

**A STUDY TO EVALUATE THE EFFECTIVENESS OF
STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE,
ATTITUDE AND PRACTICE REGARDING INFECTION
CONTROL MEASURES AMONG STAFF NURSES
IN ANNAMMAL HOSPITAL AT
KANYAKUMARI DISTRICT.**

**By
301312204**

**A DISSERTATION SUBMITTED TO THE TAMILNADU
DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI,
IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE
OF MASTER OF SCIENCE
IN NURSING
APRIL – 2015**

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Certified that this is the bonafide work of

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At the Annammal College of Nursing,

Kuzhithurai.

***Submitted in partial fulfillment of the requirements for
the degree of Master of Science in Nursing from the Tamilnadu***

Dr. M.G.R. Medical University, Chennai.

Examiners

1. _____

2. _____

Prof. Mrs. J.M.JerlinPriya, M.Sc. (N), PhD.

Principal

APRIL-2015

DECLARATION

I hereby declare that the present dissertation title **“A Study to Evaluate the Effectiveness of Structured Teaching Programe on Knowledge, Attitude and Practice Regarding Infection Control Measures Among Staff Nurses in Annammal Hospital at Kanyakumari District”**, is the outcome of the original research work undertaken and carried out by me under the guidance of **Prof. Mrs. J.M JerlinPriya, M.Sc(N),Ph.d. Principal cum professor** in Medical Surgical Nursing Department, and **Mrs. Leonarth Mary,Asst. Professor** in Medical surgical Nursing Department. I also declare that the material of this has not found in any way, the basis for the award of any degree or diploma in the university or any other university.

M.Sc. Nursing Ilyear

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M.Sc(N)II year

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XII	Photograph

LIST OF ABBREVIATIONS

API	-	Analytical profile index
CDCP	-	Center for disease control and prevention
ESBL	-	Extended spectrum beta lactamase
HAI	-	Hospital acquired infection
ICID	-	International Congress on Infectious Disease
ICUs	-	Intensive care unit
MRSA	-	Methylene resistant staphylococcus aureus
NICU	-	Neonatal Intensive care unit
OSHA	-	occupational safety and health administration
PICU	-	Pediatric intensive care unit
UTI	-	Urinary tract infection
VAP	-	Ventilator Associated pneumonia
WHO	-	World Health Organization

ABSTRACT

“A study to evaluate the effectiveness of structured teaching programme on knowledge, attitude and practice regarding infection control measures among staff nurses in Annammal Hospital at Kanyakumari District”.

INTRODUCTION

Good health depends in part on a safe environment. Practices or techniques that control or prevent transmission of infection and protect clients and health care workers from disease. Clients in all health care settings are at risk for acquiring infections because of lower resistance to infectious microorganisms, increased exposure to numbers of disease causing microorganisms and invasive procedures. By practicing infection prevention and control techniques, the nurse can avoid spreading microorganisms to clients. Infection is defined as the invasion and multiplication of microorganisms such as bacteria, viruses, and parasites that are not normally present within the body. An infection may remain in local area is called localized infection, and infection that spread through the blood or body is called systemic infection.

The term "nosocomial" comes from two Greek words: "nosus" meaning "disease" + "komeion" meaning "to take care of." Hence, "nosocomial" should apply to any disease contracted by a patient while under medical care. Nosocomial infections are infections that have been caught in a hospital and are potentially caused by organisms that are resistant to antibiotics. A nosocomial infection is specifically one that was not present or incubating prior to the patient's being admitted to the hospital, but occurring within 48 hours after admittance to the hospital. Nosocomial infections, also known as health care-associated infections, are those that an individual develops as a result of being hospitalized. Common hospital infections include those of the urinary tract, the bloodstream, and the respiratory system.

Simonetti A et.al (2003) conducted a study on a prospective cohort study on intensive care acquired infection. The study was conducted with 335 patients, 80 developed ICU acquired infection. The study findings concluded that among the patients with ICU acquired infections hospital mortality was higher percentage, regardless of whether or not the patients had infection on admission.

Maria Pavia et.al (2000) conducted a study on the prevalence of hospital acquire infection in Calabria (Italy).The aim of the study was to assess the effect of different variables on hospital acquired infection in 888 patient present in a ward for at least 24 hours and not due for discharge or transfer on the day of the survey. The overall prevalence of hospital acquired infection was 1.7% and urinary tract and surgical wounds were the most frequent sites (each four patients, 26.7%). In only eight (53.3%) of the fifteen hospital acquired infection detected, had a microbiological examination been requested and the only two positive culture results involved *Pseudomonas aeruginosa* (surgical site) and *Escherichia coli* (urinary tract).

STATEMENT OF PROBLEM

“A study to evaluate the effectiveness of structured teaching programme on knowledge, attitude and practice regarding infection control measures among staff nurses in Annammal Hospital at Kanyakumari District”.

OBJECTIVES OF STUDY

- To evaluate the effectiveness of structured teaching program regarding infection control measures by comparing pretest and posttest level of knowledge, attitude and practice of staff nurse.
- To associate the posttest level of knowledge, attitude and practice on infection control measures among staff nurses with selected demographic variable.

HYPOTHESES

H₁-There will be a significant difference between pretest and posttest level of knowledge, attitude and practice regarding infection control measures among staff nurses.

H₂-.There will be a significant association between posttest level of knowledge, attitude and practice regarding infection control measures and the selected demographic variables.

RESEARCH METHODOLOGY

The study was conducted by checking knowledge, attitude and practice regarding infection control measures among 30 staff nurses. The questionnaire, attitude, statement by 3 point likert scale and the check list were used to obtain necessary data, structured teaching programme was given the next day of pretest and posttest was administered after 7days of structured teaching programme, the same questionnaire was used to collect the post test data.

DATA ANALYSIS

Paired 't' test was used to compare the pretest and posttest level of knowledge attitude and practice among staff nurses, Karl persons correlation coefficient test was used to find out the relationship between the post test level of knowledge, attitude and practice towards infection control.

FINDINGS OF THE STUDY

1. Effectiveness of structured teaching program of knowledge, attitude and practice of staff nurses regarding infection control measures by comparing pretest and posttest level.

