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Research Article

The Impact of Patient Education on Quality of Life of Patients Undergoing Coronary Artery Bypass Grafting (CABG) in the West Bank of Palestine

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Abstract

Background: Quality of life (QoL) has emerged as an important concept and outcome in health and health care.

Aims and Objectives: The aim of this study was to determine the effectiveness of the health education program to improve QoL of patients with coronary artery bypass graft surgery (CABG) and to reduce the problems encountered after discharge. The objectives were to help patients to develop healthy behavior s to deal properly with the problems caused by the disease and to enhance their QoL after discharge. Design: The study was clinical trial with experimental correlation design.

Methods: Hundred and sixty patients were included in this experimental study and divided into two groups as; the intervention group (n = 80) and the control group (n = 80). Patients in the intervention group were given planned educational program of booklet and DVD by the research nurse beginning from hospitalization and reinforced at discharge, while the patients in the control group did not receive planned educational program other than the ordinary verbal instructions. The patient data were collected using the"Personal Information Form", "The Home Follow-Up Form after Discharge" and "SF-36 Health Survey" and "effectiveness of the educational program. The forms were used for data collection before and after intervention. follow up after discharge was provided within three intervals; 2 days, 10 days and one month after discharge.

Results: It was found that the mean QoL scores of the patients in the intervention group were higher than in the control group one month after discharge, significant difference was observed between the intervention and control group in all QoL domains ($p < 0,05$).

Conclusion: The educational program that consists of booklet and DVD given to CABG patients in the intervention group had a positive impact on the QoL of these patients and on alleviating the problems they encountered.

Keywords: *Patient Educational; Quality of Life; Discharge Problems; Coronary Artery Bypass Graft Surgery*

Introduction

Coronary artery disease (CAD) is one of the most important cardiovascular diseases and a worldwide health problem. It is estimated that in 2020, almost 25 million deaths will occur due to cardiovascular diseases. Accordingly, one in every three deaths would be due to the (CVDs) [1]. CVD are recognized as the major cause of mortality in Palestine. Mortality statistics issued by Palestinian MoH showed that the percentage of death due to CVD was 31,2% from all of the deaths in 2012 and increased to 31,9% in 2013. Also, that there were 3566 deaths in 2013 due to cardiovascular disease and 750 patients underwent open-heart surgeries. In 2014 there was 941 cases of CABG,

this indicates that there is threefold increase in the number of cases since 2000. 85% of all the open heart surgeries are (CABG) which is the major procedure utilized to alleviate the effects of cardiovascular disease [2].

QoL has emerged as an important concept and outcome in health and health care. In public health and in medicine, the concept of health- related QoL refers to a person or groups perceived physical and mental health over time. Physicians have often used health-related QoL to measure the effect of chronic illness in their patients in order to better understand how an illness interferes with a person's day-to-day life. Similarly, public health professionals use health-related QoL to measure the effects of numerous disorders, short and long-term disabilities and disease in different populations [3-6]. Tracking health-related QoL in different populations can identify subgroups with poor physical or mental health and can help guide policies or interventions to improve their health [7].

The main goal of CABG is relief of angina and increased life expectancy [8]. Although recent developments have increased the success rate of CABG surgeries, they are not sufficient to eliminate altogether the physical, psychological and social problems that individuals face in the period following discharge [9,10]. Patients who have undergone CABG surgery reported that they experienced postoperative pain, insomnia, changes in appetite or taste, chest pain, respiratory difficulty, arrhythmia, palpitations, numbness of arms, diarrhoea, constipation, nausea, vomiting, abdominal distention, weight loss, anxiety related to the treatment and their ability to adhere to the recommended physical activity, edema of chest and leg incisions, weakness, headache, dizziness and depression [9,11-13].

Following CABG surgery, patients spend most of their recovery time at home and they or their family members provide necessary care [14]. The changing circumstances require transferring the necessary care information and skills to patients and reinforcing this knowledge with health education. Providing educational program and reinforce discharge training to CABG patients, help them develop healthy behaviour, take responsibility for their own health, thus allowing for competent and confident informed choices and possibly reduce the number of problems they may encounter [11,15].

To adapt to the new life situation, CABG patients have to make considerable adjustments. These should be based on knowledge. Therefore, education is necessary and nurses are often involved in developing educational programmes and act as teacher or coach [12,16]. An important goal of the educational programme for patients is to improve health y behavior to deal more comfortably with the problems and reduce the number of problems they may encounter [15].

