

A Study on Nurses' Knowledge and Practices Regarding Post-Procedural Care for Patients Undergoing Percutaneous Transluminal Coronary Angioplasty (PTCA) in Selected Hospitals, Bangalore

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Abstract

The heart, a hollow muscular organ, is a pump house of the body. As the name suggests, its underlying function is to pump blood into the lungs for oxygenation and then carry this blood to the whole body. Arteries carry oxygenated blood away from the heart to various areas of the body, whereas veins return deoxygenated blood back to the heart. Coronary Artery Disease (CAD) is the leading cause of cardiovascular-related deaths globally, with over 4.5 million fatalities occurring in developing countries. Although there has been a decline in CAD mortality in developed nations, the rates and prevalence of risk factors are rapidly increasing in developing regions. According to data from the World Health Organization, CAD mortality rates are expected to double between 1990 and 2020, with approximately 82% of this increase occurring in developing countries.

Keywords: Arteries, Coronary Artery Disease (CAD), heart, cardiovascular-related deaths, mortality rates

INTRODUCTION

Coronary heart disease (CHD) was expected to become the leading cause of death globally, including in India. The prevalence of CHD is particularly high among people of Indian origin living outside India. A review analyzed studies on the incidence of CHD in India, showing an increase in urban areas from 1% in the 1960s to 9% by the 1990s, while in rural areas, the prevalence grew from 2% in the 1970s to 4% in the 1990s. Coronary Artery Disease remains a significant cause of morbidity and mortality for both men and women. With the rise of complications associated with percutaneous transluminal coronary angioplasty (PTCA), there is a noticeable gap in the knowledge and practices among nurses in clinical settings. Consequently, the investigator recognized the need to evaluate current knowledge

and practices, and to develop an informational manual based on the findings. This manual aims to enhance nurses' understanding and application of knowledge, ultimately helping to prevent complications for patients undergoing PTCA procedures [1–4].

OBJECTIVES

- To evaluate nurses' understanding of post-procedural care for PTCA patients.
- To examine the post-procedural practices of nurses in the care of PTCA patients.
- To explore the relationship between nurses' knowledge and practices concerning post-procedural care for PTCA patients.

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- To examine the association between nurses' knowledge and practices with selected demographic factors.

ASSUMPTIONS

- The complication of post PTCA clients is directly related to the care aspect of the nurses, implemented on the clients.
- The nurses may have knowledge regarding post procedural PTCA care of clients, to some extent.

HYPOTHESES

- H_1 : There is a significant correlation between the knowledge and practices of the nurses regarding post procedural care of PTCA clients.
- H_2 : A significant connection exists between nurses' knowledge and practices related to post-procedural care and their particular demographic attributes.

CONCEPTUAL FRAMEWORK

The conceptual framework of this research is built on the General Systems Theory, which views Coronary Artery Disease (CAD) as a complex and dynamic process influenced by multiple interconnected factors. In this context, the heart and circulatory system function as the central “system” within the human body, with CAD representing a disorder that disrupts this system's normal functioning. The framework underscores the role of various subsystems, such as biological (e.g., genetics, age, gender), behavioral (e.g., diet, physical activity, smoking), and environmental factors (e.g., air pollution, healthcare access), which collectively contribute to the onset and progression of CAD. Moreover, the study acknowledges the broader socio-economic and cultural systems within developing countries, where changes in lifestyle and healthcare disparities exacerbate the prevalence of CAD risk factors. By applying a system's thinking approach, this framework emphasizes that addressing CAD in developing countries requires a multi-level strategy, incorporating individual, community, and policy-level interventions. It posits that changes in one part of the system, such as improving healthcare access or promoting preventive health measures, can have cascading effects that reduce the overall burden of CAD and improve cardiovascular health outcomes in these regions (Figure 1) [5].

METHODOLOGY

Research Approach

A descriptive approach is selected for the study. It was employed to evaluate nurses' knowledge and practices concerning the post-procedural care of patients undergoing percutaneous transluminal coronary angioplasty (PTCA).

Research Designs

The study adopted a non-experimental, descriptive correlational design.

