The Effect of Utilizing Organizational Culture Improvement Model of Patient Education on Coronary Artery Bypass Graft Patients' Anxiety and Satisfaction: Theory Testing

Mansoureh Ashghali Farahani[1], Fatemeh Ghaffari[2], Faezeh Norouzinezhad[3], Roohangiz Jamshidi Orak[4]

[1] Associate Professor in Nursing, Iran University of Medical Sciences, Tehran, Iran
[2] Assistant professor, Nursing Care Research Center, Babol University of Medical Sciences, Mazandaran, Iran
[3] Faculty Member, MSN, BSc, Nursing Care Research Center, Babol University of Medical Sciences, Mazandaran, Iran
[4] Ph.D. in Biostatistics, Assistant Professor, Iran University of Medical Sciences, Tehran, Iran

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Abstract

Introduction: Due to the increasing prevalence of arteriosclerosis and the mortality caused by this disease, Coronary Artery Bypass Graft (CABG) has become one of the most common surgical procedures. Utilization of patient education is approved as an effective solution for increasing patient survival and outcomes of treatment. However, failure to consider different aspects of patient education has turned this goal into an unattainable one. The objective of this research was to determine the effect of utilizing the organizational culture improvement model of patient education on CABG patients' anxiety and satisfaction.

Methods: The present study is a randomized controlled trial. This study was conducted on eighty CABG patients. The patients were selected from the CCU and Post-CCU wards of a hospital affiliated with Iran University of Medical Sciences in Tehran, Iran, during 2015. Eshpel Burger's Anxiety Inventory and Patients' Satisfaction Questionnaire were used to collect the required information. Levels of anxiety and satisfaction of patients before intervention and at the time of release were measured. The intervention took place after preparing a programmed package based on the organizational culture improvement model for the following dimensions: effective communication, participatory decision-making, goal setting, planning, implementation and recording, supervision and control, and improvement of motivation. After recording the data, it was analyzed in the chi-square test, t-independent and Mann-Whitney U tests. The significance level of tests was assumed to be 0.05. SPSS version 18 was also utilized for data analysis.

Results: Research results revealed that variations in the mean scores of situational and personality anxiety of the control and experiment group were descending following the intervention, but the decrease was higher in the experiment group (p≤0.0001). In addition, the variations of the mean scores of patients' satisfaction with education were higher in the experiment group than the control group (p≤0.0001).

Conclusion: Utilization of the organizational culture improvement model of patient education reduces stress in CABG patients and increases their satisfaction with the provided education considering the factors involved in patient education, which were incorporated in the designed model.

Keywords: Patient education, Anxiety, Satisfaction, Coronary Artery Bypass Graft

1. Introduction

Cardiovascular diseases are the major cause of mortality in today's modern world. These diseases account for more than sixteen million deaths each year, and more than eighty percent of these deaths occur in low- and average-income countries (1, 2). The results of several studies conducted in Iran indicated that heart diseases, particularly CADs with a prevalence of seventy percent, are the most common cause of death in Iran, and the incidence rate per one hundred thousand people is about 181.4 (3). Heart surgery is the most common therapeutic intervention

administered for ischemic patients (4). Surgical treatment (including CABG) is a substantial and vital method for these patients (5). In Iran, 25000 heart surgeries are carried out each year, and CABG accounts for 50 to 60% of these surgeries (6). Patients who are vulnerable to CABG surgery experience great anxiety, so that 52% of them before surgery, 36% shortly after surgery and 32% three months post operatively show levels of anxiety (7). Anxiety leaves adverse effects on the cardiovascular system. Several studies have also indicated that heart diseases are more common in anxious people (8). Level of anxiety before and after cardiovascular interventions can increase the myocardium's need for oxygen and lead to outbreak of pain, which is caused by the reduction in the flow of blood to the heart muscle and arrhythmia. In addition, the adverse physiological effects of anxiety on the cardiovascular system hinder recovery and considerably increase cardiac output (9). Anxious patients are usually discharged from hospital with dissatisfaction (10). In CABG patients, stress and anxiety are caused by their fear of adapting to the new situation and their lack of adequate information (11, 12). Based on previous studies, it appears that increasing attention to information giving contacts on discharge may improve the quality of recovery period for patients having CABG (13). Considering the high rate of relapse in CABG patients, it is necessary to provide training on self-care to these patients. Education of this group of patients not only reduces surgery side effects, but also prevents relapse of coronary arteries diseases and reduces the mortality caused by this disease (11, 14). The most important goal for nurses is to protect and enhance the levels of health, mitigate anxiety of patients, and assure them before open heart surgeries and hospitalization in the ICU (intensive care unit). Nurses should make every effort to reduce the physical and psychological stresses of patients in collaboration with other members of medical teams (15-17). Due to the positive effect of education on anxiety and satisfaction of patients, researchers should identify the barriers to education of patients and try to utilize appropriate solutions to provide education effectively. In this regard, results of a qualitative study in Iran (18) showed that one of the important barriers to this goal is formed of cultural obstacles and inappropriate organizational culture. This theory is rather general and may be only evaluated, assessed and approved theoretically (by assessing logical accuracy, strength, and consistency), because this theory cannot be criticized and emulated directly with an experimental approach. Moreover, to criticize this theory experimentally it is necessary to develop it as a clinical model with an operational and applicable form. Theory testing or evaluation of a model through its utilization under clinical and replication of the test not only lead to development and improvement of the model, but also increase its use in nursing and nursing knowledge development fields. Theory testing is highly important for development, acceptance, and utilization of a model, and experimental testing allows for identification of its effect and efficiency (19). In this research, the quasi-experimental approach was used to understand the effect of the organizational culture improvement model of patient education on CABG patients' anxiety and satisfaction.

