Trends in Nursing Administration & Education
Volume 13, Issue 1 - 2024, Pg. No. 1-6
Peer Reviewed & Open Access Journal

Research Article

A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge and Practice of Staff Nurses regarding Patient Safety during Cardiac Cathetersation in SKIMS, Soura, Srinagar

Jahangir kabir[1], Muneera Kachroo[2], Suby Annu[3]

[1]M Sc Nursing, [2]Professor and Principal, Mader-e-Meharban Institute of Nursing Sciences and Research, SKIMS, Soura Srinagar, Jammu and Kashmir.
Tutor, Mader-E-Meharban Institute of Nursing Sciences and Research SKIMS,Soura, Srinagar, Jammu and Kashmir.
DOI: https://doi.org/10.24321/2348.2141.202401

I N F O

Corresponding Author:
Jahangir kabir, Mader-e-Meharban Institute of Nursing Sciences and Research, SKIMS, Soura Srinagar, Jammu and Kashmir.
E-mail Id:
buttzyan93@gmail.com
Orcid Id:
https://orcid.org/0009-0006-1169-8389
How to cite this article:
Kabir J, Kachroo M, Annu S. A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge and Practice of Staff Nurses regarding Patient Safety during Cardiac Cathetersation in SKIMS, Soura, Srinagar. Trends Nurs Adm Edu. 2024;13(1):1-6.

Date of Submission: 2024-03-19
Date of Acceptance: 2024-04-20

A B S T R A C T

Background: Cardiac catheterisation is an invasive procedure used for diagnostic and therapeutic purposes.

Aim: This study aimed to evaluate the impact of a structured teaching programme on staff nurses' knowledge and practices regarding patient safety during cardiac catheterisation at SKIMS, Soura.

Methods: A quantitative one-group pre-test post-test design was used with 50 staff nurses selected via purposive sampling. After ethical clearance, a pre-test was conducted, followed by an information booklet on day 1. A post-test was administered on day 7. Data were collected using a validated knowledge questionnaire (r = 0.75) and practice checklist (r = 0.86).

Results: Most participants (38%) were aged 36–40 years, 80% were female, and 54% held a B.Sc. qualification. Only 8% had 6–10 years of experience, and 60% had not attended related workshops. Post-test knowledge scores (53.86 ± 3.04) were significantly higher than pre-test scores (38.72 ± 5.09) with a mean difference of 15.14 (p = 0.001). Post-test practice scores (27.58 ± 1.50) also showed a significant improvement (p = 0.002). Conclusion: The structured teaching programme significantly enhanced nurses' knowledge and practices regarding patient safety during cardiac catheterisation.

Keywords: Knowledge, Practice, Cardiac Catheterisation, Staff Nurses

Introduction

According to 2019 statistics, globally, around 110 million men and 80 million women suffered from coronary heart diseases at that time which killed an estimated 9 million people annually. Around 1 in 6 deaths are caused by coronary heart diseases globally.[1]

Cardiovascular disease was the leading cause of death in the United States, responsible for 840,768 deaths (635,260 cardiac) in 2016 though from 2006 to 2016, the US death rate from cardiovascular diseases decreased by 18.6% and from coronary heart disease by 31.8%.[2]

The annual total cost of cardiovascular diseases in the United States was estimated at $351.2 billion in 2014–2015, with $213.8 billion in direct cost, including 46% for inpatient care. Approximately every 40 seconds, an American will have a myocardial infarction. The average age of first myocardial infarction is 65.6 years for men and 72.0 years for women. In 2017, emergency medical services reported out-of-hospital cardiac arrests occurred in an estimated 356,461 Americans; emergency medical services treatment was initiated in 52%. Cardiovascular diseases such as ischaemic heart disease and cerebrovascular events such as stroke account for 17.7 million deaths. In accordance with the World Health Organization, India accounts for one-fifth of these deaths worldwide, especially in the younger population. The results of the Global Burden of Disease study showed an age standardised cardiovascular diseases death rate of 272 per 100,000 population in India which is much higher than the global average of 235. Migrant Asian Indians have a three times higher prevalence of cardiovascular diseases than the native population. Indians are liable to get hospitalised 2–4 times more frequently for complications of cardiovascular diseases, in comparison with other ethnic groups, and admission rates are 5–10 times higher for populations younger than 40 years. The prevalence of cardiovascular disease in Indians living in India is 21.4%.[3]

