

The effect of home care training on anxiety and vital signs levels in coronary artery bypass grafting patients: A Randomized Clinical Trial

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Abstract

Objective: Patients with coronary artery bypass grafting require special care at home, and not being aware of this care before surgery can cause anxiety. This study aimed to determine the effect of home care training on anxiety and vital signs levels in CABG patients. **Methods:** This clinical trial study was performed on 80 patients undergoing CABG surgery in Farshchian Hospital in Hamadan, Iran, in January 2020. Samples were selected by convenience sampling and were randomly divided into intervention and control groups. The control group received only routine training, but the intervention group also received two-session training of home care. Data were collected using the Spielberger situational anxiety questionnaire and the vital signs checklist, then analyzed using descriptive and inferential statistics in SPSS software version 16. **Results:** The results showed that before the intervention, the mean scores of anxiety, heart rate, respiratory rate, temperature, systolic blood pressure, and diastolic blood pressure of the two groups were not significantly different ($P > 0/05$). However, after the intervention, the mean score of anxiety, the heart rate, respiratory rate, systolic blood pressure, and diastolic blood pressure of the intervention group was lower than the control group significantly ($P < 0/05$). But the mean temperature of the two groups showed no significant difference ($P > 0/05$). **Conclusions:** Home care training before surgery reduces anxiety and vital signs, therefore the use of home care training before surgery is recommended in this group of patients.

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Conclusions: Home care training before surgery reduces anxiety and vital signs, therefore the use of home care training before surgery is recommended in this group of patients.

Clinical trial registry: IRCT20181211094132N1

Keywords: Anxiety, Coronary Artery Bypass Grafting, Home-care, Vital signs

Introduction

Coronary artery disease is the leading cause of death in developing countries, which, in addition to increasing mortality, causes disability and disability in patients (1). Like most countries in Western Asia, CVD is the first cause of death in Iran, responsible for 46% of deaths (2). one of the major methods for treating coronary artery diseases is coronary artery bypass grafting (CABG)(3), which 50 to 60% of heart surgeries are performed with this method in Iran(4).

Despite the constant innovations in technology and the increasing quality of medical interventions in heart patients, surgery is considered a challenge for these patients that causes pre- and post-surgery limitations such as changes in their lifestyle habits and despite the risk of patient vulnerability during surgery, it can cause significant degrees of anxiety(5). On the other hand, these patients need constant monitoring of cardiac risk factors to prevent the progression of the disease and recurrence of cardiac events, which increases the level of anxiety and fear in the preoperative stage(6). In patients, preoperative anxiety stimulates the sympathetic system and significant changes in heart rate and blood pressure(7), Increasing the risk of death(8), during anesthesia, the need for anesthetic drugs increases and prolongs the recovery period(9).

One way to reduce anxiety is to educate and provide information to the patient (10). One of the topics that can be taught to the patient is home care training. According to Lancaster, home care is the best way to provide educational programs for individuals in the family (11). The goal of home care training is to increase the patient's ability to cope with their illness, to take care of themselves and to speed up recovery after an illness, and to minimize any complications, because recent changes in global health care systems require that patients with long-term complex care needs be cared at home and by self and family members (12). In fact, home care training helps the patient identify their problems, acquire the necessary care skills, and solve problems on their own, as a result, the patient will feel empowered and the fear and anxiety of disability will subside. Therefore, it is important to educate patients in the preoperative stage, so that they can control the anxiety and fear that patients have from the postoperative period. Accordingly, the present study aimed to determine the effect of home care training on anxiety and vital signs level in CABG patients.

Methods

The present study was a randomized clinical trial study performed at Farshchian Hospital in Hamadan, Iran, in January 2020. The sample size was determined with a confidence coefficient of 95% and a test power of 90% and the basis on previous studies (13), 40 subjects being taken into account for each group.

