

The Effect of Using Peplau's Therapeutic Relationship Model on Anxiety of Coronary Artery Bypass Graft Surgery Candidates

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Background: Anxiety is a one of the psychological aftereffect of cardiac surgery, which affects the outcome of treatment. One of the most effective ways to reduce anxiety is to train and establish a targeted relationship based on a functional model.

Objectives: The present study aimed to determine the effect of Peplau's therapeutic relationship model on anxiety of patients who were candidate for coronary artery bypass graft surgery (CABG).

Patients and Methods: In this clinical trial, 74 patients were enrolled according to eligibility criteria and were randomly allocated to intervention and control groups of 37 people. We evaluated anxiety of the patients using the Beck anxiety inventory before, immediately after, and two and four months after intervention. Based on Peplau's therapeutic relationship model, therapeutic communication sessions were conducted in four phases during seven sessions. Data analysis was performed with the statistical test of covariance analysis using SPSS version 16.

Results: The results of our study showed that after therapeutic communication, the mean score of anxiety decreased from 30.35 to 25.38 in the intervention group ($P < 0.001$), while the scores decreased from 33.22 to 31.46 in the control group. Furthermore, the mean score of anxiety in the intervention group decreased at two and four months after the intervention.

Conclusions: The findings showed a positive effect of therapeutic relationship based on Peplau's model on reducing anxiety of patients undergoing CABG. Therefore, health care teams, including nurses, should take advantage of appropriate communication with patients in their care procedures. In that regard, Peplau's communication model is recommended as a simple, low-cost, and efficient method.

Keywords: Communications; Therapeutics; Anxiety; Coronary Artery Bypass

1. Background

Development and industrialization of societies as well as changes in stress sources have shifted the pattern of diseases from the infectious diseases and malnutrition to heart diseases, diabetes, and accidents (1, 2). One of such diseases is coronary artery disease (CAD) with millions of people anticipated to it and the prevalence of 30% to 35% in the East Mediterranean countries, including Iran (3-5). In fact, CAD is a chronic disease with a high mortality. In the long run, it can limit individual's life and lead to inability or incapacity of a large portion of the productive forces, decreased production, and increased healthcare costs (4-7). Despite the emphasis on the disease prevention and the development of new therapies, surgery is still the only effective treatment for many of cardiac patients (8). Coronary artery bypass graft surgery (CABG) is performed to treat patients with CAD. During the treatment of CAD, nothing can affect the patients' quality of life as much as a heart surgery (6). Hence, cardiac surgery is an important event in the lives of individuals, which can negatively af-

fect their economic, professional, and personal lives (9). Each operation is accompanied with several psychological complications; the most important complication is anxiety, which is experienced by nearly 65% of cardiac patients after surgery and medical interventions. In fact, it can be said that these complications make treatment difficult for many patients (7-9). Some scientists believe that anxiety is one of the essential elements of human life; however, when occurs in the chronic conditions, it is a component in all mental illnesses (10). As Nemati et al. argue, anxiety disorder is one of the most commonly reported complications following cardiac surgeries (11). Anxiety can increase patient's heart and respiration rates as well as blood pressure and can even cause death. Therefore, measures should be taken to identify and reduce its severity (10, 12). Due to the occurrence of such complications in patients with CAD, various health and care measures should be taken to reduce these problems (13), the best of which is to establish appropriate communication with the patient

(14-16). Researches have shown that a good and effective communication is highly valuable from the patient's perspective (15). In general, communication is a set of learnable clinical skills (17). Without proper communication, performing many current and everyday affairs is impossible (18). In fact, poor communication is the cause of various problems in therapy (14). Therefore, communication is essential in healthcare (19). In clinical practice, it is understood as a therapeutic and professional relationship. In the health professions, relationship and communication skills have crucial roles in satisfying patients' expectations and solving their problems (20). This is especially more significant in patients with chronic diseases requiring long-term care (15-17).

The term therapeutic relationship refers to a useful relationship with a positive effect (21). Therapeutic relationship is shaped by the patient's first encounter with the medical team (18, 19); however, studies have shown that the relationship between patient and medical team were not effective enough and health personnel lack proper communication with patients (22).