The burden of cardiovascular diseases falls hardest on middle-income Eurovision member countries where estimated incidence rates are 30% higher compared with high-income countries. With the increase in the incidence of coronary diseases, the corresponding need for cardiac interventions too has risen in the population. Cardiac interventions can vary from major invasive cardiac surgeries to minimally invasive techniques like percutaneous coronary interventions performed through the procedure of cardiac catheterisation. Cardiac catheterisations can be either diagnostic or therapeutic. The interventions can vary from diagnostic angio graphies to therapeutic procedures like angioplasties, value plasties or septal repairs. Though cardiac catheterisation is used for a variety of purposes, it is not devoid of associated complications and patient safety concerns.[4]

There were 43,786 diagnostic left heart catheterisation procedures in 2019. 97.3% were coronary angiograms Cardiogenic and septic shock, cardiac arrhythmia, and post-surgical complications were the most common causes of in-hospital death after left heart catheterisation.[5]

4,38,351 percutaneous interventions were performed in a 1-year period in different centres 5,78,164 coronary stents with a 13.14% increase in a number of procedures. The major indication for percutaneous coronary intervention was post-myocardial infarction. It was noted that the procedure can lead to a number of complications such as peripheral vascular complications including haematomas, pseudo aneurysms, arteriovenous fistula, acute arterial occlusions, and infections that occur with an overall incidence of 1.5–9%. The occurrence of these complications in turn leads to an increase in the length of hospital stay and can have an impact on the treatment cost for both the patients and the hospital. Hence it poses a threat to the safety concerns of the patients, related to the procedure Patient safety emphasises safety in healthcare through prevention, reduction, reporting and management of errors and other types of harmful events that can lead to adverse patient outcomes. Nurses form the group of health professionals who are the first contacts with the patients in any hospital setting. A nurse's role in patient safety includes monitoring patients for clinical deterioration and unwanted outcomes associated with complications. This requires the use of up-to-date knowledge and evidence by the nurse to promote health through appropriate upgradation of their practices and skills in the procedures involved in patient care.[3]

Panicker et al. in Dubai 2022 conducted a study to assess the knowledge regarding patient safety after cardiac catheterisation among 108 staff nurses selected through convenience sampling technique.[6] The findings revealed that 64.81% had moderate knowledge, 15.74% had an adequate knowledge level whereas 19.44% had a poor level of knowledge[8]

Need for the Study

Recent years have seen a considerable rise in the occurrence with an upward trend in the occurrence and prevalence of cardiovascular diseases; the volume of related interventions also has seen a relative rise in the number of non-communicable diseases of which cardiovascular diseases form a major chunk.

Cath-labs and coronary interventions in India are increasing exponentially, adding substantially to healthcare expenses. While Cath-labs have more than doubled in the last five years, from 251 in 2010 to 630 in 2015, coronary interventions rose 51% within a year, between 2014 and 2015. Increased interventions have resulted in a higher

ISSN: 2348-2141
DOI: https://doi.org/10.24321/2348.2141.202401

number of stents being used in procedures. The data shows that 4,75,000 stents were used in 2015 for 3,75,000 coronary interventions. The figures stand out as just 1,46,719 stents were used in 1,17,420 cardiac interventions in 2010. Alone Several minor complications can occur. Injury of the artery or vein in which the catheter is introduced occurs in 0.5% to 1.5% of patients; the incidence is similar to the arm and leg approach. Bruising with skin discolouration at the site of blood vessel puncture occurs in 1% to 5% of patients. A major complication, such as death, heart attack, or stroke, during or within 24 hours of catheterisation occurs in only 0.2% to 0.3% of patients. Death may be caused by perforation of the heart.

