A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHINGPROGRAMME (STP)REGARDINGPREVENTION OF CENTRAL LINE ASSOCIATED BLOOD STREAM INFECTION IN TERMS OF KNOWLEDGE ANDSKILL AMONG STAFF NURSES IN SELECTED HOSPITAL AT DHARMAPURI

DISSERTATION SUBMITTED TO

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI – 32

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE IN NURSING

Reg. No. 301612751

DEPARTMENT OF MEDICAL-SURGICAL NURSING

SRRI PASPO COLLEGE OF NURSING

A. JETTIHALLI (PO), DHARMAPURI

OCTOBER - 2018

A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME (STP) REGARDING PREVENTION OF CENTRAL LINE ASSOCIATED BLOOD STREAM INFECTION IN TERMS OF KNOWLEDGE AND SKILL AMONG STAFF NURSES OF SELECTED HOSPITAL AT DHARMAPURI.

APPROVED BY DISSERTATION COMMITTEE

Research Guide: _____

Mrs.T.Chellammal. M.Sc(N).,
Principal,
Srri Paspo College of Nursing,
Dharmapuri – 636 007.

Clinical Specialty Guide: **Mr.BRIGHTLIN VIGIL, M.Sc (N),**

HOD in Medical – surgical Nursing,
Srri Paspo College of Nursing,
Dharmapuri– 636 007.

Viva Voce & Date:

1. Internal Examiner _____

2. External Examiner _____

A DISSERTATION SUBMITTED TO THE TAMIL NADU DR. M.G.R.MEDICAL UNIVERSITY,

CHENNAI – 32

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE IN NURSING

OCTOBER-2018

DECLARATION

I **Mrs. Kokila. S** hereby declare that this dissertation / thesis titled **"A Study To Assess The Effectiveness Of Structured Teaching Programme (STP) Regarding Prevention Of Central Line Associated Blood Stream Infection In Terms Of Knowledge And Skill Among Staff Nurses in Selected Private Hospital At Dharmapuri"** has been prepared by me under the guidance and direct supervision of Mrs.T.Chellammal M.Sc(N)., Principal, and Mr.BRIGHTLIN VIGIL,M.Sc(N)., HOD of Medical-Surgical Nursing, Srri Paspo College of Nursing, Dharmapuri – 636007.As the requirement for partial fulfillment of **MASTER OF SCIENCE IN NURSINGDEGREE** under The Tamil Nadu Dr.M.G.R. Medical University, Chennai-32. This dissertation had not been previously formed and this will not be used in further for award of any other degree/diploma. This dissertation represents independent work on the part of the candidate.

Place: Dharmapuri

Mrs. KOKILA .S

M.Sc. (N) II YEAR STUDENT

Srri Paspo College of Nursing

Dharmapuri.

ACKNOWLEDGEMENT

First, I Praise and thanks to the lord **ALMIGHTYGOD** for his loving care and special graces bestowed during this research Endeavour.

I would like to thank many members who have at different stages, played a pivotal role in completing study.

I express my sincere thanks to our **Founder Mr.Pandurangan, M.Sc.,ML, Srri Paspo College of Nursing,** for giving me an opportunity to undertake this course in this esteemed institution.

I express my heartful thanks to our **Correspondent Mrs.Anuradha ,B.Sc., BL., Srri Paspo College of Nursing,** for giving me an opportunity to undertake this course in this institution

.

I express my heartful thanks to our **Secretary Dr.P.Pradeep, M.B.B.S., and Joint Secretary Dr.P.Santhosh,M.B.B.S., Srri Paspo College of Nursing,** for giving me an opportunity to undertake this course in this institution.

I express my heartful thanks to our Co-Guide **Dr.G.Vidhya. MD., DNB Research Associate (Medical)** , **SPCON** for her valuable advice and suggestion, which helped me to lay a strong foundation for this study.

I take this opportunity to express my deep sense of gratitude and respect to my pragmatic guide **Mrs.T.Chellamal. M.Sc(N).,** principal of this institution, for rendering suggestions and boosting my inspiration in every phase of this dissertation work.

I am grateful to **Mr. BRIGHTLIN VIGIL, M.Sc. (N).,** HOD of medical - surgical nursing, **SPCON** for her valuable advice and suggestion, which helped me to lay a strong foundation for this study.

I wish express my thanks to **Mr. B. ARULOLI, M.Sc. (N).,**Associate Professor in mental health nursing and SPCON for her guidance and support.

I express thanks to **Director, K.V HOSPITAL, Dharmapuri for** giving me an opportunity to undertake this research study.

I am thankful to **Mr. P. Manogaran, M.sc, Phil.,** Statistician, **Srri Paspo College of Nursing**; He helped me in statistical analysis of the data.

I wish to place my sincere thanks to **Mr. Arul SelvamM.A.,M.Phil.,**English Faculty, for editing the manuscript meticulously.

I extend my thanks to the **Nursing staffs** for readily and willingly sharing the knowledge with me; this study would not have been possible without their co-operation.

I extend my thanks to the **other faculty members and Librarian** of **Srri Paspo college of Nursing**, for their sincere help and co-operation.

Thanks also to my well-wishers and many others who have helped me directly and indirectly in the preparation of this thesis.

Mrs. KOKILA .S

LIST OF ABBREVATIONS USED

1. ANM → Axillaries Nurse Midwifery
2. BSI → Blood Stream Infection
3. CLABSI → Central Line Associated Blood Stream Infection
4. CVP → Central Venous Pressure
5. df → Degree of Freedom
6. ED → Emergency Department
7. GNM → General Nurse Midwifery
8. HDU → High Dependency Unit
9. HAI → Hospital Acquired Infection
10. ICU → Intensive Care Unit
11. OPD → Outpatient Department
12. SD → Standard Deviation
13. χ^2 → Chi square
14. WHO → World Health Organization

ABSTRACT

“A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME (STP) REGARDING PREVENTION OF CENTRAL LINE ASSOCIATED BLOOD STREAM INFECTION INKNOWLEDGE AND SKILL AMONG STAFF NURSES INSELECTED HOSPITAL AT DHARMAPURI”

Hospital Acquired infection (MRSA-CLABSI) remains an important aspect in medical institute today. These infections may involve patients, health care worker and visitors. In spite of increase morbidity, they also account for a considerable financial and personal burden. Though its prevention is extremely simple and easy to practice, yet it is often over looked. This is leading to distressing consequences for both health care workers and their patients, so minimum standard safety precaution therefore needed to adopt to ensure compliance with the guidelines of the infection control programme and awareness need to be created among the staff nurses about infection control[1].

The present study aimed at assessing the effectiveness of Structural Teaching Programme (STP) on CLABSI in terms of knowledge and skill among staff nurses.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ANNEXURES

CHAPTER-I

INTRODUCTION

BACKGROUND OF THE STUDY

"Prevention is better than cure"

Central line associated bloodstream infections (CLABSIs) are defined as bacteremia,fungemia in a patient with an intravascular catheter with at least one positive blood culture obtained from a peripheral vein, clinical manifestations of infection (i.e., fever, chills, and/or hypotension), and no apparent source for the bloodstream infection except the catheter. Bloodstream infections are considered to be associated with a central line if the line was in use during the 48-hour period before the development of the bloodstream infection. If the time interval between the onset of infection and device use is greater than 48 hours, there should be compelling evidence that the infection is related to the central line. [1]

CLABSI is caused by various ways such as contamination of intravenous (IV) fluids by tubing , Insertion of drug additives to IV fluid, Addition of connecting tube or stopcocks to IV system, Improper care of needle insertion site, Contaminated needles or catheters, Failure of change IV access site when inflammation first appears, Improper technique during administration of multiple blood products, Improper care of peritoneal

or hemodialysis shunts , Improper accessing an IV port .[2] During CVP The nurse monitors the patient for complications, which include local obstruction with distal ischemia, external hemorrhage, massive ecchymosis, dissection, air embolism, blood.loss, pain, arteriospasm, and infection.[3]

Care bundles, in general, are groupings of best practices with respect to a disease process that individually improve care, but when applied together result in substantially greater improvement. The science supporting the bundle components is sufficiently established to be considered standard of care.The Central Line Bundle is a group of evidence-based interventions for patients with intravascular central catheters that, when implemented together, result in better outcomes than when implemented individually.The key components of the Central Line Bundle are hand hygiene, Maximal Barrier Precautions Upon Insertion,Chlorhexidine Skin Antisepsis, Optimal Catheter Site Selection, with Subclavian Vein as the Preferred Site for Non-Tunneled Catheters, Daily Review of Line Necessity with Prompt Removal of Unnecessary Lines.Patients who need frequent intravenous (IV) medications, blood, fluid replacement and/or nutrition may have a central venous catheter (or "line") placed into one of their veins. This line can stay in place for days and even weeks. Lines are often very helpful, but sometimes they cause infections when bacteria grow in the line and spreads to the patient's bloodstream. This is called a "catheter-related bloodstream infection" (CR-BSI). It is very serious and 20 percent (or 1 out of 5) of patients who get CR-BSI die from it. Doctors and nurses can help prevent CR-BSI by using a "bundle" of 5 care steps. Hospitals find that when all 5 of these steps are done that there are almost no cases of CR-BSI. The bundle of care steps areUsing proper hand hygiene. Everyone who touches the central line must wash their

hands with soap and water or an alcohol cleanser. Wearing maximal barrier precautions. The person who inserts the line should be in sterile clothing wearing a mask, gloves, and hair covering. The patient should be fully covered with a sterile drape, except for a very small hole where the line goes in. Cleaning the patient's skin with "chlorhexidine" (a type of soap) when the line is put in. Finding the best vein to insert the line. Often, this is the subclavian vein (in the chest) which is not as likely to get an infection as veins in the arm or leg.Checking the line for infection each day. The line should be taken out only when needed and not on a schedule .[4]

Prevention of catheter related infection is key to the successful use of parenteral nutrition. Most infections that do occur result from contamination of the exit site or catheter hub. Nurse must follow strict guidelines or protocols for the care of the vascular access device before, during, and after its insertion. Although catheter site care is somewhat varied and is controversial, strict adherence to hand-washing and aseptic technique is clearly the most important way to prevent infection. Dedicate(and mark) one lumen of a multi lumen catheter to the infusion of PN to minimize manipulations from the centers for Disease Control and prevention(CDC) are change the tubing for PN solutions every 24 hours.[5]

An estimated 250,000 to 500,000 CLABSI occur in US hospitals each year CLABSI are an important cause of morbidity and excess cost of care for hospitalized patients. Studies of CLABSI that control for the underlying severity of illness suggest that the attributable mortality rate is 4% to 20%. Put another way, an estimated 500 to

4000 patients die annually from CLABSI in the United States, and the reported range for patient care cost attributed to CLABSI is $3700 to $29,000 per episode.

The high incidence of CLABSI, the associated morbidity and mortality, our increasing understanding of pathogenesis and prevention strategies, and a growing unwillingness of payers, patient advocates, and patients to accept healthcare-associated infections (HAIs) as a risk of hospitalization, have led to a culture of "zero-tolerance" -- setting the goal for HAI rates at 0, treating every infection as if it should never happen, and holding everyone accountable -- for HAIs, particularly CLABSI, which are increasingly viewed as preventable or "never" events.

Clinical practice guidelines that provide recommendations for preventing and detecting HAIs and CLABSI have been published and widely disseminated. This review summarizes the existing guidelines and other literature, with an emphasis on measures that have been shown to be most successful and provide the greatest yield for prevention of infections.[6]

NEED OF THE STUDY

Dr. Curtis Sessler of the Medical College of Virginia discussed CRBSI. Dr. Sessler began by describing the extent of the problem and indicated that more than 5 million central venous catheters are placed annually in the United States. Although 30% to 50% of these may become colonized with potentially infectious pathogens, only 3% to 5% of patients suffer a CRBSI. However, that rate still implies that there are nearly 80,000 CRBSIs each year in the United States. Controversy exists regarding the attributable mortality of this process, and, as Dr.Sessler indicated, studies trying to estimate the excess death rate related to CRBSI are often limited in that they do not control for various time biases and changes in the subject's severity of illness as he/she progresses through the ICU stay. Nonetheless, from a financial perspective, CRBSIs are expensive and result in between 300 million and 2.3 billion dollars in excess costs annually.

Microbiologically, Gram-positive bacteria predominate in this infection. The most frequent pathogens are coagulase-negative *Staphylococci,Saureus* (most of which are methicillin-resistant in the ICU), and *Enterococcus.Candida* species are now surpassing Gram-negative organisms as another leading cause of this infection. These fungi presently represent the fourth most common organism in this disease state. Pathogenically, these organisms enter the blood by first colonizing the skin and, in turn, the exterior surface of the catheter. Recent studies, though, suggest that growth of organisms along the intraluminal surface of the catheter can serve as a source for infection. Coating both the intra- and extraluminal surfaces of catheters is biofilm. Biofilm is essentially slime produced in response to foreign material in the body.

Organisms can attach to this biofilm and use it as a culture medium. The biofilm also represents a relatively protected environment where antibiotics penetrate poorly and where pathogens can multiply and acquire resistance. In any event, the primary way to avoid any device infection, Dr. Sessler stressed, is to remove the device when it is no longer needed.

Because of the burden of CRBSI, the Agency for Healthcare Research and Quality (AHRQ) has made CRBSI prevention a major focus, and now a number of formal guidelines for prevention exist to help clinicians decide which strategies to adopt in their ICUs. Key recommendations include: improved hand hygiene, use of full-barrier drapes, skin preparation with chlorhexidine, site care with a semipermeable gauze, preferential use of the subclavian site, and consideration of antibiotic/antiseptic-impregnated catheters. Dr. Sessler observed that many ICUs have yet to fully implement these recommendations. He then highlighted the evidence behind several of these recommendations. For example, use of full-barrier drapes, or "making the ICU as OR-like as possible," according to Dr. Sessler, can significantly decrease the rate of CRBSIs. Similarly, reliance on chlorhexidine rather than povidine can reduce the risk for CRBSIs by 50% and costs only a few extra pennies. Overall, chlorhexidine is hugely cost-effective. With respect to the employment of antiseptic-impregnated catheters, Dr. Sessler indicated that current recommendations suggest they should be adopted if the rate of CRBSI remains > 2% despite other preventive measures. As to which catheter to rely on (2 are available, one coated with chlorhexidine and silver sulfadiazine [CSS] and one treated with rifampin and minocycline [RM]), Dr. Sessler described a recently published multicenter study of the CSS catheter vsan uncoated catheter. Although the CSS device

reduced colonization, it had no impact on actual CRBSIs. Other studies of the CSS catheter have also found that it only lowers colonization without reducing CRBSIs. Alternatively, one large randomized, controlled trial compared an older-generation CSS catheter (coated on only one luminal surface) with an RM product. In this report, the RM product was associated with significantly fewer CRBSIs. A cost-effectiveness analysis suggested this catheter may be preferred over the CSS catheter.

Putting prevention all together, though, is the key. Dr. Sessler concluded by reviewing reports of multifaceted educational efforts that have successfully addressed CRBSIs. In a study by Warren and colleagues stressing a learning and self-assessment approach that included information on risks for CRBSI, efforts at prevention, and the pathogenesis of CRBSI, researchers showed they could substantially decrease the frequency of CRBSIs. A similar project from Johns Hopkins University was also successful. It was unique in that it empowered the ICU nurses to stop a procedure if they concluded that it was not proceeding appropriately. Relying on the insight of the nurses as to process may be key since they spend the majority of the time at the bedside.[7]

ICU Infection Rates Not a Good Measure of Mortality Risk ATS 2010, NEW ORLEANS ICU-acquired infection rates are not an indication of patients' mortality risk, according to researchers the University of Pennsylvania, undermining a central tenet of many pay-for-performance initiatives. Public reporting of quality data is increasingly common in health care. These "report cards" are designed to improve the quality of care by helping patients choose the best hospitals. Yet, they only work if they successfully

identify high performers, and may be misleading if they steer patients toward poor performers.

The findings will be reported at the ATS 2010 International Conference in New Orleans. To examine whether or not publicly-reported infection rates actually identify the best hospitals, Kate Courtright, M.D., resident physician at the University of Pennsylvania and colleagues looked at patients in Pennsylvania hospitals especially at risk for two types of infections: pneumonia and blood stream infections. They calculated hospital death rates accounting for differences in illness severity across 158 hospitals, which included nearly 19,000 admissions involving mechanical ventilation and over 16,000 ICU admissions involving central venous catheterization, and compared them to ICU-acquired infection rates obtained from a public state website. They then used rank correlation and linear regression to determine the relationship between infections and death. "We found that ICU-acquired infection rates as reported on a state website did not correlate with death rates for at-risk patients." said Dr. Courtright, lead author of the abstract. "In fact, hospitals with lower rates of ICU-acquired infection did not also have lower death rates for at-risk patients." For example, the 43 hospitals that reported no cases of ICU-acquired pneumonia had an average death rate of 35.7 percent for patients receiving mechanical ventilation; hospitals with high infection rates (ranging from 1 to 8 cases per 1000 ventilator days) had an average death rate of 34.6 percent. These numbers were not statistically different.

Despite their limitations, Dr. Courtright noted, ICU-acquired infections rates are likely to continue to be a part of hospital report cards. However, "both policy-makers and the public should recognize that these rates, at least as reported by hospitals, provide limited information about the quality of the hospital, and may misidentify high and low performers," she said. "More comprehensive report cards that report both complications like ICU-acquired infections and overall survival rates are needed to help patients make correct decisions. In the meantime, more care is needed to make sure that hospital report cards don't do more harm than good. This is especiallyimportant because under upcoming health care reform, infection rates are also to be used for hospital reimbursement hospitals with high infection rates will not be reimbursed as well for their care. Such a strategy, known as 'pay-for-performance', may actually penalize good hospitals with low mortality rates."

Research on the efficacy of 'report cards' in predicting mortality rates must be expanded to other states or in a national study, said Dr. Courtright. Additionally, she said, infection rates as reported by the hospitals may be incorrect as they have an incentive to report low infection rates. "Report cards only work if they successfully identify the best hospitals," concluded Dr. Courtright. "We were surprised to find that many hospitals with good report cards from an infection standpoint are not that good from a more important standpoint—patient survival. Additionally, many hospitals with high infection rates actually had very good survival rates. Using these report cards to choose a hospital may be misleading and potentially harmful." [8]

STATEMENT OF THE PROBLEM

"A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME (STP) REGARDING PREVENTION OF CENTRAL LINE ASSOCIATED BLOOD STREAM INFECTION ON TERMS OF KNOWLEDGE AND SKILL AMONG STAFF NURSES IN SELECTED PRIVATE HOSPITAL AT DHARMAPURI''

OBJECTIVES

1. To assess the level of knowledge of staff nurses regarding prevention of central line associated blood stream infection
2. To identify the skill of staff nurses regarding prevention of central line associated blood stream infection
3. To evaluate the effectiveness ofstructured teaching programme (STP) on prevention of central line associated blood stream infection

4. To find out the relationship between the following.

   Pre-test knowledge score and pre-test skill scores.

   Post-test knowledge score and post-test skill scores.

5. To find out the association between the following.

   . Post test knowledge score and year of experience of the staff nurses.