Regarding the effectiveness, the posttest mean and standard deviation was greater than pretest mean and standard deviation for knowledge, attitude and practice. The p value is 0.001 which is highly significant. Hence, the H_1 is accepted.

2. Relationship between post test level of knowledge, attitude and practice on infection control measure among staff nurses with socio demographic variables

The data pertaining to association shows there is no association between level of knowledge with socio demographic variables but there is an association with level of attitude and practice with socio demographic variables. Hence, H₂ was accepted.

RESULT AND SUMMARY

The study concluded to evaluate the effectiveness of structured teaching program regarding infection control measures among staff nurses. The objective of the study is to evaluate the effectiveness by comparing pretest and posttest level of knowledge, attitude and practice, to associate the post test level of knowledge, attitude and practice on infection control measures among staff nurses with selected socio demographic variables. Convenient sampling technique was used to draw 30 samples from the study population.

Structured knowledge questionnaire, attitude scale, observational checklist was used to evaluate the pre test, and structured teaching was given and post test was done to evaluate knowledge, attitude and practice. After analysis and interpretation it was inferred, that structured teaching is effective.

CONCLUSION

The study findings, revealed that the structured teaching programme helps to improve knowledge attitude and practice of staff nurses regarding infection control measures and the study reveals, that there is relationship between posttest level of attitude and practice, except level of knowledge.

CHAPTER I

INTRODUCTION

- *Background of the study*
- *Need for the study*
- *Statement of the problem*
- *Objectives of the study*
- *Hypotheses*
- *Operational definitions*
- *Assumptions*
- *Delimitations*
- *Conceptual framework*

CHAPTER I

INTRODUCTION

**“Emergencies can occur any time
But a little teaching and training
Can go a long way in saving lives”**

-Richardson

Good health depends in part on a safe environment. Practices or techniques that control or prevent transmission of infection and protect clients and health care workers from disease. Clients in all health care settings are at risk for acquiring infections because of lower resistance to infectious microorganisms, increased exposure to numbers of disease causing microorganisms and invasive procedures. By practicing infection prevention and control techniques, the nurse can avoid spreading microorganisms to clients. Infection is defined as the invasion and multiplication of microorganisms such as bacteria, viruses, and parasites that are not normally present within the body. An infection may remain in local area is called localized infection, and infection that spread through the blood or body is called systemic infection.

The term "nosocomial" comes from two Greek words: "nosus" meaning "disease" + "komeion" meaning "to take care of." Hence, "nosocomial" should apply to any disease contracted by a patient while under medical care. Nosocomial infections are infections that have been caught in a hospital and are potentially caused by organisms that are resistant to antibiotics. A nosocomial infection is specifically one that was not present or incubating prior to the patient's being admitted to the hospital, but occurring within 48 hours after admittance to the hospital. Nosocomial infections, also known as healthcare-associated infections, are those that an individual develops as a result of being hospitalized. Common hospital infections include those of the urinary tract, the bloodstream, and the respiratory system.

HAI can be caused by bacteria, viruses, fungi, or parasites. These microorganisms may already be present in the patient's body or may come from the environment, contaminated hospital equipment, health care workers, or other patients etc. Depending on the causal agents involved, an infection may start in any part of the

body. A localized infection is limited to a specific part of the body and has local symptoms. A generalized infection enters the bloodstream and causes systemic symptoms such as fever, chills, low blood pressure, or mental confusion. This can lead to sepsis, a serious, rapidly progressive multi-organ infection that results in death.

The University of Michigan Health System reports in 2014 that the most common sources of infection in their hospital were urinary catheters, central venous (in the vein) catheters, endotracheal tubes and the rhyles tube. The organisms can be transferred from one patient to another (cross-infection). They can be part of a patient's own flora (endogenous infection). They can be transferred from an inanimate object or from a substance recently contaminated by another human source (environmental transfer). The organisms that cause most hospital acquired infections are common in the general population, in which setting they are relatively harmless. They may cause no disease or a milder form of disease than in hospitalized patients. This group includes *Staphylococcus aureus*, *Streptococci*, *Enterococci*, and *Enterobacteria* etc. Factors that increase a patient's susceptibility to nosocomial infections include young or old age, decreased immune resistance, underlying disease, and therapeutic and diagnostic interventions. Examples for bacteria's are *staphylococcus aureus*, *Staphylococcus epidemis*, *staphylococcus hemolyticus*, *Staphylococcus pneumonia*, *Staphylococcus enterococci* etc. Example for virus is retro virus, Myo- virus, herpes virus, Baculo virus, Rabhdo virus etc. Examples for fungi include *candida*, *Aspergillus*, *Cryptococcus*, *pneumocystis*, *Hystoplasma* etc... Bacterium named *Clostridium difficile* is now recognized as the chief cause of nosocomial diarrhea (*Methicillin – resistant Staphylococcus aureus*) MRSA is a type of *staphylococcus* bacteria that is resistant to certain antibiotics and may be acquired during hospitalization.

Nosocomial infections are caused by pathogens that easily spread through the body. Many hospital patients have compromised immune systems, so they are less able to fight off infections. In some cases, patients develop infections due to poor conditions at a hospital or a healthcare facility, or due to hospital staff not following proper procedures. Nosocomial infection is high risk for Patients with weakened immunity and Long stay in hospitals, Patients who are not following adequate aseptic

techniques after surgical and medical procedures. Who are not doing adequate hand washing techniques. It is also risk during improper use of hospital equipment's, Inadequate biomedical waste management facilities, Improper care of wound, Incisions and burns by health care workers. Inadequate use of personal protective equipment's by health care workers. Specific areas in hospital such as ICUs, laboratories, operation theatres etc.