Research Variables

This study identified two types of variables:

1. *Study variables*: The knowledge and practices of nurses related to the post-procedural care of PTCA patients.
2. *Demographic variables*: The demographic factors of the nurses, including age, gender, educational background, work setting, and years of experience in the cardiac unit.

Setting of the Study

The study was carried out in two private hospitals located in Bangalore. A pilot study took place at Suguna Hospitals, while the main study was carried out at both Sagar Hospitals and Suguna Hospitals. These locations were selected based on the practicality of accessing subjects, specifically the nurses working in the Cath lab and coronary care unit (CCU) of the hospitals [6, 7].

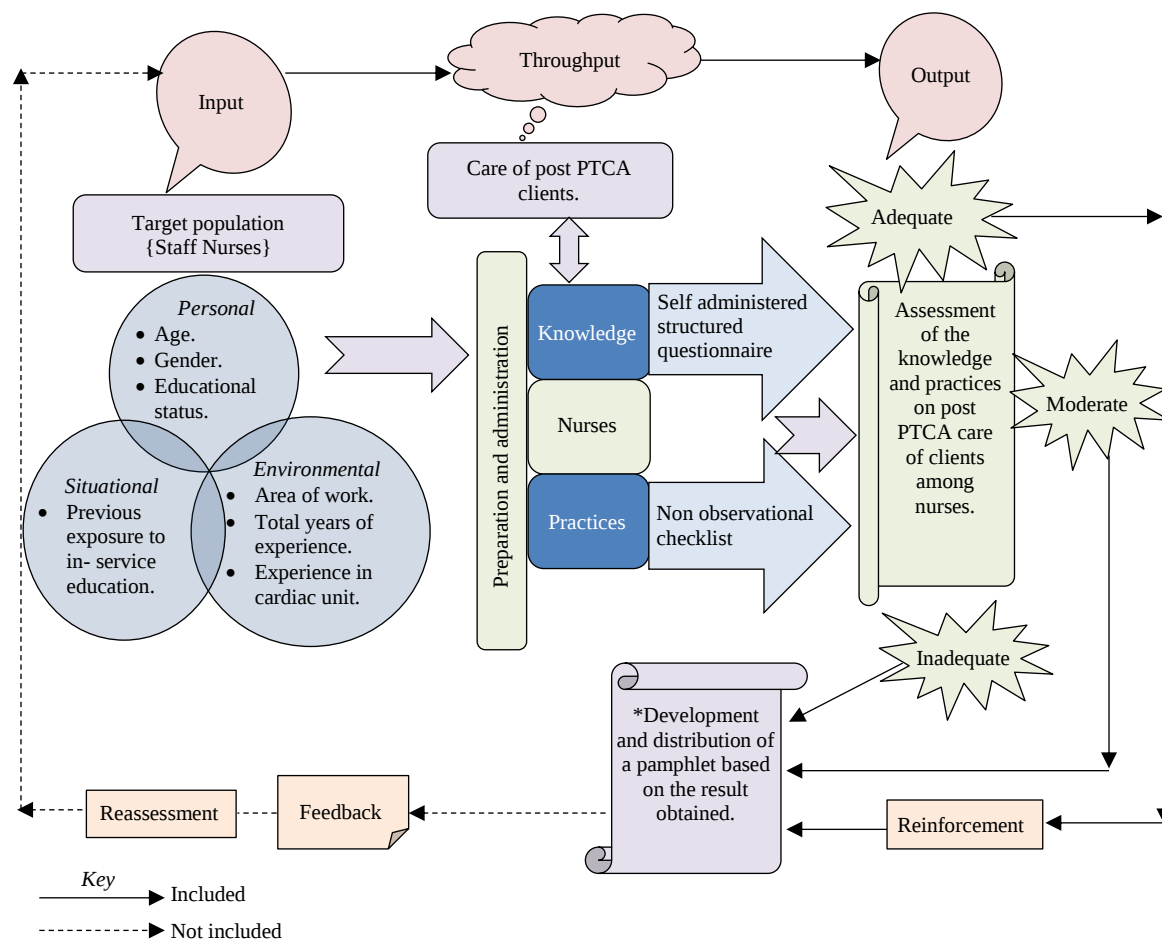


Figure 1. Conceptual framework based on modified general system theory.