Health education is a necessary tool for health and aims to promote health level and reduce the behaviors causing disease. Health and QoL also have a mutual relationship. Meanwhile, educational programs as intervening factor can play an important role in removing the health problems and changing the QoL. Early health education can be effective not only in health improvements, but also in other social domains and QoL [1]. Health education programs and attempt to change lifestyle in cardiac patients, including patients with CABG, should be the first priority. Most of the risk factors causing cardiac disease are related to behavior and awareness of individual. The experiences of advanced countries have shown that educational interventions focusing on behavior change were able to modify risk factors [1].

Considering increase in atherosclerosis and CABG surgery and with regard to importance of QoL in these patients, this study was conducted to evaluate the effect of a health education program based on booklet and DVD on QoL in bypass surgery patients.

Design and Methods

This study is a clinical trial with experimental design. This Quantitative research was conducted through a questionnaire that measures the effectiveness of a pre and post operative patient education on the QoL for patients undergoing CABG surgery one month after discharge. All patients aged 34 to 80years scheduled for an elective CABG at Palestine Medial Complex And Arab Specialist Hospital (in West Bank during the period (December 2015 - April 2016) were recruited. Selection criteria were being able to read and write Arabic language, does not suffer from mental illness or disability that prevents the patient from writing or reading or seeing. Agree to sign the consent letter and voluntary accept to participate in the research study. No pervious cardiac surgery "Did not experience a cardiac surgery". Not admitted as an emergency case. Scheduled electively to the surgery and length of stay in the ICU not more than one week.

Study instruments

Data collection tool

Four data collection tools were used in the study: The "Personal information form", "The home follow-up form after discharge", SF-36 Health Survey" and "effectiveness of the educational program were used in the study.

Personal information form

It consists of two subsections including forms A (18 items) and B (7 items). The total items on this form were questions about gender, age, height, weight, educational status, marital status, occupation, place of residence, economic status (Monthly income), whether living alone or not, length of CAD, history of CABG surgery in close relatives, suffering from chronic (long term) disease, the duration of suffering from chronic disease, history of surgeries, presence of CAD-inducing factors (smoking, narjile, excessive alcohol consumption, hypertension, diabetes, obesity, family history of CAD). In addition, there was information about the number of replaced veins, length of cross-clamping, total duration of pumping, status of complication development during the patient`s surgery and duration of stay in the intensive care unit (ICU) and hospital, ICU length of stay, graft number, graft type, post operative complication and readmission.

The home follow-up form after discharge

The total items of this form were questions regarding any physical, psychosocial and communication problems or difficulties and complications experienced, by the patients after discharge. It was filled during three intervals; the first after 2 days, the second after 10 days, the third after one month, such as respiratory difficulty, fatigue, chest pain, palpitation, edema of the legs, loss of appetite, nausea, constipation, drainage from or redness at the surgical wound, introversion, unwillingness to make social contact, fear, attention deficit problem, refusal to see visitors, insomnia and back pain. In addition, it included three questions about with whom the patient would live during the four weeks after discharge, the educational level of the person helping to care after discharge and the information resource most widely used after discharge [13,17-20].

SF-36 health survey

SF-36 Health Survey has 36 items and was developed by Rand Corporation in 1992 [21]. Cronbach's alpha was found ranging from 0.65 to 0.90 in the validity and reliability study. The SF-36 includes one multi-item scale that assesses eight health concepts: (1) Limitation in physical functions because of health problems (PF-10 items); (2) Limitation in social activities because of physical or emotional problems (SF-2 items); (3) Limitation in usual role activities because of physical health problems (RP-4 items); (4) bodily pain (BP-2 items); (5) general mental health (MH-5 items); (6) limitation in usual role activities because of emotional problems (RE-3 items); (7) vitality (VT-4 items) and (8) general health perceptions (GH-5 items). Each scale consists of two to ten items and each item is rated 2-6 points on the Likert scale. The scale score is calculated by summation of all the scores of items belonging to the same scale from 0 to 100 with higher scores indicating higher levels of function and/or better health [21,22].

Effectiveness of educational program form

The researcher developed this form by using a wide variety of resources and consulting experts. This form was especially prepared to measure the effectiveness of the educational program: the booklet and DVD for intervention group, it contain15 items, on the Likert scale from one to five where five is the highest and one is the lowest.

