RESEARCH ARTICLE

Effect of nurse led education on anxiety level among coronary artery bypass grafting pre-operative patients

Amjad Ali,[1] Sarfraz Masih,[2] Fazle Rabbi,[3] Abdur Rasheed[4]

Abstract

Objective: The objective of this study was to identify the effect of nurse-led pre-operative education in minimizing the level of anxiety among patients waiting for Coronary Artery Bypass Grafting.

Methods: This experimental study was accomplished at National Institute of Cardiovascular Diseases. Out of 136, there were 80 patients identified with the presence of anxiety using AKUADS 4 to 6 weeks before CABG. Data were collected by the primary researcher from July 2016 to December 2016. Patients with anxiety were divided into experimental and non-experimental groups. After pre-operative education to the experimental group, patients from both groups were re-assessed for anxiety level one week before CABG.

Result: Data were assessed through non-parametric Wilcoxon sign ranked and Mann Whitney tests. It was found that anxiety reduced significantly in post-assessment among experimental group participants. No significant difference was found for pre-anxiety assessment between experimental and non-experimental groups. It was noted that post assessment anxiety differed significantly between experimental and non-experimental groups.

Conclusion: Pre-operative education was found effective to decrease level of anxiety among patients waiting for CABG. There was no significant difference between pre and post assessment among patients from non-experimental group.

Keywords: CABG, Nursing Education, Patients, Anxiety. (JPMA 71: 238; 2021)

DOI: https://doi.org/10.47391/JPMA.325

Introduction

The leading cause of morbidity and mortality in both developing and developed countries is Coronary artery disease (CAD).[1] Coronary artery bypass graft (CABG) surgery is considered one of the essential treatments for patients with CAD; the operational technique reduces chest pain and improves worth of life of the patients.[2] The CABG operation has been known as a routine procedure for more than three decades. In South Africa, more than 8000 CABG operations are performed each year.[3]

Cardiac surgeries may cause physical and psychological problems, which lead to stressful experience among patients. Anxiety and fear related to outcome might cause stress among patients undergoing major cardiac surgery because a vital organ, heart is involved. Waiting for major cardiac surgery might cause additional psychological as well as physical stressors among patients. Stressors might include uncertainties, worries, anxiety and depression related to outcomes of surgery, which are usually experienced by the patients.[4]

[1,2]Institute of Nursing, Dow University of Health Sciences, Karachi, [3]National Institute of Cardiovascular Diseases, Karachi, [4]Department of Research, Dow University of Health Sciences, Karachi, Pakistan.

Correspondence: Amjad Ali, Email: amjadali33398@yahoo.com

The most important factors that lead to inflame anxiety among patients are the change in life style, and pending incident of CABG. Admission for surgical procedure, other than medical condition is a familiar situation for development of anxiety among patients. If health care provider does not identify the sustained anxiety level, it would lead to further stress, which might cause disturbance in physical and psychological health of the patients and their prognosis.[5,6] Most of the patients who are shortlisted for major cardiac surgery leading to anxiety, which is a predictable reaction widely accepted. In pre-operative nursing care, caring for pre-operative anxiety is more demanding and challenging.[7]

Due to cardiac surgery, there are many factors that lead to anxiety, fatigue, severe chest pain, fear of death, disability and persistent symptoms.[8] Stress, anxiety and depression symptoms cause disturbance in patients with cardiovascular disease, as well as in patients who are undergoing CABG surgery.[9] These factors exaggerate clinical manifestation of existing disease, negative effect on physiological parameters pre and post anaesthesia, and they also throw impact on the quality of life and recovery of patient after surgery.[4,10] South Australian study by Flinders Medical Centre is evident that psychological symptoms, like anxiety are associated with atrial fibrillation in the postoperative period.[11]

Arthur et al, highlighted that most patients experience uncertainty and fear from waiting for CABG more than chest pain.[12] Anxiety has a direct impact on immune system and on the healing process after surgery,[13] thus, it affects quality of life.[14] Luttik et al, reported that 26% of cardiac patients have degrees of depression and 42% of patients suffer from anxiety.[14] Fears of mistakes during surgery,[15] fear of consequences[16] and poor control during the operation are factors affecting anxiety.[17]

