



ISSN: 0976-3031

Available Online at <http://www.recentscientific.com>

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 9, Issue, 2(J), pp. 24459-24462, February, 2018

**International Journal of
Recent Scientific
Research**

DOI: 10.24327/IJRSR

Research Article

INTRA- AORTIC BALLON PUMP IMPLANTATION THERAPY

Rajni Thapa and Gita Neupane

SMVDCoN, Katra

DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0902.1666>

ARTICLE INFO

Article History:

Received 20th November, 2017

Received in revised form 27th
December, 2017

Accepted 4th January, 2018

Published online 28th February, 2018

Key Words:

Structured Teaching Programme,
Knowledge, Staff-Nurses, Intra-aortic
balloon pump implantation therapy in
CABG.

ABSTRACT

IABP is used as a supportive treatment tool in a clinical context that will improve myocardial oxygen perfusion while at the same time increasing cardiac output. It actively deflates in systole & inflates in diastole, increasing blood flow to the coronary arteries. "A study was conducted to assess the effectiveness of structured teaching programme (STP) on knowledge regarding intra-aortic balloon pump (IABP) implantation therapy in coronary artery bypass grafting (CABG) among the staff nurses of selected hospitals in Dehradun." A quasi-experimental one group pre and post-test design, consisted of 60 staff nurses selected by purposive sampling technique. Majority 71.7% staff nurses had reported adequate knowledge regarding IABP after structured teaching programme. The assessment of effectiveness of structured teaching programme on knowledge of staff nurses regarding IABP, revealed that, the knowledge increased after intervention is 48.96 percent at $p < 0.05$ using Structured Knowledge Questionnaire. Hence it is inferred that, knowledge score of staff nurses after STP has increased significantly.

Copyright © Rajni Thapa and Gita Neupane, 2018, this is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

The coronary arteries serve as a fuel pipe lines to the heart muscles. Patients with one or more risk factors for Coronary Artery Disease (CAD) are susceptible to the increased build-up of fatty layers, known as atheroma. This imbalance between the supply and demand of oxygen can lead to complications like angina, Myocardial Infarction (MI) and stroke. To treat the above mentioned disease conditions variety of surgeries are performed. The common procedures and surgeries of the heart includes coronary angioplasty, cardiac catheterization, pacemakers, balloon valvuloplasty, Coronary artery bypass surgery (CABG), Intra Aortic Balloon Pumping (IABP) and heart transplantation. IABP consists of a cylindrical polyethylene balloon that sits in the aorta, approximately 2 centimeters (0.79 in) from the left sub clavicle artery and counter pulsates. A computer-controlled mechanism inflates the balloon, with helium, from a cylinder during diastole, usually linked to either an electrocardiogram (ECG), or a pressure transducer at the distal tip of the catheter; some IABPs, such as the data scope System 98XT, allows asynchronous counter pulsation at a set rate, though this setting is rarely used. Helium is used because, its low viscosity allows it to travel quickly through the long connecting tubes, and, has

a lower risk than air of causing an embolism should the balloon rupture.

IABP is used as a supportive treatment tool in a clinical context, that will improve bridging therapy due to recovery or treatment. The device is contraindicated in certain conditions such as: aortic regurgitation, aortic dissection, severe aorto-iliac or peripheral vascular disease (PVD), aneurysm or other anatomical disease of aorta, preosthetic aortic tree grafts, local sepsis and severe coagulopathy.

Since the device is placed in the femoral artery and aorta, it could provoke ischemia, and compartment syndrome. Other possible complications are embolism during insertion, infection, dissection of the aorta or iliac artery, perforation of the artery and hemorrhage in the mediastinum. Mechanical failure of the balloon itself is also a risk, which entails vascular surgery to remove under that circumstance. After the balloon removal, there is also a risk of 'embolic shower' from micro clots that have formed on the surface of the balloon, and can lead to peripheral thrombosis, myocardial ischemia, hemodynamic decompensation, and late pseudo aneurysm. An article on tackling IABP therapy shows that, Nurses must have to gain a comprehensive understanding of intra-aortic balloon pump therapy to intervene when complications arise. The IABP is frequently used as an aid in stabilizing cardiac patients. Units

*Corresponding author: **Rajni Thapa**
SMVDCoN, Katra

such as the ICU, CCU, or PACU and cardiac cath lab are common places where IABP therapy is performed. Nurses working in these units not only have to know how to monitor and to operate the IABP, but also how to recognize and provide interventions for the possible complications of IABP therapy. To gain a greater understanding of IABP therapy, nurses should become familiar with specific institutional policies regarding the operation of these devices. It is also important for the nurse operating the IABP to become familiar with the model used in her specific unit.