   . Post test skill score and year of experience of the staff nurses.

HYPOTHESES

All hypotheses will be tested at 0.05 level of significance

H1-Mean post test knowledge score of staff nurses who received structured teaching programme (STP) regardingCLABSIwill be significantly higher than the mean pre-test knowledge score.

H2- Meanpost test skill score of staff nurses who received structured teaching programme (STP) regarding CLABSIwill be significantly higher than the mean pre-test skill score.

H3-a. There will be significant relationship between pre-test knowledge score and pre-test skill score among staff nurses, who received structured teaching programme (STP) regarding CLABSI

b.There will be significant relationship between post-test knowledge score and post-test skill score among staff nurses, who received structured teaching programme (STP) regarding CLABSI

H4a. There will be significant association between post-test knowledge score and selected demographic variables among staff nurses, who receivedstructuredteaching programme (STP) regardingCLABSI

b. There will be significant association between post-test skill score and selected demographic variables among staff nurses who received structured teaching programme (STP) regardingCLABSI

OPERATIONAL DEFINITIONS

- **Assess:** It refers to evaluate the knowledge level of staff nurses regarding care of patients with central line associated blood stream infection.
- **Effectiveness :** In this study 'effectiveness' means it is the outcome of Structured Teaching Programme (STP) regarding prevention of central line associated blood stream infection, which is measurable in terms of gaining in knowledge and skill score of staff nurses based on given questionnaire.
- **STP- Structured Teaching Programme :** It refers to well planned teaching material regarding prevention of central line associated blood stream infectiongiven through lecture and discussion . It will be here after referred as STP.
- **Prevention:** It refers to measures to prevent central line related blood stream infection.
- **Central line:**Acatheter (tube) that is passed through a vein to end up in the thoracic (chest) portion of the vena cava (the large vein returning blood to the heart) or in the right atrium of the heart.
- **Blood stream infection :**A condition in which bacteria enters the blood, which can occur through a wound or infection, or through a surgical procedure or injection. C. difficile – a type of bacteria (Clostridium difficile) that can cause a potentially serious form of gastrointestinal infection
- **Knowledge :** It refers to the written responses of staff nurse regarding prevention of central line associated blood stream infection as measured by knowledge questionnaire.

- **Skill:**activities carried out by nursing personnel's as a part of there care in relation to central line inserted patients .
- **Staff Nurse:**In this study it refers to those who have completed Diploma and Degree in nursing and midwifery and who are engaged in direct patient care.
- **Hospital :** It refers to private hospital at Dharmapuri.

DELIMITATION

Study is limited to

- Staff nurses who have completed general nursing and B.Sc nursing
- Staff nurses who are engaged in direct patient care.
- Staff nurses working in emergency department of KV hospital, at Dharmapuri.

CONCEPTUAL FRAME WORK

A conceptual frame work is a theoretical approach to study the problems that are scientifically based, which emphasizes the selection, arrangement and classification of its concepts.

A conceptual frame work is a network of interrelated concepts that provide a structure for organizing and describing the phenomena of interest. Research studies are based on a theory or conceptual frame work that facilitates its visualization of the problem and places the variables in a logical context.

The conceptual frame work of the present study is based on Daniel Stuffle Beam's Programme Evaluation Model. The Conceptual frame work presented in the figure shows Context evaluation, Input evaluation, Process evaluation and Product evaluation(CIPP).

CONTEXT EVALUATION

Context evaluation involves studying the environment of the programme.

Its purpose is to define the relevant environment and focus on unmet needs and missed opportunities and diagnoses the reason for unmet needs.

The present study includes collection of the demographic data, assessment of the knowledge and skill of the staff nurses regarding CLABSI.

INPUT EVALUATION

Input evaluation is designed to provide information and determines how to utilize the resources to meet the programme goals.

In the present study, it includes establishment of content validity and reliability of the tool and establishment of content validity of the STP.

PROCESS EVALUATION

Process evaluation is determination of congruency between planned and actual activities. It includes three strategies, the first is to detect defects in the procedural design, the second is to provide information for decision making and the third one is to maintain a record of procedures as they occurred.

In process evaluation a pilot study was conducted and feasibility of the study was found. Based on the pilot study, modification was done in methodology of real study.

PRODUCT EVALUATION

Product evaluation gathers data to determine whether the objectives were met or not. It allows the evaluator to decide whether to continue, terminates or modify the programme. Here the researcher conducted the post-test and follow-up test. Data was analyzed to evaluate the achievement of objectives.

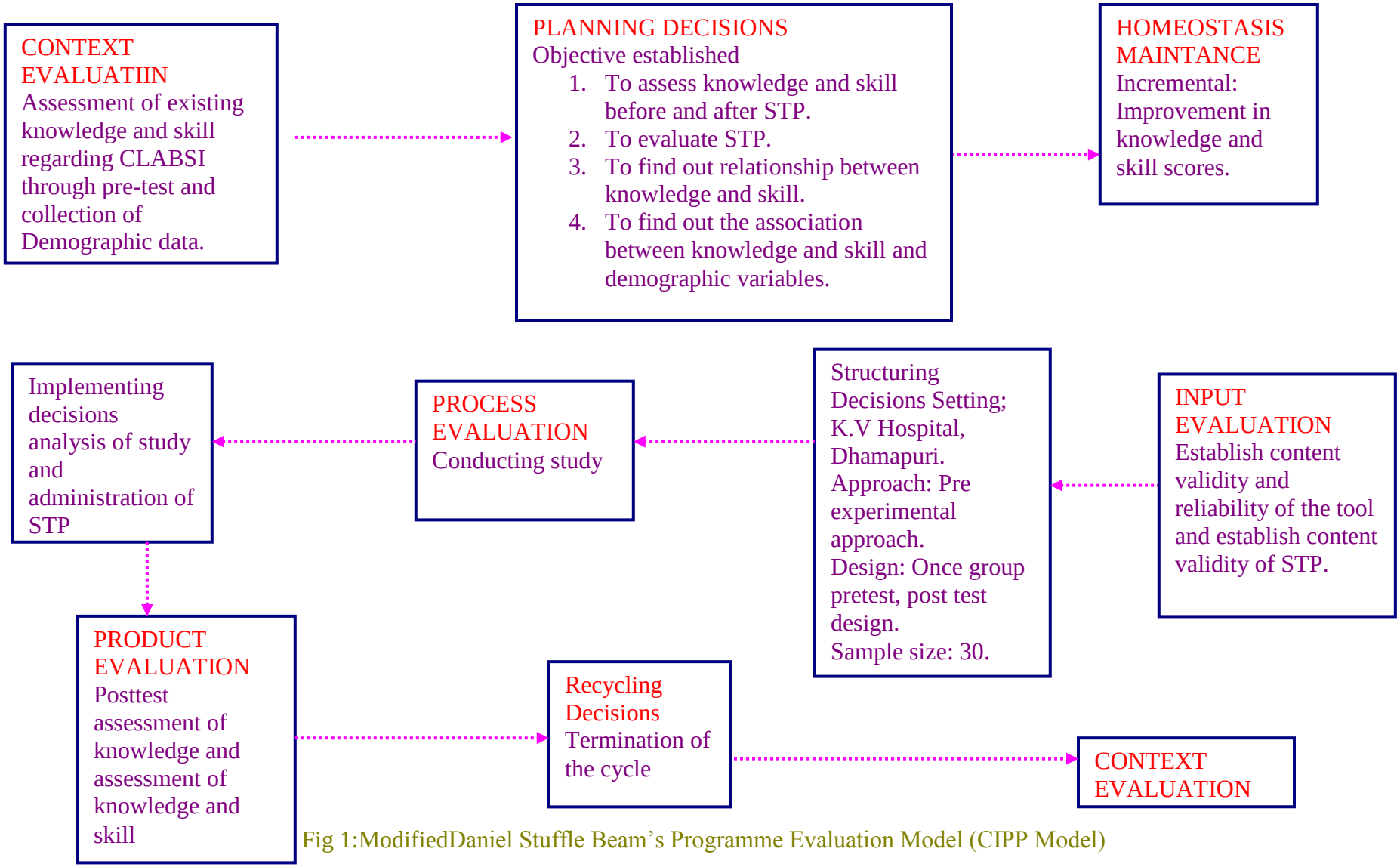


Fig 1:ModifiedDaniel Stuffle Beam's Programme Evaluation Model (CIPP Model)

CHAPTER-II

REVIEW OF LITERATURE

Review of literature is defined as a broad, comprehensive, in depth, systematic and critical review of scholarly publications, unpublished scholarly print material, audio visual materials and personal communication.

The investigator carried out an extensive review of related literature on selected topics both research and non research in order to gain maximum relevant information and to perform the study in a scientific manner.

The review of available literature was organized under the following headings:

- **Studies Related To Prevention Of Central Line Associated Blood Stream Infection**
- **Studies Related To SkillAnd Practice Of Staff Nurses In The Prevention Of Central Line Associated Blood Stream Infection**
- **Studies Related To Prevalence Of Central Line Associated Blood Stream Infection**
- **Studies Related Knowledge Of Staff Nurses In The Prevention Of Central Line Associated Blood Stream Infection**

Studies related to prevention of central line associated blood stream infection

David R. Snydman, *(*2007) conducted a study on Prevention of Catheter-Related Bloodstream Infections. **T**he recent well-documented furor over care provided to active military personnel at Walter Reed Hospital and to veterans at Department of Veterans Affairs (VA) hospitals throughout the United States provides an interesting backdrop for reading the article by Krein et al in this issue of *Mayo Clinic Proceedings*. Their survey demonstrated that VA hospitals were more likely than non-VA hospitals to use 2 appropriate quality measures to prevent catheter-related bloodstream infections (CR-BSIs). Now that the steps necessary to reduce CR-BSIs are widely known, institutions should follow the lead of the VA health care system and adopt the recommended practices so as to reduce this preventable form of infection.[9]

Bong JJ, Kite P, Wilco MH, McMahon MJ. (2003) conducted a study on prevention of catheter related bloodstream infection by silver iontophoretic central venous catheters, a randomised controlled trial. Three hundred and four single lumen study catheters were inserted into 268 patients. Total duration of catheterisation was 5449 days (median, 12 days/catheter). Complete data could be evaluated in 270 catheters: 128 silver iontophoretic catheters and 140 untreated catheters. Forty seven silver iontophoretic catheters (36.7%) were colonised compared with 48 control catheters (33.8%). Seven cases (5.5%) of CRBSI occurred in patients who received silver iontophoretic catheters, compared with 11 cases (7.7%) in patients receiving control catheters. Kaplan-Meier analysis showed no significant difference in the risk of CRBSI between the silver iontophoretic catheters and the untreated catheters ($p = 0.77$). There

was no significant difference in the incidence of catheter colonisation or CRBSI among high risk patients between silver iontophoretic catheters and control catheters. Future prospective, randomised studies with a larger number of catheters are encouraged to confirm or refute these results.[10]

Henrickson KJ, Axtell RA, Hoover SM, Kuhn SM, et.al (2000) conducted a study on prevention of central venous catheter-related infections and thrombotic events in immunocompromised children by the use of vancomycin,ciprofloxacin,heparin flush solution. To determine whether an antibiotic flush solution containing vancomycin, heparin, and ciprofloxacin (VHC) can prevent the majority of line infections..The use of either VH or VHC flush solution significantly decreased the complications associated with the use of tunneled central venous lines in immunocompromised children and would save significant health care resources.[11]

Jurewitsch B, Lee T, Park J, Jeejeebhoy K.(1998) conducted a study on Taurolidine 2% as an antimicrobial lock solution for prevention of recurrent catheter-related bloodstream infections. Taurolidine is a novel antimicrobial agent that has found a niche in Europe for prevention of bacteremia in home parenteral nutrition (HPN) patients who have multiple catheter-related blood-stream infections. These data support previous observations made outside North America and suggest that taurolidine may prove to be an effective and safe antimicrobial agent for the prevention of recurrent catheter-related bloodstream infections.[12]

Dennis G. Maki, Susan M. Stolz, Susan Wheeler, and Leonard A. Mermel (1997) conducted a study on prevention of Central Venous Catheter-Related Bloodstream

Infection by use of an Antiseptic-Impregnated Catheter. No adverse effects from the antiseptic catheter were seen, and none of the 122 isolates obtained from infected catheters in either group showed in vitro resistance to chlorhexidine-silver sulfadiazine. Cost-benefit analysis indicated that the antiseptic catheter should prove cost-beneficial if an institution's rate of catheter-related bacteremia with noncuffed central venous catheters is at least 3 infections per 1000 catheter-days) .[13]

Studies related to skillAnd Practice of staff nurses in the prevention of central line associatedted blood stream infection

Rangachari P, Rissing P, Wagner P, Rethemeyer K, et.al(2010) conducted a study on a baseline study of communication networks related to evidence-based infection prevention practices in an intensive care unit. This study seeks to gain a baseline understanding of the communication network structure, content of communication, and outcomes in a medical intensive care unit experiencing higher-than-expected central line blood stream infection (CLBSI) rates. The content of communication refers to the type of knowledge (ie, tacit vs explicit knowledge) exchanged on CLBSI prevention practices. Outcomes include compliance with CLBSI prevention practices and hospital-acquired CLBSI rates in the unit. More significantly, the study lays a foundation for generating concrete and context-sensitive strategies for organizational learning and improvement in the context of evidence-based practices. Such insight is critical from the perspective of evidence-based health care management. [14]

Sarah L. Krein, Timothy P. Hofer, Christine P. Kowalski,Russell N. Olmsted,et.al (2007) conducted astudy on Use of Central Venous Catheter-Related

Bloodstream Infection Prevention Practices by US Hospitals. The overall survey response rate was 72% (n=516). A higher percentage of VA compared to non-VA hospitals reported using maximal sterile barrier precautions (84% vs 71%; *P*=.01), chlorhexidinegluconate for insertion site antisepsis (91% vs 69%; *P*<.001); and a composite approach (62% vs 44%; *P*=.003) combining concurrent use of maximal sterile barrier precautions, chlorhexidinegluconate, and avoidance of routine central line changes. Most US hospitals are using maximal sterile barrier precautions and chlorhexidinegluconate, 2 of the most strongly recommended practices to prevent CR-BSIs. However, fewer than half of non-VA US hospitals reported concurrent use of maximal sterile barrier precautions, chlorhexidinegluconate, and avoidance of routine central line changes. Wider use of CR-BSI prevention practices by hospitals could be encouraged by fostering a culture of safety, participating in infection prevention collaboratives, and promoting infection control professional certification.[15]

Render ML, Brungs S, Kotagal U, Nicholson M, et.al(2006) conducted a study on Evidence-based practice to reduce central line infections.In 2003, through the Greater Cincinnati Health Council nine health care systems agreed to participate and fund 50% of a two-year project to reduce hospital-acquired infections among patients in intensive care units (ICU) and following surgery (SIP). At the project midpoint (3 quarters of 2004), adherence to evidence-based practices increased from 30% to nearly 95%.The direct role of hospital leadership and development of a local community of practice, facilitated cooperation of physicians, problem solving, and success. Use of forcing functions (removal of betadine in kits, creation of an accessory pack and a checklist for line

insertion) improved reliability. The appropriate floor for central line infections in ICUs is < 1 infection /1,000 line days.[16]

Craig M. Coopersmith, Jeanne E. Zack, Myrna R. Ward, Carrie S. Sona et.al (2004) conducted a study on the Impact of Bedside Behavior on Catheter-Related Bacteremia in the Intensive Care Unit. Appropriate practice was observed before and after the behavioral intervention in catheter site placement, dressing type, absence of antibiotic ointment, and proper securing of central venous catheters. Thirty-two CRBSIs occurred in 9353 catheter-days 24 months before the behavioral intervention compared with 17 CRBSIs in 6152 catheter-days during the 15 months after the intervention (3.4/1000 to 2.8/1000 catheter-days, $P = .40$). Although a previous educational program decreased the CRBSI rate, this was associated with only modest compliance with best practice principles when bedside audits were performed 18 months later. A behavioral intervention improved all identified deficiencies, leading to a nonsignificant decrease in CRBSIs.[17]

Studies related to prevalence of central line associated blood stream infection

P. Nair, E. Pabs-Garnon, C.F. Whitehead (2010) UK survey of central line related sepsis in a neurointensive care unit .The incidence of central line associated blood stream infections (CR-BSI) was audited in 2008.Data was collected daily for a period of four months. This included the number of patients with central venous catheters in the unit, The percentage of lines removed for clinically suspected CR-BSI reduced in this period from 30% to 15.04%. The average duration of stay for the lines were SC 4.4 days, IJ 5.8

days and F 4 days which was shorter than our previous audit showed. The percentage of microbiologically proven CR-BSI also dropped from 12.5% to 2.5% (4 from internal jugular lines and one from a femoral line)The survey proves that with strict adherence to guidelines and following infection control protocols diligently the risk of CR-BSI from all line types can be reduced.[18]

Criona M. Walshe, Kevin S. Boner, Jane Bourke, Rosemary Hone, et.al (2010) conducted a study on Catheter-related blood stream infection (CRBSI) in TPN patients. A multidisciplinary TPN committee was created to examine CRBSI episodes and a parallel education programme was set up and maintained. Prospectively collected data were analysed from 1,392 patients in whom 2,565 CVCs were used over 15,397 CVC days. CRBSI incidence was expressed as CRBSI episodes per 1,000 CVC days, percentage patients or percentage CVCs infected. CRBSI incidence fell from 33 to 7 episodes per 1,000 CVC days ($p<0.01$). Percentage of infected CVCs fell from 17 per cent to 5 per cent($p <0.05$) and proportion of patients affected fell from 27 per cent to 7 per cent($p <0.01$). The corresponding slopes of the lines expressing fall in CRBSI rate were -1.3-0.63 and -1.4 respectively.[19]

Victor D. Rosenthal (2009) conducted a study on Central Line-Associated Bloodstream Infections in Limited-Resource Countries, 99 studies were initially identified as being potentially eligible for inclusion, but no systematic review was found at the Cochrane Library. After the full text of these 99 studies were reviewed, 49 were excluded for the following reasons, 38 because they showed only overall health care-associated infection rates, 10 because they showed only ventilator-associated pneumonia

rates, and 1 because it showed only catheter-associated urinary tract infection rates. After the remaining 50 studies showing only CLABSI rates were reviewed. In other words, to make it feasible for hospitals in limited-resource countries to achieve the levels of quality and patient safety found in developed countries, public nationwide and global health care policies are needed to provide health care facilities with the necessary resources and support.[20]

Ranju A. Soni, Gwen Rogers, August Valenti, and Thomas E. Van der Kloot, (2008) conducted a study on Cathter related blood stream infection rates in a mixed medical-surgical icu population before and after the implementation of a central line bundle (clb). After theimplementation of CLB, from January 2007 through August 2007,the CRBSI rate was 4.44 infections/1000 device days After theimplementation of CLB, from January 2007 through August 2007,the CRBSI rate was 4.44 infections/1000 device days (26 totalcases and 5853 total device days). A statistically significantdifference was noted between the CRBSI rate in the two timeperiods (P = 0.0038). No statistically significant differencewas found in the Apache II score between the two groups, withmean values of 15.68 in 2006 and 13.13 in 2007 (P = 0.067).[21]

