

Effect of Family Centered Care on Sleep Quality of Post-CABG Patients

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Abstract

Aims and Background: CABG surgery is the treatment of choice in many cardiovascular diseases. There are various factors that can disrupt patient's sleep quality before and after CABG surgery. This study was conducted with the aim of evaluating the Effect of family centered care on sleep quality of post-CABG patients. **Methods:** This was a clinical trial that conducted in Alzahra cardiovascular hospital, Shiraz, Iran. 100 patients and one of their family member participated in this study. Participants were selected based on convenience sampling method and allocated to intervention or control group using table of random numbers. For the intervention group, family-centered care including three educative-supportive sessions and one month follow up was performed. The control group received routine cares. Sleep quality of patients was evaluated using Pittsburgh sleep quality index before, immediately after and one month after intervention. Data were analyzed with SPSS software using descriptive and analytical (chi-square, independent T-test) statistics. **Results:** Before interventions, the mean score of sleep quality in the control group was $7/94 \pm 1/82$ and in the intervention group was $8/06 \pm 1/77$. These two groups had not significance difference in this regard. Immediately after interventions, the mean score of sleep quality of patients in the control group was $7/86 \pm 1/83$ and in the intervention group was $6/28 \pm 1/55$. One month after interventions, the mean score of sleep quality the mean score of sleep quality of patients in the control group was $7/82 \pm 1/83$ and in the intervention group was $5/82 \pm 1/53$. The two study groups had significance difference regarding the mean score of sleep quality immediately and one month after interventions ($P < 0.001$). **Conclusion:** The results of the present study showed that family-centered care effective in improving sleep quality of patients. This model can be used for improving quality of cares after CABG surgery.

Keywords: Family centered care, sleep quality, coronary artery bypass graft

Introduction

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Nowadays, the prevalence of chronic disease is increased due to tendency of general population to unhealthy lifestyles, increased life expectancy, obesity and lack of physical exercise. Cardiovascular disease are one of the most prevalent and important chronic disease which can be life-threatening (Zighaimat and et al, 2010). Based on WHO estimations, cardiovascular disease will be the first cause of mortality worldwide until 2020 (Hosseinian and et al, 2014). Coronary artery disease is one of the cardiovascular disease which is considered as the most prevalent and dangerous disease in the world (asghar poor and et al, 2016). In the United States one out of each six deaths is due to coronary artery diseases. Approximately each 25 seconds one American suffers a heart attack due to coronary artery diseases and each minute one person dies because of these diseases (Sipahi and et al, 2014). In Iran, cardiovascular diseases, especially coronary artery diseases are the most common cause of mortality in all ages and both sexes. 166 cases out of 700-800 daily deaths in Iran is due to coronary artery diseases (hoseinzadeh and et al, 2010).

There are various methods and strategies for treating coronary artery diseases, such as thrombolytic therapy, various drug therapy, balloon angioplasty, Stenting, Removal of atherosclerotic plaques with suction, life style change, Coronary Artery Bypass Graft (CABG), etc (Sharif and et al, 2012). Although recent advances in treatment of patients with coronary artery disease has improved patient's outcomes and resulted in better management of patients, CABG is the only treatment option in many patients (Lewis and et al, 2016). If this surgery is done in a timely manner, have a crucial role in reducing mortality and morbidity due to coronary artery diseases (Hosseinian and et al, 2014).

Patients Undergone CABG surgery may experience various physiological, psychological and social discomforts and problems in post-operative period that can affect patient's recovery and discharge (Aghaie and et al, 2014). One of the major problems of post-CABG patients is sleep disorders (Direk and et al, 2012). Diagnostic, therapeutic, and nursing procedures and post-operative pain are factors that can impair sleep quality of post-CABG patients. Existing evidences show that CABG patients experience interruption of sleep, irregular sleep cycles, insomnia, poor sleep quality and lack of persistence of sleep in post-operative period(10). In Iran, it is reported that 80% of post-CABG patients experience sleep problems and poor sleep quality, 6 weeks after surgery (Ranjbaran and et al, 2015).

Sleep is crucial for proper healing and physical and emotional recovery and well-being. Therefore, any disturbance in quantity, quality or pattern of sleep can affect patient's physiological and psychological health and function. Poor sleep quality can postpone recovery from diseases, reduce quality of life, and increase coronary artery diseases mortality and morbidity (Wang, and et al, 2010; Liao W-C). Sleep loss and disruption can also cause weakened immune system function, diminished memory consolidation, disrupted neuroendocrine function, and cognitive decline (Stermiczuk and et al, 2014). It is also reported that risk of ischemic heart attacks and atrial fibrillation is greater in people with poor sleep quality (Açar and et al. 2013, Elwood and et al, 2006). Sleep disturbances can also exacerbate chronic conditions, disrupt medical treatments and add to the social disabilities associated with a chronic disease (Strine and Chapman, 2005). Thus, reduced sleep quality both predispose the individual to many diseases and impairs recovery from diseases(14), and it is so important to evaluate and improve sleep quality of post-CABG patients.

