



A STUDY TO ASSESS KNOWLEDGE AND PRACTICE OF NURSING OFFICERS REGARDING CARE OF PATIENTS WITH CENTRAL VENOUS CATHETER IN A VIEW TO DEVELOP A SELF INSTRUCTIONAL MODULE.

Name of Candidate

Miss. Usha Motiram Kawale

Name of College

SND College of BSC Nursing, Babhulgaon Yeola,
Nashik

Name of Guide

Dr. Anilkumar Jae

Name of Course

M.Sc Nursing

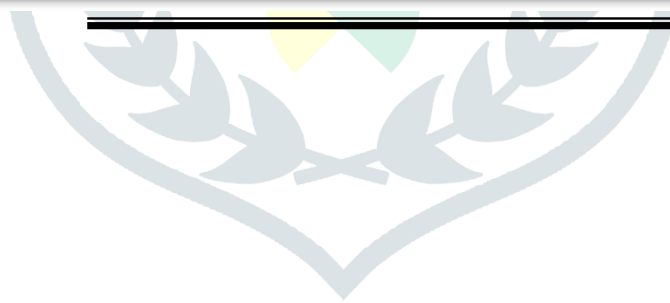
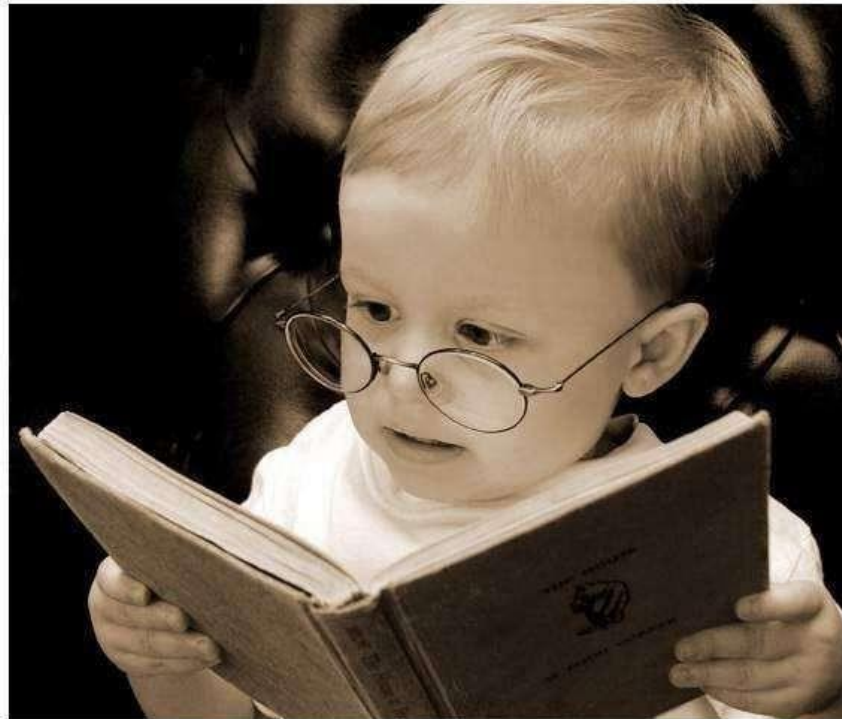
Name of Subject Speciality

Medical Surgical Nursing

Admission Year/Academic Year

2022-2023

1. INTRODUCTION



I. INTRODUCTION

“Constant attention and care by a nurse may be just as important as major operation by surgeon”

Dag Hammarskiöld

Critical care unit is a hospital facility for provision of intensive nursing and medical care for critically ill patients, characterized by high quality and quantity of continuous nursing and medical supervision and by use of sophisticated monitoring and resuscitative equipment's. Critical care nursing is the field of nursing with a focus on the care of the critically ill or unstable patients. Intensive care nurses are required to be comfortable with a wide variety of technology and its uses in the critical care settings. They should be skilled in handling equipment's such as hemodynamic and cardiac monitoring systems, mechanical ventilator therapy, intra-aortic balloon pumps, ventricular assist devices, continuous renal replacement equipment's, extracorporeal mechanical oxygenation circuits, central venous catheters and many other advanced life support devices.¹

Critically ill patients require continuous assessment of their vital organs including cardiovascular system to diagnose and manage their complex medical condition. This is most commonly achieved by means of direct pressure monitoring systems such as Central venous catheters, pulmonary artery catheters and intra-arterial blood pressure monitoring. Central venous catheters are commonly used in critically ill patients as most of them need a long term access. These catheters has got multiple functions like monitoring pressure of right side of the heart, administration of intra venous fluids, medications and nutrients.²

A central venous catheter is a long fine hollow tube with an opening at each end. One end provides access from outside your body to the other end which is situated in a large vein in the chest. It can remain in position for several months. Insertion of a central venous catheter in a human was first reported by Werner Forssman, a surgical intern, who described canalizing his own right atrium via the cephalic vein in 1929. A technique that facilitates catheter placement into lumens and body cavities — the Seldinger technique — was subsequently introduced by Sven-Ivan Seldinger in 1953. Insertion of a CVC using the Seldinger technique has revolutionized medicine by allowing the central venous system to be accessed safely and easily.³

The most common indications of central venous lines are determination of fluid volume status by measurement of pressure in vena cava and right atrium, evaluation of heart as an effective pump, assessment of vascular tension quality, unavailable peripheral access, conditions necessitating long term access, trauma, burns, high risk surgery, cardiovascular surgery, acute myocardial infarction, poor nutritional status, dehydration etc. Multilumen central venous catheters are now commonly used. They are used for administration of fluids and medications, administration of blood and blood products, total parenteral nutrition, concurrent administration of incompatible medications, venous blood sampling, central venous pressure monitoring, chemotherapy etc. Central lines prevent loss of peripheral lines due to caustic, erosive or painful drug therapy and also reduces necessity of repeated veni puncture. Some patients are able to continue their treatment at home with a central venous catheter in place. People who have a phobia of needles may prefer to have a central venous catheter. The physician threads central Venous catheters through subclavian vein, internal jugular vein, antecubital vein or femoral vein into the vena cava just above or within the right atrium.⁴

Improper management of patients with central venous catheter can give rise to various complications like line embolism, thrombosis, infection/sepsis, ischemia of involved limbs, cardiac perforation, pneumothorax, accidental puncture of an artery leading to bleeding, catheter displacement etc. A high reading of CVP indicates congestive heart failure, cardiac tamponade, increased blood volume (over transfusion or over hydration), vasoconstriction, tricuspid valve dysfunction, right ventricular dysfunction, left ventricular dysfunction, constrictive pericarditis, pulmonary hypertension etc. Low reading of CVP indicates hypovolemia (blood loss, diuresis), vasodilatation (drug induced), decreased venous tone, peripheral blood pooling etc.⁴

Role of nurses in care of patients with central venous catheter is tremendous. Before inserting a central venous catheter nurse has to ensure that patient is not taking any medication to prevent or treat blood clots, such as warfarin, heparin or aspirin. Aspirin has to be avoided one week before inserting the line as this prevents blood clotting normally. Before the procedure, blood samples are taken to ensure that blood count is satisfactory and patient's blood is able to clot normally. To prevent infection of central venous catheters, nurses have to practice strict aseptic techniques while giving care to patients. A vital sign has to be monitored

frequently and assessment of respiratory function is also important. Hand washing has to be done with antimicrobial agents. Central line must be kept clean and dry at the exit site, where it comes out of the chest, and also at the end where the bung is attached. A transparent dressing will cover the exit site while the stitches are in place. While the sutures are in place, the catheter must be dressed weekly, more frequently if the dressing becomes loose or soiled, using full aseptic technique. Regular flushing of line is necessary to prevent blockage of catheter. Firstly, the stale fluid within the line is withdrawn and thrown away. The line is then flushed with saline or hepsaline which is an anti-clotting agent. If central line is not in continuous use it must remain clamped.⁵

Today nursing is considered as a discipline of higher technology coupled with a wealth of complex information's. Nursing officer's role is to apply this knowledge in an efficient and cost effective manner. It is essential for nursing officers who are responsible for effective conduct of central venous catheter care, to have clear picture of its techniques, peculiarities, and above all its inherent dangers. They need to have knowledge and skill in care of patients with central venous catheter to prevent development of complications.

NEED FOR THE STUDY:

“Don't let your learning lead to knowledge; Let your learning lead to action.”

“jim Rohn”

Central Venous Catheters are now common among critically ill patients. More than five million central lines are inserted each year in the United States alone.⁶ Health Care Associated Infections (HAIs), previously known as Nosocomial infections are the fourth leading cause of death among hospitalized patients. Data from the Centers for Disease Control and Prevention (CDC, 2004) reports a nosocomial infection rate of 5%, of which 10% are blood stream infections (BSIs), and an attributable mortality rate of 15%.⁶

Four categories of infections are common in intensive care units: Blood stream infections (BSIs), urinary tract infections, lower respiratory tract infections, and pneumonia. Intra vascular devices are the common cause of blood stream infections. Approximately 80,000 catheter related blood stream infections occur in ICUs each year in United States. Catheter related blood stream infections are associated with high rate of morbidity,

prolonged hospitalizations, and increased costs. A comparative study done on incidence of blood stream infections associated with peripheral venous catheters and central venous catheters proved that peripheral catheters have rarely been associated with blood stream infections whereas central venous catheters accounts for majority of blood stream infections about 55,000 infections per year in United States. ⁷

Central venous catheters break the body's natural defense barrier (the skin), and so put the patients at risk of catheter-related infections, of which an estimated 200,000 cases occur worldwide each year. ⁸

Central venous catheterization can be lifesaving but is associated with complication rates of approximately 15%. A study conducted on major complications of central venous catheters found out that infection, accidental puncture of lungs (1 in 200 patients), displacement of catheter tip (very rarely) and accidental puncture of the artery which may cause bleeding (1 in 100 patients) are the commonest complications of central venous catheters. ⁵

14% of central venous catheters may become colonized in ICU patients resulting in 60,000 cases of bacteremia each year in United States. Because treatment of catheter-related infections is so costly (one infection increases hospital charges by \$11,000), prevention is the best strategy. ⁹

A study done at Escort Heart Centre, New Delhi showed that mortality due to central venous catheter related blood stream infection was 22.9% as compared with 0.2% in non central venous catheter related blood stream infection. ¹⁰

A study done at Rajiv Gandhi Cancer Institute New Delhi proved that major complications of central venous catheters are infection(1.27%), breakage/leakage (0.5%), dislodgement(0.31%) and occlusion(0.06%). ¹¹

A study was conducted to determine intensive care unit nurses knowledge of evidence-based guidelines for preventing central venous catheter related infections at selected hospitals of United States. 18% knew that central venous catheters should be replaced on indication only. Regarding dressings, 15% knew that these should be changed only when indicated and at least once weekly. 14% knew antibiotic ointments are not recommended because they trigger resistance. The recommendation to replace administration sets within 24 hours after administering lipid emulsions was recognized by 85%, but it was known by 5% only that these sets should be replaced every 96 hours when administering neither lipid emulsions nor blood products. The

study proved that nurses knowledge about care of central venous catheters is not adequate. Professional seniority and the number of intensive care beds in the ICU where nurses work showed not to be associated with better scores on the test.¹²

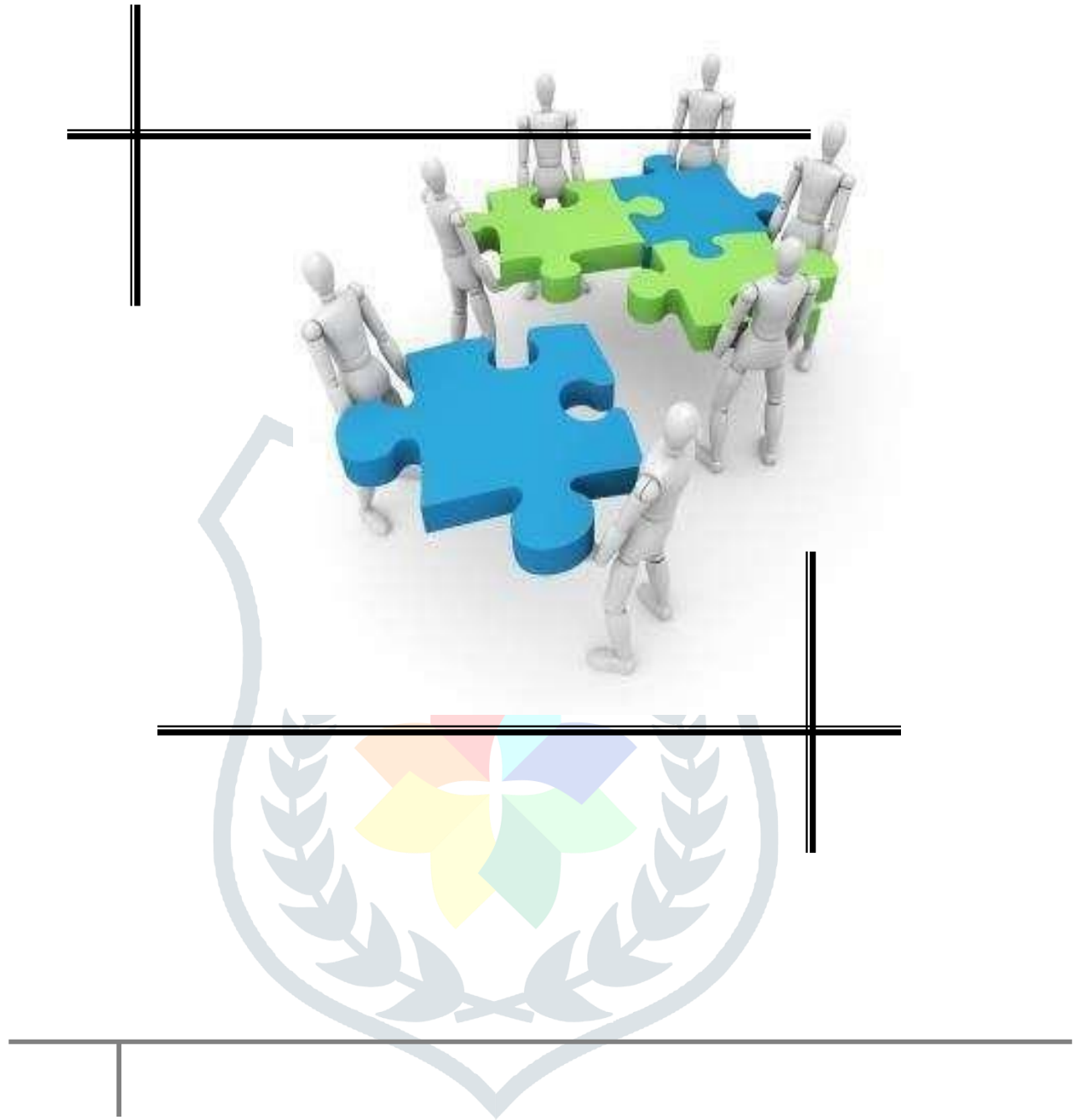
A study to assess the nurse's knowledge and practice of caring patients with intra venous therapy was done at Celal Bayer University hospital, Turkey. The study was done in two stages. The 1st stage was to determine the knowledge of nurses about using intra venous catheters, intra venous infusion treatment, symptoms and treatment of phlebitis. The 2nd stage involved observation of patients intravenous catheters for signs and symptoms of phlebitis and nursing interventions carried out for the same. The result revealed that nurses have high knowledge levels but their practice was not correlating with their knowledge which was evidenced by 67.24% of patients showing symptoms of phlebitis.¹³

Numerous studies have been published in support of staff education programs or self-instructional module to reduce intravascular catheter-related complications. Pediatric studies of staff education programs have shown that catheter infection rates can be reduced between 23 and 37%. Studies shows that education of nurses and proper care of central venous catheters can reduces infection rates by 41 to 66% in adult ICUs. The reduction of infection rates due to catheter care educational programs also leads to a decline in hospital cost.⁷ Prevention is better than cure. The above facts shows that its high time for nursing officers to improve their knowledge about care of central venous catheters and having knowledge is not adequate but putting it into practice is more important to prevent complications. The personal experience of the student researcher during clinical experience and above literatures regarding nursing officers knowledge and practice of central venous catheter care has inspired the investigator to do this study and to prepare a self-instructional module on care of patients with central venous catheter to improve nursing officers knowledge and to improve the quality of nursing care.

TITLE OF THE STUDY

Assess the knowledge and practice on care of patient with Central Venous Catheter among nursing officers working at sai siddhi hospital babhulgaon yeola in a view of develop self- instructional module.

2. *OBJECTIVES*



2. OBJECTIVES

STATEMENT OF THE PROBLEM:

“A descriptive study to assess the knowledge and practice of nursing officers working in critical care units regarding care of patients with central venous catheter in selected hospitals at Babhulgaon Yeola in a view to develop a self instructional module”.

OBJECTIVES OF THE STUDY:

1. To assess the level of knowledge of nursing officers regarding care of patients with central venous catheter.
2. To assess the level of practice of nursing officers regarding care of patients with central venous catheter.
3. To find the correlation between the knowledge and practice of nursing officers regarding care of patients with central venous catheter.
4. To find the association between the level of knowledge of nursing officers and selected socio demographic variables.
5. To find the association between the level of practice of nursing officers and selected socio demographic variables.
6. To develop a self instructional module for nursing officers on care of patients with central venous catheter

OPERATIONAL DEFINITIONS:

- 1. Knowledge:** Correct responses given by the nursing officers to the investigators questions on various aspects of CVC like general information's, insertion, care of CVC site, CVP monitoring, complications and removal of CVC as measured by a structured knowledge questionnaire.
- 2. Practice:** Refers to sequential steps performed by nursing officers during CVC site care and CVP monitoring as measured by a structured observational check list.
- 3. Nursing officers:** Refers to registered nursing officers working in Cardiac ICU, Cardio Thoracic ICU, and Medical ICU of Sai Siddhi Hospital Babhulgaon Yeola

4. Critical Care Unit : A hospital unit where patients requiring close monitoring and intensive care as long as needed and there will be highly technical and sophisticated monitoring devices and equipments and the staffs of the unit is educated to give critical care as needed by the patients. In the present study it includes Cardiac ICU, Cardio Thoracic and Medical ICU.

5. Central Venous Catheter:Central venous catheter is a small biocompatible tube or vascular access device made of soft flexible material like silicone, teflon or poly urethane, inserted into a large vein of the peripheral vascular system and tip of the catheter advanced into the superior vena cava at the opening of right atrium.

6. Selected Hospitals: Refers to Sai Siddhi hospital Babhulgaon Yeola

7. Self instructional module: A validated self-contained learning package prepared by the investigator for the nursing officers which focuses on various aspects of CVC like meaning and definition ,catheter material, types, indications and uses, contra indications, insertion sites, CVP, procedure for caring patients with CVC and complications of CVC.

Assumptions:

1. Nursing officers may have basic knowledge on care of patients with central venous catheter and practice it while providing patient care.
2. Self instructional module may improve the level of knowledge and practice of nursing officers regarding care of patients with central venous catheter.

HYPOTHESES:

H₁: There is a significant correlation between the knowledge and practice of nursing officers regarding care of patients with central venous catheter.

H₂: There is a significant association between level of knowledge of nursing officers and selected socio demographic variables.

H₃: There is a significant association between level of practice of nursing officers and selected socio demographic variables.

DELIMITATIONS:

The study is delimited to

- Nursing officers who are working in critical care units of selected hospital Babulgaon Yeola.
- A period of 30 days.
- 30 nursing officers.

CONCEPTUAL FRAMEWORK:

A frame work is a group of concepts and a set of prepositions that spell out the relationship between them. The overall purpose is to make scientific findings meaningful. Concepts mean those words describing mental images of phenomena. Concepts are the building blocks of theory.

Polit and Hungler states that conceptual framework is interrelated concepts or abstractions that are assembled together in some rationale scheme by virtue relevance to a common thing. The device that helps to stimulate research and the extension of knowledge by providing both direction and impetus.¹⁴

The present study was aimed at assessing the level of knowledge and practice of nursing officers regarding care of patients with central venous catheter in a view to develop a self instructional module. The conceptual frame work of this study is based on Ernestine Wiedenbach's helping art of clinical nursing theory (1964). It consists of three steps that are central purpose, prescription and realities.

Wiedenbach proposes a prescriptive theory for nursing which is described as conceiving of a desired situation and the ways to attain it. Prescriptive theory directs action towards an explicit goal. A nurse develops prescription based on central purpose and implements it according to the realities of the situations.¹⁵

Central purpose

It refers to what the nursing officers wants to accomplish. It is the overall goal which acts dynamically in relation to one's belief. The central purpose of the present study was to assess the level of knowledge and practice of nursing officers regarding care of patients with CVC.