Problem Statement

“A quasi experimental study to assess the effectiveness of structured teaching programme (STP) on knowledge regarding intra-aortic balloon pump (IABP) implantation therapy in coronary artery bypass grafting (CABG) among the staff nurses of selected hospitals in Dehradun.”

Objectives of the Study

1. To assess the level of knowledge regarding intra-aortic balloon pump (IABP) implantation therapy in coronary artery bypass grafting (CABG) among the staff nurses of selected hospitals in Dehradun before and after intervention.
2. To evaluate effectiveness of structured teaching programme regarding intra-aortic balloon pump (IABP) implantation therapy in coronary artery bypass grafting (CABG) among the staff nurses of selected hospitals in Dehradun.
3. To find out the association between Post-test knowledge score with selected demographic variables regarding intra-aortic balloon pump (IABP) implantation therapy in coronary artery bypass grafting (CABG) among the staff nurses of selected hospitals in Dehradun

Hypotheses

- H₁:** There will be a significant difference between pretest and post test knowledge scores regarding intra-aortic balloon pump (IABP) implantation therapy in coronary artery bypass grafting (CABG) among the staff nurses of selected hospitals in Dehradun.
- H₂:** There will be significant association between post-test knowledge scores regarding intra-aortic balloon pump (IABP) implantation therapy in coronary artery bypass grafting (CABG) among the staff nurses of selected hospitals in Dehradun with selected demographic variables.

Conceptual Framework

Conceptual models can deal with interrelated concepts or abstracts, that are assembled together in some rationale; scheme by virtue of their relevance to common theme. The conceptual model selected for this study is based on Daniel. L. Stufflebeam's context, input, process and product evaluation model (CIPP).

The CIPP model places priority on guiding, planning and implementation of development efforts. The model's intent was thus supply of evaluation for users with timely, valid information of use in identifying an appropriate area for development, formulating sound goal, activity plans and budgets, successfully carrying out work plans, periodically

deciding whether and if so, how to repeat or expand an effort and meeting a requirements.

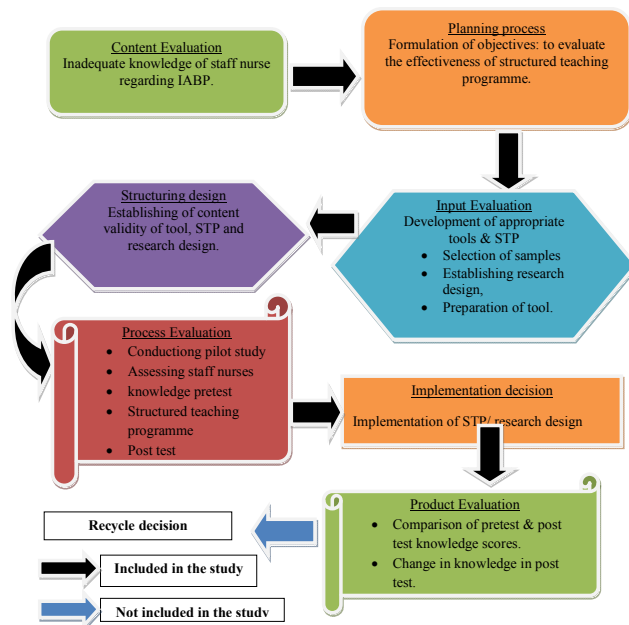


Fig 1 Conceptual frame work based on Stufflebeam, modified CIPP model

Lewis, Ward & Courtney (2009) conducted a study about IABP in heart failure management and concluded that; to achieve the best possible outcome for a patient managed with IABP, nursing and medical staff require specialized skills. Nurses must continually assess changes in patients' condition which require knowledge of the cardiovascular system, therapeutic effects of IABP and potential adverse events.⁴⁶

Kim.K.B., Lim.C., *et.al.*, (2006) conducted a study on IABP therapy, facilitates posterior vessel off-pump coronary artery bypass grafting in high-risk patients at Department of Thoracic and Surgery, Korea. 142 consecutive patients who underwent multi vessel off-pump coronary artery bypass grafting including posterior vessel revascularization were studied prospectively. The patients were divided into group A (n=57), which received preoperative or intra-operative IABP, and group B (n=85) which did not receive IABP. There was no operative mortality in group A and 1 death in group B. There were no differences in ventilator support time, length of stay in the intensive care unit, hospital stay and morbidity between the two groups. The results shows that IABP therapy was more effective in posterior vessel off-pump coronary artery bypass grafting in high-risk patients.¹⁵