2. Material and Methods
2.1. Research design and participants
The present research is a quasi-experimental study. The research environment included the CCU and Post-CCU wards of a hospital affiliated with Iran University of Medical Sciences in Tehran, Iran, during 2015. The reason for selecting this environment was the adequate number of samples and uniformity of organizational culture of the environment. The research population included all of the CABG patients, aged between forty to seventy years. The patients did not suffer myocardial infarction and class II/III heart failure. They were also willing to cooperate and participate in this research and were fully conscious (aware of the time, place, and persons). The exclusion criteria for this research included the need for emergency surgery and operation at a medical or nursing position. The sample was collected using the convenience sampling method. The sample size was estimated to be forty for each group (experiment and control groups) using the sample size formula utilized in quasi-experimental work, similar research, and the mean levels of coronary patients' anxiety before and after the study that was conducted in 2008 in Tehran (19). Precision of the sampling process was satisfactory and the procedure was carried out at a safety level of 95% and test power of over 90%. Considering the possibility of sample loss, the sample size for both groups was estimated to be fifty. Factors matched in the study and control group were age and gender.

2.2. Instrument
2.2.1. Eshpel Burger's Anxiety Inventory:
This inventory includes forty items, which allow the patient to rank his/her feelings with scores as 1 (for lack of anxiety) to 4 (for high anxiety) (20). The minimum score of situational and personality anxiety is 20 while the maximum score is 90. The total anxiety score ranges from 40 to 160. Validity of Spielberger's Anxiety Inventory was approved in Iran by Mahram in 1993 (21). The internal consistency of this scale was obtained to be 0.889 in this research using Cronbach's alpha coefficient.

2.2.2. Patients' satisfaction questionnaire:
This questionnaire consists of eighteen statements. Statements 1 to 9 question the patient's satisfaction with the education provided by nurses on different topics (including the administered drugs, medicine side effects, diet, physical and sexual activities, and drug abuse). Statement no. 10 questions the training provided on follow ups and visits, and statements 11 to 14 cover effectiveness of communication. Finally, questions 15 to 18 deal with the time, place and content of the educational program. This questionnaire is completed by the patient or by the researcher if the patient is illiterate. Patients express their opinion on each statement based on a three-point Likert scale (I am satisfied; I am partly satisfied; I am not satisfied). The scientific reliability of this questionnaire was approved by splitting the questions with reliability coefficient of r=99.8%. This scale was developed by Heshmati (22).

2.3. Data collection
The present research was based on the organizational culture improvement model of patient education, which was designed by Eshqeli Farahani et al. (18). Hence, the following steps were taken to test this model: 1) Pre-intervention phase: In this stage, patients in the control group received no intervention other than the routine therapeutic and care programs. The dependent variables (patient's anxiety and satisfaction) were studied at the beginning of the research and the time of releasing patients. 2) Intervention phase (testing the designed model): Samples were selected using the convenience sampling method. The designed organizational culture improvement model of patient education was applied to the experimental group by the nurses, and the dependent variables (patient's anxiety and satisfaction) were studied at the beginning of the research and at the time of release. The intervention included the following components:

2.3.1. Constructive communication:
For this purpose, three training workshops on methods of effective communication were held for nursing administrators (matrons, education supervisors, and clinical supervisors) and nurses. These workshops were on three different days through lectures, discussions, case studies, and topical pamphlets.