The inclusion criteria were include at least 18 years of age; fully conscious and knowledgeable regarding time, place, and person; having the ability to communicate, not having a history of heart surgery, lack of psychiatric illness, lack of occupational health care, lack of drug addiction, non-use of anti-anxiety and sedative drugs and Patients who had simultaneous CABG surgery and valve replacement or repair, Patients that unwillingness to continue the participation in the study and their condition worsening during the study period were excluded. The study units were selected by a convenient sampling method. Then, the samples

were randomly assigned to either of the groups (control and intervention) by a random method of Cards or envelop shuffling (14).

Data collection tools consisted of three parts:

1. Individual and demographic information that includes: Age, Sex, marital status, Occupation, Education, Height, Weight, diabetes, hypertension, Hyperlipidemia, hospitalization history, and history of previous surgeries.
2. Checklist of vital signs that include: Heart rate, respiration rate, temperature, systolic, and diastolic blood pressure.
3. Spielberger's state anxiety inventory: The questionnaire was made up of 20 multiple questions that measure a person's anxiety during "response time" with the options of "very little, little, a lot, and very much". In this questionnaire, the lowest score is 20 and the highest score is 80. The Spielberg anxiety questionnaire had global validity and reliability also in Iranian society, its validity and reliability have already been studied. According to Mahram's report, the scientific reliability was also verified by α -Cronbach formula, which was 0.9452 in the normal community and 0.9418 in the standard community (15). In this study, its reliability by α -Cronbach formula was 0.78.

One day before the surgery, after meeting with the patients and obtaining consent to participate in the study, the demographic characteristics of the patients were recorded and as a pre-test, their vital signs were recorded and anxiety was measured. The control group (n=40) received only routine training programs of hospital, but the intervention group (n=40), in addition to these routine trainings, participated in two one-hour home care training sessions. The first session was held at 10 am and the second session was held at 5 pm in the conference room of the ward, in these sessions, the researcher, the patient, and the experienced nurse were present. To empower patients in home care, an educational package was prepared and designed based on the results of the AYDANUR AYDIN et al. study, which undertaken to determine patients' care needs in the first month after CABG surgery(16), and according to clinical experts and university professors. The educational topics of this package include: Breathing, surgical incision care, Sternal bone care, Prevention and care of edema of the upper and lower limbs, Surgical wound dressing training, Bathing, Rest, Pain control, Depression control, Sleep, Diet, Medications, Prayer, Mobility and activity, time and principles of starting work and sports. Content validation method was used to evaluate the validity of the training package. For this purpose, the training package was provided to 8 faculty members of the Cardiovascular and Nursing Department to review the content of the package and express their dissent or agreement with the educational content. Then the content validity ratio (CVR) was calculated that to be 0.75. After ensuring that the training package was appropriate, the patient was given the necessary care according to the intervention program and the questions and concerns of the people regarding the post-discharge period from the hospital were answered. Then, in the morning of the surgery, as a post-test, the vital signs and anxiety of all control and intervention groups were re-evaluated. Data analysis was performed using descriptive statistics and inferential statistics methods in SPSS software version 16 and at a significance level of 0.05 (Figure 1).

Results

The demographic characteristics of the two groups are presented in (Table1), the results demonstrated that the mean age of the control and intervention groups were 64.15 ± 11.05 years, 61.27 ± 7.92 years respectively, and the mean of BMI of the control and intervention groups were 25.70 ± 2.74 , 26.64 ± 3.05 respectively. Most of the patients in these two groups were male, married, self-employed, and illiterate. The statistical tests revealed no meaningful difference between the demographic characteristics of the two groups ($p>0/05$). The results of the medical records displayed that 48/75% of the patients had hypertension, 33/75% had diabetes, and 40% had hyperlipidemia, 73/75% hospitalized, and 43/75 surgery. According to the Chi-square test was not a significant difference between the two groups in terms of medical records ($p>0/05$) (table2). Based on the results of the independent t-test before home care training, the mean anxiety score of the control and intervention groups was 51.65 ± 5.23 and 49.60 ± 7.01 , respectively, which were not significantly different between the two groups ($p=0/143$). The results of the Paired t- test showed that after home care training, the