Population

The population of this study was nurses working in recovery room of Cath lab/CCU of Sagar hospitals, and Suguna Hospitals, Bangalore.

Sample

The sample size for this study consists of 60 nurses who meet the inclusion and exclusion criteria.

Sampling Technique

A non-probability convenience sampling method was used to select the study participants.

Criteria for Sample Selection

The sample selection criteria are divided into two primary categories: (1) inclusion criteria and (2) exclusion criteria.

Inclusion Criteria

- Staff nurses who hold either a diploma or degree in nursing and are registered.
- Nurses employed in the recovery room of the Cath lab/CCU at selected hospitals in Bangalore.
- Nurses who voluntarily agree to participate in the study.
- Nurses working the morning and evening shifts.

Exclusion Criteria

- Nurses who have already participated in the previous research study of PTCA.

Development and Description of Tool

The investigator created a self-administered questionnaire to gather accurate and comprehensive responses from the nurses. To assess the knowledge, a self-administered questionnaire is used and to assess the practices, non-observational checklist is used.

Content Validity

The developed tool, along with the study objectives, was presented to four experts in Medical-Surgical Nursing, one expert in Medicine, and one Biostatistician for review.

Reliability of the Tool

The reliability of the tool was evaluated using the test-retest method for both knowledge and attitude. The correlation coefficients were calculated using Karl Pearson's formula, yielding a reliability score of $r=0.97$ for knowledge and $r=0.99$ for practice. These results indicate that the knowledge questionnaire and practice checklist are highly reliable. Therefore, the tool was deemed statistically reliable for the main study [8].

Procedure for Data Collection

Formal written approval was secured from the Medical Director of Sagar Hospitals and Suguna Hospitals in Bangalore to carry out the main study. The investigator conducted the main study over a 4-week period in August, from August 1 to August 31, 2010. The investigator introduced herself and develops a good rapport with subjects and then conducted the study by selecting the samples by convenience sampling technique. Structured interview schedule and checklist was used. After assessment of knowledge, and practice, the investigator distributed the pamphlets on post procedural care of PTCA clients [9].

Processing of the Data

The data collected was processed daily. Any missing data was identified and promptly corrected the following day.

Plan for Data Analysis

The collected data were analyzed based on the study's objectives, employing both descriptive and inferential statistical methods.

1. *Descriptive statistics*
 - i. Frequency and percentage distribution were used to study the demographic variables of the nurses such as age, gender, educational status, area of work, and years of experience in cardiac unit.
 - ii. Mean and standard deviation were employed to assess the knowledge and practices of nurses related to post-procedural care for PTCA patients.
2. *Inferential statistics*
 - i. Correlation-coefficient for correlating knowledge and practices of nurses regarding post procedural care of PTCA clients.
 - ii. Chi-square test was used to examine the association between knowledge and practices and the selected demographic variables.

Ethical Consideration

Formal approval was obtained from the Medical Director of Sagar Hospitals and Suguna Hospitals in Bangalore. Informed consent was secured from the participants after providing them with an explanation of the study's purpose and assuring them of the confidentiality of the data collected. No ethical concerns arose during the data collection process.

RESULTS**Presentation of Data and Analysis**

The collected data were reviewed, organized, analyzed, and interpreted. The findings were then presented in tables, structured under two main parts and five sections.

Part-I

Section A: Description of the Demographic Characteristics of the Nurses

Frequency and percentage distribution of demographic variables of nurses, including age, gender, educational qualifications, and years of experience in the cardiac unit.

Table 1 shows the Frequency and percentage distribution of nurses according to selected demographic variables such as age, gender, educational status, area of work, years of experience in cardiac unit.

Section B: Assessment of Nurses' Knowledge Regarding Post-procedural Care for PTCA Patients

Frequency and percentage distribution of nurses' knowledge levels related to post-procedural care for PTCA patients. Mean, standard deviation, and mean percentage of nurses' knowledge regarding post-procedural care for PTCA patients.