It is a nurse's observation that patients undergoing CABG surgery suffer from fear, stress and overwhelming anxiety, preoperatively. Effective nursing education could reduce patient anxiety level before CABG surgery and also result in fast recovery. It is imperative for the critical care nurse to routinely assess anxiety in patients waiting for CABG surgery before the procedure because impending open-heart surgery is anxiety provoking to most patients, hence interventions to prevent or reduce anxiety should be provided.[18] The objective of this study was to identify the effect of nurse-led education in minimizing the level of anxiety among patients waiting for Coronary Artery Bypass Grafting.

Methods

This experimental study was accomplished at the National Institute of Cardiovascular Diseases (NICVD) Karachi. As an initial step, the researchers performed anxiety screening among 136 patients; out of which 80 patients with anxiety were identified through AKUADS with 20 as cut off score. AKUADS is a screening tool with sensitivity of 66%, and specificity of 79% in Pakistani context.[19]

Sample size calculation was carried out using OpenEpi software. Using Mean and SD of both control and intervention groups (32.3±27, 54.2±30, respectively),[20] confidence interval 95%, Power of the test 90%, the initially calculated sample was 36 in each groups. We took 40 in each group, making total sample size 80. For selection of patients, researchers considered the list of patients for CABG, patients with 30 to 70 years of age and patients waiting for CABG with four to six weeks prior to surgery, and also included patients for CABG for double or triple vessels diseases in this study. Only those patients, who were resident of Karachi and score 20 or more on AKUADS, were included in the study. Participants who score <20 on AKUADS, admitted with single vessel disease and not resident of Karachi were excluded from the study.

Participants for interventional and non-interventional groups were recruited through simple random (balloting) sampling. Pre-operative education for interventional group was in accordance with the Nursing Interventions Classification (NIC).

Data collection was completed in six months from July 2016 to December 2016. Data were collected through AKUADS by the primary researcher four to six weeks prior to CABG for determining/screening anxiety among patients waiting for CABG. After identifying 80 anxiety patients (pre-experimental), they were divided into experimental and non-experimental groups. After one to two weeks of initial data collection, teaching sessions were conducted by the primary researcher to patients of the experimental group. Pre-operative education based on Interventional Classification (NIC) comprised of following two domains(1) physiological (basic) with Class of Activity and exercise management, Nutritional support and physical comfort promotion (2) Family with Class of caregiver support, Family involvement, and Family mobilization. Oral presentation of 90-120 minutes was provided to interventional group. Booklet translated in National language, Urdu was provided to all the participants for their understanding. Also, primary researcher explained verbally to the participants about disease process, causes and symptoms, and modifiable risk factors.

Participants of experimental and non-experimental groups were reassessed (post-education) one week before CABG, through AKUADS questionnaire. After recruitment, all patients in experimental group were reported properly. There was no loss to follow up and no blinding was used in this study. Participant's selection, data collection and pre-operative education before admission were completed in OPD. There was no chance of contamination in sharing of information among experimental and control group as they did not have any opportunity of detailed communication.

The approval from the Institutional Review Board (IRB) of DUHS was obtained for this study. Written informed consent was taken from all participants. The data were analyzed by using SPSS Version 21. Non-parametric Wilcoxon Sign Ranked test was used for comparison of pre and post ADS scores of experimental and non-experimental groups. However, comparison between experimental and non-experimental groups for pre and post scores was made through Mann-Whitney test. P-value ≤ 0.05 was considered as significant.

Result

The findings of this study (Table-1) illustrated that majority of participants were males (n=30, 75%) in the experimental group; however, this percentage in non-experimental group was 35 (87.5%). For experimental

Tables-1: Demographic characteristic of the participants.

