

## Evaluation of the effect of individual education-supported needs assessment for anxiety among elderly candidates of open-heart surgery

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### Abstract

**Background:** The presence of pain and anxiety in a patient affects the results and, therefore, the process of healing, as well as the postoperative complications. Therefore, this study was performed to gauge the effect of individual education-supported needs assessment on anxiety among elderly patients who were candidates for open-heart surgery.

**Method:** This quasi-experimental study was carried out in Iran in 2019. Sixty-one patients, who were candidates for open-heart surgery and aged 60 years or older, were divided into two groups: experiment and control. The patients within the control group received routine care, and therefore, the patients with the intervention received education-supported needs assessment in addition to routine care. The State-Trait Anxiety Inventory was used to assess the patients' anxiety levels. All analysis was performed in SPSS v19 with a significance level of 0.05.

**Results:** The demographic variables were similar in both groups ( $p < 0.05$ ). The mean scores of both the state and the trait anxiety among the patients in the intervention group decreased significantly after the intervention ( $p < 0.05$ ). The mean scores of both the state and the trait anxiety among the patients in the control group were similar before and after the intervention ( $p > 0.05$ ).

**Conclusion:** Individual education based on needs assessment among elderly patients is an effective strategy for reducing their anxiety before open-heart surgery.

**Keywords:** Anxiety, Individual education, Needs assessment, Open-heart surgery, CABG, Elderly

### Introduction

Currently, cardiovascular diseases are the first cause of death worldwide, and among them, coronary artery disease (CAD) has the highest share (1). More than 30% of deaths in industrialized countries are due to cardiovascular diseases (2). The most common

treatment method for advanced CAD is coronary artery bypass graft (CABG) surgery (2). Among the patients who are candidates for this method of treatment, pain and anxiety are prevalent (1). Anxiety is an emotional state which is characterized by feelings of tension, anger, worry, fear, and increased activity of the autonomic nervous system, it leads to physical and

psychological responses, and is accompanied by increased heart rate, blood pressure, and cardiac output (3). Moreover, pain alone is an unpleasant sensory and emotional experience associated with actual or potential tissue damage (4). The presence of pain in a patient can be associated with several complications, such as: atelectasis, respiratory infection due to the inability to excrete pulmonary secretions, and deep vein thrombosis due to insufficient mobility (5).

The need for education is one of the most fundamental needs of human which is more tangible among the elderly. Sufficient knowledge in individuals could lead to increased satisfaction, improved quality of life, ensured continuity of care, a reduction in anxiety level as well as the incidence of complications, increased participation in healthcare programs, increased autonomy in performing daily activities, improved healthcare delivery, and a reduction in costs (6). Individual-to-individual or face-to-face education is one of the most powerful procedures to affect others. In this method, the instructor can provide an active learning opportunity in real conditions while presenting the desirable patterns appropriate to personal characteristics (7). The learning process often begins by determining the necessity of what one needs to know (8). Hence, for nurses, as the first health care providers confronting with the patients' symptoms and needs, taking all aspects of the patients' needs into consideration has a substantial importance (9). Identifying the patient's educational needs may be examined through direct questions which is a good opportunity to provide an effective education (8).

Studies on the effect of this method of education on elderly patients undergoing open-heart surgery are limited. In one study, Mousavi and colleagues conducted a study to assess the effect of preparatory face-to-face education on the reduction of depression and anxiety among adult patients undergoing open-heart surgery and found anxiety reduction after the intervention (7). In the study of Nasiriani and colleagues, they evaluated the effect of familiarization with the cardiac surgery process on the anxiety of patients undergoing CABG and reported that anxiety among the patients within the experimental group significantly decreased after education (10). In another study in 2012, Chan Yan assessed the impact of nurse counseling and education on postoperative anxiety symptoms and complications after CABG and found its significant decrease of postoperative complications and anxiety (11).

With regard to the limited number of studies among elderly patients undergoing open-heart surgery, we decided to carry out this study with the aim of evaluating the effect of individual education-

supported needs assessment on anxiety among elderly candidates for open-heart surgery.

## Methods

The current quasi-experimental study was carried out at Afshar Heart Hospital in Yazd in 2019. Sixty-one patients, who were candidates for open-heart surgery aged 60 years or older, were selected through a convenient sampling method and were randomly assigned into two groups: experiment and control. Before randomization, the participants were matched in terms of sex only.

The inclusion criteria were being an elderly person (aged 60 years or older), being informed, voluntary participation, obtaining a written consent form to participate in the study, and being conscious. Exclusion criteria included a history of neurological diseases, a history of an emergency surgery, and direct delivery to the operating room, a history of previous or current use of neuropsychiatric drugs, and having Alzheimer.

