

Original Article

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The Effects of Discharge Training and Postdischarge Counseling on Quality of Life after Coronary Artery Bypass Graft Surgery

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ABSTRACT

Background: Coronary artery bypass graft (CABG) surgery is associated with different postoperative problems such as lengthy rehabilitation period and decreased quality of life (QOL). **Objective:** This study aimed to investigate the effects of discharge training and postdischarge counseling on QOL after CABG. **Methods:** This quasi-experimental study was carried out on a convenience sample of 100 patients who underwent CABG surgery in Seyedoshohad Heart Hospital, Urmia, Iran. Using a nonrandom assignment technique, patients were allocated to a control and an intervention group. Patients in the intervention group were provided with an educational booklet as well as discharge training and postdischarge counseling. Training and counseling services continued up to 6 weeks after hospital discharge. Patients in the control group only received routine discharge and postoperative services. The 36-item Short Form Survey was used to measure QOL both in the admission day and 6 weeks after hospital discharge. A home follow-up form was also completed for all patients 2 and 10 days and 6 weeks after hospital discharge. The data were analyzed via the paired-sample *t*, independent-sample *t*, Chi-square, Fisher's exact, Mann-Whitney U and Wilcoxon signed ranks tests. **Results:** The baseline mean scores of QOL in the control and the intervention groups were respectively 46.89 ± 11.91 and 46.53 ± 15.04 , with no between-group difference ($P = 0.90$). Six weeks after hospital discharge, the mean score of QOL in the intervention group was significantly greater than the control group (93.19 ± 4.45 vs. 47.00 ± 13.43 ; $P < 0.001$). **Conclusions:** Discharge training and postdischarge counseling are effective in improving postoperative QOL among patients who undergo CABG surgery.

KEYWORDS: Coronary artery bypass, Counseling, Discharge planning, Aftercare, Patient education, Quality of life

INTRODUCTION

Coronary artery bypass graft (CABG) surgery is associated with different complications and problems. Most of these complications and problems can be prevented and alleviated through effective nursing measures such as continuous care designs and appropriate discharge training and counseling.^[1,2]

Post-CABG discharge training and counseling alleviate postoperative problems, reduce rehospitalization rate and health-care costs, improve patient satisfaction and quality of life (QOL), promote patients' functional


independence,^[3,4] and enable patients to do self-care activities and meet their personal needs.^[5] A study showed that discharge training was effective in alleviating postdischarge problems and improving patient outcomes such as health-related knowledge and self-care ability.^[6] Other studies also proved the effectiveness of discharge training and counseling in minimizing

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the negative effects of post-CABG complications on different aspects of daily life^[6,7] and alleviating patients' and their families' post-CABG problems.^[8-10] Yet, due to lack of necessary training, around half of the discharged patients have limited, if any, knowledge about their underlying conditions, self-care activities, necessary care services, medication use, and medication side effects. Moreover, one-fourth of them usually experience different complications during the first postdischarge month, most of which are preventable through appropriate training and counseling.^[2]

To the best of our knowledge, there is no systematic protocol for discharge training and counseling and postdischarge follow-up in hospitals of Iran. Therefore, Iranian nurses provide some discharge training to patients without any follow-up assessment. Moreover, it is unknown whether discharge training and postdischarge counseling improve the patients QOL after a CABG surgery.

Objectives

This study aimed to investigate the effects of discharge training and postdischarge counseling on post-CABG QOL.

METHODS

Design and participants

This quasi-experimental study was carried out on patients who underwent CABG in January–September 2014 in Seyedoshohada Heart Hospital, Urmia, Iran. Patients were included if they were literate, had undergone an elective CABG for the first time, had not undergone any other surgical procedure during CABG, had no history of psychiatric disease during the last 6 months, suffered from no hearing, perceptual, or speech problems, and signed the informed consent.

