

## Effectiveness of Planned Discharge Instructions on Patients' Recovery Following Coronary Artery Bypass Graft Surgery

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**Background:** Coronary artery bypass graft (CABG) which is integral to the treatment of cardiovascular disease, may resulting in fragile recovery, and decreased self-confidence in doing activities of daily life, in order to reduce the complications and further re-admission the individuals must develop the knowledge and skills for self-management at home to prolong their survival. **Aim of the study:** To evaluate the effectiveness of planned discharge instructions on patients' recovery following CABG surgery. **Aquasi-experimental design** was used to conduct the current study in cardiothoracic surgical unit and outpatient clinics, at Nasser institute during the period from beginning of August 2017 till beginning of June 2018. **Subjects:** A purposive sample of 214 patients recruited according to the study formula based on the total number of patients who admitted to the study settings during 2016. **Tools:** Three tools were utilized for data collection, 1) Structured interviewing questionnaire sheet, 2) Structured Knowledge questionnaire and 3) Cardiac self efficacy scale. **Results:** Showed that mean score regarding knowledge and self efficacy after CABG among intervention group were significantly higher after implementing intervention than among control group with a lower incidence of complications as well as there was a highly significant association between knowledge and self efficacy among the studied groups. **Conclusion:** The planned discharge instructions was effective in improving knowledge, self efficacy as well as reducing incidence of complications after surgery among the studied patients. Besides, the knowledge was significantly correlated with self efficacy. **Recommendation:** Assuring the importance of implementing the planned instructions for patients with CABG before and after operation as well as during recovery period. Besides, Reinforcement of receiving specific discharge instructions after CABG rather than disease knowledge. **Keywords:** Coronary artery bypass graft, patient recovery, planned discharge instructions

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### I. Introduction

The heart is one of the most vital and delicate organs in the body. It has the major role to make the circulation of blood around the body possible (Actforlibraries, 2017). If heart does not function properly, all other organs, including the brain – begin to die from lack of oxygen within just a few minutes. As of 2009, the most common cause of death in the world was heart disease (Moore et al., 2018). Cardiovascular disease (CVD) is the term for all types of diseases that affect the heart or blood vessels, including coronary heart disease, which can cause heart attacks, stroke, congenital heart defects and peripheral artery disease. It occurs when plaque (a combination of fat, cholesterol, calcium, and other substances found in the blood) builds up in arteries, which reduce the amount of oxygen-rich blood getting to heart, and can cause chest pain (also called angina). It can also lead to blood clots, which block blood flow and are the most common cause of a heart attack (National Heart, Lung and Blood Institute, 2016).

A higher burden of risk factors is associated with a higher lifetime risk of death from CVD. These risk factors include high blood pressure, high blood cholesterol, smoking, diabetes, overweight or obesity, and physical inactivity (Berry, 2012). It's important to reduce or control these risk factors and seek treatment to lower the chance of a heart attack or stroke. Treatment also depends on current health condition, risk factors, and overall wellbeing. The main treatment modalities are drug therapy, nutritional therapy, coronary surgical revascularization, percutaneous coronary interventions and coronary artery bypass graft surgery (Sampson, 2018).

Coronary artery bypass graft (CABG) which is integral to the treatment of CVD. Mainly used to treat the patient whose coronary artery are severely blocked i.e., mainly triple vessel disease. CABG is done based on the severity of the symptoms and the extent of the disease. The main goal of this surgery is to relieve the symptoms of coronary artery disease, mainly the angina, and also to lower the risk of suffering from heart attack or other cardiac incident and to bring back the patient to a normal life style (Fredericks et al., 2012).

common side effects from surgery which often go away within 4 to 6 weeks after surgery, include, discomfort or itching from healing incisions, swelling of the area where an artery or vein was removed for grafting, muscle pain or tightness in the shoulders and upper back, Fatigue, mood swings, problems in sleeping or loss of appetite, Constipation, and Chest pain around the site of the chest bone incision (**The Regents of the University of California, 2018**), and as a result The quality of life (QOL) of most patients who undergo CABG is dramatically decreased due to fragile recovery, anxiety, depression, and decreased self-confidence in doing activities of daily life Self-efficacy which known as one's confidence for performing an action and it is considered as a key prerequisite for successful self-care and behavior modification (**Miri et al., 2016**).

Although these surgical procedures often improve survival rates, individuals with chronic CVD remains at increased risk for coronary events. To reduce the complications and further re-admission the individuals must develop the knowledge and skills for self-management at home to prolong their survival, improve their quality of life and reduce the need for additional interventions. Education provided at discharge following open heart surgery increases the knowledge of patients. Indeed, education training after open heart surgery is beneficial as it eliminates or reduces physical and emotional problems of the patient (**Zhang et al., 2011**), who explored the effect of nurse-initiated preoperative education and counseling on postoperative complications following CABG

Nurses have a great role in preventing postoperative complications of patients with coronary artery bypass graft surgery through educating the patients and their families regarding post operative problems, activity progression, nutrition and medication also preparing patients mentally and physically to effectively self-manage post-surgical symptoms once they are discharged to home. Thus, CABG discharge education should be conducted in view of helping the patients and caregivers to cope up with acute and chronic health problems (**Kanchana et al., 2015**).