Prescription

Refers to the plan of activity directed. It specifies the nature of the action that will fulfill the nursing officers central purpose and the rationale for that action. Here the investigator developed a structured knowledge questionnaire to assess the knowledge of nursing officers regarding CVC and an observational checklist to assess the practice of nursing officers regarding care of CVC site and CVP monitoring. A self instructional module was prepared by the researcher which focuses on various aspects of CVC like meaning and definition, catheter materials, types, indications and uses, contra indications insertion sites, CVP, procedure for caring patients with CVC and complications of CVC in order to improve the knowledge and practice of nursing officers regarding care of patients with central venous catheter.

Realities

Refers to the physical, physiologic, emotional and spiritual factors that come into the play in a situation involving nursing actions. The realities are

Agent: Nurse researcher. Recipient: Nursing officers.

Goal: To assess the level of knowledge and practice of nursing officers regarding care of patients with CVC.

Means: Structured knowledge questionnaire and observational checklist. Framework: Critical care units.

Nursing practice

According to Wiedenbach, nursing practice is an art and this has 3 components.

1. Identification of the patients need for help.
2. Ministration of the needed help.
3. Validation of the help given.

Identification of the need for help

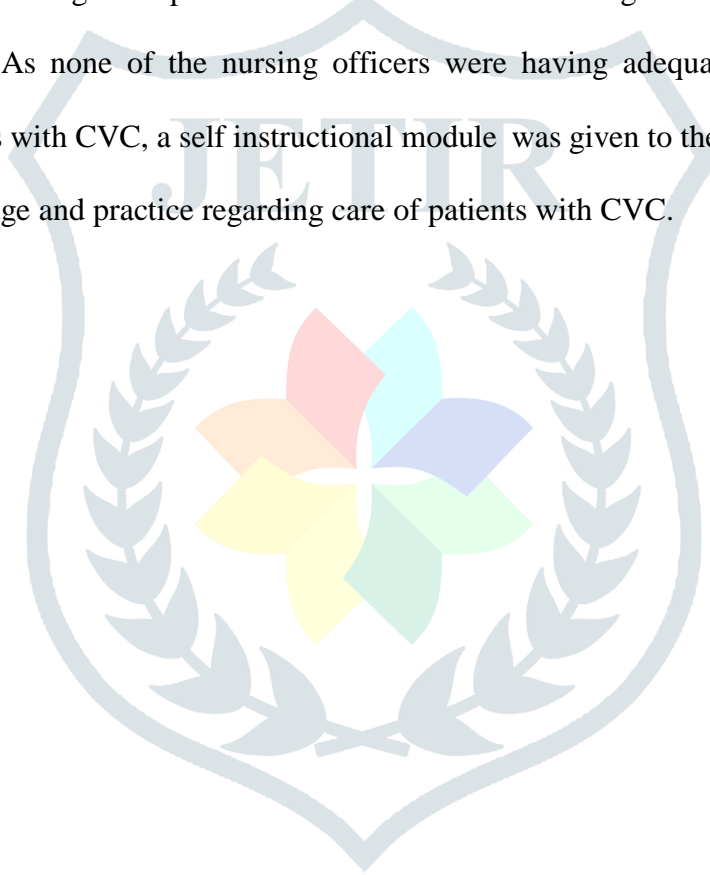
This phase involves determining the clients need for help based on the existence of the need. A structured knowledge questionnaire and observational checklist was used by researcher to assess the level of knowledge and practice of nursing officers regarding care of patients with CVC.

Ministration of the needed help

In this phase nurse researcher has prepared a structured knowledge questionnaire and observational checklist to assess the level of knowledge and practice of nursing officers regarding care of patients with CVC. A self instructional module on care of patients with CVC was prepared by researcher and was validated by 8 experts from the field of Medical Surgical Nursing, 1 Cardio Thoracic Surgeon and 1 Physician.

Validation of the needed help

In this phase the nurse researcher has done the analysis of the knowledge and practice scores obtained by nursing officers. The knowledge and practice scores obtained were categorized as inadequate, moderately adequate and adequate. As none of the nursing officers were having adequate knowledge and practice regarding care of patients with CVC, a self instructional module was given to the study participants in order to improve their knowledge and practice regarding care of patients with CVC.



The conceptual framework of the present study is depicted in Fig:1

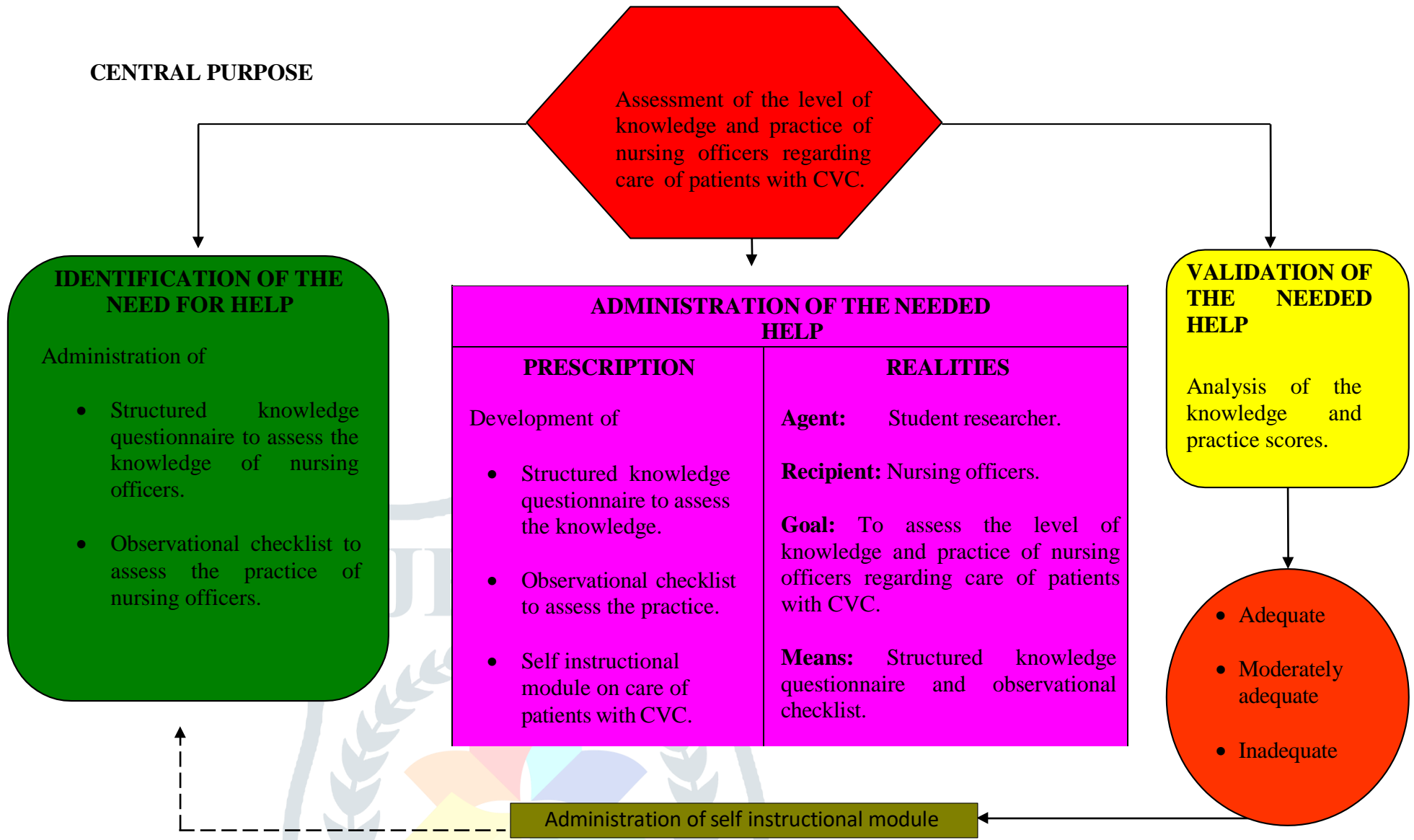


FIG: 1 CONCEPTUAL FRAMEWORK BASED ON ERNESTINE WIEDENBACH'S HELPING ART OF CLINICAL NURSING THEORY (1964).

3. REVIEW OF LITERATURE



3. REVIEW OF LITERATURE

The review of literature is traditionally considered as a systematic critical review of the most important published scholarly literature on a particular topic.

According to Polit and Hungler (1999) “Review of literature is a critical summary of research on a topic of interest generally prepared to put a research problem in context or it identifies the gaps and weakness in prior studies so as to justify a new investigation”.¹⁴

Literature review for the present study has been collected and presented under the following headings:-

Literature related to:

Section A: Advantages of central venous catheters. Section B: Complications of central venous catheters.

Section C: Prevention of complications of central venous catheters.

Section D: Nursing officer’s knowledge and practice regarding care of patients with central venous catheter.

Section E: Effectiveness of educational programmes on nursing officers knowledge and practice of care of patients with CVC.

Section A: Advantages of central venous catheters.

A retrospective study was conducted on the advantages of peripherally inserted central venous catheters in malignant patients for the safe administration of medications and to avoid repeated painful venipuncture’s at Rajiv Gandhi Cancer Institute, New Delhi. Of the 127 catheters inserted in 127 patients, mean catheter life was 161 days. Elective removal occurred in 63/101 (62.4%) and catheter removal due to complication rate was 2.41 per 1,000 catheter days. Infection, breakage/leakage, dislodgement, phlebitis, and occlusion rates were 1.27, 0.57, 0.31, 0.06, and 0.06 per 1,000 catheter days, respectively. The study proved that central venous catheters are convenient, cheap, safe, and reliable device for long term intravenous access in patients with malignancies.¹⁶

A study was conducted to find out the advantages of central venous catheters in malignant patients requiring long term venous access among 110 patients at All India Institute of Medical Sciences, New Delhi, India. The mean catheter life was 120 days and total catheter related complications were observed in 37 (34.54%) patients. The study concluded that long term venous access using central venous catheters is the safe and reliable method for administration of chemotherapeutic agents, antibiotics and blood products.¹⁷

According to an article on Nutritional Support in Critical Care units, 40 percent of adult patients are seriously malnourished when admitted to an ICU and parenteral nutrition with peripheral lines and central venous lines can improve the nutritional status of such patients and reduce the rate of micro-aspiration and risk of dangerous misplacement or displacement of the feeding tubes.¹⁸

A randomized comparative trial was conducted to find out the advantages of percutaneously inserted central venous catheters over peripheral intra venous catheters among 63 infants with very low birth weight at intensive care units of a tertiary care Hospital, United Kingdom. The study revealed that percutaneously inserted central venous catheter is more advantageous than peripheral intra venous catheters as it will reduce the number of insertion attempts, number of catheters used and also reduces number of painful intra venous procedures.¹⁹

The common indications of central venous catheters are hemodynamic monitoring, conduit for insertion of pulmonary artery catheter, administration of medications, transvenous cardiac pacing, plasmapheresis, hemodialysis and poor peripheral venous access.²⁰

A study conducted on uses of peripherally inserted long term central venous catheters in patients with cancer in home or non-acute settings at United States of America on 130 patients showed that the most common uses were antibiotic therapy, pain control, and parenteral nutrition.²¹

Section B: Complications of central venous catheters.

A study was conducted on complications of central venous catheterization at Global Hospital, Hyderabad, India. The common complications are arterial puncture (10.6 -13%), hematoma formation (4-8.4%), brachial plexus injury (1.7%), pneumothorax (0-6.6%) and hemothorax (1%). The procedure is also

associated with some rare but serious complications, including arterial rupture (<1%), arteriovenous fistula formation (0.2%), guide wire loss (0.5%), chylothorax and chylopericardium.²²

A study was conducted to determine the incidence, risk factors, outcome and pathogens of central venous catheter—related bloodstream infections at Escorts Heart Institute and Research Centre, New Delhi, India. The results showed that out of the 1,314 patients in the study, 35 (2.6%) had blood stream infections. Pathogens isolated were *Escherichia coli* (47%), *Acinetobacter* species (11.7%), *Enterobacter* species (5.8%), *Proteus* species (5.8%), Methicillin-resistant *Staphylococcus* species (11.7%), coagulase-negative *Staphylococcus* species (5.8%), and *Candida* (11.7%).²³

A study conducted to determine infection rate of central venous catheters at Hinduja National Hospital & Medical Research Center Mumbai among 122 patients with central venous catheters showed that 24 were infected. The organisms were, *Pseudomonas aerogenosa*, *Klebsiella pneumoniae* and *Enterobacter agglomerans*.²⁴

Most nosocomial infections originate from an intravascular device particularly the central venous catheter. Catheter-associated bacteremia prolongs hospitalization and greatly increase the cost of health care. It also contributes to an attributable mortality rate in the range of 10 percent to 25 percent.²⁵

A study conducted on central venous catheter associated infections at Geneva university hospital, Switzerland revealed that the risk for catheter associated blood stream infections due to central venous catheters is high with an incidence density of 2 to 7 episodes per 1000 catheter-days depending on ward-type, institution and geographical region.²⁶

A study conducted on micro organisms responsible for central venous catheter infections at Luke's medical centre Chicago proved that gram-negative aerobes (i.e., *Escherichia coli*, *Klebsiella*, *Pseudomonas aeruginosa*) caused 25% to 33% of infections, while gram-positive aerobes (i.e., *Staphylococcus aureus*, *S. epidermis*, and streptococcus species) caused more than 50% of all infection.²⁷

A study conducted on thrombotic complications of central venous catheters at ST Josephs hospital California revealed that ultrasonography with colour doppler imaging detected venous thrombosis in 33 percent of patients in medical intensive care units and in approximately 15 percent of these patients the

thrombosis was catheter-related.²⁸

A study conducted on thrombotic complications of femoral central venous catheters at medical intensive care unit of a selected hospital in Spain revealed that catheter-related thrombosis occurred in 21.5% of the patients with femoral venous catheters and in 1.9% of those with subclavian venous catheters. The risk of thrombosis associated with internal jugular insertion was four times the risk associated with subclavian insertion. The study proved that subclavian site is the preferred site for central venous catheterization than femoral and jugular sites as it reduces the chances of thrombotic complications.²⁹

A study was conducted to find incidence of Pneumothorax after insertion of central venous catheters in the intensive care units of 2 tertiary teaching hospitals at British Columbia, Canada. 5816 central venous catheters were inserted; 113 pneumothorax occurred within 2 days after insertions (1.9%). The rate during the last week of the month was greater (2.7%) than during the first, second or third weeks (1.7%, 1.8% and 1.4%, respectively). The study showed that rate of pneumothorax after insertion of central venous catheters are greatest in the last week of the month.³⁰

A retrospective study to determine the infectious and mechanical complication rate of central venous catheter at intensive care units of Salmaniya medical complex, Bahrain among 1319 patients reported 12 mechanical complications and 128 infectious complications.³¹

A survey conducted by Victorian National Nosocomial Infection Surveillance System on central venous catheter related infections in intensive care units of selected hospitals of Australia reported an annual infection rate of 3500 and annual mortality rate of 12%.³²

A retrospective study on common complications of central venous catheters, in pediatric intensive care units of Split University Hospital, London reported the commonest complications are catheter malposition (5.4%), occlusion of catheter (4.3%), catheter related blood stream infections (4%), catheter dislodgement (3.7%), pneumothorax (0.9%) and catheter damage (0.6%).³³

Section C: Prevention of complications of central venous catheters.

A prospective, randomized study performed in the medical and surgical intensive care units of Global Hospital, Hyderabad, India showed that insertion of central venous catheters using the landmark

technique may be associated with high failure rates of up to 35% and ultrasonography guided insertion is associated with a success rate ranging from 81.3 to 100% .³⁴

A randomized controlled trial to assess the impact of patient education regarding provision of their own catheter care on reducing the frequency of central venous catheter related infections conducted at the University Hospital of Copenhagen, Denmark revealed >50% reduction in the incidence rate of catheter related infections in the interventional group (40 patients) than the control group (40 patients).³⁵

A randomized trial conducted on central venous access sites to prevent venous blood clots, blood vessel narrowing and infections in patients requiring long-term intravenous therapy at School of Health and Social Care, Oxford Brookes University revealed that the upper chest area was better than the femoral area for central venous catheter insertion because of a lower risk of infection and blood clots forming in catheters.³⁶

A study conducted on incidence of infection in central venous catheters impregnated with antimicrobial agents at Celal Bayar University hospital, Turkey concluded that use of catheters impregnated with chlorhexidine and silver sulfadiazine lowered the rate of catheter-related bloodstream infections from 7.6 infections per 1000 catheter-days (4.6 percent of catheters) to 1.6 infections per 1000 catheter-days (1.0 percent).³⁷

A randomized controlled trial done to evaluate the effect of heparin on thrombus formation and infection associated with use of central venous catheters by Division of Pediatric Hematology, Mc Master University, Canada revealed that prophylactic heparin administration effectively reduces thrombus formation (relative risk 0.43; 95% confidence interval, 0.23, 0.78) and may reduce catheter-related infections (relative risk 0.26; 95% confidence interval, 0.07, 1.03).³⁸

A randomized controlled trial to assess the effectiveness of heparin in preventing central venous catheter related venous thrombosis by department of medicine, University of Toronto proved that use of heparin reduced the risk of catheter occlusion (relative risk 0.28, 95% confidence interval, 0.15, 0.53).³⁹

A prospective, randomized clinical trial to find the effectiveness of central venous catheters impregnated with anti microbial agents in reducing the rate of catheter related bloodstream infection as compared with unimpregnated catheters was done at Department of Medicine, Baylor College of Medicine, Houston among 865 patients. The study revealed that the rate of catheter related blood stream infections was

0.3% in catheters impregnated with chlorhexidine and silver sulfadiazine and 22.8% in unimpregnated catheters.⁴⁰

A study conducted on care of the non-tunnelled central venous catheters by Robert Koch-Institute (RKI) showed that chlorhexidine gluconate (from .5 to 2 percent), povidone-iodine (from 5 to 10 percent) or alcohol (70 percent) are the most effective disinfecting agents. The recommended dressing is gauze or transparent semi permeable polyurethane dressing. Interval between dressing changes varied between once a day and once in seven days, depending on the nature of the dressing applied.⁴¹

A randomized, prospective study to compare the effectiveness of transparent adherent dressing over dry sterile gauze dressing in patients receiving bone marrow transplantation at Johns Hopkins Oncology Centre, Baltimore revealed that transparent adherent dressing that was changed every fourth day caused less skin irritation, was preferred by patients, cost less, and required less nursing time than dry sterile gauze dressing that was changed daily.⁴²

A comparative study to determine the effectiveness of double lumen central venous catheters over single lumen catheters among oncology patients of Texas oncology Hospital, Houston proved that single lumen catheters were associated with more risk of bacteraemia of 57% compared to 50% in double lumen catheters. Fewer manipulations occurred in the single-lumen group compared with the double-lumen group, but the incidence of mechanical complications tended to be greater. When managed carefully, double-lumen central venous catheters are more beneficial than single lumen central venous catheters.⁴³

A study conducted on impact of dressing materials on central venous catheter infection rates at St. Joseph Mercy Hospital, United States of America showed that highly permeable transparent dressing can significantly reduce the rate of infections associated with central lines.⁴⁴

A study conducted to examine the infection rates and patency related to weekly flushing procedures for central venous catheters at Tom Baker Cancer Centre, Canada on 82 patients showed an overall infection rate of 19.1% and reduced patency in 13.5%. When compared with published complication rates, these findings support the use of a weekly flushing protocol over twice daily flushing.⁴⁵

Section D: Nurses knowledge and practice regarding care of patients with central venous catheter.

