and immune system disorder; so, it is essential to research about the causes and treatment of sleep disorders and measuring sleep quality is one of the important indexes of care quality (12). Sleep is a dynamic and essential part of human life and health; nurses play an important role in promoting healthy sleep in the health care system, in this regard nursing actions should be based on methods affecting a patient's sleep (13). One of the effective strategies for promoting the quality of nursing services is evaluating clinical guidelines (14), which enable nurses to make the right decisions in clinical conditions and health care (15). Systematic, summarized and the best and most up-to-date evidence-based guidelines should be used to achieve these objectives (14). it has been stated in a review study that lack of nursing knowledge, studies and consecutive actions influence the ability of sleep in critically ill patients (16); it is while nurses can play an effective role in identifying and eliminating factors, which cause sleep disorder and treating it (17); because of their important role in taking care of the patients, nurses need to be aware of the latest developments regarding clinical cares and they should keep their clinical information up to date (18). Evidence-based nursing guidelines, which are provided based on the recent researches, have an important role in providing solutions and standardizing methods and it is a helpful tool for the treatment team (19).

2. Objectives

Considering all the emphasis and warnings regarding the adverse effects of sleep deprivation in the hospitalized patients especially those who are hospitalized in CCUs, still there are many patients who are suffering from problems due to experiencing sleep disorder (20). Also, considering the importance of evidence-based nursing guidelines in promoting quality of care (21) and lack of evidences regarding the effect of implementation of evidence-based nursing guidelines on quality of sleep, this study aimed to examine the effect of implementation of evidence-based nursing guidelines on sleep quality in patients hospitalized in CCU.

3. Patients and Methods

This before and after clinical trial study was conducted on 90 patients hospitalized in the CCU of Hazrat Fatima (sa) hospital of Kerman, Iran, in 2012 - 2013. Inclusion criteria were as follows: being hospitalized in CCU more than 24 hours, the ability of communication, not being engaged in long-term complications associated with collaborative diseases and also the cause of hospitalization should not be surgery. No exclusion criterion was considered.

In order to measure patients' sleep quality, 40 samples were considered by counting $\alpha = 5\%$ (error type 1) and $\beta = 10\%$ (error type 2) and power = 90% (power of the study), using Yaghmaei (22) and the study of Joolaee et al. (23); by considering the possible loss of the samples to 10%, 90 patients (45 patients in the control group and 45 patients in the intervention group) were considered. It is clear that the patients of the control and intervention groups were different. Sampling was done through the convenient nonprobability method based on inclusion criteria in two control and intervention groups. Group matching of the patients before and after the intervention was done considering three variables including; age, gender and history of hospitalization.

Tools of the study included two parts. The first part included demographic features questionnaire of the samples and the second part included the standard questionnaire of Pittsburgh sleep quality index (PSQI). The questionnaires were filled out by the researcher and the participants were being assured of the confidentiality of their information. Written consent regarding participation in the study was also taken from the patients.

Pittsburgh questionnaire includes nine questions in seven parts: subjective sleep quality, sleeping late, sleeping adequacy, sleeping period, and using sleep medications and their incomplete effect during the day. Every part has 0 - 3 scores and scores 0, 1, 2 and 3 in every scale respectively are indicating natural situation, weak, moderate and severe problem. The highest and the lowest scores of the questionnaire are respectively 21 and 0. Scores less than 5 indicate appropriate sleep quality and scores 5 and higher indicate inappropriate sleep quality; higher scores indicate lower sleep quality. The Pittsburgh sleep quality index is an international standard, which has been validated in several studies (24). Reliability of the Iranian version of this questionnaire has been confirmed by retest ($r = 0.88$), also its content validity has been assessed and confirmed by the study of Hoseinabadi et al. (25).

After approval of the study and coordination with the research management of Baqiyatallah Medical Sciences University, the research management letter was given to Hazrat Fatima (sa) hospital by the researcher as the first step and the study was started after coordination with the chief resident, related assistant and head nurses of CCU.

Initially, sleep quality of patients with acute coronary syndrome (ACS) hospitalized in CCU was measured using the Pittsburgh sleep quality standard questionnaire.