## **II. Significance Of The Study**

According to the latest WHO data published in 2017 Coronary Heart Disease Deaths in Egypt reached 126,312 or 24.58% of total deaths, ranks Egypt #18 in the world (**Who, 2017**), it was stated in the study about the role of nursing education that, The operative success of cardiac surgery is limited unless the patient understands and adheres to the prescribed activities, diet, exercise & medical regimen after surgery. Since, surgery improves patients' knowledge of their illness and awareness of behavioral changes to prevent a new event or readmission to hospital (**Kadda et al., 2012**) . So, the present study intended to evaluate the nursing post discharge instructions on patients' recovery following CABG surgery.

### **Aim Of The Study**

The aim of the present study was to evaluate the effectiveness of planned discharge instructions on patients' recovery following CABG surgery. Through,

- Assessing knowledge among patients undergoing CBAG
- Assessing level of self efficacy among patients undergoing CBAG
- Detecting incidence of complications following CBAG
- Evaluating the effect of post discharge instructions on knowledge, self efficacy and incidence of complications

## **III. Research Hypotheses**

To fulfill the aim of this study the following research hypotheses were formulated:

**H<sub>1</sub>** –The intervention group with CBAG who received discharge instructions will exhibit significantly higher mean score of knowledge post program compared to control group.

**H<sub>2</sub>** – Mean score of self efficacy among the intervention group with CBAG post discharge instructions will be significantly higher compared to control group

**H<sub>3</sub>** – There will be significant difference with lower incidence of complications post discharge instructions among the intervention group compared to control group

**H<sub>4</sub>**- There will be significant association between knowledge and self efficacy post discharge instructions among patients with CBAG

## **IV. Subjects And Methods**

**4.1 – Research design:** Quasi-experimental design was utilized to conduct the current study.

**4.2- Setting:**

This study was conducted in cardiothoracic surgical unit then; it was completed in out patients' follow up clinics at Nasser institute Hospital Cairo, Egypt.

**4.3- Subjects:**

**A- Type:** Purposive sample

**B-Size:** The sample size was calculated based on the previous year census report of admission in cardiothoracic surgical unit from **Nasser institute Hospital Census, 2016**. The total number of subjects comprised 229 patients, utilizing the following formula (**Yamane, 1967**)

$$n = \frac{N}{1+N(e)^2}$$

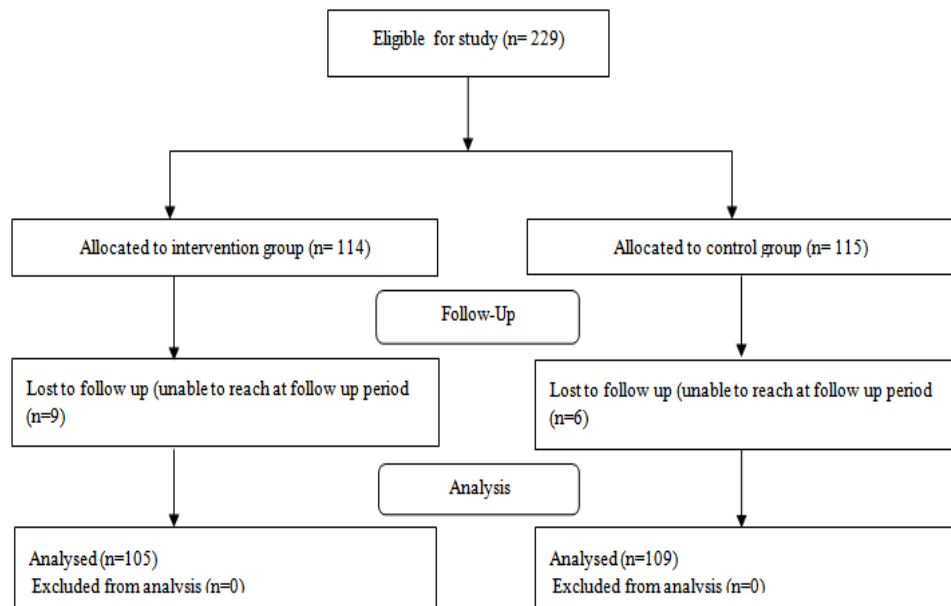
Where:

n= sample size

N= total population (535)

e= margin error (0.05)

A total 229 of patients were recruited in the current study. They were divided into two groups: group (1) control group included 115 patients they had ordinary nursing care. Group (2) intervention group included 114 patients they had the planned discharge instructions, to reach at the end of study period to 109 patients in the control group and 105 patients in the intervention group.



**Figure 1.** The process of study design.

**C-Technique:** Control group related assessment and intervention were firstly applied at the first half of time of data collection (1st 2 months). This was applied to avoid and reduce bias during sample collection. Intervention group related assessment and intervention were applied at the second half of time of data collection (2nd 2 months).