Development of patient educational programme (booklet and DVD)

The researchers developed a teaching booklet and DVD by using a wide variety of resources and by consulting expert's opinion. The booklet and DVD entitled "Care Guidelines for Patients Who Have Undergone Coronary Artery Bypass Graft Surgery and Their Relatives" included such aspects as promotion of control, self-care and social support. The researcher delivered copies of the booklet and DVD to the patients in the intervention group on the day of their hospitalization, explained that reading the information provided inside the booklet

would help them and encouraged them to ask questions when they did not understand a topic and to express their problems clearly to explore possible solutions during teaching pogramme.

Study implementation

The study implementation was conducted between December 20-2015 until April 1- 2016 (Figure 1). The intervention group had consisted of those patients who received planned preoperative, reinforce postoperative and at discharge education and training services during the time of their hospitalization and provided home visit or given information by phone after discharge, while the control group had routine nursing care that include; applying medicine and measuring vital signs with no plan for education and training services. Education programme services were applied according to patients' individual needs and through education and a training booklet and DVD which were developed for this purpose.

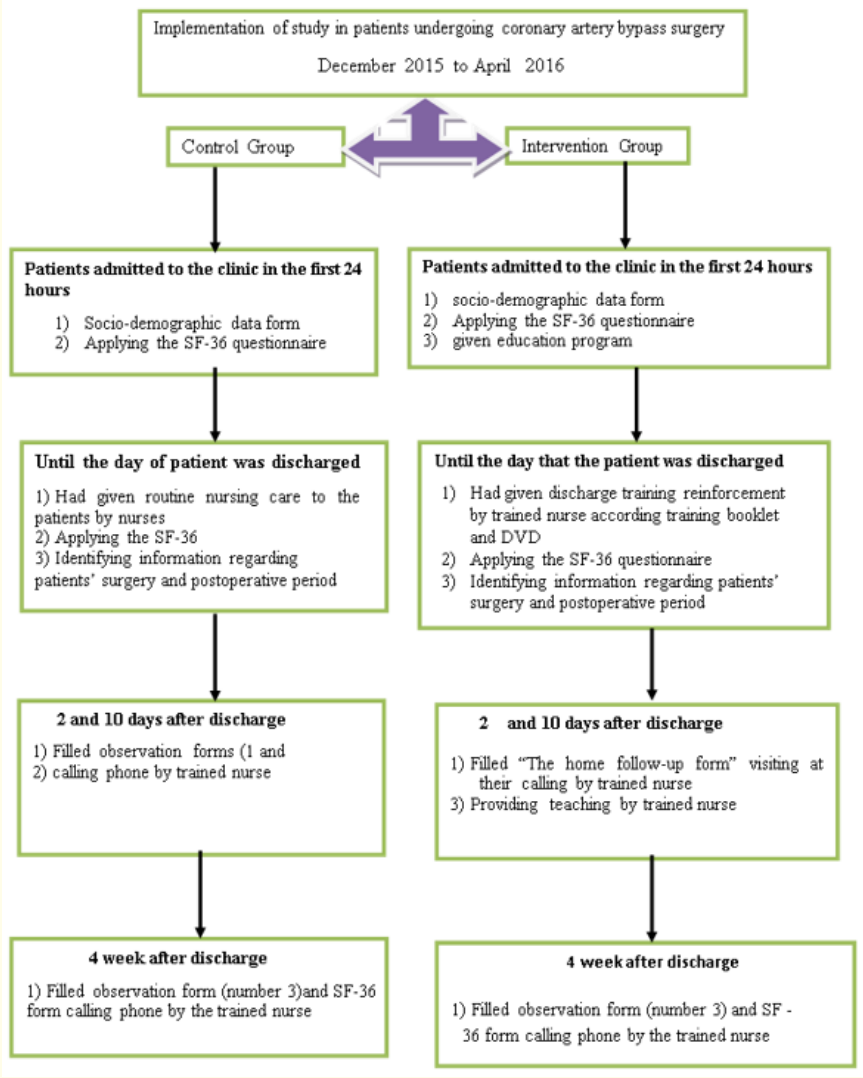

Figure 1: *Flow chart about study implementation.*

Control group

The trained nurse filled in the "Personal information socio-demographic form" and the "SF-36 Health Survey" for control group patients in the first 24 hours after admission to the surgical unit by using face to face interview method. The nurses gave routine nursing care to the patients in the control group. The day that the patients in the control group were discharged, the trained nurse filled in Personal information form regarding patients' surgery and postoperative period according to file and observation form for the patients. The trained nurse filled "The home follow-up form" by calling them after 2 days and ten days following discharge. The trained nurse filled "The home follow-up form" and „ SF - 36 Health Survey" by face to face or by phone interview at four weeks after their discharge in the polyclinic.