A descriptive study was conducted on Critical Care Nurses knowledge about preventing infections associated with Central Venous Catheter at Ghent University College, Belgium. Most of the nurses responded that the use of coated central venous catheters does not result in a significant decrease in catheter-related infections (value 0.4). Second, the respondents chose the use of polyurethane dressings at the catheter site (value 0.7), whereas both gauze and polyurethane dressings are recommended (value 0.2). Finally, the nurses selected 0.5% alcoholic chlorhexidine solution (value 0.8) over the recommended 2% aqueous chlorhexidine solution. All respondents thought correctly that the use of an antibiotic ointment at the catheter insertion site is not recommended because antibiotic ointments do not decrease the risk for catheter-related infections (value 0.6), whereas the correct reason is that the use of these ointments causes antibiotic resistance (value 0.3). The study suggested the need of a self study module to improve nurses knowledge as they had numerous misconceptions about the care of central venous catheters.⁴⁶

A study was conducted to assess nurses knowledge on care of patients with central venous catheter at Glasgow hospital, United Kingdom. The study showed that 68% of the nurses were having inadequate knowledge and 32% had moderately adequate knowledge. None of the nurses were found to have adequate knowledge.⁴⁷

A study was conducted to determine intensive care unit nurses knowledge of evidence-based guidelines for preventing central venous catheter related infections at selected hospitals of America. 18% knew that central venous catheters should be replaced on indication only. Regarding dressings, 15% knew that these should be changed only when indicated and at least once weekly. 14% knew antibiotic ointments are not recommended because they trigger resistance. The recommendation to replace administration sets within 24 hours after administering lipid emulsions was recognized by 85%, but it was known by 5% only that these sets should be replaced every 96 hours when administering neither lipid emulsions nor blood products. The study proved that nurses knowledge about care of central venous catheters is not adequate. Professional seniority and the number of intensive care beds in the ICU where nurses work showed not to be associated with better scores

on the test.⁴⁸

An observational study was conducted to assess nurses practice of central venous catheter care at University of California. The areas assessed were administration of medications and fluids, CVP monitoring and site care. The study revealed that 64% of nurses were having inadequate practice and 36% had moderately adequate practice. None of the nurses were found to have adequate practice.⁴⁹

A study conducted on effect of nursing care on preventing central venous catheter infections at intensive care unit of selected hospitals at United States proved that when a catheter care team or nurse provide standardized, meticulous care, central venous catheter related infection rates are significantly reduced, on average from about 25% to 33% to about 4%.⁵⁰

A retrospective study conducted to evaluate the use of the peripherally inserted central catheters that were inserted by nursing staffs to provide ongoing venous access in the general adult and paediatric patient population at Rochester Medical Centre, New York showed that Correct catheter tip placement in the superior vena cava was achieved in 95% of placements with a catheter dwell time ranging from less than 1 day to 353 days (average, 24 days). Strict adherence to obtaining and monitoring quality assurance kept catheter complications to a minimum.⁵¹

A survey done on adherence of nurses on hand washing practice before caring for central venous catheters in pediatric intensive care units of Sydney children's hospital Rand wick found an enormous level of variation among and between nurses reported practice and local policies. Intensive care unit staffs have been identified as one of the least adherent group of health care professionals to practice hand antisepsis before invasive procedures. There is no association between practice and demographic variables such as age, gender, year of experience etc.⁵²

A retrospective cohort study was conducted to determine whether central venous catheter dressing to be performed by nurses or infusion therapy team at university of Texas, Houston. The study revealed that there is no significant difference between the two groups in the risks of catheter-related site

infection or any catheter-related infection. The study concluded that the responsibility of CVC dressing changes could be delegated to the ward nurses without increasing the risk of CVC-related infections, resulting in an estimated cost saving in excess of \$90,000 per year.⁵³

Section E: Effectiveness of educational programmes on nurse's knowledge and practice of care of patients with CVC.

A study done to find out the effectiveness of self instructional module for nurses to prevent catheter-associated bloodstream infections at Missouri Baptist Medical Center, Saint Louis revealed that there was a significant reduction in infection rate from 4.9 cases/1000 catheter-days to 2.1 cases/1000 catheter-days after educational intervention. The study proved that a focused, educational intervention among nurses can result in a significant, sustained reduction in the incidence of catheter-associated bloodstream infection.⁵⁴

A Quasi experimental study conducted to find the effectiveness of nursing staff educational programme on compliance with central line care policy in cardio vascular ICU of Christie Hospital New York showed a significant increase in knowledge of nurses in post test following educational programme ($p < .001$, 95% confidence interval).⁵⁵

A study was conducted on effectiveness of teaching programme to increase knowledge of nurses on care of central venous catheter at pediatric cancer center of a large urban hospital in the Southwest. The study showed that the post-test mean score of 86.5% was significantly better than the pre-test mean score of 72% ($p < 0.001$). Results of the study indicates that an educational programme greatly improves knowledge and understanding of CVC care.⁵⁶

An observational study conducted on hand washing adherence of nurses working at intensive care units at a tertiary care hospital at Argentina revealed that hand washing adherence in ICU, for nurses was 23.1%. Following an educational intervention the adherence rate increased to 64.5% and reduced the occurrence of infections in patients.⁵⁷

A survey conducted on effectiveness of comprehensive educational interventions for nurses based on CDC (Centre for Disease Control and Prevention) guidelines to reduce rate of catheter related blood stream infections on 2043 patients with central venous catheters in intensive care units of selected hospitals of Australia proved a 57% reduction in catheter associated blood stream infection within 13 months.⁵⁸

A nonrandomized pre-post observational trial was conducted on effectiveness of education of nurses to decrease the risk for vascular catheter infections at Six intensive care units and one step-down unit at Wake Forest University Baptist Medical Center, North Carolina. The rate of catheter-related infections decreased from 4.51 infections per 1000 patient-days before the first course to 2.92 infections per 1000 patient-days 18 months after the first course (average decrease, 3.23 infections per 1000 patient-days; $P < 0.01$). The study proved that Standardization of infection control practices through a course is a cost-effective way to decrease related adverse outcomes.⁵⁹

A cohort study was conducted on use of Simulation-Based Education to reduce Catheter-Related Bloodstream Infections in an adult intensive care unit Northwestern University Feinberg School of Medicine, Chicago. There were fewer catheter infections after the simulator-trained residents entered the intervention ICU (0.50 infections per 1000 catheter-days) compared with both the same unit prior to the intervention (3.20 per 1000 catheter-days) ($P = .001$) and with another ICU in the same hospital throughout the study period (5.03 per 1000 catheter-days) ($P = .001$). The study showed that educational intervention in CVC insertion significantly improved patient outcomes.⁶⁰

Training nursing staff to insert CVCs has reaped benefits for patients, with reductions in the waiting times for catheter placement and treatment, reduction in line-related infection rates in the first 30 days after placement, and an improvement in the number of lines successfully placed.⁶¹

A study was conducted to find the effectiveness of educational programme to increase the knowledge and practice of nurses on care of patients with central venous catheter at University of California Los Angeles. The study showed that after the intervention, nurses knowledge increased from 55% to 77% and practice compliance increased from 30% to 90%. Rates of catheter related blood stream infections decreased from 7.5 to 2.9 per 1000 catheter days in one unit and from 10.4 to 0 per 1000 catheter days in another unit.⁶²

This chapter deals with review of literature. The research studies supported in this chapter provide the framework for the development of the structured knowledge questionnaire and observational checklist. They also provide valuable materials for developing the conceptual framework and setting a suitable research design. The studies reported were also helpful for giving an insight into various aspects of central venous catheters, prevention of complications and ways to improve nurses knowledge and practice regarding care of patients with central venous catheters.



4. RESEARCH METHODOLOGY



4. METHODOLOGY

This chapter deals with the methodology used for the problem selected and is discussed under the following headings: research approach, research design, variables, settings, population, sample and sampling technique, development and description of the tool, scoring key, content validity, reliability, pilot study, procedure for data collection and plan for data analysis.

Research approach

The research approach selected for the present study was descriptive survey approach.

Research design

The research design selected for the present study was non experimental descriptive research design.

Variables under study

The variables for the present study were

- **Study variables:** Knowledge and practice of nursing officers regarding care of patients with central venous catheter.
- **Attribute variables:** Personal and professional characteristics of nursing officers which include age, gender, professional qualification, professional experience, experience in present area and previous training programmes on care of patients with CVC.

Settings of the study

The study was conducted at selected hospital Babhulgaon Yeola. The criteria for selecting these settings were feasibility for conducting the study, availability of samples and familiarity of the investigator with these settings.

Sai Siddhi Hospital Babhulgaon Yeola is a 350 bedded multi speciality hospital with 6 ICU's and 53 ICU beds. The total number of ICU staffs were 108. The researcher selected Medical ICU for the study and total number of staffs were 60. Total bed strength of Medical ICU is 21 and average number of CVC insertion in a month is 15 with an average catheter life time of 6 days.

Sai Sddhi Hospital Babhulgaon Yeola . This is a speciality hospital for cardiology. Total bed strength is 71 and there are 2 ICU's. Both the ICU's were selected by the researcher for the study. Cardiac ICU is 20 bedded and Cardio Thoracic ICU is 6 bedded. Total number of ICU staffs were 47. Average number of CVC insertion in a month is 25 and average catheter life time is 5 days.

Population

The accessible population of the study was nursing officers working in critical care units of selected Hospital Babhulgaon Yeola.

Sample and sampling technique:

Criteria for selection of sample:

Inclusion criteria

Nursing officers involved in care of patients with central venous catheter in critical care units of Sai Siddhi Hospital Babhulgaon Yeola.

Exclusion criteria

Nursing officers who are not willing to participate in the study.

Sampling technique

In this study non – probability convenient sampling technique was used to select samples based on selection criteria.

Sample size

30 critical care unit nursing officers. 15 nursing officers working in critical care units of Sai Siddhi Hospital Babhulgaon Yeola and 15 nursing officers working in critical care units of Sai Sddhi Hospital Babhulgaon Yeola.

Development of the tool

After an extensive review of literature and discussion with the experts the structured knowledge questionnaire, observational check list and self instructional module on care of patients with central venous catheter was developed. The tool comprised of two sections.

Section I

Socio demographic profile consisting of 6 items which includes age, gender, professional qualification, professional experience, experience in present clinical area and participation in previous training programmes on care of patients with central venous catheter.

Section II

Part A: A structured knowledge questionnaire on care of patients with central venous catheter which has six sub sections.

- General information 4 items
- Insertion of CVC 11 items
- Care of CVC site 9 items
- CVP monitoring 8 items
- Complications of CVC 5 items
- Removal of CVC 3 items.

The knowledge questionnaire consists of 40 items to assess the knowledge of nursing officers regarding care of patients with central venous catheter.

Part B: An observational check list to assess the practice of nursing officers regarding care of patients with central venous catheter. This consists of two parts.

Care of CVC site 24 items

- CVP monitoring 14 items.

The observational checklist consists of 38 items to assess the practice of nursing officers regarding care of patients with central venous catheter.

Self instructional module

A self instructional module on care of patients with central venous catheter was developed by the researcher.

The content of the self instructional module were distributed under the following areas.

- Meaning and definition of CVC.
- Catheter material.
- Types of CVC
- Indications and uses.
- Contra indications of CVC.
- Sites for inserting CVC
- Central venous pressure.
- Procedure for caring of patients with CVC.
- Complications of CVC.
- Practice activity.

Scoring key

Section I:

Scoring key was prepared for coding the socio demographic variables.

Section II:

Part A: Structured knowledge questionnaire:

The total score was 40. All questions were knowledge domains. Correct answers were given one mark and wrong answers zero. Thus total of 40 marks were allotted under knowledge assessment. To interpret the level of knowledge, the scores were distributed as follows:

- In-adequate knowledge $\leq 50\%$.
- Moderately adequate knowledge 51 – 75 %.
- Adequate knowledge $> 75\%$.

Part B: Observational checklist:

The total score was 38. All the items were in the application domain. An observational check list was developed on care of central venous catheter site, central venous pressure monitoring etc. Each item had two options yes/no. The activity performed by the subject was given a score of one and the activity not

performed by the subject was given zero score. Thus a total of 38 marks were allotted under skill assessment.

To interpret the level of practice, the scores were distributed as follows:

- In-adequate practice $\leq 50\%$.
- Moderately adequate practice 51 – 75 %.
- Adequate practice $> 75\%$.

Content validity

10 experts comprising of 8 nursing experts from Medical Surgical Nursing department, one Physician and one Cardio Thoracic Surgeon established the content validity of the tool. Minor suggestions regarding modifications of options was done. The final tool was prepared as per the suggestions given by the experts.

Reliability

The reliability of the structured knowledge questionnaire was obtained by split half method, $r = 0.81$ and $r' = 0.89$ and observational checklist was obtained by inter rater reliability method, $r = 0.72$ and $r' = 0.84$. Hence the tool was found to be reliable for the study.

Pilot study

The pilot study was conducted from 3rd to 10th October 2023 at selected Hospital Babhulgaon Yeola, which is a medical teaching hospital. The study was conducted at Medical ICU which is a 8 bedded ICU with 18 nursing officers. The average number of CVC insertion in a month is 12 and average catheter life time is 8 days.

An administrative approval was obtained from the Medical Director and Nursing Superintendent of Selected Hospital Babhulgaon Yeola to conduct the study. 5 nursing officers taking care of patients with CVC were selected by non- probability convenient sampling technique. Consent was taken from the participants. The practice of CVC site care and CVP monitoring by nursing officers were assessed by using an observational checklist. Participatory Participatrry observation method was used by the researcher. After that self administered knowledge questionnaire was administered on the same nursing officers whose practice was assessed priorly.

The data was analysed using descriptive and inferential statistics. The results revealed that 2(40%) of the nursing officers had inadequate knowledge, 3(60%) moderately adequate knowledge and none of the nursing officers had adequate knowledge. 2(40%) of the nursing officers had inadequate practice, 3(60%) had moderately adequate practice and none of them had adequate practice.

There was sufficiently high positive correlation between the knowledge and practice of nursing officers regarding care of patients with CVC ($r = 0.81$). The study showed that there is no association between the level of knowledge and practice with selected socio demographic variables. The findings revealed that the study is feasible.

Procedure for data collection

Formal permission to conduct the study was obtained from concerned authorities of Selected Hospital Babhulgaon Yeola. The study was conducted during the month of October to November 2023 for a period of 30 days.

30 nursing officers taking care of patients with CVC were selected by using non probability convenient sampling technique from Medical ICU of Selected Hospital Babhulgaon Yeola. Consent was obtained from the samples to participate in the study. The investigator assured the confidentiality of the reply and the findings.

Participatory observational method was used by the researcher to assess the practice of CVC care by nursing officers. Nursing officers were observed while performing CVC site care and CVP monitoring and each action performed by the nursing officers was recorded using a check list. A score of one was given to the action performed and a score of zero was given to those actions not performed. After that a self administered knowledge questionnaire was given to those nursing officers whose practice was assessed before. An average of 30 minutes was taken by the participants to fill the questionnaire.

Plan for data analysis

The data analysis was planned to include descriptive and inferential statistics.

Descriptive statistics

- Frequency and percentage distribution were used to analyze the level of knowledge, level of practice and selected socio-demographic variables.
- Mean, mean percentage and standard deviations were used to assess the knowledge and practice of nursing officers.

Inferential statistics

- Karl Pearson's correlation co-efficient was used to find the correlation between the knowledge and practice of nursing officers.
- Chi-square test was used to find the association between the level of knowledge and level of practice of nursing officers with selected socio demographic variables.



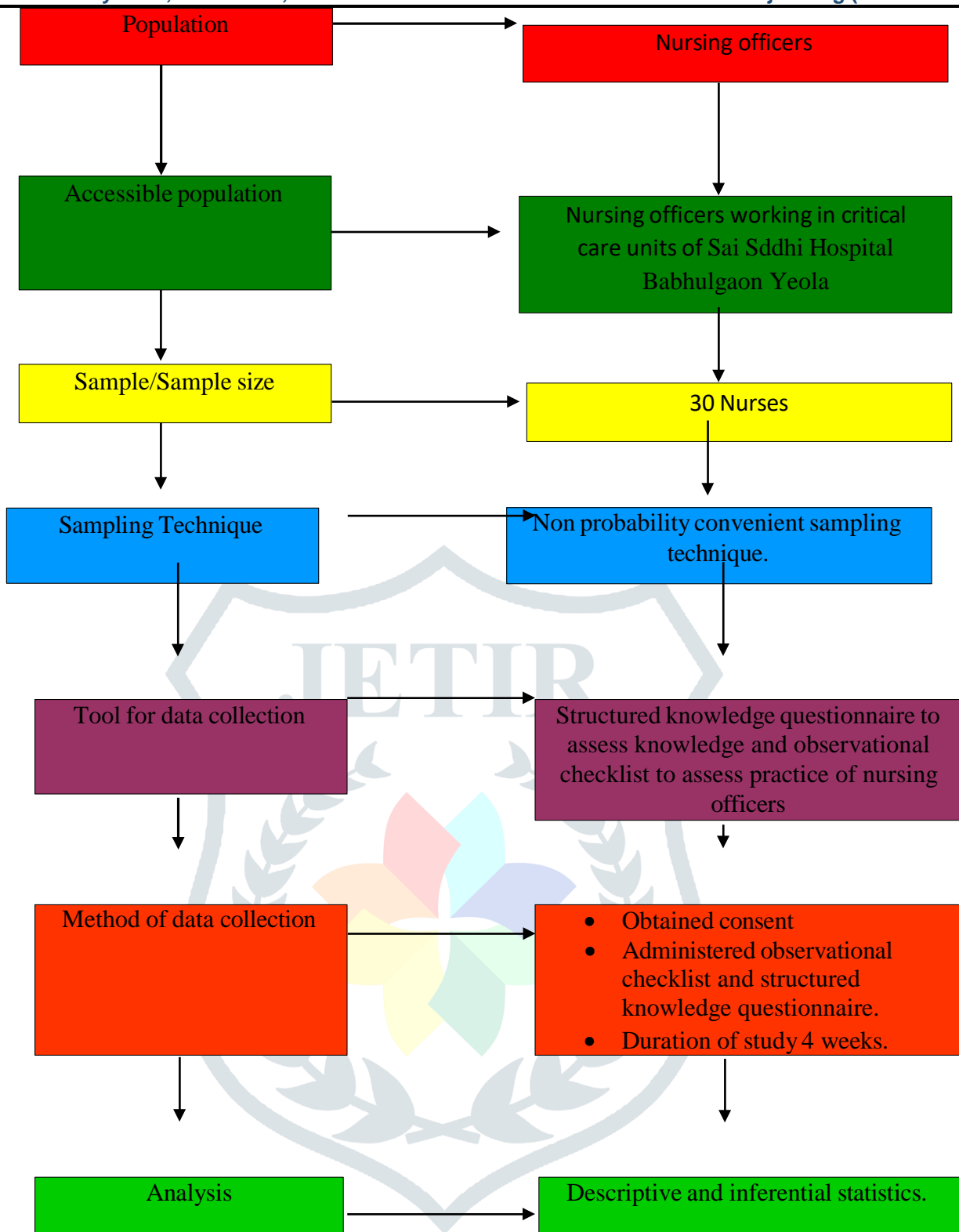


Fig 2: Schematic representation of the study design.

5. RESULTS AND ANALYSIS



5. RESULTS

This chapter deals with the analysis and interpretation of data collected from 30 nursing officers working in critical care units of selected hospital Babhulgaon Yeola, in order to evaluate the level of knowledge and practice of nursing officers regarding care of patients with central venous catheter. The purpose of analysis is to reduce the data to a manageable and interpretable form, so that the research problem can be studied and tested.

The data collected were analyzed according to the plan for data analysis which includes both descriptive and inferential statistics. The data findings have been tabulated according to the plan for data analysis and interpreted under the following objectives:

1. To assess the level of knowledge of nursing officers regarding care of patients with central venous catheter.
2. To assess the level of practice of nursing officers regarding care of patients with central venous catheter.
3. To find the correlation between the knowledge and practice of nursing officers regarding care of patients with central venous catheter.
4. To find the association between the level of knowledge of nursing officers and selected socio demographic variables.
5. To find the association between the level of practice of nursing officers and selected socio demographic variables.
6. To develop a self-instructional module for nursing officers on care of patients with central venous catheter.

PRESENTATION OF DATA:

The data obtained were entered in a master data sheet for tabulation and statistical processing. The analysis of the data was organized and presented under the following sections:

Section A: Socio demographic variables of nursing officers.

Section B: Assessment of level of knowledge of nursing officers regarding care of patients with central venous catheter.

Section C: Assessment of level of practice of nursing officers regarding care of patients with central venous catheter.

Section D: Correlation between the knowledge and practice of nursing officers regarding care of patients with central venous catheter.

Section E: Association of level of knowledge of nursing officers with selected socio demographic variables.

Section F: Association of level of practice of nursing officers with selected socio demographic variables.

SECTION A: SOCIO DEMOGRAPHIC VARIABLES OF STAFF NURSING OFFICERS.

The socio demographic variables of the subjects were described in terms of age, gender, professional qualification, professional experience, experience in present clinical area and participation in previous training programmes on care of patients with central venous catheter.

The frequency and percentage distribution of the subjects according to personal characteristics are shown in the following table and figures.

Table 1: Frequency and percentage distribution of socio demographic variables.

n = 30

Sr No	Socio demographic variables	Frequency (f)	Percentage (%)
1	Age in years.		
	21 – 25	19	63.33
	26 – 30	9	30
	31 – 35	2	6.67
	36 and above	0	0
2	Gender		
	Male	5	16.67
	Female	25	83.33
3	Professional qualification		
	GNM	23	76.67
	B.Sc Nursing PC.	7	23.33
	BSc Nursing	0	0
4	Professional experience		
	<1 year	2	6.67
	1-5 years	21	70
	6–10 years	7	23.33
	>10 years	0	0

5	Experience in present clinical area <1 year 1–3years 4–6years >6 years	8 13 6 3	26.67 43.33 20 10
6	Have you undergone any training programmes on care of CVC? Yes No	0 30	0 100

The above table 1 shows that maximum number of nursing officers 19(63.33%) were in the age group of 21-25 years, 9(30%) were in the age group of 26-30 years and 2(6.67%) were in the age group of 31-35 years. There were no nursing officers in the age group of 36 and above. Majority of the nursing officers 25 (83.33%) were females and only 5(16.67%) were males.