Advances in surgical techniques, recombinant drugs and improvements made in care services have been led to reduced length of hospital stay after CABG surgery and major part of recovery period is spent at home (Black and Hawks, 2009.), and recovery from CABG surgery and the overall health status of post-CABG patients is significantly is influenced by family. Therefore, family members of these patients must be involved in caring for them in post-operative period and after hospital discharge (Coyne and et al, 2001). One of the applicable nursing models for supporting patients and their family, is family centered care model (Hoseini and et al, 2014). Family centered care is one of the main concepts in nursing profession and the aim of this model is maintaining family integrity and providing unique care for each patient and his/her family based on their identified needs (Sanaie and et al, 2014). Family cantered care emphasizes on the crucial role of family in all healthcare settings and is based on mutual and purposeful collaboration between healthcare professional and families (including patients and their family members) (Rabiei and et al, 2012). In family centered care model, the patient and his/her family members are considered as a single client (Farnia and et al, 2015). Family centered care consists of 4 basic concepts: dignity and respect, information sharing, family participation in care and family collaboration. Dignity and respect means that

healthcare professional honor family perspectives and choices which are based on their values, beliefs and cultural background and must be considered in care planning and delivery. In information sharing, healthcare professionals have to give complete and accurate information about the disease and required care plans in a timely manner to families. In participation, the healthcare team encourage and support families to participate in decision making and caregiving based their level of ability. Collaborate requires that families participate in policy and program development, facility design, and professional education (Griffin and et al, 2006).

Nurses are healthcare professionals that have the most contact and interaction with patients and their family and have the authority to evaluate and respond to educational and care needs of patients and their family (Kaakinen and et al, 2014). In family centered care model, the role of nurses is providing educations and support for patients and their family so they can participate in decision making and caregiving activities (Masoodi and et al, 2010). Family centered care empowers patients and families, improves their autonomy, increases cost-effectiveness of cares provided, improves satisfaction of nurses, patients and families and improves patient's comfort (Farnia and et al, 2015; Masoodi and et al. 2013). There are some studies that have evaluated effects of family centered care on various patient's outcomes, but we found no study evaluating effect of this model on sleep quality of post-CABG patient. Considering possible positive effects of family centered care on post-CABG patients, this study was conducted with the aim of evaluating the Effect of family centered care on sleep quality of post-CABG patients.

Methods

This is clinical trial which was conducted in Alzahra cardiovascular hospital, Shiraz, Iran. This study is approved by ethics committee of Shahrekord university of medical sciences, Shahrekord, Iran (ethics code: IR.SKUMS.REC.1396.179) and Iranian registry of clinical trials (IRCT code: IRCT20130212012452N7). Totally, 100 patients undergoing CABG surgery in Alzahra hospital and one family caregivers for each patient participated in this study which were selected based on convenience sampling method and then randomized to intervention or control group using table of random numbers. Informed consent was obtained from each patient and family caregiver before participation in the study.

Inclusion criteria were willingness to participate in this study, reading and writing literacy, elective CABG surgery, not having previous CABG surgery, residence of patient's family caregiver in patient's home or near his home, not having renal failure, cerebral vascular accident (CVA) and chronic obstructive pulmonary disease (COPD), patient and his/her family care givers be able to make phone calls with the researcher. Exclusion criteria were unwillingness or inability to continue participation in the study, patient's death and change in the main family caregiver.

In the present study data were collected using demographic data questionnaire and Pittsburgh sleep quality index. Demographic data questionnaire included questions about age, sex, educations level, marital status which was completed by both patients and their family caregivers at the time of participation in the study.

Sleep quality of patients was assessed using Pittsburgh sleep quality index (PSQI). The PSQI is the most commonly used generic measure of sleep quality in clinical and research settings. This questionnaire was developed in 1988 with the aim of providing a reliable, valid and standardized tool for measuring sleep quality, and discriminating "good" and "poor" sleepers. This questionnaire is an easy index for patients to complete and for clinicians and researchers to interpret (Mollayeva and et al, 2016). The PSQI consists of 19 self-rated items that evaluate subjective sleep quality. These 19 questions are classified into 7 clinically-derived components (sleep quality, sleep latency, sleep duration, sleep efficacy, sleep disturbances, sleep medication, and daytime dysfunction), each component weighted equally from 0-3. The score of these 7 component are added to obtain a global score indicating overall sleep quality, the higher the global scores the worse sleep quality. The PSQI has a sensitivity of 89.6 and specificity of 86.5 for identifying cases with sleep disorders, using a cut-off point of 5 (Buysse and et al, 2008). The Cronbach's alfa for Persian version of this questionnaire is reported to be 0.85 (Moghaddam and et al, 2012).

