

The Impact of Peplau's Therapeutic Communication Model on Anxiety and Depression in Patients Candidate for Coronary Artery Bypass

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Abstract: Background and Objective: Anxiety and depression are among the psychological disorders in heart surgeries. Establishing a simple communication is essential to reduce anxiety and depression. Hence, the objective of the present study was to examine the impact of Peplau therapeutic communication model on anxiety and depression in patients, who were candidate for coronary artery bypass in Al-Zahra Heart Hospital, Shiraz during 2012-2013. Methods: This is a clinical trial in which 74 patients were randomly divided into intervention and control groups, each consisted of 37 patients. Anxiety and depression levels were assessed before, and two and four months after intervention using the Hospital Anxiety and Depression Scale (HADS). Seven therapeutic communication sessions were held in four stages. Data were analyzed with the SPSS (version 16) using analysis of covariance. Results: The mean anxiety and depression levels decreased in the intervention group after the therapeutic communication ($p < 0.01$). Anxiety scores in the intervention group before and after intervention were 10.23 and 9.38, respectively. While the corresponding scores in the control group were 10.26 and 11.62, respectively. Depression scores in the intervention group before and after intervention were 11 and 9.13, respectively. The corresponding scores in the control group were 11.30 and 12.08, respectively. Conclusion: The results demonstrated the positive role of therapeutic communication in reducing anxiety and depression of the patients. Therefore, the therapeutic communication is recommended as a simple, cost effective and efficient method in this area.

Keywords: Anxiety, communication, coronary artery bypass surgery, depression, Peplau, therapeutic communication.

INTRODUCTION

Development of human societies and industrialization as well as changes in stress sources has changed disease pattern in civilized societies. As a result, the disease pattern has changed from traditional diseases such as infectious diseases and malnutrition to diseases such as heart disease, diabetes, accidents and so forth [1]. Among them are coronary artery diseases. Coronary artery disease is the most cardiovascular disorder as a health problem in developing and developed countries [2]. In fact, this is not only a chronic disease associated with high mortality, but it causes limitations in life and disability in a large part of the productive forces of the country. It is also associated with reduced production and increased medical costs [3-5].

Nowadays, cardiovascular diseases are among the most widespread chronic diseases in most countries. According to forecasts, cardiovascular diseases would sacrifice 25 million patients until 2020. The mortality rate in eastern Mediterranean countries including Iran will be 30-35% [6, 7]. Despite the emphasis on prevention and development of new

treatments, surgery is the only choice for many patients with cardiovascular disease [8].

One of the surgical procedures for the treatment of cardiovascular patients is coronary artery bypass surgery. In fact, heart surgery significantly influences on the quality of life of patients with cardiovascular diseases [6]. Hence, heart surgery is an important event in the lives of patients causing collapse of economic, professional and personal life [4]. On the other hand, each surgical procedure is associated with several psychological complications for patients [7].

Of the most important complications are anxiety and depression so that approximately 65% of cardiovascular patients experience them after surgical and medical interventions. In fact, anxiety and depression complicate the treatment process [7, 8]. Some scientists believe that anxiety is one of the essential elements of human life. However, acute and long-term anxiety is integral part of all psychological diseases [9]. According to Nemati and colleagues, anxiety is one of the most commonly cited complications after heart surgery [10]. In fact, anxiety is a common psychological response of cardiovascular patients which is associated with reduced quality of life and psychological morbidity [11, 12]. On the other hand, anxiety causes increased heart rate and breathing as well as high blood pressure and even mortality.

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Thus, some measures should be done to identify and reduce anxiety [10].

Depression is among common consequences after bypass surgery. It is associated with increased risk of mortality, disability, increased medical care and functional impairment in daily activities [12, 13]. Clinical depression has been reported in 54% of patients after bypass surgery [14]. According to World Health Organization (WHO), depression is the fourth chronic disease where its disability is comparable with 8 major chronic disorders. The outcome of depression in patients with cardiovascular disease is deterioration of physical and emotional state [11].