**Intervention group** consisted of thirty-one patients. In addition to the routine care, these patients received an education based on needs assessment. The patients' needs were assessed, according to the level of education, culture, and society. In addition to the face-to-face education, a pamphlet as well as a booklet were provided upon the patients' requests. The content of the education was based on the results of the needs assessment including the reasons of the necessity of this surgery, the time and procedure of the surgery, the effect of surgery on health and quality of life, the pre- and post-operative care (such as monitoring, wound care, and nutrition) which are provided by nurses and physicians, the complications of the surgery, and the medication used and its potential effects. The education was provided for all the patients in this group in one room in the hospital by a trained nurse.

**Control group** were thirty patients. The patients in this group received only routine care. This care includes medical and nursing education, as well as the care provided by physicians and nurses.

The patients' anxiety levels were assessed two times before the day of surgery using the State-Trait Anxiety Inventory (STAI) developed by Spielberger (15). This questionnaire consists of 40 items. The first 20 items assess the state, and the second 20 items evaluate the trait of pervasive anxiety. Each item is answered on a 1–4 Likert scale, and a score of 4 indicates a high presence of anxiety. The validity and reliability of the Persian version of this questionnaire in Iran were confirmed by Mahram and colleagues with a Cronbach's alpha of 0.87 (15).

## Ethical Issues

Each patient was asked to sign an informed consent form. All the ethical issues in medical research, including confidentiality, anonymity, and privacy, were considered in this study. Besides, all the stages of the study were conducted under the supervision of the ethics committee of Shahid Beheshti University of Medical Science (ethics code: IR.SSU.REC.1398.118).

## Data Analysis

The mean, standard deviation, and frequency were used to describe the quantitative and qualitative variables. The independent and paired t-test were used to compare the mean scores of quantitative variables such as: age, and within and between two groups. All the analysis was performed using SPSS (Version 19) with a significance level of 0.05.

## Results

In the current study, 61 patients participated. Of them, 31 (50.8%) were in the intervention group and 30 (49.2%) were in the control group. Thirty-eight patients (62.3%) were male and the rest were female. The mean  $\pm$  standard deviation age was  $39.66 \pm 6.68$  years, and most of them ( $n=47$ , 77%) were married. Approximately 60% of the patients were illiterate. The demographic variables were similar between two groups ( $p > 0.05$ ) (Table 1).

While, the mean scores of both the state and the trait anxiety among the patients in the intervention group decreased significantly after the intervention ( $p < 0.05$ ), the mean scores of both the state and the trait anxiety among the patients in the control group were similar before and after the intervention ( $p > 0.05$ ) (Table 2). The mean pain scored between two groups were also similar ( $p > 0.05$ ) (Table 3).

## Discussion

The focus of the current study was on the education of elderly patients undergoing CABG. The results revealed that after application of individual education based on needs assessment before the surgery, the state and the trait anxiety significantly decreased among the elderly patients.

Considering the increasing number of elderly people undergoing open-heart surgery (16), their educational needs should be considered by all healthcare providers; because the presence of anxiety before cardiac surgery can result in several bad consequences

for patients before and after the surgery (17, 18, 19). In some studies, the rate of preparatory anxiety among cardiac patients was reported to be about 80% (17). Cardiology patient education has obtained essential attention in recent years from healthcare providers (20), especially individualized education (21). However, limited studies on this matter are available among elderly patients.

Similar to this study, Yildiz and colleagues evaluated the effect of standard versus patient-targeted in-patient education on the anxiety of (mostly elderly) patients after cardiovascular surgery and reported that individual education has a significant effect on the anxiety of these patients (22). In another study, Xue and colleagues assessed the effect of preoperative cardiac surgery education on the prevalence of delirium after cardiac surgery and found that individual education significantly decreases delirium after cardiac surgery in this group of patients (23).

In individual education based on needs assessment, the patients are engaged in order to determine the content of the education so that they can better accept it. It seems that individual education is a desirable way to educate the elderly undergoing cardiac surgery, and this method should be considered by all healthcare providers. In the current study, the education was led by nurses. The results showed that this type of education is effective for the elderly. Previous studies have also confirmed the positive impact of the preoperative education led by nurses for cardiac patients. For example, in one study, Kalogianni and colleagues reported that patient education led by nurses before cardiac surgery significantly reduced the anxiety level of patients before the surgery and the complications after the surgery (24). In addition, Guo and colleagues also reported that the patient education led by the cardiac nurses significantly reduced the anxiety level of patients before the surgery and the complications after the surgery (14). This matter should be considered more by the healthcare systems in developing countries. Previous research has shown that nurses in developing countries are not well trained for this purpose. In this regard, Bader and colleagues reported that about 80% of the clinical nurses in heart centers do not receive enough training about heart failure (25). It seems that cardiac nurses need to be well trained in patient education before cardiac surgery.