Intervention group received family centered care plan that was included 3 educational-supportive session with presence of patients and family members (one family caregiver for each patient) and one month follow up. First session was 24-48 hours before surgery. In this session, general topics about the disease, the reason for the need to CABG surgery, and preparations needed before surgery presented to participants. In the second session which was done 48 hours after surgery, group discussion in 4-6 person groups (2-3 patients with one family member for each) used for presenting topics. Topics of this session was presented at five parts: diet, drug regimen, activity plan, complications of surgery and cares needed after surgery. In the third session, which was at 4th day after surgery, wound care methods, physical exercises, how to use varicose socks and sternum protector educated to participants. After this session, all educated contents and care plans offered to participant in form of an educational booklet to participants, then they were followed up for one month with phone calls, two times a week. In these phone calls which was made by the researcher, the process of implanting presented and educated care plan by the patients and their family caregivers was evaluated.

Control group received only routine cares and the researcher did not do any intervention for them. To comply with the ethics of research, after the end of interventions and collecting post test data, all the educational topics used for intervention group, offered to the control group in form of booklet.

Sleep quality of all participants were measured using PSQI before, immediately after (at the time of hospital discharge) and one month after interventions (one month after discharge). Data were analyzed with descriptive (mean and standard deviation) and analytical (chi square, independent samples T-test) statistics. In all tests P value<0.05 was considered as statistically significant.

Result

Totally, 100 patients and 100 family caregivers of patients (one family caregiver for each patients) participated in this study. The mean age of patients in the intervention group was 60.06±8.77 and in the control group was 59.2±2.48. In the intervention group, 36 patients (72%) were male and 14 patients (28%) were female. In the control group, 39 patients (78%) were male and 11 patients (22%) were female. 94% of patients in the intervention group and 90% in the control group were married. Patients in the intervention and control groups had not significant difference regarding demographic variables.

The mean age of family members of patients was 44.31±10.81 in the intervention group and 42.17±9.76 in the control group. 46% of family members in the intervention group were male and 54% of them were female. In the control group, 40% of family members were male and 60% of them were female. Regarding marital status, 88% of family members in the intervention group and 82% in the control group were married. Demographic characteristics patients and their family members are shown in tables 1-3.

Table 1- the mean age of patients and family members in the intervention and control group

	Intervention group	Control group	P value (independent T-test)
Patients	60.06±8.77	59.2±2.48	0.619
Family members	44.3±10.81	42.18±9.76	0.306

Table 2- Demographic characteristics of patients in the control and intervention group

Variable	Variable modes	Intervention		Control		P-value
		Numbers	Percent	Numbers	Percent	
Marital status	Single	3	6	5	10	0.715
	Married	47	94	45	90	
Education level	Elementary education	38	76	37	74	0.869
	High school	8	16	10	20	
	College education	4	8	3	6	
Sex	Male	36	72	39	78	0.488
	Female	14	28	11	22	
Job	Employed	7	14	8	16	0.841
	Unemployed	14	28	10	20	
	Housewife	3	6	3	6	
	Retired	9	18	13	26	
	Others	17	34	16	32	

Table 3- Demographic characteristics of family members of patients in the control and intervention group

Variable	Variable modes	Intervention		Control		P-value
		Numbers	Percent	Numbers	Percent	
Marital status	Single	6	12	9	18	0.401
	Married	44	88	41	82	
Education level	Elementary education	19	38	19	38	0.775
	High school	21	42	18	36	
	College education	10	20	13	26	

Sex	Male	23	46	20	40	0.545
	Female	27	54	30	60	
Job status	Employed	9	18	12	24	0.713
	Unemployed	3	6	4	8	
	Housewife	16	32	19	38	
	8	8	16	5	10	
	Others	14	28	10	20	

Before interventions, the mean score of sleep quality was 8.06 ± 1.77 in the intervention group and 7.9 ± 1.82 in the control. Independent T test didn't show significant difference between the two study groups regarding the mean score of sleep quality before interventions ($P=0.739$). Immediately after interventions the mean score of sleep quality was 6.28 ± 1.55 in the intervention group and 7.86 ± 1.83 in the control group, and the two groups had significant statistical difference regarding the mean score of sleep quality ($P<0.001$). One month after interventions, the mean score of sleep quality was 5.82 ± 1.53 in the intervention group and 7.82 ± 1.83 in the control group, and there was a significant difference between the two study groups in terms of the mean score of sleep quality ($P<0.001$).