In relation to professional qualification majority of the nursing officers 23 (76.67%) had diploma in general nursing and only 7(23.33%) had BSc Nursing degree.

In relation to years of experience majority of the nursing officers 21 (70%) had 1-5 years of experience, 7 (23.33%) had 6-10 years of experience and only 2 (6.67%) had less than 1 year experience. There were no nursing officers above 10 years of experience.

Most of the nursing officers 13 (43.33%) were having 1-3 years' experience in the present clinical area, 8(26.67%) had experience less than 1 year, 6(20%) had 4- 6 years of experience and only 3(10%) had the experience more than 6 years.

None of the nursing officers had undergone any training programmes on care of patients with central venous catheter.

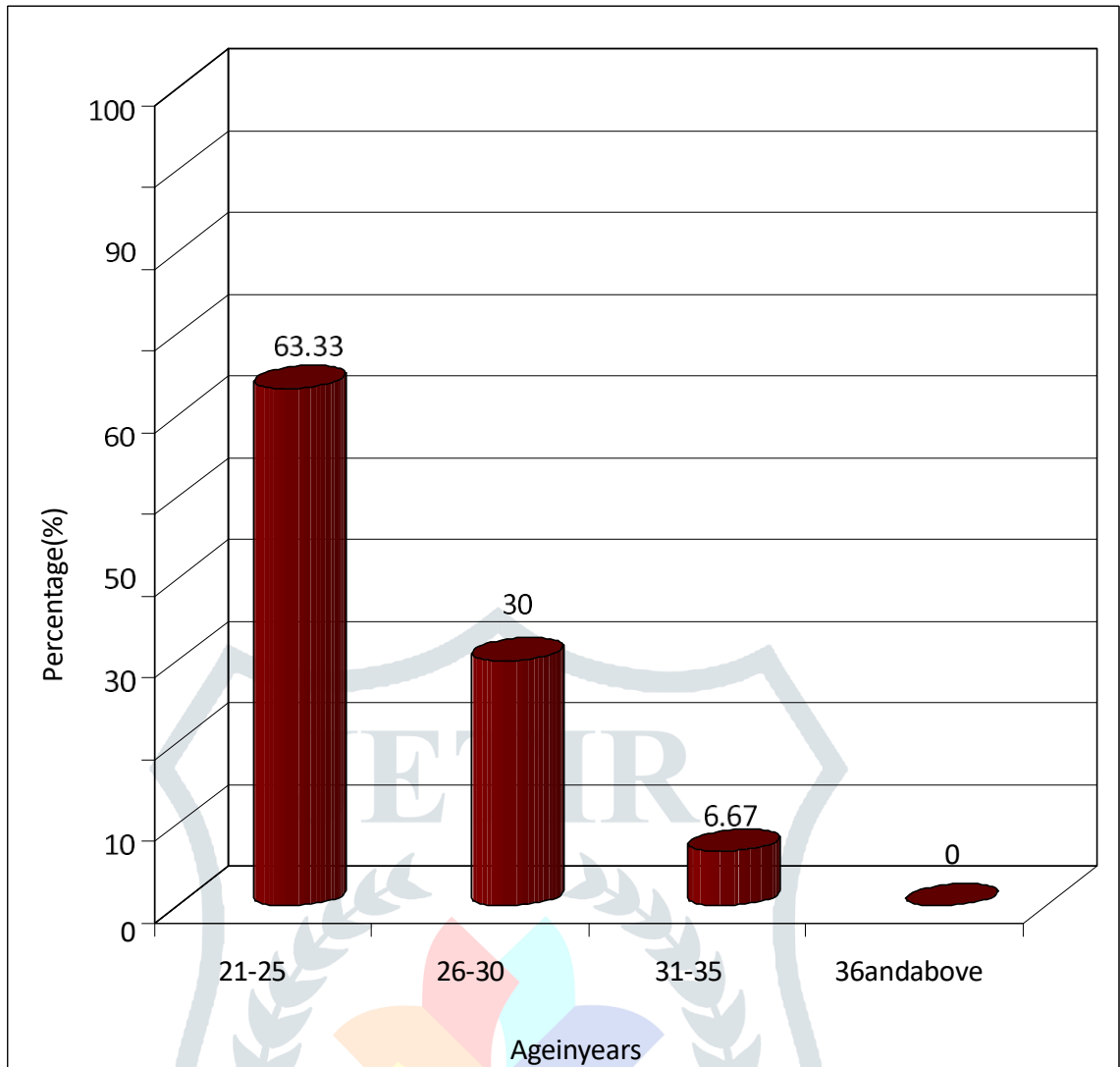


Fig3:Percentage distribution of nursing officers according to their age.

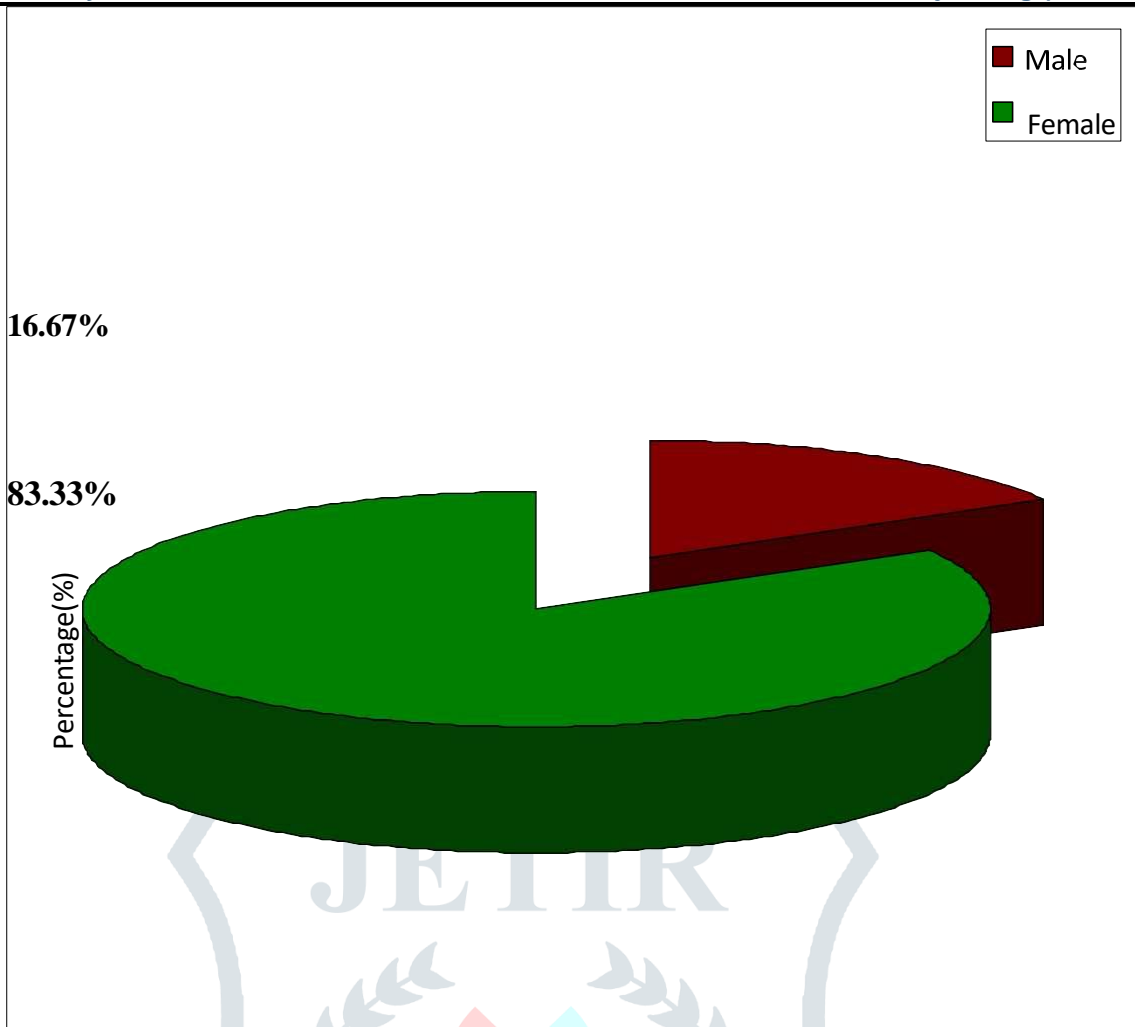


Fig4:Percentage distribution of nursing officers according to their gender

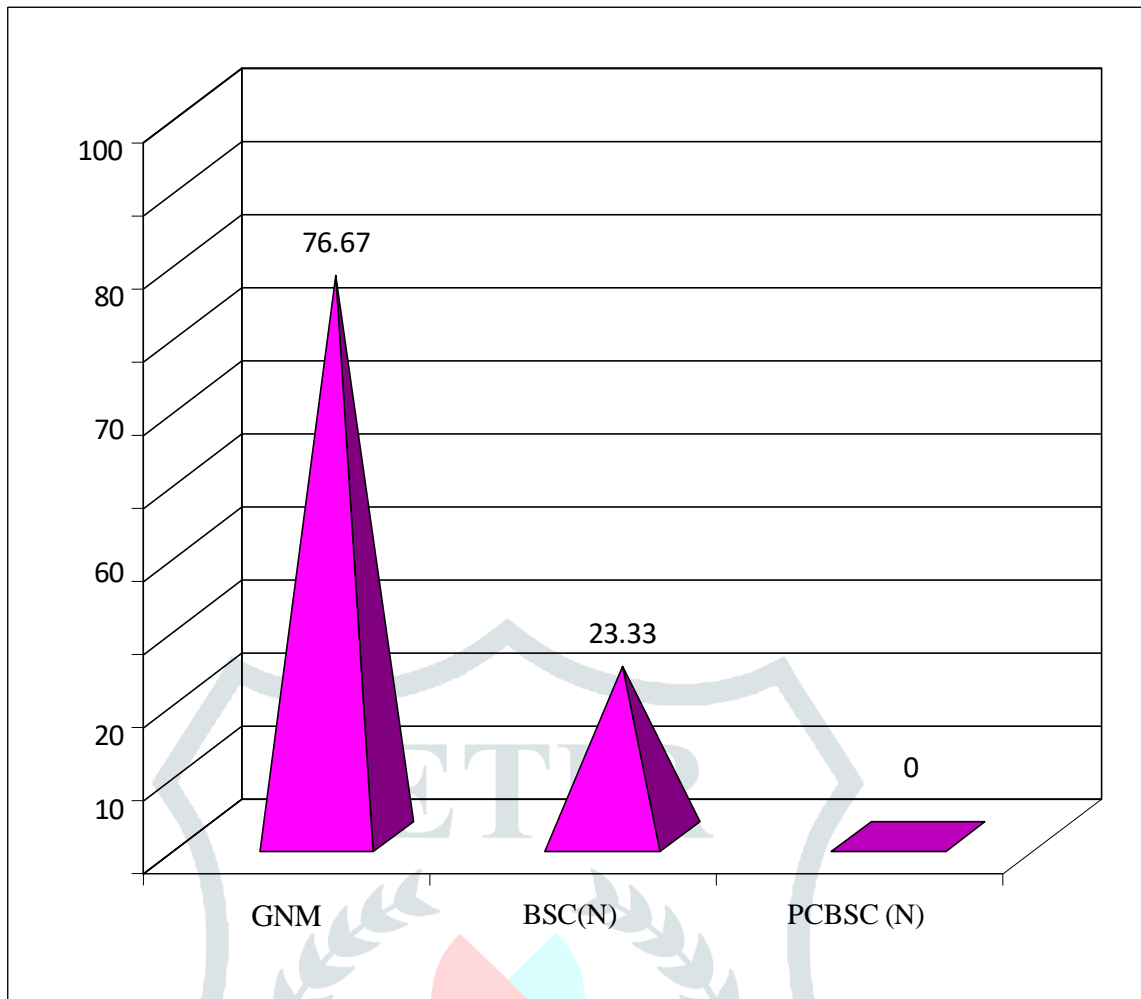


Fig 5: Percentage distribution of nursing officers according to their professional qualification.

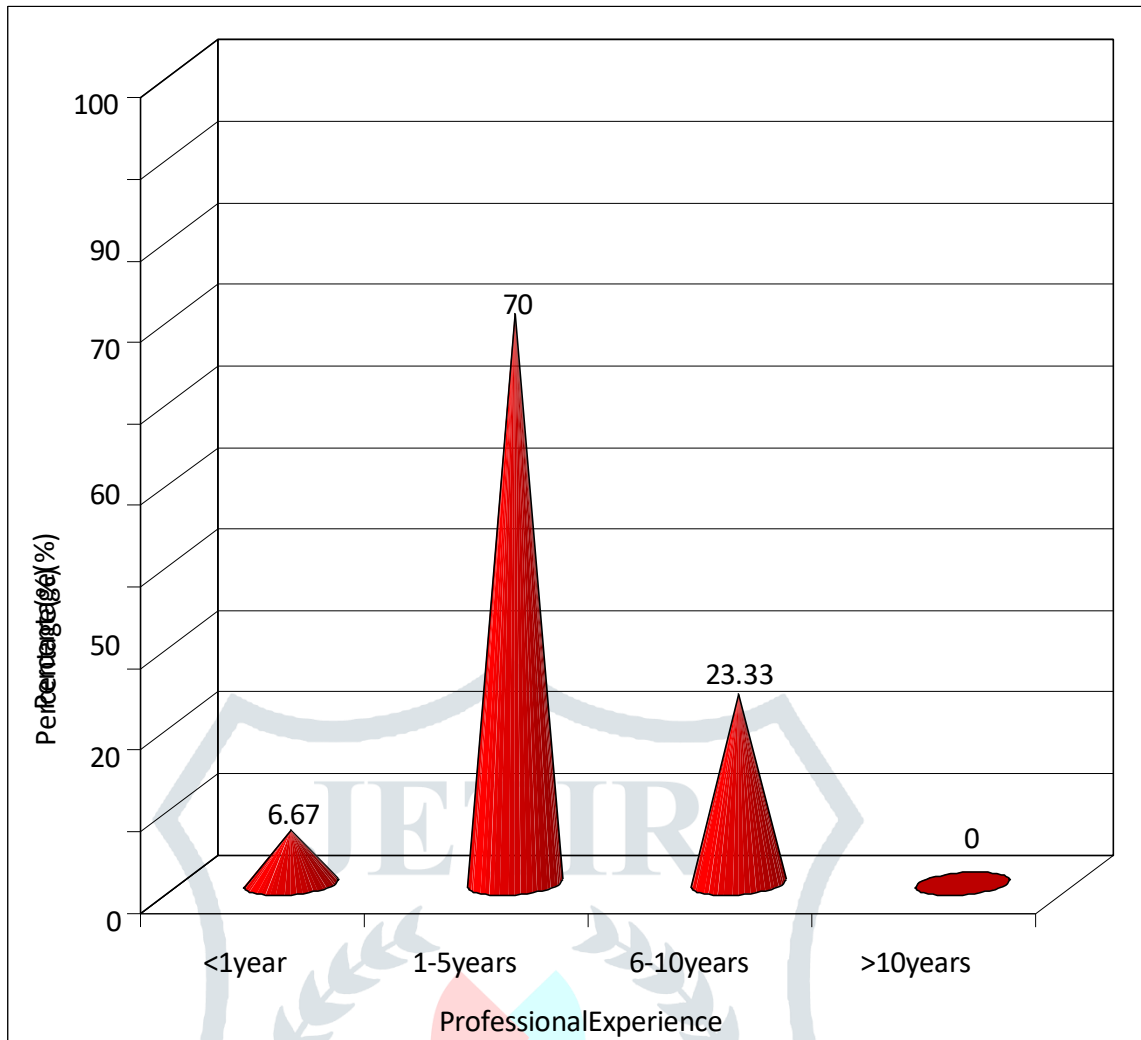


Fig6:Percentage distribution of nursing officers according to their professional experience.

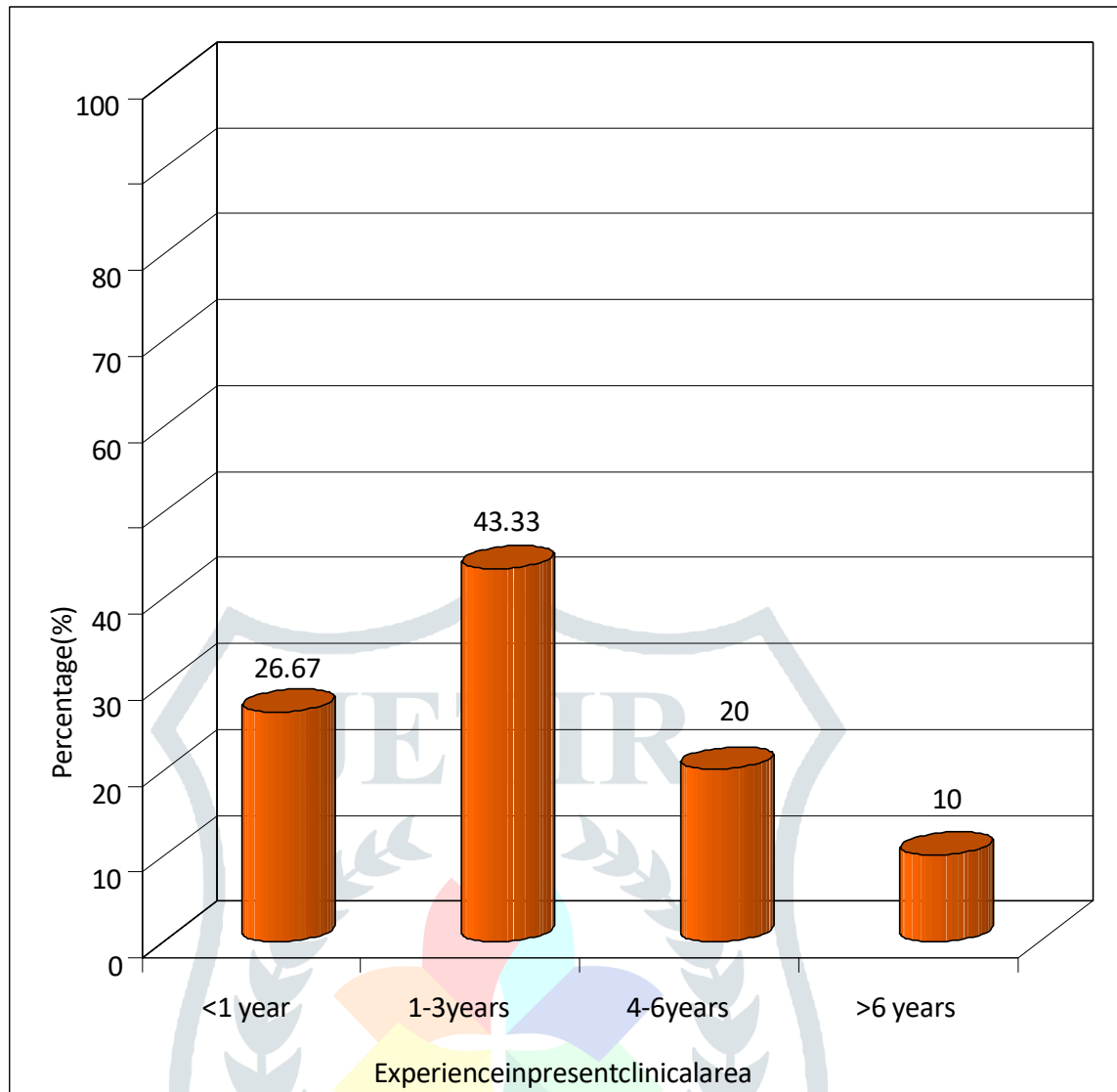


Fig 7: Percentage distribution of nursing officers according to experience in present clinical area.