Little time spent by nurses and care staff in communicating with patients often leaves the patients dissatisfied with the amount of received information as well as the way they are communicated with. Hence, communication should be addressed in order to achieve the best treatment outcome (19, 23). Since nursing is a practical field based on professional knowledge (4, 7), the knowledge should be used in order to create new approaches in clinical practice. In this regard, it can get help from theories of nursing scientists (20, 21). For this purpose, Peplau's inductive theory was used to establish a simple, convenient, and yet purposeful therapeutic relationship, in which the relationship between nurses and patients is an essential element (23, 24). In his theory, Peplau refers to the importance of the therapeutic relationship with patients and the significant role of communication in reducing anxiety (21, 24). In fact, this theory provides a framework for communication between nurses and patients according to which a nurse responds to the communication needs of a patient and establishes a therapeutic relationship with him or her (20, 22). Hospitalization and undergoing a heavy surgery such as CABG are stressful and tense conditions; therefore, mental relaxation and security is one of the basic needs of patients through which an appropriate and structured therapeutic relationship can be simply achieved at a low cost.

2. Objectives

This study aimed to determine the effect of using Peplau's therapeutic relationship model (PTRM) on anxiety of patients undergoing CABG.

3. Patients and Methods

This study was a clinical trial that examined the effect of the independent variable of PTRM on the dependent

variable of anxiety. We included all candidate for CABG who were referred for elective surgery to the research environment. In this study, Al-Zahra Heart Hospital in Shiraz was chosen as the research environment because of the easy access to subjects and the appropriate number of patients referring to this environment. Beck anxiety inventory (BAI) was employed to measure the anxiety of patients. Reliability and validity of BAI was examined by Kaviani et al. and the internal consistency was set at 92% with Cronbach's alpha. BAI has 21 items scored from never (0) to severe (3); the total scores between zero to seven are regarded as never, eight to fifteen as mild, 16 to 25 as moderate, and 26 to 63 as severe anxiety.

Among the participants, ten patients with BAI score of ≥ 10 were selected as a pilot group. Since there was no error rate to calculate the sample size, the data were analyzed after the test procedures. The actual sample size was calculated at 32 using the formula of sample size; considering 15% loss of the samples during study, we reached the samples size of 37 in each group. Participants were randomly allocated to two groups. The inclusion criteria were being on the CABG list, having severe to moderate anxiety, no history of mental illness, no history of prior CABG, age of 35 to 70 years, and ability to communicate verbally in Farsi language. Patients who were not candidate of CABG for any reasons, died during the study period, or lacked collaboration in the therapeutic relationship program sessions (two sessions) were excluded. Therapeutic communication sessions for the intervention group were based on PTRM at four phases as follows: orientation, identification, exploitation, and termination.

3.1. Peplau's Phases

3.1.1. Orientation Phase

In this phase, researcher played the role of a stranger. In fact, it was a phase to acquaint patients with the researcher and initiate the intervention during which the researcher briefly established a communication with the patients. This phase lasted 25 to 40 minutes and was held nearly four to five days before the surgery (21, 22).

3.1.2. Identification Phase

In this phase, the physical and psychological data of each patient were collected by the researcher. Then the patients expressed their feelings, fears, and anxieties by talking about their problems. In this phase, the researcher asked the patients to discuss all their questions. Then the patients' expectations of healthcare team were specified. After determining the patients' expectations, the researcher briefly pointed to the care team's efforts to improve patient's health, and gave a brief explanation on how CABG would be done and pre-operation and post-operation cares would be provided. The second phase took place a day before surgery and lasted 35 to 60 minutes (21).

3.1.3. Exploitation Phase

This phase took place after the surgery. Approximately one to two days after surgery, the researchers held a ten to twenty minute session in the intensive care unit. Based on their hemodynamic conditions, the patients expressed their postoperative concerns and feelings. About a week after CABG, the patients were discharge from the hospital. After coordination and agreement with the patients and their families, the next therapeutic relationship session was held in the patients' homes. The aim of this session was to evaluate the general condition of the patients, their problems, and concerns after discharge. This session lasted approximately 40 to 60 minutes (22, 23).

3.1.4. Termination Phase

This phase was performed during three of 45- to 60-minute sessions that were more focused on the patients' emotional problems. The researcher explained the mental support resources available to the patients (family, friends, psychologist, psychiatric nurse, etc). In these sessions, the researcher also noted the importance of follow-up, rehabilitation sessions, and the patients' lifestyle changes (21-23).