2.3.2. Participatory decision-making:
Following a briefing session, the researcher (the first author of this paper) discussed the notions, philosophy, objectives, and implementation of the model with nursing administrators and nurses, and used their opinions and suggestions. Afterwards, in collaboration with the aforementioned individuals, he formed a committee on planning, implementation, supervision, and control of the patient education program. Moreover, at the time of implementing this model, official and non-official sessions were held with all members on the provided educational program and their opinions and recommendations were used. In this stage, all of the group members reached consensus on different steps of implementation and method of implementation.

2.3.3. Goal setting:
In this phase, the primary and secondary objectives were determined based on patients' needs and problems and in accordance with educational standards through a step-wise process. Moreover, the form of assessment of patients' educational needs, which was designed based on educational standards and the committee's opinion, was provided to the nurses.

2.3.4. Planning and implementation:
The patient education program was implemented in a place with suitable sound level, lighting, and factors for six days in accordance with the major and minor goals of the program. Two educational posters were attached in locations with the highest possibility of use, and a pamphlet, which was developed based on the needs and opinions of the education program's committee, was presented to the patients. It shall be mentioned that the content of the pamphlet and posters were approved by an internist, a heart surgeon, and a nutritionist. The teaching method, implementation of the education program, and installation of posters were determined based on the opinions and suggestions of members of the education program committee of the project. According to the ward routine and hospital's policy, patients hospitalized in CCU were introduced to the education program, training sessions, and training contents on the first day. They also received information on the surgery, respiratory exercises, and method of providing care in the ICU open heart surgery ward. Following the surgery, when the patients were transferred from the ICU open heart surgery ward to the general ward, they partly recovered their physical, psychological, and mental well-being and the education program was followed within different days in accordance with the educational content and educational needs of patients. Each day patients were asked questions, which would motivate learning on the next day based on the educational contents of the following day. Examples of these questions included the following: Do you know which diet is suitable and useful for you? Do you know why aspirin was prescribed for you? Do you know the best time for consuming the prescribed aspirin? During the training sessions, the nurses gave examples to clarify the contents and patients' understanding of the education program. They also used strategies such as contents review, model presentation, and persuasion of patients to facilitate learning and to motivate

patients. The presented educational program was reviewed on the fifth and sixth days and all of the questions and problems of patients were addressed. At the end of each phase, the nurse in charge of training recorded the presented programs.

2.3.5. Supervision and control:
The nursing administrators supervised and controlled implementation of the educational program both directly and indirectly. A checklist was developed for this purpose based on standards for evaluation of the educational program and opinions of the education program's committee. In addition, results of evaluation were reported to nurses to reinforce the strengths and eliminate weaknesses. Nursing administrators used strategies for valuing and institutionalizing education to encourage and support nurses in this regard.

2.3.6. Motivation:
The nurses received financial and spiritual incentives (such as fees, written encouragement, and oral encouragement) based on their performance. The nurses' performance regarding education of patients was recorded on their occupational files and was taken into account in their evaluations. In addition to nurses, motivational actions were also taken for patients. Some of these actions included informing patients of their educational rights and their disease and treatment process, creating pamphlets and attractive/appropriate posters, encouraging patients' peers to educate each other, asking motivating questions, encouraging patients to find the risk factors associated with their coronary artery disease, considering these factors in following comprehensible/simple educational recommendations on preventing restenosis of grafted arties and treating/caring on the basis of disease pathophysiology, evaluating levels of awareness, performance and attitude of patients regarding the received education, and reporting evaluation results to patients.

2.4. Statistical analysis
The descriptive and inferential statistical methods were employed to analyze the data. The Chi-square test was used to examine the relationship between qualitative variables. Moreover, the independent-samples t-test method was used to compare mean values in the case of normal distribution, while the statistical test method was used in the case of lack of normal distribution. The significance level of tests was assumed to be 0.05. SPSS version 18 was also utilized for data analysis.

2.5. Moral Considerations
The written and informed consent of participants was obtained, and their information remained confidential. The right to leave the study in any stage remains preserved for the participants. To follow moral considerations, following the research, the researcher provided the control group at the time of dismissal with hand books.