Intervention group

The trained nurse filled in the "Personnel information form" and the "SF-36 Health Survey" for the intervention group patients in the first 24 hours after admission to the surgical unit by using the face to face interview method. Twenty four hours after the intervention group patients with CABG surgeries were admitted to the surgical unit from the intensive care unit, the trained nurse determined the interview time that was most appropriate for the patients and the hospital ward procedures. At the interview, the trained nurse delivered copies of the booklet and DVD to the patients in the intervention group on the day of their hospitalization, explaining the booklet and DVD also they emphasized that reading and Watching the information provided inside the booklet and DVD helped them and encouraged them to ask questions when they did not understand a topic and to express their problems clearly in order to explore possible solutions during training. The trained nurse determined the teaching time that was most appropriate for the patients and the hospital ward procedures. The trained nurse gave education postoperative and discharge training according to the educational program to the intervention group patients in the educational room or in their own room, with individual education and training between 11:00 - 1:00 and 16:00 - 20:00. Aimed at answering the questions of patients and relatives and correcting inappropriate practices which had not been covered in the teaching sessions. Discharge training was given in the appropriate room on the same floor equipped with sufficient light, proper ventilation and silence, with windows and enough chairs for ten patients to sit. Along with patients' education and training, the training booklet and DVD, educational tools such as slides, educational posters, educational models role play, demonstration and spirometer were used. In addition, the trained nurse used different methods of teaching (questions and answers, giving feed-back, emphasis on reinforcement points and summary of important training points) according to the training given to patients and family members and gave attention to patient's non-verbal behaviors.

- The day that the patients in the intervention group were discharged, the trained nurse filled in "section two of Personal information form" about patients' surgery and postoperative period according to the patient files and the "SF-36 Health Survey". The trained nurse filled "The home follow-up form" by calling them at 48 hours and ten days following discharge. Also, given information according to patients' needs and the educational program were provided by the trained nurse to meet the patient's and their family's needs. The trained nurse filled "The home follow-up form" and the "SF-36 Health Survey", by calling or face to face interview at one month after their discharge and the information was continually given. The education and training time for individual patient lasted 35 - 70 minutes while group education and training varied between 55 - 120 minutes (mean: 140 minutes pre-post operative). For better training, at least one family member was with the patient and instructed the patient in order to help the patient. In all individual education and training, patients' characteristics (interests, ability, learning needs) were taken into account.
- The education and training time for individual patient lasted 35 - 70 minutes while group education and training varied between 55 - 120 minutes (mean: 140 minutes pre-post operative). For better training, at least one family member was with the patient and instructed the patient in order to help the patient. In all individual education and training, patients' characteristics (interests, ability, learning needs) were taken into account.

Ethical consideration

Permission for the study was granted by the Gazi University Ethics Committee. The necessary written approval was obtained from the administration department of the hospital prior to this study. Patients were informed about the study and written informed consents were obtained.

Data analysis

Data were analyzed with Pearson correlation analysis and association between demographic information and QoL was analyzed with Chi Square test and correlation between two groups. Mean and interaction effect of education on QoL in each group (in pre operation, at discharge and 1 month post education) was analyzed with paired t-test. Variance analysis ANOVA test and Comparison of QoL between two groups in one month post education stages was analyzed with independent sample t test. P-value less than 0.05 was considered to be statistically significant. Analyses of data was performed using Social Package of Statistical Science SPSS (version 18.0). Frequencies, percentages, Means and Standard Deviation-also was done.

Results

The findings of this study included patients' descriptive characteristics, health status and habits before surgery, current hospital and operation experiences, distribution and comparative information in follow-up, problems experienced after discharge and the comparison of life quality before surgery, at discharge and 1 month after discharge. Also the study was interested in exploring the impact of Booklet and DVD on the intervention group from the patient's point of view.

