

## Effectiveness of individualized health education on knowledge about home care management among patients after CABG: A randomized controlled study

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### Abstract

Coronary Artery Disease (CAD) one of the non - communicable diseases, has become a major public health problem in the developing countries. CAD in India is showing an increasing trend. Coronary Artery Bypass Graft surgery improves quality of life of the CAD patients and help them to return to the normal life, the early recovery period presents a number of challenges for patients, carers and nurses. Early and adequate discharge planning based on in- depth knowledge of the post discharge experience will help to ensure optimal recovery. It was a true experimental study, a randomized trial was done among 50 patients who have undergone. CABG, 25 each in control group and experimental group (who have got individualized health education). Both groups were given pretest on the day of admission and post-test on the day of discharge. A structured questionnaire was used to assess the knowledge of the patients. The data were analysed using Epi info. This study revealed that knowledge score has increased in the experimental group compared to the control group and there is a statistically significant difference in the mean knowledge of the experimental and control groups ( $p = 0.006$ ). The study concluded that individualized health education is an appropriate method for imparting health education on home care to the patients after CABG prior to discharge from the hospital.

**Keywords:** Coronary artery disease, Coronary artery bypass graft surgery, quality of life

### Introduction

Coronary Artery Disease (CAD) is a growing health concern, especially in developing countries like India. CABG surgery is a common procedure for CAD patients, and early discharge planning with adequate knowledge is essential for optimal recovery. Previous studies have shown that many cardiac surgery patients do not receive proper home care education. This study focuses on providing individualized health education to CABG patients to assess its impact on their knowledge and, ultimately, their recovery.

Coronary Artery Disease (CAD) one of the non - communicable diseases, has become a major public health problem in the developing countries. CAD in India is showing an increasing trend. The incidence of CAD ranges from 14.5 - 65.4 per 1000 population, mainly because of the changing life style and dietary habits that involves a stress full life and diet replete with cholesterol <sup>[1]</sup>.

American Heart association position statement declared that CABG is indicated if medical management does not satisfactorily control angina in patients with CAD or if the patient has >50% obstruction of the left main coronary artery or three vessel disease with moderate or severe left ventricular dysfunction regardless of symptoms. Reports from 2005 shows that out of 60,000 open heart surgeries

done every year majority are CABG <sup>[3]</sup>.

Early and adequate discharge planning based on in- depth knowledge of the post discharge experience will help to ensure optimal recovery <sup>[4]</sup>.

The education and counseling needs of cardiac surgery patients and family members vary over time and with the type of surgery, length of hospitalization, degree of social support, personal understanding of the surgery, presence of co-morbidities personal preference. Research studies showed that only 25% or less of cardiac surgery patients receive nursing home care after discharge <sup>[5]</sup>.

CABG are commonly conducting in two ways, "On pump" CABG and "Off pump" CABG. In On pump CABG, cardiopulmonary bypass is used during surgery, it helps to stop the heart in order to perform the coronary attachments under direct vision in a relatively dry motionless field. Off-pump coronary artery bypass graft surgery on a beating heart has been facilitated by the development of positioning devices and stabilizer systems. The most commonly used for CABG are internal mammary artery and great saphenous vein. Other conduits which less commonly used are radial artery, gastroepiploic artery and inferior epigastric artery. The minimally invasive endoscopic saphenous vein harvesting technique have significantly reduced incision morbidity <sup>[6]</sup>.

The increasing tendency towards early discharge with a view to reducing the stay period and hospital cost can result in increasing nursing needs during the home stay period. The increased nursing needs result in increased need for information [7]. The information provided during the discharge training should consist of the physiological and psychological changes in patients and complication symptoms and the 'Do's and Don'ts' for patients.

Complete recovery from surgery is a gradual process, care should be continued in the home also. So home care is very important. Lack of knowledge regarding home care is an important factor in developing complications. Most wound infections are identified after discharge from the hospital, so it is important to give discharge teaching to patients regarding home care including modification, rest, exercise, drugs and personal hygiene.

### Objectives

- To assess the impact of individualized health education on CABG patients' knowledge of home care.
- To evaluate the relationship between knowledge and selected demographic variables.

### Methodology

This study adopts a true experimental approach, with 25 patients in the experimental group and 25 in the control group. The study was conducted at the Institute of Cardiology and Cardiac Surgery, GSVM Medical College, Kanpur, U.P. Conceptual framework used was Wiedenbach's Helping Art of Clinical Nursing Theory. Tools and data collection was developed by researcher and was written in Hindi and English language. The level of knowledge was collected through following tools:

Tool 1: Socio-Demographic Variables: Age, gender, education, monthly income.

Tool 2: A structured questionnaire was developed, consisting of two parts: demographic variables and a knowledge assessment with 20 questions. The questions were designed to evaluate knowledge in areas such as incisional care, diet, exercise, and more.