Types of nosocomial infection are Urinary tract infection, Wound infection, Respiratory infection, and Blood stream infections etc. The urinary tract infection account for 40-45% of nosocomial infections. Common pathogens associated with urinary tract infection are E.coli, Klebsiella species, Enterobacter, Pseudomonas, Candida and staphylococcus Epidermis Wound infection is another type of nosocomial infection, it account for nearly 30% of all hospital infections. Common pathogens associated are Staphylococcus aureus, Pseudomonas aeruginosa, Acinebacter, E.coli, Staphylococcus pyogens. Respiratory infection is another type of nosocomial infection, itaccounts for 15-20% of nosocomial infections caused by aspiration of endogenous or hospital acquired Oropharyngeal flora. Common pathogens causing ventilator associated pneumonia are klebsiella species, Staphylococcus aureus, E.coli, Pseudomonas species, Acinebacter species, and Proteus species. Blood stream infections are due to contamination IV fluids by tubing or needle changes, Insertion of drug additives to IV fluids, Improper care of needle insertion site, contaminated needles or catheters, Improper hand washing, Improper care of peritoneal and hemodialysis common sites of blood stream infection are central venous catheter line, arterial line and peripheral line

According to WHO Infection prevention and control measures aim to ensure the protection of those who might be vulnerable to acquiring an infection both in the general community and while receiving care due to health problems, in a range of settings. The basic principle of infection prevention and control is by following hygiene measures. The mission of the WHO Infection Prevention and Control in Health Care initiative is to assist client in reducing infections associated with healthcare, by assisting with the assessment, planning, implementation and evaluation of national infection control policies. The ultimate goal is to endorse quality promotion of health care which is safe for patients, health care workers, others in the health care setting and the environment, and to accomplish these goals in a cost-

effective manner. Health care workers can take steps to prevent the spread of infectious diseases. These steps are part of infection control. Proper hand washing is the most effective way to prevent the spread of infections in hospitals.

Role of health professionals is to Provide staff and client education on infection control and prevention, Developing and review about the infection prevention and control policies and procedures, Following Recommended Isolation procedures, Screening client records for community acquired infections Gather statistics regarding Epidemiology(cause and effect) of health care associated infection. In the United States, Occupational Safety and Health Administration (OSHA) standards require that employers must provide readily accessible hand washing facilities, and must ensure that employees wash hands and any other skin with soap and water or flush mucous membranes with water as soon as feasible after contact with blood or other potentially infectious materials.

BACKGROUND OF THE STUDY

Globally the CDCP (Centre for disease control and prevention) estimates that 1.7 million hospital-associated infections, from all types of bacteria combined, cause or contribute to 99,000 deaths each year. In Europe, where hospital surveys have been conducted, the categories of Gram-negative infections are estimated to account for two-thirds of the 25,000 deaths each year. Nosocomial infections can cause severe pneumonia and infections of the urinary tract, bloodstream and other parts of the body. Many types are difficult to attack with antibiotics, and antibiotic resistance is spreading to Gram-negative bacteria that can infect people outside the hospital too. France estimates ranged from 6.7% in 1990 to 7.4%. In Italy since 2000, estimates show that about 6.7 % was the infection rate in which 4,500 and 7,000 deaths. A survey in Lombardy gave a rate of 4.9% of patients in 2000. United Kingdom estimates of 10%infection rate, with 8.2% estimated in 2006.Finland estimates it at 8.5% of patients in 2005.

According to ICID(International congress on infectious disease) the worldwide respiratory infection - 47%, Wound infection-7%, Bloodstream infection - 12%, Urinary tract infection -18%Other nosocomial infection -16%.At national level, prevalence of infection among patients in health care facilities was 6.7% in

1996, 5.9% in 2001 and 5.0% in 2006. The rates for nosocomial infections were 7.6% in 1996, 6.4% in 2001 and 5.4% in 2006. In India the average incidence rate-5% to 10%, but may be up to 28% in ICU. Urinary Tract infection-usually catheter related-28%, Surgical site infection or wound infection-19%, Pneumonia-17%, Blood stream infection-7% to 16%.

A study conducted in relation with prevention of hospital acquired infection due to health personnel reveals that the general clinical use of a policy of cohort nursing with gowns and gloves resulted in a reduction in the nosocomial infection rate by 26 to 9.5%. Hospitals have sanitation protocols regarding uniforms, equipment sterilization, washing, and other preventive measures. Thorough hand washing and use of alcohol rubs by all medical personnel before and after each patient contact is one of the most effective ways to combat nosocomial infections.

Nosocomial pneumonia is also a significant problem. About 3% of patients on ventilators acquire pneumonia, which in this circumstance, has a very high case-fatality rate. The source of the microorganism is often endogenous but may also be exogenous with transfer of an organism from the respiratory equipment. In one example of successful reduction of ventilator-associated pneumonia (VAP), the Owensboro Medical Health System was able to reduce their rate of VAP in the ICU is zero for eight months. They implemented the Ventilator Bundle, a series of interventions related to ventilator care. The main interventions include elevation of the head of the bed, assessment of the readiness for extubation, daily "sedation" vacations, peptic ulcer prophylaxis, and deep venous thrombosis prophylaxis. The Owensboro team particularly noted the importance of elevating the head of the bed, citing an observed association of inability to elevate the head of the bed due to clinical condition and VAP. The team also noted the importance of getting "buy-in" from the nursing staff, making changes as easy as possible for the nursing staff and teaching new staff members the importance of the ventilator bundle. Besides ventilator-associated pneumonia, there are also problems with viral bronchiolitis in children's units and influenza with secondary bacterial pneumonia in institutions for the elderly.

Teaching will promote knowledge provide positive attitude and develop practice level. Accurate and proper teaching helps in reduction of hospital acquired infection and may reduce length of hospital stay.

NEED FOR THE STUDY

“To guard is better than to heal, the shield is nobler than spear!”

Oliver Wendell Holmes

Nosocomial Infections are most frequently occurring infection. Clients in health care settings are at increased risk of infection. In 2012, a study was conducted in which infection rate of 2006 – 2008 periods was compared and the overall infection rate was unchanged and incidence of infection also increased. These findings highlighted the need for targeted study.

Rasmus Leistner et al (2007) conducted a study in intensive care units of seven Indian cities. It showed that 10,835 patients hospitalized for 52,518 days for infection in which 476 Health care associated infections, and it showed an overall rate 4.4% was health care associated infections, per 1000 ICU-days. The central venous catheter-related bloodstream infection rate was 7.92 per 1000, the ventilator-associated pneumonia rate was 10.46 per 1000 ventilator-days; and the catheter-associated urinary tract infection rate was 1.41 per 1000 catheter-days.