Chee L, Brown M, Sasadeusz J, MacGregor L.et.al (2008) Gram-negative organisms predominate in Hickman line-related infections in non-neutropenic patients with hematological malignancies. A detailed retrospective review was done from January 2003 to December 2005 on all patients with hematological malignancies who had double-lumen non-antibiotic impregnated tunneled CVCs (Hickman catheters) inserted in our hospital to identify those fulfilling our criteria for CRBSI episodes. The majority (73%)

of initial CRBSI episodes required catheter removal within 7 days of onset. Vancomycin and cefepime was the most common initial antibiotic regimen used. This study highlights the predominance of gram-negative infections in our cohort of non-neutropenic patients with underlying hematological malignancies who had Hickman catheters whose lines were not salvageable in the majority of cases. Empiric monotherapy with an antimicrobial agent with broad spectrum gram-negative cover needs to be given upfront pending results of the nature and sensitivity of organisms identified.[22]

Leonardo Lorente, Ruth Santacreu, María M Martín,Alejandro Jiménezet.al (2006) conducted a study on arterial catheter-related infection of 2,949 catheters. A total of 2,018 patients was admitted to the intensive care unit during the study period. The number of arterial catheters, the number of days of arterial catheterization, the number of CRLIs and the number of CRBSIs were as follows: total, 2,949, 17,057, 20 and 10; radial, 2,088, 12,007, 9 and 3; brachial, 112, 649, 0 and 0; dorsalispedis, 131, 754, 0 and 0; and femoral, 618, 3,647, 11 and 7. The CRLI incidence was significantly higher for femoral access (3.02/1,000 catheter-days) than for radial access (0.75/1,000 catheter-days) (odds ratio, 1.5; 95% confidence interval, 1.10–2.13; P = 0.01). The CRBSI incidence was significantly higher for femoral access (1.92/1,000 catheter-days) than for radial access (0.25/1,000 catheter-days) (odds ratio, 1.9; 95% confidence interval, 1.15–3.41; P = 0.009). Our results suggest that a femoral site increases the risk of arterial catheter-related infection.[23]

IssamRaad, Hend A. Hanna, BadieAlakech, IoannisChatzinikolaou, et.al(2004)conducted a study ondifferential time to positivity. A Useful Method for Diagnosing Catheter-Related Bloodstream Infections. 191 bloodstream infections with positive simultaneous central venous catheter and peripheral vein blood cultures were included. One hundred eight patients had catheter-related bacteremias, and 83 had non–catheter-related bacteremias. Catheter-related bacteremias were more frequently caused by staphylococci and less likely to be associated with underlying hematologic malignant conditions, neutropenia, and longer duration of hospitalization. As a diagnostic tool for catheter-related bacteremia differential time to positivity of 120 minutes or more was associated with 81% sensitivity and 92% specificity for short-term catheters and 93% sensitivity and 75% specificity for long-term catheters.Differential time to positivity of 120 minutes or more is highly sensitive and specific for catheter-related bacteremia in patients who have short- and longterm catheters.[24]

Studies related to knowledge of staff nurse in the prevention of central line associated blood stream infection

A Srinivasan, MD, M Wise, PhD, M Bell, MD, D Cardo, MD, el.al (2011) conducted a study on Central Line Associated Blood Stream Infections United States, In 2001, an estimated 43,000 CLABSIs occurred among patients hospitalized in ICUs in the United States. In 2009, the estimated number of ICU CLABSIs had decreased to 18,000. Reductions in CLABSIs caused by *Staphylococcus aureus* were more marked than reductions in infections caused by gram-negative rods, *Candida* spp., and *Enterococcus* spp. In 2009, an estimated 23,000 CLABSIs occurred among patients in inpatient wards

and, in 2008, an estimated 37,000 CLABSIs occurred among patients receiving outpatient hemodialysis. In 2009 alone, an estimated 25,000 fewer CLABSIs occurred in U.S. ICUs than in 2001, a 58% reduction. This represents up to 6,000 lives saved and $414 million in potential excess health-care costs in 2009 and approximately $1.8 billion in cumulative excess health-care costs since 2001. A substantial number of CLABSIs continue to occur, especially in outpatient hemodialysis centers and inpatient wards.[25]

Koll BS, Straub TA, Jalon HS, Block R,et.al (2008) conducted a study on CLABs collaborative, a regionwide effort to improve the quality of care in hospitals.There was a statistically significant decrease of 54% ($p < .001$) between the mean CLABs rate during the intervention period (2.24 infections per 1,000 central line days) compared with the mean baseline rate (4.85 infections per 1,000 central line days). By March 2008, the rate had dropped by 70% (1.44 infections per 1,000 central line days) compared with baseline. At the hospital level, decreases in CLABs rates up to 88% were observed between the baseline period and the intervention period, with 56% of hospitals achieving at least a 50% decrease in their CLABs rate. Each participating hospital sustained implementation of the central line bundle throughout the 33-month intervention, which, along with standardized line maintenance procedures, resulted in reduction in, and sometimes elimination of, CLABs.[26]

Eggimann P, Pittet D (2002) conducted a study on overview of catheter-related infections with special emphasis on prevention based on educational programs Intra-vascular access is an unavoidable tool in sophisticated modern medical practice, and catheter-related infection remains a leading cause of nosocomial infections.We briefly

review the pathophysiology of these infections, highlighting the importance of the skin insertion site and the intravenous line hub as principal sources of colonization and infection. A large proportion of these infections are preventable and this has been the objective of creating precise guidelines. It was recently suggested that the situation may evolve with the introduction of antibiotic antiseptic-coated devices, whose impact on the epidemiology of antibiotic resistance remains to be determined. Recently, educational programs and or a global preventive strategy based on the strict application of specific preventive measures and careful control of all factors associated with infection proved to be even more effective than coated devices in reducing rates of infection. Practical aspects regarding educational approaches will help clinicians to adapt and incorporate educational programs into clinical practice.[27]

CHAPTER III

RESEARCH METHODOLOGY

This chapter deals with description of research methodology adopted in the study. It is discussed under the following headings: research approach, research design, setting population, sample size, sampling technique, sampling criteria, selection and development of tools, pilot study, and procedure for data collection and plan for data analysis.

RESEARCH APPROACH

The selection of research approach is a basic procedure for collecting data. “The research approach refers to a general set of orderly disciplined procedures used to acquire dependent and useful information.” It refers to the way the researcher plans and structures the research process

The research approach adopted in the study was evaluative approach method. An evaluatory research method and procedure helps to evaluate a problem, treatment, practice or policy. It uses analytic means to document the worth of an activity. The present study aims at identifying the knowledge and skill of staff nurses regarding prevention of central line associated blood stream iinfection.

RESEARCH DESIGN

Research design helps the researcher in the selection of subjects, manipulation of independent variables, and observation of type of statistical method to be used to interpret data.

Selection of the research design depends upon the purpose of the study, research approach and variables to be studied. The research design selected for the present study was one group pre-test post-test design, which belongs to the pre-experimental design.

The pre-experimental design is a design in which the pre-test and post-test observations are made on different days with only one selected group and without a control group

SCHEMATIC REPRESENTATION OF STUDY DESIGN

O_1 O_2 _____ x _____ O_3 O_4

O_1 Pretest assessment of knowledge

O_2 Pre-test assessment of skill

X Administration of structured teaching programme

O_3 Post-test assessment of knowledge

O_4 Post-test assessment of skill.

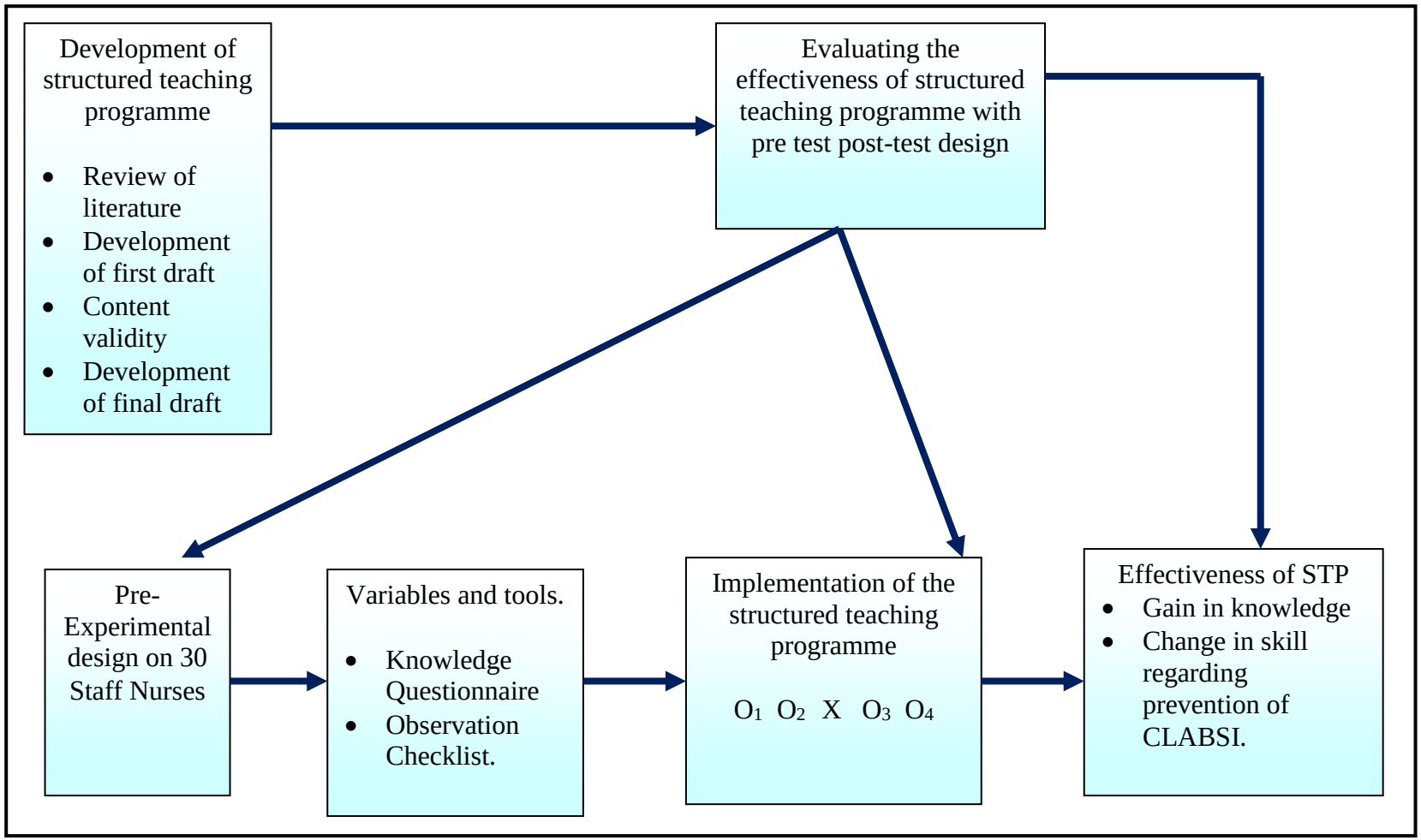


Fig. 2: Schematic representation of the study design

VARIABLES UNDER STUDY

The concepts that can take on different quantitative values are called variables.

The variables for the present study were:

- Independent variable: Structured Teaching Programme.
- Dependent variable: Knowledge and skill of staff nurses.
- Extraneous variables:Age, Gender, Previous knowledge on prevention of CLABSI, previous training on prevention of CLABSI, Years of experience and Department of working.

SETTING OF THE STUDY

The study was conducted in Kumutha&K.V Hospital. Criteria for selecting the approximately5 km from SrriPaspo College of Nursing. The total numbers of staff nurses in the hospital is 75.They are working in 3 shifts. The different departments available in the hospital are OT-2, Step down ICU-1, Recovery Room-2, Pre-operative wards-2, Post-operative wards-2, Casuality-2, OPD-3 and ECG Room-1, Labour room-1, Antenatal & Post natal ward -1

POPULATION

The target population for the study was qualified staff nurses who are working in ICU& Emergency in Private HospitalatDharmapuri.

SAMPLE SIZE

A sample is a small portion of the population selected for the study.

In the study sample consisted of 30 staff nurses who met the inclusion criteria.

SAMPLING TECHNIQUE

Sampling refers to the process of selecting a portion of population to represent the entire population.

In this study purposive sampling technique has been used to select the sample.

Purposive sampling is based on the belief that a researcher's knowledge about the population can be used to handpick the cases to be included in the sample.

CRITERIA FOR SAMPLE SELECTION

Samples were selected based on the following inclusion and exclusion criteria.

INCLUSION CRITERIA

- Staff nurse who completed general nursing and B.Sc nursing.
- Staff nurses of both genders.
- Staff nurses who are willing to participate in the research study.
- Staff nurses who are working in ICU and Emergency department.
- Staff nurses between 20-45 years.

EXCLUSION CRITERIA

- Staff nurses who were engaged in administrative work such as Nursing Supervisor and Superintendent.
- Staff nurses of other categories like ANM and Trained worker.
- Staff nurses who are not willing to participate.
- Staff nurses who are working in other than ICU

SELECTION AND DEVELOPMENT OF TOOL

The tool was prepared after going through the extensive review of literature and with the guidance of experts in the field. Based on the objectives of the study the investigator prepared a knowledge questionnaire to assess the knowledge regarding CLABSIand observation check list to assess the skill regarding CLABSI.

DESCRIPTION OF THE TOOL

Section A: Consisted of items related to demographic data such as age, gender,educational qualification, previous education onprevention of CLABSI, previous training onprevention of CLABSI , years of experience and department of working.

Section B Tool-1: Consisted of structured questionnaire with 30 questions related to knowledge ofprevention of CLABSI. The maximum obtainable score was 30. A right answer was given a score of one and for wrong answer or omitted question a score zero was allotted.

Based on the above scoring the level of knowledge was assessed as:

75 and above: Adequate knowledge

51 – 74: Average knowledge

50 and less: Inadequate knowledge

Section B Tool-2: Consisted of observation check list with 20 activities related to the skill of staff nurses regardingprevention of CLABSI. Each activity had 3 options. Done correctly, done incorrectly, not done. If an activity is done correctly a score of "one" and if done incorrectly or not done, a score "zero" was allotted. The maximum obtainable score was 20.

Based on the above scoring the level of skill was assessed as:

75 and above: Good

51-74: Fair

50 and less: Poor

DEVELOPMENT OF STP

STP was prepared based on the research topic and objectives pertaining to the domain of learning i.e. knowledge and application. The main objectives that were kept in mind while preparing a STP were knowledge level of the sample, method of teaching to be adopted, simplicity of language and relevancy of teaching. The components included in the STP were general knowledge regarding prevention of CLABSI.

CONTENT VALIDITY OF THE TOOL AND STP

Content validity of the tool was established by ten experts who comprised of five nurse educators, Two doctor and one statisticians. The experts were requested to go through the developed tool and give their valuable suggestions. The suggestions of experts were incorporated in the tool and structured teaching programme was further modified and finalized with expert's opinion with consultation of guide. After the content validity, validated tool was given to language experts for editing.

RELIABILITY OF THE TOOL

The tool after validation was subjected to test for its reliability. The reliability was established by using split half method. Reliability coefficient of knowledge questionnaire was found to be r = 0.83 and reliability coefficient of observation check list was found to be r = 0.86 which indicated that tool was reliable.

PLANNING FOR TEACHING PROGRAMME

SELECTING THE METHOD OF TEACHING

Lecture cum discussion method was selected as appropriate methods of teaching the staff nurses. It was planned to teach groups. Group teaching permits exchange of views and broadened knowledge through wider interaction.

SELECTION AND PREPARATION OF AV AIDS

LCD, charts and flip chart, OHP, pamphlets were considered appropriate.

DETERMINING TEACHING LEARNING ACTIVITIES

Teaching and learning activities were determined in advance and included the following:

- Creating interest by motivating and reinforcing
- Discussion
- Participatory discussion

Informing the participants: It was planned to inform the sample well in advance to conduct the STP according to their convenience.

DETERMINING THE METHOD OF EVALUATING THE STP

The evaluation of STP was through post-test after seven days of implementation of teaching programme.

PILOT STUDY

The pilot study was conducted in Kumudha Hospital from 26-04-2018 to 30-04-2018 to find out the feasibility of the tool and study. The investigator utilized purposive sampling technique to select the samples. Six staff nurses who met the inclusion criteria were selected for the study. Pre-test was administered using structured questionnaire to assess knowledge and observation check list to assess skill. STP was given on the day of pre-test. After four days, post-test was conducted by using the same questionnaire and observation check list for evaluating the effectiveness of STP. The effectiveness of STP was assessed on the basis of their written answers of the knowledge questionnaire and the observation based on the observation check list.

DATA COLLECTION PROCEDURE

Formal permission to conduct the study was obtained from the concerned authorities. The period of data collection was carried out during May from 02-05-2018 to 23-05-2018. The researcher used structured knowledge questionnaire and observation checklist for collecting data. Structured teaching programme was conducted after pre-test. Each day STP was conducted for 3subjects by lecture, demonstration and discussion method. Each session of STP lasted for about 30 minutes group members participated with interest. The AV aids used were L.C.D charts, flip charts, photographs. They were alert and enthusiastic. At the end of the session, 10 minutes were given for discussion.

Post-test was conducted seven days after STP, using the same structured knowledge questionnaire and observation check list which was used for pre-test.

The respondents were cooperative and the researcher thanked them for their cooperation. During the time of observation and intervention staff nurses were given refreshment and incentives in the form of gifts.

Daily 3 subjects were selected by purposive sampling technique. There were totally 10 groups.

PLAN FOR DATA ANALYSIS

The data obtained were analyzed in terms of objectives of the study using descriptive and inferential statistics. The plan of data analysis was as follows:

- Organization of data in master sheet/computer
- Personal data were analyzed in terms of frequencies and percentages.
- The knowledge and skill of staff nurses regarding prevention of CLABSIin before and after STP were analyzed in terms of frequency, percentages, mean, and standard deviation and were presented in the form of bar/column diagram.
- Paired‘t’ test was used to test the significant difference between two means in pre-test and post-test of knowledge and skill.
- Correlation coefficient ‘r’ value was used to find out the relationship between pre-test knowledge score and pre-test skill score and between post-test knowledge score and post-test skill score.
- Chi-square test was used to study the association between pre-test level of knowledge and demographic variables and post-test level of skill and demographic variables.

CHAPTER IV

Data Analysis & Interpretation

Kerlingerdefines analysis as the categorizing, ordering, manipulating and summarizing of the data to obtain answer to research questions .The purpose of analysis is to reduce data to an intelligible and interpretable form, so that the relation of research problems can be studied and tested.

This chapter presents the analysis and interpretation of the data collected to determine the effectiveness of structured teaching programme on prevention of CLABSI among staff nurses in selected hospitals at Dharmapuri.

ORGANIZATION OF THE STUDY FINDINGS

The data collected from the staff nurses are organized, analyzed and presented under the following headings.

Section A

Demographic variables of the staff nurses.

Section B

- Assessment of pre-test and post-test level of knowledge of staff nurses on CLABSI.
- Assessment of pre-test and post-test level of skill of staff nurses on CLABSI.

