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ORIGINAL ARTICLE

The effect of comfort-based care (Reflective massage and education to patient) on comfort in patients undergoing coronary artery bypass grafting

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Abstract

Introduction: Growing incidence of cardiovascular disease and various treatment procedures, including coronary artery bypass graft surgery, is a stressful experience for the patient and the family. The multiple complications of surgery during hospitalization can have impacts on the patient comfort, which may require comfort-centered nursing care. Studies in this regard report conflicting results concerning the effects of these interventions. Considering the importance of nursing care and its impact on elimination of the needs and reduction of the patient's problems in cardiac surgery, this study was designed to determine the effect of comfort-centered nursing care, including reflective massage and education, on the comfort of patients undergoing coronary artery bypass grafting (CABG).

Methods: In this randomized clinical trial, 70 CABG patients were selected with convenience sampling method and allocated into intervention and control groups via permuted block randomization. The data collection tools comprised of demographics form and Hospice Comfort Questionnaire (HCQ) the reliability of the latter was calculated by Cronbach's alpha as 0.75. Initially, the prevalent needs of the patients were determined including pain in the sternum, anxiety, lack of awareness of post-operative care, sleep disturbance. Also, disruptions in comfort were assessed using the HCQ. The intervention group received the comfort-centered care program once a day for 6 days. The program included foot reflective massage and education to patients, whereas the controls received the routine cares. In the end of the sixth session, both groups completed the comfort questionnaire. Data were analyzed by SPSS software version 23 using descriptive (mean, standard deviation, frequency and percentage) and inferential statistics (independent t, Mann-Whitney U, and Wilcoxon). The significant level was set at $P < 0.05$.

Results: The mean of comfort score increased in the intervention group after intervention ($P < 0.001$). Also, in the control group, the mean score of comfort and its dimensions significantly improve after intervention ($P < 0.001$). However, the mean scores of changes in comfort and its dimensions was not significantly different in the intervention and control groups after intervention relative to before intervention ($P > 0.05$) .

Conclusions: This study reported significant increase of comfort in both groups, positive effect of care implementation and nurse`s presence on better communication with patient and comfort in critical conditions after surgery.

Key Words: Comfort-centered care, Comfort, Reflective massage, Education to patient, Coronary artery bypass graft

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Introduction

Coronary artery disease is one of most prevalent cardiovascular disorders in developing countries that affects one's health and ability (1,2). Approximately, 44.8% of deaths in Iran by 2030 are estimated to be caused by cardiovascular diseases (3). According to statistics, 300 people lose their lives due to cardiovascular disease every year (4).

Today, there are several methods such as coronary artery bypass graft surgery (CABG) for treatment of cardiovascular patients, aiming to increase and improve quality of life in patients (5). In Iran, 50-60% of open heart surgery is performed by CABG per year (6). Although cardiac surgery is a successful operation in cardiac care, it is stressful for many patients and can have effects on multiple aspects of life (7).

Surgery with incision in chest such as CABG can affect the comfort of the patient due to multiple complications such as pain, respiratory distress, and motility. On the other hand, hospitalization in the special wards after cardiac surgery may disrupt the patient's comfort due to noise, alien environment (8), postoperative discomfort and pain, changes in body function, concerned about the family, or potential changes in lifestyle (9). The greatest request of these patients is provision of comfort and relief to escape from this difficult and stressful situation (10).

Comfort is a vital need and a multi-dimensional, complex, obscure, holistic and essential concept in health care investigated by many theorists and nursing scholars, and is considered a result of nursing care and essential human needs (11-13). One of the theorists is Kathrin Kolcaba, who specifically examined patients' feelings of comfort. Kolcaba classified comfort in physical, mental, social, and environmental domains (12). In fact, comfort from Kolcaba's view is an experience felt by the patient after fulfillment of comfort needs in the four dimensions of physical (e.g., pain), psychological (e.g., anxiety), sociocultural (e.g., family and social relationships) and environmental (e.g., light, voices and commuting) (7). Provision of comfort is a major goal and responsibility of clinical nursing care providers and one of the perceived priorities of patients (14,15).

In nursing cares, several interventions are concurrently applied aiming to reduce patients' needs and problems, such as disturbance in relaxation and comfort during treatment and care (16). One of these interventions is massage. Massage is a simple, soothing, and non-invasive treatment according to the Nursing Interventions Classification (NIC) and the National Institutes of Nursing Research used for alleviate anxiety, relaxation of body and mind, increase in blood, and feeling of comfort by nurses and healthcare providers (17).