mean of anxiety of the intervention group decreased significantly ($p=0/001$), but the mean of the anxiety of the control group increased, although it was not significant ($p=0/107$). This difference between the mean of the post-test of the two groups was significant ($p=p=0/001$) (Table 3). Based on the results of the independent t-test before home care training, there was no significant difference between the pre-test score of the heart rate, Respiration rate, temperature, systolic blood pressure, and diastolic blood pressure ($p>0/05$). Based on the t-test, it was found that after training, the mean of the number of pulses, the respiration rate, systolic and diastolic blood pressure of the intervention group decreased significantly ($p<0.05$). However, no significant difference was observed between the mean of the pre-test and post-test of the number of pulses, the respiration rate, systolic and diastolic blood pressure of the control group ($p>0.05$), that this difference between the two groups is statistically significant ($p<0.05$). Moreover, the results of the comparison between group and intragroup of the pre-test and the post-test temperature did not show a significant difference ($p>0/05$) (Table 3).

Discussion

This study aimed to investigate the effect of home care training on anxiety and vital signs level in coronary artery bypass grafting patients. The results of this study showed that the two groups were homogeneous in terms of demographic characteristics. Furthermore, before the intervention, the two groups were homogeneous in terms of the variables studied, therefore, it can be concluded with more confidence that the changes in the studied variables can be affected by the training of home care to patients. Despite the searches, a similar and comparable study that investigates the effect of home care training on anxiety and vital signs level in coronary artery bypass grafting patients was not found, therefore, to discuss these results, studies that have used different educational approaches to reduce patients' anxiety were examined. The results of this study indicate a significant reduction in the anxiety of the intervention group after training at home to this group, but in the control group, although it was not significant, but the level of anxiety has increased, This finding indicates a positive effect of home care training on reducing anxiety in patients with coronary artery bypass grafting, which indicates the importance of this educational approach. The results of this study are consistent with the findings of Aghakhani et al., Who in their study examined the effect of self-care training package and concluded that self-care training can reduce patients' anxiety (17). Garbossa et al. (2009) concluded in a study that there was a significant difference in the anxiety of the trained group compared to the control group in patients undergoing coronary artery bypass graft surgery (18), which is consistent with the present study. One of the benefits of reducing anxiety and calming down before surgery is balancing the level of vital signs. Moreover, the results of this study showed that after the training of home care, the rate of heart rate, respiratory rate, and systolic and diastolic blood pressure of the intervention group decreased significantly, this finding indicates a positive effect of home care training on heart rate, respiratory rate and systolic and diastolic blood pressure in patients with coronary artery disease. This finding is consistent with the results of a study by Farsi et al. (2015) that showed the effectiveness of peer education and orientation tour on patients' the hemodynamic indices(19). The study of Orujlu et al. (2014) has also shown that nurses' educational interventions have been effective in reducing the vital signs of endoscopic candidate patients (20), which is consistent with the findings of this study, But this finding contradicts the results of a study by Maguire et al. (21) and García Sierra et al. (22), This difference may be due to differences in the study population. In the present study, patients were considered that candidates for coronary artery bypass grafting, but in Maguire's (2004) study, endoscopic patients and in the Sanchez (2013) study, Gastroscopy patients have been studied. One of the limitations of the present study was all patients' hospitalizations in one ward, which could exchange information between the two control and intervention groups units that to control this restriction, sampling was performed as a weekly block. Another limitation of this study is the lack of follow-up of patients to evaluate the effectiveness of the home care training programs on other aspects of patients' lives, for this reason, it is suggested that further studies be conducted on the effectiveness of home care education on different aspects of these patients' lives.

Conclusions

Based on the results of the present study, it can be concluded that providing information about home care

to patients who are candidates for coronary artery bypass graft surgery can reduce anxiety and mutually affect the rate of vital signs. Therefore, health care systems should provide the necessary facilities to provide home care training information.