**D-Inclusion Criteria:** The patients had been selected according to the following criteria: Age 20 years or older, both sexes (male and female), diagnosed with coronary artery disease and hospitalized for a planned surgery of CABG, with no previous cardiac surgery, and agreed to participate in the study, while excluded patients who will have post-operative complications, such as heart block, angina, fever, uncontrolled arrhythmia and who have malignant type of arrhythmia.

**4.4- Tools of Data Collection**

**Three tools were utilized for data collection.**

**Tool (I): Structured interviewing questionnaire sheet:** it was developed by the researchers, and was divided into three parts:

**Part 1:** Concerned with socio-demographic characteristics of the study subjects including; age, gender, marital status, residence, education level, occupation, nature of work.

**Part 2:** Health related data such as; pre-operative functional status, past medical history, ICU length of stay, graft number, graft type, post operative complication, etc.

**Part 3:** Patient's complications, which was developed by researcher after reviewing literature (**National heart lung and blood institute, 2016**) including: Wound pain, Muscle pain (neck, shoulder back), Fatigue, Sleep disturbance, changes of appetite, Wound discharge, Shortness of breath, Bowel motion Disorder, Leg incision, disorder (edema, infection, pain), Angina, and Perspiration. may occurred to CABG patient to be evaluated by two scale Yes or No.

**Tool (II):** Structured Knowledge Questionnaire. It was developed and written in Arabic language by the researcher after reviewing relevant literature (**Davidson & Bonow, 2011; Douglas & King, 2011; and Oxford University Hospitals Trust; Oxford Heart Centre, 2013**) and agreed upon by a panel of experts to assess subjects' knowledge needs in form of multiple choice questions and closed ended questions. It was divided into two major sections

**Section (a):** It entails knowledge regarding open heart surgery: It comprised (7 questions) about definition of CABG, indications for CABG, patients' preparation before surgery, experienced problems after surgery

**Section (b):** Composed of questions to collect data about patients' knowledge regarding post discharge instructions: It comprised (15 questions) including, pain management, wound care, diet information, activities of daily living, medications, and management of experienced problems after surgery.

**Scoring system:** All knowledge variables were weighted according to the items included in each question of multiple choices [a question that implies response with (don't know) scored as "1", (incomplete) scored as "2" and (complete) scored as "3". Another questions which has a response with "wrong answer or don't know" scored as "1", while correct answer was scored as "2". The total score was 61, patients' knowledge was considered (poor) if percent score was  $< 50\% = 31$ , (average) if percent score was  $50\% - < 70\% = 31 - < 43$ , and (good) if percent score was  $\geq 70\% = 43$  and more

**Tool (III):** The Cardiac Self-Efficacy Scale. This instrument was developed by (**Sullivan et al. 1998**), in order to measure self-efficacy related to heart disease and composed of 16 items: Symptom control (eight items), functioning maintenance (five items) and three additional items associated with obesity, smoking and dietary habits, which were applied to subjects requiring modification of risk factors. Each item was scored on a 5-point Likert scale ranging from 0 (strongly disagree) to 4 (strongly agree). In this study, the score was obtained by summing scores from all items of the two subdimensions except for the three subject-specific items (obesity, smoking and dietary habits) and ranged from 0–52. A higher score indicates a greater level of cardiac self-efficacy.

#### **Tool validity**

The content validity was done through five panels of experts in medical and nursing field for face and content validity, and their opinions were requested via an assessment form. The experts were asked to grade each item as "essential," "useful but inadequate" or "unnecessary". Modifications were carried out according to experts' judgment on the clarity and appropriateness of content. The percentage of consensus among experts regarding structured interviewing questionnaire was 98%, Structured knowledge questionnaire was 97% and The Cardiac Self-Efficacy Scale was 98%.

#### **Pilot study**

It was conducted on 10% of the total sample (21 patients), and they were excluded from the study sample. In order to test the feasibility and reliability of tools. It revealed that, internal consistency for structured interviewing questionnaire was ( $r = 0.92, 0.90, \text{ and } 0.96$ , respectively). Regarding cronbach alpha value for patients' complications questionnaire was 0.873, and Patients' Knowledge Questionnaire, was: 0.85 for the entire scale. In addition Cardiac Self Efficacy Scale related cronbach alpha was 0.975.

#### **4.5 Ethical considerations:**

This study was conducted under the approval of the Faculty of Nursing Ethics Committee, Benha University. An explanation about the purpose of the study was given to participants, and they were also informed that they could withdraw from the study at any time before the completion of the study. After agreement for Participation in the study, participants were asked to sign a consent form. Moreover, they were reassured that all information gathered would be confidential and used only for the purpose of the study.

#### **4.6 Field of work**

##### **Data were collected in the following sequence**

- An official permission to carry out the study was obtained from pertinent authorities after explanation of its purpose. Then, structured interview was conducted for patients eligible for the study (fulfilled the inclusion and exclusion criteria) in order to explain the purpose of the study, assure confidentiality and to obtain informed written consent.

- Data collection extended over a period of 10 months from beginning of August 2017 to beginning of June 2018.