Hughes et al (2007) conducted Study on the efficacy of nosocomial infection control (SENIC Project) results and implications for the future. The purpose of the Study on the Efficacy of Nosocomial Infection Control (SENIC Project) was to evaluate nosocomial infection prevention and control infection rate in hospitals in the United States. The overall plan was to assess the surveillance and control activities in hospitals in the United States and to measure the change in the nosocomial infection rates and to assess the influence of changes in infection rates after controlling for other important changes that occurred during the interval. The SENIC 'bottom line' was that 32% of infections that would have occurred in the absence of well-organized infection surveillance and control measures. However, only 6% of infections were actually being prevented In the United States, priorities for nosocomial infection

prevention and control measures are carried ,In addition, there is a critical need for timely analysis and dissemination of surveillance data and for continued training of infection control practitioners and physicians to maximize the effectiveness of prevention and control efforts.

Normanul et.al conducted a descriptive study on assessment of knowledge attitude and practice towards infection control. The aim of the study to evaluate knowledge attitude and practice towards infection control in hospitalized patients out of 1000 distributed questionnaire 780 were returned with response rate the result is study highlighted poor knowledge attitude and practices. The positive linear correlations reframe that better knowledge can lead to positive attitude and subsequently in good practices. This will further help in prevention and management of infection. Therefore, extensive health educational campaign should be provided to general population

Structured teaching program on infection control measures helps to increase the knowledge, attitude and practice level knowledge attitude and practice level of staff nurses, because teaching will provide better ideas and views about infection prevalence rate. If helps in learning newer methods in controlling infection.

A survey in Lombardy gave a rate of 4.9% of patients in 2000. United Kingdom estimates of 10%, infection rate, with 8.2% estimated in 2006.Finland estimates it at 8.5% of patients in 2005.11Hospital acquired infections are commonly transmitted when hospital officials become complacent and personnel do not practice correct hygiene regularly. Also, increased use of outpatient treatment means that patients who are hospitalized are more ill and have more weakened immune systems than may have been true in the past. Moreover, some of the medical procedures bypass the body's natural protective barriers causing infections.

Components of PPE include gloves, gowns, bonnets, shoe covers, face shields, CPR masks, goggles, surgical masks, and respirators. The components are used is often determined by regulations or the infection control protocol of the facility in question. Many or most of these items are disposable to avoid carrying infectious materials from one patient to another patient and to avoid difficult or costly disinfection. In the US, OSHA requires the immediate removal and disinfection or

disposal of a worker's PPE prior to leaving the work area where exposure to infectious material took place.

Health care workers may be exposed to certain infections in the course of their work. Vaccines are available to provide some protection to workers in a healthcare setting. Depending on regulation, recommendation, the specific work function, or personal preference, healthcare workers or first responders may receive vaccinations for Influenza, measles, mumps and rubella; Tetanus, diphtheria, pertussis, N. meningitides and varicella.

The investigator during her clinical experience has observed that the incidence of nosocomial infection increased because of unhygienic practices. This will increase the length of stay in hospital and increase the healthcare associated infection. This has motivated the researcher to do structured teaching programme on infection control measures to improve the knowledge, attitude and practice level of staff nurses regarding infection control to reduce the incidence of hospital acquired infection.

STATEMENT OF PROBLEM

“A study to evaluate the effectiveness of structured teaching programme on knowledge, attitude and practice regarding infection control measures among staff nurses in Annammal Hospital at Kanyakumari District”.

OBJECTIVES OF STUDY

1. To evaluate the effectiveness of structured teaching program regarding infection control measures by comparing pretest and posttest level of knowledge, attitude and practice of staff nurse.
2. To associate the posttest level of knowledge, attitude and practice on infection control measures among staff nurses with selected socio demographic variables.

HYPOTHESES

H₁-There will be a significant difference between pretest and posttest level of knowledge, attitude and practice regarding infection control measures among staff nurses.

H₂-.There will be a significant association between posttest level of knowledge, attitude and practice regarding infection control measures and the selected socio demographic variables.

ASSUMPTIONS

The study assumes that,

- The staff nurses working in hospital will have adequate knowledge regarding the infection control measures but may have less attitude and practice towards them.
- Comparing with other strategies of teaching the video teaching will be more effective for proper understanding of infection control measures.
- Structured teaching programme will help to update the current knowledge of staff nurses and helps to improve their attitude and practice towards infection control measures.

DELIMITATIONS

This study is delimited to

- Data collection period of 4 weeks.
- Sample size of 30.
- Samples available during the time of data collection.
- Samples who are willing to participate in the study.

PROJECTED OUTCOME:

- ✓ The study will help to assess the knowledge, attitude and practice level of staff nurses.
- ✓ The study will help to find out the association between the knowledge, attitude and practice level of staff nurses.
- ✓ The study will help to find out the effectiveness of structured teaching programme.

OPERATIONAL DEFINITIONS

Evaluate

Evaluate refers to the act of judging or assessing the effectiveness of structured teaching program regarding infection control measures in terms of knowledge, attitude and practice with the help of structured questionnaire, attitude scale and observational checklist.

Effectiveness

It refers to gain in knowledge, change in attitude and appreciating skills regarding infection control measures after initiating structured teaching programme among staff nurses.

Knowledge

In this study, it refers to the correct response given by the staff nurses regarding infection control measures which is interpreted as inadequate, moderately adequate and adequate knowledge as measured by self-administered knowledge questionnaire.

Attitude

In this study, it refers to the pre disposition or a tendency to respond positively or negatively towards the ability of the staff nurses regarding infection control measures as measured by the items in the attitude scale.

Practice

In this study, it refers to the continuous action taken by the staff nurses to prevent the infection in their departments as it is elicited through observation checklist.

Staff nurses

In this study, staff nurses refers to those who have completed General Nursing and midwifery, P.B.B.Sc (N) and BSc (N) courses and registered to practice as a staff nurse and working in the research setting.

Infection control measures

In this study, infection control measures refers to the policies and procedures used to minimize the risk of spreading infections such as usage of personal protective equipment (mask, gloves, gown, etc.), following proper hand washing techniques.

CONCEPTUAL FRAMEWORK

A conceptual framework is a group of concepts and a set of propositions that spells out the relationship between them. Conceptual framework plays several

interrelated roles in the progress of science. Their overall purpose is to make scientific findings meaningful and generalizable.

