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## **A study to assess the effect of nursing interventions on prevention of complications of intercostal drainage among post-operative CABG patients admitted in selected hospital**

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### **Abstract**

#### **Introduction**

Coronary heart disease is a condition in which a substance called plaque builds up inside the coronary arteries. Plaque is made up of fat, cholesterol, calcium, and other substances found in the blood. Plaque can narrow or block the coronary arteries and reduce blood flow to the heart muscle. If the blockage is severe, angina, shortness of breath, and, in some cases, heart attacks can occur.

Coronary artery bypass grafting (CABG) is a type of surgery that improves blood flow to the heart & is used for people who have severe coronary heart disease (CHD). During CABG a healthy artery or vein from the body is connected, or grafted, to the blocked coronary artery. This creates a new passage, and oxygen rich blood is routed around the blockage to the heart muscle. After coronary artery bypass graft surgery intercostal drainage is inserted to drain accumulated fluid & air. But intercostal drainage can put patient at risk of certain complications. These include pain during placement, infection, bleeding, pneumothorax or accidental disconnection. All complications can be prevented by proper nursing interventions.

#### **Statement**

**“A study to assess the effect of nursing interventions on prevention of complications of intercostal drainage among post-operative CABG patients admitted in selected hospital”**

**OBJECTIVE:** 1) To assess effect of nursing interventions on prevention of complications of intercostals drainage. 2) To find association of complications of intercostal drainage with selected demographic variables.

#### **Research Approach**

Quantitative research approach was used. Research design used was post-experimental post-test single group design. Conceptual framework used was Dorothy Orem's self-care deficit theory. The setting for this study was the cardiac recovery (CRR), Dr. D.Y. Patil Hospitals and Research Center of Pune city. Population for the study was post-operative CABG patients with intercostal drainage. Non probability purposive sampling technique was used for 60 post-operative CABG patients who met the designated set of criteria during the period of data collection. The tool included, **Section-I:** demographic variables, **Section-II:** Observational checklist, to assess the complications of intercostal drainage &. **Section-III:** nursing interventional plan towards prevention on complications of intercostal drainage system. Tool validity was done, and tool found reliable. Study found feasible after pilot study.

#### **Result**

Findings related to Fisher's exact test for association of Pneumothorax among post-operative CABG patients with selected demographic variables. Since all the p-values are large (greater than 0.05), none of the demographic variables was found to have significant association with pneumothorax among post-operative CABG patients. Fisher's exact test for association of bleeding among post-operative CABG patients with selected demographic variables 56 all the p-values are large (greater than 0.05), none of the demographic variables was found to have significant association with bleeding among post-operative CABG patients. Fisher's exact test for association of infection among post-operative CABG patients with selected demographic variables, p-values are large (greater than 0.05), none of the demographic variables was found to have significant association with infection among post-operative CABG patients. Fisher's exact test for association of Accidental Disconnecting of system among postoperative CABG patients with selected demographic variables. p-values are large (greater than 0.05), none of the demographic variables was found to have significant association with accidental disconnecting of system among post-operative CABG patients.

#### **Conclusion**

Corresponding p-value was small (less than 0.05) Null hypothesis is rejected. It is evident that pneumothorax, bleeding, infection, Accidental disconnecting of system, had improved significantly

after nursing intervention among post-operative CABG patients. Systematic plan to assess the complications of intercostal drainage of CABG patients has shown a significant effect in reducing the complications of intercostal drainage among post-operative CABG patients.

**Keywords:** Parental attitude, participation, sports, girls

### Introduction

CABG is one treatment for CHD. During CABG a healthy artery or vein from the body is connected, or grafted, to the blocked coronary artery. The grafted artery or vein bypasses (that is, goes around) the blocked portion of the coronary artery. This creates a new passage, and oxygen rich blood is routed around the blockage to the heart muscle. After coronary artery bypass graft surgery intercostal drainage is inserted with purpose of accumulation of fluid, air, or prevents complication of surgery like pneumothorax, bleeding, infection, etc. goal intercostal drainage is to evacuate the air or blood from the plural space.

### Research Design

The research design used for this study is post-experimental post-test single group design.

### Research Setting

The present study was conducted in Dr. D.Y. Patil Hospitals and Research Center of Pune city.