Sample size was calculated using the Number Cruncher Statistical System-Power Analysis and Sample Size software 2008 PASS, (NCSS LLC, Kaysville, United States). According to Lindsay *et al.*^[11] and with a power of 80% and a Type I error of 0.05, a sample of 100 patients was determined to be necessary to detect an increase of 20% in the mean score of one of the subscales of the 36-item Short Form Survey (SF-36) [Figure 1]. Therefore, 100 patients were recruited to the study via the convenience sampling method and were allocated to

$$n = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2 (S_1^2 + S_2^2)}{d^2} = 50$$

$$(\alpha = 0.05; \beta = 0.2; S_1 = S_2 = 16; d = 9)$$

Figure 1: Sample size calculation formula

a control ($n = 50$) and an intervention group ($n = 50$) using nonrandom assignment. There was only one heart hospital in Urmia at the time of the study. All patients underwent CABG and were hospitalized after the surgery in the same hospital. Therefore, in order to prevent between-group information leakage, we initially recruited fifty patients to the control group and then, fifty to the intervention group.

Instruments

Data collection instrument consisted of three parts, namely, a demographic and clinical characteristics questionnaire, a researcher-made home follow-up form, and the Persian SF-36. The demographic and clinical characteristics questionnaire contained items such as age, gender, body mass index, history of chronic illnesses and smoking, and marital, educational, and employment status. The researcher-made home follow-up form contained several questions regarding potential postdischarge physical, psychological, and communication problems or difficulties. The validity of the form was evaluated by four nursing experts from Turkey as well as six heart surgeons and six nursing and midwifery faculty members from Urmia University of Medical Sciences, Urmia, Iran. The original SF-36 was translated into Persian and cross-culturally adapted by Montazeri *et al.* who reported its acceptable validity and reliability. They found that except for the vitality subscale which had a Cronbach's alpha of 0.65, the Cronbach's alpha values of the other SF-36 subscales were as high as 0.77–0.90.^[12]

Procedure

Control group

Patients in the control group received routine care services including medication therapy and vital sign monitoring without any planned discharge training or postdischarge counseling

Intervention group

The intervention for patients in this group was a program with discharge training and postdischarge counseling components alongside routine care services.

The discharge training component

In the first admission day, patients were given an educational booklet and were provided with explanations about the educational materials and the discharge plan. They were also motivated to express their problems and ask their care-related questions. Then, they were provided with care-related training in small three-person groups using teaching methods such as lecture, question-and-answer, demonstration, feedback-giving, reinforcement, and summarization. Training sessions were held both before and after CABG, either in a

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conference room or in patients' hospitalization rooms. Sessions lasted 60–220 min with a mean of 140 min. In order to increase the effectiveness of training, at least one family member of each patient was also asked to attend the sessions. Family members were trained to help patients perform post-discharge self-care activities.

The educational booklet was developed based on disease- and care-related topics such as coronary artery disease (CAD), the purposes, procedure, and complications of CABG, prevention of the coronary artery blockage, and post-CABG self-care activities.^[1,7,13] Face and content validity of the booklet were assessed by four nursing experts from Turkey as well as six heart surgeons and six nursing and midwifery faculty members affiliated to Urmia University of Medical Sciences, Urmia, Iran. The booklet was then piloted in Seyedoshohada hospital on ten patients. These ten patients were not included in the main study.

The postdischarge counseling component

This component aimed to answer patients' and their family members' care-related questions and modify their inaccurate self-care practices. Counseling was provided via both home visits and follow-up telephone contacts at 2 and 10 days and 6 weeks after discharge. In each counseling session, the educational needs of the intended patient were identified and then, the first author and the intended patient held discussions about events happened in previous days or weeks, patient's positive and negative experiences, health-related problems, problem management, and expectations. Moreover, during postdischarge home visits and follow-up telephone contacts, need-based training and counseling services were provided to patients and they were advised to refer to the educational booklet for detailed information about their problems.

In the 1st day of hospital admission, all patients completed the demographic and clinical characteristics questionnaire and the SF-36. Moreover, the SF-36 was recompleted by patients 6 weeks after hospital discharge, while the home follow-up form was completed 2 and 10 days and 6 weeks after discharge.

Ethical considerations

This study was approved by the Institutional Review Board and the Ethics Committee of Hacettepe University, Ankara, Turkey (with the approval code of B.30.2HAC.O.05.07.00.210). Moreover, necessary permissions were obtained from the administrators of Seyedoshohada Hospital, Urmia, Iran. Patients were assured that participation in and withdrawal from the study would be voluntary and their information would remain confidential and would be used only for the purposes of the present study.