Section C

Correlation between the knowledge and skill.

Section D

Association of the post-test level of knowledge and skill of the staff nurses and demographic variables.

Section A: DEMOGRAPHIC VARIABLES OF STAFF NURSES

Table1: Frequency and percentage distribution of staff nurses by selected demographic variables

n =30

Sl.No.	Demographic variables	No.	%
1.	**Age**		
	a. 20-23 yrs	12	40
	b. 24-28 yrs	14	46.7
	c. 29yrs and above	4	13.3
2.	**Gender**		
	a. Male	12	40
	b. Female	18	60
3.	**Educational qualification**		
	a. B.Sc Nursing	15	50
	b. Diploma in Nursing	15	50
4.	**Previous education on CLABSI**		
	a. In –service education		
	b. Mass media	14	46.7
	c. Books	1	3.3
	d. Magazines	15	50
5.	**Training programme on CLABSI**		
	a. Undergone	5	16.7
	b. Not Undergone	25	83.3
6.	**Year of experience**		
	a. 0 - 1 years	6	20
	b. 2 - 4 years	16	53.3
	c. 5 years and above	8	26.7
7.	**Department of working**		
	a. ICU	17	56.7
	b. Emergency	13	43.3

INTERPRETATION

Interprets that maximum numbers of samples 14 (46.7%) belonged to the age group of 24-28 years and next maximum numbers of samples 12 (40%) belonged to the age group of 20-23 years. There were only 4 (13.3%) samples found between the ages of 29 years and above

Regarding Gender, majority of the subjects were female that is 18 out of 30 (60%) while only 12 out of 30 (40%) were males.

RegardingEducational qualification, equal number of subjects that is 15 (50%) belonged to Diploma and B.Sc Nursing.

Regarding to previous education on CLABSI 16 (53.3%) from the books and magazines. On the other hand, 14 (46.7%) learnt from In-service education.

Staff nurses have undergone CLABSI training showed that 5 (16.7%) and not undergone training showed that 25 (83.3%).

Regarding the years of experience, the majority of the subjects that is 22 out of 30 (73.3%) had below 5 years of experience and 8 (26.7%) subjects had above 5 years of experience.

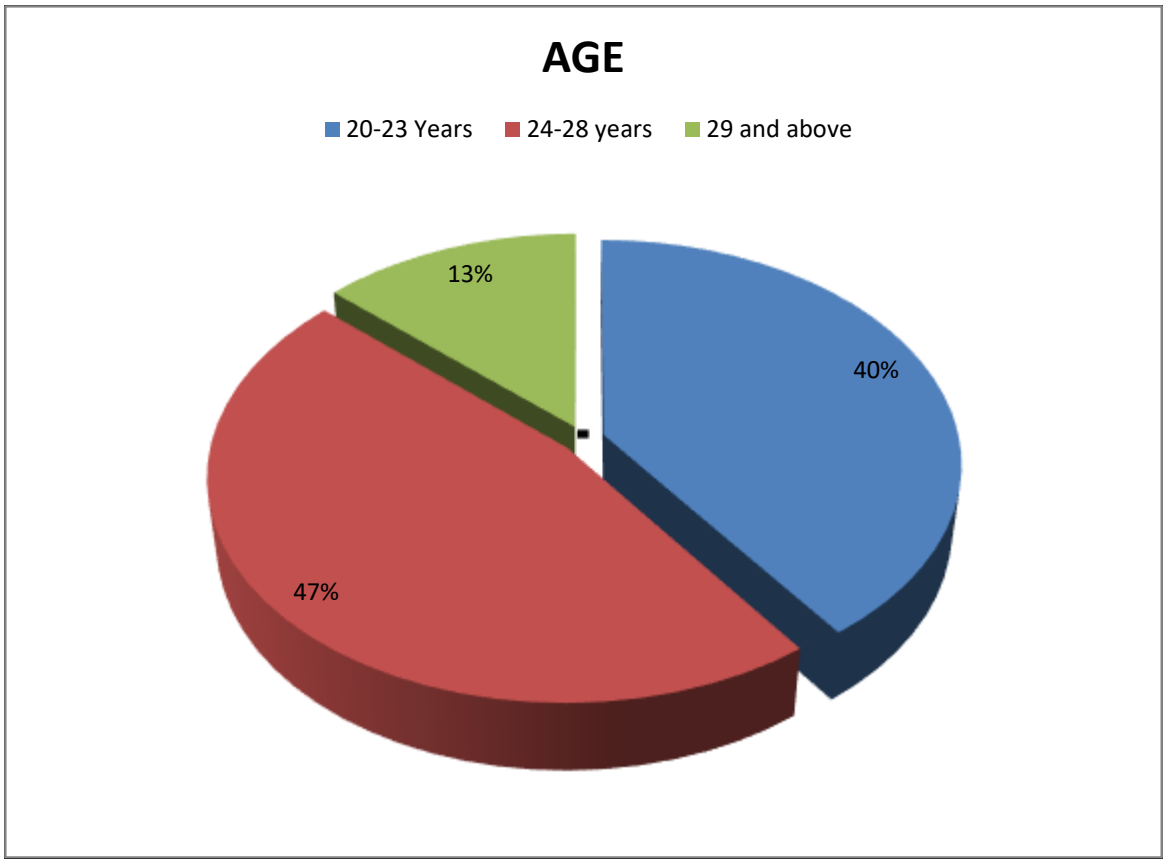


Fig 3: Percentage distribution of staff nurses according to age

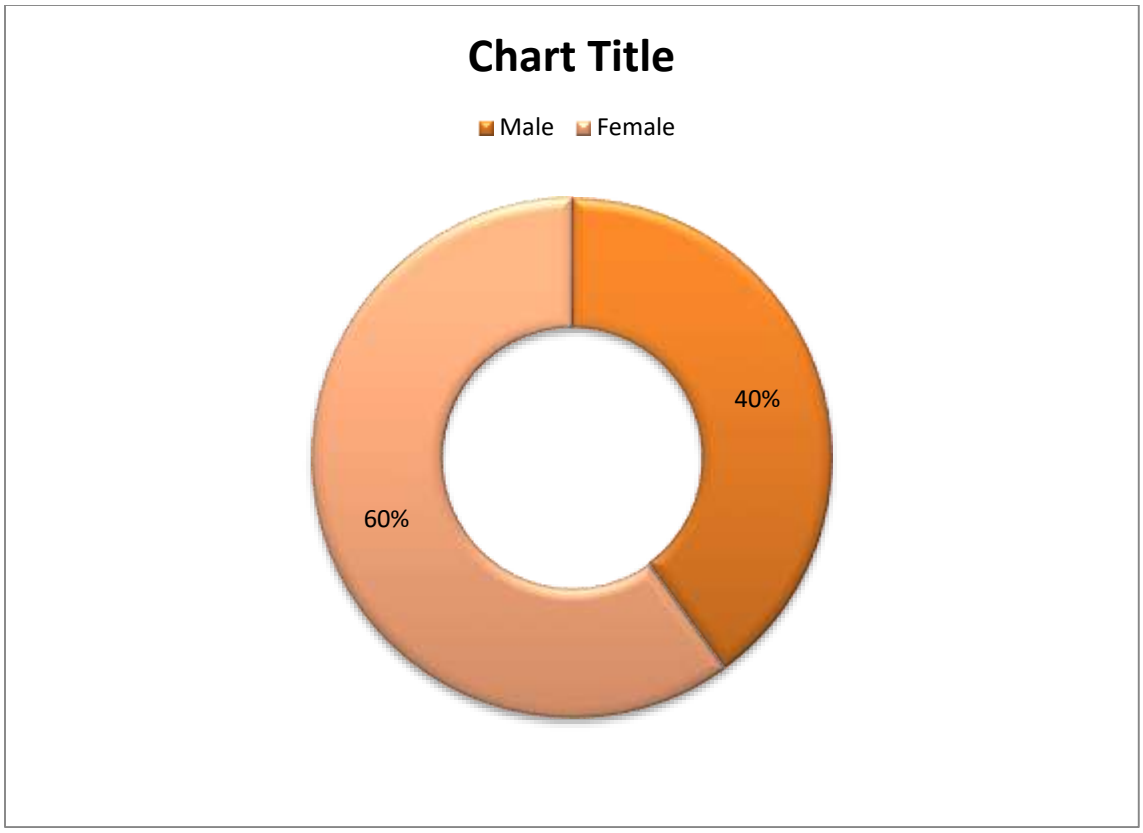


Fig. 4: Percentage distribution of staff nurses according to gender

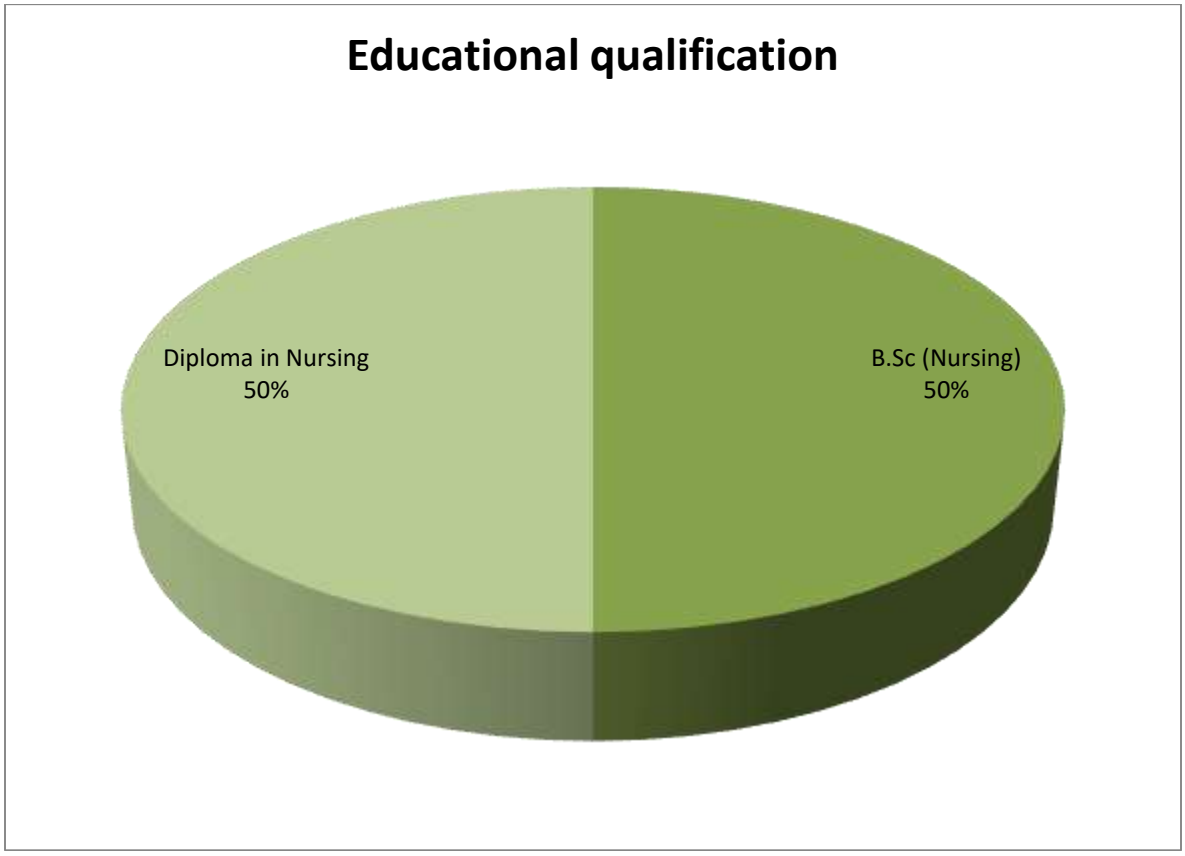


Fig 5: Percentage distribution of staff nurses according to education qualification

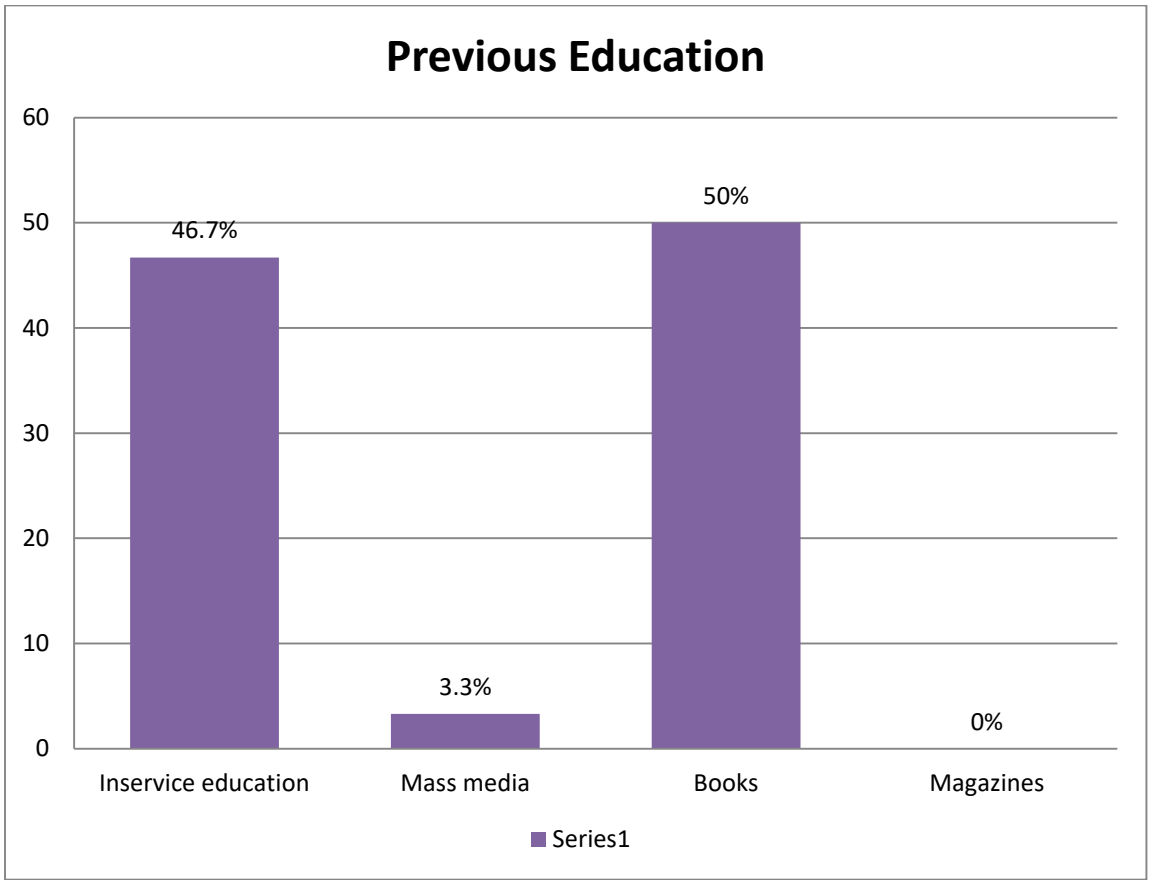


Fig. 6: Percentage distribution of staff nurses according to previous education on CLABSI

Fig 7: Percentage distribution of staff nurses according to training onCLABSI

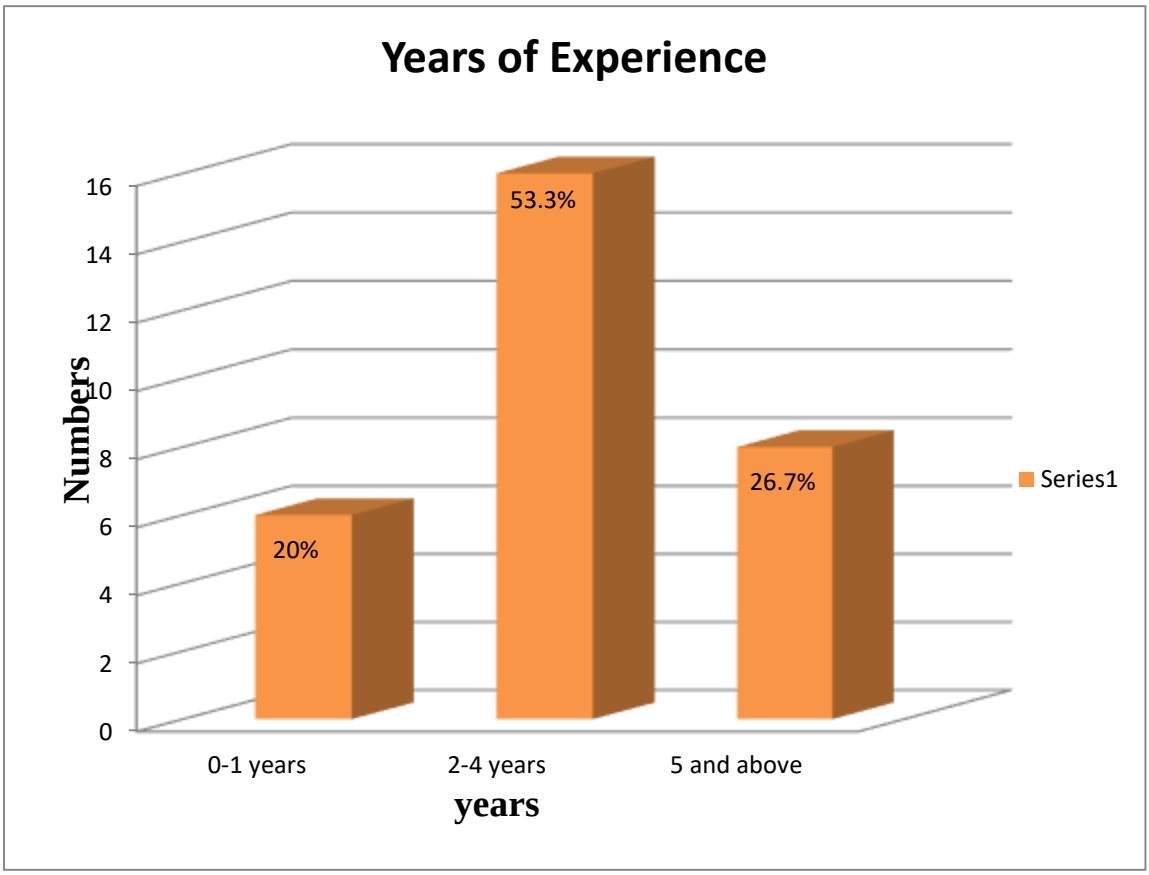


Fig. 8: Percentage distribution of staff nurses according to years of experience

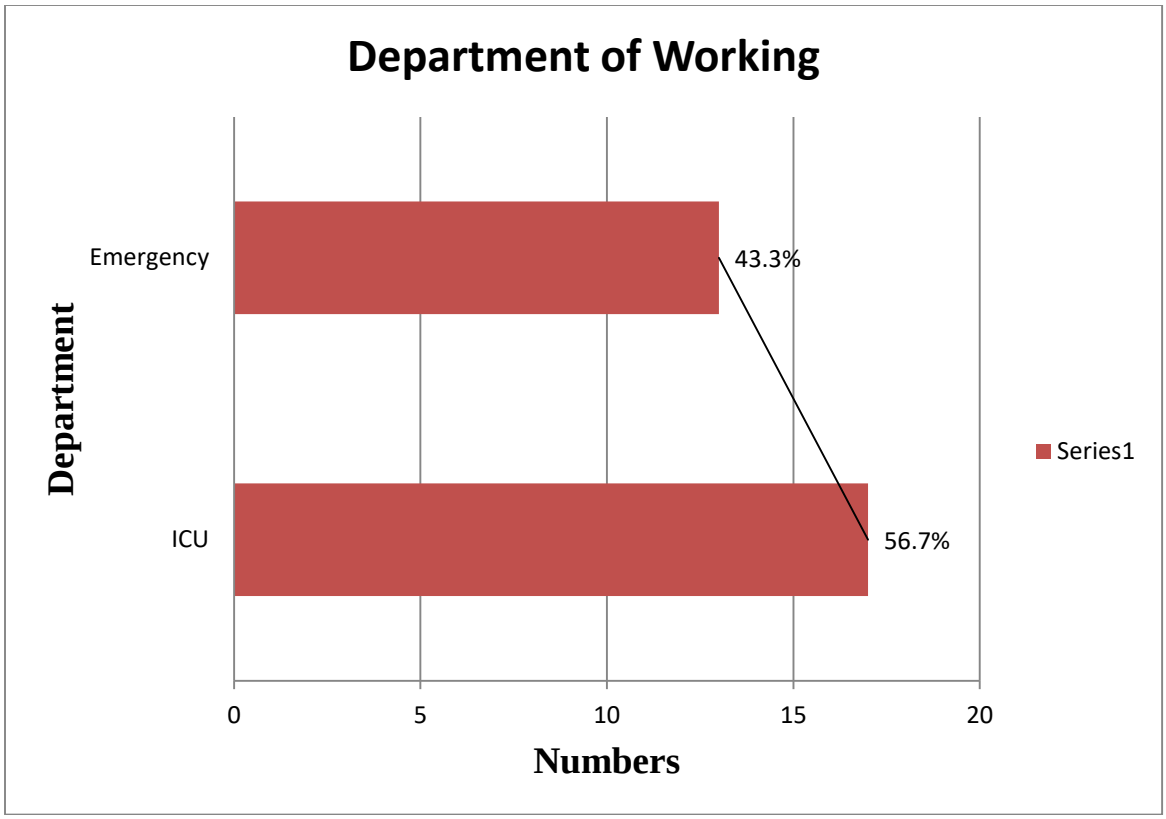


Fig 9: Percentage distribution of Staff nurses according to working department.