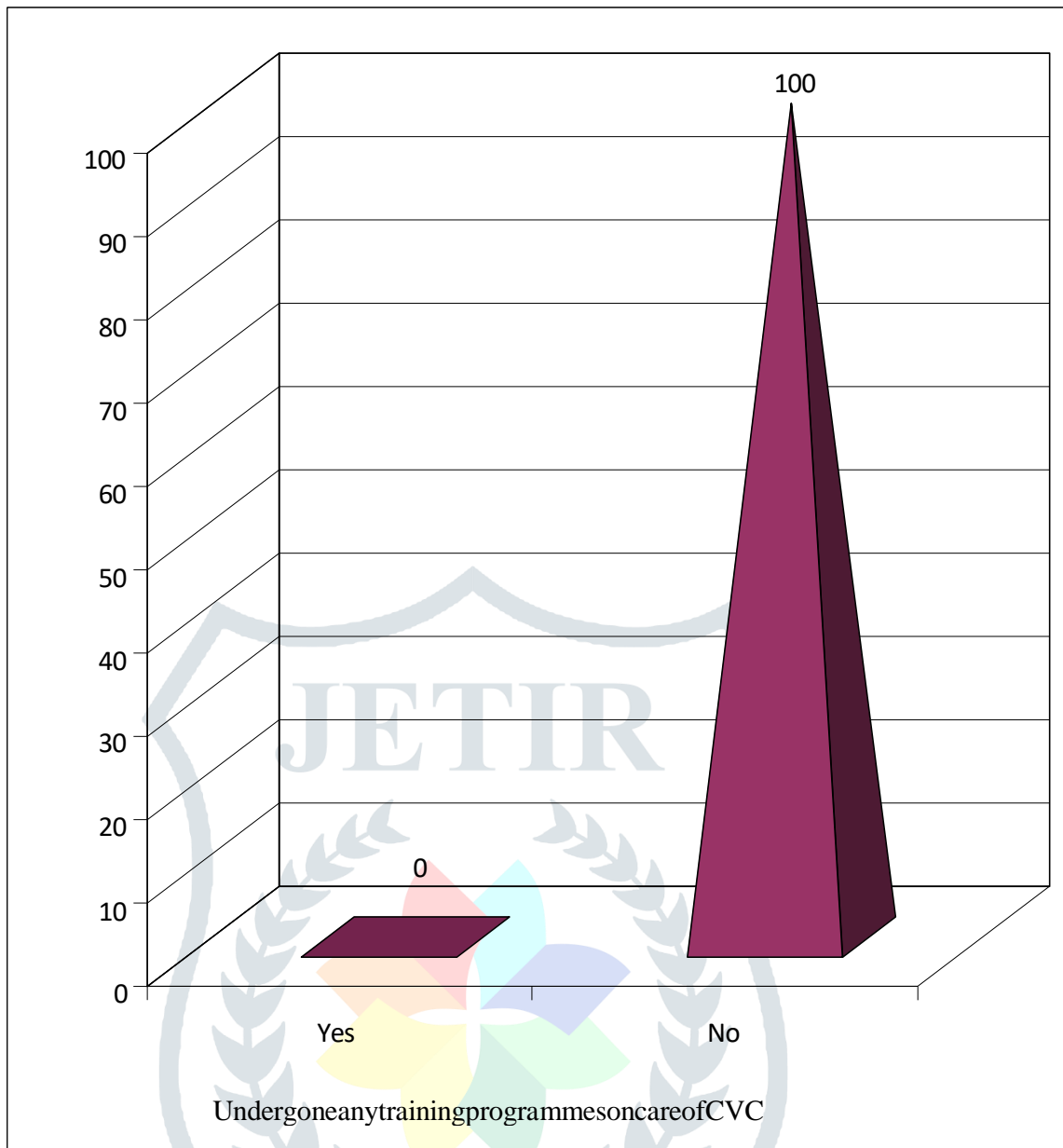


Fig 8: Percentage distribution of nursing officers according to participation in training programmes on care of CVC.

SECTIONB:ASSESSMENT OF LEVEL OF KNOWLEDGE OF NURSING OFFICERS REGARDING CARE OF PATIENTS WITH CENTRAL VENOUS CATHETER.

Table2:Mean, mean percentage and standard deviation of knowledge scores of nursing officers regarding care of patients with central venous catheter.

n=30

SINo	Aspectsofknowledge	Maximums core	Mean	Meanpercentage	Standard deviation
1	General information on CVC	4	2.3	57.5	0.69
2	Insertion of CVC	11	4.7	42.73	1.18
3	Care of CVC	9	4.83	53.67	1
4	Central venous pressure Monitoring	8	5.17	64.62	1.24
5	Complications of CVC	5	2.67	53.4	1.4
6	Removal of CVC	3	1.2	40	0.6
Overall knowledge		40	20.9	52.25	3.18

The table 2 shows that the overall knowledge mean was 20.9 with standard deviation of 3.18. The highest mean was 5.17 with standard deviation of 1.24 in relation to central venous pressure monitoring and the lowest means core 1.2 with standard deviation of 0.6 in relation to removal of central venous catheter. The mean percentage of knowledge scores of nursing officers is depicted in fig: 9.

Fig9: Mean percentage of

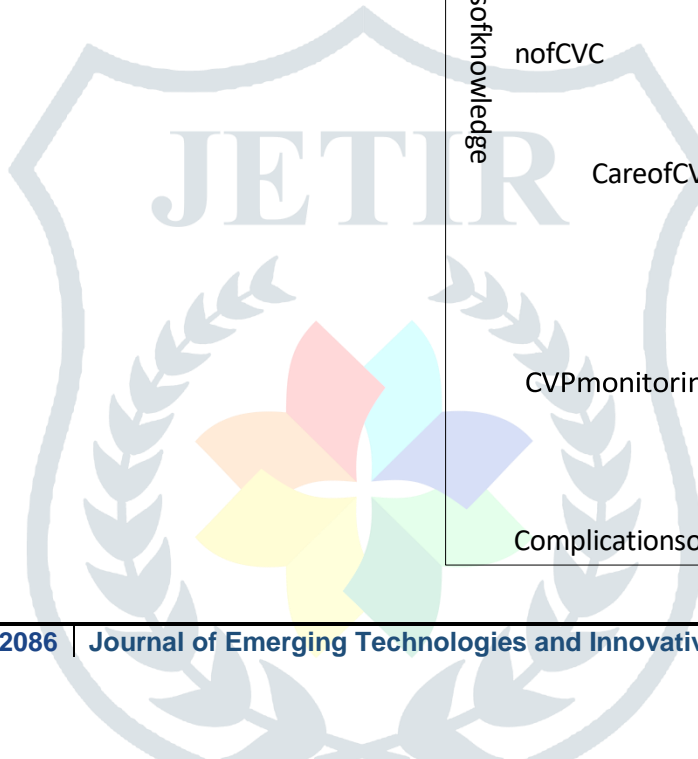
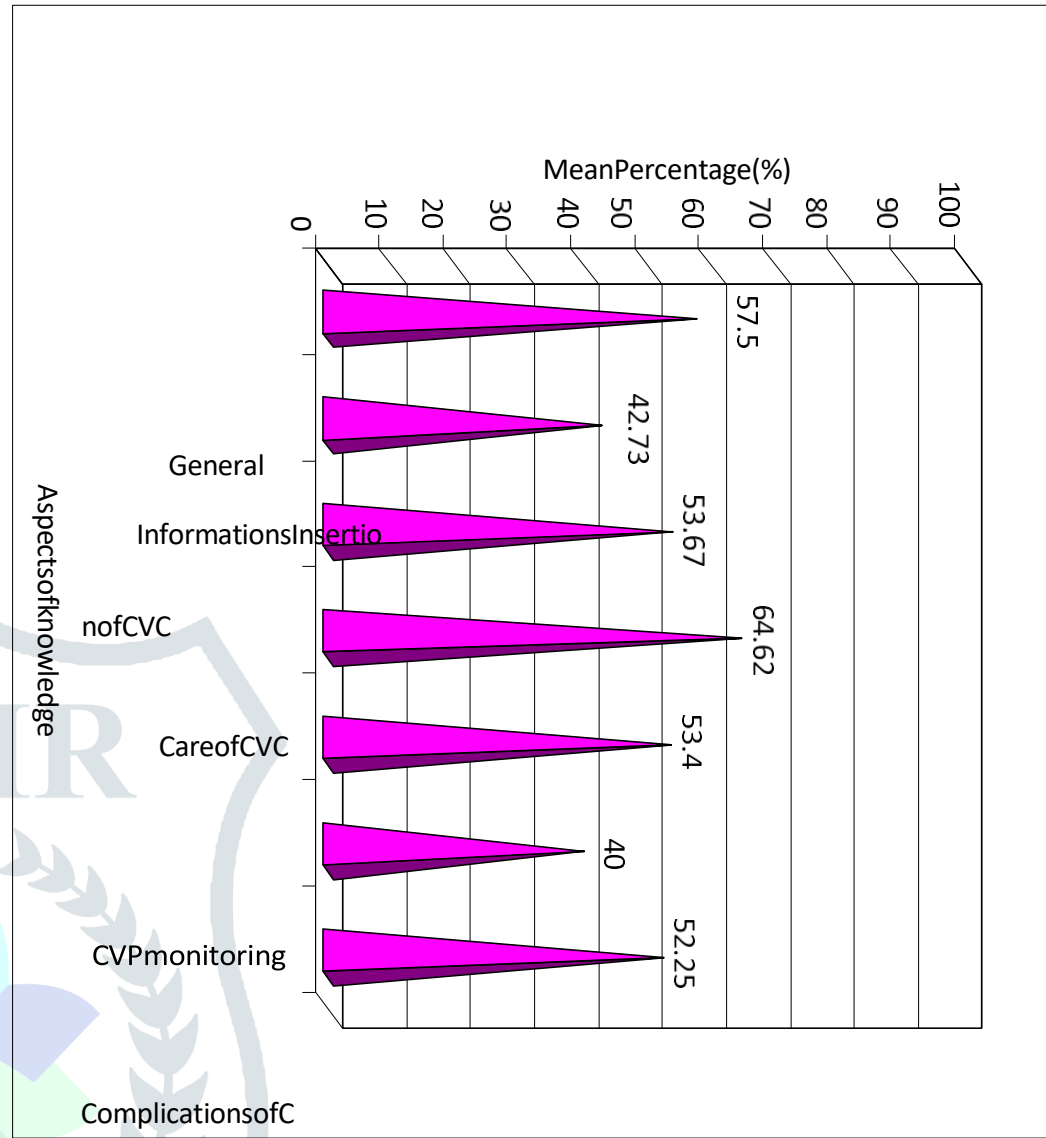


Table3:Frequency and percentage distribution of level of knowledge of nursing officers regarding care of patients with central venous catheter.

n =30

SrNo	Aspects of knowledge	Inadequate knowledge ≤ 50%		Moderately adequate knowledge 51-75%		Adequate knowledge > 75%	
		f	%	F	%	f	%
1	General information on CVC	19	63.33	10	33.34	1	3.33
2	Insertion of CVC	24	80	6	20	0	0
3	Care of CVC	11	36.67	19	63.33	0	0
4	Central venous pressure Monitoring	8	26.67	19	63.33	3	10
5	Complications of CVC	16	53.33	11	36.67	3	10
6	Removal of CVC	23	76.67	6	20	1	3.33
Overall knowledge		13	43.33	17	56.67	0	0

The table 3 shows frequency and percentage distribution of level of knowledge of nursing officers regarding care of patients with central venous catheter. In relation to overall knowledge on care of patients with central venous catheter 13 (43.33%) nursing officers had inadequate knowledge, 17 (56.67%) nursing officers had moderately adequate knowledge and none of the nursing officers had adequate knowledge. The above data is depicted in fig:10

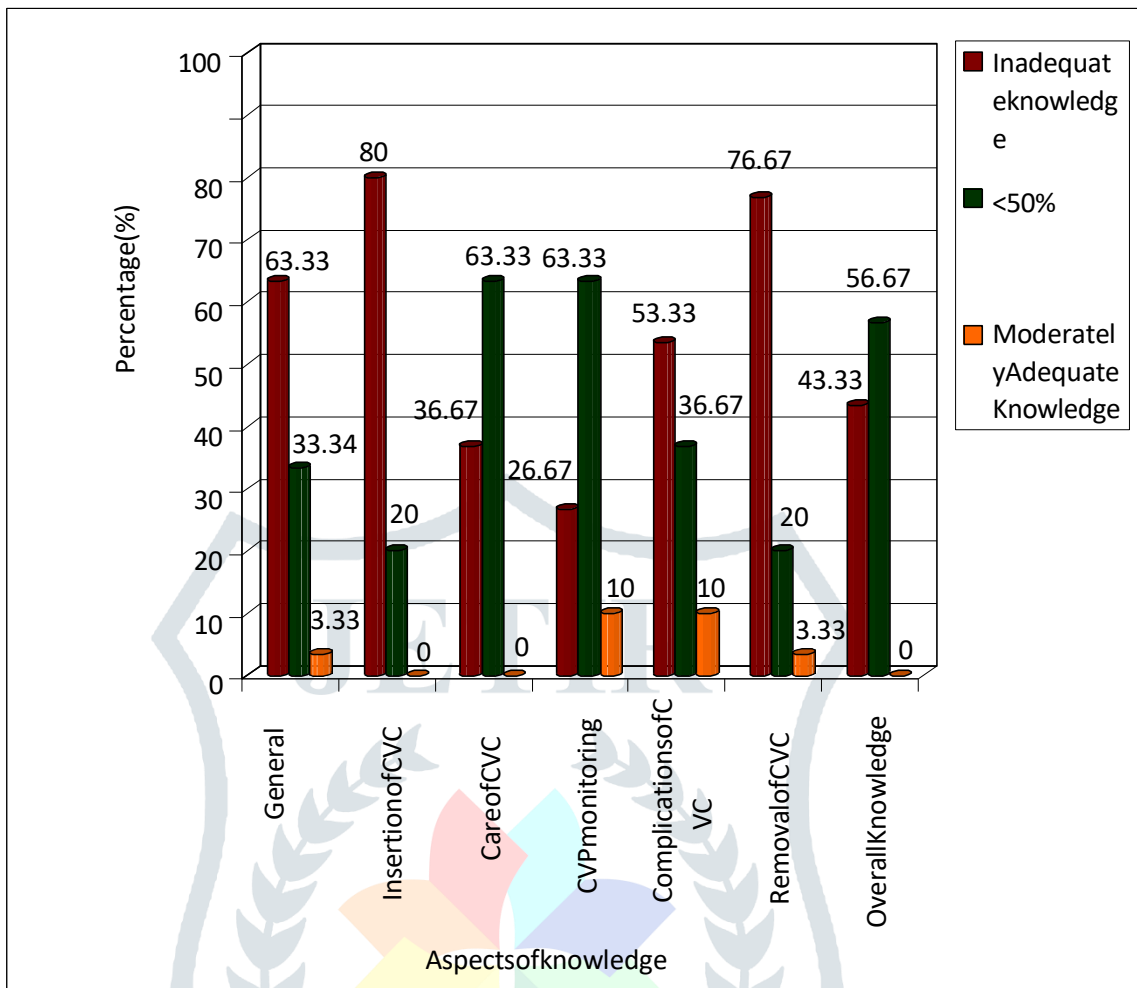


Fig10:Percentage distribution of level of knowledge of nursing officers Regarding care of patients with CVC.

SECTIONC:ASSESSMENT OF LEVELOF PRACTICE OF NURSING OFFICERS REGARDING CARE OF PATIENTS WITH CENTRAL VENOUS CATHETER.

Table4:Mean,mean percentage and standard deviation of practices cores of nursing officers regarding care of patients with central venous catheter.

n =30

SI No	Aspects of practice	Maximums core	Mean	Mean percentage	Standard deviation
1	Care of central venous Catheter site.	24	9.47	39.46	1.38
2	Central venous pressure Monitoring.	14	9.13	65.21	0.5
Overall practice		38	18.6	48.95	1.47

The table 4 shows that overall practice mean was 18.6 with standard deviation of

1.47. The highest mean was 9.47 with standard deviation of 1.38 in relation to care of central venous catheter site and lowest mean was 9.13 with standard deviation of 0.5 in relation to central venous pressure monitoring. The mean percentage of practice scores of nursing officers is depicted in fig: 11.

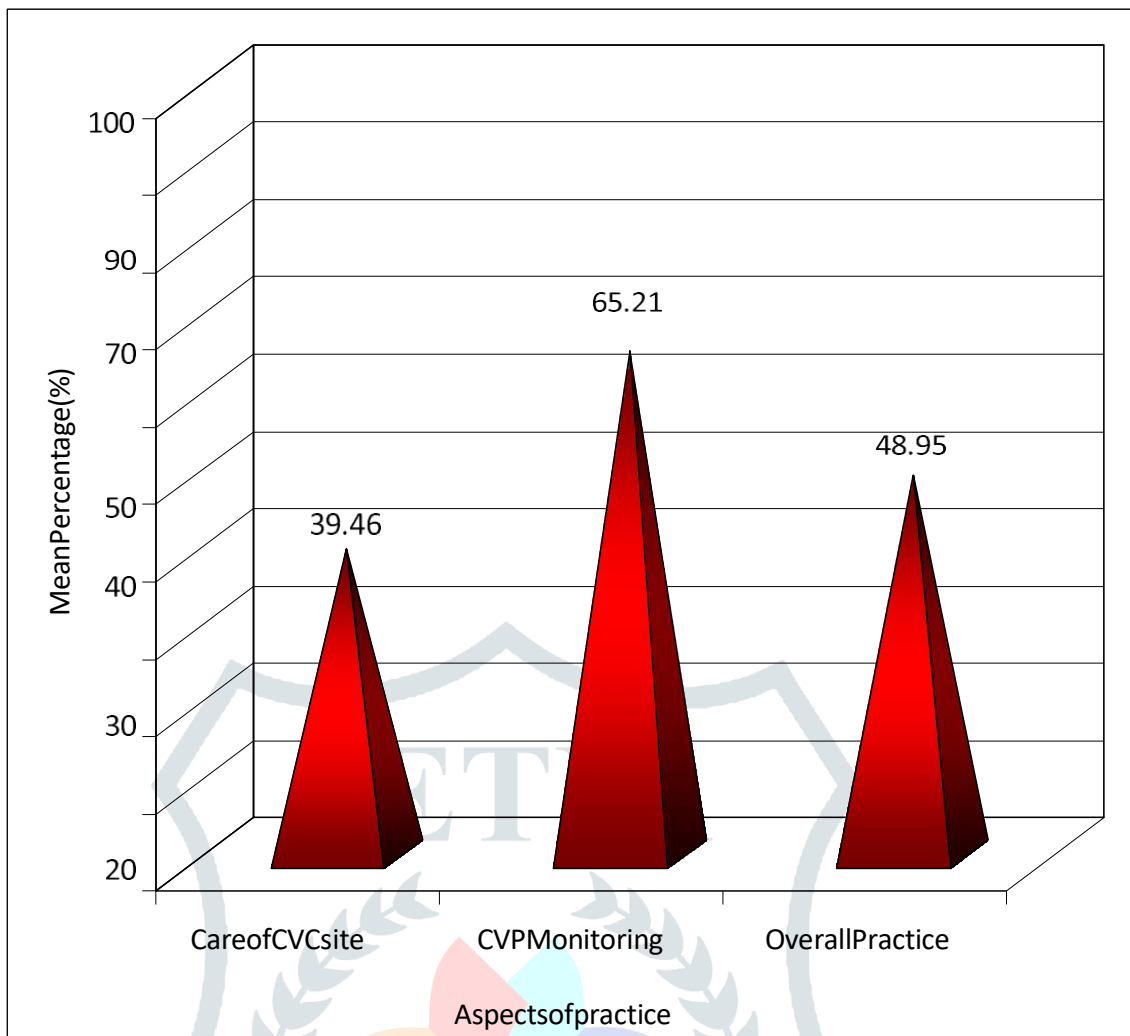


Fig11: Mean percentage of practice scores of nursing officers.

Table 5: Frequency and percentage distribution of level of practice of nursing officers regarding care of patients with central venous catheter.

n = 30

S/No	Aspect of practice	Inadequate practice ≤ 50%		Moderately adequate practice 51-75%		Adequate practice > 75%	
		f	%	f	%	f	%
1	Care of central venous Catheter site.	29	96.67	1	3.33	0	0
2	Central venous pressure Monitoring.	0	0	30	100	0	0
Overall practice		21	70	9	30	0	0

The table 5 shows frequency and percentage distribution of level of practice of nursing officers regarding care of patients with central venous catheter. Majority of the nursing officers 21 (70%) had inadequate practice and 9 (30%) had moderately adequate practice. None of the nursing officers were found to have adequate practice regarding care of patients with central venous catheter. The above data is depicted in fig:12.