The content validity, the tools along with the blueprint, objectives and criteria checklists were given to 11 experts from the field of medical-surgical department. Reliability was found by using Karl Pearson test-retest method based on pilot study data. Reliability for knowledge test was 0.83. The tool was found to be reliable and this value of Karl Pearson's test-re-test

The target population consisted of both male and female patients who had undergone CABG. The sample included 50 CABG patients (25 in each group) who met the inclusion criteria and agreed to participate. The samples were the patients were recruited consecutively using random sampling who meet the Inclusion criteria included understanding Hindi, conscious state, first-time CABG surgery, and willingness to participate.

The intervention was prepared using information tool on home care management of CABG patients using power point presentation. It is the systematically planned instructions on home care management of CABG patients that has to be followed after discharge. Informations regarding incisional care, healthy diet, exercises, activities, life style modifications, returning to job, resuming sexual activity and follow-up care were highlighted by using power information booklet for 30-40 minutes for each participant.

Participants were selected and allocated to experimental and control group by using lottery method. The samples were given adequate explanation about the self and the study. Written and oral consent were obtained from both the patients and their relatives. Confidentiality about the responses were assured.

**Phase 1:** Demographic data of the selected sample were collected on the third post operative day followed by the experimental group where the information guide was administered, along with the hospital routine care. The patients were explained about the different components of post operative care such as general considerations, incisional care, dressing, diet, exercise, activities, driving, travelling, life style modifications, stress management, resuming sexual activities and follow up care using information booklet for 30-40 minutes of duration. For the control group, hospital routine care, instructions and discharge advice were given.

**Phase 2:** On the day of discharge a structured interview questionnaire were administered to assess the post-test level of knowledge on home care management of CABG patients for both the experimental and control group.

Data Analysis were done using descriptive statistics were used to describe the sample characteristics and item-wise analysis. Inferential statistics included paired t-tests and chi-square tests to analyze knowledge scores and associations.

### Pilot study

The pilot study was conducted among 10 samples. The samples are recruited to interventional and control group by selecting the patients undergoing surgery in alternative days. The research tool was given to the patients and then 15 minutes was given to answer the questions. A pre test was conducted for both interventional and control group. Then the researcher gave individualized health education regarding home care after CABG to the patients in the interventional group by using a structured educational pamphlet. The samples were very cooperative and no problems occurred during data collection.

### Results

#### Section A: Description of demographic variables of experimental and control group among CABG patient.

**Tables 1:** Frequency and percentage distribution of CABG patients in relation to socio-demographic variable n=25+25

Variables	Categories	Experimental group N(%)	Control group N(%)
Age in years	40-49	4(24%)	2(12%)
	50-59	11(44%)	12 (48%)
	60-69	4(28%)	9 (36%)
	70-79	4(4%)	1 (4%)
Sex	Male	19 (76%)	23 (92%)
	female	6(24%)	2 (8%)
Educational status	School	16(64%)	(72%)
	diploma	4(16%)	1(8%)
	degree	5(20%)	5 (20%)
Monthly income	Below Rs.5000	2(8%)	0 (0)
	Rs.5001 to 10000	1 (4%)	1 (8%)
	Rs.10001 to 15000	20 (80%)	20 (80%)
	> 15000	2(8%)	4 (16%)
Previous knowledge	Yes	1(8%)	1 (8%)
	No	21 (92%)	24 (92%)

Majority i.e. 44% and 48% patient were in the age group of 50-59yr, 76% and 92% patient were male. 64% and 72% completed the school, 44% and 48% patient were in the age group of 50-59yr, 80% were having income between 10,000-15,000 and regarding knowledge 92% were not having awareness about CABG and its home care

management.

**Section B: Analysis and interpretation of level of knowledge of experimental and control group among CABG patient.**

**Table 2:** Pre-test Level of knowledge regarding home care management of CABG among experimental and control group among CABG patient. n=25+25

Pre-Test Knowledge	Inadequate		Fairly adequate		Moderately adequate		Adequate	
	No.	%	No.	%	No.	%	No.	%
Experimental Group	21	84	4	16	0	0	0	0
Control Group	20	80	5	20	0	0	0	0

Among 25 subjects respectively in experimental and control group majority of them i.e. 84 and 80% were having inadequate knowledge reading home care management of CABG.

**Table 3:** Post-test Level of knowledge regarding home care management of CABG among experimental and control group among CABG patient. n=25+25

Post Test Knowledge	Inadequate		Fairly adequate		Moderately adequate		Adequate	
	No.	%	No.	%	No.	%	No.	%
Experimental Group	0	0	0	0	5	20	20	80
Control Group	6	24	13	52	6	24	0	0

Among 25 subjects in experimental 80% were having adequate knowledge and in control group, among 25 subjects 52% were having fairly adequate knowledge reading home care management of CABG.