Data analysis

Absolute and relative frequencies were used to describe the data. Between-group comparisons respecting numerical and categorical demographic variables were performed through the independent-sample *t* and the Chi-square or Fisher's exact tests, respectively. Moreover, within- and between-group comparisons regarding the mean scores of QOL were done by running the paired- and the independent-sample *t*-tests, respectively. The Mann–Whitney U or Wilcoxon signed ranks tests were done for non-normal data. $P < 0.05$ was considered statistically significant.

RESULTS

Two patients in the control group died during the study and thus were replaced with two new ones [Figure 2]. Participants aged 34–78 with a mean of 59.94 ± 9.28 . Around 80% of patients in the control group and 76% in the intervention group were male. Moreover, 92% and 98% of patients in these groups were married, respectively. Statistical analyses showed no significant differences between the groups in terms of patients' demographic and clinical characteristics ($P > 0.05$), except for their employment status and history of chronic illnesses ($P < 0.05$) [Table 1].

At baseline, the total mean scores of QOL in the control and the intervention groups were 46.89 ± 11.96 and 46.53 ± 15.04 , respectively. Six weeks after hospital discharge, these values were 47.00 ± 13.43 and 93.19 ± 4.45 , respectively. As shown in Table 2, except for the general health perception subscale ($P = 0.01$), between-group differences regarding the pretest mean scores of the other subscales of QOL were not statistically significant ($P > 0.05$). However, 6 weeks after hospital discharge, the mean scores of QOL and all its subscales in the intervention group were significantly higher than the control group [$P < 0.05$; Table 2].

Postdischarge follow-up assessments showed that more than 50% of patients in the control group suffered from different post-CABG problems such as respiratory problems, loss of appetite, fatigue, weakness, introversion, difficulty in falling asleep, insomnia, chest pain, back pain, and shoulder pain. However, in the intervention group, only chest pain was reported by 50% of patients. In other words, the rates of all post-CABG problems in the control group were higher than the intervention group. At the third assessment time point, i.e., 6 weeks after discharge, only 12% of post-CABG problems in the control group had been alleviated. This rate in the intervention group was as high as 88.6%.

QOL mean score had no significant relationship with employment status, financial status, living type (i.e., alone or with others), and smoking