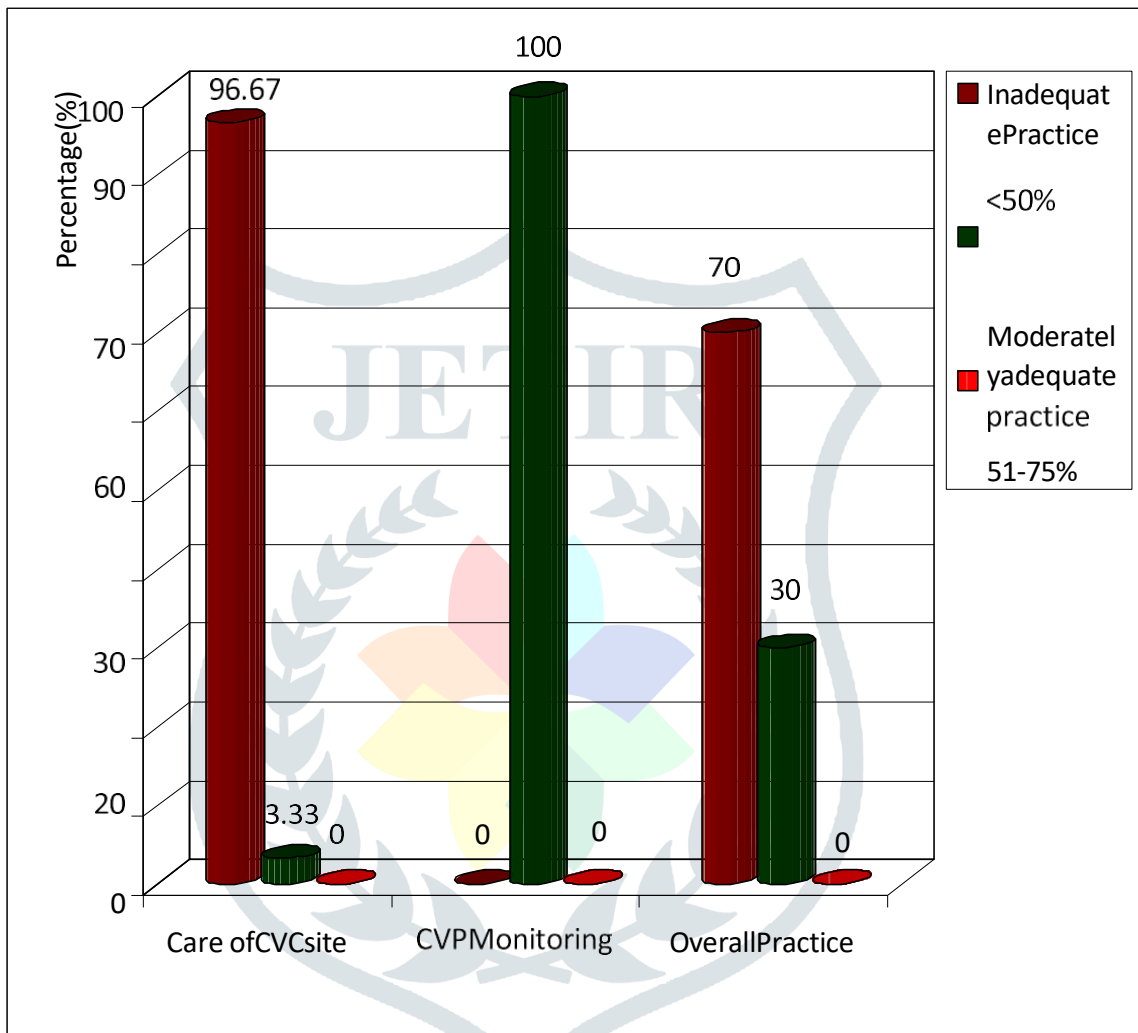


Fig12:Percentage distribution of level of practice of nursing officers Regarding care of patients with CVC.

SECTIOND: CORRELATION BETWEEN THE KNOWLEDGE AND PRACTICE OF NURSING OFFICERS REGARDING CARE OF PATIENTS WITH CENTRAL VENOUS CATHETER.

Table6:Correlation between the knowledge and practice of nursing officers regarding care of patients with central venous catheter.

n =30

Sl No	Variables	Mean	Standard deviation	rvalue
1	Knowledge	20.9	3.18	r=0.6 't'=3.85 df=28
2	Practice	18.6	1.47	

$r=+1$ to-1,Level of significance=0.05.

The above table 6 shows moderate positive correlation between the knowledge and practice of nursing officers regarding care of patients with central venous catheter. The calculated 't' value was greater than the table value at degree of freedom 28 and level of significance 0.05. Hence the null hypothesis stated for the statistical analysis H_0 , there is no significant correlation between the knowledge and practice of nursing officers Regarding care of patients with central venous catheter was rejected. The correlation between knowledge and practice of nursing officers regarding care of patients with CVC is depicted as scattered diagram in Fig:13.

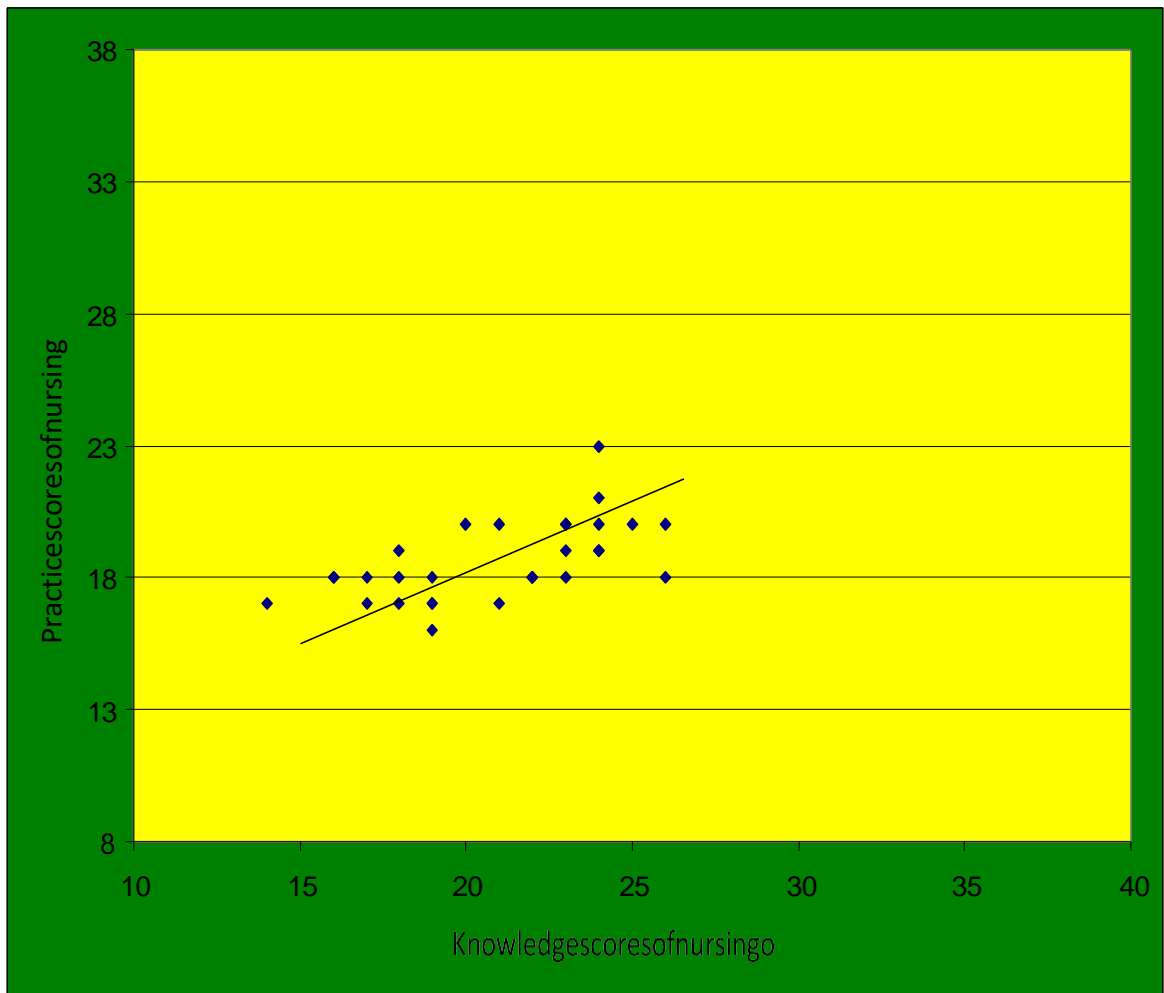


Fig 13: Scattered diagram showing correlation between the knowledge and Practice of nursing officers.

**SECTIONE:ASSOCIATION OF LEVEL OF KNOWLEDGE OF
NURSING OFFICERS W I T H SELECTED SOCIO-
DEMOGRAPHIC VARIABLES.**

Table7:Association of level of knowledge of nursing officers with selected socio demographic variables.

n=30

Sl No	Sociodemographicvariables	Inadequate Knowledge		Moderatelyadequate knowledge		χ^2 value
		f	%	f	%	
1	Ageinyears.					$\chi^2=0.91$ df=2
	21 – 25	7	23.33	12	40	
	26 – 30	5	16.68	4	13.33	(NS)
	31 – 35	1	3.33	1	3.33	
2	Gender					$\chi^2=1.33$ df=1
	Male	1	3.33	4	13.33	
	Female	12	40	13	43.34	(NS)
3	Professionalqualification					χ^2 =0.001 df=1
	GNM	10	33.33	13	43.34	
	B.ScNursing	3	10	4	13.33	(NS)
4	Professionalexperience					$\chi^2=1.69$ df=2
	<1 year	0	0	2	6.67	
	1-5 years	10	33.33	11	36.67	(NS)
	6–10 years	3	10	4	13.33	
5	Experienceinpresentarea					$\chi^2=1.06$ df=3
	<1 year	3	10	5	16.67	
	1–3 years	6	20	7	23.33	(NS)
	4–6 years	2	6.67	4	13.33	
	>6 years	2	6.67	1	3.33	

NS=Not significant,Level of significance=0.05.

The table7shows association of knowledge with selected socio-demographic variables. The calculated chi square value was less than the table value for all socio demographic variables at level of significance 0.05. Hence the null hypothesis stated for the statistical analysis H_0 ,

there is no significant association between the level of

knowledge of nursing officers and selected socio-demographic variables was accepted.

SECTION F: ASSOCIATION OF LEVEL OF PRACTICE OF NURSING OFFICERS WITH SELECTED SOCIO DEMOGRAPHIC VARIABLES.

Table 8: Association of level of practice of nursing officers with selected socio demographic variables.

n=30

Sl No	Sociodemographic variables	Inadequate practice		Moderately adequate practice		χ^2 value
		f	%	f	%	
1	Age in years.					$\chi^2=1.54$
	21 – 25	12	40	7	23.33	df=2
	26 – 30	7	23.33	2	6.67	(NS)
	31 – 35	2	6.67	0	0	
2	Gender					$\chi^2=2.57$
	Male	2	6.67	3	10	df=1
	Female	19	63.33	6	20	(NS)
3	Professional qualification					$\chi^2=3.2$
	GNM	18	60	5	16.67	df=1
	B.ScNursing	3	10	4	13.33	(NS)
4	Professional experience					$\chi^2=0.41$
	<1 year	1	3.33	1	3.33	df=2
	1-5 years	15	50	6	20	(NS)
	6–10 years	5	16.67	2	6.67	
5	Experience in present area					$\chi^2=0.56$
	<1 year	5	16.67	3	10	df=3
	1–3 years	10	33.33	3	10	(NS)
	4–6 years	4	13.33	2	6.67	
	>6 years	2	6.67	1	3.33	

NS=Not significant, Level of significance=0.05.

Table 8 shows association of practice with selected socio demographic variables. The calculated chi square value was less than the table value for all socio-demographic variables at level of significance 0.05. Hence the null hypothesis stated for the statistical analysis H_{03} , there is no significant association between the level of practice of nursing officers and selected socio demographic variables was accepted.

6. DISCUSSION



6. DISCUSSION

This chapter deals with the discussions in accordance with the objectives of the study and the hypotheses. The statement of the problem was “A descriptive study to assess the knowledge and practice of nursing officers working in critical care units regarding care of patients with central venous catheter in selected hospitals at Babhulgaon Yeola in a view to develop a self instructional module”.

Socio demographic variables of the nursing officers.

In the present study it was found that maximum number of nursing officers 19(63.33%) were in the age group of 21-25 years, 9(30%) were in the age group of 26-30 years and 2(6.67%) were in the age group of 31-35 years. There were no nursing officers in the age group of 36 and above.

Majority of the nursing officers 25 (83.33%) were females and only 5(16.67%) were males.

In relation to professional qualification majority of the nursing officers 23 (76.67%) had diploma in general nursing and only 7 (23.33%) had BSc Nursing degree.

In relation to years of experience majority of the nursing officers 21 (70%) had 1-5 years of experience, 7 (23.33%) had 6-10 years of experience and only 2 (6.67%) had less than 1 year experience. There were no nursing officers above 10 years of age.

Most of the nursing officers 13 (43.33%) were having 1-3 years experience in the present area, 8 (26.67%) had experience less than 1 year, 6 (20%) had 4-6 years of experience and only 3 (10%) had the experience more than 6 years.

None of the nursing officers had undergone any training programmes on care of patients with central venous catheter.

The first objective was to assess the level of knowledge of nursing officers regarding care of patients with CVC.

The present study revealed that 13(43.33%) had inadequate knowledge and 17(56.67%) had moderately adequate knowledge. None of the nursing officers were found to have adequate knowledge. The mean percentage obtained for overall knowledge was 52.25% with standard deviation of 3.18 which showed that nursing officers had moderately adequate knowledge regarding care of patients with CVC.

The study findings are supported by a study conducted on “Assessment of nurses knowledge on care of patients with central venous catheter” at Glasgow hospital, United Kingdom. The study showed that 68% of the nurses were having inadequate knowledge and 32% had moderately adequate knowledge. None of the nurses were found to have adequate knowledge.⁴⁷

The second objective was to assess the level of practice of nursing officers regarding care of patients with CVC.

The present study revealed that 21(70%) of the nursing officers had inadequate practice, 9(30%) had moderately adequate practice and there were no nursing officers with adequate practice. The mean percentage obtained for overall practice was 48.95% with standard deviation of 1.47, which showed that the nursing officers had inadequate practice regarding care of patients with CVC.

This study findings are supported by an observational study conducted on “Assessment of nurses practice on central venous catheter care” at University of California. The areas assessed were administration of medications and fluids, CVP monitoring and site care. The study revealed that 64% of nurses were having inadequate practice and 36% had moderately adequate practice. None of the nursing officers were found to have adequate practice.⁴⁹

The third objective was to find the correlation between the knowledge and practice of nursing officers regarding care of patients with central venous catheter.

Using Karl Pearson’s correlation co-efficient the correlation between the knowledge and practice of nursing officers regarding care of patients with central venous catheter was done. The study findings revealed that there is a moderate positive correlation between the knowledge and practice of nursing officers. As the knowledge increases practice also improves. The study results showed that $r = 0.6$.

Hence the research hypothesis H_1 , there is a significant correlation between the knowledge and practice of nursing officers regarding care of patients with central venous catheter was accepted.

The findings of this study are contradictory to the findings of the study conducted on “Assessment of the nurses’ knowledge and practice of caring patients with intra venous therapy” at Celal Bayer University hospital, Turkey. The study was done in two stages. The 1st stage was to determine the

knowledge of nurses about using intra venous catheters, intra venous infusion treatment, symptoms and treatment of phlebitis.

The 2nd stage involved observation of patients intravenous catheters for signs and symptoms of phlebitis and nursing interventions carried out for the same. The result revealed that nurses have high knowledge levels but their practice was not correlating with their knowledge which was evidenced by 67.24% of patients showing symptoms of phlebitis.¹³

The fourth objective was to find the association between the level of knowledge of nursing officers and selected socio demographic variables.

The analysis was done for association between the level of knowledge of nursing officers with selected socio demographic variables using chi-square test. The computed chi square value was lesser than the table value at $p < 0.05$, level of significance.

Hence the research hypothesis H_2 , there is a significant association between level of knowledge of nursing officers and selected socio demographic variables was rejected.

The study findings are supported by a study done on “Intensive care unit nursing officers knowledge of evidence-based guidelines for preventing central venous catheter related infection” at selected hospitals of United States. 18% knew that central venous catheters should be replaced on indication only. Regarding dressings, 15% knew that these should be changed only when indicated and at least once weekly. 14% knew antibiotic ointments are not recommended because they trigger resistance. The study proved that nurses knowledge about care of central venous catheters is not adequate. Professional seniority and the number of intensive care beds in the ICU where nursing officers work showed not to be associated with better scores on the test.¹²

The fifth objective was to find the association between the level of practice of nursing officers and selected socio demographic variables.

The analysis was done for association between the level of practice of nursing officers and selected socio demographic variables using chi-square test. The computed chi square value was lesser than the table value at $p < 0.05$, level of significance.

Hence the research hypothesis H₃, there is a significant association between level of practice of nursing officers and selected socio demographic variables was rejected.

The study findings are supported by a survey done on “Adherence of nursing officers on hand washing practice before caring for central venous catheters” in pediatric intensive care units of Sydney children’s hospital Rand wick. The study found an enormous level of variation among and between nurses reported practice and local policies. Intensive care unit staffs have been identified as one of the least adherent group of health care professionals to practice hand antisepsis before invasive procedures. There is no association between practice and demographic variables such as age, gender, years of experience etc.⁵²

The sixth objective was to develop a self instructional module for nursing officers on care of patients with central venous catheter.

A self instructional module was developed on care of patients with CVC which has been validated by 8 experts from the field of Medical Surgical Nursing, 1 Cardio Thoracic Surgeon and 1 Physician. The self instructional module was distributed to all the study participants at the end of the study.

A descriptive study was conducted on “Critical Care Nurses knowledge about preventing infections associated with Central Venous Catheter” at Ghent University College, Belgium. Most of the nurses responded that the use of coated central venous catheters does not result in a significant decrease in catheter-related infections (value 0.4). Second, the respondents chose the use of polyurethane dressings at the catheter site (value 0.7), whereas both gauze and polyurethane dressings are recommended (value 0.2). Finally, the nursing officers selected 0.5% alcoholic chlorhexidine solution (value 0.8) over the recommended 2% aqueous chlorhexidine solution. All respondents thought correctly that the use of an antibiotic ointment at the catheter insertion site is not recommended because antibiotic ointments do not decrease the risk for catheter-related infections (value 0.6), whereas the correct reason is that the use of these ointments causes antibiotic resistance (value 0.3). The study suggested the need of a self study module to improve nurse’s knowledge as they had numerous misconceptions about the care of central venous catheters.⁴⁶

7



7. CONCLUSION

This chapter deals with the conclusion, implications, recommendations and limitations of the study “A descriptive study to assess the knowledge and practice of nursing officers working in critical care units regarding care of patients with central venous catheter in selected hospitals at Babhulgaon Yeola in a view to develop a self instructional module”.

Conclusion

The present study assessed the level of knowledge and practice of nursing officers regarding care of patients with central venous catheter and found that 13(43.33%) of the nursing officers had inadequate knowledge, 17(56.67%) had moderately adequate knowledge and none of the nurses had adequate knowledge. 21(70%) of the nursing officers had inadequate practice, 9(30%) had moderately adequate practice and none of the nursing officers had adequate practice.

The overall knowledge mean percentage was 52.25% with standard deviation of 3.18. The overall practice mean percentage was 48.95% with standard deviation of 1.47.

Karl Pearson's correlation coefficient, $r = 0.6$, which showed that there is a moderate positive correlation between the knowledge and practice of nursing officers. As the knowledge increases practice also increases.

Chi square test found that there is no association between the level of knowledge and practice of nurses with selected socio demographic variables.

As none of the nursing officers were having adequate knowledge and practice regarding care of patients with central venous catheter, a self instructional module was developed and distributed to the study participants at the end of the study in order to improve their knowledge and practice.

Implications:

The findings of the study has implications in the following areas

- Nursing Education
- Nursing Practice

- Nursing Administration
- Nursing Research

Nursing Education

- The curriculum of basic nursing should include lessons on central venous catheters.
- Nursing students should be given adequate exposure to critical care units and they should be given practical demonstrations on care of CVC's by experienced and skilled personnel.
- The nurse educators as well as staff development personnel should supervise and guide the students to improve their skills.
- The students need to be taught evidence based practices and keep their knowledge up-to-date.

Nursing Practice.

- The nursing officers should be periodically evaluated to assess their knowledge and practice.
- In-service education has to be planned according to the needs of the nursing officers.
- Different types of in-service educational programmes and orientation courses has to be conducted for the nursing officers from time to time.

Nursing Administration

- The nurse administrator can organize and conduct in-service education and continuous nurse education programmes for nursing officers in order to enhance their knowledge and keep them aware of the latest technological advancements and handling of sophisticated devices to provide quality care to the patients.
- The nurse administrator can take initiative to create an infection control team in the hospital, so that most of the infections that occur in the hospital settings especially catheter related infections can be controlled.
- A catheter care team can also be created, who are given special training in caring various types of catheters used in the clinical settings, so that they can supervise and guide the activities of the nursing officers and can prevent development of complications.

Nursing Research

- Nurse researcher should conduct researches on ways to prevent catheter related complications, which will provide scientific data and adds more scientific knowledge to nursing profession.

