



SCHOOL OF NURSING

**Nurses' Practice and Associated Factors Regarding Care for Patients
Undergoing Cardiac catheterization in selected cardiac Centers,
Addis Ababa, Ethiopia, 2024**

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**A Research thesis Submitted to the Department of Medical surgical Nursing
presented in partial Fulfillment of The Requirements for the Degree of Masters
in Cardiovascular Nursing Practitioner St. Paul's Hospital Millennium Medical
College**

July, 2024

Addis Ababa, Ethiopia

Nurse's practice and associated factors regarding care for patients undergoing cardiac catheterization in selected cardiac centers, Addis Ababa, Ethiopia, 2024

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ABSTRACT

Background: Nurses have critical roles with the care of patients' before, during, and after cardiac catheterization procedure in order to reduce the risk and complication associated with this cardiac catheterization and for good patient outcome. The quality of nursing care and factors influencing in this context in Ethiopia, remains understudied so this study aim to identify the gap and inform interventions.

Objectives: To assess nurses' practice and associated factors regarding care of patients undergoing cardiac catheterization at selected cardiac centers in Addis Ababa, Ethiopia 2024

Methods: Institution based cross sectional study design was conducted among 172 nurses working in purposely selected in cardiac catheterization ward, cardiac catheterization laboratory and cardiac catheterization intensive care units from April to June 2024. Study sample included all nurses employed full-time at the centers and available during data collection periods. The data were collected by self-administered questionnaires and observational check list then entered in to Epi-data then exported to SPSS version 26 for analysis. All candidate variables with a p value ≤ 0.25 in the bivariable analysis were included in a multivariable analysis and final model, adjusted odds ratio (AOR) with 95% confidence intervals and p-value < 0.05 were used to declare statistically significant.

Results: In this study, 165 nurses were enrolled with response rate of 96%.107(64.8%) participants Were females. The median age was 33 years, with an interquartile range of 28 to 38.5 years. More than half (52.7%) of study participants had good practice level with prevalence of (52.5%, 95%CI: 0.44-0.61) for patients undergoing cardiac catheterization in selected cardiac centers. Having MSc educational level (AOR: 3.22; 95% CI: 1.52-6.83) as compared to Diploma nurses and 1:2 nurse to patient ratio (AOR=0.34; 95%CI: 0.16, 0.71) compared to 1:1ratio had statistically significant association with Practice.

Conclusion: more than half of study participants had good practice level on care of patient undergoing cardiac catheterization in cardiac centers. Educational level and nurses to patients' ratio have association with practice of cardiac catheterization.

Recommendations: continuous in-service training needed, continuous evaluation of nurse's practice to identify nurse's needs to correct the gap .The health service management should recruit nurses to balance their numbers with the respective patient in order to reduce work load.

Keywords: Cardiac catheterization, Nurses, and Practice

Acknowledgement

First and foremost, I offer my gratitude to the Almighty God for His boundless guidance and strength have been enabling me to overcome challenges

I would like to say thanks to St. Paul Hospital Millennium Medical College for providing me this learning opportunity and financial support needed for thesis work.

I express my heartfelt gratitude to my Advisors Mr. Birhanu Asrat and Mr. Habtamu Ayalew for their valuable, advice, suggestions, comments and guidance.

I also thanks all cardiac centers for their permission to collect the data, study participants participate on this study and data collectors.

Finally, I would like to express my heartfelt appreciation to my family and friends for their unwavering support and encouragement during this challenging journey.

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Acronyms and Abbreviations

A.A	Addis Ababa
ACH	Addis Cardiac Hospital
AOR	Adjusted Odd Ratio
BLH	Black Lion Hospital
CAD	Coronary Artery Disease
CI	Confidence Intervals
CVD	Cardiovascular Disease
Cath lab	Catheterization Laboratory
CC	Cardiac Catheterization
CCICU	Cardiac Catheterization Intensive Care Unit
CCE	Cardiac Center Ethiopia
ECG	Electro Cardio Graphy
ICU	Intensive Care Unit
MCH	Myung Sung Christian General Hospital
NCD	Non Communicable Disease
NSEMI	Non ST-Segment Elevation Myocardial Infraction
STEMI	ST-Segment Elevation Myocardial Infraction

1. Introduction

1.1. Background

Cardiac catheterization is an invasive procedure used to diagnose and manage coronary artery disease(1).Coronary artery disease(CAD) is the most common type of cardio vascular disease (CVD)(2).It is a leading cause of mortality and morbidity, accounts for 50% of all cardio vascular deaths and more than 2.5 million hospitalizations worldwide each year, This condition affects the coronary arteries and is brought on by a narrowing or obstruction of the coronary artery lumen. Myocardial cell death results from arterial narrowing or blockage in elevation myocardial infarction (NSTEMI) and ST-segment elevation myocardial infarction (STEMI)(3).

For the purpose of examining various types of coronary and structural heart disease, cardiac catheterization is the most reliable method and the gold standard(4). Procedures involving diagnostic and therapeutic cardiac catheterization include percutaneous transluminal coronary angioplasty, carotid angiography, peripheral angiography, coronary angiography, and temporary pacemaker implantation(5).

Cardiac catheterization may lead to major and minor complications which may cause morbidity and mortality, Early diagnosis and timely management are important to prevent further complications(6).

Nursing is the art and science of providing care together with an emphasis on preventing disease and injury, promoting and optimizing human functioning, easing suffering through compassionate presence, and facilitating healing(9) Nursing is the diagnosis and treatment of human reactions as well as advocacy for the well-being of individuals, families, groups, and communities while acknowledging the interconnections of all people(10).

Nursing care for patients undergoing cardiac catheterization requires an expert nurse who understands the types of complications that can occur, as well as the assessment skills to stop them. The combination of nursing knowledge and skills during, before and after cardiac catheterization aims to ensure safe and accurate procedures and improve physical and mental health (11).

A nurse is in the best position to keep an eye on patients and start resuscitation as soon as a problem is noticed (12).

The nurse's duty starts with preadmission and concludes with discharge. It consists of health screening, preparing patients for procedure, assisting the cardiologist during the procedure, and keeping an eye on patients until they are discharged(13).

Understanding nurses' perspectives and the factors that influence them is essential. How nurses care for patients undergoing cardiac catheterization and their ability to apply its components can be affected by several factors, including a lack of knowledge on the subject, a lack of time, a shortage of nursing staff, an increase in workload, and the unavailability of supplies and equipment(18).

Workplace health requirements include meaningful recognition, genuine leadership, proper staffing, effective decision-making, communication, and teamwork. Nurses' interpersonal relationships, physical and mental health, and productivity at work all depend on having excellent nurse leaders(19).

Ethiopia is one of developing countries that demand of cardiac catheterization services has increased, however the health care system faces challenges such as limited resources, inadequate infrastructure, shortage of skilled health care professionals, particularly nurses this can have impact on quality of care provided to patient(20).

1.2. Statement of the problem

Among the cardiovascular diseases, the one with the greatest most incident is the coronary artery disease(CAD)(21). In developed countries, it is responsible for 42% of the deaths among the Non Communicable Disease(NCD)s and, in Brazil, for more than 30% of the deaths recorded due to these diseases(22).

Cardiac catheterization is a useful diagnostic and intervention technique that is performed which may lead to several major and minor complications which may contribute to morbidity and mortality(6). According to reports, the total frequency of vascular access problems alone might vary from 1.5% to 9%, contingent upon the procedure type, anti-coagulation, closure devices, age, sex, and concomitant conditions(23).

A major worldwide public health concern is patient safety. Sometimes, mistakes made in the delivery of medical care can cause substantial harm to patients, including death, incapacity, or need for further, protracted treatment. Additionally, it could result in lost productivity and indirect health care expenditures. It also has an impact on customer impression, attitude, and trust. But it could also have an impact on the trust and honesty of the suppliers(24).

In Ethiopia, where patient deaths and problems during hospital stays are increasing and the treatment outcome of CAD is poor(3).

Many complications for patients undergoing cardiac catheterization such as infection, bleeding, hematoma and thrombosis occur because of Poor performance during nursing care(13). Therefore, it is very important to assess nurses' performance regarding the care of patients undergoing cardiac catheterization. To discover the gap and correct them in the future by the provision of comprehensive educational and training programs for nurses to improve the quality of care(2).

In my knowledge, in Ethiopia there is no studies that assess nurse's practice and associated factors for care of patient undergoing cardiac catheterization despite the increasing prevalence of cardiovascular disease and growing reliance on cardiac catheterization. Therefore, this study aimed to assess the nurse's practice and identify factors affecting nurse's practice regarding care of patient undergoing cardiac catheterization and give recommendation based on results in selected cardiac centers Addis Ababa, Ethiopia, 2024.