The previous years have seen a major growth in the number of cath labs and coronary interventions increasing from 539 cardiac catheterisation labs and 177,240 coronary interventions in 2012 to about 1200 cardiac catheterisation labs and 373,579 coronary interventions in 2016 (as per the NIC data presented in 2016). There has also been a responsive increase in the number of centres reporting their data, which has increased from 369 in 2012 to 698 in 2016[9]

Beig et al. in 2017 SKIMS Srinagar conducted a prospective observational study in patients undergoing percutaneous coronary interventions.[8] A total of 624 patients (mean age 59.30 ± 11.17 years,84.8% males and 15.2% females) were included in the study. Most of the procedures were elective (61.4%) and the femoral route was used in the majority (82.6%). Drug-eluting stents were deployed in 99.1% of the cases. The overall procedural success rate was 93.6%. Procedural mortality was 1.0% and periprocedural complications occurred in 9.9% of patients[10]

The above-cited data clearly indicates that the number of cardiac catheterisations is on an upward trend and so are the complications associated with it.

This lays an ever-growing emphasis on patient safety concerns during cardiac catheterisation complications and unwanted outcomes are to be promptly identified and managed in order to reduce hospital stay and healthcare costs for both the patients and the institutions.

Nurses are a group of healthcare providers who are in direct contact with these occurrences and are responsible for positive patient outcomes that necessitate this group of health professionals to have adequate up-to-date knowledge and practice related to the procedure that is congruent with the latest technological advancements in the field.

Yaqoob et al. conducted a study on knowledge and practices among nurses regarding patients' care following cardiac catheterisation at a tertiary care hospital in Karachi, Pakistan.[9]It was found that the majority of the nurses (54.3%) had adequate, 40% had inadequate, and only 5.7% had excellent knowledge scores. Moreover, 87.1% of nurses were observed as carrying out unsatisfactory practices, whereas, only 12.9% of nurses were found to have satisfactory practices. Hence updation of knowledge and practice among staff nurses regarding patient safety during cardiac catheterisation was found to be necessary[11]

In view of the findings of the above-mentioned studies combined with the investigator's own observation during the clinical experience in the Department of Cardiology, it was seen that patients after cardiac catheterisation are often at risk of developing complications that are procedure-related or drug related. Nurses are the first-line providers of care who often come across these complications and are expected to manage them. Hence the investigator felt the need for a study that explores and enhances the knowledge and practice of the staff nurses and administers a structured teaching programme that will help in enhancing their knowledge and practice regarding patient safety during the procedure and in turn improve quality outcomes in these patients.

Methodology

The research design used in this study was pre-experimental one-group pre-test post-test design. Permission was obtained from the concerned authorities to conduct the final study. Ethical clearance was obtained from the Institutional Ethics Committee (IEC) to conduct the study on 50 staff nurses selected using purposive sampling technique.The data collection tool, namely the self-structured knowledge questionnaire and practice checklist was validated and the reliability of the tool was calculated which was r = 0.85 and r = 0.86, respectively.

The pre-test knowledge score and practice score were assessed using a self-structured knowledge questionnaire and practice checklist respectively. The teaching programme was given to the staff nurses as an information booklet. Post-test knowledge and practice scores were assessed on the 7th day.

Results & Discussion

Findings Related to Demographic Variables of Participants 38% of the study subjects were in the age group of 36–40 years Maximum (80%)study subjects were females,54% had professional qualifications of BSc Nursing, 58% of the study subjects had a working experience of 6–10 years, and 60% had not attended any workshop on patient safety during cardiac catheterisation (Table 1).

Findings Related to the Knowledge Level of Participants The findings of the pre-test in the present study revealed that the majority of the study subjects, i.e. 90%, had moderately adequate knowledge, while 100% had adequate knowledge in the post-test (Table 2). The study findings were consistent with the results of studies conducted by Panicker et al.[6] and Laishram et al.[10]

ISSN: 2348-2141
DOI: https://doi.org/10.24321/2348.2141.202401

Findings Related to the Practice Level of Participants The findings of the present study revealed that the pre-test practice level of study subjects showed that the maximum number of the study subjects, i.e. 88%, had good practice while 100% had good practice in the post-test (Table 4). The study findings were consistent with the findings of studies conducted by Karthi et al.[11] and Yaqoob It was thus seen that the mean knowledge and mean practice scores of the study subjects improved significantly after the structured teaching programme. This may be due to the fact that the staff nurses had not undergone any other in-service education programme on the topic for a considerable time. So they were interested in updating their knowledge and practice regarding cardiac catheterisation and they took a keen interest in the structured teaching programme. The findings of the study were supported by different studies across the globe.[6,10]