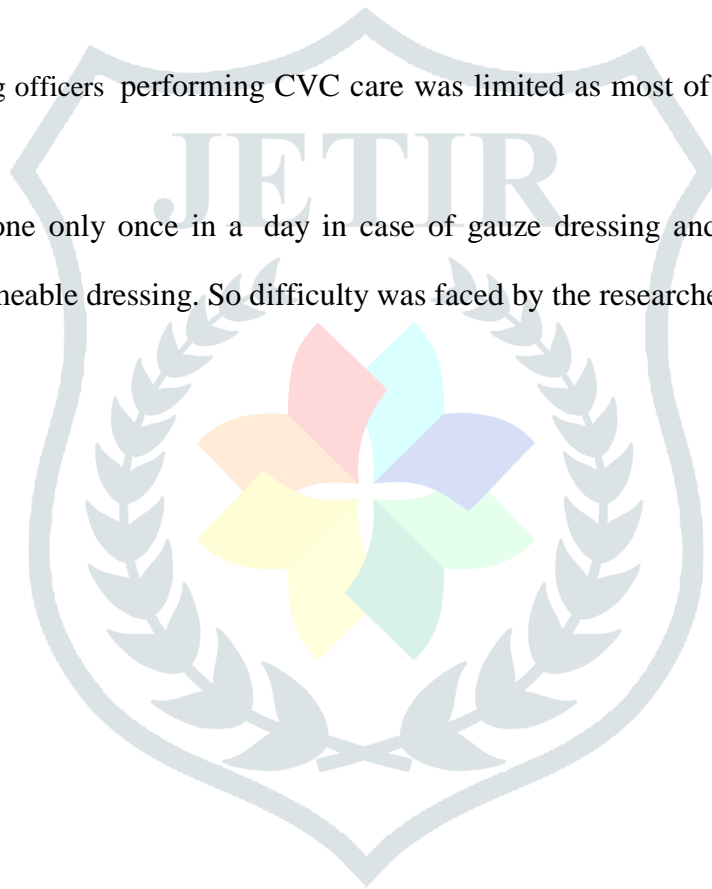
- The nurse researcher should conduct workshops, seminars, poster sessions and should publish research findings in journals to communicate findings to nursing professionals.

Recommendations

- The study can be replicated with large number of nursing officers for generalizations.
- Effectiveness of self instructional module can be assessed.
- Different teaching strategies can be used and their effectiveness can be assessed.
- A comparative study can be conducted between two hospital organizations.

Limitations

- The number of nursing officers performing CVC care was limited as most of the patients were having IV cannula.
- CVC dressing was done only once in a day in case of gauze dressing and once in a week in case of transparent semi permeable dressing. So difficulty was faced by the researcher to get the samples.



8.

SUMMARY



8. SUMMARY

The primary aim of the study was to assess the “knowledge and practice of nursing officers working in critical care units regarding care of patients with central venous catheter in a view to develop a self instructional module”.

The objectives of the study were:

1. To assess the level of knowledge of nursing officers regarding care of patients with central venous catheter.
2. To assess the level of practice of nursing officers regarding care of patients with central venous catheter.
3. To find the correlation between the knowledge and practice of nursing officers regarding care of patients with central venous catheter.
4. To find the association between the level of knowledge of nursing officers and selected socio demographic variables.
5. To find the association between the level of practice of nursing officers and selected socio demographic variables.
6. To develop a self instructional module for nursing officers on care of patients with central venous catheter.

The study attempted to examine the following research hypotheses

H₁: There is a significant correlation between the knowledge and practice of nursing officers regarding care of patients with central venous catheter.

H₂: There is a significant association between level of knowledge of nursing officers and selected socio demographic variables.

H₃: There is a significant association between level of practice of nursing officers and selected socio demographic variables.

The conceptual frame work adopted for the study was based on “Ernestine Wiedenbach’s helping art of clinical nursing theory” which consists of three steps, that is the central purpose, prescription and realities. The nursing officers develop a prescription based on central purpose and implements it according to the realities of the situation.

An extensive review of literature for this study was done by the investigator, which helped her to develop the conceptual frame work, criteria for development of the structured knowledge questionnaire and observational checklist. The literature review also helped to develop a self instructional module for the nursing officers regarding care of patients with CVC and plan for determining the analysis.

The research approach selected was descriptive survey approach and research design selected was non experimental descriptive research design.

The study samples consisted of 30 nursing officers working in critical care units of selected hospital Babhulgaon Yeola. A non-probability, convenient sampling technique was adopted.

The tool developed and used for data collection was structured knowledge questionnaire and an observational checklist. A self instructional module on care of CVC was also developed. The tool comprised of two sections.

Section I – Consists of 6 items related to socio demographic variables of nursing officers.

Section II- Consists of part A and part B.

Part A consists of 40 items on various aspects of central venous catheters.

Part B consists of observational checklist to assess the practice of nursing officers regarding care of CVC site and CVP monitoring.

The self instructional module consisted of information regarding various aspects of CVC. The self instructional module was organized in sequence and continuity. The module was prepared with a view to enhance the knowledge and practice of nursing officers regarding care of patients with CVC.

The content validity of the tool and self instructional module was established by 8 experts from Medical Surgical Nursing department, 1 Cardio Thoracic Surgeon and 1 Physician. The reliability of the structured knowledge questionnaire was established by using split half method, which was $r = 0.81$ and $r' = 0.89$ and the reliability of the observational check list was obtained by using interpreter reliability which was, $r = 0.72$ and $r' = 0.84$. Hence the tool was found to be reliable for the study.

A pilot study was conducted from 3rd October to 10th October 2023 at selected hospital babhulgaon yeola with 5 samples.

The main study was conducted from 15th October to 14th November 2023 at selected hospital babhulgaon yeola. The sample consisted of 30 nursing officers working in critical care units.

The practice of nursing officers was assessed by using an observational checklist and knowledge was assessed using self administered knowledge questionnaire. A self instructional module on care of patients with central venous catheter was given to all the study participants at the end of the study.

The data gathered were analyzed and interpreted according to the objectives. Descriptive statistics used were mean, mean percentage and standard deviation with graphical presentation of data. Inferential statistics used to test hypotheses were Karl Pearson's correlation co-efficient and chi square test.

Findings of the study:

The present study revealed that the mean percentage obtained for overall knowledge was 52.25% with standard deviation of 3.18. The mean percentage obtained for overall practice was 48.95% with standard deviation of

1.47. The results of the study showed that 13(43.33%) nursing officers had inadequate knowledge and 17(56.67%) had moderately adequate knowledge. None of the nursing officers were found to have adequate knowledge. 21(70%) of the nursing officers had inadequate practice, 9(30%) had moderately adequate practice and there were no nursing officers with adequate practice.

The study also revealed that there is a moderate positive correlation between the knowledge and practice scores of nursing officers. The results showed that $r = 0.6$. Hence the research hypotheses H_1 were accepted.

The analysis of the association of knowledge and practice of nursing officers with selected socio demographic variables by using "chi- square test" revealed that there is no significant association. Hence the research hypotheses H_2 and H_3 were rejected.

LIST OF ABBREVIATIONS USED

C.V.C	Central Venous Catheter
C.V.P	Central Venous Pressure
I.C.U	Intensive Care Unit
I.V	Intra Venous
S.V.C	Superior Vene cava



9. *BIBLIOGRAPHY*



9. BIBLIOGRAPHY

1. Urden D Linda, Joseph K Davis, Thelen A Lynne. Essentials of Critical Care Nursing. Sydney: Mosby year Book; 1992; 3 - 4.
2. Phipps Wilma J, Barbara C Long, Nancy Fugate Woods. Shafer's Medical Surgical Nursing. New Delhi: B.T. Publication; 1995; 404 - 405.
3. Bornie P Stewart, Rhonda M Strawn. Ready reference for critical care. Sudbury: Jones and Barlet Publishers; 2004; 280-286.
4. Smelter C Suzanne, Bare G Brenda. Brunner and Suddharths Medical Surgical Nursing. Philadelphia: Lippincot publishers; 2004; 677-697.
5. Christie Hospital Patient Information Service. Care of central venous catheter a guide for Patients and their Carers.UK: 2007; available at [http:// www.christie.nhs.uk](http://www.christie.nhs.uk).
6. Ryder M.A. Peripherally Inserted Central Venous Catheters. Nurs Clin North America 1993; 28(4):937-971.
7. Kaplow Roberta, Hardin N Sonya. Critical Care Nursing Synergy for optimal outcomes. Sudbury: Jones and Barlets Publishers; 2007:67-69.
8. Mary Courtney. Central Venous Catheter Infection. Journal of Advanced Nursing 2004 March; 247-256.
9. Darouiche R.O, Raad II. A comparison of two antimicrobial impregnated central venous catheters. N England Journal of Medicine 1999; 340:1-8.
10. M Pawar, Y Mehta. et.al. The incidence, risk factors, outcome, and pathogens of central venous catheter—related bloodstream infections. Journal of Cardiothoracic and Vascular Anesthesia 2006; 18(3):304 – 308.
11. Shukla N.K, Das D.K. An analysis of long-term venous access catheters in cancer patients experience from a tertiary care centre in India. Journal of Post graduate Medicine 2006; 48(1):21-24.
12. Rosza Konczne Reti, Erika Vass, Katalin Darvas. Intensive care unit nurses Knowledge of evidence-based guidelines for preventing central venous catheter related Infection. Orv Hetil 2008; 149(20): 929-932. available at <http://www.ajconline.org>.

13. Karadeniz G Kutlu, Tatlisumak E, Ozbakkaloq B. Nurses knowledge regarding care of patients with IVcatheters and phlebitis interventions. *Journal of Vascular Nursing* 2003; 21(20):166-169. available at <http://linkinghub.elsevier.com>.
14. Denise F Polit, Berne Delte P Hungler. *Nursing Research Principles and Methods*. Philadelphia: J.B Lippincott Company; 2003; 69 - 70, 97 – 98.
15. Wesley L Ruby. *Nursing Theories and Models*. Pennsylvania: Springhouse publications; 1994; 34 – 39.
16. Shukla NK, Das DK. An analysis of long-term venous access catheters in cancer patients experience from a tertiary care centre in India. *Journal of Post graduate Medicine* 2006; 48(1): 21-24.
17. Abedin S Kapoor. Advantage of peripherally inserted central venous catheters in children with malignancies for the safe administration of medication and to avoid repeated painful venipuncture. *Pediatric Blood Cancer* 2008; 51(2): 251-255.
18. Dr Vikram Mahajan. *Nutritional Support in Critical Care*. Criticare Frontiers 2009; available at <http://www.expresshealthcare.in/criticare2009>.
19. M Janes. Percutaneously inserted central venous catheters vs. peripheral intravenous catheters. *Journal of pediatric surgery* 2003; 35: 1040-1044.
20. Michael young, Scott Manakar, Kewin C Wilson. Indications for and complications of central venous catheters. *Journal of Post graduate Medicine* 2008; 24-26.
21. S Markel, K Reynen. Impact on patient care- PIC catheter days in the alternative setting. *Oncology Nursing Forum* 2002; 8:1349-56.
22. Gopal B Palepu, Juneja Deven, M Subramanian. et.al. Complications of CVC. *Indian Journal of Radiology and Imaging* 2009 November; 19:191-8.
23. M Pawar, Y Mehta. et.al. The incidence, risk factors, outcome, and pathogens of central venous catheter—related bloodstream infections. *Journal of Cardiothoracic and Vascular Anesthesia* 2006; 18(3):304 – 308.
24. Kapadia Farhad. The cost implications of surveillance of ICU infections. *Indian Journal of Critical Care Medicine* 2004 January; 8(1):33-35. available at <http://www.bioline.org.br>.

25. Dr Ashima Bhatia. Nosocomial Infections and IV Infusion systems. The Indian Express 2004 September 15.
26. Zing W, Cartier Fassler V, Walder B. Central venous catheter associated infections. Best Practice Research Clinical Anesthesiology 2008; 22(3): 407- 421.
27. Rita Wickham, Diane Welker. Long term central venous catheter: issues for care. Medithesis 1992 May; 133-147.
28. Michael K Gould. Complications of central venous catheters. Journal of Hospital Infection 2003 March; 220-225.
29. Joel Dunning. Thrombotic complications of femoral central venous catheters. New Journal of Medicine 2004; 46-49.
30. Ayas N.T, Norena M. Incidence of Pneumothorax after insertion of central venous catheters in the intensive care unit. Qual Saf Health Care 2007; 16(4): 252-256.
31. Akmal A.H, Hasan M, Mariam A. The incidence of complications of central venous catheters at an intensive care unit. Journal of Thoracic Medicine 2007; 2(2): 61–63.
32. Victorian National Nosocomial Infection Surveillance System. Hospital Acquired Infection. 2007 June; available from <http://www.vicniss.org.au/resources>.
33. Juliji Mestrovic, Ivanka Ercegovic. et.al. Complications of central venous catheters in pediatric intensive care units. SIGNA VITAE 2006; 1(1): 20-24.
34. Deven J, Mohan S. et.al. Impact of ultrasonography on central venous catheter insertion in intensive care. Indian Journal of Radiology and Imaging 2009 November; 19:191-198.
35. Maller N Borregaard, M. Tvede, L. Adamson. Patient education a strategy for prevention of infections caused by permanent central venous catheters in patients with hematological malignancies. Journal of Hospital Infection 2002; 61(4): 330 – 341.
36. Helen C Hamilton, David Fox Croft. Central venous access sites for prevention of venous thrombosis, stenosis and infection. Cochrane Data base of systematic Review 2007 July; 85 – 87.
37. David C, M.C Geo. Preventing complications of central venous Catheters. New Journal of Medicine 2003 March; 348:1123-1133.

38. Division of Pediatric Hematology. Mc Master University, Canada: Effect of heparin on thrombus formation and infection associated with use of central venous catheters. *Critical Care Nurse* 2006; 26(2): 137 – 138.
39. Shah P.S, Shah P.V. The effectiveness of heparin to prevent venous thrombosis. *Cochrane data base systematic review* 2008 April; 16(2):94-97.
40. Heard S.O, Thornby J.I, Wenker O.C. et.al. A comparison of two antimicrobial- impregnated central venous catheters. *N England Journal of Medicine* 1999 January; 340(1): 48-50. available at <http://www.ncbi.nlm.nih.gov/pubmed>.
41. L Baranowski, Dietmar Ausserhofer, Elfriede Fritz. Care of the non-tunnelled central venous catheter. *Journal of Intravenous Nursing* 2003; 16 (3):167-94.
42. J.C Shivnan, D McGuire, S Freedman. et.al. A comparison of transparent adherent and dry sterile gauze dressings for long-term central catheters in patients undergoing bone marrow transplant. *American Journal of pediatrics* 1988 August; 142(8):893- 895
43. R.J Schulman, E.O Smith, S Rahman. et.al. Single- vs. double-lumen central venous catheters in pediatric oncology patients. *Journal of Intravenous Nursing*; 20 (4):201- 206.
44. J Treston Aurand, R.N Olmsted, K Allen-Bridson, C P Craig. Impact of dressing materials on central venous catheter infection rates. *Oncology Nursing Forum* 1992 May; 19:599-605.
45. C Kelly, L Dumenko, S.E McGregor, M.E McHutchion. A change in flushing protocols of central venous catheters. *Oncology Nursing Forum* 1994 June; 21(5):879-84.
46. S Labeau, A Vereecke, DM Vandijck. Critical Care Nurses' Knowledge of Evidence-Based Guidelines for Preventing Infections Associated With Central Venous Catheter. *American Journal of Critical Care* 2008; 65-71.
47. Henry Mary. Assessment of nurses knowledge regarding care of patients with CVC. *Journal of intra venous nursing* 2002; 23-25.

48. Rosza Konczne Reti, Erika Vass, Katalin Darvas. Intensive care unit nurses Knowledge of evidence-based guidelines for preventing central venous catheter related Infection. *Orv Hetil* 2008; 149(20): 929-932. available at <http://www.ajconline.org>.
49. Michael Cox, Richard David. Assessment of nurses practice of CVC care. *Critical care nurse* 2004; 35 - 37.
50. Sandra Purl, Janet Robinson. Central venous catheters: long term care. *Medithesis* 1992 May; 102-106.
51. K.D Miller, C.L Dietrich. Experience with CVC at a university medical centre. *Journal of Intravenous Nursing* 2006; 13(6):347-351.
52. Harvey A, Dunnellon R. Handwashing practice and policy variability among nurses while caring CVC. *Australian critical care Journal* 2006 February; 19(1):15-21.
53. Gonzalez V, Richardson D, Marts K. Infusion therapy team and dressing changes of central venous catheters. *Infection Control Hospital Epidemiology* 1999 Feb; 20(2):101-105.
54. David K, Jeane E Cox, Michael J. Effectiveness of self study module on nurses to prevent central venous catheter complications. *Nursing Times* 2006; 32-35.
55. Debora East, Catherine Jacob. The effect of nursing staff educational programme on compliance with central line care policy. *Journal of pediatric nursing* 2005 June ; 31(3)24-26.
56. Brandi Horvath, Annie Hyde, Robbie Norville. et.al. Using a Comprehensive Educational Program to Improve Nurses Knowledge of CVC care. *Oncology Nursing Forum* 2009 March; 36(2):232-8.
57. Rosenthal VD, Guzman S. Reduction in nosocomial infection with improved hand hygiene in ICUs. *American Journal of Infection Control* 2005; 33(7):392-397.
58. Claire M Richard, Mary Courtney. Central venous catheters- a survey in ICU patients. *Journal of advanced nursing* 2004 March; 247-256.
59. Robert J. Sherertz, Debi M. Westbrook. et.al. Education of nurses Can Decrease the Risk for Vascular Catheter Infection. *Journal of hospital infection* 2009 March;301:1285-1287. available at <http://www.annals.org>.

60. Jeffrey H. Elaine R. Cohen B.A. et.al. Use of Simulation-Based Education to Reduce CRBSI's. Arch Intern Med 2009; 169(15):1420- 1423.

61. Fitzsimmons C.L. Central venous catheter placement: extending the role of the nurse.

Journal of the Royal College of Physicians of London 1997; 31(5):533-535.

62. Biagan O., Furukawa M., Gawlinski A. Effect of an Evidence-Based Guideline for Central Venous Catheter Care on Catheter-Related Bloodstream Infections. Critical Care Nursing 2008 April; 45-48



DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation entitled “**A descriptive study to assess the knowledge and practice of nursing officers working in critical care units regarding care of patients with central venous catheter in selected hospitals at Babhulgaon Yeola in a view to develop a self-instructional module**” is a bonafide and genuine research work carried out by me under the guidance of **Mr. Anilkumar jee**, Lecturer, Department of Medical Surgical Nursing,.

Date:

Place: Babhulgaon Yeola

JETIR (Usha Motiram Kawale)

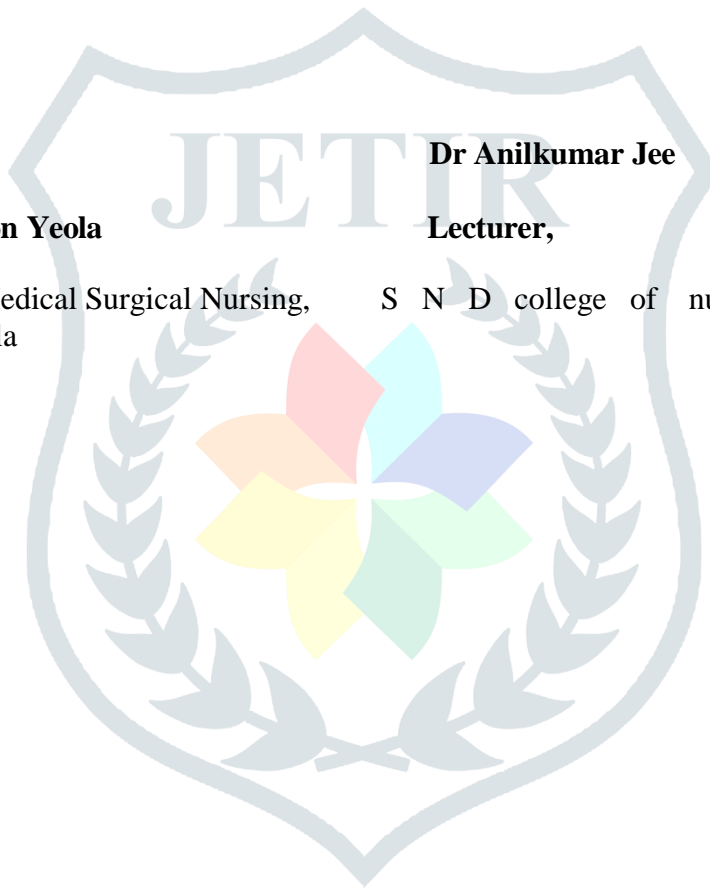


ANNEXURES**CERTIFICATE BY THE GUIDE**

This is to certify that the dissertation entitled “**A descriptive study to assess the knowledge and practice of nursing officers working in critical care units regarding care of patients with central venous catheter in selected hospitals at Babhulgaon Yeola in a view to develop a self-instructional module**” is a bonafide research work done by **Miss Usha Motiram Kawale** in partial fulfillment of the requirement for the degree of M.Sc. Nursing.