**Table 4:** Mean score, standard deviation and mean difference of subjects n=25+25

Post Test Knowledge	Mean	S.D	Mean difference
Experimental Group	20.73	2.32	12.06
Control Group	8.67	3.13	

Mean and standard deviation of experimental group i.e. 20.73±2.32 being compared to mean and standard deviation of control group i.e. 8.63±3.13.

**Section C: Effectiveness of individual health education on knowledge regarding home care management of CABG patients in the experimental and control group**

**Table 5:** Comparing experimental and control group knowledge score among CABG patients

Group	Experimental Group		Control Group		Unpaired 't' Value
	Mean	S.D	Mean	S.D	
Knowledge	20.73	2.32	8.67	3.13	t = 16.957 p = 0.05

**Hypothesis testing**

**H0<sub>1</sub>:** There is no significant difference in level of knowledge among CABG patients between experimental and control group.

Level of significance (p value): 0.05

Degree of freedom (df): 24

Table no 5 depicts that unpaired t test was used to compare between experimental and control group, the researcher calculated that t-value i.e. 16.957 and compared with calculated t value and found that calculated value was significantly higher. So the researcher rejected the null hypothesis H0<sub>1</sub>, which shows the effectiveness of individualized health education on knowledge regarding home care management among CABG patients.

Hence, the intervention was effective in terms of knowledge.

**Section IV:- Association between pre-test knowledge scores with their selected socio- demographic variables.**

**Hypothesis testing**

**H0<sub>2</sub>:** There is no significant association between level of knowledge and with their selected demographic variables in experimental and control group.

**Table 6:** Association of pre-test knowledge score of mothers of infant with socio-demographic variables n=25+25

Demographic Variables	<Mean		>Mean		d.f	Chi-Square Value	
	No.	%	No.	%			P value
<b>Age</b>						d.f=2 p = 0.397	1.848 N.S
40-49 yrs	-	-	-	-			
51-59 yrs	2	6.7	2	6.7			
60-69yrs	9	30.0	7	23.3			
69-79yrs	8	26.7	2	6.7			
<b>Gender</b>						d.f=1 p = 0.102	2.671 N.S
Male	15	50.0	11	36.7			
Female	4	13.3	0	0			
<b>Education</b>						d.f=1 p = 0.265	1.241 N.S
School	17	56.7	11	36.7			
Diploma	-	-	-	-			
Degree	2	6.7	0	0			
<b>Monthly income</b>						d.f=4 p = 0.013	12.638 S*
<5000	3	10.0	0	0			
5000-10000	5	16.7	2	13.3			
10000-15000	8	26.7	1	3.3			
>15000	3	10.0	4	13.3			

Table 6 revealed that at appropriate degree of freedom there was significant association found between the pre-test knowledge score with monthly income. Hence H0<sub>2</sub> rejected.

**Discussion**

The study confirmed that individualized health education significantly improved knowledge about home care management among CABG patients. Previous studies have also shown the importance of patient education in postoperative care. The results support the implementation of information booklets and individualized health education in hospitals to enhance patient knowledge.

Driscoll (2000), conducted a study to assess the patients and caregivers' perception of information, and their utilization of post-discharge care received from the health care professionals during their stay in the hospital. The study was conducted in two stages. Stage one included a qualitative approach of interviews two weeks after the discharge from the hospital. A quantitative approach using two sets of questionnaires was used in stage two with a sample size of 40 patients. The finding suggested that the carers received very little information from the health care professionals concerning their health care problems<sup>[59]</sup>.

Steele and Ruzucki (1987), conducted a study to evaluate the effect of cardiac teaching during hospitalization. In this evaluation, patients readily learned information that prepared them to deal with post-operative experiences, that is ambulation, exercise, resumption of sexual activity, and symptoms to report indicating lack of tolerance to such activities. Areas that showed limited knowledge gain were those that required long term behavioral changes, such as diet modification and stress modification<sup>[59]</sup>.

**Nursing Implications**

Discharge planning and education should begin at the time of admission for CABG patients. Preparation and education

before surgery can lead to better postoperative outcomes. Hospital administrators should develop a discharge checklist for CABG patients. Nursing staff should receive education on postoperative complications and prevention.

**Conclusion**

The study's findings indicate that individualized health education significantly improves CABG patients' knowledge of home care management. This underscores the importance of tailored patient education for better postoperative outcomes.

**Recommendations**

Implement information guides for postoperative patients. Conduct larger studies in different settings for broader generalization. Incorporate cultural background in knowledge assessments. Explore the effectiveness of different educational interventions, such as video-assisted materials.

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