A total of seven therapeutic communication sessions were held individually in the hospital and the patients' homes depending on the consent of the patients and their families. During the therapeutic relationship program, duration of each session could be changed according to the circumstances and the patients' needs. The location for each session was determined according to the patients' convenience and consent. At all sessions, the researcher used verbal and nonverbal therapeutic relationship skills. For both test and control groups, patients' degree of anxiety was measured once at the beginning of the study and then two and four months after the surgery. Finally, the data analysis was performed using descriptive statistics as well as the statistical test of covariance analysis using SPSS 16 (SPSS Inc., Chicago, IL, USA).

3.2. Ethical Considerations

The ethical issues considered in this study included the provision of adequate explanations to the patients, obtaining informed consent, absence of any obligation for the patients to participate in the study, respecting privacy of the patients, confidentiality of the information obtained from them, and reporting the study results without mentioning their names and individual characteristics. This study was registered at the Iranian registry of clinical trials (IRCT) with the code number of IRCT2013072214110N1.

4. Results

The participants aged 51 to 60 years (91.8%) and 51 to 60 years (83.7%) in the intervention and control groups, respectively. Independent-samples t-test showed no significant difference in age between groups. The number

of men in the intervention group (70.3%) was higher than women. In contrast there were nearly equal number of males (51.4%) and females (48.6%) in control group. Fisher's exact test showed no statistically significant differences regarding sex distribution between study groups. All the patients in the current study were married. Regarding education, the majority of the participants in both groups had primary education and Chi square test showed no significant difference between the patients' level of education. Concerning the status of the underlying disease in the study groups, 35.1% had hypertension in both groups (Table 1). Table 2 shows that the mean BAI score in the intervention group decreased after the test, while the mean score increased in the control group postoperatively. In the analysis of covariance were used to determine the effect of PTRM on anxiety in participants. BAI was used to measure the degree of anxiety, and BAI scores were used for the analysis of covariance. Results showed that after

Table 1. Basic Characteristics of Patients in Study Groups ^a

Variable	Intervention (n = 37)	Control (n = 37)	P Value
Gender			0.06
Female	11 (29.7)	18 (51.4)	
Male	26 (70.3)	19 (48.6)	
Age			0.36
40-50	0 (0)	0 (0)	
51-60	34 (91.8)	31 (83.7)	
61-70	3 (8.2)	6 (16.3)	
Education level			0.28
Illiterate	1 (2.7)	0 (0)	
Primary school	28 (75.6)	26 (70.3)	
Cycle degree	6 (16.3)	6 (16.3)	
High school	0 (0)	2 (5.4)	
Diploma	2 (5.4)	3 (8.2)	
Academic	0 (0)	0 (0)	
Marital status			
Single	0 (0)	0 (0)	
Married	37 (100)	37 (100)	
Divorced	0 (0)	0 (0)	
Risk factors			0.7
Lack of underlying disease	8 (21.6)	8 (21.6)	
Renal failure	0 (0)	0 (0)	
Diabetes	1 (2.7)	0 (0)	
Blood pressure	13 (35.1)	13 (35.1)	
Blood lipids	7 (18.9)	4 (10.8)	
Heart failure	0 (0)	0 (0)	
Stroke	0 (0)	0 (0)	
More than one disease	5 (13.5)	9 (24.3)	

^a Data are presented as No. (%).

Table 2. Pretest and Posttest Beck Anxiety Inventory Scores in Study Groups ^a

	Pretest	After Surgery	Two Months After Surgery	Four Months After Surgery
Intervention	30.35 ± 4.18	25.38 ± 3.57	26.65 ± 4.14	4.30 ± 22.22
Control	33.22 ± 4.77	36.08 ± 4.57	31.46 ± 4.46	5.49 ± 29.68

^a Data are presented as mean ± SD.

Table 3. Covariance Analysis of Posttest Beck Anxiety Inventory Scores in Study Groups With Pretest Control ^a

Source	SS	DF	MS	F	P Value
Pretest hospital anxiety					
Immediately after surgery	761.65	1	761.65	120.76	0.000
Two months after surgery	4.21	1	4.21	0.230	0.633
Four months after surgery	41.17	1	41.17	1.71	0.195
Intervention group					
Immediately after surgery	1245.79	1	1245.79	197.52	0.000
Two months after surgery	412.83	1	412.83	22.56	0.000
Four months after surgery	1056.30	1	1056.30	43.83	0.000
Error					
Immediately after surgery	447.81	71	6.31		
Two months after surgery	1299.41	71	18.30		
Four months after surgery	1711.21	71	24.10		
Total					
Immediately after surgery	73208	74			
Two months after surgery	64198	74			
Four months after surgery	52598	74			