### Population

Target populations for the study were patients undergoing CABG procedure in selected hospitals of Pune city. Accessible population for the study was post-operative CABG patient with intercostal drainage.

### Sample

Samples are post-operative CABG patient with intercostal drainage in Dr. D.Y. Patil Hospitals and research center of Pune and who fulfill the inclusion criteria.

### Sample size

In this study sample size is 60 CABG post-operative patients

### Sample technique

In this study, Purposive sampling technique is used to select 60 post-operative CABG patients who met the designated set of criteria during the period of data collection.

### Criteria for selection of sample

#### Inclusion Criteria

1. CABG patients with intercostal drainage.
2. Patients who are willing to participate in the study

#### Exclusion Criteria

1. CABG patients who were in a critical condition

### Development of tool

The tools of data collection translate the research objectives in to specific questions items, the responses to which provide the data requires to achieve this purpose, each question must convey to the respondent an idea or group required by the research objectives. Demographic variable (age, gender, occupation, area of residence, education, type of surgery, Number of drains and other associated disease).

Observation checklist to assess the complications of intercostal drainage among post-operative CABG patients.

### Description of the tool

In this study the tool consisted of:-

**Section-I:** demographic variables,

**Section-II:** Observational checklist, to assess the complications of intercostal drainage &.

**Section-III:** nursing interventional plan towards prevention on complications of intercostal drainage system

### Reliability of the Tools

The reliability was done by Inter Rater Method. Calculation was done by Cohen's kappa correction formula and the reliability coefficient was found to be  $Kappa=0.91$  the tool is 33 considered to be significant if the reliability coefficient is more than 0.7, Hence the tool is reliable.

### Ethical consideration

The researcher followed the ethical and legal issues related to nursing research. Permission was taken from Nursing Superintendent, Medical Superintendent and cardiac surgeon. The authority was informed and consent was intercostal drainage among post-operative CABG patients admitted in selected hospital. This study was done only for study purpose, and researcher maintained confidentiality of this research.

### Plan for data collection

At the beginning, the session was introduced/by investigator. They were explained about the purpose of the study and assured about the confidentiality of the information between the investigator and the respondent only. Their willingness for sought for data was collected as per demographic (age, gender, occupation, area of residence, education, Type of surgery, Number of drains and other associated disease). Observation checklist to assess the complications of intercostal drainage among post-operative CABG patients. In nursing, interventional plan was added as per the experts' advice.

### Pilot study

The pilot study helped the investigator to assess the effectiveness of the data collection plan, identify the inadequacies of the plan and make due modifications as required. Also to find out the feasibility of conducting the study and to determine the methods of statistical analysis. The investigator conducted the pilot study on CABG post-operative patients from 3 January 2020 to 20 January 2020, to treat the practicability of the tool and to decide on a plan for statistical analysis.

### Data analysis and interpretation

The investigator decided to analyze the data using descriptive and inferential statistics and present them in tables, graphs and figures. For the analysis of demographic data, frequencies and percentage was calculated. Significance was calculated by using mean, median, mode, standard deviation, and calculated 't' test to assess the effectiveness of nursing intervention to prevent complication of ICD in post CABG patient. Chi square to associate between the selected demographic variables.

### Result

**Frequency and percentage distribution of selective Demographic Variables:**

In this study 23.3% of the post-operative CABG patients were in the age group of 40-50, 30% of them were 51-60 years of age, 33.3% of them were aged 61-70 years and 13.3% of them had age more than 70 years. 65% of them were males and 35% of them were females. 51.7% of them were from nuclear family and 48.3% of were from joint family. 45% of them were illiterate, 25% of them had primary education, 23.3% of them had higher secondary education and 6.7% of them had graduation and above. 11.7% of them had government service, 20% of them had private service, 30% of had business, 8.3% of them were labourers, 25% of them were farmers. 30% of them had two graft surgeries, 65% of them had three graft surgeries and 5% of them had more than three graft surgery.

**Analysis of data related to the effect of nursing interventions on complications of intercostal drainage among post-operative CABG patients:** On day1, 16.7% of the post-operative CABG patients did not has any sign of pneumothorax. 36.7% of them had chance to develop pneumothorax and 46.7% of them had sign of pneumothorax present. On day2, 41.7% of the post-operative CABG patients did not has any sign of pneumothorax, 30% of them had chance to develop pneumothorax and 28.3% of them had sign of pneumothorax present. On day 3, 65% of the post-operative CABG patients did not has any sign of pneumothorax, 23.3% of them had chance to develop pneumothorax and 11.7% of them had sign of pneumothorax present.