1.3. Significance of the study

The study's findings expected to give helpful information for policymakers, organizations, clinical units, emphasizing the need to focus on management, training related to the particular aspects influencing nurse's practice and taken into consideration when creating guidelines and intervention methods.

The study finding will contribute to improve nurses understanding by identifying factors influencing their practice, nurses can advocate for changes to improve their working conditions and patient care.

The study finding will benefit patients by improving quality of care given for them by identifying the gap in nursing care and give recommendation.

Conducting this study benefit me by increasing my knowledge on research and cardiac catheterization and it is also requirement to complete postgraduate study.

This study also will use as base line and supportive for future researchers.

2. Literature Review

2.1. Assessment of nursing care practice among patient undergoing cardiac catheterization

Patient evaluation is one of the many responsibilities and tasks carried out by the nursing staff in this industry(25). By using the nursing consultation at the exam site, the pre-procedure consultation enables the nurse to review the patient's medical history and previous laboratory results that may have an impact on the best outcome. It also provides guidelines for the procedure and post-catheterization care measures that are particularly important(22).

The study conducted at sulaimani cardiac hospital on assessment of nurse's knowledge and practice showed that over half of the nurses employed "good practice," and that their understanding of cardiac catheterization was satisfactory. Additionally, the study's findings show a statistically significant positive link between nurses' knowledge and practice at the pre-, intra-, and post-cardiac stages. The study suggests that all nurses who work with children having pediatric cardiac catheterization should complete a particular Training program(26).

Many people experience avoidable injury while receiving hospital medical care. Thus, enhancing patient safety is the top priority in terms of both policy and practice. Furthermore, cardiac nurses are in charge of post-cardiac catheterization care Patients should be treated according to established protocols since infectious diseases are very contagious. The majority of risks to patient safety and health are caused by factors related to the organization and health care providers. The danger to patient safety is influenced by professional elements, such as health care providers' awareness and skillfulness about patient safety. This is especially true when those providers lack the necessary safety knowledge and expertise to offer their patients with secure care(27).

Within the healthcare sector, the nursing profession offers leadership. It is imperative to highlight that nurses play a critical role in reducing the risks and difficulties that come with cardiac catheterization(7).

A nurse's role in treating patients with heart issues and those who have had cardiac catheterization is crucial and comprehensive. Nurses are also in charge of safely transporting patients, giving medication, assisting with basic personal care needs, monitoring patients for any unfavorable indicators of a change in status, managing bleeding, and maintaining hemostasis(12).

The study done in Pakistan, karache tertiary hospital shows that the majority of the nurses (87.1%) were carrying out unsatisfactory practice, whereas only (12.9%) nurses were carrying out satisfactory practices(12).

Study done in Egypt Shows that more than half (55%) of sample had poor practice level and (45%) had good level of practice regarding procedure performed to maintain patient's safety post cardiac catheterization(23).

Study done at Asia, Helena university show that More than four -fifths of (83.3%) of the studied nurses had a competent practice regarding standards of care before, during and after cardiac catheterization(28).

Research done in port-said university show that more than two third of nurses had satisfactory level of practice regarding care of patients undergoing cardiac catheterization. Concerning the level of practice during cardiac catheterization findings of this study Egypt Cairo, documented that all the studied nurses had unsatisfactory level of practice regarding caring of patients undergoing cardiac catheterization(13).

2.3. Factors affecting nursing care practice among patient undergoing cardiac catheterization

There is Many factors may influence negatively or positively how nurses caring of patient undergoing cardiac catheterization(18). The study conducted at zagazig university done 50 nurses revealed that more than two third of studied nurses had satisfactory level of practice regarding care of patient undergoing cardiac catheterization due to increase year of experience in cardiac unit which they have unsatisfactory knowledge(29).

The study conducted Egypt, Aim shams university show good communication skill of nurses has positive effect on their practice, but less experiences, lack of training, lack of supervision, work load, patient nurse ratio are the reason of inadequacy of nurses practice on care of patient undergoing cardiac catheterization(18).

Workplace features that either support or impede the practice of professional nursing are referred to as the nurses' work environment, and they have been connected to improved patient outcomes. The quality and amount of care that nurses can deliver, as well as workforce retention, are significantly influenced by their work environment. The study demonstrates a relationship between nurses' intention to depart and their work environment. Nurses' intention to quit reduced and their level of involvement at work increased when they reported improved working circumstances(19).

The study conducted in Egypt, Assiut university show that the level of nurses practice pre(patient preparation physical and psychological), intra(using aseptic technique) and post(monitoring vital sign) procedure is poor, it may be due to lack of knowledge, lack of training, work load which is lead to patients Anxiety ,discomfort, unsterile field, post procedure not monitored properly(30)

Study done in Pakistan, Lahore hospital show the reasons of low practice level is increased number of patients and work load. In addition, nurses' practices were based on traditions and imitations(27).

2.4 Conceptual Frame work

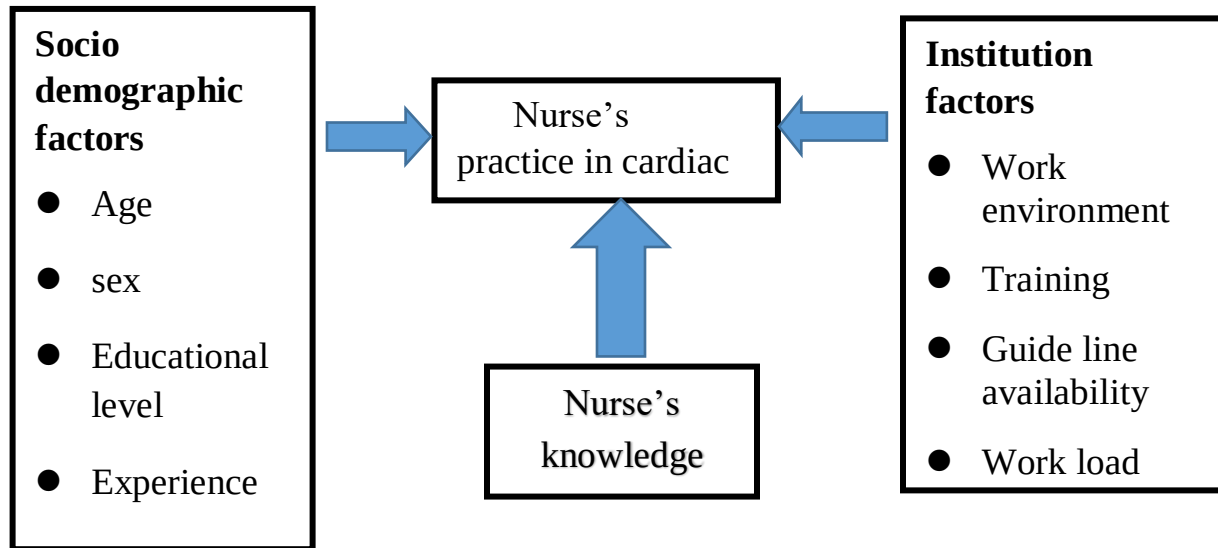


Figure 1: Conceptual frame work show the relation between dependent and independent variable(12,18,19,31).

3. Objectives

3.1 General objective

- To assess nurses' practice and associated factors regarding care of patients undergoing cardiac catheterization in selected cardiac centers in Addis Ababa, Ethiopia, 2024

3.2 Specific objectives

- To assess nurses practice regarding care of patients undergoing cardiac catheterization in selected cardiac centers in Addis Ababa, Ethiopia, 2024
- To identify factors associated with nursing care practice regarding patients undergoing cardiac catheterization in selected cardiac centers in Addis Ababa, Ethiopia, 2024

4. Methods and Materials

4.1 Study area

The study was conducted in purposely selected governmental and private cardiac centers in Addis Ababa. Addis Ababa is the capital city of Ethiopia located at the heart of the nation, occupies a total of 540 sq. km land area and had a total population above 5 million (32). There are around 14 private and public cardiac centers from those 2 governmental and four private centers selected purposely because they have cardiac catheterization laboratory, Namely, Black Lion Hospital, St. Peter Hospital, Myung Sung Christian Medical General Hospital, Addis Cardiac Center, Cardiac Center Ethiopia and Ethio-Tebib Cardiac Centers.

4.2 Study period

The study was conducted from April 15 to June 28, 2024 at selected cardiac centers in Addis Ababa Ethiopia

4.3 Study design

An institutional-based cross-sectional study design was conducted.