Given the incidence of such complications in patients with cardiovascular disease, various care and treatment measures are required to alleviate this problem [12]. The best practice in this area is appropriate communication with patient [13, 15]. Good and effective communication is very valuable from the perspective of patients [16]. In general, communication is a set of learning skills. Many experts believe that communication is a basic clinical skill [17]. Many current affairs of life are impossible without proper communication [18]. In fact, poor communication is the cause of most problems in treatment of patients [13]. So, communication is of utmost importance in medical care. In fact, communication at the bedside is a therapeutic and professional communication. In health professionals, communication and communication skills play a very important role in satisfaction of patients and solving their problems [19]. This is more important, especially in patients with chronic diseases or those requiring long-term care [15].

The term therapeutic communication refers to a useful communication with a positive impact [20]. The therapeutic communication is formed from the first encounter of the patient with the medical team [21, 22]. However, studies have shown that the communication between patient and medical team is not efficient. The health personnel don not have adequate communication skills [21]. In fact, nursing and medical team spend very little time to communicate with patients. Accordingly, patients are not often satisfied with received information as well as the level and method of communication. Hence, to achieve best therapeutic results, special attention should be paid to communication [16, 19, 22]. Since nursing is a practical discipline based on professional knowledge [5], it is necessary to use knowledge infrastructure to develop new approaches in clinical practice. Theories proposed by nursing scientists can be useful in this area [16, 19, 23].

For this purpose, Peplau inductive theory was used to establish a simple convenient purposeful therapeutic communication. The nurse-patient communication is an essential element of this theory [21, 24]. According to Peplau theory, the purpose of nursing care is to achieve a common good nurse-patient communication. According to Peplau, poor nurse-patient communication is the cause a lot of problems in nursing. Peplau refers to the importance of therapeutic communication with patients and its important role in reducing anxiety [21, 23, 24]. In fact, this theory provides a framework for nurse-patient communication. Following this framework, the nurse will be able to respond communication

needs of patients through establishing a good therapeutic communication with the patient [16, 19, 23].

Hospitalization and a complex surgery such as heart surgery is a stressful process leading to depression in patients. Furthermore, the need for security and psychological comfort is one of the basic needs of patients achieved through a proper structured therapeutic communication with low cost. Accordingly, the objective of the present study is to examine the impact of Peplau therapeutic communication model on anxiety and depression in patients who were candidate for coronary bypass surgery.

METHODS

This is a clinical trial with pre/post testing scheme examined the impact of independent variable (Peplau therapeutic communication) on the dependent variables (anxiety and depression). The population consisted of all patients who were candidates for coronary artery bypass referred to the research environment on non-emergency basis. The research environment was Al-Zahra Heart Hospital in Shiraz due to the easy access to subjects and sufficient number of patients.

Data were collected using the Hospital Anxiety and Depression Scale (Kanter *et al.*). The reliability and validity of the scale have been studied by Montazeri et al in 2003. An internal consistency of 78% and 86% was respectively calculated for anxiety and depression using Cronbach's alpha. The scale is divided into depression and anxiety parts. There are 14 four-option questions, each with a score of zero to 3. Any option indicating depression and anxiety takes the highest score three. Other options take a score of one or two. Options representing a lack of depression and anxiety take a score of zero. Odd and even questions are used to measure anxiety and depression, respectively (seven questions to assess anxiety and seven questions to assess depression). A score of zero to 21 is given to each patient based on responses in each area (a score of zero-seven: normal, eight-10: moderate and >10: disease).