#### **Effect of nursing interventions on Bleeding among post-operative CABG patients**

On day 1, 15% of the post-operative CABG patients did not has sign of bleeding), 43.3% of them had chance to develop bleeding. and 41.7% of them had sig of bleeding present. On day 2, 28.3% of the post-operative CABG patients did not has sign of bleeding, 41.7% of them had chance to develop bleeding and 30% of them had sign of bleeding present. On day 3, 58.3% of the post-operative CABG patients did not has sign of bleeding, 33.3% of them had chance to develop bleeding and 8.3% of them had sign of bleeding present.

#### **Effect of nursing interventions on infection among post-operative CABG patients**

On day1, 28.3% of the post-operative CABG patients did not has sign of infection, 51.7% of them had chance to develop infection and 20% of them had sign of infection present. On day 2, 45% of the post-operative CABG patients did not has sign of infection, 53.3% of them had chance to develop infection and 1.7% of them had sign of infection present. On day 3, 73.3% of the post-operative CABG patients did not has sign of infection and 26.7% of them had chance to develop infection.

#### **Effect of nursing interventions on Accidental disconnecting of system among post-operative CABG patients**

On day 1, 16.7% of the post-operative CABG patients did not has sign of accidental disconnecting complication., 65% of them had sign of disconnecting drainage and 18.3% of them had sign of accidental disconnecting present On day 2, 41.7% of the post-operative CABG patients did not has sign of accidental disconnecting complication and 58.3% of them had sign of disconnecting drainage. On day3, 86.7% of the

post-operative CABG patients did not has sign of accidental disconnecting complication and 13.3% of them had sign of disconnecting drainage.

#### **Analysis of data related to the association of complications of intercostal drainage among post-operative CABG patients with selected demographic variables:**

Fisher's exact test for association of Pneumothorax among post-operative CABG patients with selected demographic variables since all the p-values are large (greater than 0.05), none of the demographic variables was found to have significant association with pneumothorax among post-operative CABG patients. Fisher's exact test for association of bleeding among post-operative CABG patients with selected demographic variables 56 all the p-values are large (greater than 0.05), none of the demographic variables was found to have significant association with bleeding among post-operative CABG patients. Fisher's exact test for association of infection among post-operative CABG patients with selected demographic variables, p-values are large (greater than 0.05), none of the demographic variables was found to have significant association with infection among post-operative CABG patients. Fisher's exact test for association of Accidental Disconnecting of system among postoperative CABG patients with selected demographic variables. p-values are large (greater than 0.05), none of the demographic variables was found to have significant association with accidental disconnecting of system among post-operative CABG patients.

#### **Conclusion**

Corresponding p-value was small (less than 0.05) Null hypothesis is rejected. It is evident that pneumothorax, bleeding, infection, Accidental disconnecting of system, had improved significantly after nursing intervention among post-operative CABG patients. Systematic plan of assess the complications of intercostal drainage of CABG patients has shown a significant effect in reducing the complications of intercostal drainage among post-operative CABG patient.

#### **Discussion**

In present study, to assess the effect of nursing interventions on complications of intercostal drainage among post-operative CABG patients. This study describes 3 days procedure to prevent complications and total 60 samples were selected. In this study to improvement in consistent use in Observation checklist to assess the complications of intercostal drainage, and the number risks identified. Researcher applied chi-square test for the effect of systematic plan of nursing intervention to complication on complications of intercostal drainage. P-value is 0.000and corresponding p-value was small(less than 0.05), null hypothesis is rejected. It is evident that that the complications was improved significantly after nursing intervention among postoperative CABG patients.

#### **Limitations**

1. The data was collected only through the baseline data.
2. This study was limited to the hospitals of PCMC area of Pune city.
3. The study was limited to the post-operative CABG patients.
4. Data collection period was limited.

### Recommendations

1. A similar study may be replicated on large samples; thereby findings can be generalized.
2. The study may be undertaken in different settings and different generalization of findings.
3. A comparative study can be done by using other methods and to find the accuracy.

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