Ajith Bhatia., Mali Patel., *et.al.*, (2007) conducted a study to assess the risk score to predict 30-day mortality in patients with intra-aortic balloon pump implantation at Department of Cardiothoracic Surgery and Heart Centre Ahmadabad. They performed a retrospective analysis of 120 patients receiving pre or postoperative IABP support. Univariate and multivariate analysis were carried out to assess variables potentially influencing 30-day mortality to develop a risk score for the prognosis of survival and for the decision on optimal patient-specific treatment. The 4 parameters (mean arterial pressure, adrenaline dose, central venous pressure, and blood concentration) at 6 hours of IABP use were independently related to 30-day mortality. This data demonstrated that intra-

aortic balloon implantation is necessary to reduce mortality rate.

Martins.WN., Escobar.RR., *et.al.*, (2012) conducted randomized controlled trials study to assess the efficacy of a prophylactic intra-aortic balloon pump in high- risk patients undergoing coronary artery bypass graft surgery. Patients treated with prophylactic IABP presented an overall difference in means for length of intensive care unit stay and hospital stay, which was lower than that in control group. Only 7.4% of the patients who received prophylactic IABP developed complications at an insertion site, with no IABP related death. The study concluded that, the meta- analysis supports the uses of prophylactic IABP in high risk patients to reduce hospital mortality.

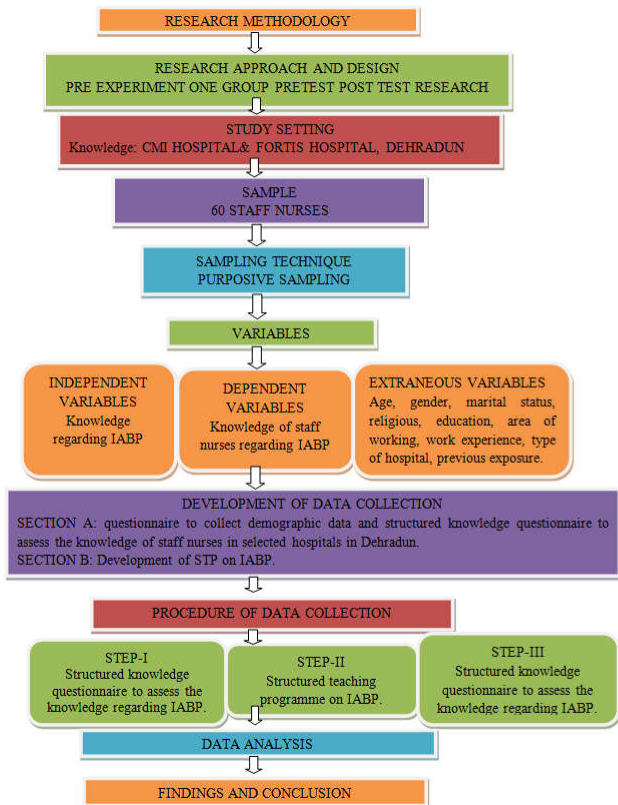


Fig 2 schematic representation of research methodology

RESULT

Knowledge Score of Staff Nurse in Pre & Post Test

Table 1 Knowledge Level of Staff Nurse regarding IABP in Pre & Post Test

N=60

Knowledge level	Pre test		Post test	
	Frequency	Percentage	Frequency	Percentage
1.1 Inadequate	48	80%	0	0%
1.2 Moderate	12	20%	17	28.3%
1.3 Adequate	0	0%	43	71.7%
Total	60	100%	60	100%

Table 2 Mean, Mean percentage and standard deviation for the pre test and post test knowledge scores of staff nurse aspect wise.

Sl. No.	Knowledge aspect	No of item	Pre-test			Post-test		
			Mean	Mean %	SD	Mean	Mean%	SD
1	Questionnaire related to CABG	5	2.43	48.6	1.51	3.75	75	1.49
2	Questionnaire related to IABP	25	8.26	33.04	3.44	20.50	82	1.92
	Total	30	10.7	35.67	4.27	24.25	80.83	2.783

Table 3 Comparison of Pre Test and Post Test Knowledge Scores of Staff Nurse

N = 60

Sl. No.	Knowledge aspects	Mean	Mean %	S D	Enhancement	t Value	Df	Inference
1	Pre test	8.26	33.04	3.44	48.96	23.932	59	S
2	Post test	20.50	82	1.92				