Characteristics of control and intervention group patients

Personnel information form results shows that the majority of the patients in the control and intervention groups were male (80%), (72,5%) respectively. Age group (36 - 79), (34 - 74). Primary school graduates (16,3%), (38,8%), married (95,0%), (96,3%). Unemployed (10,0%), (21,3%). BMI (15,73 - 35,96), (19,53 - 38,27). Smoking (48,8%), (38,8%). Had Chronic Illness (48,8%), (58,8%). Had CAD in Family (32,5%), (25,0%). Length of in Hospital Stay (days) (5 - 10), (5 - 9) and who had Cross clamp time (minute) of the control and intervention group were (24 - 67), (29 - 67) respectively. Statistical analysis showed that the control and intervention group did not differ significantly in terms of the variables in the personal information form except in terms of education ($p = 0,000$), income status ($p < 0,05$), Age ($p = 0,018$), BMI ($p < 0,05$) and in terms of having Previous Surgery ($p = 0,006$) that were significant differences. However these significant difference were analyzed by turkey test and the results showed that these variables had no effect on the QoL scores of patients between the two groups ($p > 0,05$).

Habits and health status of control and intervention group patients

Statistical analysis showed that there were significant differences between the control and intervention groups in terms of having Previous Surgery ($p = 0,006$), the intervention group had less patients with Previous Surgery than patients in control group. there were no significant differences between the control and intervention groups in terms of Type of surgery, Number of graft and Cross clamp time ($p > 0,05$). in terms of Length of in Hospital Stay there were significant differences between the control and intervention groups ($p = 0,000$), the mean of the control group was higher than the mean of the intervention group.

The problems experienced by control and intervention group patients during follow-ups after discharge

Statistical analysis in table 1 showed that there were significant differences between the control and intervention groups in follow-up 1, 2 and 3 since all $p < 0,05$ whereas the intervention group had problems less than expected while the control group had problems more than expected in terms of the following problems: Respiratory difficulty, Palpitation, Loss of appetite, Constipation, Dizziness, Fatigue, Attention deficit problem, Difficulty in falling asleep, Insomnia, Back pain, Shoulder pain and Edema of the legs. Statistical analysis showed that there were no significant differences between the control and intervention groups in follow-up 1, 2 and 3 since all $p>0,05$ in terms of the following problems: Pain at the surgical wound, Vomiting, Diarrhea, Refuse to see visitor, Unwillingness to social contacts and other problem.

Problems	Follow-up1 48hrs				Follow-up2 10 days				Follow-up3 One month			
	Control group (n = 80)	Inter-vention group (n = 80)	Statistical evaluation		Control group (n = 80)	Inter-vention group (n = 80)	Statistical evaluation		Control group (n = 80)	Inter-vention group (n = 80)	Statistical evaluation	
			χ^2	P			χ^2	P			χ^2	P
Back pain	55(68,8%)	16(20,0%)	38,512	0,000	45(56,3%)	4(5,0%)	49,45	0,000	42(52,5%)	0(0,0%)	56,949	0,000
Difficulty in falling asleep	51(63,8%)	18(22,5%)	27,75	0,000	39(48,8%)	4(5,0%)	38,958	0,000	32(40,0%)	2(2,5%)	33,613	0,000
Loss of appetite	50(62%)	16(20%)	7,876	0,005	36(45,0%)	7(8,8%)	13,202	0,000	29(36,3%)	3(3,8%)	11,757	0,001
Chest pain	50(62,5%)	34(42,5%)	6,416	0,011	36(45,0%)	7(8,8%)	36,226	0,000	29(36,3%)	3(3,8%)	36,226	0,000
Shoulder pain	49(61,3%)	19(23,8%)	23,018	0,000	44(55,0%)	7(8,8%)	39,403	0,000	39(48,8%)	1(1,3%)	48,133	0,000
Insomnia	45(56,3%)	9(11,3%)	36,226	0,000	44(55,0%)	6(7,5%)	42,007	0,000	40(50,0%)	0(0,0%)	53,333	0,000
Edema of the legs	38											
Respiratory difficulty	37(46,3%)	20(25,0%)	7,876	0,005	27(33,8%)	8(10,0%)	13,202	0,000	21(26,3%)	5(6,3%)	11,757	0,001
Constipation	28(35,0%)	12(15,0%)	8,533	0,003	16(20,0%)	2(2,5%)	12,269	0,000	18(22,5%)	0(0,0%)	20,282	0,000
Fatigue	25(31,3%)	13(16,3%)	4,97	0,026	23(28,8%)	5(6,3%)	14,026	0,000	19(23,8%)	2(2,5%)	15,841	0,000
Palpitation	24(30,0%)	12(15,0%)	5,161	0,023	20(25,0%)	5(6,3%)	10,667	0,001	14(17,5%)	0(0,0%)	15,342	0,000
Attention deficit problem	23(28,8%)	11(13,8%)	5,378	0,02	17(21,3%)	5(6,3%)	7,589	0,006	12(15,0%)	2(2,5%)	7,828	0,005
Dizziness	21(26,3%)	9(11,3%)	5,908	0,015	18(22,5%)	4(5,0%)	10,329	0,001	14(17,5%)	0(0,0%)	15,342	0,000
Does not sleep on supine position	17(21,3%)	9(11,3%)	2,939	0,086	14(17,5%)	5(6,3%)	10,131	0,001	12(15,0%)	1(1,3%)	2,939	0,086