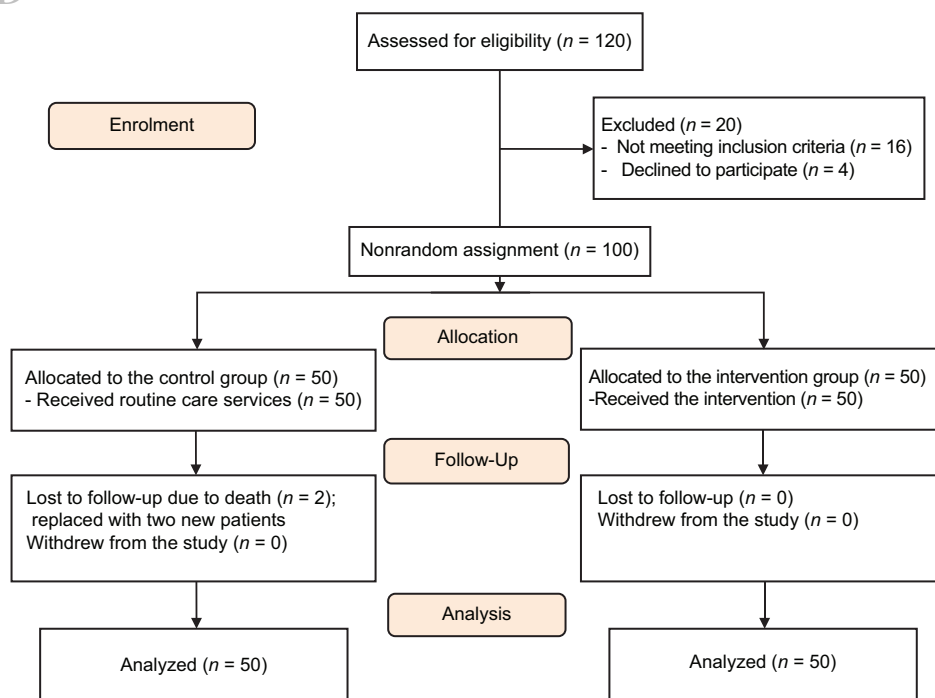


Figure 2: The flow diagram of the study

Table 1: Demographic characteristics in both groups

Characteristics	Groups ^a		P
	Intervention	Control	
Age (year)	58.82 ± 9.26	61.06 ± 9.24	0.65 ^b
Gender			
Male	38 (76)	40 (80)	0.62 ^c
Female	12 (24)	10 (20)	
Marital status			
Married	49 (98)	46 (92)	0.16 ^d
Single, divorced	1 (2)	4 (8)	
Educational status			
Illiterate	16 (32)	21 (42)	0.09 ^d
Primary	16 (32)	9 (18)	
Guidance school	10 (20)	5 (10)	
High school and higher	8 (16)	15 (30)	
Employment status			
Employed	27 (54)	36 (72)	0.03 ^d
Unemployed	23 (46)	14 (28)	
History of chronic illnesses ^e			
Yes	15 (30)	13 (26)	0.03 ^c
No	35 (70)	37 (74)	
Body mass index	27.12 ± 4.19	26.75 ± 3.25	0.16 ^b
Smoking history			
Yes	22 (44)	20 (40)	0.68 ^c
No	28 (66)	80 (60)	

^aData are presents as mean ± SD or n (%), ^bt-test, ^cChi-squared test, ^dFisher's exact test, ^eChronic illnesses were hypertension, diabetes mellitus, asthma, dyspnea, arthritis. SD: Standard deviation

history ($P > 0.05$). However, it had significant relationship with gender, educational status, marital status, and history of chronic illnesses ($P < 0.05$).

DISCUSSION

Study findings showed that all patients in both groups experienced at least one post-CABG problem after hospital discharge. However, the rates of the problems in the intervention group significantly decreased during the first 6 postdischarge weeks. It seems that patients' adherence to the recommendations provided in the educational booklet and training and counseling sessions (about the importance of postoperative healthy diet and adequate rest, sleep, and physical activity) helped reduce postoperative problems in the intervention group. Similarly, a study showed that during the first 4 weeks after CABG, the rates of postoperative problems decreased by 50% and patients' telephone calls for receiving counseling were mainly related to problems with medication use, pain management, and suture removal.^[14]

Findings also showed that during the study, the mean scores of QOL and its subscales in the control group did not change significantly, while in the intervention group, the mean scores of QOL and all its subscales increased significantly. In line with our findings, an earlier study reported that lifestyle-related education and counseling significantly improved QOL.^[15] Two other studies also showed the positive effects of patient education on knowledge, attitude, anxiety, and QOL among patients undergoing CABG^[16] and on QOL among patients with hypertension.^[17]

Usually, we expect that CABG improves the QOL of patients with CAD. However, post-CABG period

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Table 2: The pretest and posttest mean scores of quality of life and its subscales in both groups

QOL subscale	Time	Group ^a		P ^b
		Intervention	Control	
Physical functioning	Before	42.50 ± 32.73	44.70 ± 28.86	0.66
	After	93.50 ± 6.24	46.30 ± 21.91	<0.001
	P ^c	<0.001	0.73	
Physical role	Before	19.00 ± 36.96	24.00 ± 37.44	0.51
	After	99.98 ± 0.14	27.50 ± 43.81	<0.001
	P ^c	<0.001	0.61	
Bodily pain	Before	40.22 ± 38.41	40.44 ± 34.68	0.97
	After	91.11 ± 14.89	38.66 ± 30.38	<0.001
	P ^c	<0.001	0.76	
General health	Before	65.00 ± 23.71	53.20 ± 26.62	0.01
	After	94.40 ± 9.23	59.40 ± 24.98	<0.001
	P ^c	<0.001	0.09	
Vitality	Before	57.20 ± 29.93	55.10 ± 27.11	0.72
	After	86.10 ± 17.82	54.70 ± 27.61	<0.001
	P ^c	<0.001	0.92	
Social functioning	Before	53.50 ± 38.63	54.00 ± 27.59	0.93
	After	95.50 ± 6.56	56.75 ± 28.70	<0.001
	P ^c	<0.001	0.459	
Emotional role	Before	29.33 ± 43.45	34.66 ± 44.65	0.53
	After	98.66 ± 6.59	29.33 ± 43.45	<0.001
	P ^c	<0.001	0.52	
Mental health	Before	58.96 ± 29.75	62.24 ± 25.40	0.57
	After	87.76 ± 13.50	61.44 ± 24.33	<0.001
	P ^c	<0.001	0.81	
Total QOL score	Before	46.53 ± 15.04	46.89 ± 11.91	0.90
	After	93.19 ± 4.45	47.00 ± 13.43	<0.001
	P ^c	<0.001	0.71	