**Table 1.** The demographic variables of participants

Variable	Characteristics	Groups				P-value *
		Intervention		Control		
Age		Mean	S.D. #	Mean	S.D.	0.339
		65.85	6.01	67.23	7.32	
Sex		Frequency	Percent	Frequency	Percent	P-value **
	Men	19	61.3	19	63.3	0.990
	Women	12	38.7	11	36.7	
Marital status		Frequency	Percent	Frequency	Percent	P-value ***
	Married	25	80.6	22	73.3	0.530
	Single	1	3.2	0	0	
	Divorced	0	0	1	3.3	
	Widowed	5	16.1	7	23.3	
Level of education		Frequency	Percent	Frequency	Percent	P-value ***
	Illiterate	16	51.6	21	70	0.265
	Less than diploma/Diploma	14	45.2	8	26.7	
	Upper diploma	1	3.2	1	3.3	

#: S.D. = Standard Deviation; \* = T-test; \*\* = Chi-square test; \*\*\* = Fisher's Test;

**Table 2.** Comparison of the state and the trait anxiety before and after the intervention between two groups

Variable	Group									
	Intervention					Control				
	Before		After		P-value *	Before		After		P-value *
	Mean	S.D. #	Mean	S.D. #		Mean	S.D. #	Mean	S.D. #	
State anxiety	50.1	1.48	33.45	1.66	0.001	50.33	2.37	50.91	2.06	0.364
Trait anxiety	53.77	1.76	47.03	1.76	<0.02	53.40	2.05	51.60	1.85	0.803

#: S.D. = Standard Deviation; \* = Pair t-test;

**Table 3.** Comparison of the pain scores between two groups of intervention and control after the intervention

Variable	Group	Frequency	Mean	S.D.	P-Value *
Pain scores	Intervention	31	5.22	2.14	0.396
	Control	30	5.73	2.24	

#: S.D. = Standard deviation; \* = Independent t-test;

## Conclusion

The management of anxiety in the elderly before heart surgery is necessary. This study revealed that individual education based on the patients' needs provided by clinical nurses is an effective and available intervention in this regard. This intervention should be considered by all healthcare systems during the time of caring for the elderly undergoing CABG to improve their clinical situation. In future studies, it is recommended to evaluate the effects of this method of education on other variables, such as depression and quality of life. It is also recommended to evaluate the following effects of this intervention for a longer period.

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## Limitation

In the current study, the sampling and randomization had some limitations that should be considered. In addition, the findings are related to only elderly patients, and the generalizability to other age groups is not possible.

## References

1. Rigi, F., Feizi, A., Amirian, Z., Nasdri, M., Salehi, S. Effect of foot reflexology massage on pain in patients undergoing coronary bypass surgery. *J Anesthesiology Pain* 2015;5(4):42-49.
2. Javadzadeh Moghtader, A., Salari, A., Shad, B., Hasandokht, T., Nourisaeed, A. Depression and Anxiety in Patients Undergoing Open-Heart Surgery: Age and sexual Differences. *Horizon Med Sci* 2018;24(3):231- 238.