Tables 2 and 3 shows the assessment which includes Frequency and Percentage and also Mean, SD and Mean Percentage of the level of knowledge of nurses regarding post procedural care of clients with PTCA.

Section C: Assessment of Nurses' Practices Regarding Post-procedural Care for PTCA Patients

Frequency and percentage distribution of nurses' practice levels concerning post-procedural care for PTCA patients. Mean, standard deviation, and mean percentage of nurses' practices related to post-procedural care for PTCA patients.

Tables 4 and 5 shows assessment which includes Frequency and Percentage and also Mean, SD and Mean Percentage of practices of nurses regarding post procedural care of clients with PTCA.

Part-II

Section D: Correlation Between Knowledge and the Practices of the Nurses Regarding the Post Procedural Care of PTCA Clients.

Table 6 shows the Correlation between knowledge and practice of nurses regarding post procedural care of clients with PTCA.

Table 1. Frequency and percentage distribution of nurses according to selected demographic variables (n=60).

S.N.	Demographic variables	Frequency	Percentage
1.	Age (years)		
	a) 20–25	42	70.0
	b) 26–30	18	30.0
	c) 31–35	-	-
	d) >35	-	-
2.	Gender		
	a) Male	24	40
	b) Female	36	60
3.	Educational status		
	a) GNM	18	30.0
	b) BSc. nursing	42	70.0
	c) PC BSc nursing	-	-
4.	Area of work		
	a) CCU	30	50
	b) Cath lab	30	50
5.	Years of experience in cardiac unit		
	a) <2	48	80
	b) 3–4	12	20
	c) 4–5	-	-
	d) >5	-	-

Table 2. Frequency and Percentage distribution of knowledge of nurses regarding post procedural care of clients with PTCA (n=60).

S.N.	Level of knowledge	Number/f	%
1.	Inadequate knowledge	-	-
2.	Moderately adequate knowledge	34	56.7
3.	Adequate knowledge	26	43.3
4.	<i>Over all</i>	60	100.0

Table 3. Mean, SD and Mean Percentage of knowledge of nurses regarding post procedural care of clients with PTCA (n=60).

S.N.	Aspects of knowledge	Maximum score	Range	Mean	SD	Mean %
1.	General information and indication of PTCA	6	4–6	5.30	0.64	88.3
2.	Assessment of post PTCA client	4	1–4	3.05	0.62	76.2
3.	Care of PTCA client	7	4–7	5.08	0.94	72.5
4.	Complication of PTCA client	4	1–4	2.28	1.10	57.0
5.	Patient education	4	0–4	2.03	1.24	50.7
6.	<i>Overall</i>	25	13–23	17.75	2.71	71.0

Table 4. Frequency and Percentage distribution of practices of nurses regarding post procedural care of clients with PTCA (n=60).

S.N.	Level of practice	Number/f	%
1.	Poor practice (<50%)	-	-
2.	Moderate practice (50–75%)	5	8.3
3.	Good practice (>75%)	55	91.7
4.	<i>Over all practice</i>	60	100.0

Table 5. Mean, SD and Mean Percentage of practices of nurses regarding post procedural care of clients with PTCA (n=60).

S.N.	Aspects of practice	Maximum score	Range	Mean	SD	Mean %
1.	Assessment of post PTCA clients	12	10–12	10.92	0.53	91.0
2.	Post procedural care	27	20–27	25.08	2.16	92.8
3.	Post PTCA complications	18	14–18	16.55	1.18	91.9
4.	Patient education	18	12–18	16.88	1.79	93.7
5.	<i>Overall practice</i>	75	57–75	69.45	5.06	92.6

Table 6. Correlation between knowledge and practice of nurses regarding post procedural care of clients with PTCA.

Variable	Knowledge	
	<i>r</i>	<i>p-value</i>
Practice	0.402*	P<0.05

Note: *: Significant at $p < 0.05$.

Section E: Association of Knowledge, Attitude and Practices with Selected Demographic Variables

The results of the Chi-square analysis revealed a significant association between knowledge scores and the demographic variable of years of experience in the cardiac unit among nurses. Additionally, there was a significant relationship between practice scores and both gender and years of experience in the cardiac unit. However, no notable correlations were observed between practice scores and any of the other demographic variables.