The conceptual framework selected for the study was based on **Ernestine wiedenbach “The Helping Art of Clinical Nursing”**. Wiedenbach’s prescriptive theory may be described as a system of concepturatic invented for a purpose. Prescriptive theory may be described as one that conceptualizes both the desired situations and the perception by which it is to be brought about as an outcome.

The study is based on the concept that administration of structured teaching programme to the staff nurses regarding infection control will enhance their knowledge. The investigator has adopted the Wiedenbach’s helping art of clinical nursing theory (1964) as a base of developing the conceptual framework. This is a prescriptive theory, which directs action towards an expected goal.

The conceptual model of nursing practice according to this theory consists of 3 steps as follows

Step 1: Identifying the need for help

Step 2: Ministering to the need

Step 3: Validating the met need

STEP 1: IDENTIFYING THE NEED FOR HELP

The first step is to identify the need to plan further actions to meet them. The need identified among the sample is to empower them on infection control and its prevention. The process began with sample selection on the basis of the inclusion criteria followed by the pre-testing the knowledge of staff nurses regarding infection control pursued during four years of B.sc nursing, two years of post-B.sc(N) and three years of GNM course.

STEP 2: MINISTERING TO THE NEED

The second step refers to the provision of required help to fulfill the identified need. It has two components

1. Prescription: It means fulfillment of central purpose.
2. Realities: It includes agent, recipient, goal, means and framework.

In this study prescription refers to the development, validation and administration of structured teaching programme on infection control measures. Elaborate review of literature was done and with validation from experts the structured teaching programme was finalized. The second component refers to realities which include factors that influence the process of gaining knowledge in the present situation.

The various aspects which constitute realities are as follows

Agent: The investigator is the agent who prepared the structured teaching programme on Infection control Measures and also organized the sessions.

Recipient: The Staff nurses were the recipients.

Goal: In this study, it refers to the improvement in knowledge, attitude and practice score of staff nurses on Infection control measures which was evaluated using structured questionnaire

Means and activities: A pretest was carried out to assess the knowledge of staff nurses on infection control measures and its prevention. Following which a structured teaching programme on infection control measures was administered to these samples.

STEP 3: VALIDATING THE MET NEED

The last step is to validate the met need. In this study the validation of the need was done by conducting a posttest on 7th day. Same tool was used to assess the Knowledge, attitude and practice regarding infection control. Findings revealed that the mean posttest score was significantly higher than their mean pretest score, showing the effectiveness of structured teaching program regarding infection control among the samples.

SUMMARY:

This chapter included introduction, background of the study, need of the study, statement of the problem, objectives of the study, hypotheses, operational definitions, assumption, delimitations, and conceptual frame work.

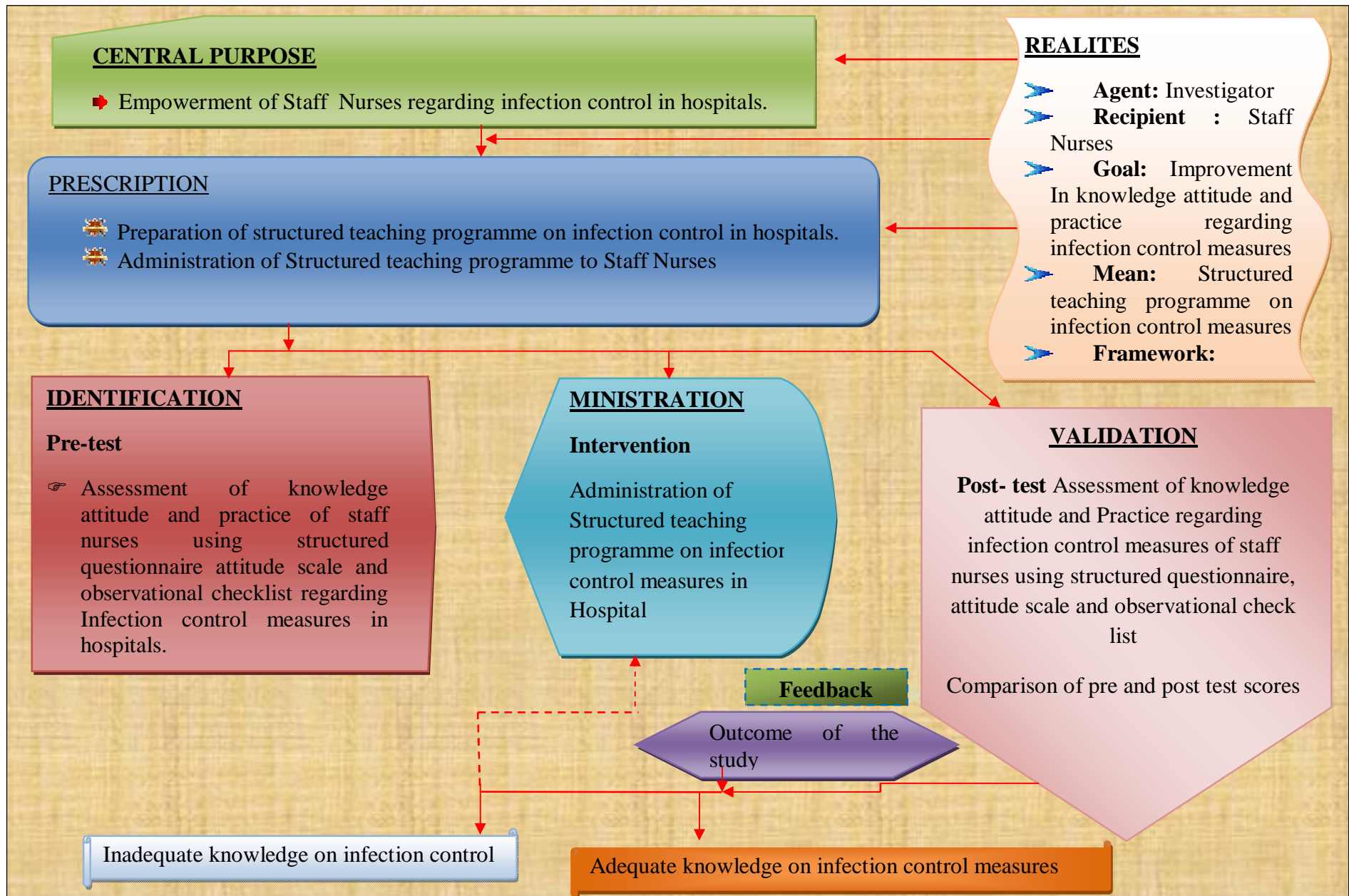


Fig: 1 CONCEPTUAL FRAME WORK BASED ON WIEDENBACH'S PRESCRIPTIVE THEROY (1964)