Due to the lack of access to error rate to calculate the sample size, 10 patients were selected as pilot (with a depression and anxiety score of 10 or more based on the Hospital Anxiety and Depression Scale). After performing tests, the obtained data were analyzed. Then, an actual sample size of 32 was calculated. Finally, a sample size of 37 was estimated including the loss of samples. The subjects were randomly divided into test and control groups (using a coin (toss)).

$$\frac{(Z 1 - \alpha/2 + Z 1 - \beta)^2 (S1^2 + S2^2)}{(X1 - X2)^2}$$

The inclusion criteria were: being in a bypass list, having moderate to severe depression and anxiety scores, no history of mental illness, interesting in participating in the study (i.e. the tendency of the patient and his family to participate in the intervention), lack of previous bypass surgery, aged between 35 and 70 years, ability to communicate verbally and ability to speak Persian. The exclusion criteria included: lack of cooperation of patients and families during the intervention, failure to perform coronary artery bypass surgery for various reasons, mortality during the study, failure to attend therapeutic communication sessions (at least the absence in two sessions).

Therapeutic communication sessions were held for the intervention group based on Peplau's model at four stages including: orientation, identification, exploitation and resolution. In total, seven sessions were held individually with the consent of the patient and his family at the hospital and patient's home. It should be noted that during therapeutic communication, duration of each session was variable given the location and patient's needs. The place of each meeting was determined with the consent of the patient. At all meetings, the researcher used verbal and nonverbal communication skills to communicate with patients. To ensure the correct application of therapeutic communication skills, a self-control researcher-made tool approved by experts was used. The depression and anxiety of patients in both groups were assessed using the Hospital Anxiety and Depression Scale (HADS) at baseline and then two and four months after surgery. The obtained data were analyzed using descriptive statistics as well as covariance analysis with the help of SPSS 16.

ETHICAL CONSIDERATIONS

This study was approved by The Ethics Committee of the Jondi Shapoor Medical University of Ahvaz with REC.1392.58 Code. The ethical issues considered in this study include an adequate explanation for the patients and their permission to participate in the study, the lack of any compulsion for patients to participate in the study, refusing to disclose secrets or private matters of patients and confidentiality of information, announcing the results without names and personal details. Furthermore, the present study was registered with the IRCT2013072214110N1 code in Clinical Trial Center (irct.ir).

RESULTS

The percentage of male and female patients in the intervention group was 70.3% and 29.7%, respectively. The percentage of males and females in the control group was 51.4% and 48.6%, respectively. Most participants in both age groups aged 51-60 years. All patients were married. Most of the patients had a primary school degree. The status of the underlying disease was depicted in both intervention and control groups. According to results, the majority of patients were suffering from high blood pressure in both groups with a high frequency of 35.1% (Table 1).

As shown in Table 2, anxiety was reduced in the intervention group, while postoperative anxiety in the control group was increased. The hospital anxiety in the intervention group was reduced after the therapeutic communication. This indicates the role of Peplau's therapeutic communication in reducing hospital anxiety of patients. Analysis of covariance was used to determine the effect of Peplau's therapeutic communication on anxiety level of the subjects. Since Hospital Anxiety Scale was used to measure anxiety, analysis of variance was performed using Hospital Anxiety scores. The results showed significant differences between experimental and control groups in terms of anxiety level immediately after surgery, two and four months after surgery after adjustment for post-test scores by eliminating the effect of pre-test. Adjusted mean anxiety scores suggest that anxiety in the intervention group was lower

than the control group. In fact, the mean anxiety scores of patients in the intervention group in pre-test and post-test stages represent the independent role of Peplau's therapeutic communication model in reducing anxiety in the intervention group ($F=174.02$, $P=0.000$). Such a difference is not observed in the control group. Moreover, the anxiety level in the intervention group two and four months after the intervention was decreased compared to the control group ($F=38.37$, $P=0.000$; $F=11.58$, $P=0.000$) (Table 3).