Section Ba. Assessment of Pre-test and Post-test level of knowledge of staff nurses on CLABSI

Table 2: Frequency and percentage distribution of level of knowledge in pre-test

n=30

	Level of Knowledge					
	Inadequate (50% and less)		**Average (51-74%)**		**Adequate (75% and above)**	
	No.	**%**	**No.**	**%**	**No.**	**%**
Pre-test knowledge	6	20	15	50	9	30

The above table shows that in the pre-test majority of them 6 (20%) had inadequate knowledge, 15 (50%) had average knowledge and only remaining 9(30%) had adequate knowledge.

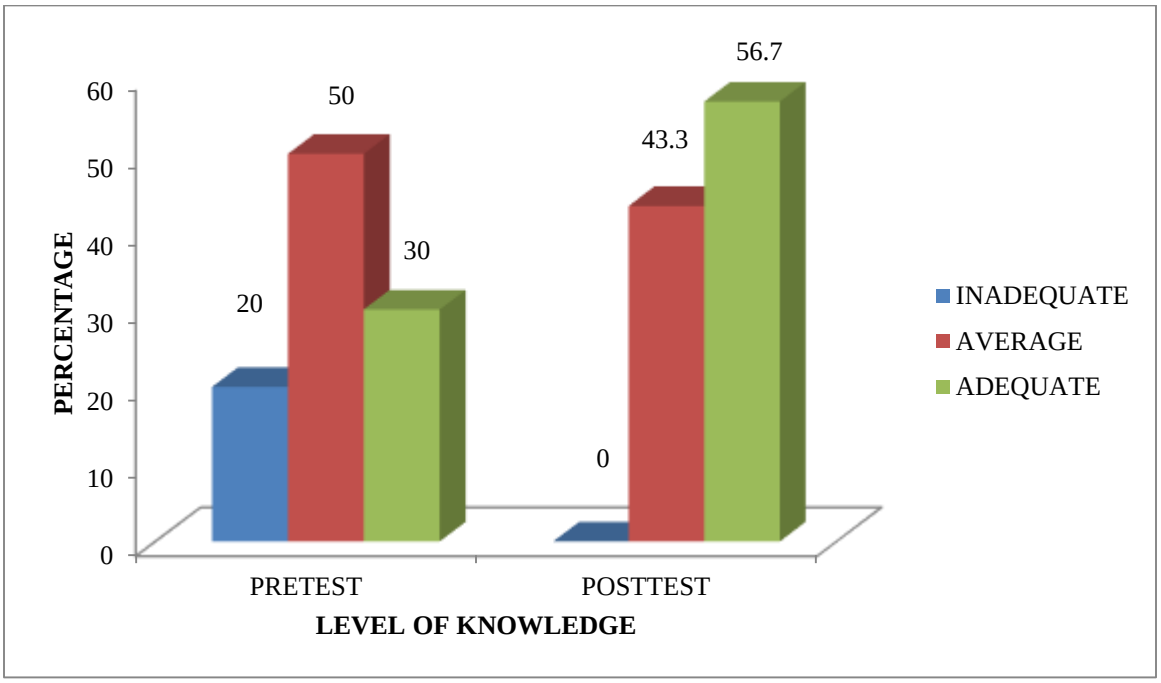
Table 3: Frequency and percentage distribution of level of knowledge in post-test

n= 30

	Level of Knowledge					
	Inadequate (50% and less)		**Average (51- 74%)**		**Adequate (75% above)**	
	No.	**%**	**No.**	**%**	**No.**	**%**
Post Test Knowledge	0	0	13	43.3	17	56.7

The above table shows that maximum number of staff nurses 17 (56.7%) had adequate knowledge, 13 (43.3%) had average knowledge and no one had inadequate knowledge.

FIG 10: Percentage Distribution of Level of Knowledge in Pre test & Post test



Section B- b.Assessment of Pre-test and Post-test level of skills of staff nurses on CLABSI

Table 4: Frequency and percentage distribution of level of skill in pre-test

n=30

	Level of Skill					
	Poor (50 % and less)		**Fair (51-74%)**		**Good (75% and above)**	
Pre testSkill	**No.**	**%**	**No.**	**%**	**No.**	**%**
	9	30	14	46.7	7	23.3

The above table shows that in pre-test majority of them 14 (46.7%) had Fair skill, 9 (37.5%) had Poor skill and only 7 (23.3%) had Good skill.

Table5: Frequency and percentage distribution of level of Skill in post test.

n=30

	Level of Skill					
	Poor (50 % and less)		**Fair (51-74%)**		**Good (75% and above)**	
PosttestSkill	**No**	**%**	**No**	**%**	**No**	**%**
	4	13.3	8	26.7	18	60

The above table shows that in the post-test, majority of them 18 (60%) had Fair skill, 8 (26.7%) had Good skill and the remaining 4(13.3%) had Poor skill.

FIG 11: Percentage Distribution of Level of Skill in Pre test & Post test

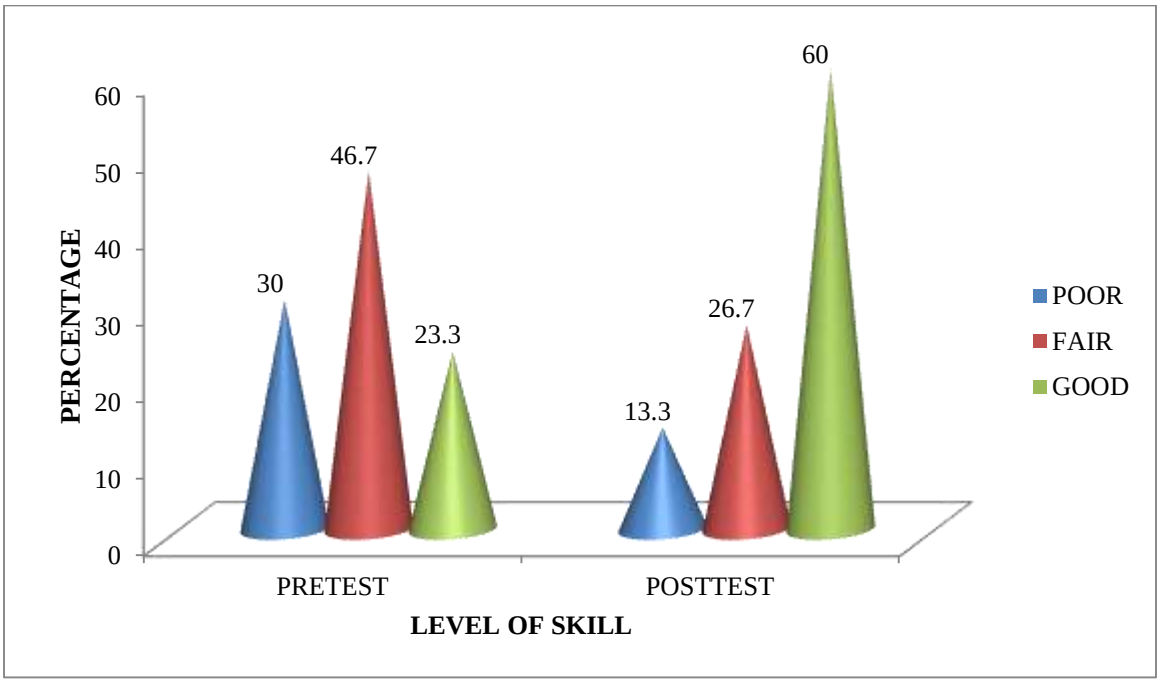


Table6: Comparison between the pre and post knowledge regarding CLABSI

n=30

Domain	Pre-test		Post test		Improvement		t- test
	Mean	SD	Mean	SD	Mean	SD	
Knowledge	19.83	4.58	22.93	2.92	3.1	2.07	8.18

S* p>0.05 level**

Data on the table 6 shows that the mean post-test knowledge score of the subjects was 22.93. Post-test knowledge was higher than the mean pre-test knowledge score of 19.83. In order to test the difference between the 2 means, t-test was computed and the obtained 't' value of 8.18 was found to be statistically highly significant at 0.05 level. This indicated that the difference between the means 3.1 was a true difference and not occurred by chance. Hence,the research hypothesisH_1 which stated that "mean post-test knowledge score of staff nurses who received structured teaching programme (STP) regarding CLABSI will be significantly higher than the mean pre-test knowledge score" was accepted and the null hypothesis was rejected.

Fig 13 Comparison between the Pre and Post test knowledge score

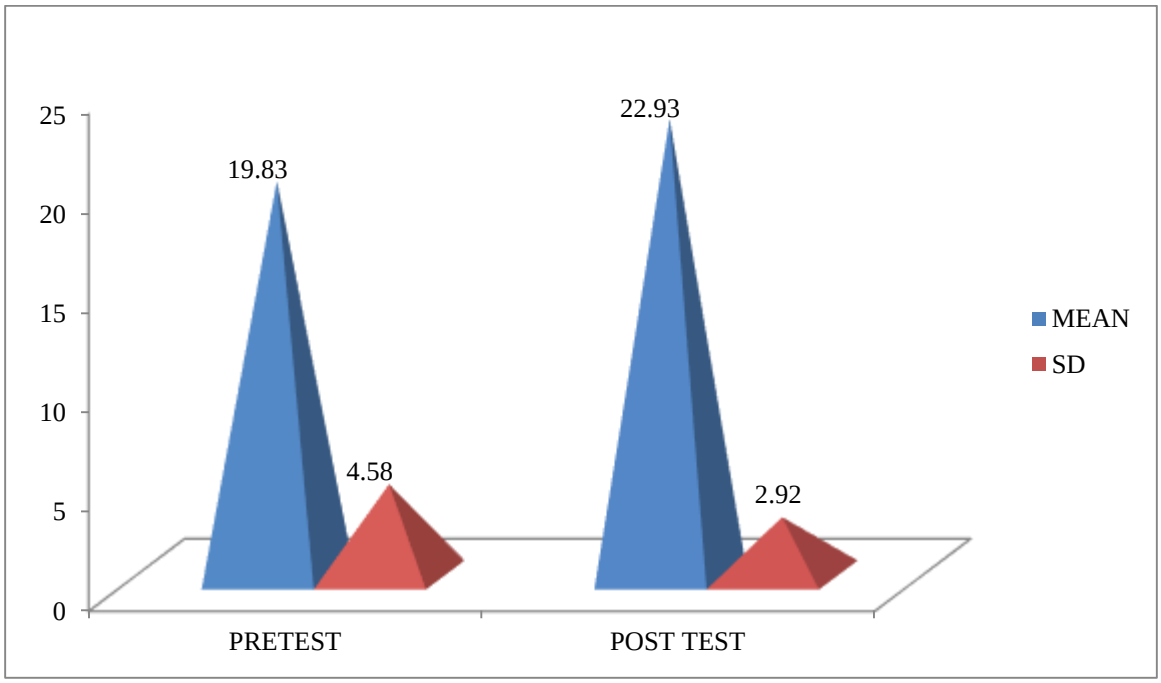


Table 7: Comparison between the pre and post test skill score regarding CLABSI

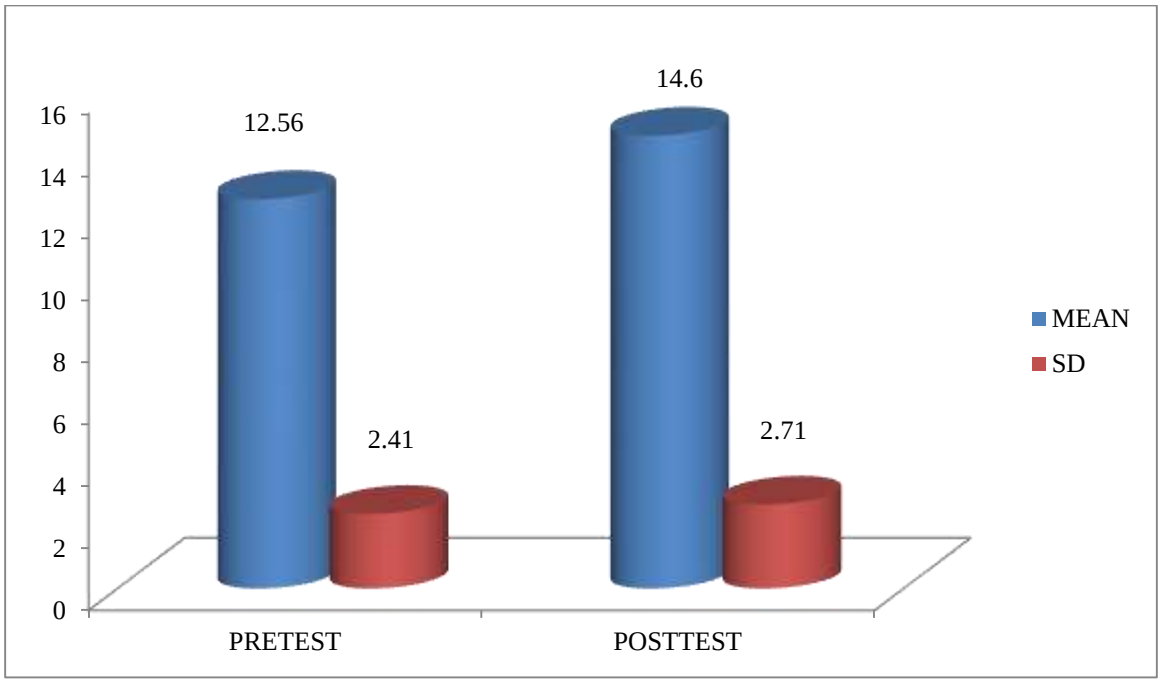
n=30

Domain	Pre-test		Post test		Improvement		t- test
	Mean	SD	Mean	SD	Mean	SD	
Skill	12.56	2.41	14.6	2.71	2.03	2.79	3.98

S= p>0.05 level**

Data on the table 7 shows that the mean post-test skill score of 14.6 was higher than the mean pre-test skill score of 12.56. In order to test the difference between the 2 means t-test was computed and the obtained t-value of 3.98 was found to be statistically highly significant at 0.05 level. The difference between the means 2.03 was a true difference and had not occurred by chance. Hence, the research hypothesisH_2 which stated that "mean post-test skill score of staff nurses who received structured teaching programme (STP) regarding CLABSI will be higher than the mean pre-test skill score" was accepted and the null hypothesis was rejected.

Fig 14 Comparison between the Pre and Post test skill score



Section C:Correlation between knowledge and skills

Table 8: Correlation between pre-test knowledge and pre-test skill.

n=30

Domain	Pre Knowledge		Pre Skill		r- value
	Mean	SD	Mean	SD	Mean
Correlation	19.83	4.58	12.56	2.41	0.59

S* = p>0.05 level

Table 8 depicts that the obtained co-efficient of correlation r - 0.59 was significant at 0.05 level. This indicates that there was a highly positive correlation and marked relationship between pre-test knowledge and pre-test skill scores which was significant at 0.05 level. Hence, the research hypothesis H_3 (a) which stated that "there will be a significant relationship between pre-test knowledge score and pre-test skill scores among staff nurses, who received STP regardingCLABSI" was accepted and the null hypothesis was rejected. The finding suggests that when there is increase in knowledge, there will be an improvement in skill.

Table 9: Correlation between Post-test knowledge and post-test skill

n=40

Domain	Post Knowledge		Post Skill		r- value
	Mean	**SD**	**Mean**	**SD**	**Mean**
Correlation	22.93	2.92	14.60	2.71	0.74

S*= p>0.05 level**

Table 9 depicts that the obtained coefficient of correlation r = 0.74 was significant at 0.05 level. This indicated that there was highly positive correlation and a perfect relationship between post-test knowledge score and post-test skill scores, which was significant at 0.05 level. Hence, the research hypothesis H_3 (b)which stated that "there will be a significantrelationship between post-test knowledge score and post-test skill scores among staff nurses who received STP regardingCLABSI" was accepted and the null hypothesis was rejected.

The findings suggest that when there is increase in knowledge, there will be a positive change in skill. These findings suggest that the STP has improved the knowledge and has also brought about a corresponding change in skill.