4.4. Populations

4.4.1. Source population

All Nurses working in cardiac centers in Addis Ababa, Ethiopia

4.4.2. Study population

Nurses working in cardiac catheterization wards, Cath labs and Cath ICU for 6months and above fulfill inclusion criteria at selected cardiac centers.

4.5. Eligibility criteria

4.5.1. Inclusion criteria

Nurses working in the CC lab, CC ward and CCICU were included.

4.5.2. Exclusion criteria

Nurses not full time worker and not voluntary to participate

4.6. Sample size and sampling technique

Since the total number of nurse working in selected cardiac centers N= 172 all nurses working cardiac catheterization unit was included.

4.7. Variables

4.7.1. *Dependent variable*

Nursing care practice for patient undergoing cardiac catheterization.

4.7.2. *Independent variables*

Sociodemographic factors:

Sex, Age, Educational level, experiences in the unit

Institutional factors:

Work environment, Nurse to patient ratio, Work load, Training related to cardiac catheterization, Guideline availability, performance monitoring system.

4.8. Operational definition

Practice in this study it refers to the task carried out by the nurses on the patient before, during and after cardiac catheterization such as Psychological and physiological preparation, secure iv line, checking as consent taken, use sterile technique, prepare necessary materials, give medications, compression given to puncture site after sheath removal, immobilizing the affected limb after sheath removal, checking of any symptoms, maintenance of intake and output etc.

Nurses' practice on patient care after cardiac catheterization was measured using a 32-items Likert type scale. Each item has 3 response options with values of (0 = never, 1 = Sometimes, and 2 = always) then mean value calculated.

Knowledge In this study it refers to a state of awareness or understanding with conscious mind regarding care of patient undergoing cardiac catheterization as measured by structured questionnaire.

Nurses' knowledge on patient care was measured using a 10 items True/False questioners.

Good practice: nurses those score above and equal to mean value from self-administered questionnaire pre, intra and post procedure prepared to assess their practice(33).

Poor practice: nurses those score below mean value from self-administered questionnaires pre, intra and post procedure to assess their practice(33).

Good Knowledge: study participants those score above and equal to 75% of knowledge questions (2,31).

Poor knowledge: those study participants score below 75% of knowledge questions(2,31).

4.9. Data collections tools and Techniques

For data collection self-administered questionnaire was used for assessing nurse's practice regarding care of patients during pre, intra and post cardiac catheterization and associated factors that adapted from different similar studies and literature (7, 9, 13, 19). Questionnaire was prepared in English Language. It had four parts; part I, Socio demographic and Institutional characteristics and part II self-administered questionnaire to assess knowledge Part III self-administered Likert scale questionnaire to assess practices of the nurse on pre, intra and post cardiac catheterization and associated factors and part IV Observational checklist.

4.10. Data quality control

The adopted tool was evaluated, pre-test was done in 5% of samples in St. Peter before two weeks of actual data collection period to test clarity, applicability, understand ability of the tools and to determine the needed time for the application of the study tools and reliability test was done Cronbach's Alpha test by using SPSS version 29 and result was **0.76**.

Data collectors assigned 4 BSc and 1 MSc nurses and necessary information was provided to achieve common understanding on the objective of the study. Supervision was made during data

collection and the collected data was checked for completeness and accuracy during data collection period.

4.11. Data analysis technique

The collected data was checked for completeness, entered in to Epi –data version 3.1 then, exported to SPSS version 26, coding, cleaning and analyses was done. Data was described by numbers, percentages, means and median, binary logistic regression was used to analyze the result. Bi variable and multi variable binary logistic regression used to determine the association between the independent and dependent variables. The independent variables which become fitted on the bi variable regression less than or equal to p-value of 0.25 was included in the multi variable binary logistic analysis. The odds ratio with 95% CI and p values < 0.05 were considered to declare statistical significance

4.12. Ethical and Legal Consideration

Ethical clearance was secured from the Ethical Clearance Committee of St. Paul hospital Medical College, (Ref.no.Pm23/1146) Centers has their ethical review committee also evaluated the proposal they approved and give permission for data collection Informed consent was obtained from each participant. Names and personal identification of respondent was not stated through the study process to ensure anonymity, Confidentiality also maintained at all levels of the study.

4.13. Dissemination plan

Results of this study will be presented in the form of thesis defense at s.t Paul's hospital, Medical College. The hard copies of the study will be submitted to St. Paul's hospital, Medical College Postgraduate Office, Department of nursing. Finally, Publications will be attempted on scientific national and international reputable journals for interested researchers and academicians or scholars.

5. Result

5.1. Socio-demographic Characteristics of study participants

In this study 165 study participants were involved with making response rate of 96.5%. As shown in Table 1, study participants were categorized into different age groups. Among them, the most common age group was 30-34 years (29.1%), followed by 25-29 years (23.6%) with the median age was 33 years, with an interquartile range of 28 to 38.5 years. Almost two-third (75%) participants were female. Most participants held a Bachelor's degree (58.8%) in their educational level. Nearly half (46.7%) participants had 2-5 years' service experience in the cardiac unit.

Table 1:- Socio-demographic characteristics of nurses in selected cardiac centers, Addis Ababa, Ethiopia 2024 (n=165)

Variable	Category	Frequency	Percentage (%)
Age	20-24	12	7.3
	25-29	39	23.6
	30-34	48	29.1
	35-39	28	17.0
	≥40	38	23.0
	Median(IQR:Q1-Q3)	33(28-38.5)	
Sex	Female	107	64.8
	Male	58	35.2
Educational level	Diploma	11	6.7
	BSc	97	58.8
	MSc	57	34.5
Experience in cardiac unit	6months-1 year	35	21.2
	2-5 years	77	46.7
	6-10 years	40	24.2
	≥11 years	13	7.9

5.2. Institution related characteristics

As shown in Table 2, almost one-third (32.7%) of study participants had reported having training related to cardiac catheterization. Regarding the nurse-to-patient ratio, the majority of respondents (43.0%) reported a ratio of 1:2. Additionally, more than three-fourths (81.2%) of study participants had confirmed the availability of guidelines in their cardiac units.

Table 2:- Institutional related characteristics of nurses in selected cardiac centers, Addis Ababa, 2024 (n=165)

Variables	Category	Frequency	Percent
Training related to cardiac catheterization	Yes	54	32.7
	No	111	67.3
Nurse to patient ratio	1:1	61	36.9
	1:2	71	43.0
	1:3	25	15.2
	1:≥5	8	4.9
Guide line availability	Yes	134	81.2
	No	31	18.8

5.3. Knowledge of study participants

There were ten True and False knowledge questions. Of these, almost all (97.0%) study participants correctly answered the first question about the importance of providing nurses with information about how to care for patients undergoing cardiac catheterization; (90.9%) had correctly recognized the importance of checking vital signs and ECG before procedure, (60.0%) study participants answered correctly the importance of advising about drinking water after procedure for the patient, (57.0%) of study participants correctly answer a patient not to waiting ten days to take a Shower after undergoing cardiac catheterization. The knowledge of study participants about the complications of cardiac catheterization was relatively high, with 86.7% answering correctly. The study finding also revealed that the majority (90.9%) of study participants correctly identified that patients with uncontrolled hypertension should not undergo the cardiac catheterization. In terms of medication management before the procedure, more than half (53.3%) of study respondents understood the importance of medication adjustments. More than two-thirds (68.5%) of the study participants had answered correctly about important investigations needed prior to the procedure. The overall knowledge status of study participants regarding the procedure of cardiac catheterization reported as good was one-fourth (25.5%) (Table-3).