Date:**Dr Anilkumar Jee****Place: Babhulgaon Yeola****Lecturer,**Department of Medical Surgical Nursing,
Babhulgaon Yeola

S N D college of nursing Babhulgaon Yeola



**ENDORSEMENT BY THE HOD, PRINCIPAL / HEAD OF
THE INSTITUTION**

This is to certify that the dissertation entitled “**A descriptive study to assess the knowledge and practice of nursing officers working in critical care units regarding care of patients with central venous catheter in selected hospitals at Babhulgaon Yeola , in a view to develop a self-instructional module**” is a bonafide research work done by **Miss Usha Motiram Kawale** under the guidance of **Anilkumar jee**, Lecturer, Department of Medical Surgical Nursing, S N D college of Nursing Babhulgaon Yeola.

Seal and Signature of H.O.D

Seal and Signature of Principal

Dr. Anilkumar Jee

Lecturer,

Department of Medical Surgical Nursing

Date:

Place: Babhulgaon Yeola

Mr. Nagaraj G J

Principal,

S ND College Babhulgaon Yeola

Date:

Place: Bbabhulgaon Yeola.



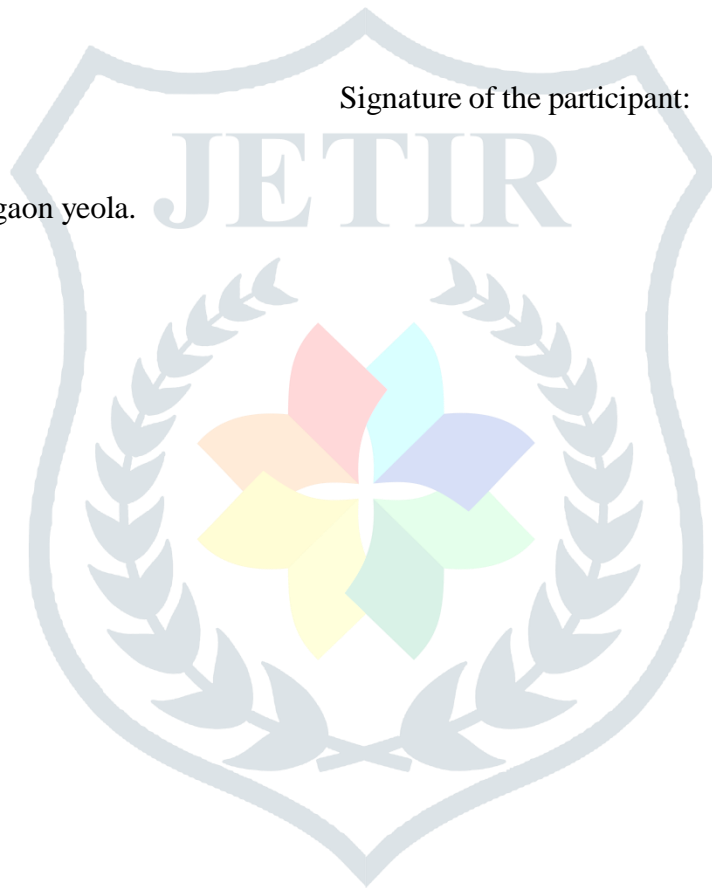
ANNEXURE**CONSENT FORM FOR PARTICIPANTS.**

I am willing to participate in the study. “A descriptive study to assess the knowledge and practice of nursing officers working in critical care units regarding care of patients with central venous catheter in selected hospitals at Babhulgaon Yeola in a view to develop a self instructional module”. I am aware that the information provided will be kept confidential and will be used only for the study purpose.

Date

Signature of the participant:

Place: Babhulgaon yeola.



ANNEXURE

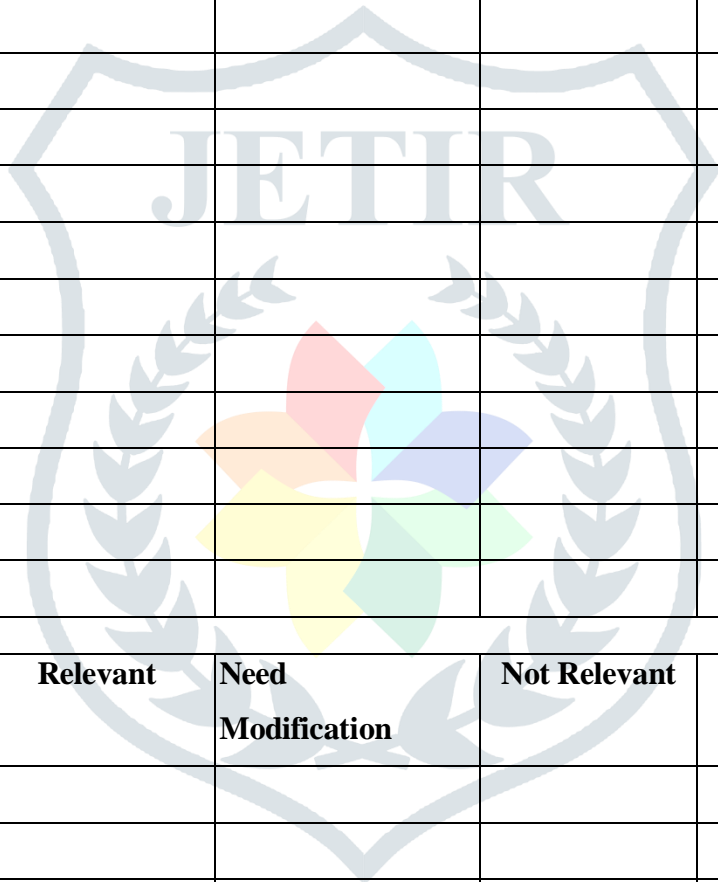
**CRITERIA RATING SCALE FOR VALIDATING SELF ADMINISTERED
QUESTIONNAIRE AND OBSERVATIONAL CHECKLIST.**

Respected Madam/Sir,

Kindly go through the content and place tick mark against questionnaire in the following columns ranging from relevant to not relevant, when found to be not relevant and need modification, kindly give your opinion in the remark column.

Section I - Socio Demographic Variables.					
Sl No	Item	Relevant	Need Modification	Not Relevant	Remark
1	1				
2	2				
3	3				
4	4				
5	5				
6	6				
Section II – Part A. Structured Knowledge Questionnaire regarding care of patients with Central Venous Catheter.					
Sl No	Item	Relevant	Need Modification	Not Relevant	Remark
1	1				
2	2				
3	3				

4	4				
5	5				
6	6				
7	7				
8	8				
9	9				
10	10				
11	11				
12	12				
13	13				
14	14				
15	15				
16	16				
17	17				
18	18				
19	19				
20	20				
21	21				
22	22				
23	23				
24	24				
25	25				
26	26				



Sl No	Item	Relevant	Need Modification	Not Relevant	Remark
27	27				
28	28				
29	29				
30	30				
31	31				
32	32				
33	33				
34	34				
35	35				

36	36				
37	37				
38	38				
39	39				
40	40				

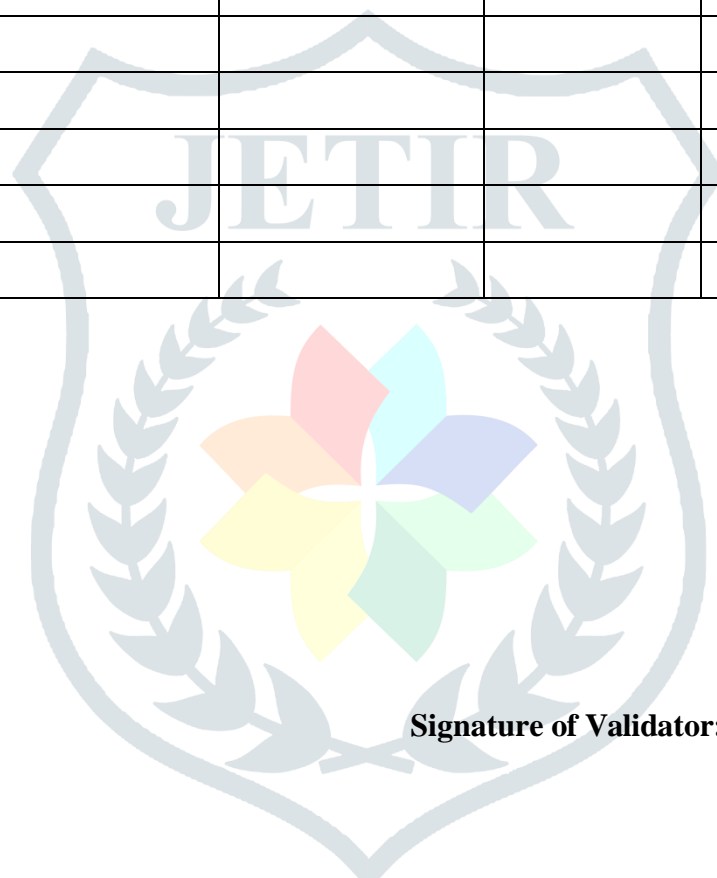


Section II – Part B. Observational Checklist to assess practice of nursing officers					
A. Care of Central Venous Catheter site.					
Sl No	Item	Relevant	Need Modification	Not Relevant	Remark
1	1				
2	2				
3	3				
4	4				
5	5				
6	6				
7	7				
8	8				
9	9				
10	10				
11	11				
12	12				
13	13				
14	14				
15	15				
16	16				
17	17				
18	18				
19	19				
20	20				
21	21				
22	22				
23	23				
24	24				

B. Central Venous Pressure Monitoring.					
Sl No	Item	Relevant	Need Modification	Not Relevant	Remark
1	1				
2	2				
3	3				
4	4				
5	5				
6	6				
7	7				
8	8				
9	9				
10	10				
11	11				
12	12				
13	13				
14	14				

Suggestions:

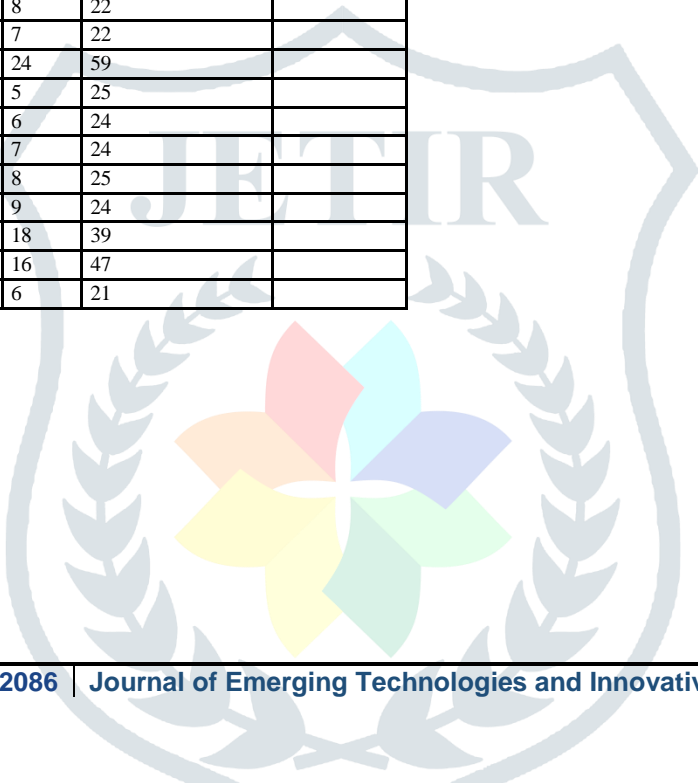
Signature of Validator:



SL. NO.	DEMOGRAPHIC VARIABLES			KNOWLEDGE																																																				
	1	2	3	TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16					
1	2	1	2	5	0	0	1	1	0	0	1	0	1	0	0	0	0	1	0	1	0	1	1	0	1	0	0	0	1	0	1	1	0	1	13	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1	0					
2	2	2	2	6	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	1	0	7	0	1	0	1	0	0	1	0	0	1	0	0	1	0	0	1	0					
3	3	1	3	7	0	1	0	0	0	1	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	8	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0						
4	2	2	2	6	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	1	0	0	6	0	0	1	0	1	0	0	1	1	0	0	0	1	0	0	0	0					
5	3	1	3	7	0	0	0	1	0	0	1	1	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	1	0	1	0	1	9	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0					
6	2	1	2	5	1	0	1	0	0	1	0	0	1	0	0	0	1	1	0	1	0	1	0	1	0	1	0	0	1	1	0	1	1	14	1	0	1	0	1	0	1	1	0	1	0	1	0	1	1	0	1	1	0			
7	3	2	3	8	0	1	0	0	0	0	0	0	0	1	1	1	0	0	1	0	1	0	1	0	1	0	0	0	0	1	0	0	0	1	10	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0				
8	3	1	3	7	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	7	0	1	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	1	0				
9	2	1	2	5	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	1	0	1	0	8	0	1	0	1	0	1	0	1	0	1	0	0	1	0	0	1	0	0				
10	1	1	1	3	0	1	0	0	0	0	0	0	1	0	0	1	1	0	0	1	0	0	0	1	0	0	1	0	0	1	0	0	0	8	0	0	0	1	0	0	0	0	0	1	0	1	0	1	0	0	1	0				
11	4	2	4	10	1	0	1	1	1	0	1	0	1	0	1	1	0	1	0	1	0	1	1	1	1	1	1	0	1	1	1	1	21	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
12	2	1	2	5	0	0	1	0	0	0	1	0	1	0	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	9	1	0	0	1	0	0	1	0	0	0	0	1	0	0	0	1	0	0	1	0	
13	3	2	3	8	1	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	8	0	1	1	0	1	1	0	0	0	1	1	0	0	0	1	0	0	1	0			
14	2	2	2	6	1	1	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	9	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	1	0	0	0	0		
15	2	1	2	5	0	0	1	0	0	0	0	1	0	1	0	0	0	1	0	0	1	0	0	1	0	1	0	0	1	0	0	1	0	10	0	1	0	1	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0			
16	3	1	3	7	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	6	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	0			
17	3	2	3	8	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	0	1	0	1	7	1	0	1	0	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0			
18	3	1	3	7	1	0	1	0	1	0	1	0	0	1	0	0	1	0	0	1	0	1	0	0	0	1	0	1	0	1	0	0	0	1	12	0	1	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	1	0		
19	3	1	3	7	0	1	0	0	1	0	0	0	1	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	8	0	1	1	1	0	0	0	1	0	0	1	0	0	0	1	0	1	0	1	0		
20	2	2	2	6	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	1	0	0	1	0	1	0	1	0	8	0	0	0	0	1	0	1	0	0	0	1	0	0	0	1	0	1	0	1	0	
21	2	2	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	1	0	1	0	1	1	1	9	1	0	0	1	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0		
22	4	2	4	10	1	1	1	0	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
23	2	1	2	5	0	0	0	1	0	0	0	1	0	1	0	0	1	0	0	1	0	1	1	0	1	1	0	1	1	1	0	1	15	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
24	3	2	3	8	1	1	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	1	1	10	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
25	3	1	3	7	1	0	0	1	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	1	0	0	1	10	0	1	0	1	0	0	0	1	0	0	1	0	0	1	0	0	1	1	0	1	1	0	
26	3	2	3	8	1	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	1	0	0	1	0	9	0	0	0	0	1	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0		
27	3	2	3	8	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	7	1	0	1	0	0	0	0	1	0	0	1	0	0	1	0	0	1	0	0	0	0		
28	3	1	3	7	0	1	0	1	1	0	0	0	1	0	0	0	1	0	1	0	1	0	1	0	0	1	1	1	1	1	0	1	14	1	0	1	1	0	0	1	1	1	0	1	1	0	1	1	0	1	1	1	1	1	1	1
29	4	1	4	9	1	1	0	1	0	1	1	1	0	1	0	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	0	1	22	0	1	0	0	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1	1	0	1
30	2	2	2	6	1	0	1	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	1	9	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0



RACTICE											GRAND TOTAL	
17	18	19	20	21	22	23	24	25	26	TOTAL		
0	1	0	0	0	1	0	0	0	1	8	26	
0	0	1	0	0	0	0	1	0	0	8	21	
0	1	0	0	0	1	0	1	0	1	7	22	
1	0	0	0	0	0	0	1	0	0	7	19	
0	0	0	1	1	0	1	0	0	1	8	24	
1	1	0	1	0	0	1	0	1	1	15	34	
0	0	1	0	0	1	0	0	0	0	6	24	
0	1	0	0	1	0	1	0	0	1	8	22	
1	0	0	0	1	0	0	0	1	0	9	22	
1	0	1	0	0	1	0	1	0	0	8	19	
1	1	1	1	1	1	1	1	0	0	1	23	23
0	0	1	0	0	0	1	0	1	0	8	22	
0	0	0	0	0	1	0	0	0	0	8	24	
1	0	0	1	0	0	1	0	1	0	7	22	
0	0	0	0	1	0	0	0	0	0	6	21	
0	1	0	1	0	0	0	1	0	1	7	20	
1	0	0	0	0	0	1	0	1	0	9	24	
1	0	0	1	0	1	0	1	0	1	9	28	
0	1	0	0	0	0	1	0	0	0	8	23	
0	0	0	1	0	1	0	0	1	0	8	22	
1	0	1	0	0	0	0	0	0	0	7	22	
1	1	1	1	1	1	1	1	0	1	1	24	59
0	0	0	1	0	1	0	0	0	0	5	25	
0	1	0	0	1	0	0	1	0	1	6	24	
0	0	0	0	0	0	1	0	0	0	7	24	
1	0	1	0	0	1	0	0	1	0	8	25	
0	1	0	1	1	0	0	1	0	0	9	24	
1	1	0	1	1	0	1	1	0	1	18	39	
0	1	1	0	1	0	1	0	1	1	16	47	
0	0	1	0	0	0	0	0	0	1	6	21	



ABSTRACT

Back ground and objectives

Central venous catheters are now commonly used in critical care units as most of these patients need a very long access. These catheters has got multiple functions like monitoring pressure of right side of the heart, administration of intra venous fluids, medications and nutrients. Improper management of patients with central venous catheter can give rise to various life threatening complications.

Today nursing is considered as a discipline of higher technology coupled with a wealth of complex information. As technology is advancing at a rapid speed, nursing officers involved in patient care should up-to-date their knowledge. Having knowledge only is not adequate; they should apply this knowledge while providing care to patients to improve the health of patients and to prevent development of complications. This will leads to development of nursing profession.

The study undertaken was **“A descriptive study to assess the knowledge and practice of nursing officers working in critical care units regarding care of patients with central venous catheter in selected hospitals at Babhulgaon Yeola in a view to develop a self-instructional module”**

Objectives of the study:

1. To assess the level of knowledge of nursing officers regarding care of patients with central venous catheter.
2. To assess the level of practice of nursing officers regarding care of patients with central venous catheter.
3. To find the correlation between the knowledge and practices cores of nursing officers regarding care of patients with central venous catheter.
4. To find the association between the level of knowledge of nursing officers and selected socio demographic variables.

5. To find the association between the level of practice of nursing officers and selected socio demographic variables.
6. To develop a self-instructional module for nursing officers on care of patients with central venous catheter.

Methods

A non-experimental descriptive research design was selected for the study and non-probability convenient sampling technique was used to select 30 nursing officers working in critical care units of selected hospital Babhulgaon Yeola Data was collected using structured knowledge questionnaire and observational checklist. The duration of study was one month.

Results

The results of the study revealed that 13(43.33%) of the nursing officers had inadequate knowledge, 17(56.67%) had moderately adequate knowledge and none of the nursing officers had adequate knowledge. 21(70%) of the nursing officers had inadequate practice, 9(30%) had moderately adequate practice and none of the nursing officers had adequate practice.

The overall knowledge mean percentage was 52.25% with standard deviation of 3.18. The overall practice mean percentage was 48.95% with standard deviation of 1.47.

Karl Pearson's correlation coefficient=0.6, which showed that there is a moderate positive correlation between the knowledge and practice scores of nursing officers. As the knowledge increases practice also increases.

Chi square test found that there is no association between the level of knowledge and practice of nursing officers with selected socio demographic variables.

Interpretation and conclusion

The study findings revealed that nursing officer's knowledge regarding care of patients with CVC was moderately adequate and their practice was inadequate. None of the nursing officers were found to have adequate knowledge and practice. There was a moderate positive correlation between the knowledge and practice scores of nursing officers. The study also revealed that there is no association between the level of knowledge and practice of nursing officers with selected socio demographic variables. A self-instructional module was given to the study participants with a view to improve their knowledge and practice regarding care of patients with CVC.