Evidence-based nursing guidelines regarding ACS have been designed by Nezamzade et al. in 2010. Guidelines included nursing diagnosis, causes, study criteria and nursing interventions. Nursing diagnosis and one example of the guidelines can be observed in Box 1 and Box 2 (26). Content of the education included expla-

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nation of the evidence-based guidelines, explanation of the nursing process and the way of documenting that, explanation of different kinds of documenting sheet of nursing process, treatment sheet and nursing care sheet. Education of these guidelines, which was according to the nursing process stages was given to the education staff by the scientific consultant of the study in two four-hour workshops and the importance of implementation of these guidelines were emphasized; simultaneously standard documenting sheets of nursing process stages were attached to the patients' documents. One meeting was held after two weeks to remove the probable problems in documenting forms. The researcher controlled the documents by her permanent presence and the reforms were done by the help of the research team members and the feedback was given to the nurses. Patients' sleep quality (the intervention group) was assessed two months after the education and implementation of the guidelines and the results were compared before and after implementation of the guidelines.

At the end of the sampling period, SPSS software version 19, mean descriptive statistics, standard deviation statistics, inferential statistics and independent t-test and chi-square tests were used to analyze and compare the data of the control and intervention groups.

4. Results

In the current study, the patients aged 20 - 80 years old. The men age of the patients in the control group was 59.98 (10.92) and after the intervention it was 62.69 (11.07). The patients' lengths of hospitalization before and after the intervention were 3.51 (1.05) and 3.31 (1.55), respectively. In terms of gender, most of the patients (60%) were females in both stages. Independent t-test showed that there was no significant difference in the control and intervention groups in terms of age and length of hospitalization ($P > 0.05$). Also, the chi-square test showed that the two control and intervention groups were in the same level in terms of education, gender, marital status, history of hospitalization and family history ($P > 0.05$) (Box 2).

Sleep quality was more appropriate in the intervention group; so that the mean total scores for sleep adequacy in the control and intervention groups were 6.71 (±3.54) and 5.26 (±2.58), respectively (Table 1). Findings of the present study are indicating that there was a significant difference between the mean score of sleep quality, late sleeping, sleeping disorders, duration of useful sleep, the amount of sleep aids scales and also total score of sleep quality between the control and intervention groups ($P = 0.03$).

There was no significant difference between the two groups in terms of morning dysfunction and sleep adequacy ($P > 0.05$).

Box 1. Nursing Diagnosis

Risk for Decreased Cardiac Output (NANDA)
Chest pain (NANDA)
Cardiac dysrythmia
Risk for myocardial perfusion disorder
Anxiety
Risk for activity intolerance and fatigue
Impaired drug regimen
Knowledge deficient
Impaired respiratory function
Risk for imbalance fluids and electrolytes
Imbalance nutrition less than body requirements
Impaired skin integrity
Risk for falls
Pulmonary edema
Noncompliance
Powerless to do his/her role
Risk for phlebitis
Risk for insufficient peripheral tissue perfusion
Risk for ineffective cardiac tissue perfusion
Sleep pattern disorder
Risk for thromboembolism
Risk for cardiogenic shock
Risk for bleeding
Grieving
Risk for constipation

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Box 2. An Example of Nursing Guidelines

The Risk of Decreased Cardiac Output (NANDA)
Nursing Diagnosis
Decreased cardiac output related to Improper functioning of valvesThe effect of the sympathetic nervous and renin-angiotensin system Heart structural changes
Evaluation Criteria
Activity tolerance, peripheral and apical pulse, perspiration, blood pressure, Gallup rhythm, respiration, psychological level, urine, output, venous return less than 3 seconds, color and warmth of skin, complaining of weakness, fatigue, chest pain, confusion
Nursing Interventions
1. Assessing symptoms of cardiac failure and decreased cardiac output; 2. putting the patient in a sitting or semi-sitting position; 3.quiet environment and limited visitors; 4. 4 - 6 liters nasal oxygenating (2 - 3 liters in COPD patients); 5. low sodium and low cholesterol diet at low volume and many meals; 6. training the patient to increase his or her activity gradually; 7. training the patient to avoid Valsalva maneuver; 8. training the patient to avoid smoking; 9. training the patient to use caffeine with caution (coffee, tea, cola drinks); 10. informing the doctor in the case of deterioration of the situation or resistance of the symptoms.