Variable	Group	
	Experimental (n=40) Frequency (%)	Non- Experimenetal (n=40) Frequency (%)
Age (years)		
30-40	2 (5%)	05 (12.5%)
41-50	16 (40%)	11 (27.5%)
51-60	18(45%)	13(32.5%)
61-70	4(10%)	11(27.5%)
Sex		
Male	30 (75%)	35 (87.5%)
Female	10 (25%)	05 (12.5%)
Marital Status		
Married	37 (92.5%)	38(95%)
Unmarried	2 (5%)	02 (5%)
Divorced	1 (2.5%)	0(0%)
Educational Level		
Uneducated	09 (22.5%)	13(32.5%)
Primary	16 (40%)	11 (27.5%)
Matric	11 (27.5)	10 (25%)
Intermediate	03 (7.5%)	03 (7.5%)
Graduate	01 (2.5%)	01 (2.5%)
Post-Graduate	Nil	02 (5%)
Income Level (Rs)		
Less 1000	16 (40%)	20 (50 %)
1000-10000	12 (30%)	07 (17.5%)
11000-20000	11 (27.5%)	11 (27.5%)
21000-30000	01 (2.5%)	01 (2.5%)
More than 30000	Nil	01 (2.5%)
Social Status		
Lower class	17 (42.5%)	19 (47.5%)
Middle class	23 (57.5%)	21 (52.5%)

group, majority of the participants (n=34, 85%) were in age range of 41 to 60 years. In similar age group, there were 24 (60%) participants from non-experimental group. Proportions of married participants in both experimental and non-experimental group were 37 (92.5%) and 38 (95%) respectively. Most prevalent educational category of the experimental group was primary 16 (40%), whereas for non-experimental group 13 (32%) were uneducated. Few participants in both groups were highly educated (graduate and post-graduate). Lower and middle social economic class of the participants was not notably different between both experimental and non-experimental group.

Table-2 shows a comparison of pre and post AKUADS scores for experimental and non-experimental groups. There was no significant difference in median pre and post AKUADS scores for non-experimental group. However, Wilcoxon Sign Ranked test confirmed anxiety reduced significantly in post-assessment among experimental group participants (p-value < 0.05). Table-2 further exhibited no significant difference in pre-anxiety assessment between experimental and non-experimental groups. However, Mann Whitney test confirmed post assessment anxiety differed significantly between experimental and non-experimental groups (p-value <0.05).

Discussion

This experimental study addressing patients undergoing CABG surgery showed that nursing education provided in preoperative period contributed to decreasing anxiety levels among patients. In this study, anxiety was found among approximately 60% CABG patients. Another study conducted in Manipal, India in 2017 showed a higher level of anxiety, i.e., 84% among pre-operative CABG patients.[21] Whereas a study conducted in Australia among preoperative CABG found anxiety level in only 21.06% patients;[22] furthermore, a study conducted in Germany also revealed a low level of anxiety (14.7%).[23]

In this study, it was found that most of the patients belong to age group between 30-70 years, which is supported by a study conducted in India,[21] Brazil[24] and Egypt.[25] The

Table-2: Between and within group's comparison of Pre and Post AKUADS Score.

		Median	IQ Range	95% CI for Median	P-values
Within-group					
Experimental Group	Pre	23.5	28.7--21.0	22.0--26.0	<0.001*
	Post	19	22.0--17.2	18.0--21.0	
Non- Experimental Group	Pre	23	29.7--21.0	22.0--25.0	0.206
	Post	25.5	30.5--22.0	24.0--28.0	
Between groups					
Pre	Experimental	23.5	28.7-21.0	22.0--26.0	0.805
	Non-Experimental	23	29.7-21.0	22.0--25.0	
Post	Experimental	19	22.0--17.2	18.0--21.0	< 0.001
	Non-Experimental	25.5	30.5-22.0	24.0--28.0	

*: P-value $\leq$ 0.05 considered as significant (Wilcoxon Sign Rank Test).