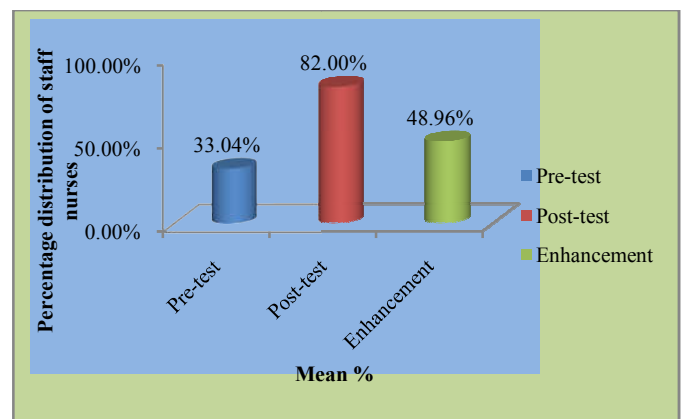


Fig Cylindrical bar diagram depicting comparison of pre test and test knowledge score of staff nurse regarding IABP

Summary

Majority 80% of the staff nurses had inadequate knowledge and 20% had moderate knowledge before structured teaching programme. After structured teaching programme majority 71.7% of staff nurses had reported adequate knowledge and 28.3% of staff nurses reported moderate knowledge regarding IABP. The obtained chi-square value for age, gender, marital status, religion, education, area of working and experience are less than the table value, which indicates that there is no significant association between post-test level of knowledge at 0.05 level of significance. Hence, the research hypothesis is rejected and null hypothesis is accepted. The obtained chi-square value for type of hospital is greater than the table value, which indicates that there is significant association between post test level of knowledge at 0.05 level of significance. Hence, the research hypothesis is accepted and null hypothesis is rejected.

Major findings

The assessment of effectiveness of structured teaching programme on knowledge of staff nurses regarding IABP, revealed that the knowledge increased after intervention is 48.96 percent at p<0.05 using Structured Knowledge Questionnaire. Hence, it is inferred that, there is a significant increase in the knowledge of staff nurses

Recommendations

1. Updating knowledge and practice of ICU nurses through carrying out continuing educational programs about IABP.
2. Conduction of periodic training sessions to improve practices about the assessment and management of patients connected to IABP.
3. Ongoing monitoring of staff nurses' practice by the head in-charge nurses when caring for patients connected to IABP and provision of guidance to correct poor practices.
4. Study the impact of a designed nursing intervention protocol on the outcome of patients connected to IABP.
5. Replication of the study on a larger probability sample from different geographical locations in Dehradun district.

CONCLUSION

The main aim of this study is to assess the effectiveness of Structured Teaching Programme (STP) on knowledge regarding intra-aortic balloon pump (IABP) implantation therapy in CABG among staff nurses. The pre-test and post-test knowledge were assessed. The study concluded that Structured Teaching Programme (STP) was effective in enhancing the knowledge as majority of staff nurses had adequate knowledge regarding IABP after STP.

Bibliography

- Black. M. Joyce, "Medical Surgical Nursing Clinical Management of Positive Outcomes", Volume 2, 7th edition, 2005, Elsevier publication; Page no. 1641-1642.
- Lewis SM, Heitkemper MM, Dirksen SR. "Medical Surgical Nursing", 6th edition, America: Mosby Publishers; 2000.
- Polit F Denise, Hungler PB, "Nursing research principles and methods", 6th edition, Philadelphia: Lippincot Company; 1990.
- Nancy Burns, Susan Grove, "Understanding Nursing Research", 2nd edition, Philadelphia: W.B. Saunders Company; 2004.
- Harris PJ, Harrell FE Jr., Lee KL. Survival in medically treated coronary artery disease. *Circulation* 1998 october; p.1190-59.
- Eagle KA, Guyton RA, Davidoff R, *et.al.* ACC/AHA 2006 Guidelines for Coronary. Available at: <http://www.americanheart.org/> Accessed September 2006.
- Currey J, Browne J, Botti M, Haemodynamic instability after cardiac surgery: nurses' perceptions of clinical decision-making. *J Clin Nurse.* 2006 Sep; 15(9):1081-90.
- Heart-diseases.2012. Available at URL:<http://www.mayo clinic.com/health/ heart-disease/DS01120>

How to cite this article:

Rajni Thapa and Gita Neupane.2018, Intra- Aortic Ballon Pump Implantation Thaerapy. *Int J Recent Sci Res.* 9(2), pp. 24459-24462. DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0902.1666>