Table 3:- Knowledge of nurses on cardiac catheterization in selected cardiac centers, Addis Ababa, Ethiopia 2024 (n=165)

Item	True, n (%)	False, n (%)	Unknown, n (%)
Importance of giving information for nurses about cardiac catheterization for patient care	160(97.0)	5(3.0)	0(0.0)
Checking Vital sign and ECG before procedure	150(90.9)	15(9.1)	0(0.0)
Explaining to the patient drinking little water after procedure	66(40.0)	99(60.0)	0(0.0)
Patient wait ten days after cardiac catheterization to take shower	59(35.8)	94(57.0))	12(7.3)
Patient should take full rest for 9 hours after procedure	86(52.1)	69(41.8)	10(6.1)
Patient Avoid heavy activities for 3months after procedure	104(63.0)	54(32.7)	7(4.2)
About Complications of cardiac catheterization	143(86.7)	20(12.1)	2(1.2)
patient have uncontrolled hypertension can undergoing cardiac catheterization	13(7.9)	150(90.9)	2(1.2)
Used or stopped medication before procedure	88(53.3)	54(32.7)	23(13.9)
Important investigations before procedure	113(68.5)	31(18.8)	21(12.7)
Overall Knowledge status	Poor, n (%)		123 (74.5)
	Good, n (%)		42(25.5)

5.4. Practice of nurses on cardiac catheterization

5.4.1 Pre-procedure of practice

As demonstrated in Table 4, for nursing assessments conducted after admission, exactly half (50.3%) of study participants reported always performing nursing assessment.(56.4%) of study participants answered always asking about a patient's allergy history. (57.6%) of study participants had answered sometimes regarding explaining the procedures to patients. Almost two-thirds (73.3%) of study participants had answered sometimes about psychological support and ensuring an empty bladder before procedures. Exactly two-thirds (75.2%) of study participants answered sometimes regarding shave and clean area before procedure. In terms of instructing patients to remain NPO, the majority (93.9%) of study participants had answered always follow the guideline.

(71.5%) of study participants had always performed in secure IV lines and checked informed consent.

Table 4:- Pre-procedure cardiac catheterization practice of nurses in selected cardiac centers in Addis Ababa, Ethiopia 2024 (n=165)

Items	Never, n (%)	Sometimes, n (%)	Always, n (%)
Nursing assessment after admission	12(7.3)	70(42.4)	83(50.3)
Ask history of allergy	6(3.6)	66(40.0)	93(56.4)
Explain about procedure	9(5.5)	95(57.6)	61(37.0)
Notify about drug given before procedure	19(11.5)	97(58.8)	49(29.7)
Psychological support and empty bladder	3(1.8)	121(73.3)	41(24.8)
shave and clean area before procedure	12(7.3)	124(75.2)	29(17.6)
Instruct patient to NPO	1(0.6)	9(5.5)	155(93.9)
Check patient vital sign, height and weight	2(1.2)	8(4.8)	155(93.9)
Check laboratory test	2(1.2)	16(9.7)	147(89.1)
Remove denture, watch, ring or glass	20(12.1)	100(60.6)	45(27.3)
Secure iv line and check informed consent taken	1(0.6)	46(27.9)	118(71.5)
Take ECG and check Echo	2(1.2)	14(8.5)	149(90.3)
Take ECG and check Echo	7(4.2)	98(59.4)	60(36.4)

5.4.2. Intra- procedure Practice

As indicated in Table 5, half (51.5%) of the study participants had always prepared all necessary materials for the procedure. (60.0%) of study participants had always checked patient identification and confirmed informed consent taken. A high number (84.8%) of study participants had always used principles of aseptic technique. Similarly, the majority (83.0%) of respondents reported always in terms of surgical hand washing technique. Regarding the cleaning of all catheters and guide wires, the finding revealed that (60.0%) of study participants had always cleaned catheter and guide wire.

Table 5:- Intra-procedure cardiac catheterization practice of nurses in selected cardiac centers in Addis Ababa, Ethiopia 2024 (n=165)

Items	Never, n (%)	Sometimes, n (%)	Always, n (%)
Prepare all necessary materials	16(9.7)	64(38.8)	85(51.5)
Check patient identification and informed consent taken	21(12.7)	45(27.3)	99(60.0)
Use principles of aseptic technique	19(11.5)	6(3.6)	140(84.8)
Use surgical hand washing technique	20(12.1)	8(4.8)	137(83.0)
Wear surgical glove, mask and head cover	21(12.7)	19(11.5)	125(75.8)
Administers analgesics as needed	40(24.2)	102(61.8)	23(13.9)
Cleans all catheters and guide wires	45(27.3)	21(12.7)	99(60.0)
Overall practice status	Poor, n (%)		56 (33.9%)
	Good, n (%)		109(66.1%)

5.4.3. Post- procedure of Practice

As shown in Table 6, two-thirds (74.5%) of study participants had sometimes explained post-procedure care to patients. The majority (72.1%) of the study participants reported always applying pressure for 20–45 minutes after sheath removal. More than half (53.9%) of study subjects had sometimes made assessments of temperature, pulse, and skin color of the extremity, and 81.8% of study participants had always assessed vital signs for 15 to 20 minutes. The majority (93.9%) of study participants had always made observations of the catheter insertion site for bleeding or hematoma. Regarding observing extremities, a high number (86.1%) of study participants always ensured that they were straight or immobilized the hand for 4 to 6 hours post-procedure. In general, more than half (52.7%) of study participants had good practice regarding the care of patient undergoing cardiac catheterization.

Table 6:-Post procedure cardiac catheterization practice of nurses in selected cardiac center in Addis Ababa, 2024 (n=165)

Items	Never, n (%)	Sometimes, n (%)	Always, n (%)
Explain post procedure care to patient	13(7.9)	123(74.5)	29(17.6)
Apply pressure for 20-45minutes after sheath removal	3(1.8)	43(26.1)	119(72.1)
Assess temperature, pulse and skin color of extremity	2(1.2)	89(53.9)	74(44.8)
Assess vital sign for 15-20 minutes and less frequently	2(1.2)	29(17.6)	134(81.2)
Encourage patient to increased fluid intake	3(1.8)	135(81.8)	27(16.4)
Observe sign of hypersensitivity to contrast	0(0.0)	121(73.3)	44(26.7)
Observe catheter insertion site for bleeding or hematoma	1(0.6)	9(5.5)	155(93.9)
Check patient urine output	3(1.8)	133(80.6)	29(17.6)
Observe extremity straight or immobilize hand for 4-6 hours after procedure	3(1.8)	20(12.1)	142(86.1)
Educate about sexual activity after procedure	83(50.3)	78(47.3)	4(2.4)
Give instruction to patient on self-management at home before discharge	3(1.8)	70(42.4)	92(55.8)
Post practice status	Poor, n (%)		84(50.9%)
	Good, n (%)		81(49.1)

5.4.4. The pre, intra and post nursing practice level

The nurses practice was considered as poor or good based on their score of like cart self-administer questioners mean value, Those scored greater than mean value was considered as they have good practice and those scored less than mean value was considered as poor practice.

According to this, in this study 82(49.7%) of study participants had poor pre nursing care practice level while 109(66.1%) study participants had good intra practice level and 84(49.1%) study participants had poor post nursing care practice level for patients undergoing cardiac catheterization(Fig.2).

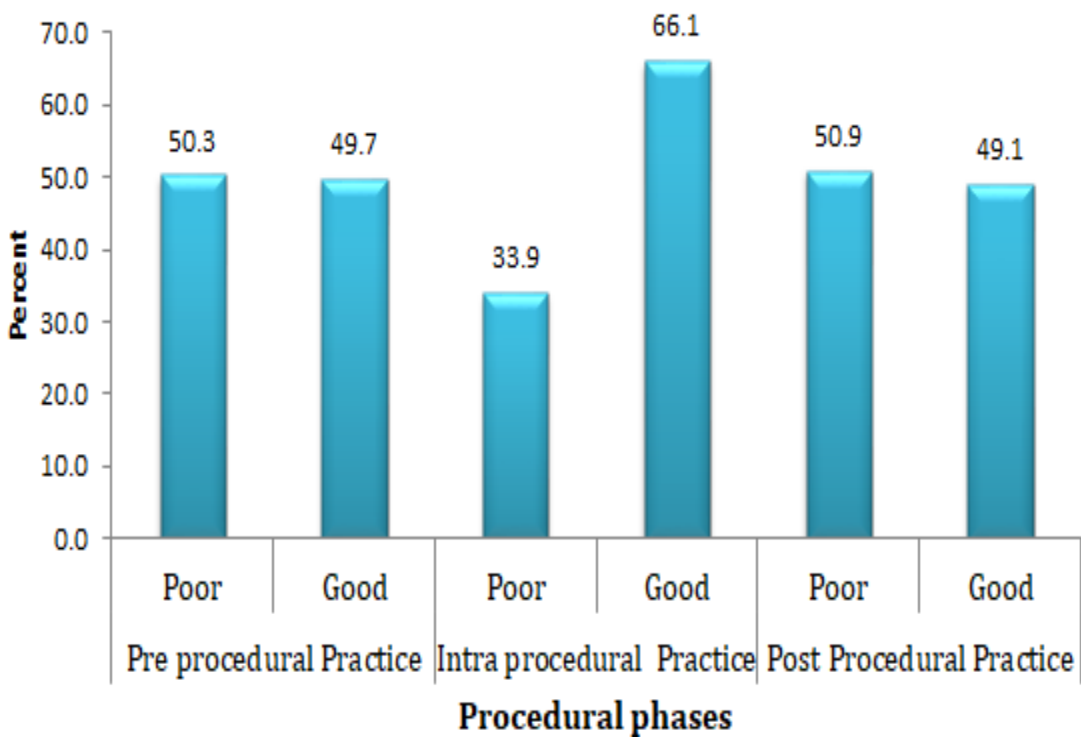


Figure 2:-Three procedural phase of nursing care practice level

5.4.4. over all nurses practice level

As shown in figure 3 more than half (52.7%) of study participants had good where as 47.3% had poor over all nursing care practice level for patients undergoing cardiac catheterization (Fig.4).