One of the types of massage is reflective massage that is a holistic approach including pressure and massage on reflective points` in the palm or foot, which are reflective small mirrors of all parts of the body (18). Complementary medicine specialists believe it flows energy in the body through vertical zones from the legs to head, which can have impacts on all organs, glands, bones and muscles (19). Since there are 7,000 nerves in each leg, leg massage and stimulation of these nerve cells relax the body, reduce stress, and restore body balance (20). In this regard, Kolcaba et al (2006) reported positive effects of massage on comfort in patients (13). Also, BagheriNesami et al (2012) reported the effect of reflective massage on pain and fatigue in patients after CABG (15). However, some researchers, including Albert et al (2009), reported that massage does not have a significant effect on comfort of patients after open heart surgery (21).

On the other hand, education to patients is another care procedure that can accelerate patients' recovery process, increase patient empowerment in self-care, and enhance care quality by nurses' presence and communication (22, 23). A person who receives the necessary training at the time of illness feels safe and comfortable as his/her needs including more accurate awareness of the illness status are satisfied. On the other hand, a patient who has not received proper education may make mistakes in self-care and thereby harm him/herself (24).

Currently, the CABG candidates are typically hospitalized one day before surgery and receive the nursing primary interventions such as training the caring procedures before and after surgery. One day after surgery when the patient's consciousness is returned, s/he will be detached from the mechanical respiration devices and will be trained by the nurse about deep breathing and incentive spirometry. Also during hospitalization, the patients are taught about care from incision and mobility. It is obvious that the main aim of such interventions is improvement of physical conditions and typically low attention is paid to patients' comfort (25).

On the other hand, in most studies on comfort, only one aspect of comfort is considered, such as pain (11), anxiety (26), and socio-cultural conditions (27). Therefore, the present study is designed with the aim to study the effect of

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comfort-centered care, including reflective massage and education to patient, on comfort in patients undergoing coronary artery bypass grafting.

Methods

This randomized clinical trial was consucted in the heart center of Amir Al-Momenin Hospital of Kordkoy in 2017. The participants were selected by convenience sampling method and were allocated into intervention and control groups via permuted block randomization.

The sample size was estimated according to mean and standard deviation of the comfort score by HCQ questionnaire in guideline study with participation of 20 patients in each group 17 patient, that finally for increase of test powers was sampled in each group 35 patient. Inclusion criteria were CABG candidates to be operated by the cardiovascular surgeon at Amir AlMomenin Hospital; willingness of participate in study; provision of informed consent; age range of 25-60 years; non-emergent surgery; ability of verbal communication; ability to read and write; lack of scratch, scar, infection and damage in foot palms; lack of history of mental illness; non-addiction; and absence of hearing and vision impairments and PTT of 30-60 seconds. Exclusion criteria were any incidents contradictory with inclusion criteria (such as loss of consciousness, foot infections, and patient's desire to leave the study).

The data collection tool included demographics from (age, sex, place of life, marital status, education) and Hospice Comfort Questionnaire (HCQ). The HCQ was developed by Kolcaba (2004) (17) and includes 24 items in physical fields (5 items with a score range between 5 and 30), environmental (5 items with score range of 5 to 30), psychological (10 items with score range of 10 to 60) and social (4 items with scores ranging from 4 to 24). Answers to the items are on the 6-point Likert scale (1=Disagreement and 6= Complete agreement). The total scope range is from 24 to 124. Meanwhile, scoring is reverse for items 2, 4, 7, 11, 13, 14, 15, 18, 19, 22, 23, and 24. The reliability of this questionnaire has been reported with Cronbach's alpha of 0.65 to 0.88 in various studies (17,28). In the present study, the reliability of this questionnaire was calculated as 0.75 using Cronbach's alpha.

Intervention: Initially, according to results obtained from implementation of the HCQ with the participation of 20 patients, the prevalent needs of patients were identified including pain in sternum, anxiety, lack of awareness of post-operative care, sleep disturbance and disturbance in comfort. One day before surgery, each patient was assigned into intervention or control groups by the researcher randomly based on permutation blocking after self-introduction and description of goals of study. The demographics forms were completed by the researcher via interviews with the patients. After 24 hours from surgery and consolidation of hemodynamic status of the patients, the HCQ was filled out by the researcher. Then, in the intervention group, the comfort-centered intervention (reflective massage and face to face training) was performed after vital signs were checked. Face-to-face education was presented about nursing care after open heart surgery (including nutrition, mobility and post-surgery activities, sleep and rest, health issues and patient care, training abut prescription drugs, referral for follow-up of therapy and sexual activity) by researcher in the form of short instructional parts, once per day for 15 to 20 minutes during 6 days.