CHAPTER II

REVIEW OF LITERATURE

- *Empirical studies related to prevalence and types of hospital acquired infections.*
- *Empirical Studies related to infection control measures.*
- *Empirical Studies related to knowledge attitude and practice regarding infection control measures.*
- *Summary*

CHAPTER-II

REVIEW OF LITERATURE

Review of literature is a key step in research process. It refers to an extensive, exhaustive and systematic examination of publications relevant to the research project. Nursing research may be considered as a continuing process in which knowledge is gained from earlier studies in an integral part of research in general.

(Denise F Polit).

Literature review refers to the activities involved in searching for information on a topic and developing a comprehensive picture of the state of knowledge on the topic

(Polit and Hungler 1993).

Therefore the investigator studied and received their view of literature to broaden the understanding about the topic to gain insight into the selected problem.

In this present study the review of literature are divided into three following sections

Section A

Empirical studies related to prevalence and types of hospital acquired infections.

Section B

Empirical Studies related to infection control measures.

Section C

Empirical Studies related to knowledge, attitude and practice regarding infection control measures.

Section A

Empirical studies related to prevalence and types of hospital acquired infections.

H. Mythri et.al (2014) conducted a retrospective study on Nosocomial Infections among Patients Admitted in Intensive Care Unit of a Tertiary Health Center, India. The aim was to study, the current status of nosocomial infection, rate of infection and distribution of infection among patients admitted in Medical Intensive Care Unit (MICU) of a District Hospital. Data were collected retrospectively from 130 patient's records presented with symptoms of nosocomial infection in MICU of a Tertiary Health Center from August 2012 to May 2013. Descriptive statistics used to

calculate the percentage of infection rate. The results show that the nosocomial infection was seen more in the 40-60 year of age. The male were more prone to nosocomial infections than the female. The study concluded that the most frequent nosocomial infections (urinary, respiratory, and surgical site) were common in geriatric patients in the MICU setting and is associated with the use of invasive device. Large-scale studies are needed to be carried out in Indian population to plan long-term strategies for prevention and management of nosocomial infections.

RaikaDurusoy (2013) conducted a study to determine the point prevalence of nosocomial urinary tract infections and to investigate risk factors for pathogen type and extended spectrum beta lantanas positive among nosocomial UTI Patients. A questionnaire consenting of 44 Questions and demographic data was send to 51 tentacle hospitals of patients who were risk for UTI. Univariate and multivariate analyses were conducted. The study result showed that overall prevalence of UTI was 1.82%.The study concluded that reasons underlying the high prevalence of nosocomial UTIs are reduced by better understanding of the risk factors.

Mohamed issa Ahmed (2012) conducted a study on prevalence of Nosocomial wound infection among post-operative patients and Antibiotics patterns at Teaching Hospital in Sudan. The aim of the study was to determine the prevalence of aerobic nosocomial pathogens among patients with post-operative wound infection. In this 109 wound swabs were collected from patients who had develop post op wound infection. Conventional technique for isolation of bacteria was applied with analytical profile index (APIsystem) for identification to conform primary and secondary isolates. Antibiotics susceptibility was applied for all isolated bacteria. The prevalence rate of HAI was 25.23%. The study concluded that the highest prevalence rate of nosocomial post-operative wound infection was due to poor antibiotic selection, for prophylaxis during and after surgery and increased level of contamination in most part of the hospital.

M.Eshwarappa et.al (2011) conducted a multidisciplinary Prospective Observational study on Clinical microbiological profile of urinary tract infection in South India. This study was performed to determine the presentation and risk factors associated with catheter associated urinary tract infection (CA-UTI) Patients who had CA-UTI confirmed by positive urine culture reports were included in the study. Escherichia coli (66.9%) was the most common organism causing CA-UTIs with

extended spectrum beta lactamase (ESBL) resistance seen in nearly two-thirds of these cases (42.2%). The organisms recorded least resistance against carbapenems (3.9%). A high resistance rate was seen for Fluroquinolone (74.1%). In conclusion, a high rate of ESBL-positive organisms and their resistance to commonly used antibiotics brings a concern for future options in treating these conditions.

Hilmar wispling off et.al (2008) conducted a concurrent surveillance study to assess nosocomial Blood stream infection in US Hospital. The aim of the study was to reduce morbidity and mortality of Nosocomial Blood stream infections in United States. In this study surveillance and control of pathogens of epidemiological importance method were used to examine the trends in the epidemiology and microbiology of nosocomial blood stream infection. The study was concluded that the proportion of Nosocomial Blood stream infections due to antibiotic resistant organisms in us Hospitals.

Simonetti A et.al (2007) conducted a study on a prospective cohort study on intensive care acquired infection. The study was conducted with 335 patients, 80 developed ICU acquired infection. The study findings concluded that among the patients with ICU acquired infections hospital mortality was higher percentage, regardless of whether the patients had infection on admission.

Section B

Empirical Studies related to infection control measures.

Celik S et.al (2008) conducted a descriptive study on hygiene hand washing among nursing students in turkey. The aim of the study was to determine the applications status of hand washing information given within the context of infection control measures in practices areas among nursing students. The sample size is 430 students. The questionnaire was filled out by the students. The results show that the students wash their hands before and after each clinical procedure at a rate of 80.2%. Most of the students (71.9%) reported that they wash their hands for 1 minute or longer. The study concluded with the context of infection control measures is updated but that the students neither practice what they have learned nor give adequate attention to the subject.