Table 1.Frequency and Percentage Distribution of Study Subjects as per Their Demographic Variable

N=50

Demographic Variables	Frequency (f)	Percentage (%)
Age (years)		
25–30	2	4.0
31–35	16	32.0
36–40	19	38.0
> 40	13	26.0
Gender		
Male	10	20.0
Female	40	80.0
Professional qualification		
GNM	10	20.0
PBBSc (N)/ BSc	27	54.0
MSc Nursing	13	26.0
Years of experience		
2–5	5	10.0
6–10	29	58.0
> 10	16	32.0
Any workshop attended related to cardiac catheterisation		
Yes	20	40.0
No	30	60.0

Table 2.Frequency and Percentage Distribution of Study Subjects According to Their Pre-Test and Post-Test Knowledge Scores regarding Patient Safety during Cardiac Catheterisation

N=50

Level of Knowledge	Pre-Test Knowledge Levels		Post-Test Knowledge Levels	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Inadequate knowledge	2	4.0	0	0.0
Moderately adequate knowledge	45	90.0	0	0.0
Adequate knowledge	3	6.0	50	100.0
Total	50	100.0	50	100.0

Table 3.Comparison of Pre-Test and Post-Test Knowledge Scores of Study Subjects regarding Patient Safety during Cardiac Catheterisation

Test	Mean	Std. Deviation	t Value	df	p Value
Pre-test	38.72	5.091	-23.392	49	0.001***
Post-test	53.86	3.044	-		

ISSN: 2348-2141
DOI: https://doi.org/10.24321/2348.2141.202401

Table 4.Frequency and Percentage Distribution of Study Subjects according to Their Pre-Test and Post-Test Practice Scores regarding Patient Safety during Cardiac Catheterisation

Levels	Pre-Test Practice Levels		Post-Test Practice Levels	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Poor	6	12.0	0	0.0
Good	44	88.0	50	100.0
Total	50	100.0	50	100.0

Table 5.Comparison of Pre-Test and Post-Test Practice Scores of Study Subjects regarding Patient Safety during Cardiac Catheterisation among Staff Nurses

Test	Mean	Std Deviation	df	t Value	p Value	Remarks
Pre-test	21.52	2.816	49	-16.107	0.002***	Statistically significant
Post-test	27.58	1.500	-			

p value < 0.05: Statistically significant

Conclusion

- Pre-test knowledge scores of staff nurses were found to be moderately adequate in the majority of the sample which improved to adequate in the post-test.
- In practice, the pre-test score was found to be good and the same finding was revealed in the post-test practice score.
- The study concluded that the knowledge level and practice level of staff nurses regarding patient safety during cardiac catheterisation improved after the administration of the structured teaching programme in the form of an information booklet and hence it was found to be effective.