Section D:Association of Post-test level of knowledge and skill of staff nurses with demographic variables

Table 10: Association of post-test level of knowledge of staff nurses with their Demographic Variable

Demographic Variables	No.	%	Level of Knowledge						chi-square
			Inadequate		Average		Adequate		
N= 30			No.	%	No.	%	No.	%	
1.Age									
a. 20-23 yrs	12	40	0	0	12	40	0	0	26.2
b. 24-28 yrs	14	46.7	0	0	1	3.3	13	43.3	df 2
c. 29yrs and above	4	13.3	0	0	0	0	4	13.3	S*
2.Gender									0.23
a. Male	12	40	0	0	5	16.6	7	23.3	df 1
b. Female	18	60	0	0	8	26.6	10	33.3	NS
3.Educational Qualification									
a. B.Sc Nursing	15	50	0	0	9	30	6	20	3.39 df 1
b. Diploma in Nursing	15	50	0	0	4	13.3	11	36.6	NS
4.Previous education on CLABSI									
a. In-service education	14	46.7	0	0	7	23.3	7	23.3	1.08 df 2
b. Mass media	1	3.3	0	0	0	0	1	3.3	
c. Books	15	50	0	0	6	20	9	30	NS
d. Magazines	0	0	0	0	0	0	0	0	
5.Training programme on CLABSI									
a. Undergone	5	16.7	0	0	1	3.3	4	13.3	1.33 df 2
b. Not Undergone	25	83.3	0	0	12	40	13	43.3	NS
6.Year of experience									
a. 0 - 1 years	6	20	0	0	6	20	0	0	13.96
b. 2 - 4 years	16	53.3	0	0	7	23.3	9	30	df 2
c. 5 years and above	8	26.7	0	0	0	0	8	26.6	S*
7.Department of working									
a. ICU	17	56.7	0	0	8	26.6	9	30	0.22 df 1
b. Emergency	13	43.3	0	0	5	16.6	8	26.6	NS

The table 10 describes that, the association of knowledge of staff nurses regarding CLABSI with age, gender, previous education onCLABSI, previous undergoneCLABSI training, years of experience and department of working.

In order to find out the association between the post-test knowledge and demographic variables χ^2 was computed.

The chi-square value of all the demographic characteristics, such as age, and years of experience showed that there was statistically significant association with the post-test level of knowledge regardingCLABSI. Hence, the research hypothesis H_4 (a)whichstatedthat "there will be a significant association between the post-test knowledge score and selected demographic variables among staff nurses who received STP regardingCLABSI" was accepted and the null hypothesis was rejected.

Table: 11 Association of post-test level of skill of staff nurses with demographic variables.

Demographic Variables	No	%	Level of Skill						chi-square
			Inadequate		Average		Adequate		
N= 30			No.	%	No.	%	No.	%	
1.Age									
a. 20-23 yrs	12	40	3	10	5	16.6	4	13.3	7.12
b. 24-28 yrs	14	46.7	1	3.3	3	10	10	33.3	df 4
c. 29yrs and above	4	13.3	0	0	0	0	4	13.3	NS
2.Gender									8.12
a. Male	12	40	3	10	0	0	9	30	df 2
b. Female	18	60	1	3.3	8	26.6	9	30	NS
3.Educational Qualification									
a. B.Sc Nursing	15	50	3	10	6	20	6	20	5.0
b. Diploma in Nursing	15	50	1	3.3	2	6.6	12	40	df 2 NS
4.Previous education on CLABSI									
a. In-service education	14	46.7	2	6.6	1	3.3	11	36.6	6.73
b. Mass media	1	3.3	0	0	0	0	1	3.3	df4
c. Books	15	50	2	6.6	7	23.3	6	20	NS
d. Magazines	0	0	0	0	0	0	0	0	
5.Training programme on CLABSI									
a. Undergone	5	16.7	0	0	1	3.3	4	13.3	1.3
b. Not Undergone	25	83.3	4	13.3	7	23.3	14	46.6	df 2 NS
6.Year of experience									
a. 0 - 1 years									
b. 2 - 4 years	6	20	3	10	1	3.3	2	6.6	14.93
c. 5 years and above	16	53.3	1	3.3	7	23.3	8	26.6	df 4
	8	26.7	0	0	0	0	8	26.6	S*
7.Department of working									
a. ICU	17	56.7	4	13.3	3	10	10	33.3	4.26
b. Emergency	13	43.3	0	0	5	16.6	8	26.6	df 2 NS

From the Table 11, it can be seen that the years of experience of the staff nurses had significant association with the post-test skill of the staff nurses regarding CLABSI.χ^2 value of 14.93 was significant at 0.05 and 0.01 level. Hence, the research hypothesis H_4 (b) which stated that "there will be a significant association between the post-test skill scores and selected demographic variables among staff nurses who receivedCLABSI" was accepted and the null hypothesis was rejected.

CHAPTER - V

DISCUSSION

This chapter deals with the discussions in accordance with the objective of the study and hypothesis. The statement of the problems was a study to assess the effectiveness of structured teaching programme (stp) regarding Prevention Of Central Line Associated Blood Stream Infection in terms of knowledge and skill among staff nurses in selected private hospital at Dharmapuri.

The first objective was to determine the level of knowledge of staff nurses regardingCLABSI.

The pre-test knowledge scores revealed that 6 (20%) had inadequate knowledge 15 (50%) had average knowledge. Hence it was necessary for the investigator to improve the subject's knowledge by giving teaching on CLABSI.

Finding of this study is supported by the study conducted by **A Srinivasan, MD, M Wise, PhD, M Bell, MD, D Cardo, MD,** el.al (2011) conducted a study on Central Line Associated Blood Stream Infections United States, In 2001, an estimated 43,000 CLABSIs occurred among patients hospitalized in ICUs in the United States. In 2009, the estimated number of ICU CLABSIs had decreased to 18,000. Reductions in CLABSIs caused by *Staphylococcus aureus* were more marked than reductions in infections caused by gram-negative rods, *Candida* spp., and *Enterococcus* spp. In 2009, an estimated 23,000 CLABSIs occurred among patients in inpatient wards and, in 2008, an estimated

37,000 CLABSIs occurred among patients receiving outpatient hemodialysis. In 2009 alone, an estimated 25,000 fewer CLABSIs occurred in U.S. ICUs than in 2001, a 58% reduction. This represents up to 6,000 lives saved and $414 million in potential excess health-care costs in 2009 and approximately $1.8 billion in cumulative excess health-care costs since 2001. A substantial number of CLABSIs continue to occur, especially in outpatient hemodialysis centers and inpatient wards.[11]

The second objective was to identify the skill of staff nurses regarding CLABSI.

The pre-test skill scores revealed that majority of them 9 (30%) had Poor skill, 144 (46.7%) had Fair skill and only 1 (23.3%) had Good skill.

Finding of this study is supported by the study conducted by**Rangachari P, Rissing P, Wagner P, Rethemeyer K,** et.al(2010) conducted a study on a baseline study of communication networks related to evidence-based infection prevention practices in an intensive care unit. This study seeks to gain a baseline understanding of the communication network structure, content of communication, and outcomes in a medical intensive care unit experiencing higher-than-expected central line blood stream infection (CLBSI) rates. The content of communication refers to the type of knowledge (ie, tacit vs explicit knowledge) exchanged on CLBSI prevention practices. Outcomes include compliance with CLBSI prevention practices and hospital-acquired CLBSI rates in the unit. More significantly, the study lays a foundation for generating concrete and context-sensitive strategies for organizational learning and improvement in the context of evidence-based practices. Such insight is critical from the perspective of evidence-based health care management.

Hence, it was necessary for the investigator to improve the subject's skill by giving teaching on prevention of CLABSI.

. **The Third objective was to evaluate the effectiveness of structured teaching programme (STP) on CLABSIin terms of knowledge and skill among staff nurses.**

With regard to knowledge, mean post-test score 22.93 with SD 2.92 was higher than the mean pre-test score 19.83 with SD 4.58, which showed that the STP was effective in increasing the knowledge. So the research hypothesis H_1 was accepted.

The comparison between the pre and post skill regarding CLABSI revealed that the overall improvement mean was 2.03 with the standard deviation of 2.79. The paired't' test value was 3.98, which was highly significant at 0.05 level. Hence, the research hypothesis H_2 was accepted and null hypothesis was rejected

The fourth objective was to find out the relationship between the pre-test knowledge score and pre-test skill score and between post-test knowledge score and post-test skill scores.

In the relationship between the pre-test knowledge and pre-test skill score, the obtained co-efficient of correlation r-value 0.59 was significant at 0.05 levels. Hence, the research hypothesis **H_3** (a) was accepted and the null hypothesis was rejected.

In the relationship between the post-test knowledge and post-test skill score of staff nurses, the obtained coefficient of correlation r-value was 0.59, which was

significant at 0.05 level. Hence, the research hypothesis was accepted and the null hypothesis was rejected.

The fifth objective was to find out the association between the post-test knowledge score and selected demographic variables of the staff nurses and between the post-test skill score and year of experience of the staff nurses.

The Chi-square value computed for association of post-test level of knowledge of staff nurses with years of experience.

The chi-square value of all the demographic characteristics, such as age, and years of experience showed that there was statistically significant association with the post-test level of knowledge regardingCLABSI. Hence, the research hypothesis H_4 was accepted and the null hypothesis was rejected.

In the association between post-test skill and years of experience, the value of 14.93 was significant at 0.05 and 0.01 level. Hence, the research hypothesis was accepted and the null hypothesis was rejected.

CHAPTER - VI

SUMMARY, FINDINGS, IMPLICATIONS, LIMITATIONS, RECOMMENDATIONS AND CONCLUSION

SUMMARYOF THE STUDY

This study was undertaken to determine the effect of structured teaching programme regarding prevention and control of CLABSI on knowledge and skill of nursing personnel.

The following objectives were set for the study:

1) To determine the level of knowledge of staff nurses regarding CLABSI
2) To identify the skill of staff nurses regarding CLABSI.
3) To evaluate the effectiveness of structured teaching programme (STP) on CLABSIin terms of knowledge and skill among staff nurses.
4) To find out the relationship between the following.
    - Pre-test knowledge scores and pre-test skill scores.
    - Post-test knowledge scores and post-test skill scores.
5) To find the association between the following.
    - Post-test knowledge score and selected demographic variables of the staff nurses.
    - Post-test skill score and selected demographic variables of the staff nurses

MAJOR FINDINGS OF THE STUDY

H1. Mean post-test knowledge score of staff nurses who received structured teaching programme (STP) regarding CLABSI will be significantly higher than the mean pre-test knowledge score.

H2. Mean post-test skill score of staff nurses who received structured teaching programme (STP) regarding CLABSI will be higher than the mean pre-test skill score.

H3. **(a)** There will be a significant relationship between pre-test knowledge score and pre-test skill score among staff nurses, who received STP regarding CLABSI

(b) There will be a significant relationship between post-test knowledge score and post-test skill score among staff nurses who received STP regarding CLABSI.

H4. **(a)** There will be a significant association between the post-test knowledge score and selected demographic variables among staff nurses who received STP regarding CLABSI.

(b) There will be a significant association between the post-test skill scores and selected demographic variables, among staff nurses who received CLABSI.

LIMITATIONS

1. The study did not use a control group and there was a threat to internal validity due to history as the investigator had no control over the events that took place between Pre-test and post-test.
2. The study was limited for a period of 40 days only.
3. The study was conducted on a small sample of 30; hence generalization must be done with caution.

IMPLICATIONS

CLABSIcausing nosocomial infection is an emerging problem in health care settings. It may be due to lack of knowledge and practice of nursing personnel regarding significance of CLABSI and universal precaution .Improving knowledge and practice among nursing personnel is a vital component of primary prevention.

The findings of the study have several implication for the following fields.

Implication for nursing education

The study clearly enlightens the fact that improvement in knowledge of nursing personnel regarding prevention of CLABSI can promote their skill. To impart this knowledge to the nursing personnel and students nurses, the nurses educator need to be equipped with adequate knowledge and skill, regarding prevention of CLABSI. So the nursing curriculum should emphasize the CLABSI and its prevention measures. Moreover the institutional curriculum may adopt various method of teaching like STP, SIM and computer based education

Implication for nursing practice

The findings of the study proved that STP regarding prevention of CLABSI was effective as a module to improve the knowledge and skill of nursing personnel. Prevention ofCLABSI, ward based teaching to the caregiver especially nurses is necessary. The infection control nurses and In-service nurses are in the best position to impact education and train nurses who are taking care o f the patients, regarding prevention of CLABSI. In the entire hospitals periodic teaching programme can be conducted on knowledge and skill regarding prevention of CLABSI. All the hospital can setup an infection control department to survey prevention of CLABSI regularly.

Implication for nursing Research

It is essential to identify the level of knowledge and skill of nursing personnel regarding prevention of CLABSI to gauge the extent of information necessary to be given extensive research must be conducted in this area to identify several more effective methods of education, which are acceptable as better teaching strategies of education.

This study can be baseline, for future studies to build upon.

Implication for nursing administration

Cost effective production of materials used for teaching by the nurse educator should be encouraged. Necessary administrative support should be provided to conduct such activities. Nurse administrators should take initiative to establish infection control department and in-service education department in order to make nurses gain knowledge regarding prevention of CLABSI.Standard principles and policies must be formulated

and circulated to all the nursing personnel.Periodic conferences, seminars; symposium can be arranged regarding infection control. Nurse administers should increase the availability of materials used for infection control such as sterilizer, gloves, masks, disinfectants.

RECOMMENDATIONS

1. A comparative study can also be done between effectiveness of STP versus other modes of teaching structured instructional module, computer based teaching.
2. A similar study can be conducted using true experimental design.
3. Future studies can be conducted to estimate the knowledge regarding CLABSI among patients
4. Similar kind of the study can be conducted for a large group on a long term basis.
5. Similar kind of study can be conducted among physicians.
6. Future studies can include the attitude of the nursing personnel in order to make out the relationship between knowledge, skill and attitude.

CONCLUSIONS

The present study assessed the knowledge of staff nurses on CLABSI and found that maximum number of staff nurses 15 (50%) had average knowledge and 6 (20%) had inadequate knowledge and only remaining 9 (30%) had adequate knowledge. After the structured teaching programme the post-test showed that the maximum number of samples 17 (56.7%) had adequate knowledge, 13 (43.3%) had average knowledge and none of the sample had inadequate knowledge.

The comparison of pre-test knowledge scores and post-test knowledge scores of the subjects shows that the overall mean in the pre-test was 19.83 with SD 4.58 and in the post-test 22.93 with SD 2.92. The overall improvement mean was 3.1 with't'- value 8.18 which was highly significant at P>0.05 level. This showed that there was a significant improvement in knowledge of staff nurses after the structured teaching programme.

The present study also assessed the skill of staff nurses on CLABSI and found that maximum number of staff nurses 14 (46.7%) had Fair skill 9 (30%) had poor skill, and only 7 (23.3%) had Good skill. After the structured teaching programme, the post-test showed that the maximum number of samples 18 (60%) had Good skill, 8 (26.7%) had Fair skill and the remaining 4 (13.3%) had Poor skill.

The comparison of pre-test skill scores and post-test skill scores of the subjects shows that the overall mean in the pre-test was 12.56 with SD 2.41 and in the post-test mean 14.6 with SD 2.71. The overall improvement mean was 2.03 with t'- value 3.98 which was highly significant at p>0.05level. This showed that there was a significant improvement in skills of staff nurses after the structured teaching programme

The literature review included a Medline search for published and unpublished research and a manual search of recent literature. These literature provided information, which enabled the investigator to study the extent of the selected problem, to develop conceptual frame work, data analysis and for interpretation.

The conceptual frame work of the study is based on CIPP model.

An evaluative study was conducted by using one group pre-test and post-test research design. Non probability convenient sampling was used to obtain the samples. The structured questionnaire on knowledge assessment and observation check list on skill assessment of CLABSI was used to collect the data. The tool consisted of Section A and B. Section A pertained to the demographic profile of staff nurses and Section B consisted of Tool 1 and Tool 2, In which Tool 1 include a structured knowledge questionnaire consisted of 30 items and Tool 2 include the Observation Check list consisted of 20 items.

After obtaining formal permission from Fortis Hospital, Bangalore, the pilot study was conducted with seven staff nurses. The reliability of the tool 1 ($r = 0.83$) and tool 2 ($r= 0.86$) was established by split half method which showed that the tool was reliable. The pilot study revealed that the study was feasible.

The main study was conducted from 02-05-2012 to 23-05-2012 with a sample size of 30 staff nurses. The obtained data were analyzed in terms of the objectives and hypothesis using descriptive and inferential statistics.

REFERENCES

1. Potter-Perry. Fundamental of Nursing. 7th ed. India; Mosby; 2009.

2.Joyce M Black. Medical Surgical nursing. 7th ed. India; Elsevier 2005.

3.Sr.Nancy. Principles And Practice of Nursing volume 1. 5nd ed. India;Stephanie's 2004.

4 .Brunner and Suddarth's. Medical Surgical nursing. 12th ed. Philadelphia Lippincott; 2010

5.Appendix A, CDC Guideline MMWR. Aug. 9 2002;51(RR10):27-28

6. Prevention of Central Line-Associated Bloodstream Infections in Hospitalized Patients: Introduction, http://www.me dscape.org/viewarticle/705882_2.

7. Preventing Complications in the ICU, http://www.medscape.org/viewarticle/518004.

8. ICU Infection Rates Not a Good Measure of Mortality Risk, Researchers Find, http://www.sciencedaily.com/releases/2010/05/100517204354.htm,

9. Prevention of Catheter-Related Bloodstream Infections: Looking to the Department of Veterans Affairs Health Care System for Guidancehttp://www.mayoclinicproceedings.com/content/82/6/665.full.

10.Prevention of catheter related bloodstream infection by silver iontophoretic central venous catheters: a randomised controlled trial, http://www.ncbi.nlm.nih.gov/pubmed/14514774.

11.Prevention of central venous catheter-related infections and thrombotic events in immunocompromised children by the use of vancomycin/ciprofloxacin/heparin flush solution: A randomized, multicenter, double-blind trial, http://www.ncbi.nlm.nih.gov/pubmed/10715297.

12. Taurolidine 2% as an antimicrobial lock solution for prevention of recurrent catheter-related bloodstream infections, http://www.ncbi.nlm.nih.gov/pubmed/9661127.

13. Prevention of Central Venous Catheter-Related Bloodstream Infection by Use of an Antiseptic-Impregnated Catheter, http://www.annals.org/content/127/4/257.abstract.

14. A baseline study of communication networks related to evidence-based infection prevention practices in an intensive care unit, http://www.ncbi.nlm.nih.gov/pubmed/20924254.

15. Use of Central Venous Catheter-Related Bloodstream Infection Prevention Practices, http://www.mayoclinicproceedings.com/content/82/6/672.abstract.

16. Evidence-based practice to reduce central line infections, http://www.ncbi.nlm.nih.gov/pubmed/16761789,

17. The Impact of Bedside Behavior on Catheter-Related Bacteremia in the Intensive Care Unit,http://archsurg.ama-assn.org/cgi/content/full/139/2/131.

18.Survey Of Central Line Related Sepsis In A Neurointensive Care Unit,http://poster-consultation.esicm.org/ModuleConsultationPoster/posterDetail.aspx?intIdPoster=167.

19. Catheter-related blood stream infection (CRBSI) in TPN patients: Benefit of an educational programme and multimodal expression of CRBSI incidence, http://www.ingentaconnect.com/content/mcb/248/2010/00000015/00000004/art00006.

20. Central Line-Associated Bloodstream Infections in Limited-Resource Countries: A Review of the Literature,http://cid.oxfordjournals.org/content/49/12/1899.full.