Along with this training, reflective massage was performed once a day during 6 days of patient hospitalization. Initially, the patients` foot was cleansed with wet gauze. Then, the researcher warmed hands. First, s/he relaxed the patient's leg with simple rubbing movements. Then, the patient toe was bent toward metatarsus and the reflex points of chest in spherical bulge below the toe was placed under pressure. This massage included rotational pressures in the direction of clock counters by thumb of hand in reflex points in the left foot with 0.5 cm depth alternately for two minutes and in total 15 minutes (13,14,27,29,30). It should be noted that foot reflective massage was applied for all patients in determined and identical hours (between 17:00 and 18:00). In addition, the titles and contents for education to patient were confirmed by two heart surgeons. Also, the researcher under supervision of the relevant specialist had completed the training course of foot reflective massage and received the relevant certificate. Finally, the HCQ was completed again on the sixth day after implementation of the last intervention by the researcher. Also, in order to increase knowledge of the patient's companions for later assistance, care was provided at their disposal. The educational notes included the above-mentioned information. The control group received routine cares and then completed the HCQ again on the 6th day. In order to observe ethical considerations, care was given at the disposal of the patients' companions and educational notes were provided to all.

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Data analysis: Data was analyzed by SPSS software version 23. To determine normal distribution of the data, the Kolmogorov-Smirnov test was used. To determine the mean score of the main dependent variables (comfort and dimensions), descriptive statistics were used including mean and standard deviation. For demographic variables, frequency and percentage were applied. Paired t-test was used to compare the mean score of variables with normal distribution including comfort in total and physical and psychological components in both experimental and control groups before and after intervention. Moreover, as for variables with abnormal distribution including environmental and social components, Wilcoxon test was employed. Paired t-test was applied to compare comfort's mean changes and its dimensions for normal data including comfort and physical and psychological components. For abnormal data including environmental and social components, the Mann-Whitney U test was used. Significant level was established at P <0.05.

Results

The results of this study showed that 38.6% of the participants (n=27) were female and 61.4% (n=43) were male. The mean age of participants was 55.12 ± 5.97 years. The level of education 92.9% (65 people) was below diploma. Also, all participants were married and 65.7% (44 persons) had urban residence (Table 1).

The mean of comfort in intervention group before intervention was 103.11 ± 9.03 which increased to 110.94 ± 6.22 after intervention (p <0.001). Also, the mean of comfort in physical, psychological, environmental and social dimensions showed significant improvement after intervention in the intervention group (p <0.001). In the control group, too, the mean of comfort and its dimensions after intervention had significantly improved than before intervention (p <0.001) (Table 2).

The results showed that there was no significant difference between mean of overall comfort and its components before or after intervention in the two groups (p >0.05) (Table 2).

Table 1: Demographic characteristics of the participants in the research

Variable	Condition	Control group N (%)	Intervention group N (%)	P-value
Age	≤ 55 years	20 (57.1)	11 (31.4)	0.03
	> 55 years	15 (42.9)	24 68.6)	
Sex	Male	19 (54.3)	24 (68.6)	0.22
	Female	16 (45.7)	11(31.4)	
Level of education	Lower than diploma	33 (94.3)	32 (91.4)	1.00
	Diploma and higher	2 (5.7)	3 (8.6)	
Residence	Urban	22 (62.8)	24 (68.5)	0.62
	Rural	13(37.1)	11(31.4)	

Table 2: Comparison of the mean total comfort score and its components before and after the intervention in patients of the control and intervention group

Variable	p-value	control group Mean±SD		p-value	intervention group Mean±SD		Comparison of two groups p-value	
		After intervention	Before intervention		After Intervention	Before intervention	After Intervention	Before intervention
Physical dimension	0.001<	23.34±3.18	19.14±5.27	0.001<	23.17±2.50	18.91±3.85	0.80	0.84
Psychological dimension	<0.001	4.58±40.25	37.62±5.49	0.001<	40.02±3.47	36.40±4.27	0.84	0.30
Environmental dimension	<0.001	1.21±25.14	2.16±25.80	0.64	2.21±24.77	3.74±25.02	0.90	0.66
Socio-cultural dimension	0.78	1.94±22.54	1.94±22.57	0.49	1.79±22.94	2.05±22.77	0.55	0.55
Overall perceived comfort	<0.001	7.55±110.28	11.70±104	<0.001	6.22±110.94	9.03±103.11	0.71	0.39

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Variable	Control group	Intervention group	p-value
	Mean ± SD	Mean ± SD	
Physical dimension	4.02±4.20	3.98±4.26	*0.95
Psychological dimension	2.90±2.63	5.05±3.66	*0.3
Environmental dimension	1.28±0.66	3.22±0.26	**0.92
Socio-cultural dimension	0.62±0.03	1.47±0.17	**0.63
Total perceived comfort	6.09±6.14	8.89±7.51	*0.45

* Test result of Independent t
**Test result of U Mann Whitney

The mean of overall comfort changes and its components after intervention was not significantly different relative to pre-intervention in the intervention and control groups (p> 0.05) (Table 3).