The mean changes of sleep quality scores immediately after interventions was -1.78 ± 0.89 in the intervention group and -0.08 ± 0.69 in the control group. Based on independent T test results, the mean changes of sleep quality scores was significantly different between the two study groups in this stage ($p<0.001$). One month after interventions, the mean change of sleep quality scores was -2.24 ± 1.04 in the intervention group and -0.12 ± 0.89 in the control group and independent T-test showed that the mean changes of sleep quality score is significantly different between the two study groups ($P<0.001$). Table 4 and 5 compare the mean score of sleep quality and the mean changes of sleep quality in the intervention and control groups.

Table 4- comparing the mean score of sleep quality between the intervention and control group

	Intervention group	Control group	P value (independent T-test)
Before interventions	8.06 ± 1.77	7.9 ± 1.82	0.739
Immediately after intervention	6.28 ± 1.55	7.86 ± 1.83	<0.001
One month after intervention	5.82 ± 1.53	7.82 ± 1.83	<0.001

Table 5- Comparing the mean changes of sleep quality scores between the intervention and control group

	Intervention group	Control group	P value (independent T-test)
Immediately after intervention	-1.78 ± 0.89	-0.08 ± 0.69	<0.001
One month after intervention	-2.24 ± 1.04	-0.12 ± 0.89	0.001

Discussion

This was a randomized controlled trial conducted on 100 patients undergoing CABG surgery and one of their family members. The results of the present study showed that the mean score of sleep quality in the intervention group was significantly lower (better) than the control group, immediately after and one month after interventions. Also, mean changes of sleep quality scores in the intervention group was significantly higher than the control group. These results show that family centered care can improve sleep quality of post-CABG patients significantly.

In the present study, the majority of participating patients were male, with low educational level, and married. The mean age of participating patients was $60.06 \pm 8/77$ in the intervention group and 59.2 ± 2.48 in the control group. In this regard, there are some studies that have reported similar demographic characteristics for CABG patients. In the study conducted by Behrouzifar, et al (Behrouzifar and et al, 2008) on CABG patients, the majority of participants were male, married and in the age group of 51-60 years. In the study by salemoghdam, et al (SalehMoghaddam and et al, 2016) the mean age of CABG patients in the control group was 56.2 and in the intervention group was 57.5 years. The majority of participants in this study were married and with low educational level. In the study

conducted by Direk, et al (Direk and et al, 2012) on CABG patients in turkey, the majority of the patients were male, married, with low educational level, and the mean age of them was 65.43 years. Considering these results, it can be concluded that the risk of cardiovascular disease and subsequently the need for CABG surgery is greater in male sex, individual with lower educational level and after age 50.

In the present study, the mean score of sleep quality before interventions was 8.06 ± 1.77 in the intervention group and 7.94 ± 1.82 in the control group. Based on the scoring method in Pittsburgh sleep quality index, all participants in the study had poor sleep quality. In the study conducted by Totonchi, et al (Totonchi and et al, 2015) on patients undergoing CABG surgery, 25% of participant had poor sleep quality and 74% of them had moderate sleep quality before interventions (before surgery), and only 1% of them had good sleep quality. These results demonstrate that the majority of patients undergoing CABG surgery suffer from disrupted sleep quality.

The result of the present study showed that family centered care is effective in improving sleep quality of post-CABG patients. We found no study evaluating the effects of family centered care model on sleep quality of patients, but there are some studies that have involved family members of patients in process of caregiving and reported improved sleep quality of patients. Ranjbaran, et al (Ranjbaran and et al, 2015) evaluated the effect of interventions based on precede-proceed model on sleep quality of post-CABG patients. Based on precede-proceed model concepts, family is the most enabling factors for the patient, and in this study, family members of patients were involved in interventions and caregiving processes. The results of this study showed that interventions based on precede-proceed model and involvement of family members in caregiving activities is effective in improving sleep quality of post-CABG patients. Golafrooz, et al (Golafrooz and et al, 2014) evaluated the effect of continuous care model on sleep quality in patients with type 2 diabetes. In this study, all interventions were performed for patients and their family caregivers. The results of this study showed that sleep quality of patients in the intervention group reduced significantly after intervention. Thus, it can be concluded from the results of our study and above mentioned studies that, nursing care models that recognize the crucial role of family in designing, implementing and evaluating of care plans and involve the family members in the caregiving processes, can have positive health outcomes for patients, including improved sleep quality.

Conclusion

The results of our study showed a significant improvement in sleep quality of post-CABG patients in the intervention group, immediately after and one month after interventions. Thus, it can be said that educating patients and their family caregivers about cardiovascular disease and process of care after CABG surgery, collaborating with them in designing and implementing care plans, supporting them after discharge and meet their care and educational needs, can be an effective method for improving patient's outcome after CABG surgery. Family centered care can be considered by nurses as an effective framework for offering holistic care to patients in various care settings.

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