^aData are presents as mean ± SD, ^bIndependent sample *t* or Mann–Whitney U-tests, ^cPaired sample *t* or Wilcoxon signed ranks-tests. QOL: Quality of life, SD: Standard deviation

is usually accompanied by many physical and psychological complications which can impair the QOL if appropriate discharge educations are not provided to these patients. Unfortunately, at the time of this study, patients who underwent CABG in the study setting received no special training about post-CABG home care. As a result, the QOL of the control group did not change considerably at the end of the study. Perhaps, if the duration of the study was longer, we could probably observe some improvements in the QOL of the control group when their postsurgical problems have been subsided. Numerous studies demonstrated that patients need help and support for doing their self-care activities and improving their QOL. Such help and support can be provided mainly through training and counseling. Providing training, counseling, and support to patients who undergo CABG promote their self-care abilities, increase their QOL, ensure care continuity after hospital discharge, minimize complications, and reduce rehospitalization rate.^[7,13,18]

Another finding of the study was the significant relationship of QOL with patients' gender, educational status, and marital status. In this study, most participants were married. Marriage, particularly a successful one, can improve post-CABG survival.^[19] The positive effects of marriage on health-related outcomes and survival may be due to factors such as spousal support and great motivation for having a healthy lifestyle.^[20]

The findings also showed a significant relationship between QOL and history of chronic illnesses. Comorbidity can negatively affect QOL among patients with CAD. Dantas *et al.* found a fourfold decrease in functional ability among patients with chronic illnesses, highlighting the necessity of paying special attention to the negative effects of chronic illnesses on QOL.^[20] The results of another study also revealed the effects of age, educational status, marital status, place of residence, and comorbidity on QOL.^[21] However, a study showed that QOL was not correlated with educational and marital status.^[22]

We also found that before CABG, male patients in both groups had higher QOL scores than their female counterparts. However, 6 weeks after discharge, QOL mean score was higher among female patients. In contrast to our findings, a study showed that after CABG, improvements in some aspects of QOL (including vitality, sleep, and physical mobility) among male patients were greater than their female counterparts.^[23] Another study also reported that women had comparatively poorer post-CABG QOL compared with men.^[24] Although the results of previous studies respecting the effects of demographic and disease-related characteristics on QOL are contradictory, a general conclusion is that these factors can affect QOL. This conclusion highlights the necessity of individualized training, counseling, and rehabilitative services for improving post-CABG QOL.

Among the limitations of the study were the recruitment of participants through convenience sampling method and the nonrandom assignment of them to the study groups. These limitations can restrict the generalizability of the findings. Large-scale randomized controlled trials are needed to produce more credible results. Moreover, as the study follow-up was relatively short, studies with longer follow-up periods are suggested.

CONCLUSIONS

This study shows the effectiveness of discharge training and postdischarge counseling in improving post-CABG QOL and alleviating postoperative problems. Discharge training and postdischarge counseling can also improve patients' self-care abilities, help maintain care continuity after hospital discharge, and reduce rehospitalization

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rate. Post-CABG care units are recommended to use discharge training and postdischarge counseling to improve patients' self-care abilities and QOL and to alleviate their postoperative problems. Moreover, providing patients who undergo CABG with telephone counseling services can improve their postoperative outcomes.

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Conflicts of interests

There are no conflicts of interest.

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