^a Abbreviations: DF, degree of freedom; F, F-test; MS, Mean of the Sum; SS, sum of squares.

adjustment of posttest scores by eliminating the effect of pretest, there were no significant differences between the test and control groups, in terms of the anxiety severity (immediately as well as two and four months after the surgery). The adjusted mean scores of anxiety showed that the severity of anxiety in the intervention group was less than in the control group. Indeed, a comparison of the mean BAI score in the intervention group at pretest and posttest indicated an independent effect of the therapeutic relationship, according to PTRM, on the reduction of anxiety severity in the intervention group ($F = 197.57$; $P = 0.000$). Such a difference was not analyzed. Furthermore, the results showed that two months after the intervention, anxiety severity decreased in the intervention group in comparison to the control group. ($F = 22.56$; $P = 0.0000$; and $F = 43.83$; $P = 1.000$, respectively) (Table 3).

5. Discussion

Our study indicated that establishing therapeutic communication sessions with patients undergoing CABG could dramatically reduce the severity of their anxiety. It indicated the effect of communication and therapeutic relationship with patients in a more purposeful and functional manner, which greatly contributed to the healing process. PTRM is one of the simplest, yet functional health

patterns, which refers to nurses' key role in communicating with patients. As an essential technique in life, communication is a two-way process in which two people participate. Communication is a technique that can be fitted with the social context of individuals (25-27). During communication with the patient, a patient and a nurse can interact and each can take an active role in exchanging information (26, 27). Sangestani et al. showed that from 444 hours of 74 shifts in 74 nurses, they was made in a total of 40 hours communication process. In the study by Coiera et al. in Australia, 35 hours and 13 minutes were observed, and 1286 distinct communication events were identified, representing 36.5 events per person per hour in nurses, which confirm the importance of communication and its effect on treatment (28, 29). The results of that study were not consistent with the present study.

The level of observation of patients' rights in communication was reported at 60% in the study by Vaskoey-Ashkooi et al. which represents a moderate level of communication skills (30). Sangestani et al. suggested that the average time to establish communication by a nurse in six-hour shifts was 32 minutes in about one case of communication process, which for each relationship, the nurse interacted with a patient for just three minutes on average; this short time indicated a poor and inadequate

communication of the nursing team (28). According to the previous studies, nurses do not establish appropriate relationships with patients and do not have enough awareness of the importance of communication and therapeutic relationship (31). Therefore, the communication and time spent with patients as well as the use of a targeted and coordinated communication by a nurse can highly affect treatment outcomes. Results of a study conducted on 30 burn patients showed that establishing appropriate and targeted communication with patients is an important strategy to reduce anxiety severity, to support burn patients, and to increase their information (32). The study by Reynolds and Carnwell regarding the importance of nurse and patient communication in care was also consistent with the results of this study (20).

PTRM is also used to solve the systematic problems of the family and to treat patients with chronic diseases. McGuinness et al. applied PTRM in patients with multiple sclerosis in Canada from making the diagnosis to the admission and full acceptance of the disease by patients and their families (33). The results of their research showed that the use of PTRM not only helped the healing process but also greatly reduced their psychological distress and concerns. It revealed the ambiguities and deficiency that patients bear in mind regarding their disease and involved the patients in their treatment process. The findings of this study were consistent with the current research. Furthermore, the results of a study conducted by Manzari et al. on burn patients showed that the severity of pain in burn patients was considerably reduced through applying therapeutic communication sessions with Peplau's underlying principles, which indicated the importance of nurse and patient communication (34). These results were in line with our findings.

Finally, the results showed that establishment of a coherent and purposeful, yet simple therapeutic relationship with patients and the attention paid to their feelings after surgery can dramatically reduce the severity of their anxiety during various sessions and can speed up their recovery process. To promote the nurse-patient relationship and create a more effective communication and treatment processes that can improve clinical practice, we recommend to include programs in in-service trainings to educate and acquaint the treatment team with the simple and inexpensive, but effective communication skills, and to use this procedure in clinical settings. The limitations of the present study were the individual characteristics and circumstances of the patients' life, which affected the intervention conditions.

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Authors' Contributions

SM: Study design, data collection/analysis, drafting of manuscript, supervision. KZ: administrative/technical/material support, critical revisions for important intellectual content. BD: administrative/technical/material support, supervision. MHH: Study conception, data analysis, and supervision.

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