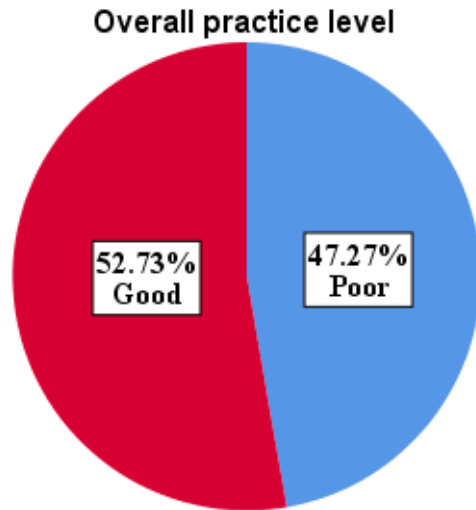


Figure 3: over all nurses' practice level in selected cardiac centers Addis Ababa, Ethiopia, 2024

5.5. Socio-demographic and institutionally related characteristics of study participants for Observation checklist

In the pre-procedure phase, 11 study participants were involved. Almost two-thirds (63.6%) were females. Similarly, the study participants with an age greater than 30 years old and a BSc degree accounted for 63.6% for each. More than half (54.5%) of study participants had 2–5 years of work experience. Nearly three-fourths (72.7%) of study participants had agreed with the availability of guidelines.

During the intra-procedure phase, 17 study participants were included. More than half (52.9%) of them were females. The majority (88.2%) of study participants were greater than 30 years old. Almost half (52.9%) of participants hold an MSc degree and work experience of greater than 6 years for each. All participants (100%) adhered to guidelines.

In the post-procedure phase, 15 study participants were involved in the study. Almost three-fourths (73.3%) of study participants were females. Study participants with an age greater than 30 years old and holding a BSc degree accounted for two-thirds (66.7%) for each. Nearly half (46.7%) of study participants had work experience of 2–5 years. However, training was less common, with

73.3% not having received it, but more than three-fourths (80.0%) of study participants had agreed with the availability of guidelines.

Table 7: Socio demographic and institutional characteristics of study participants for observational checklist in cardiac centers, Addis Ababa, 2024(n=165)

Variables	Category	Pre-procedure		Intra-procedure		Post-Procedure	
		Frequency	Percent	Frequency	Percent	Frequency	Percent
Sex	Female	7	63.6	9	52.9	11	73.3
	Male	4	36.4	8	47.1	4	26.7
Age group	<=30	4	36.4	2	11.8	5	33.3
	>30	7	63.6	15	88.2	10	66.7
Educational level	Diploma	1	9.1	1	5.9	-	-
	BSc	7	63.6	7	41.2	10	66.7
	MSc	3	27.3	9	52.9	5	33.3
Experience	6 months-1year	1	9.1	1	5.9	4	26.7
	2years-5 years	6	54.5	7	41.2	7	46.7
	>=6years	4	36.4	9	52.9	4	26.7
Training	Yes	2	18.2	11	64.7	4	26.7
	No	9	81.8	6	35.3	11	73.3
Nurse to Patient ratio	1:1	-	-	3	17.6	4	26.7
	1:2	7	63.6	11	64.7	8	53.3
	1:>=3	4	36.4	3	17.6	3	20.0
Guideline	Yes	8	72.7	17	100.0	12	80.0
	No	3	27.3	-	-	3	20.0

5.5.1. Pre-procedural Practice Observation of Cardiac catheterization

As shown in Table 8, more than half (54.5%) of study participants did not perform nursing assessments after admission. Study participants also asked about a history of allergy, but nearly three-fourths (72.7%) of them unperformed it. Consistently, the majority (81.8%) of study participants were unperformed about explaining the procedure. Conversely, the majority (81.8%) of study participants performed in checking patient vital signs, height, and weight and took ECG and checked echo for each. However, all study participants (100.0%) unperformed in stopping drugs before procedure.

Table 8: Pre practice nursing care practice level of observational check list

Items of pre-procedural of practice	Response	Frequency	Percent
Nursing assessment after admission	Unperformed	6	54.5
	Performed	5	45.5
Ask history of allergy	Unperformed	8	72.7
	Performed	3	27.3
Explain about procedure	Unperformed	9	81.8
	Performed	2	18.2
Notify about drug given before procedure	Unperformed	10	90.9
	Performed	1	9.1
Psychological support and empty bladder	Unperformed	9	81.8
	Performed	2	18.2
shave and clean area before procedure	Unperformed	9	81.8
	Performed	2	18.2
Instruct patient to NPO	Unperformed	1	9.1
	Performed	10	90.9
Check patient vital sign, height and weight	Unperformed	2	18.2
	Performed	9	81.8
Check laboratory test	Unperformed	1	9.1
	Performed	10	90.9
Remove denture, watch, ring or glass	Unperformed	10	90.9
	Performed	1	9.1
Secure iv line and check informed consent taken	Unperformed	4	36.4
	Performed	7	63.6
Take ECG and check Echo	Unperformed	2	18.2
	Performed	9	81.8
Drugs stopped before procedure	Unperformed	11	100.0

5.5.2. Intra procedural Practice of observation

As summarized in Table 9 all participants (100.0%) prepared necessary materials, used aseptic technique, wore surgical gloves, masks, and head covers, and cleaned all catheters and guide wires for the procedure. More than two-thirds (70.6%) of study participants did not perform checking patient identification and informed consent and administer analgesics for each.

Table 9: Intra practice level of observational check list

Items of intra-procedural of practice	Response	Frequency	Percent
Prepare necessary materials	Performed	17	100.0
Check patient identification and informed consent	Unperformed	12	70.6
	Performed	5	29.4
Use aseptic technique	Performed	17	100.0
Use surgical hand washing	Unperformed	6	35.3
	Performed	11	64.7
Wear surgical glove, mask and head cover	Performed	17	100.0
Administer Analgesics	Unperformed	12	70.6
	Performed	5	29.4
Clean all catheters and guide wires	Performed	17	100.0

5.5.3. Post procedural observation

As shown in Table 10 the majority (80.0%) of study participants were explaining post-procedure care to the patient was unperformed. Nearly two-thirds (60.0%) of study participants were unperformed applying pressure for 20-45 minutes after sheath removal. Similarly, about three-fourths (73.3%) of study participants unperformed in assessing temperature, pulse, and skin color of the extremity. Similarly, the majority of study participants unperformed, encouraging the patient to increase fluid intake (73.3%) and observing for signs of hypersensitivity to contrast (86.7%), respectively. Additionally, all (100%) study participants were unperformed in educating about sexual activity after the procedure.

Conversely, about 60% of study participants performed assessing vital signs for 15-20 minutes and less frequently for patients. In addition to this, all (100%) study participants were performed on applying a pressure dressing over the insertion site when withdrawing the catheter. About 93.3% of study participants performed observing the catheter insertion site for bleeding or hematoma.

Table 10: Post procedure Observational check list level

Items of post-procedural practice	Response	Frequency	Percent
Explain post procedure care to patient	Unperformed	12	80.0
	Performed	3	20.0
Apply pressure for 20-45minutes after sheath removal	Unperformed	9	60.0
	Performed	6	40.0
Assess temperature, pulse and skin color of extremity	Unperformed	11	73.3
	Performed	4	26.7
Assess vital sign for 15-20minutes and less frequently	Unperformed	6	40.0
	Performed	9	60.0
Encourage patient to increased fluid intake	Unperformed	11	73.3
	Performed	4	26.7
Observe sign of hypersensitivity to contrast	Unperformed	13	86.7
	Performed	2	13.3
Observe catheter insertion site for bleeding or hematoma	Unperformed	1	6.7
	Performed	14	93.3
Check patient urine output	Unperformed	11	73.3
	Performed	4	26.7
Observe extremity straight or immobilize hand for 4-6hours after procedure	Unperformed	6	40.0
	Performed	9	60.0
Apply pressure dressing over insertion site when catheter with draw	Performed	15	100.0
Encourage coughing when patient feel chest discomfort	Unperformed	10	66.7
	Performed	5	33.3
Educate about sexual activity after procedure	Unperformed	15	100.0
Give instruction to patient on self-management at home before discharge	Unperformed	8	53.3
	Performed	7	46.7

5.6. Nurses Level of satisfaction on current practice

As shown in Figure 6, nurses asked to rate their level of satisfaction, a very small number, 18(10.9%) of study participants, had been satisfied, and the majority, 92(55.8%) of study participants, had been unsatisfied regarding the current level of their practice.