21. Catheter-Related Blood Stream Infection (Crbsi) Rates In A Mixed Medical-Surgical Icu Population Before And After The Implementation Of A Central Line Bundle (Clb),http://meeting.chestpubs.org/cgi/content/abstract/134/4/s3003,

22. Gram-negative organisms predominate in Hickman line-related infections in non-neutropenic patients with hematological malignancies**,**http://www.ncbi.nlm.nih.gov/pubmed?term=central%20line%20related%20blood%20stream%20infection.

23. Arterial catheter-related infection of 2,949 catheters,http://ccforum.com/content/10/3/r83/abstract/.

24. Differential Time to Positivity: A Useful Method for Diagnosing Catheter-Related Bloodstream Infections,http://www.annals.org/content/140/1/18.abstract

25.Vital Signs: Central Line--Associated Blood Stream Infections, United States, 2001, 2008, and 2009http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6008a4.htm

26. The CLABs collaborative: a regionwide effort to improve the quality of care in hospitals http://www.ncbi.nlm.nih.gov/pubmed/19119725

27. Overview of catheter-related infections with special emphasis on prevention based on educational programs http://www.ncbi.nlm.nih.gov/pubmed/12047407

ANNEXURE - I

SECTION – A: DEMOGRAPHIC DATA

INSTRUCTION TO THE PARTICIPANT

Please complete the following by placing the right option code in appropriate box [√] provided against each item. The information furnished by you will be kept confident.

Sample No. ( )

1. Age in years
    a) 20-23 years ( )
    b) 24-28 years ( )
    c) 29 and above ( )
2. Gender
    a) Male ( )
    b) Female ( )
3. Previous education on CLABSI.
    a) In –service education ( )
    b) Mass media ( )
    c) Books ( )
    d) Magazines ( )
4. Previous training on prevention of CLABSI.
    a) Undergone ( )
    b) Not Undergone ( )

5. Year of experience

    a) 0 - 2year ( )

    b) 3 - 5 years ( )

    c) Above 5 years ( )

6. Department of working

    a) ICU ( )

    b) Emergency ( )

SECTION B

TOOL-1

STRUCTURED KNOWLEDGE QUESTIONNAIRE

Instruction: Kindly go through the questions given below. Choose the best answer and put its choice number in the space provided.

Please read the questions carefully and then write the correct answer for each question.

1. CLABSI means [ ]

   a) Catheter line and blood stream infection.

   b) Central line associated blood stream infection.

   c) Craniotomy related blood stream infection.

   d) Catheter line associated blood stream infection .

2. Central line is also called [ ]

   a) Central peripheral catheter

   b) Central venous catheter

   c) Central arterial catheter

   d) Central catheter

3. Central line is indicated for [ ]

   a) Oxygen saturation

   b) Serum electrolytes

   c) CVP monitoring

   d) All the above

4. Central line is contra indicated for [ ]

   a) Fever

   b) Vomiting

   c) Jaundice

   d) Clot in the selected vein

5. The site for placing central line is [ ]

   a) Internal jugular

   b) Subclavian

   c) Femoral veins.

   d) All the three.

6. The factor increase the chance of developing a CLABSI [ ]

   a) Having a catheter for a very long time

   b) Improper aseptic technique

   c) Having a weakened immune system

   d) All the three

7. The common symptoms of CLABSI [ ]

   a) Fever, Chills, Fast heart rate, Drainage from catheter site and Pain

   b) Head ach, Nausea and Vomiting

   c) Stomach pain, Nausea and Vomiting

   d) Muscle spasm.

8. Themicro organism is responsible for CLABSI? [ ]

   a) Staphylococcus aureus

   b) Pneumococci

   c) Meningococci

   d) H.influenza

9. The expansion of MRSA is ? [ ]

   a) Methycillin Resistant Staphylococcus Aureus

   b) Methycillin Resistant Streptococcus Aureus

   c) Meningococci Resistant Staphylococcus Aureus

   d) Meningococci Resistant Streptococcus Aureus

10. The following is not an element of the central line bundle [ ]

    a) Hand washing

    b) Barrier technique

    c) Use of chlorhexidine

    d) Blood sampling.

11. The catheter is threaded through this vein until it reaches a large vein near the [ ]

    a) Heart

    b) Lung

    c) Mediastinum

    d) Stomach

12. The common cause for CLABSI [ ]

a) Virus

b) Fungi

c) Bacteria

d) Trauma

13. A central line catheter is made up of [ ]

a) Elastic tube

b) Thick tube

c) Thin tube

d) None of the above

14.Central Line Daily Maintenance Bundle include [ ]

a) Chlorhexidine 2%

b) Chlorhexidine 4%

c) Chlorhexidine 6%

d) Chlorhexidine 5%

15. Purpose of central line catheterization [ ]

a) ABG sampling

b) Venous blood sampling

c) Biopsy

d) Both a & b

16. Central line dressing is performed [ ]

a) As a clean procedure

b) Under anesthesia

c) As a sterile procudre

d) Only in OT

17. The site which is responsible for increase the rate of infection and DVT [ ]

a) Femoral

b) Jugular

c) Sub clavin

d) Carotid

18. Frequently the IV bags are changed [ ]

a) Change IV bags q24 hours

b) Change IV bags q48hours

c) Change IV bags q72 hours

d) Every 6 hours

19. Frequently the IV tubings are changed [ ]

a) Change IV tubing q48 hours

b) Change IV tubing q72 hours

c) Change IV tubing q24 hours

d) Change IV tubing q12 hours

20.The position is used for central line dressing [ ]

a) left lateral

b) fowlers

c) prone

d) supine or semi-Fowler's

21. The initial diagnostic test to identify CLABSI ? [ ]

a) Blood test & culture

b) Urine test

c) Echocardiogram

d) x ray

22. The common complication of central line ? [ ]

a) Pneumothorax,

b) Venous Thrombosis, Deep Vein Thrombosis

c) Intra-thoracic pressureair embolism.

d) All the three.

23.The treatment of choice is used for CLABSI ? [ ]

a) Antibiotics

b) Replacing by a new catheter.

c) Bronchodilator

b) Both (a) and (b).

24.Itis always apply to central line insertion site and to dry [ ]

a) topicalanathesia.

b) lignocine.

c) lidocaine

d) antiseptic

25. It is used to check the heart to see if bacteria have reached the heart Valves? [ ]

a) Chest X-ray

b) Echocardiogram

c) Endoscopy

d) ECG

26. The dressing regimens commonly used for catheter site [ ]

a. Composite

b. Alginate

c. Transparent, semi-permeable

d. Hydrocolloid

27. In placing a central line, appropriate hand hygiene should occur : [ ]

a. Before donning and after removing of the glove

b. Before and after palpation of the catheter insertion site

c. Between patients

d. All of the above

28. MRSA is a [ ]

a. Bacteria

b. Virus

c. Fungus

d. Yeast

29. Management of complications of CLABSI [ ]

a. antimicrobial therapy

b. Surgical resection

c. catheter removal

d. Both (a) and (c)

30. Nosocomial infection is also known as [ ]

a. Septic infection

b. Hospital acquired infection

c. Reinfevtion

d. None of the above

SECTION – B

TOOL – 2: STRUCTURED OBSERVATION CHECKLIST TO ASSESS THE SKILL OF STAFF NURSES REGARDING CLABSI

Instruction: The observer will carefully observe the activities carried out by the staff nurses, regarding CLABSI. If the activities are carried out correctly the observer places tick mark [√] in done correctly column and a score of one will be given. If the activities are done incorrectly or not done they will be given a score of zero.

Sl No	Activities Performed	Observation		
		Done Correctly	Done Incorrectly	Not Done
		1	0	0
1.	Identify the patient for dressing change.			
2.	Check the Catheter Insertion Date			
3.	Check the Last Dressing Change Date:			
4.	Check the Catheter Type			
5.	Check the Insertion Site			
6.	Collect appropriate equipment (Central Line Maintenance Kit)			
7.	Wash the hands.			
8.	Explain the procedure to the patient and position the patient supine or semi-Fowler's position with head turned away from the dressing site. If patient is intubated, suction the			

	patient prior to positioning.			
9.	Don protective wear, surgical mask, clean gloves, sterile gowns, and cap.			
10.	Carefully loosen and remove the old dressing down to the insertion site. Pull the dressing towards the exit site of a long term catheter or towards the insertion site of ashort term catheter (this helps prevent pulling out the line).			
11.	Inspect the area around the site for any signs of infection (redness, swelling, drainage, tenderness, warmth, or odor).			
12.	Notify MD for any signs or symptoms of infection.			
13.	Deglove, wash your hands adhere to strict hand hygiene using soap.			
14.	Open kit, create a sterile field and don sterile glove.Secure catheter from movement. Cleanse the catheter insertion site using appropriate antiseptic technique;2%Chlorhexidine-based preparation is preferred.			

15.	DO NOTback swab the insertion site.			
16.	Do not fan or blow on the site. Discard the applicator after a single use.			
17.	Always allow the antiseptic to remain on the insertion site and to dry.			
18.	Apply Biopatch (blue in the sky) and transparent dressing. Apply tape around the edges of the dressing. Label dressing with date, time and initials.			
19.	Discard used items and wash hands.			
20.	Document in the patient's medical record the following: date and time of dressing changed, observation of site, any signs ofcomplications and patient's response and tolerance of the procedure.			

Total Marks_____

ANNEXURE –II

STP ON PREVENTION OF CENTRAL LINE ASSOCIATED BLOOD SREAM INFECTION

Name of the student teacher: Mrs. KOKILA .S

Programme : M.Sc. (N) II year Student

Subject : Medical – Surgical Nursing

Topic : Prevention of central line associated blood stream infection

Guide/Evaluator : Mr.BRIGHTLIN VIGIL, HOD,

Group : Staff Nurses

Venue: Hospital

Time : 1 Hour

Method of teaching : Lecture cum discussion,

A.V.Aids : LCD, Chart, Roller board, Video Assisted

CENTRAL OBJECTIVE:-

At the end of the teaching programme the staff nurses will have acquired in depth knowledge, skill and attitude on prevention of central line associated blood stream infection

SPECIFIC OBJECTIVES:-

At the end of the teaching programme Staff Nurses will be able to,

1. define central line or central venous catheter
2. list down the indication and contra indication central line placement
3. define the central line associated blood stream infections
4. list down the causes and risk factors for central line associated blood stream infection
5. enlist the symptom of central line associated blood stream infection
6. list down the diagnosis of central line associated blood stream infection
7. explain the treatment of central line associated blood stream infection
8. discuss the prevention of central line associated blood stream infection
9. discuss the central line dressing procedure

S.N	Time	Specific objective	Content	Teacher /Learner Activities	A.V. Aids	Evaluation
1	**4mts**	Introduce the Topic	**INTRODUCTION:** Central venous catheters (CVCs) are a commonly used modality throughout the medical center and especially in the intensive care units, serving a vital role in the management of critically ill patients. These devices involve placement of a large-bore catheter into one of the body's main central veins. Typical sites include the internal jugular, subclavian, and femoral veins. Although indications vary among critically ill patients. Central venous catheter-related bloodstream infection (CRBSI) is associated with high rates of morbidity and mortality in critically ill patients. **DEFINITION:** **Central line or central venous catheter**	T – Introduces the topic L – Participates in discussion	Roller board	
2	**5 mts**	define central line or central venous catheter	A central venous catheter, also called a central line, is a long, thin, flexible tube used to give medicines, fluids, nutrients, or blood products over a long period of time, usually several weeks or more. A catheter is often inserted in the arm or chest through the skin into a large vein. The catheter is threaded through this vein until it reaches a large vein near the heart.	T – Define Arterial blood gas L – Notes down and participate in discussion	Roller board 	How do you define central line or central venous catheter?

S.N	Time	Specific objective	Content	Teacher /Learner Activities	A.V. Aids	Evaluation
3	5mts	List down the indication and contra indication central line placement	**INDICATIONS FOR CENTRAL LINE PLACEMENT** • Administration of medications — Many medications (eg, vasopressors, chemotherapy, TPN) • Hemodynamic monitoring – transduction of CVP, or conduit for PA line • Hemodialysis. • Poor peripheral access. Volume resuscitation **CONTRAINDICATIONS TO CENTRAL LINE PLACEMENT** • Infection over catheter site • Clot in the selected vein Coagulopathy and thrombocytopenia	T- Discussing and Explaining L – Listening		What are the indication and contra-indication for central line placement?

S.N	Time	Specific objective	Content	Teacher /Learner Activities	A.V. Aids	Evaluation
4	2mt	define the central line associated blood stream infections	**Central Line-Associated Bloodstream Infections:** A central line-associated bloodstream infection (CLABSI) occurs when bacteria enters the bloodstream through a central line catheter. A central line catheter is a long, thin tube that is inserted through a vein until it reaches a larger vein close to the heart. It is used to deliver medicine, nutrition, IV fluids, and chemotherapy. It comes under MRSA.	T- Discussing and Explaining L – Listening	Roller board 	How do you define CLABSI ?
5	5mts	list down the causes and risk factors for central line associated blood stream infection	**CAUSES AND RISK FACTORS** **Causes** Bacteria normally live on the skin. These bacteria will sometimes track along the outside of the catheter. From the catheter, they can get into the bloodstream. **Risk factors** These factors increase your chance of developing a CLABSI: • Having a catheter for a very long time	T- Discussing and Explaining L – Listening	LCD 	What are all the causes and risk factors for CLABSI ?

S.N	Time	Specific objective	Content	Teacher /Learner Activities	A.V. Aids	Evaluation
6	3mts	enlist the symptom of central line associated blood stream infection	• Having a catheter that is not coated with an antimicrobial (a substance that kills bacteria). • Having a catheter inserted into a vein in the thigh. • Having a weakened immune system. • Being in the intensive care unit. • Having an infection elsewhere in the body or skin. • Improper aseptic technique. • Improper care. **SYMPTOMS** • Fever • Chills • Pain • Fast heart rate • Redness, swelling, or tenderness at the catheter site • Drainage from catheter site	T- Discussing and Explaining L – Listening	LCD 	List down the symptoms of CLABSI ?

S.N	Time	Specific objective	Content	Teacher /Learner Activities	A.V. Aids	Evaluation
7	3 mts	list down the diagnostic test of central line associated blood stream infection	**DIAGNOSTIC TEST** Tests may include the following: • Blood tests and cultures - to check blood cells and to check if bacteria are present • Other cultures - urine , sputum , and/or skin to test for infection • Echocardiogram - to check the heart to see if bacteria have reached the heart valves	T- Discussing and Explaining L – Listening		What are all the diagnostic test of central line associated blood stream infection?
8	3 mts	explain the treatment of central line associated blood stream infection	**TREATMENT** Treatment options include the following: • Antibiotics—Antibiotics are medicines used to treat an infection. The kind of antibiotic you will be given depends on which bacteria is found in your blood. • Central line care—Often, the central line catheter willneed to be removed and replaced by a new catheter.	T – Asking questions L - Answering	Roller board 	

S.N	Time	Specific objective	Content	Teacher /Learner Activities	A.V. Aids	Evaluation
9	10 mts	discuss the prevention of central line associated blood stream infection	**PREVENTION:** **Central Line Insertion Bundle** ❖ Optimal site selection ❖ Hand washing !!! ❖ Full body drape (sterile field) ❖ Sterile Gloves, Gown, Towels ❖ Surgical mask & cap ❖ Chlorhexidine 2 % & 70% alcohol skin prep ❖ All ports capped by MD ❖ Immediate dressing application (dated) **Central Line Daily Maintenance Bundle** ❖ Hand washing before access ❖ Standard dressing changes (date & time) ❖ Swab ports with Chlorhexidine 2% & 70% alcohol swabs	T – Asking questions L - Answering	LCD  LCD 	Explain the prevention of CLABSI ?

S.N	Time	Specific objective	Content	Teacher /Learner Activities	A.V. Aids	Evaluation
			❖ Change IV bags q24 hours ❖ Change IV tubing q72 hours ❖ Daily review of necessity/Early removal ❖ Screen patients for S & S of infection (integrated into the Daily Goal Sheet) **OTHERS INCLUDE** ❖ Site selection (subclavian, jugular, femoral) ❖ Hand Hygiene ❖ Aseptic Technique ❖ Skin Antiseptic – (attachment to Povidone) ❖ Catheter Site Dressing Regiments ❖ Early detection of colonized patients ❖ Data collection for Central Line days and CRBSI rates	T- Discussing and Explaining L – Listening	LCD	

S.N	Time	Specific objective	Content	Teacher /Learner Activities	A.V. Aids	Evaluation
			Hand Hygiene ❖ Empower nurses to ask the question ❖ Posted reminder notes on each insertion checklist. ❖ Posted reminders on each central line kit. ❖ Hand sanitizer mounted outside and inside each room. ❖ Good hand hygiene **Use of Chlorhexidine 2% & Alcohol 70% as Skin Antiseptic** ❖ Company contacted and asked to tint the antiseptic (pink) ❖ Large swabs saturated with antiseptic ❖ Elimination of Povidone from unit stock **Catheter Site Dressing Regimens** Transparent, semi-permeable dressings are most commonly used	T- Discussing and Explaining L – Listening T- Discussing and Explaining L – Listening	LCD  	

S.N	Time	Specific objective	Content	Teacher /Learner Activities	A.V. Aids	Evaluation
			❖ These dressings are • Reliably secure the device • Permit continuous visual inspection of the catheter site • Permit patients to bathe without saturating the dressing • Require less frequent changes **Early Detection of Colonized Patients** ❖ Identification of patients with central lines during daily rounds ❖ Completion of daily goal sheets • Bundle compliance • Reminder to complete checklist upon insertion • Assess and advocate for early removal ❖ Prompts regarding S&S of central line related blood stream infections to cue practitioners to notify infection control (contact number provided)	T – Asking questions L - Answering		

S.N	Time	Specific objective	Content	Teacher /Learner Activities	A.V. Aids	Evaluation
			Data Collection for Central Line days and CRBSI rates ❖ Initially, number of central line days were collected manually ❖ Now, collected through the Critical Care Information System (CCIS) ❖ All positive blood culture results are automatically flagged for the infection control practitioners ❖ Any patients with central lines and has a blood culture order has comparative cultures obtained from central line as well	T – Asking questions L - Answering		

S.N	Time	Specific objective	Content	Teacher /Learner Activities	A.V. Aids	Evaluation
10	5	discuss the central line dressing procedure	**CENTRAL LINE DRESSING PROCEDURE** • Identify the patient for dressing change. • Check the Catheter Insertion Date • Check the Last Dressing Change Date: • Check the Catheter Type: • Check the Insertion Site: • Collect appropriate equipment (Central Line Maintenance Kit) • Wash your hands. • Explain the procedure to the patient and position the patient supine or semi-Fowler's position with head turned away from the dressing site. If patient is intubated, suction the patient prior to positioning.	T- Demonstating and Explaining L – observing	LCD 	

S.N	Time	Specific objective	Content	Teacher /Learner Activities	A.V. Aids	Evaluation
			• Don protective wear, surgical mask, clean gloves, sterile gowns, and cap. • Carefully loosen and remove the old dressing down to the insertion site. Pull the dressing towards the exit site of a long term catheter or towards the insertion site of a • short term catheter (this helps prevent pulling out the line). • Inspect the area around the site for any signs of infection (redness, swelling, drainage, tenderness, warmth, or odor). • Notify MD for any signs or symptoms of infection. • Deglove, wash your hands adhere to strict hand hygiene using soap.			