As shown in Table 4, the mean depression in the intervention group was reduced after the surgery. The mean post-operative depression in the control group was increased. In fact, the hospital depression in the intervention group was reduced after the therapeutic communication. This indicates that the role of Peplau's therapeutic communication model in reducing hospital depression. Analysis of covariance was used to determine the effect of Peplau's therapeutic communication on depression level of the subjects. Since Hospital Depression Scale was used to measure depression, analysis of variance was performed using Hospital Depression scores. The results showed significant differences between experimental and control groups in terms of depression level immediately after surgery, two and four months after surgery after adjustment for post-test scores by eliminating the effect of pre-test. Adjusted mean depression scores suggest that anxiety in the intervention group was lower than the control group. In fact, the mean depression scores of patients in the intervention group in pre-test and post-test indicate the independent role of Peplau's therapeutic communication model in reducing depression in the intervention group ($F=163.27$, $P=0.000$).

Such a difference is not observed in the control group. Moreover, the depression level in the intervention group four months after the intervention was decreased compared to the control group ($F=20.58$, $P=0.000$). However, no significant difference was found between two groups in terms of hospital depression two months after intervention ($P=0.61$) (Table 5).

DISCUSSION

According to the results, Peplau's therapeutic communication is effective in reducing anxiety and depression in patients who were candidate for coronary artery bypass. It resulted in a dramatic decrease in anxiety and depression scores in the intervention group. Depression and anxiety are the most important preventive factors in cardiovascular diseases [25] causing disease rejection by the patient and reduce the incentive to treat and increase the likelihood of disease recurrence [25-27]. Most patients with coronary heart disease who survive after surgery resume their normal life after several weeks or several months. However, they are still considered as high risk patients. The first few months after discharge is crucial for these patients [28].

Previous studies show that patients suffer from anxiety and depression several months and sometimes several years after the surgery [26, 27, 29]. Therefore, follow-up and strategies to deal with postoperative psychological complications are of utmost importance. It is not possible except through establishing a coherent and targeted therapeutic communication [30]. Indeed, effective communication enables the medical team to identify patients' needs and take

Table 1. Age, gender and their frequencies in intervention and control groups.

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

steps to solve problems and meet their needs [27]. According to Dadashi, Hosseini and Moghaddam (2009), staff had close encounters with patients in 85.5% of cases [28]. According to Mastaneh and Mouseli (2013), the rate of respecting patient rights in terms of communication was 60% indicating a moderate level of communication skills [29].

On the other hand, duration and how to communicate with patients, particularly in dealing with patients with chronic diseases are essential in the hope and positive attitude to treatment and follow-up after discharge [29-31]. In fact, the patient gains motivation to cope with illness and trust in nurses through proper therapeutic communication,

because the care of patients with either physical or mental illness requires correct and consistent communication [30, 31]. Therefore, implementing a communication pattern will help medical team to establish a proper communication [19]. Peplau's model is one of these communication patterns. To communicate with patients, especially patients with chronic diseases, Peplau's described four stages and defined roles for the nurse at every step as someone who is in close relationship with the patient [16, 23]. Peplau's communication model helps nurses and patient to identify the disease, concerns and questions of the patient. Through defining different roles for the nurse, it helps the patient maintain his/her independence

Table 2. Mean and standard deviation of pre-test and post-test hospital anxiety in control and intervention groups.

	Pre-Test	After Surgery	Two Months After Surgery	Four Months After Surgery
	Mean± SD	Mean± SD	Mean± SD	Mean± SD
Intervention group	10.73±1.89	9.38±1.25 ^{†§}	9.57±1.68 ^{†§}	9.59±1.28 ^{†§}
Control group	10.26±1.40	11.62±1.01 [§]	11.46±0.99 [§]	10.68±1.45 [§]

† Significant different (p<0.001) from Pre-test.

§ Significant different between intervention and control groups.

Table 3. Covariance analysis of post-test hospital anxiety scores in control and intervention groups with pre-test control.