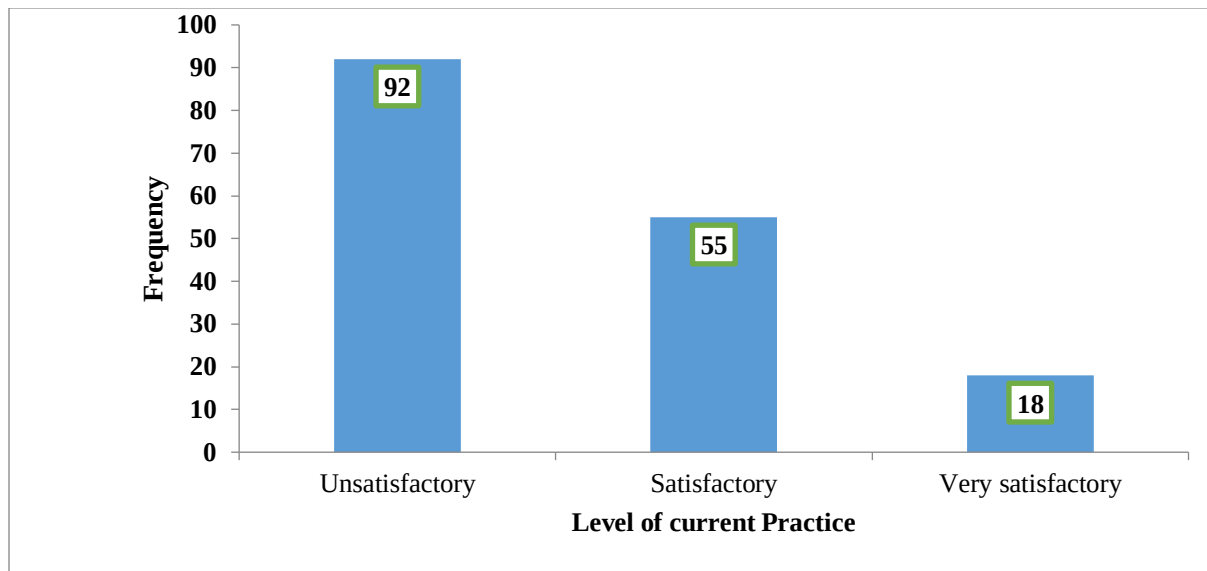


Figure 4 : Level nurses satisfaction on current practice in selected cardiac center in Addis Ababa, Ethiopia 2024 (n= 165)

5.4.6. Nurses reason of unsatisfactory

Nurses also state that their lack of experience, work load, and lack of training was the primary cause of their inadequate performance, as shown in Figure 7.



Figure 5: Reason for unsatisfied of nurses in selected cardiac centers in Addis Ababa, Ethiopia 2024

5.5. Associated factors of Practice

In binary logistic regression analysis, each independent variable was correlated with the dependent Variable, practice, and checked for significance at a P-value of 0.25. As shown in Table 7, a few variables like sex, age group, nurse-to-p patient ratio, experience in the cardiac unit, training on cardiac catheterization, and educational level were selected for multivariable logistic regression analysis.

In the final model only two variables, educational level and nurse to patient ratio were statistically significant. A study participants having MSc degree were 3.22 times more likely have good practice (AOR: 3.22; 95% CI: 1.52-6.83) as compared to those poor practice. Study participants with 1:2 nurse to patient ratio were 66% less likely to have poor practice (AOR=0.34; 95%CI: 0.16, 0.71) as compared to 1:≥3 nurse to patient ratio.

Table 11:-Associated factors of cardiac catheterization practice of nurses in selected cardiac centers in Addis Ababa, 2024 (n=165)

Variables	Category	Practice		COR(95%CI)	AOR(95%CI)	P-value
		Good, n (%)	Poor, n (%)			
Sex	Female	60(56.1)	47(43.9)	1.47(0.77,2.78)		
	Male	27(46.6)	31(53.4)	Ref		
Age groups in years	20-24	5(41.7)	7(58.3)	Ref		
	25-29	22(56.4)	17(43.6)	1.81(0.49,6.72)		
	30-34	21(43.8)	27(56.3)	1.09(0.30,3.92)		
	35-39	18(64.3)	10(35.7)	2.52(0.63,10.05)		
	≥ 40	21(55.3)	17(44.7)	1.73(0.46,6.43)		
Educational level	BSc/Diploma	46(52.9)	62(79.5)	Ref		
	MSc	41(47.1)	16(20.5)	3.45(1.73,6.90)	3.22(1.52,6.83)	0.002
Experience in cardiac unit	6months-1year	15(17.2)	20(25.6)	Ref	Ref	
	2-5years	39(44.8)	38(48.7)	1.37(0.61,3.06)	1.25(0.53,2.96)	0.613
	≥ 6 years	33(37.9)	20(25.6)	2.20(0.92,5.25)	1.58(0.60,4.15)	0.356
Training on cardiac catheterization	Yes	35(64.8)	19(35.2)	2.09(1.07,4.09)	1.45(0.66,3.18)	0.351
	No	52(46.8)	59(53.2)	Ref	Ref	
Nurse to patient ratio	1:1	38(43.7)	23(29.5)	Ref	Ref	
	1:2	28(32.2)	43(55.1)	0.39(0.20,0.80)	0.34(0.16,0.71)	0.004
	1:≥3	21(24.1)	12(15.4)	1.06(0.44,2.55)	0.71(0.27,1.85)	0.485
Guide line availability	Yes	71(53.0)	63(47.0)	1.06(0.48,2.31)		
	No	16(51.6)	15(48.4)	Ref		
Knowledge	Poor	66(53.7)	57(46.3)	Ref		
	Good	21(50.0)	21(50.0)	0.86(0.43,1.74)		

6. Discussion

The competence of nurses about practice regarding care for patients undergoing cardiac catheterization was very crucial, high nursing practice will decrease the mortality and improving patient's quality of life. The primary focus of this study was to assess nurses' practice and associated factors regarding care of patients undergoing cardiac catheterization in selected cardiac centers in Addis Ababa, Ethiopia. These study assessed the nurses' socio-demographic, institutional-related characteristics, knowledge, and practice regarding the patient's undergone cardiac catheterization using a binary logistic regression analysis model.

This study finding indicated that more than half (52.7%) study participants has good practice level, This finding is supported by a study done at sulaimani cardiac hospital on assessment of nurse's knowledge and practice showed that more than half(55%) of sample had good practice(26).This study inconsistency with the study done in Pakistan, Karachi on assessment of nurses knowledge and practice on care of patient undergoing cardiac catheterization show that (87%)study participants were carrying out poor practice(12)this difference may due to use of different tool to assess nurses practice.

Even if the overall nurses practice is found to be relatively good in our study, the score in pre procedure notifying drug given before procedure to patient, intra procedure administering anti pain, encourage patient fluid intake post procedure, check urine output were low and patient education about sexual activity was very low which is Avery important things for patient good outcome, relieving pain and to prevent post procedure complication

This study findings demonstrate that education level has a significant association with the good practice of nurses. This is inconsistency with study conducted in Iraq show that study participants has good practice regardless to educational level(34). This study suggests that factors other than formal education, such as on-the-job training, experience, or institutional protocols, may play a more significant role in ensuring high-quality care. This difference underscores the importance of considering local contexts and practices when evaluating the impact of education on nursing care.

Our study finding also reveal that the nurse-to-patient ratio is a significant factor affecting practice of nurses, with the 1:2 ratio demonstrating a negative association. This result emphasizes how

crucial having enough staff members is to achieving improved patient outcomes. This study finding is supported by study conducted in Egypt, Cairo on factors affecting nurse's practice(18).