## **Procedures:**

The planned discharge instructions comprised the following phases:

### **A- Assessment Phase:**

Patients who were planned for undergoing CABG surgery were interviewed in groups before applying the planned instructions in order to collect the baseline patients' data using all study tools. This interview took about 30 to 35 minutes.

### **B- Implementation phase**

The developed instructions was implemented for the studied patients in groups (ranged from 3-4 patients) while they were in cardiothoracic surgical unit. It was conducted in 5 sessions, while they were approached two days before surgery, as well as during their hospital stay after surgery at the surgical unit. The first session was carried out during assessment phase, involved (overview about the heart, CABG including definition, indications, and preoperative preparations) and the second session involved (experienced problems after surgery, postoperative pain management, as well as relaxation and deep breathing exercises) while the third involved (wound care, ambulation and extremity exercises). Also the fourth session included (activities as personal hygiene, diet, medications, sexual activity, and return to work), moreover the fifth session involved (how to manage experienced problems post surgery and follow up schedules). Each session took about 30 to 35 minutes.

The instructional booklet was given to each patient under the study to help for reviewing and support teaching at home, and teaching materials which were used in these sessions included illustrations, models and discussions. It was developed by the researcher based on review of current literature. A booklet containing the content of the planned instructions, it was written in a simple Arabic language and supplemented by photos and illustrations to help the patient understanding of the content.

### **c- Evaluation phase**

Immediately after implementation of the planned instructions (**prior to their discharge**), each patient in the study was interviewed to evaluate knowledge using tool (II) (Structured knowledge questionnaire).

**After one month** from implementation of the intervention, evaluation of patients was done in the outpatients clinics using the study tool (I) (part 3) Patients' complications experienced post surgery, and Tool (III) (Cardiac self efficacy scale).

**After three months** from implementation of the intervention, evaluation of patients was done in the outpatients clinics using the study tool (I) (part 3) Patients' complications experienced post surgery, tool (II) (Structured knowledge questionnaire), and Tool (III) (Cardiac self efficacy scale).

**After six months**, study subjects were reevaluated by the researcher using the study tool (I) (part 3) Patients' complications experienced post surgery, tool (II) (Structured knowledge questionnaire), and Tool (III) (Cardiac self efficacy scale).

## **V. Data Analysis**

The collected data were tabulated and statistically analyzed using an IBM computer and the statistical package for social science (SPSS) advanced statistics, version 20 (SPSS Inc., Chicago, IL). Numerical data were expressed as mean and standard deviation. Qualitative data were expressed as frequency and percentage. Chi-square test was used to examine the relation between qualitative variables. For quantitative data, comparison between two groups was done using student t-test. One-way ANOVA for repeated measures at different time intervals in each group was done. Pearson method was used to test correlation between numerical variables. A p-value < 0.05 was considered significant, and <0.001 was considered highly significant.

## **VI. Results**

**Table 1.** Reveals that there is no significant statistical differences between both intervention and control groups, with a mean age of  $\{(42.07 \pm 8.76 \text{ \& } 42.13 \pm 8.02), \text{ respectively}\}$ , also (81.0 & 80.7%, respectively) were female, (54.0%) of intervention group were married while in control group (57.8%) were not married. As well as (61.9 & 66.1%, respectively), were living in rural area, and more than half (57.4 & 54.3, respectively) had a primary or secondary education (53.6 %) of intervention group were in governmental work and (59%) were not working and (54,1 %) of intervention group had a hard work and (52.9%) of control group had a moderate work.

**Table 2.** Presents illness related data among both study and control groups with no significant statistical difference between both groups , with high percentage was 81.0% of the intervention group and 80.7%of the control group was related to the functional class III and Iv. Most of groups (95.2 &97.2%) had co morbidities, with all subjects complaint from chest pain and breathing difficulties, with a mean of time since diagnosis was  $\{6.53 \pm 2.74 \text{ \& } 6.89 \pm 2.87, \text{ respectively}\}$ . regarding length of stay at ICU the higher percents (60.0 &64.2%,

respectively) stayed less than 3 days. Concerning bypass it was shown that, {2.29± 0.77 & 2.22± 0.69} was the mean number of grafts. The data also indicated that (71.4%) of the intervention group and (75.2%) of the control group had their graft from saphenous vein graft and left internal mammary artery.

**Table 3** Points out that, the incidence of commonly experienced complications was not statistically significant between both groups at post-operative discharge, where wound and muscle pain as well as sleep disturbances constituted the highest expressed problems. During the first month of follow-up, still the condition but in a lower degrees regarding wound pain. During the third month, a statistical significant differences were observed for wound pain, muscle pain, appetite disturbance, bowel motion disorder and angina, with a better improvement in expressed complications among the intervention group to be highly improved at 6 months after operation with a statistical significant differences were observed for percentages of wound, muscle pain, sleep disturbance, and appetite ( $p \leq 0.05$ ).