Source	Dependent Variable	(Sum of Squares) SS	df	MS	F	Sig.
Pre-test hospital anxiety	Immediately after surgery	53.55	1	53.55	95.38	0.000
	Two months after surgery	10.63	1	10.63	6.01	0.017
	Four months after surgery	0.90	1	0.899	0.476	0.493
Intervention group	Immediately after surgery	97.69	1	97.69	174.02	0.000
	Two months after surgery	67.90	1	67.90	38.37	0.000
	Four months after surgery	21.89	1	21.89	11.58	0.001
Error	Immediately after surgery	39.86	71	0.561		
	Two months after surgery	125.64	71	1.77		
	Four months after surgery	134.13	71	1.89		
Total	Immediately after surgery	8345	74			
	Two months after surgery	8382	74			
	Four months after surgery	7758	74			

Table 4. Mean and standard deviation of pre-test and post-test hospital depression in control and intervention groups.

	Pre-test	Immediately After Surgery	Two Months After Surgery	Four Months After Surgery
	Mean± SD	Mean± SD	Mean± SD	Mean± SD
Intervention group	11±1.58	9.13±1 ^{†§}	12.40±1.13	9.87±1.36 ^{†§}
Control group	11.30±1.63	12.08±1.30 [§]	13.97±1.66	11.19±1.37 [§]

† Significant different (p<0.001) from Pre-test.

§ Significant different between intervention and control groups.

in this communication [16]. This model refers to nursing skills and abilities to establish a simple convenient therapeutic communication. The model enables nurses help the patient after discharge and to spend more time with patient [16, 23, 24]. Peplau's theory has been tested by various studies. For example, it has been used in communicating with cancer patients and solving systematic problems of families [32, 33].

In this study, Peplau's communication models were employed as communication sessions for patients who were candidates for coronary artery bypass through applying nursing roles. Patients were followed two and four months after heart surgery. The results showed that holding communication meetings with patients immediately after surgery dramatically reduced hospital anxiety and depression. Accordingly, to improve the nurse-patient communication and establish more effective therapeutic communication processes

which improves clinical basis and can have a positive impact on the treatment and discharge processes and rehabilitation of patients, especially in patients with chronic diseases, training courses should be included in in-service courses to train and introduce medical team with simple and inexpensive communication skills. This pattern can be used in clinical applications. Furthermore, there is evidence that workshops on communication skills for health team can improve health outcomes and satisfaction of patients. It should be noted that individual characteristics and circumstances of patients' life affected interventions. These are considered as limitations of this study. Another limitation of this study is the lower percentage of females (29.7%) in the intervention group with respect to the control group (51.4%). The lower anxiety score in the intervention group could be due to therapeutic communication but also to gender differences.

Table 5. Covariance analysis of post-test hospital depression scores in control and intervention groups with pre-test control.

Source	Dependent variable	SS	df	MS	F	Sig.
Pre-test hospital depression	Immediately after surgery	33.69	1	33.69	37.74	0.000
	Two months after surgery	69.61	1	69.61	0.31	0.58
	Four months after surgery	2.62	1	2.62	1.42	0.237
Intervention group	Immediately after surgery	145.76	1	145.76	163.27	0.000
	Two months after surgery	56.13	1	56.13	0.25	0.619
	Four months after surgery	38.07	1	38.07	20.58	0.000
Error	Immediately after surgery	6339	71	0.893		
	Two months after surgery	1595828	71	224.76		
	Four months after surgery	13132	71	1.85		
Total	Immediately after surgery	8585	74			
	Two months after surgery	28946	74			
	Four months after surgery	8308	74			

CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

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AUTHORSHIP

Dr. Zarea designed the study and supervised data collection. Mrs. Maghsoudi collected data and prepared draft of manuscript and Mr. Dashtbozorgi supervised data collection. Mr. Haghighizadeh processed the data. Mostafa Javadi prepared draft of manuscript and supervised revision.

RESEARCH ETHICS STATEMENT

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