Table 3: Comparison of the mean changes of comfort scores in overall and its components before and after intervention in patients in intervention and control groups.

Discussion

One of the important responsibilities of nurses in clinical care is providing patient comfort, which has priority from both the patient and family's viewpoints (14, 15). The purpose of this study was to determine the effect of comfort-centered nursing care on comfort of patients undergoing CABG. Based on the results of this study, increase of comfort was significant after performing comfort-centered interventions in intervention group patients. Chen et al (2013) (31) reported the increase of comfort after massage in 64 patients with congestive heart failure. Also, Shafiee et al (2013) (32) reported significant increase of comfort in 72 patients undergoing CABG after stroke massage. Different researchers reported the effects of different types of massage on pain, relief, anxiety, decreased muscle tension and patient satisfaction (33,34,35). Therefore, it can be concluded that in the present study, increased comfort in the intervention group was achieved probably through the effect of the designed interventions. It should be noted that in various studies identical results have not been reported regarding the effect of different types of massage on comfort of patients. For example, Hatan et al (2002) (36) showed that foot massage in patients undergoing heart surgery could not significantly improve psychological factors including pain, anxiety, tension, relaxation, rest and hope in intervention group before and after intervention.

In present study, the mean score of comfort and its dimensions were significant in the two groups after intervention. In this regard, in Albert et al.'s (2009) (21) study, massage therapy after cardiac surgery could not significantly increase factors such as pain, anxiety, tension, refreshing feeling and fatigue in both intervention and control groups. In addition, in Kolcaba et al.'s study (2006) (13) done with the aim to determine the effects of hand massage on the comfort and satisfaction of the elderly home residents, the passage of time showed no significant difference in comfort and satisfaction of the participants in intervention and control group. It should be noted that in the above study, the expected outcomes were measured including comfort and satisfaction of the participants in three steps. Finally, in the study of Hatan et al. (2002) (36), too, no significant difference was found in the investigated factors between intervention and control groups after intervention (with the exception of hope). These authors attributed the results to low sample size in their studies and suggested the use of a larger sample of patients in future studies. Strong routine care, designed program of comfort-centered including reflective massage and training which was presented for all patients in intervention group relatively identical not with emphasize on needs and individual concerns of every single patient, which likely was due to existence some condition including absence of completely separate rooms for each patient, limited facilities and intervention environment, duration of intervention and limited implementation of program once in day and also implementation of interventions by a person outside of special cares personnel who was not constantly in contact with patients in spite of that patients had felt of need to the constant presence of nurses can be one from reasons lack meaningful in comparing of results in intervention and control groups.

However, studies such as Brown et al.'s (2012) (34) Swedish massage was found effective in reducing anxiety, pain, muscle tension, increasing satisfaction of patients and relaxation after heart surgery. Also, Boitor et al. (2015) (37) reported a significant impact of massage on pain relief and

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muscle tension in patients undergoing cardiac surgery (CABG, heart valve replacement, or both).

In the present study was obtained the interesting result including significant difference in mean of comfort and its` dimensions in control group after intervention that likely be due to positive impact of routine cares. Also, nurses of the intensive care unit, especially nurses of open heart surgery unit, in Golestan heart center were educated about care of open heart surgery patients. This can be conducive to the current findings.

From the limitations of the present study was cultural, psychological and behavioral characteristics of the participating patients in the study, especially concerning the implementation of massaging, which is not controllable. Differences in the educational needs of patients were another limitation of this study. As mentioned already, educational content was presented identically for all patients. Other notable limitations comprised of time limitation to follow implementation of comfort-centered cares and limited control of the researcher on adjustment of some environmental factors` such as lack of separate room for each patient.

Conclusions

According to the results of this study, combined application of reflective massage and education can enhance comfort of patients undergoing CABG. However, lack of significant difference in comfort results of the two groups after intervention expresses the necessity of revision, restoration and strengthening of comfort-centered programs, such as what was investigated in this study.

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Conflict of interests

The authors declare no conflict of interest.

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