Christianes G, Barbier et al (2006) conducted a descriptive study to assess the effectiveness of hand hygiene procedure for control of nosocomial infection as

first measure. The hand hygiene promotion programme started on May 2004 at the university hospital of Liege after a baseline survey of compliance. An attempt was made to promote hand hygiene and most particularly alcohol based hand disinfection. They measured MRSA transmission rates and consumption of alcohol based hand rub solution and soap in parallel. The study concluded that, consumption of alcohol based hand rub solution and soap increased by 56% respectively MRSA transmission rates decreased from 1,104 to 707 cases per 1000 admissions.

Rabin Saba, Dilara Iran et al (2005) conducted a prospective observational study to assess the hand hygiene compliance in a hematology unit. Two observers monitored the hand hygiene compliance of health care workers in a hematology unit during 30 minutes observation periods distributed randomly during the day time over 2 months. The non-compliance was higher among nurses. The lowest compliance rate (4%) was observed before patient care and the highest (60%) was after insertion of invasive devices. The study concluded that noncompliance with hand hygiene was high in this hematology unit, especially among nurses and before activities. Variations with the type of health care worker and activity suggest that targeted educational programs and feedback control may be useful.

Section C

Empirical Studies related to knowledge, attitude and practice regarding infection control measures.

Mahodro B Shinde et.al (2008) conducted a cross sectional study to assess the knowledge, attitude, and practices of five moments of hand hygiene among nursing staff and students at a tertiary care hospital at Karad. In this study sample size 100 nursing staff and 100 nursing students medical college in Karad, Knowledge was assessed using WHO hand hygiene questionnaire attitude and practice were evaluated by using another self-structured questionnaire, Z test was used to compare the % of correct responses between medical and nursing students, In this the student results shows that knowledge on hand hygiene was moderate (144 out of 200, 74%) among the total study population, The majority of students had poor attitudes had poor attitudes with regard to hand hygiene nursing students had significantly and better attitudes when compared to nursing staff. Student nurses had better five moments of hand hygiene practices than the staff nurses.

Abdul shamed et.al (2007) Conducted a comparative study to assess the level of knowledge among staff nurses and student nurses regarding the nosocomial infections. In this study the sample size was 160, among them 40 were III year GNM students, 40 were IV year B.Sc. nursing students, 40 were GNM staff nurses and 40 were B.Sc. staff nurses. The result showed that majority of B.Sc. (N) staff nurses (55%) had good knowledge, whereas the knowledge of GNM staff nurses was 47.5%, Fourth year B.Sc. nursing students had 67.5% knowledge and III year GNM students had 65% knowledge regarding nosocomial infection.

Aberdeen et.al (2007) conducted a study to assess the knowledge and attitude on infection control practices. The aim of the study was to assess the knowledge and Attitude regarding infection control practices in hospitals. In this study the total sample was 324 staff nurses from acute care hospitals among them 158 were doctors and 166 were nurses. The results shows that 16%, 14% and 0.3% of the respondents achieved maximum scores for knowledge, attitude and practice items respectively. The study concluded that the staff nurses had good knowledge and positive attitude towards most aspects of infection control measures.

Olaideedetet.al(2007) conducted a quasi-experimental study on knowledge of standard precautions among undergraduate nursing students before and after structured teaching session in Nigeria. The aim of the the study was to determine the impact of HIV/AIDS´ related structured training on undergraduate nursing students´ knowledge of standard precautions in Nigeria. It was delimited to students in their third and fourth year that would be available for the intervention. The participants were selected by simple random sampling technique. A total of 42 students participated in the study. A self-developed and well-validated questionnaire with reliability co-efficient of 0.8 was used for data collection. In this study the result showed that there is a difference between pretest and posttest. This difference was highly statistically significant .The study concluded that planned instruction can improve the knowledge of undergraduate nursing students on standard precautions, hence the need to expose the students to safety education before posting them to the clinical setting.

Mehrdad Askarian et.al (2007) conducted a cross sectional study on knowledge, attitude, and practices related to standard precautions of surgeons and

physicians in university affiliated hospitals. They staffing were assessed using a questionnaire method. The results showed that across the four medical staffing groups the median levels of knowledge ranged from 6 to 7 median attitude scores were high ranging from 35 to 36, while median practice scores were low, ranging from 2 to 3. A moderate relationship between knowledge and attitude were found in surgical residents and medical residents.

Soh KL, Koziol-Mclain J, Wilson J, Soh KG (2007) conducted a descriptive study on knowledge regarding prevention of nosocomial pneumonia among nurses. A survey design using a mailed self-administered questionnaire was used. 134 critical care nurses were identified through the nursing council of New Zealand. The nosocomial pneumonia knowledge score ranged from 21% to 92%. The mean was 48%. No nurse demographic or workplace characteristics was associated with nosocomial pneumonia knowledge. The study concluded that several important deficits in nosocomial pneumonia knowledge were identified indicating a need for critical care nurses to have greater exposure to nosocomial pneumonia prevention education, guidelines and research.

Suchitra JB, Lakshmi Devi N (2006) conducted a descriptive study to assess the impact of education on knowledge, attitudes and practices among various categories of health care workers on nosocomial infections. A total of 150 health care workers, doctors (n=50), nurses (n=50) and ward aides (n=50) were included. A questionnaire was administered. A scoring system was devised (KAP score). They were further subjected to a series of similar questionnaires at different intervals after an education module. Statistical analysis was done using statistical software. Total compliance was 63% and ward aides were most compliant 76.7%. The study concluded that education has a positive impact on retention of knowledge, attitudes and practices in all the categories of staff. There is a need to develop a system of continuous education for all categories of staff in order to reduce the nosocomial infections.

Summary

This chapter deals with the studies related to prevalence and types of hospital acquired infections, studies related to infection control measures and studies related to knowledge, attitude and practice regarding infection control measures.

CHAPTER III

RESEARCH METHODOLOGY

- *Research approach*
- *Research design*
- *Variables*
- *Settings*
- *Population*
- *Sample*
- *Sample size*
- *Sampling technique*
- *Sampling criteria*
- *Development of the tool*
- *Description of the tool*
- *Validity*
- *Reliability*
- *Pilot study*
- *Data collection procedure*
- *Plan for data analysis*
- *Ethical consideration*
- *Summary*

CHAPTER III

RESEARCH METHODOLOGY

Research methodology involves the systematic procedures by which the researcher starts from the initial identification of the problem to its final conclusion. It involves steps, procedures and strategies for gathering and analyzing data during the research investigation.