**Table 4.** Indicates that, the difference in mean scoring of knowledge was statistically not significant at pretest, while there was a highly significant difference between both groups during each post operative period ( $p \leq 0.05$ ), it also reveals the significant difference in mean knowledge score within each group through different study periods ( $p \leq 0.05$ )

**Table 5.** Presents the difference in mean scoring of self efficacy was statistically not significant at pretest, while there was a highly significant difference between both groups during each post operative period ( $p \leq 0.05$ ), it also reveals the significant difference in mean self efficacy score within each group through different study periods ( $p \leq 0.05$ )

**Table 6.** Clarifies that there is a positive and significant correlation between knowledge regarding post discharge instructions and self efficacy ( $p < 0.001^{**}$ ).

**Table (1).** Distribution of the studied sample according to their socio-demographic characteristics (n =214).

Frequency in Each Group  Socio Demographic Data	Intervention group		Control Group		Chi-square	
	No	%	No	%	X <sup>2</sup>	P value
<b>* Age (in years)</b>						
< 50	63	60.0	70	64.3	8.613	0.126 <sup>n.s</sup>
50 or more	42	40.0	39	35.7		
- Mean ± SD	42.07 ± 8.76		42.13 ± 8.02		t- test	p- value
					-0.054	0.957 <sup>n.s</sup>
<b>* Gender:</b>						
Male	20	19.0	21	19.3	0.002	0.968 <sup>n.s</sup>
Female	85	81.0	88	80.7		
<b>* Marital status:</b>						
Married	67	54.0	57	46.0	2.910	0.088 <sup>n.s</sup>
Not married	38	42.2	52	57.8		
<b>* Residence:</b>						
Rural	65	61.9	72	66.1	0.400	0.527 <sup>n.s</sup>
Urban	40	38.1	37	33.9		
<b>* Education:</b>						
Illiterate	0	0.0	0	0.0	2.042	0.360 <sup>n.s</sup>
primary	31	57.4	23	42.6		
Secondary/ Diplomat	42	45.7	50	54.3		
High education	32	47.1	36	52.9		
<b>* Occupation:</b>						
Not working	25	41.0	36	59.0	2.506	0.286 <sup>n.s</sup>
Free work	20	48.8	21	51.2		
Governmental work	60	53.6	52	46.4		
Retired	0	0.0	0	0.0		
<b>* Nature of work :</b>						
Simple work	21	51.2	20	48.8	0.664	0.718 <sup>n.s</sup>
Moderate work	64	47.1	72	52.9		
Hard work	20	54.1	17	45.9		

(n.s) Not Statistically Significant

(No) Number

(SD) Standard Deviation

**Table (2): Distribution of Both Studied Groups According to Their Illness-Related Data, Intervention group(n=105) and Control Group (n= 109).**

Frequency in Each Group	Intervention group		Control Group		Chi-square	
	No	%	No	%	X <sup>2</sup>	P Value
<b>Illness- Related Data</b>						
<b>* Functional status before surgery (NYHA classification)</b>						
I and II	20	19.0	21	19.3	0.002	0.968 <sup>n.s</sup>
III and IV	85	81.0	88	80.7		
<b>* Comorbidities:</b>						
No	5	4.8	3	2.8	0.600	0.439 <sup>n.s</sup>
Yes	100	95.2	106	97.2		
<b>Current complaint</b>						
Chest pain	105	100.0	109	100.0	o.c	<b>n.s</b>
Loss of appetite	43	41.0	49	45.0	0.349	0.554 <sup>n.s</sup>
Difficulty in breathing	105	100.0	109	100.0	o.c	<b>n.s</b>
<b>* Time since diagnosis:</b>						
<5 years	42	40.0	39	35.8	2.109	0.348 <sup>n.s</sup>
5-10 years	61	58.1	64	58.7		
>10 years	2	1.9	6	5.5		
- Mean ± SD	6.53± 2.74		6.89± 2.87		t-test -	P- Value 0.353 <sup>n.s</sup>
<b>*Length of stay in ICU after surgery:</b>						
< 3 days	63	60.0	70	64.2	0.757	0.685 <sup>n.s</sup>
3 days and above	42	40.0	39	35.8		
<b>* Number of grafts:</b>						
1	12	11.4	10	9.2	1.834	0.607 <sup>n.s</sup>
2	59	56.2	71	65.1		
3	26	24.8	22	20.2		
4	8	7.6	6	5.5		
- Mean ± SD	2.29± 0.77		2.22± 0.69		t-test -	P- Value 0.511 <sup>n.s</sup>
<b>* type of grafts:</b>						
SVG	9	8.6	7	6.4	0.512	0.774 <sup>n.s</sup>
LIMA	21	20.0	20	18.3		
SVG & LIMA	75	71.4	82	75.2		