S.N	Time	Specific objective	Content	Teacher /Learner Activities	A.V. Aids	Evaluation
			• Open kit, create a sterile field and don sterile glove. • Secure catheter from movement. Cleanse the catheter insertion site using appropriate antiseptic technique; 2% Chlorhexidine-based preparation is preferred. • DO NOTback swab the insertion site. Do not fan or blow on the site. Discard the applicator after a single use.Always allow the antiseptic to remain on the insertion site and to dry. • Apply Biopatch (blue in the sky) and transparent dressing. Apply tape around the edges of the dressing. • Label dressing with date, time and initials. • Discard used items and wash hands • Document in the patient's medical record the following: date and time of dressing changed, observation of site, any signs of complications and patient's response and tolerance of the procedure.			

SUMMARY:CLABSI is dangerous; it can be prevented and treated. But cost of treatment is very high. So prevention is better than cure. As nurses we must follow the universal precaution methods in relation to prevention of CLABSI and will help the patient to minimize the duration of hospitalization and economic burden.

ANNEXURE – III

KEY ANSWER

S. No	Answers
1	b
2	b
3	d
4	d
5	d
6	d
7	a
8	a
9	a
10	b
11	a
12	c
13	c
14	a
15	d
16	c
17	a
18	a

S. No	Answers
19	b
20	d
21	a
22	d
23	d
24	d
25	b
26	c
27	b
28	a
29	d
30	b

ANNEXURE- IV

CRITERIA CHECKLIST FOR VALIDATION OF THE TOOL

Respected Sir/ Madam,

Kindly go through the content and put right mark against structured questionnaire in the following columns ranging from 'relevant' to 'not relevant'. Where modification is needed, kindly give your constructive suggestions in the remarks column.

SECTION A

DEMOGRAPHIC DATA

SL NO	ITEMS	RELEVANT	NEEDS MODIFICATION	NOT RELEVANT	REMARKS
1					
2					
3					
4					
5					
6					

SECTION B

TOOL-1: STRUCTURED KNOWLEDGE QUESTIONNAIRE

Sl NO	Items	Relevant	Needs Modification	Not Relevant	Remarks
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					

Suggestions if any:

Date: Signature & seal of Expert

Place:Dharmapuri Name & Designation

SECTION B

TOOL -2: STRUCTURED OBSERVATION CHECKLIST

Sl No.	Items	Relevant	Needs Modification	Not Relevant	Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Suggestions if any:

Date: Signature & seal of Expert

Place: Dharmapuri Name & Designation

ANNEXURE – V

COPY OF LETTER SEEKING EXPERTS OPINION FOR TOOL AND CONTENT VALIDITY

From,

Mrs. Kokila .S,
M.Sc (N) II year,
Srripaspo college of Nursing,
Dharmapuri.

To,

Respected Madam/Sir,

Sub: Experts opinion and suggestion for the tool for its validity

I am post graduate student (Medical Surgical Nursing) of Srri Paspo College of Nursing. I have selected the below mentioned topic for the research project to be submitted to the Dr.M.G.R University, Chennai as fulfillment of Master Science in Nursing.

Title of the topic:

"A study to assess the effectiveness of structured teaching programme (STP) regarding prevention of central line associated blood stream infection on terms of knowledge and skill among staff nurses in selected private hospital at Dharmapuri''

With regard to this may I kindly request you to content and validate my tool for its relevancy. I am enclosing the objectives of the study. I would be highly obliged and remain thankful for your great if you could validate and send it as possible.

Thanking you,

Place: Yours sincerely,

Date:

Enclosure:

1. Structured Questionnaire to assess the knowledge.
2. Structured observation checklist to assess the skill of staff nurses.

COPY OF LETTER SEEKING PERMISSION FROM THE HOSPITAL TO CONDUCT THE STUDY

From,

Mrs. Kokila .S,

M.Sc (N) II year,

Srri Paspo College of Nursing,

Dharmapuri.

To,

K.V Hospital,

Dharmapuri

Respected Madam/Sir,

Sub: Srri Paspo College of Nursing – Project Work of M.Sc (N) student –

permission requested – reg.

We wish to state that Mrs.Kokila.S one of our final year M.Sc (N) student has to conduct a research project, which is to be submitted to the Dr.M.G.R University, Chennai as fulfillment of university requirements.

Title of the topic:

"A study to assess the effectiveness of structured teaching programme (stp) regarding prevention of central line associated blood stream infection on terms of knowledge and skill among staff nurses in selected private hospital at dharmapuri''

We therefore request you to kindly permit her to do the research work under your valuable guidance and suggestions.

Thanking you,

Yours faithfully,

Principal

Srri Paspo College of Nursing, Dharmapuri

LIST OF EXPERTS CONSULTED FOR THE CONTENT VALIDITY

OF RESEARCH TOOL

Mrs.T.Chellammal. M.Sc(N).,
Principal,
Srripaspo College of Nursing,
Dharmapuri.

Mr.Brightlin Vijil M.Sc (N).,
HOD, Medical Surgical Nursing,
Srripaspo College of Nursing,
Dharmapuri

Mrs.Shanthi M.Sc (N).,
HOD, Obstetrical and Gynaecological Nursing,
Shrinidhi College of Health Sciences and Research,
Sivagangai

Mr.Abdus Sukkoor M.Sc (N).,
HOD, Paediatric Nursing,
Shirnidhi College of Health Sciences and Research,
Sivagangai

Mrs. Jasmine Jenifer Gladys M.sc(N).,
HOD, Medical Surgical Nursing,
Shrinidhi College of Health Sciences and Research.
Sivagangai.

Mrs.Parameswari M.Sc (N).,
HOD, Obstetrical and Gynaecological Nursing,
Shrinidhi College of Health Sciences and Research,
Sivagangai

ANNEXURE –VI: MASTER DATA SHEET:PRE TEST (KNOWLEDGE)

S No / Q.No	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	1	0	0	0	1	0	0	1	1	0	0	1	1	0	1	1	0	0	0	1	1	0	0	0	1	0	0	1	0	1	13
2	1	1	0	1	1	1	1	1	1	0	1	1	1	0	0	1	1	0	0	1	1	1	1	0	1	0	0	1	1	0	20
3	1	0	1	1	0	1	1	0	1	0	0	0	1	0	0	1	1	1	1	0	1	1	0	1	1	0	1	0	0	0	16
4	0	1	0	1	1	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	1	1	1	11
5	1	1	1	1	1	1	1	0	0	0	1	0	1	1	1	1	0	0	1	0	1	1	1	1	1	0	1	1	1	1	22
6	0	0	0	1	1	0	1	0	1	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0	1	0	1	1	1	13
7	1	1	1	0	1	1	1	0	0	0	1	0	1	1	0	1	0	0	1	0	1	1	0	1	1	0	1	1	1	1	19
8	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	1	1	1	1	0	1	0	0	1	1	1	1	1	24
9	1	1	1	0	1	1	1	0	1	0	1	1	1	1	1	1	0	0	1	1	1	0	0	1	0	0	1	1	1	0	20
10	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	26
11	0	0	1	1	0	1	1	0	1	0	1	0	1	0	0	1	1	1	1	0	1	1	0	1	1	0	1	0	1	0	17
12	1	1	0	1	1	1	1	1	1	0	1	1	1	0	0	1	1	0	0	1	1	0	1	0	1	1	0	1	1	1	21
13	1	0	0	0	1	1	0	1	1	1	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0	1	0	1	0	16
14	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	0	0	1	1	1	1	1	1	0	24

S No / Q.No	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
15	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	27
16	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	1	0	1	0	1	0	0	1	20
17	1	1	1	0	1	1	1	1	0	0	0	1	1	1	1	1	1	0	1	0	1	1	1	1	1	0	1	1	1	0	22
18	1	1	0	1	0	1	1	0	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	0	1	1	1	1	0	1	22
19	1	0	0	0	1	0	0	1	1	0	1	1	1	0	1	1	0	0	0	1	1	0	0	0	1	0	0	1	1	0	14
20	1	1	0	0	1	1	1	1	1	0	1	1	0	1	1	1	1	1	0	1	0	1	0	0	1	0	0	1	0	1	19
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	0	27
22	1	0	1	0	0	0	0	1	1	0	0	0	1	0	0	0	1	0	1	1	1	1	0	1	1	1	0	1	0	1	15
23	0	0	0	0	1	1	1	1	1	0	1	1	0	1	0	1	0	0	0	1	1	0	1	0	1	0	0	1	1	1	16
24	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	0	1	1	0	1	1	1	1	25
25	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	0	1	1	1	0	24
26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	0	1	1	0	1	0	0	1	24
27	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	0	1	1	1	0	1	0	1	0	0	1	0	0	1	1	21
28	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0	1	1	0	1	1	1	0	25
29	0	1	0	1	1	0	0	1	0	1	0	1	1	0	1	0	0	0	0	0	0	0	1	0	0	1	0	1	1	1	13
30	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**0**	**1**	**0**	**1**	**0**	**1**	**1**	**1**	**1**	**0**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**19**

MASTER DATA SHEET: PRE TEST (SKILL)

S No / Q.No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	TOTAL
1	1	1	1	1	0	0	0	0	0	0	1	1	0	1	1	1	0	1	1	1	12
2	1	1	1	1	1	1	0	0	0	1	1	0	0	1	1	0	1	1	1	1	14
3	1	0	0	1	0	0	0	0	0	0	0	1	1	1	1	0	1	0	1	1	9
4	1	1	1	1	0	0	0	0	0	0	1	1	0	1	0	1	1	1	1	1	12
5	1	1	1	1	1	0	0	1	0	0	1	0	1	1	1	1	0	1	1	1	14
6	1	1	1	1	0	0	0	0	0	0	1	1	0	1	1	1	0	1	1	1	12
7	1	1	0	1	1	1	0	1	0	1	1	0	1	1	1	1	0	1	1	1	15
8	1	1	0	0	1	1	0	0	0	1	1	1	1	0	0	0	0	1	1	0	10
9	1	0	1	1	1	1	0	0	0	1	1	0	0	1	1	0	1	1	0	1	12
10	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	1	1	15
11	1	0	0	1	0	1	0	0	1	0	1	0	1	0	1	1	0	1	1	0	10
12	1	1	1	0	1	0	1	1	1	0	1	1	1	0	0	0	0	1	1	1	13
13	1	0	0	0	1	0	0	0	0	0	1	0	0	1	1	1	0	1	1	1	9
14	1	0	1	0	1	0	1	1	1	0	1	0	0	0	1	1	0	1	1	1	12
15	1	1	1	1	0	1	1	0	1	1	1	1	1	1	0	1	1	0	1	1	16
16	1	1	0	1	1	1	1	1	1	1	0	1	1	0	1	0	1	1	1	1	16
17	1	1	1	0	0	0	0	1	1	1	1	0	0	0	1	1	1	1	1	1	13
18	1	1	1	0	1	0	1	1	1	0	1	1	1	0	0	0	0	1	1	1	13
19	0	0	1	0	1	0	1	1	1	0	1	0	0	0	1	1	0	1	1	0	10
20	1	1	1	1	1	1	0	0	0	1	1	0	0	1	1	0	1	1	1	1	14
21	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	17
22	1	0	0	1	0	1	0	0	1	0	1	0	1	0	1	0	0	1	1	0	9
23	1	0	0	1	0	0	0	0	0	0	1	1	0	1	1	1	0	1	1	1	10
24	1	0	1	0	1	0	1	1	1	0	1	0	0	0	1	1	1	0	1	1	12
25	0	1	1	0	1	1	0	0	1	0	1	1	0	1	0	0	0	1	1	0	10
26	1	0	1	1	1	1	0	1	1	1	1	0	1	0	1	0	1	1	1	1	15
27	1	0	0	1	1	1	0	1	1	1	1	0	1	0	1	1	1	0	1	1	14
28	1	1	1	1	0	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	17
29	1	1	0	0	1	1	0	0	0	1	1	1	1	0	0	0	0	1	1	0	10
30	1	1	1	1	1	0	0	1	0	0	1	1	0	1	0	0	1	1	1	0	12

MASTER DATA SHEET: DEMOGRAPHIC VARIABLES

S No	1. Age	2. Gender	3. Education	4. Previous education on CLABSI	5.Training programe	6.experience	7. Department of working
1	a	a	a	C	b	a	a
2	a	b	a	C	b	a	b
3	a	b	a	A	b	a	b
4	a	b	a	A	b	a	a
5	b	a	b	C	b	b	a
6	a	b	a	C	b	b	a
7	b	b	a	C	b	b	a
8	b	a	a	C	a	c	b
9	a	b	a	C	a	b	a
10	c	b	a	A	a	c	a
11	a	a	b	A	b	b	a
12	b	a	b	C	b	b	a
13	a	b	b	A	b	b	b
14	b	a	b	C	a	c	b
15	c	b	b	A	b	c	b
16	b	b	a	C	b	b	b
17	b	b	a	A	b	c	a
18	b	b	b	C	b	b	b
19	a	a	b	A	b	a	a
20	b	b	b	C	b	b	b
21	c	b	b	A	b	c	a
22	a	b	a	C	b	b	b
23	a	a	a	A	b	b	a
24	b	b	a	C	b	b	a
25	b	a	b	A	b	c	b
26	b	b	b	A	b	b	b
27	b	a	b	C	b	c	a
28	c	b	b	A	a	b	a
29	a	a	a	A	b	a	a
30	b	a	b	C	b	b	b

MASTER DATA SHEET: POST TEST (KNOWLEDGE)

S No / Q.No	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	1	1	0	1	1	0	1	1	1	0	0	1	1	0	1	1	0	1	0	1	1	0	1	0	1	0	1	1	0	1	19
2	1	1	0	1	1	1	1	1	1	0	1	1	1	0	1	1	1	0	0	1	1	1	1	0	1	0	1	1	1	0	22
3	1	0	1	1	0	1	1	0	1	0	1	0	1	0	0	1	1	1	1	0	1	1	1	1	1	0	1	0	1	1	20
4	1	1	0	1	1	1	0	1	0	1	1	1	0	1	1	0	1	0	1	0	0	0	1	0	0	1	0	1	1	1	18
5	1	1	1	1	1	1	1	0	1	0	1	0	1	1	1	1	0	1	1	0	1	1	1	1	1	0	1	1	1	1	24
6	1	1	1	1	1	0	1	0	1	0	1	1	0	0	1	1	1	0	1	0	1	0	0	0	0	1	1	1	1	1	19
7	1	1	1	0	1	1	1	0	1	0	1	0	1	1	1	1	0	1	1	0	1	1	1	1	1	0	1	1	1	1	23
8	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	0	1	0	0	1	1	1	1	1	25
9	1	1	1	0	1	1	1	0	1	0	1	1	1	1	1	1	0	0	1	1	1	0	0	1	0	0	1	1	1	1	21
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	29
11	1	0	1	1	1	1	1	0	1	0	1	0	1	0	0	1	1	1	1	0	1	1	1	1	1	0	1	0	1	1	21
12	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0	1	1	0	1	0	1	1	0	1	1	1	23
13	1	1	1	1	1	1	0	1	1	1	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	0	1	0	1	1	21
14	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	0	1	1	1	1	1	1	1	0	25

S No / Q.No	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
15	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	28
16	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	0	1	0	1	0	0	1	23
17	1	1	1	0	1	1	1	1	0	0	0	1	1	1	1	1	1	0	1	0	1	1	1	1	1	0	1	1	1	1	23
18	1	1	0	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	25
19	1	0	1	0	1	0	0	1	1	0	1	1	1	1	1	1	0	1	0	1	1	0	0	1	1	1	0	1	1	0	19
20	1	1	1	0	1	1	1	1	1	0	1	1	0	1	1	1	1	1	0	1	0	1	0	0	1	0	1	1	0	1	21
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	28
22	1	0	1	1	1	0	0	1	1	1	0	0	1	0	0	0	1	1	1	1	1	1	0	1	1	1	0	1	1	1	20
23	1	1	1	0	1	1	1	1	1	0	1	1	0	1	1	1	1	0	0	1	1	0	1	0	1	1	0	1	1	1	22
24	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	0	0	1	1	1	24
25	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	0	1	1	1	1	25
26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	0	1	0	1	1	26
27	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	1	0	1	1	1	24
28	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	0	27
29	0	1	0	1	1	1	0	1	0	1	0	1	1	0	1	1	1	1	0	1	0	0	1	1	0	1	1	1	1	1	20
30	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	0	1	1	1	1	0	1	0	1	0	1	1	1	0	23

MASTER DATA SHEET: POST TEST (SKILL)

S No / Q.No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	TOTAL
1	1	1	0	1	0	1	0	1	0	0	0	0	1	1	1	0	1	0	1	0	10
2	1	1	1	0	0	1	0	1	1	0	1	0	1	0	1	0	1	0	1	1	12
3	1	1	1	1	0	1	0	1	0	1	1	1	1	1	1	0	1	0	1	1	15
4	1	1	0	1	0	1	1	0	0	0	1	0	0	1	0	1	1	1	0	0	10
5	1	1	1	1	1	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	17
6	1	1	1	1	0	1	0	1	0	1	1	1	0	1	0	1	0	1	0	1	13
7	1	1	0	1	1	1	0	1	0	1	1	1	1	1	1	1	0	1	1	1	16
8	1	1	0	1	1	1	0	1	0	1	1	1	1	0	1	1	0	1	1	1	15
9	1	0	1	1	1	1	0	1	1	1	1	0	0	1	1	0	1	0	1	0	13
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	19
11	1	1	0	1	1	1	0	1	1	0	1	0	1	1	1	1	0	1	1	1	15
12	1	1	1	0	1	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	9
13	1	0	1	0	1	1	0	1	0	1	1	0	1	1	1	1	1	0	1	0	13
14	1	0	1	1	1	1	1	1	1	0	1	1	0	0	1	1	1	1	1	1	16
15	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	18
16	1	0	0	1	1	1	1	1	1	1	0	0	1	0	1	0	1	1	0	1	13
17	1	1	1	0	1	0	0	1	1	1	1	0	0	1	1	1	1	1	1	1	15
18	1	1	1	0	1	1	1	1	1	0	1	1	1	1	0	0	1	1	1	1	16
19	1	1	1	1	1	1	1	1	0	0	1	0	1	0	1	1	0	1	1	1	15
20	1	1	1	1	1	1	0	0	0	1	1	0	0	1	1	0	1	1	1	1	14
21	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	19
22	1	0	0	1	0	1	1	1	1	0	1	0	1	0	1	1	1	1	1	1	14
23	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	0	1	1	1	16
24	1	0	1	1	1	0	1	1	1	0	1	0	0	0	1	1	1	1	1	1	14
25	1	1	1	1	1	1	0	1	1	1	1	1	0	1	0	1	0	1	1	1	16
26	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	18
27	1	0	0	1	1	1	0	1	1	1	1	0	1	0	1	1	1	1	1	1	15
28	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	18
29	1	1	0	0	1	1	1	0	1	0	0	1	1	0	0	0	0	1	0	0	9
30	1	1	1	1	1	1	0	1	0	1	1	1	0	1	0	0	1	1	1	1	15