: P-value $\leq$ 0.05 considered as significant (Mann Whitney Test).

prevalence of anxiety in this study was found to be higher (68.18%) among females, which is supported by a study conducted in India in 2017.[21] The findings of this study also highlighted that majority of patients (46.25%) in experimental and non-experimental group belonged to the income level of less than 1000/= PKR per month. A study conducted in Egypt (2017)[25] also showed 51.6% of anxiety level among patients who were jobless or retired. This study showed that dominant part of anxiety was among patients with primary education. A study conducted in Iran revealed a higher level of anxiety (56.2%) among patients with elementary level of education.[26] Some studies reported contradictory findings; a study conducted in India and Brazil showed that anxiety level was higher among patients with intermediate education, 37.9% and 75.36%, respectively.[27]

This study finding revealed that nursing education significantly reduced anxiety level among patients from experimental group, i.e., significant difference was found in pre and post assessment of experimental group. Similar findings were also found in the study conducted among nurses in Iran (2018).[26] A study conducted in Australia did not support these findings; according to that study two-week intervention did not show any difference in experimental and routine care group.[27] In this study, anxiety level in non-experimental group remained unchanged in pre and post an assessment, which is in accordance with the findings of an Iranian study conducted in 2018.[26] This study exhibited that anxiety level decreased significantly among the experimental group, while anxiety level remained same among patients from non-experimental group. These findings were also supported by studies conducted in Iran.[26]

Conclusion

It was concluded from this study that nursing education was effective in reducing anxiety level among patients waiting for CABG. No significant difference was obtained between pre and post assessment among patients from non- experimental group.

Limitation

This study was carried out in the only public tertiary cardiac hospital and included only residents of Karachi, and due to time constraint patients waiting for more than six weeks for surgery were not included.

Implication of the Practice

◆ Findings of this study could be implicated into nursing practice and nursing administration. The findings of this study are available for the bed side nurses to focus on pre-operative education for reducing anxiety level of patients waiting for surgery.

◆ This preoperative educational study might help health care workers to provide evidence based decisions about this form of interventions for incorporating into daily practices to prepare cardiac patients for surgery.

Disclaimer: None to declare.

Conflict of Interest: None to declare.

Funding Sources: This research received no specific grant from any funding agency.

References

1. Sekhri T, Kanwar RS, Wilfred R, Chugh P, Chhillar M, Aggarwal R, etal. Prevalence of risk factors for coronary artery disease in an urban Indian population. BMJ Open. 2014;
2. McKenzie LH, Simpson J, Stewart M. A systematic review of preoperative predictors of post-operative depression and anxiety in individuals who have undergone coronary artery bypass graft surgery. Psychol Health Med. 2010;15:74–93.
3. The Heart and Stroke Foundation. A look at bypass surgery.[online][cited 2019 Jun 12]. Available from: URL: http://www.health24.com/Medical/Heart/Treatment-for-heart-disease/A-lookat-bypass-surgery-20120721.
4. Guo P, East L, Arthur A. A preoperative education intervention to reduce anxiety and improve recovery among Chinese cardiac patients: a randomized controlled trial. Int J Nurs Stud. 2012;49:129-37.
5. Goebel S, Kaup L, Mehdorn HM. Measuring preoperative anxiety in patients with intracranial tumors: the Amsterdam preoperative anxiety and information scale. J Neurosurg Anesthesiol 2011;23:297–303.
6. Yilmaz M, Sezer H, Gürler H, Bekar M. Predictors of preoperative anxiety in surgical inpatients. J Clin Nurs 2012;21: 956–64.
7. Nigussie S, Belachew T, Wolancho W. Predictors of preoperative anxiety South Western Ethiopia. BMC Surgery 2014;14: 67.
8. Bagheri-Nesami M, Shorofi SA, Zargar N, Sohrabi M, Gholipour-Baradari A, et al. The effects of foot reflexology massage on anxiety in patients following coronary artery bypass graft surgery: A randomized controlled trial. Complement Ther Clin Pract 2014;20:42-7.
9. Cserép Z, Losoncz E, Balog P, Szili-Török T, Husz A, Juhász B,et al. The impact of preoperative anxiety and education level on long-term mortality after cardiac surgery. J Cardiothoracic Surg 2012;7:86.
10. Nerbass FB, Feltrim Z, de Souza SA, Ykeda DS, Lorenzi-Filho G. Effects of massage therapy on sleep quality after coronary artery bypass graft surgery. Clinics (Sao Paulo, Brazil) 2010; 65;1105–10.
11. Tully PJ, Bennetts JS, Baker RA, McGavigan AD, Turnbull DA, Winefield HR. Anxiety, depression, and stress as risk factors for atrial fibrillation after cardiac surgery. heartlung. 2011;40:4-11.
12. Arthur HM, Smith KM, Kodis J, McKelvie R. A controlled trial of hospital versus home-based exercise in cardiac patients. Med Sci Sports Exerc. 2002;34:1544–50.
13. Rattray J, Jones MC. Essential elements of questionnaire design and development. J Clin Nurs. 2007;16:234–43.
14. Luttik M, Jaarsma T, Sanderman R, Fleer J. The advisory brought to practice routine screening on depression (and anxiety) in coronary heart disease; consequences and implications. Eur J Cardiovasc Nurs. 2011;10:228–33.
15. Gallagher R, Trotter R, Donoghue J. Procedural concerns and