3. Results
Results of the chi-square statistical test and Fisher's exact test showed no significant difference between the control and experimental groups regarding the demographic variables (including education level, marital status, insurance status, occupation, history of hospitalization, history of heart diseases, and history of surgery). Results revealed that mean values of situational anxiety in the experiment and control groups show a descending trend, while the significance level in both groups demonstrates a significant difference before and after the intervention (df=39, t=3.82, p≤0.0001). However, the difference between the means of the experiment group is larger. The changes in the mean values of situational anxiety in the control groups showed a descending trend before and after the intervention. The independent t-test also shows a significant difference between the pre- and post-intervention results (df= 78, t=-6.2, p≤0.0001). The mean values of personality anxiety in the experiment group display a descending trend. Results of the paired t-test also indicated a significant difference before and after the intervention (df=37, t=3.5, p≤0.0001). However, this test does not show a significant difference in the pre- and post-intervention results of the control group (df=35, t=0.87, p=0.38). Results of the independent t-test do not show a significant difference between results of personality anxiety of the two groups before and after intervention (df=77, t=-1.07, p=0.28). Research results indicated that variations of satisfaction were higher in the experiment group than the control group. The independent t-test also showed no significant difference between results of the two groups following the intervention (t=16.74, p≤0.0001).

4. Discussion
In the present research, anxiety of patients was examined in the situational personality dimensions. In this regard, variations of mean values of situation and personality anxiety in the experiment and control groups showed a descending trend, but the decrease was more significant in the experiment group. Results of this research revealed that utilization of the organizational culture improvement model of patient education can play a significant role in

the reduction in anxiety of CABG patients through effective communication with them, need assessment, participatory decision-making (for educating all patients), increased motivation of patients for learning and increased motivation of nurses for teaching. This finding reflects the effect of non-pharmacological treatment on the reduced anxiety of patients with heart diseases. Abedini et al. (23) believe that nurses can increase patients' motivation for learning and effective of educational topics by assessing education needs of patients. Lalani and Gulzar argued that patient education calls for high levels of motivation as a professional activity. Educating nurses by increasing their awareness and knowledge leads to the improvement of their motivation for actively participating in patient education programs (24). Results of other studies also indicated that patient education drastically reduces anxiety scores (25-27). In an investigation by Serlie et al. (27) the mean anxiety of participants decreased significantly following training. Results of various studies indicated that excessive anxiety of patients with cardiac ischemia hinders recovery and increases chances of arrhythmia and mortality (29, 30). It can also prevent psychological adaptation with cardiovascular diseases as well as patient's physical recovery following CABG. It can eventually reduce patient's self-care potential (31). It is possible to mitigate levels of anxiety (23) and improve quality of nursing care through education (27). Results of the present research also indicated that utilization of the organizational culture improvement model of patient education can play a considerable role in increasing the satisfaction of CABG patients through provision of training to nurses on methods of educating patients. These findings comply with results of other studies (22, 32, 33). Patients with heart diseases are specifically in need of training in the course of hospitalization and at the time of release. Moreover, the chronic nature of such diseases along with their potential and active complications reveals the significance of educating patients. One of the dimensions of patient satisfaction is informing patients of their disease. Since the knowledge and attitude of nurses significantly influences patient education and their improved performance, it is necessary to plan in-service training programs for nurses to educate them on patient education (34). Another dimension of the organizational culture improvement model of patient education, which affects patient satisfaction, is assessment of patient's educational needs and establishment of a constructive communication with the patient. Research results indicated that establishment of transparent relationships and provision of information on the care received by patients are essential to patients' satisfaction. Patients that are aware of clinical procedures display an increased level of adaptation to the disease and the diagnosis/treatment process as well as an increased level of cooperation in following the therapeutic system. Health care training improves patient independence, self-care, and trust in care, mitigates anxiety and outbreak of diseases, and reduces relapse and return to hospital (35, 36). Results of this research also showed that subversion and control over the patient education process can improve patients' satisfaction. These findings comply with results of other studies (37, 38). Results of the study by Farahani et al. (39) indicated that one of the major barriers to education of patients with coronary artery diseases is the lack of supervision and control over the educational role of nurses by nursing administrators. On the other hand, effectiveness of activity of employees of each organization largely depends on supervision over their performances (40). Since patients' satisfaction with nursing services is a very important measure in assessing the quality and method of provision of nursing services (41, 42), utilization of effective interventions (such as patient education using the organizational culture improvement model) seems necessary in view of findings of the present study.

5. Research Limitations
Since the independent variable for this research was improvement of organizational culture of patient education, the random sampling method could not be employed in this research. Hence, as mentioned, the samples were selected using the purposive sampling technique.

6. Conclusions
Findings of this research indicated that utilization of the organizational culture improvement model of patient education reduces anxiety of CABG patients and increases their satisfaction. It is recommended that the provided education considering factors involved in patient education (such as effective communication, participatory decision-making, supervision and control, and motivating patients and nurses), which were incorporated in the designed model. Doing a completing research on utilizing organizational culture improvement model and on other chronic disease patients and with the methodology of randomized control trial can be a good future subject to probe.

Conflict of Interest:
There is no conflict of interest to be declared.

Authors' contributions:
All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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