(n.s) Not Statistically Significant

(O.C) Out of Statistical Comparison

(NYHA) New York Heart Association Classification

(LIMA) Left Internal Mammary Artery

(SVG) Saphenous Vein Graft

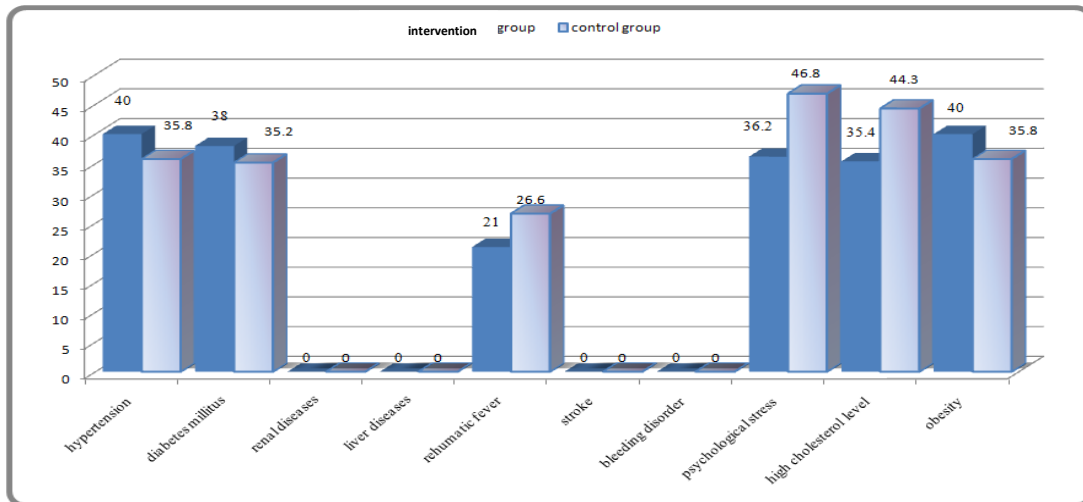


Fig (1): Distribution of studied groups according to presence of co-morbidities among intervention group(n=105) and control group (n= 109).

Table (3): Difference between the frequency of commonly experienced complications for intervention and control groups with CABG during different study periods

Study periods	Group	At discharge		1 month after operation		3 months after operation		6 months after operation	
		No	%	No	%	No	%	No	%
Wound pain	Intervention group	105	100.0	83	79.0	42	40.0	21	20.0
	Control group	109	100.0	80	73.4	59	54.1	61	56.0
		O.C		0.942 (0.332 n.s)		4.284 (0.038 *)		29.266( <0.001**)	
Muscle pain	Intervention group	84	80.0	84	80.0	22	21.0	20	19.0
	Control group	89	81.7	89	81.7	47	43.1	44	40.4
		0.094 (0.759 n.s)		0.094 (0.759 n.s)		12.029(0.001**)		11.596 (0.001**)	
Fatigue	Intervention group	62	59.0	62	59.0	21	20.0	21	20.0
	Control group	60	55.0	65	59.6	31	28.4	31	28.4
		0.349 (0.554 n.s)		0.008 (0.931 n.s)		2.071 (0.150n.s)		2.071 (0.150 n.s)	
Sleep disturbance	Intervention group	64	61.0	62	59.0	21	20.0	21	20.0
	Control group	73	67.0	71	65.1	28	25.7	36	33.0
		0.841 (0.359 n.s)		0.843(0.358 n.s)		0.980 (0.322n.s)		4.645 (0.031*)	
appetite	Intervention group	42	40.0	21	20.0	0	0.0	0	0.0
	Control group	39	35.8	19	17.4	10	9.2	8	7.3
		0.405 (0.525 n.s)		0.232 (0.630 n.s)		10.105 (0.001*)		8.006 (0.005*)	
Wound discharge	Intervention group	42	40.0	21	20.0	0	0.0	0	0.0
	Control group	39	35.8	28	25.7	0	0.0	0	0.0
		0.405 (0.525 n.s)		0.980 (0.322 n.s)		O.C		O.C	
Shortness of breath	Intervention group	62	59.0	42	40.0	21	20.0	21	20.0
	Control group	60	55.0	39	35.8	27	24.8	20	18.3
		0.349 (0.554 n.s)		0.405 (0.525n.s)		0.700 (0.403n.s)		0.094 (0.759 n.s)	
Bowel motion disorder	Intervention group	42	40.0	21	20.0	0	0.0	0	0.0
	Control group	39	35.8	19	17.4	5	4.6	0	0.0
		0.405 (0.525 n.s)		0.232 (0.630 n.s)		4.932 (0.026*)		O.C	
Leg incision disorder	Intervention group	62	59.0	42	40.0	42	40.0	0	0.0
	Control group	55	50.5	39	35.8	45	41.3	0	0.0
		1.592 ( 0.207 n.s)		0.405 (0.525n.s)		0.037 (0.848n.s)		O.C	
angina	Intervention group	42	40.0	21	20.0	0	0.0	0	0.0
	Control group	39	35.8	20	18.3	5	4.6	0	0.0
		0.405 (0.525 n.s)		0.094 ( 0.759 n.s)		4.932 (0.026*)		O.C	
Perspiration	Intervention	42	40.0	21	20.0	21	20.0	21	20.0



group									
Control group	39	35.8	19	17.4	24	22.0	19	17.4	
	0.405 (0.525 n.s)		0.232 (0.630 n.s)		0.131 (0.717n.s)		0.232 (0.630n.s)		