Table 1: *The problems experienced by control and intervention group patients during follow-ups after discharge. Significance level: p < 0,5.*

QoL mean score in control and intervention group patients

Statistical analysis in table 2 showed that there were significant differences between the control and intervention groups before surgery in terms of Role limitations due to physical health scale (p = 0,002), the intervention group was higher than the control group. The results showed that there were significant differences between the control and intervention groups at discharge in terms of Physical functioning only (p < 0,05), whereas the intervention group was higher than the control group. The results showed that there were significant differences between the control and intervention groups after 1 month in terms of all QoL Scales since all p < 0,05 the intervention group was higher than the control group in: Physical functioning Role limitations due to emotional problems, Energy/fatigue, Emotional well-being, Social functioning, Pain and General health.

Scale	Group	before surgery	at discharge	after 1 month
		± SD	± SD	± SD
Physical functioning	Control	48,25+8,42	6,75+5,34	45,63±12,05
	Intervention	46,06+8,18	10+6,8	68,13±7,69
	Statistical Evaluation	t = 1,666, p = 0,098	t = -3,362, p = 0,001	t = -14,081, p = 0,000
Role limitations due to physical health	Control	6,88+12,56	16,25+35,38	55,31±19,36
	Intervention	15,31+20,47	10,94+19,01	65,94±19,59
	Statistical Evaluation	t = -3,142, p = 0,002	t = 1,183, p = 0,239	t = -3,451, p = 0,001
Role limitations due to emotional problems	Control	37,92+27,43	10+17,1	15,83±35,17
	Intervention	31,67+26,99	16,25+36,37	74,58±23,86
	Statistical Evaluation	t = -1,453, p = 0,148	t = 1,391, p = 0,166	t = 12,364, p = 0,000
Energy/fatigue	Control	28,44+8,7	29,38+8,76	30±8,68
	Intervention	28,94+9,2	30+8,68	62,13±12,55
	Statistical Evaluation	t = 0,353, p = 0,724	t = 0,453, p = 0,651	t = 18,833, p = 0,000
Emotional well-being	Control	48,95+9,07	49,05+8,24	50,25±7,17
	Intervention	50,95+7,6	50,25+7,17	63,95±11,18
	Statistical Evaluation	t = 1,511, p = 0,133	t = 0,983, p = 0,327	t = 9,228, p = 0,000
Social functioning	Control	37,97+16,21	38,44+14,45	37,81±14,06
	Intervention	37,66+14,13	37,81+14,06	72,97±11,67
	Statistical Evaluation	t = -0,13, p = 0,897	t = -0,277, p = 0,782	t = 17,207, p = 0,000
Pain	Control	58,22+10,46	56,25+11,62	55,16±12,6
	Intervention	57,03+10,85	55,16+12,6	79,63±12,41
	Statistical Evaluation	t = -0,705, p = 0,482	t = -0,571, p = 0,569	t = 12,373, p = 0,000
General health	Control	31,69+7,02	46,81+10,01	50,25±7,95
	Intervention	30,56+6,51	47,38+8,46	58,69±11,44
	Statistical Evaluation	t = -1,051, p = 0,295	t = 0,384, p = 0,701	t = 5,417, p = 0,000