anxiety assessment in patients undergoing coronary angiography and percutaneous coronary interventions. Eur J Cardiovasc Nurs. 2010;9: 38–44.

16. Székely A, Balog P, Benkö E, Breuer T, Székely J, Kertai MD, et al. Anxiety predicts mortality and morbidity after coronary artery and valve surgery—a 4-year follow-up study. Psychosom Med. 2007;69:625–31.
17. Koivula M, Hautam¨aki-Lamminen K, Astedt-Kurki P. Predictors of fear and anxiety nine years after coronary artery bypass grafting. J Adv Nurs. 2010;66:595–606.
18. Gallagher R, McKinley S. Anxiety, depression and perceived control in patients having coronary artery bypass grafts. J Adv Nurs 65:2386–96.
19. Ali BS, Reza H. Development of an indigenous screening instrument in Pakistan: the Aga Khan University Anxiety and Depression Scale. J Pak Med Assoc. 1998;48:261-5.
20. Parvan K, Zamanzadeh V, LakDizaji SL, MousaviShabestari MM, Safaie N. Patient's perception of stressors associated with coronary artery bypass surgery. J Cardiovasc Thorac Res 5:113.
21. Tully PJ, Pedersen SS, Winefield HR, Baker RA, Turnbull DA, Denollet J. Cardiac morbidity risk and depression and anxiety: a disorder, symptom and trait analysis among cardiac surgery patients. Psychol Health Med. 2011;16:333-45.
22. Rothenhäusler HB, Grieser B, Nollert G, Reichart B, Schelling G, Kapfhammer HP. Psychiatric and psychosocial outcome of cardiac surgery with cardiopulmonary bypass: a prospective 12-month follow-up study. Gen Hospital Psychiatr. 2005;27:18-28.
23. Mendonça KM, Andrade TM. Patient's perception about coronary artery bypass grafting. Braz J Cardiovasc Surg. 2015 ;30:544-51.
24. Ahmed AF, Khalil NS, Morsy WY. Stressors encountered by patients undergoing open-heart surgery at a Cairo University Hospitals. Egyptian Nurs J 2017;14:78.
25. MousaviMalek N, Zakerimoghadam M, Esmaeili M, Kazemnejad A. Effects of Nurse-Led Intervention on Patients' Anxiety and Sleep Before Coronary Artery Bypass Grafting. Crit Care Nurs Q. 2018 ;41:161-9.
26. Hamester L, Souza EN, Cielo C, Moraes MA, Pellanda LC. Effectiveness of a nursing intervention in decreasing the anxiety levels of family members of patients undergoing cardiac surgery: a randomized clinical trial. Revistalatino-americana de enfermagem. 2016;24.
27. Rosenfeldt F, Braun L, Spitzer O, Bradley S, Shepherd J, Bailey M, et al. Physical conditioning and mental stress reduction-a randomised trial in patients undergoing cardiac surgery. BMC Complement Altern Med. 2011;11:20.