(n.s) Not Statistically Significant

(\*\*) Highly Statistically Significant

(\*) Statistically Significant

(O.C) Out of Statistical Comparison

**Table (4): Difference between mean scores of knowledge for intervention and control groups with CABG during different study periods**

Different study periods	Knowledge mean score	Intervention group	Control group	t- test	p- value
		$\bar{X} \pm SD$	$\bar{X} \pm SD$		
Pre test (1- 2 days before operation)		29.51+1.47	29.60+1.38	-.422	0.673 <sup>n.s</sup>
Post test (at discharge)		54.85+1.19	37.41+1.02	115.14	<0.001**
Post test ( 3 months after operation)		47.25+6.17	35.17+2.05	19.36	<0.001**
Post test (6 months after discharge)		46.85+5.37	31.43+2.91	26.22	<0.001**
F (Anova with repeated measures)		F (0.003) P- <0.001**	F (0.042) p- <0.001**		

(n.s) Not Statistically Significant

(\*\*) Highly Statistically Significant

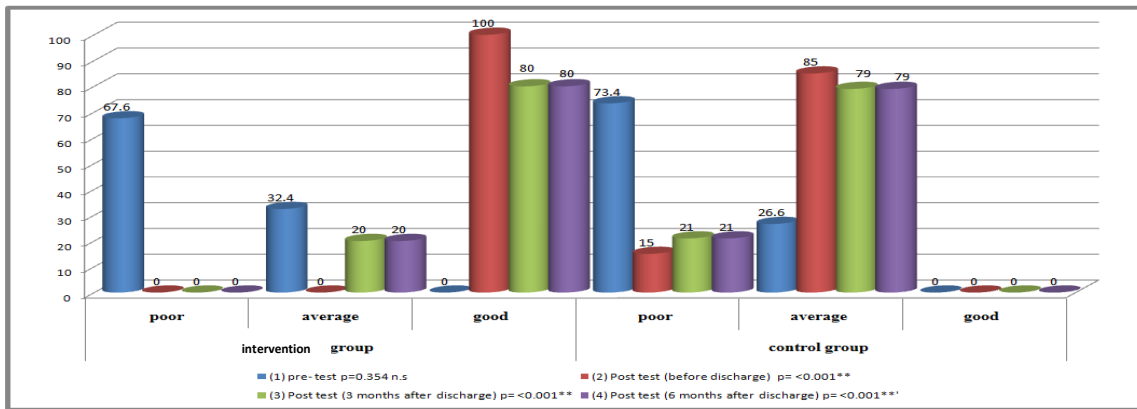


Fig (2): Differences between studied groups according to level of knowledge during different study periods

**Table (5): Difference between mean score of self efficacy for intervention and control groups with CABG during different study periods**

Different study periods	Self efficacy mean score	Intervention group	Control group	t- test	p- value
		$\bar{X} \pm SD$	$\bar{X} \pm SD$		
Pre test (1- 2 days before operation)		15.78+4.13	15.36+3.59	0.801	0.424 <sup>n.s</sup>
Post test ( one month after operation)		24.01+8.36	18.72+3.71	6.022	<0.001**
Post test ( 3 months after operation)		36.90+12.14	24.61+3.05	10.251	<0.001**
Post test ( 6 months after operation)		46.78+11.10	28.50+3.89	16.187	<0.001**
F (Anova with repeated measures)		F (0.024) P <0.001**	F (0.136) P <0.001**		

(n.s) Not Statistically Significant

(\*\*) Highly Statistically Significant

**Table (6) : Correlation between knowledge regarding post discharge instructions after 6 months post program and self efficacy among the intervention and control groups.**

knowledge	r-\ p values	
	r-test	P-value
Intervention group	0.906	<0.001**
Control group	0.220	0.022*

\*\* = Highly statistically significant at  $\leq 0.01$

Weak = indicates (r < 0.5)

(\*) Statistically Significant at  $\leq 0.05$

Good = indicates (r > 0.5-0.75)

Fair = indicates (r = 0.5)

Very good = indicates (r >0.75)

### VIII. Discussion

The study aimed to evaluate the effectiveness of planned discharge instructions on patients' recovery following CABG surgery. According to characteristics of the studied subject, the present study results showed that, there were no significant statistical differences between both intervention and control groups concerning characteristics, revealing the homogeneity among study subjects regarding their characteristics, these findings were consistent with (Ahmed et al., 2006) who stated that there was no statistically significant differences could be detected between early activity and the control groups as regards to age, body weight, occupation, sex and smoking. (p= 0.120, 0.082, 0.468, 0.695 and 0.0997 respectively).

According to marital status, more than half of intervention group were married while in control group less than three fifth were not married. More than three fifth of study sample and about two thirds of control group were living in rural area. These findings were not in accordance with (Akbari & Celik, 2015) who stated in their study that, the majority of patients were urban residents and males in the intervention and control groups. Considering other demographics, it was revealed that most participants in both groups were married.