Table 2: *QoL mean score in control and intervention group patients.*

**The significance level of p<0,05 was accepted.*

Booklet and DVD impact on CABG patients in the intervention group

Statistical analysis showed that the total degree of the respondents toward the booklet was high (mean = 4,21) The highest percentages of agreement were that drawings helped to understand the information (mean 4,8). Regarding DVD impact statistical analysis showed that the total degree of the respondents toward watching the DVD was very high (mean = 4,47). The highest percentages of agreements were that DVD meet patient's need for information about CABG operation (mean 4,84). While low percentage of patients mentioned that they have information about operation before reading the booklet (mean 1,33) and before watching the DVD (mean 1,75) most of the patients did not have information about the operation before reading the booklet or the watching the DVD. Results showed that the DVD impact on patients (mean 4,47) was higher than Booklet impact (mean 4,21).

Discussion

The results of this study showed that there was no significant difference between groups observed ($p > 0,05$) in the (QoL) mean scores between patients in the control and intervention group before surgery in all subcategories, except in terms of the role limitations due to physical health where a significant difference was observed ($p < 0,05$). Furthermore in all subcategories of the QoL scores in patients of both groups at discharge, there was no significant difference observed ($p > 0,05$), except for physical functioning which was statistical significant difference ($p < 0,05$). While in all subcategories of the QoL scores in patients of both groups one month after discharge, there was significant difference observed ($p < 0,05$) where QoL mean scores were higher in the intervention group compared to the control group. Also in all subcategories of QoL, the obtained average quality of life scores in the control group before and one month after discharge were not significantly different ($p > 0,05$), but in the intervention group the obtained QoL scores in all cases before and one month after discharge were significantly different ($p < 0,05$). These findings were similar with the results of other researchers, for instance Akbari found that QoL mean scores of CABG patients were higher in the intervention group compared to the control group [11]. In a study of Cebeci there was a significant difference in self care scale means of the intervention and control group at discharge, also there was a significant difference in self care scale means of the intervention and control group at the first follow up (one week after discharge) and in the second follow up (one month after discharge) [23]. Furthermore, Babaee implemented an educational program based on Miko Education Pattern and reported that there was significant difference in QoL means of the intervention and control group after one month post operation [24]. In addition Baghery showed that group-counseling had positive effect on QoL in patients with myocardial infarction, analysis of the data one month post counseling showed that QoL had significantly improved pre and post counseling in intervention group but no improvement was found in control group [25]. Almost similar results were found by Al gersha where the health of the study group with CABG surgery was better than that of the control group [26]. A statistical significant difference was found between the study and the control groups at functional capacity, self-efficacy through the period of follow up (one to three month) ($p \leq 0,05$). Lehtonen implemented a teaching module on self care activity for cardiac surgery patients, they found there was a significant difference in self care activity between experimental and control group in 4^{th} and 7^{th} day post operatively [27].

Education of patients with a chronic disease and improving QoL of these patients gets a growing attention, [28]. According to Babaee education can improve health and QoL in patients with CABG [24]. Also Gallagher and McKinley reported that patient education can be considered an important aspect of patient care [29,30]. If patients are not educated regarding their care, they may be at risk of complications for example, more post-operative pain, more readmissions and an increased length of stay. The purpose of pre-operative education is to give the patient and their family the tools that they need to be able to make informed decisions [20].

Hayward showed that patients who had received preoperative information required less analgesia and recovered faster than those who had not [31]. A meta-analysis of 191 studies focusing on how psychoeducational interventions influence recovery showed a positive effect of preoperative patient's education on postsurgical pain, psychological wellbeing, anxiety and satisfaction [32].

Towell and Nel conducted a study to explore the CABG patient's experience and benefit of pre-operative education programme as positive and lower anxiety levels [33]. They found that the majority of the patients were positive about the programme and were empowered to take control of anxious situations in their lives. Moreover the critical review by Oshodi aimed to analyze and discuss published research in the effect of preoperative education on postoperative outcomes such as pain, anxiety and recovery since 1994, he found that all studies reported one or more statistically significant effect in the outcome measures and all support the use of preoperative education [4]. while Ronco published a systematic review from 2004 to 2010, the frequently analyzed outcomes were anxiety, knowledge, pain and length of hospital stay [34]. The objective knowledge was the only positive outcome influenced by patient education [34]. Al-gersha and Krouse also investigated the effect of planned preoperative education on the recovery of CABG patients and found that preoperative education is an extremely effective method to strength self care abilities and enhance recovery [26,35]. Sabzmakan evaluated the effect of an educational

intervention PRECEDE on depression and (QoL) of patients with (CABG) 4 to 8 weeks after surgery [1]. The findings confirmed the improvement of psychological status and depression of the patients which finally increased QoL of patients after CABG. Veronocivi concluded in their literature review on studies related to discharge education for cardiovascular surgery that patient education is essential and no studies reported negative findings in relation to preoperative education [36]. Consequently the results of this study confirm that implementing health educational programme consists of booklet and DVD had a positive effect on CABG patients QoL one month after discharge.