Nurses were asked to rate their level of practice and 92(55.8) of them rated their level of Practice as unsatisfactory and then, they were asked to mention the possible factors affecting Their level of practice and the result revealed that lack of training, workload, lack of experience and insufficient performance monitoring system were the identified factors affecting the nurse's practice

Concerning socio demographic factors, there was no statistically significant association on age, sex, year of experience, knowledge and nurses practice in current study. This result was consistent with the study conducted in Al-Najaf cardiac center on role of nurses(35).

7. Conclusion and Recommendations

7.1. Conclusions

More than half nurses' practice was good regarding the care for patient undergoing cardiac catheterization in selected cardiac centers. Educational attainment and nurse-to-patient ratios were particularly significant. The study emphasizes how several factors like workload, lack of training and lack of experience can have a significant influence on the cardiac catheterization nursing care practice as nurse's state as the reason of their unsatisfied practice level.

7.2. Recommendations

For ministry of health and Nursing schools

Targeted education and training initiatives is essential for improving practice standards and ensuring patient safety

An educational program for nurses to improve the performance about care of patient undergoing cardiac catheterization and assess the impact of this program

The health service management should recruit nurses to balance their numbers with the respective patient in order to reduce work load and improve patient outcome.

Set a plan to program for postgraduate study means graduating nurses who specialize in cardiac catheterization. Nursing schools pay attention to cardiac catheterization and care of patient undergoing cardiac catheterization

For Nurses

Nurses must have update their knowledge and practice for better nursing care for patient undergoing cardiac catheterization and participate trainings related to cardiac catheterization.

8. Limitation and Strength of the study

Strengths

As far as I know this is the first study conducted in the country to assess nurses practice and associated factors regarding care for patient undergoing cardiac catheterization so it helps baseline data for further study in the future.

Pretest was done before actual administration of the prepared tool. The study involved six hospitals found in Addis Ababa city and tried to make the result representative.

Standard and valid questionnaire used in other studies was adopted and adapted for this study.

Limitation

In Ethiopia no adequate literature on related topics so make comparison impossible

Since this study had used a self-administered Questioners the study may be subjected to response set bias from the respondents

9. References

1. Jackson JL, Meyer GS, Pettit T. Complications from cardiac catheterization: Analysis of a military database. *Mil Med.* 2000;165(4):298–301.
2. Amin HE, Abd O, Ahmed A, Mahedy NE, Ibraheem MH, Ahmed ;, et al. Assessment of level of Knowledge and Practice of Patients Undergoing Cardiac Catheterization. Vol. 7, Port Said Scientific Journal of Nursing. 2020.
3. Desta DM, Nedi T, Hailu A, Atey TM, Tsadik AG, Asgedom SW, et al. Treatment outcome of acute coronary syndrome patients admitted to ayder comprehensive specialized hospital, mekelle, Ethiopia; A retrospective cross-sectional study. *PLoS One.* 2020;15(2):1–17.
4. E. Aboalizm S. Effect of Early Nursing Preparation on Anxiety Among Patients Undergoing Cardiac Catheterization. *Am J Nurs Sci.* 2016;5(5):222.
5. Dubey L, Sharma S. Cardiac catheterization and complications: initial experience. *J Coll Med Sci.* 2012;8(2):1–6.
6. Mohamed SH, Fathy AT, Mahmoud DM. Effect of an Intervention Protocol regarding Safety Measures on Knowledge, Practices and Attitude of Nurses Caring for patients undergoing cardiac catheterization. Vol. 14, Original Article Egyptian Journal of Health Care, September2023 EJHC.
7. Mwaura MW, Sell SL Van, Bailey C. CRIMSON PUBLISHERS Prevention of Risk and Complications Associated with Heart Catheterization. 2018;274–9.
8. Ebeed MS, Khalil N, Ismaeel M. Vascular complications and risk factors among patients undergoing cardiac catheterization. *Egypt Nurs J.* 2017;14(3):259.
9. Ambushe SA, Awoke N, Demissie BW, Tekalign T. Holistic nursing care practice and associated factors among nurses in public hospitals of Wolaita zone, South Ethiopia. *BMC Nurs.* 2023;22(1):1–8.
10. American Nurses Association. Nursing: Scope and Standards of Practice, 3rd Ed. Overview of the Content [Internet]. *Nursesbooks.org.* 2015. Available from: <https://www.lindsey.edu/academics/majors-and-programs/Nursing/img/ANA-2015-Scope-Standards.pdf>
11. Thabet OF, Ghanem HM, Ahmed AA, Abd-elmouhsen SA. Assessment of Nurse ' s knowledge and practice for patients undergoing Cardiac Catheterization Assessment of Nurse ' s knowledge and practice for patients undergoing Cardiac. 2019;(November).

12. Yaqoob A, Barolia R, Noor A, Nazar A. Knowledge and Practices among Nurses Regarding Patients' Care Following Cardiac Catheterization at a Tertiary Care Hospital in Karachi, Pakistan. *Open J Nurs.* 2019;09(08):809–34.
13. Bakr A, El-Ata A, Shehab MS, El-Zayat RN. ASSESSMENT OF NURSES' PERFORMANCE REGARDING CARE OF PATIENTS UNDERGOING CARDIAC CATHETERIZATION. Vol. 7, *Port Said Scientific Journal of Nursing.* 2020.
14. McEnroe-Petitte DM. Preparing a patient for cardiac catheterization. *Nursing (Lond).* 2011;41 Suppl:14–5.
15. Doi : -----, Hamed AM, Shehata AE, Soliman GH, Elwan WM. MNJ Menoufia Nursing Journal Faculty of Nursing Menoufia University Effect of Patient's Safety Educational Program on Nurses' Performance for Patients Undergoing Cardiac Catheterization Professor of Medical Surgical Nursing, 4 lecturer of Medical Surgical. Mnj [Internet]. 2023;8(1):151–66. Available from: <https://menj.journals.ekb.eg>
16. Thabet OF, Ghanem HM, Ahmed² AA, Abd-Elmouhsen SA. Effect of Developing and Implementing Nursing Care Standards on outcome of Patients Undergoing Cardiac Catheterization. 2019;8(1):42–54. Available from: www.iosrjournals.org
17. Faried A, Ali A, Abdelkhalik EF, Adel B, Ibrahim M, Sabek EM, et al. Effect of Implementing Educational Guidelines on Cardiac Nurses' Performance regarding Patient Safety Post Cardiac Catheterization 1. *Orig Artic Egypt J Heal Care.* 2023;14(3):619–32.
18. Abd Elawhabe HS, Shehata Mohamed H, Mohamed Khalil B. Factors Affecting of Nurses Performance for Patients undergoing Cardiac Catheterization. Vol. 10, *Original Article Egyptian Journal of Health Care.* 2019.
19. Hegazy A, Ibrahim M, Shokry W, El Shrief H. Work Environment Factors in Nursing Practice. *Menoufia Nurs J.* 2021;6(2):65–73.
20. Misganaw Dr. A, Mariam DH, Ali A, Araya T. Epidemiology of major non-communicable diseases in Ethiopia: A systematic review. *J Heal Popul Nutr.* 2014;32(1):1–13.
21. Omer Y. The Quality of Pre Cardiac Catheterization Nursing Care at Surgical Specialty Hospital-Cardiac Center in Erbil City. *Erbil J Nurs Midwifery.* 2020;3(1):75–81.
22. Nascimento RKM, Andrade KBS, Camerini FG, Franco AS, Marins ALC, Naves CB de OC. Nursing consultation prior to cardiac catheterization: patient satisfaction assessment. *Rev Enferm.* 2021;29:1–8.
23. Henedy WM, El-Sayad HES. Nurses' Knowledge and practice regarding patient's safety Post Cardiac Catheterization. *IOSR J Nurs Heal Science [Internet].* 2019;8(3):43–52. Available from: www.iosrjournals.org
24. Hasballah S, Shaor O, Mohamed M, Mohamed A. Assess Nurses' Knowledge and