Table 1. Demographic Information of the Patients Before and After the Intervention in the Two Groups

	Control Group, No. (%)	Intervention Group, No. (%)	Test	χ^2	Df	P Value
Gender			Chi-square	0	1	0.99
Male	18 (40)	18 (40)				
Female	27 (60)	27 (60)				
Education			Chi-square	62.7	4	0.10
Illiterate	26 (57.8)	24 (53.3)				
Under diploma	8 (17.8)	14 (31.1)				
Diploma and higher	11 (24.4)	7 (15.6)				
Marital status			Chi-square	2.04	1	0.15
Married	43 (95.6)	45 (100)				
Single	2 (4.4)	0				
Occupation			Chi-square	0.91	2	0.634
Housewife	23 (51.1)	23 (51.1)				
Employee	13 (28.9)	16 (35.6)				
Self-employment	9 (20)	15 (16.7)				
History of hospitalization			Chi-square	0.216	1	0.642
Yes	31 (68.9)	33 (73.3)				
No	14 (31.1)	12 (29.7)				
Family history			Chi-square	0.714	1	0.398
Yes	26 (58.8)	22 (48.9)				
No	19 (42.2)	23 (51.1)				
Age, y	(10.92) 59.98	(11.07) 62.69	Independent- t	T = -1.169	88	0.245
Length of hospital stay (number of days)	(1.05) 3.51	(1.55) 3.31	Independent- t	T = 0.715		

5. Discussion

Results of the study showed that implementation of evidence-based nursing guidelines leads to improvement of sleep quality.

In this regard Lofthouse et al. (2011) stated that implementation of evidence-based guidelines improves sleep quality of the patients hospitalized in psychiatric ward (27), which is in consistent with the results of the present study.

In the study of Zeraati et al. (2009), sleep quality of patients with ACS was dropped at the time of discharge according to the PSQI (28), which is in consistent with reduction of sleep quality in the control group in this study. The study of Bahramnezhad et al. (2013) showed that modification of nursing care procedures can promote sleep quality of the patients hospitalized in CCU (29). In other studies by Neyse et al. (2011), using some equipment such as sleeping eye mask and earplug can also prevent sleeping disorders in patients hospitalized in CCU (5). A review study by Brostrom et al. (2005) showed that decreasing

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patient's sleeping environment stressors (proper ventilation, darkness, calm environment), prescribing oxygen as a nonpharmacological method for obstructive sleep apnea (OSA), training the patient regarding avoidance of alcohol and caffeine before sleep, weight loss, avoiding supine position, adjusted sport activities can be useful for improving sleep quality (30).

Albert believes that evidence-based guidelines can decrease the gap between scientific evidences and bedside, lead to clinical care and can also be a tool for nurses to increase high quality care (31). Evidence-based guidelines explain implementation stages of clinical care and prevent nonclinical activities (32).

The study of Considine (2010) also showed that using evidence-based guidelines improves quality of nursing care of the patients suffering from acute cerebrovascular accident and their prognosis (33). Also, in the study of Higuchi et al. (2011) implementation of the best nursing guidelines in patients suffering from asthma and diabetes increases quality of care improvement indexes in these patients (34). The study of Madarshahian et al. (2012) also showed that an evidence-based clinical education program to the nursing students increases care quality and patients' satisfaction (35).

Totally, the results of our study showed that training and implementation of evidence-based nursing guidelines increase patients' sleep quality. One of the limitations of the current study was individual and intrinsic differences of the samples regarding the affecting level of guidelines and psychological conditions of the patients at the time of answering sleep quality questionnaire. Since patients need adequate sleep to improve faster, it is recommended to consider education and implementation of these guidelines, which are taken from the best and up to date research evidences of the world in the schedule of in-service training of the nurses. The effect of education and implementation of evidence-based guidelines on the sleep quality of other patients should also be considered.

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Footnotes

Authors' Contribution: Study concept and design: Jamileh Mokhtari Nouri, and Seyed Mohammad Khademol-Hoseyni; analysis and interpretation of data: Khadijeh Zamanibabgohari, and Abbas Ebadi; drafting of the manuscript: Khadijeh Zamanibabgohari; critical revision of the manuscript for important intellectual content: Jamileh Mokhtari Nouri, Seyed Mohammad Khademol-Hoseyni, and Abbas Ebadi.

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