This study also revealed the problems that patients may encounter after discharge and within three different intervals after discharge (the first follow up 48 hrs after discharge, the second follow up 10 days after discharge and the third follow up one month after discharge). One of the main purposes of the booklet and DVD was teaching and training CABG patients how to manage and deal with the problems they may face after discharge and while they are at home during the recovery period.

the most frequently reported problem in the intervention and control group at discharge was loss of appetite (61,3%) and (77,5%) respectively. While during the three follow ups the control group continued complaining from loss of appetite compared to the intervention group who were able to manage with this. The patients in the intervention group have experienced anorexia to a lesser degree because they received training on how to boost their appetite, how to cope with nausea and the positive effect of proper nutrition on healing. The problems that patients reported during the three follow ups demonstrated that all patients experienced at least one problem after discharge. Patients in the intervention group who received preoperative education by the booklet and DVD experienced fewer problems after returning home than patients in the control group who received the routine hospital instructions in all three follow ups. And there was a descending pattern of the problems reported by the intervention group from discharge until the third follow up (1 month after discharge). Whereas patients in the control group reported more problems in the three follow ups. These results were similar to the findings of Akbari and Cebeci.

The patients in the intervention group who received teaching and training by the booklet and DVD have experienced less frequent occurrence of respiratory difficulty than the control group during the recovery period, this might be explained that the use of spirometer and the benefit of training on deep breathing and coughing exercises had a positive effect. Some studies confirmed that planned preoperative education and training increase postoperative deep breathing and coughing ability [36].

Control group had more intense pain at discharge and in the three follow ups than the intervention group who demonstrated a continuous decrease in the pain tense, these results were in concurrence with the results of Shuldham, "Akbari and Cebeci, who reported that preoperative training was instrumental in reducing preoperative pain [10,11,23]. Many studies reported that pain was the most frequent problem reported by patients and it needs to be addressed after CABG [9,11]. Moreover, nurses have a key role in preoperative education to help patients and their families prepare mentally and physically for the surgical process and learn how to effectively self-manage post-surgical symptoms once they are discharged home [36].

Patients are not expecting to retain all information they receive at hospital either from a doctor or nurse, thus giving brief, clear information oriented to patients needs could help in preventing complications and reducing the incidence of rehospitalization [36].

This study was also interested in exploring the impact of booklet and DVD on CABG patient's in the intervention group and their ability to deal with the problems they may face during the recovery period while they were at home. The analysis of these results revealed that the DVD and the booklet had a high positive impact on patients in the intervention group regarding all items (DVD mean [4,36] and booklet mean [4,21]. Obviously the impact of DVD was higher than the impact of booklet in most of the items, for example 80% of patients mentioned that watching DVD was extremely easy while 72,5% of patients mentioned that booklet was easy a lot. It seems that patients prefer watching DVD rather than reading booklet. This can be explained that watching needs less effort and consumes less time. Further more reading usually requires more skills than watching.

Conclusion

Cardiac surgery can save lives and improve quality of life. The outcomes of cardiac surgery can be affected by the quality of pre-operative health education programme provided to these patients. The findings of this study proved that the use of preoperative educational program of booklet and DVD was an effective educational tool in improving CABG patient's QoL in the early recovery period, also patient's education and training pre surgery and enforced at discharge helped in reducing the complications that patient's faced while at home with their families.

Limitations

1. The study was conducted only in the West Bank. Centers of Gaza Strip and Jerusalem/Al-Quds were excluded due to the Israeli occupation and difficulty in getting permission to reach there.
2. Prevailing political situation in the area which greatly limits transportation during the home follow up.
3. The intervention and control groups were similar in sociodemographic data except level of education, age, previous had surgery and length of in hospital stay (days).

Declaration of Conflicting Interests

Authors have no conflict of interests.

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