Source of Funding: None

Conflict of Interest: None

References

1. Lindstrom M, DeCleene N, Dorsey H, Fuster V, Johnson CO, LeGrand KE, Mensah GA, Razo C, Stark B, Turco JV, Roth GA. Global burden of cardiovascular diseases and risks collaboration, 1990-2021. J Am Coll Cardiol. 2022 Dec 20;80(25):2372-425. [PubMed] [Google Scholar]
2. Benjamin EJ, Muntner P, Alonso A, Bittencourt MS, Callaway CW, Carson AP, Chamberlain AM, Chang AR, Cheng S, Das SR, Delling FN, Djousse L, Elkind MS, Ferguson JF, Fornage M, Jordan LC, Khan SS, Kissela BM, Knutson KL, Kwan TW, Lackland DT, Lewis TT, Lichtman JH, Longenecker CT, Loop MS, Lutsey PL, Martin SS, Matsushita K, Moran AE, Mussolino ME, O'Flaherty M, Pandey A, Perak AM, Rosamond WD, Roth GA, Sampson UK, Satsou GM, Schroeder EB, Shah SH, Spartano NL, Stokes A, Tirschwell DL, Tsao CW, Turakhia MP, VanWagner LB, Wilkins JT, Wong SS, Virani SS; American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics-2019 update: a report from the American Heart Association. Circulation. 2019 Mar 5;139(10):e56-528. [PubMed] [Google Scholar]Arramraju SK, Janapati RK, Kumar ES, Mandala GR. National Interventional Council data for the year 2018-India. Indian Heart J. 2020 Sep-Oct;72(5):351-5.[PubMed] [Google Scholar]
3. Timmis A, Vardas P,Townsend N, Torbica A, Katus H, De Smedt D, Gale CP, Maggioni AP, Petersen SE, Huculeci R, Kazakiewicz D, Rubio VD, Ignatiuk B, Raisi-Estabragh Z, Pawlak A, Karagiannidis E, Tresekes R, Gaita D, Beltrame JF, McConnachie A, Bardinet I, Graham I, Flather M, Elliott P, Mossialos EA, Weidinger F, Achenbach S; Atlas Writing Group, European Society of Cardiology. European Society of Cardiology: Cardiovascular Disease Statistics 2021. Eur Heart J. 2022;(8):716 99[PubMed] [Google Scholar]
4. Al-Hijji MA, Lennon RJ, Gulati R, El Sabbagh A, Park JY, Crusan D, Kanwar A, Behfar A, Lerman A, Holmes DR, Bell M, Singh M. Safety and risk of major complications with diagnostic cardiac catheterization. Circ Cardiovasc Interv. 2019 Jul;12(7):e007791. [PubMed] [Google Scholar] Panicker T, Cherian Sejimol T. Cardiac nurses' knowledge towards patient safety after cardiac catheterization; a cross sectional studySci Healthc Res. 2022;(2):6-13. Slicker K, Lane WG, Oyetayo OO, Copeland LA, Stock EM, Michel JB, Erwin JP. Daily cardiac catheterization procedural volume and complications at an academic medical centre. Cardiovasc Diagn Ther. 2016 Oct;6(5):446-52. [PubMed] [Google Scholar]Beig Rashid Jahangir ,Shah R Taraq , Hafeez Imran, Dar Mohd Iqbal, A. Rather Hilal, Tramboo Nisar A. et al. National Library of medicine Indian Heart Journal, ISSN: 0019-4832, Vol: 69, Issue: 5, Page: 589-596 Publication Year 2017

5. Yaqoob A, Barolia R, Noor A Afshan N. Knowledge and practices among nurses regarding patients' care following cardiac catheterization at a tertiary care hospital in Karachi, Pakistan. Open JNurs. 2019;9(8):809-34. [Google Scholar]
6. Laishram Sheema Chanu and Pallabi Chetia and Betbhalin Mary Mukhim journal Indian journal of applied research 2018,volume-8, issue-7 Print ISSN No 2249-555x ID:133238773
7. Karthi R, Joy GIJemima M, Mahalakshmi D. Assess the knowledge and practice among cardiac nurses about patient safety after cardiac catheterization, Tamil nadu. IntResRev2021;
8. Panicker Mathew Thomas Cherian Sonia and Thomas Rajimol in International Journal of science and healthcare research Vol.7; Issue: 2; April-June 2022 Original Research Article ISSN: 2455-7587 DOI: https://doi.org/10.52403/ijshr.20220402
9. Bhat Ramesh,John Denny Price-cap is after all Just a new price: The case of Cardiac Stents in India Observer Research Foundation April 2017 Issue No 175
10. Beig Rashid Jahangir ,Shah R Taraq , Hafeez Imran, Dar Mohd Iqbal, A. Rather Hilal, Tramboo Nisar A. etal. National Library of medicine Indian heart Journal, ISSN: 0019-4832, Vol: 69, Issue: 5, Page: 589-596 Publication Year 2017
11. Yaqoob Adnan, Barolia Rubina, Noor Ahmad, and Nazar Afshan and Khan Aga (2019) Knowledge and practices among nurses regarding patients' Care following cardiac catheterization at a tertiary care hospital in Karachi, Pakistan. Open Journal of Nursing, 9, 809-834. https://doi.org/10.4236/ojn.2019.98062

ISSN: 2348-2141
DOI: https://doi.org/10.24321/2348.2141.202401