- Attitude for Patient Safety in Cardiac Catheterization Unit. *Assiut Sci Nurs J*. 2019;7(19):151–9.
25. Rushdy R, Youssef Y, Elfeky Y. Nurses' knowledge and practice regarding care of patients connected to intra-aortic balloon pump at Cairo university hospitals. *Egypt J Nurs*. 2015;10(1):1–14.
 26. AZIZ S, AZIZE P. Assessment of Nurse's Knowledge and Practices Regarding Pediatric Cardiac Catheterization at Sulaimani Cardiac Hospital. *Mosul J Nurs*. 2022;10(1):111–23.
 27. Feroze M, Afzal M, Sarwar H, Galani A, Afshan S. Assess knowledge and practice of registered nurses about patient safety after cardiac catheterization in Punjab institute of cardiology, Lahore. *Pakistan J Med Heal Sci*. 2017;11(2):589–92.
 28. *Asian Nursing Research Journal* Assessment of Nurses ' Performance Regarding Standards of Care for Patients Undergoing Cardiac Catheterization Patients. 2023;(January):0–14.
 29. Mahmoud Jabr E, Mohamed Taha N, Ali Metwally E. Eman Mahmoud Nurses' Knowledge and Practice for Patient Undergoing Cardiac Catheterization Nurses' Knowledge and Practice Regarding Care for Patients Undergoing Cardiac Catheterization. *Zagazig Nurs J*. 2022;18(1):1–15.
 30. Thabet O, Ghanem H, Ahmed A, Abd-ElMouhsen S. Assessment of Nurse's knowledge and practice for patients undergoing Cardiac Catheterization. *Assiut Sci Nurs J*. 2019;7(17):95–101.
 31. O. Sharif B, H. Salih S, A. Sailh N, I. Salim B. Nurses' Knowledge Regarding Cardiac Catheterization at General Hospital in Rania City. *Kurdistan J Appl Res*. 2018;(September 2018):183–7.
 32. Berhe AG, Erena DB, Hassen IM, Mamaru TL, Soressa YA, Hassen IM, et al. CITY PROFILE CITY PROFILE.
 33. Abd El-Aty S, Abozead S, Ahmed A, Abd El-All HA. Assessment of Nurses' Knowledge and Practice Regarding Care of Patients Undergoing Percutaneous Coronary Intervention. *Assiut Sci Nurs J*. 2018;6(15.00):29–35.
 34. Halim A, Gourgees S. Evaluation of nurses practices toward patients who undergo cardiac catheterization. *Iraqi Natl J Nurs Spec*. 2006;19(1):39–47.
 35. Mustafa MA, Al-Tameemi HM, Al-Hchaim MH, Al-Metbai R. Nurses' Roles towards Patient undergoing Cardiac Catheterization at Al-Najaf Governorate: Patient Perspective. *Technol Sci Am Sci Res J Eng* [Internet]. 2020;64(1):200–9. Available from: <http://asrjetsjournal.org/>

10. Assurance of principal Investigator

Declare that this research Thesis entitled “Nurses practice and associated factors regarding care of patients undergoing cardiac catheterization in selected cardiac centers, Addis Ababa, Ethiopia, 2024” is my own work that have not been addressed in the study area as far as my knowledge touched and all the sources I used has been indicated and acknowledged as complete reference.

Name of investigator

Signature

Date

Name of Advisor/s

1. -----

2. -----

Name of Examiners

1. -----

2. -----

11. Appendix

Annex I consent form

Dear participant!

The purpose of this questionnaire is to study nurse's practice and associated factors regarding care for patients undergoing cardiac catheterization then, recommend appropriate solution. It is intended for the partial fulfillment of master's program at St. Paul's hospital millennium medical college of nursing school. The study is entitled as nurse's practice and associated factors regarding care for patient undergoing cardiac catheterization in selected cardiac centers Addis Ababa Ethiopia, 2024. Your participation in this study is valuable for the research result. Your answers to the questions will not be given to anyone else and no reports of this study ever identify you in anyway. Participation in this study does not involve any risk. I sincerely appreciate your participation and thank you for the answers provided.

If you have any question regarding the study, don't hesitate to contact at +251-929-30-97-38 or Email rahelayele28@gmail.com

Rahel Ayele

Master's Program Candidate at St. Paul's Hospital Millennium Medical College nursing school.

Are you satisfied with the information provided so far?

1. Yes 2. No 3.If No, please provide me your comments_____

Respondent's signature (Initial) _____

Date _____

Annex II Questioners

Table 5: Part I: Socio demographic characteristics

1. Age	-----
2. Gender	Female Male
3. Educational level	Diploma BSc MSc
4. Experience in cardiac units	-----
5. Training related to cardiac catheterization	Yes No
6. Nurse to patient ratio	1:1, 1:2, 1:3, 1:>5
7. Guide line availability	Yes No

Part II: knowledge Questioners

Instruction: Encircle the most appropriate answer.

1. Information about cardiac catheterization is very necessary for nurse especially regarding diagnosis and treatment procedure for patient's preparation before and after the procedure.

- 1. True
- 2. False
- 3. I don't know

2. Vital sings and ECG should be checked before the procedure.

- 1. True
- 2. False
- 3. I don't know

3. One of the important point is explaining procedure for the patient especially drinking a little amount of water daily after the procedure.

- 1. True
- 2. False
- 3. I don't know

4. The patient cannot take a shower until ten days after the procedure.

- 1. True
- 2. False
- 3. I don't know

5. The patient should take full rest for 9 hours after the procedure.

- 1. True
- 2. False
- 3, I don't know

6. The patients should avoid heavy activities for 3 months after the procedure

- 1, True
- 2, False
- 3, I don't know

7. Bruising, Bleeding are same complications of cardiac catheterization

- 1, True

2, False

3, I don't know

8. If the patient has severe uncontrolled hypertension the procedure can be done

1. True

2. False

3. I don't know

9. The patient should ask the physician to stop or use medications before the procedure such as insulin, antihypertensive drugs

1. True

2. False

3. I don't know

10. Blood urea, serum creatinine, Hepatitis and HIV are the main important investigations before the cardiac catheterization

1. True

2. False

3. I don't know

Table 6: Part: III Practice Questioner

Instructions: The following questions seek information about practice of nurse's regarding Care for patients undergoing cardiac catheterization pre, intra and post procedure. Place a tick mark (✓) in corresponding column according to your response.

No	Activities	Always	Some times	Never
	Before procedure			
1	Do you do Nursing Assessment for the patient after admission?			
2	Do you ask the patient for history of allergy?			
3	Do you explain the risk and complication of the procedure and characteristics of pain associated with procedure?			
4	Do Notify the patient about which drugs should be given before the procedures (e.g. Aspirin, clopedogril)?			
5	Do you psychologically support and Ask the patient to empty bladder?			
6	Do you Shave and clean the area before the catheter insertion site?			
7	Do you Instruct the patient to NPO (Nothing by mouth)?			
8	Do you Check patient vital sign, height and weight?			
9	Do you Check the laboratory test (CBC, PT, serum Creatine, blood sugar, electrolytes, chest X- ray, virology screen)?			

10	Do you Remove dentures, hearing aids or glasses of the patient?			
11	Do you secure IV line?			
12	Do you Check as informed consent taken?			
13	Do you Take ECG for the patient and Checking ECHO?			
14	Do you Notify the patient about which drugs should be stopped before the procedures (e.g. Insulin, Warfare, and Daonil)?			
	Intra procedure			
1	Do you prepare all necessary materials or equipment?			
2	Do you check patient identification and informed consent is taken?			
3	Do you use principles of aseptic technique?			
4	Do you use surgical hand washing technique?			
5	Do you wear surgical glove, mask and head cover?			
6	Do you administers appropriate analgesics as necessary if the patient experiences pain?			
7	Do you cleans all catheters and guide wires?			
	Post procedure			
1	Do explain the post procedure care to the patient?			
2	Do you remove the sheath?			
3	Do you apply manual pressure for 20-45 minute after sheath removal?			

4	Do you assess temperature, pulse and skin color of extremity?			
5	Do you assess the vital sign for (15-30) minutes for 2 hours initially and less frequently			
6	Do you Monitor the patient by ECG			
7	Do you encourage patients to increased fluid intake?			
8	Do you Observe for signs of hypersensitivity to the contrast and other sign			
9	Do you observe the catheter insertion site for bleeding or hematoma			
10	Do you Check the patient urine output			
11	Do you Observe the extremity in which catheter inserted straight for 4-6 hours after procedure			
12	Do you Immobilize the patient's arm on arm board, if the antecubital vessels are used			
13	Do you apply pressure dressing over the insertion site when catheter with draw			
14	Do you observe if there are complications after procedure?			
15	Do you educate about sexual activity after procedure			
16	Do you give instruction to the patient for self-management at home, before discharge			

17. How do you rate the overall level of your current practice regarding care of patient undergoing cardiac catheterization? Encircle your choice.

1. Very satisfactory

2. Satisfactory

3. Unsatisfactory

If you are not satisfied with your practice, what are the reasons?

1. lack of experience

2. workload

3. Insufficient performance monitoring systems

4. Lack of training

5. work environment (employees' safety, job security, good working relationship among employees, recognition for best effort and performance, greatly inspired for performing well and effective involvement in decision-making processes of the organization)

6. Guide line unavailability

Others: _____