Concerning illness related data among both intervention and control groups, the present study revealed that there was no significant statistical difference between both groups; most of both groups were related to the functional class III and IV. The data also indicated that less than three quadrant of the intervention group and about three quadrant of the control group had their graft from SVG and LIMA. These finding was congruent with (Al-gersha et al., 2005), who stated that the high percentage was 88.89% of the intervention group and 92.86% of the control group which was related to the functional class III and IV and also about (85.1%) of the intervention group and (89.29%) of the control group had their graft from SVG and LIMA. Moreover, most of both groups (95.2% & 97.2%, respectively), had associated co morbidities. This finding was supported by Clough et al. (2002), who stated that the relative frequencies of the comorbid conditions. Hypertension (64.3%) was the most frequent, followed by diabetes (30.1%), obesity (24.6%). Also, Kendir et al. (2018), suggested that there were associations between CVDs and other chronic diseases. All CVDs showed associations with many of comorbidities studied.

Concerning knowledge for both groups with CABG during different study periods, the present study revealed that the mean scoring of knowledge was not significantly different at pretest, this might be due to that, baseline measures were taken preoperatively so none of both groups had adequate baseline knowledge, also doctors/ nurses focus on providing brief guidelines just before discharge, the study findings also revealed that, there was a highly significant statistical difference between both groups during each postoperative period (p≤ 0.05), which supported research hypothesis (1), assuring the effectiveness of post discharge instructions, and also indicating that, when the information is given to patients in a simplified way their knowledge improves. It also reveals the significant difference in mean knowledge score within each group through different study periods (p≤ 0.05), These finding in the same line with Mansin (2017), who said that the study revealed that the pre-operative and pre-discharge knowledge mean scores as well as the mean self-care ability scores at post-operative day 5th and at 1 month of the experimental group were significantly higher than those of the control group (p<0.001). Also, Ranjbaran et al. (2015), reported that following the intervention incorporating discharge instructions, the mean score of knowledge in the intervention group was significantly higher than that of the participants in the control group. As well, Sandhya (2010), who found that there is no statistically significant difference in the mean score of knowledge of patients in the pretest of both groups, while after intervention there were statistically significant difference in the mean knowledge score of patients in the intervention and control group in post test

In the current study the difference in mean scoring of self efficacy was statistically not significant at pretest, while there was a highly significant difference between both groups during each post operative period (p≤ 0.05), it also reveals the significant difference in mean self efficacy score within each group through different study periods (p≤ 0.05). Which supported research hypothesis (2), this may be attributed to that, post discharge instructions played more vital and essential part in such improvement. These finding were in the same line with Cebeci and Celik (2008), in a study about discharge training and counseling increase self-care ability and reduce post discharge problems in CABG patients, and found that the intervention group had a higher mean self-care score than the control group. Also, Al-gersha et al. (2005), stated that there were highly significant differences regarding the scoring of self efficacy measurement between study and control group for CABG patient, during the period of follow up (p≤ 0.01). As well, Veronovici et al. (2014), reported that cardiovascular surgery education has been demonstrated to improve patient outcomes post-discharge. Self-management skills are rarely innate and patients and families require education to acquire the knowledge and skill to manage their care at home post cardiovascular surgery. In a recent study, Mohsenipouya et al. (2018),

revealed that the educational intervention based on a health promotion model proved effective in improving self-care behaviors in cardiac surgery patients. These interventions can be helpful in convincing patients to carry out behavioral changes and adhere to food and drug regimens.

Regarding the incidence of complications, there was not statistically significant difference between both groups at post-operative discharge, with a significant difference during 3<sup>rd</sup> and 6<sup>th</sup> months after surgery, **which supported research hypothesis (3)** reflecting that these instructions put a positive effect on patients' outcomes. These findings contradicted with (*Tuna & Celik, 2014*), who stated that older adults who underwent CABG experienced some problems in the postoperative period that affected their functional autonomy levels, with these levels being higher in the intervention group. In addition, they experienced fewer problems in the postoperative period than the patients in the control group. Also, *Akbari and Celik (2015)*, in their study about the effects of discharge training and counseling on post-discharge problems in patients undergoing coronary artery bypass graft surgery, found that there were statistically significant differences were found between the control and intervention groups ( $P < 0.05$ ).

There was a positive significant correlation between knowledge regarding post discharge instructions and self efficacy, **which supported research hypothesis (4)**, pointing out the positive effect of knowledge on enhancing confidence while performing physical activities and. This finding was congruent with *Mary (2016)*, who found there was positive correlation between knowledge and attitude after self instructional discharge protocol.

### **IX. Conclusion**

The planned discharge instructions was effective in improving knowledge, self efficacy as well as reducing incidence of complications after surgery among the studied patients. Besides, the knowledge was significantly correlated with self efficacy.

### **X. Recommendations**

Based on the results of the study, the following recommendations are suggested :

1. Assuring the importance of implementing the planned instructions for patients with CABG before and after operation as well as during recovery period
2. Reinforcement of receiving specific discharge instructions after CABG rather than disease knowledge.
3. Complying with Follow up visits to the clinic is important in order to determine the progress of patient's condition and detect any incidence of complications.
4. Establishment of patients' educational centers in hospitals equipped by suitable related materials, medias and audio-visual aids for teaching all CABG patients' how to cope with their health condition

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