3. Kavei, P., Ebadi, A., Saeed, Y., Moradian, S.T., Sedigh Rahimabadi, M. Effect of foot reflexology on anxiety and agitation in patients under mechanical ventilation after open-heart surgery. *J Clin Nurs Midwife* 2015;4(1):16-26.
4. Hinkle, J.L., Cheever, K.H. *Brunner and Suddarth's Textbook of Medical-Surgical Nursing*. 14<sup>th</sup> edition. London: Wolters Cluwer 2018.
5. Seirafi, M.R., Kalate Aghamohammadi, M., Peimani, J. The effect of predictability and sense of control over the pain of cardiac surgery patient. *J Nurs Physician War* 2015;3(8):34-40.
6. Taghizadeganzadeh, M., Ravanipour, M., Jahanpour, F., Sobhanian, S., Motamed, N. Barriers to educating the elderly patients from the perspectives of the nurses in the hospital of Bushehr University of Medical Sciences in 2014. *J Community Health* 2014;7(4): 37-44.
7. Mousavi, S.S., Sabzevari, S., Abbaszade, A., Hosseinnakhaie, F. The effect of preparatory face to face education to reduce depression and anxiety in open heart surgery adult patient in Shafa hospital in Kerman. *Iran J Nurs Res* 2011;6(21):29-38.
8. Mohajer, T. *Text book of Patient teaching*. 7<sup>th</sup> edition. Tehran, Jameenegar. 2019:16-81.
9. Shafiei, Z., Nourian, K., Babaei, S., Nazari, A. Effectiveness of light pressure stroking massage on pain and fatigue of patients after coronary artery bypass graft surgery. *J Clin Nurs Midwife* 2013;2(3):28-38.
10. Dehghani, H., Dehghani, K.H., Nasiriani, K.H., Banaderakhshan, H. The effect of familiarization with cardiac surgery process on the anxiety of patients undergoing coronary artery bypass graft surgery. *Modern Care J* 2014; 10(4):257-263.
11. Zhang, C.Y., Jiang, Y., Yin, Q.Y., Chen, F.J., Ma, L.L., Wang, L.X. Impact of nurse-initiated preoperative education on postoperative anxiety symptoms and complication after coronary artery bypass grafting. *J Cardiovasc Nurs* 2012;27(1):84-88.
12. Ertürk, E.B., Ünlü, H. Effects of pre-operative individualized education on anxiety and pain severity in patients following open-heart surgery. *Int J Health Sci (Qassim)* 2018;12(4):26-34.
13. Jamshidi, L., Seif, A. Comparison of cardiovascular diseases risk factors in male and female older adults of Hamadan City. *J Gerontol* 2016;1(1):1-10.
14. Guo, P. Preoperative education interventions to reduce anxiety and improve recovery among cardiac surgery patients: a review of randomized controlled trials. *J Clin Nurs* 2014;24(1-2):34-36.
15. Gholami Booreng, F., Mahram, B., Kareshki, H. Construction and Validation of a Scale of Research Anxiety for Students. *Iran J Psych Clin Psychol* 2017; 23(1):78-93.
16. Senmar, M., Azimian, J., Rafiei, H., Habibollahpour, M., Yousefi, F. The incidence of pressure ulcer in old patients undergoing open heart surgery and the relevant factors. *J Prev Epidemiol* 2017;2(2):e15.
17. Prado-Olivares, J., Chover-Sierra, E. Preoperative Anxiety in Patients Undergoing Cardiac Surgery. *Diseases* 2019;7(2):46.
18. Younes, O., Amer, R., Fawzy, H., Shama, G. Psychiatric disturbances in patients undergoing open-heart surgery. *Middle East Current Psychiatry* 2019;26:4.
19. Cserép, Z., Losoncz, E., Balog, P., Szili-Török, T., Husz, A., Juhász, B., Kertai, M.D., Gál, J., Székely, A. The impact of preoperative anxiety and education level on long-term mortality after cardiac surgery. *J Cardiothorac Surg* 2012;7:86.
20. Pool, M.D.O., Hooglugt, J.L.Q., Schijven, M.P., Mulder, B.J.M., Bouma, B.J., de Winter, R.J., Pinto, Y., Winter, M.M. Review of Digitalized Patient Education in Cardiology: A Future Ahead? *Cardiology* 2021;146(2):263-271.
21. Zhuo, Q., Liang, H., Bai, Y., Hu, Q., Hanum, A.L., Yang, M., Wang, Y., Wei, W., Ding, L., Ma, F. Perceptions of patients undergoing percutaneous coronary intervention on pre-operative education in China: A qualitative study. *Health Expect* 2021;24(1):121-130.
22. Yıldız, T., Gürkan, S., Gür, Ö., Ünsal, C., Gökteş, S.B., Özen, Y. Effect of standard versus patient-targeted in-patient education on patients' anxiety about self-care after discharge from cardiovascular surgery clinics. *Cardiovasc J Afr* 2014;25(6):259-264.
23. Xue, X., Wang, P., Wang, J., Li, X., Peng, F., Wang, Z. Preoperative individualized education intervention reduces delirium after cardiac surgery: a randomized controlled study. *J Thorac Dis* 2020;12(5):2188-96.
24. Kalogianni, A., Almpiani, P., Vastardis, L., Baltopoulos, G., Charitos, C., Brokalaki, H. Can nurse-led preoperative education reduce anxiety and postoperative complications of patients undergoing cardiac surgery? *Eur J Cardiovasc Nurs* 2016;15(6):447-58.
25. Bader, F., Atallah, B., Sadik, Z.G., Tbishat, L., Gabra, G., Soliman, M., Bakr, K., Ferrer, R., Stapleton, J., Khalil, M. Nurse-led education for heart failure patients in developing countries. *Br J Nurs* 2018;27(12):690-696.