DISCUSSION

Characteristics of the Demographic Variables

The demographic characteristics of the nurses were described in terms of frequency and percentage distribution. The majority, 42 (70%), were aged 20–25 years, while 18 (30%) fell into the 26–30 years age group. In terms of gender, most nurses, 36 (60%), were females. Regarding educational qualifications, 18 (30%) held a GNM degree, whereas 42 (70%) had a BSc in Nursing. Concerning their work area, 30 (50%) were from the CCU, and 30 (50%) worked in the Cath lab. When considering years of experience in the cardiac unit, 48 (80%) had less than 2 years of experience [10, 11].

The First Objective was to Assess the Knowledge of Nurses on Post Procedural Care of PTCA Clients

Among the 60 nurses assessed for their overall knowledge level, the majority, 34 (56.7%), demonstrated moderately adequate knowledge, while 26 (43.3%) had adequate knowledge. None of the nurses were classified as having inadequate knowledge. The overall mean score for knowledge was 17.75, with a standard deviation of 2.71, resulting in a mean percentage score of 71.

The study indicated that the highest mean percentage score of 88.3 was achieved for knowledge regarding general information and indications for PTCA, with a mean score of 5.30 and a standard deviation of 0.64.

The Second Objective was to Assess the Post Procedural Practices of Nurses in Caring PTCA Clients

Out of 60 nurses assessed regarding the overall level of practices of the nurses was having good practice. Majority 55 (91.7%) of nurses had good practice, 5 (8.3%) had moderate practice and none of them had poor practice. The overall mean score for practice was 69.45 with a standard deviation of 5.06 and mean score percentage of 92.6.

The Third Objective was to Correlate the Knowledge and Practices of the Nurses Regarding Post Procedural Care of PTCA Clients

The findings showed that there is linear correlation between knowledge and practices regarding post procedural care of clients with PTCA, resulted to be positive that is $r=0.402$ which is statistically significant at $p<0.05$. Hence the hypotheses (H_1) as stated “There is a significant correlation between the knowledge and practices of the nurses regarding post procedural care of PTCA clients.” was accepted.

The Fourth Objective was to Associate the Knowledge and Practices of Nurses with Selected Demographic Variables

The association test results revealed that there is a statistically significant association between knowledge scores with demographic variable, years of experience in cardiac unit of nurses. There is also a statistically significant association between practices of nurses with the demographic variables gender and years of experience in cardiac unit of nurses.

Therefore, the hypothesis H_2 , which posits that “There is a significant relationship between nurses' knowledge and practices regarding post-procedural care and their selected demographic variables”, was accepted for gender and years of experience in cardiac unit of nurses.

CONCLUSION

The findings of this studies showed that knowledge of the nurses was moderate and their practice was found to be good practice irrespective of the knowledge they had; this was because the SOP and protocols were followed in the hospital during the procedure since it was the policy of the hospital. Therefore, the investigator has provided health education pamphlets to motivate and reinforce the subjects in client care.

Implications

The present study has revealed that health education can be effective to improve the knowledge and practices regarding post procedural care of clients with PTCA in order to reduce the complications. An educational program utilizing effective teaching strategies will assist nurses in preventing complications. Being a nurse administrator, one can arrange in-service education and special training programs regarding post procedural care of clients with PTCA. Dissemination of findings through conferences and professional journals will make the application of research findings to be effective.

Limitations

- The researcher encountered challenges in obtaining cooperation from nurses due to their demanding work schedules at the hospital.
- The investigator had to navigate through several legal processes to obtain permission from the hospitals to conduct the study.
- Due to the distance between the hospitals and the institution, the investigator faced difficulties in traveling long distances to collect the data.

Recommendations

On the basis of the study that had been conducted, certain suggestions are given for future studies.

- A similar study can be under taken with a large sample to generalize the findings.
- A comparative study can be done between the private and government hospital nurses on their knowledge and practices of post procedural care of clients with PTCA.
- A study can be done to assess the effectiveness of STP regarding post procedural care of clients with PTCA among nurses in selected hospitals.

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