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Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Table 1: CABG candidate patients' demographic in the two groups of patients

Variable	Variable	Control group (n=40)	Intervention group (n=40)	p-value
Age (mean \pm SD)	Age (mean \pm SD)	64.15 \pm 11.08	61.27 \pm 7.92	0.186
BMI (mean \pm SD)	BMI (mean \pm SD)	25.70 \pm 2.74	26.64 \pm 3.05	0.142
Gender (N (%))	Female	9 (22/5%)	11 (27.5%)	0.606
	Male	31 (77.5%)	29 (72.5%)	
Education (n (%))	Illiterate	23 (57.5%)	21 (52.5%)	0.675
	Primary school only	13 (32.5%)	12 (30%)	
	Diploma	4 (10%)	6 (15%)	
	College education	0 (0%)	1 (2.5%)	
Employment (n (%))	Unemployed	10 (25%)	14 (35%)	0.471

Variable	Variable	Control group (n=40)	Intervention group (n=40)	p-value
Marital status (n (%))	Self-employed	23 (57.5%)	22 (55%)	0.302
	Office worker	7 (17.5%)	4 (10%)	
	Single	12 (30%)	8 (20%)	
	Married	28 (70%)	32 (80%)	

Table 2: CABG candidate patients' medical records in the two groups of patients

Variable	Variable	Control group (n=40)	Intervention group (n=40)	p-value
Hypertention (n (%))	Yes	18 (45%)	21 (52.5%)	0.502
	No	22 (55%)	19 (47.5%)	
Diabetes (n (%))	Yes	12 (30%)	15 (37.5%)	0.478
	No	28 (70%)	25 (62.5%)	
Hyperlipidemia (n (%))	Yes	13 (32.5%)	19 (47.5%)	0.171
	No	27 (67.5%)	21 (52.5%)	
Hospitalization (n (%))	Yes	28 (70%)	31 (77.5%)	0.446
	No	12 (30%)	9 (22.5%)	
Surgery record (n (%))	Yes	16 (40%)	19 (47.5%)	0.499
	No	24 (60%)	21 (52.5%)	

Table 3: : Comparing Between groups and intragroup of pre-test and post-test of score of the anxiety and vital signs of the two groups

Variable	Variable	Control group (n=40)	Intervention group(n=40)	Indep
Anxiety (mean \pm SD)	Pre-test	51.65 \pm 5.23	49.60 \pm 7.01	P=0.1
	Post-test	54.65 \pm 8.66	41.25 \pm 4.89	P=0.0
	Paired t- test	P=0.107, t=-1.65, df=39	P=0.001, t=7.32, df=39	
Heart rate (mean \pm SD)	Pre-test	83.42 \pm 5.40	81.55 \pm 5.22	P=0.1
	Post-test	84.80 \pm 4.86	78.72 \pm 4.76	P=0.0
	Paired t- test	P=0.135, t= -1.52, df= 39	P=0.005, t=2.94, df=39	
Respiration rate (mean \pm SD)	Pre-test	17.67 \pm 2.56	18.07 \pm 1.91	P=0.4
	Post-test	18.32 \pm 2.10	17.10 \pm 1.90	P=0.0
	Paired t- test	P=0.064, t=39, df=-1.90	P=0.011, t=39, df=2.66	
Temperature (mean \pm SD)	Pre-test	37.12 \pm 0.39	37.16 \pm 0.30	P=0.6
	Post-test	37.17 \pm 0.19	37.11 \pm 0.28	P=0.2
	Paired t- test	P=0.560, t=-0.587, df=39	P=0.321, t=1.00, df=39	
Systolic blood pressure (mean \pm SD)	Pre-test	124.95 \pm 10.19	122.42 \pm 14.96	P=0.3
	Post-test	126.92 \pm 8.57	118.40 \pm 11.33	P=0.0
	Paired t- test	P=0.279, t=-1.09, df=39	P=0.048 \pm t=2.03, df=39	
diastolic blood pressure (mean \pm SD)	Pre-test	77.15 \pm 8.34	80.32 \pm 8.84	P=0.1
	Post-test	80.85 \pm 8.85	75.17 \pm 6.69	P=0.0
	Paired t- test	P=0.057, t=-1.96, df=39	P=0.010, t=2.69, df=39	

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