Denise F. Polit (2011)

This chapter deals with the methodology adapted to this study. It includes Research approach, Research design, Variables, Settings, Population, Sample, Sample size, and Criteria for sample selection, Sampling technique, Description of tool, Content validity, reliability, Pilot study, Method of data collection, plan for data analysis and Protection of human rights and data collection schedule.

RESEARCH APPROACH:

The research approach tells the researcher what data to collect and how to analyze it. It also suggests possible conclusion to be drawn from the data, in view of the nature of the problem under study and to accomplish the objectives of the study.

Denise F. Polit (2011)

Evaluative research approach was used as an appropriate research approach for the present study to evaluate the effectiveness of structured teaching program on knowledge, attitude and practice regarding infection control measures among staff nurses.

RESEARCH DESIGN

Research design provides the clue that holds the research project together. A Design is used to structure the research to show how all of the major parts of the research project work together to try to address the initial research question.

Denise F. Polit (2011)

The research design selected for the present study is one group pretest posttest design.

Pretest	Intervention	Post test
O₁	X	O₂

O₁- Pretest of knowledge and attitude and practice of staff nurses

X - Structured teaching programme on infection control measures.

O₂- Posttest of knowledge and attitude and practice of staff nurses.

VARIABLES

A variable is defined as “An attribute that varies, that it, takes on different values”.

Denise F. Polit (2011)

Independent variables-structured teaching programme on infection control measures.

Dependent variables- knowledge, attitude, and practice on infection control measures.

Socio demographic variables- the socio demographic variable comprise of Age, gender, place of residence, monthly income, qualification, year of experience, area of experience, etc.

SETTINGS

Research setting is the physical location and condition in which data collection takes place. Setting refers to the area where the study is conducted.

Polit and Hungler (2010)

The setting was chosen on the basis of availability of samples and the co-operation extended by the management and the health team. This study was conducted in Annammal hospital at Kuzhithurai a 150 bedded Hospital, it has 30 staff nurses in which 15 as day shift and 15 as night shift during my period of data collection, 2 nurse managers, 1 nursing superintendent was also present. This hospital

is highly equipped with all specialties in organized manner and infection control committee and is doing infection control measures to prevent infection.

POPULATION

A Population is defined as “The entire set of individuals or objects having some common characteristics”.

Denise F. Polit (2011)

TARGET POPULATION

It is defined as the entire population in which the researcher is interested and to which he or she would like generalized the study results.

Denise F. Polit (2011)

In this study, the target population comprises of all the staff nurses at Kanyakumarai district.

ACCESSIBLE POPULATION

The population of people available for a particular studies often a non-random Subset of the target population.

Denise F. Polit (2011)

In this study, accessible population comprises of staff nurses working in Annammal hospital at Kanyakumari district

SAMPLE

Sample is defined as, “A subset of a population comprising those selected to participate in a study”.

Denise F. Polit (2011)

Sample consists of staff nurses working in Annammal hospitals who fulfills the inclusion criteria.

SAMPLING CRITERIA

Sampling Criteria involves selecting cases that meet some predetermined criterion of importance. The criteria for sample selection are mainly depicted under two heading, which includes the inclusive criteria and exclusive criteria.

✓ Inclusion criteria

The staff nurses

- Who are posted in all the department at the time of data collection.
- Who are willing to participate in the study.
- Available at the time of data collection.

✓ **Exclusion criteria**

The staff nurses

- Who are not registered in nursing council.
- Who have physical and mental illness.

SAMPLE SIZE

Sample size is defined as, “The number of people who participate in a study”.

Denise F. Polit (2011)

Sample size consists of 30 staff nurses working in Annammal hospital

SAMPLING TECHNIQUE

Sampling technique is defined as, “The process of selecting a portion of the population to represent to the entire population”.

Suresh K Sharma (2007)

The investigator used the non-probability convenience sampling technique to select the samples for the study.

DEVELOPMENT OF THE TOOL

Tool development is a complex and time consuming process. It consists of defining the construct to be measured formulating the items, assessing the items for content validity developing instructions for respondents, pre-testing, estimating there liability and conducting pilot-study.

(Polit and Hungler, 1993).

The tool was prepared on the basis of objectives of the study. The following methods were used for the development of the tool by the investigator.

1. Review of literature from books, journals, other publications and web-sites.
2. Informal interview between staff nurses.
3. Investigators experience of improving Knowledge, attitude, and practice of staff nurses.

4. Discussion with subject experts like guides, Infectious disease specialist, Infection control nurse
5. Review and modification of the observation checklist.

DESCRIPTION OF THE TOOLS

The data collection tool consists of

Part I: Demographic data consists of personal data of the client, which includes age, Gender, Religion, Language known, Education, Working area, Month of experience, Area of experience.

Part II: Structured Knowledge Questionnaire to assess the knowledge of staff nurses regarding infection control measures.

Part III: Attitude scale to assess the attitude level of staff nurses regarding infection control measures.

Part IV: Observational Check List to assess the practice level of staff nurses regarding infection control measures.

SCORING TECHNIQUE

SCORING OF KNOWLEDGE QUESTIONNAIRE

Totally 30 questions were given, in which correct answer carries 1 mark and no mark for incorrect answers. Total attainable score is 30 which is converted into percentage in which adequate knowledge ranges from 76-100%, moderate knowledge from 51-75%, for inadequate knowledge below 50%.

GRADE	SCORE
Adequate Knowledge	76-100%
Moderately Adequate Knowledge	51-75%
Inadequate Knowledge	Below 50%

SCORING OF ATTITUDE SCALE

Totally 10 statement in which score 3 for agree, score for 2 for uncertain and score 1 for disagree. Total attainable score is 30 which is converted to percentage. Most favorable attitude ranges from scores 86.3-100%, favorable attitude ranges between 53.3-83.3% and for unfavorable attitude the range is $\geq 50\%$.

LEVEL	SCORES
Most Favorable attitude	86.3-100%
Favorable attitude	53.3-83.3%
Unfavorable attitude	$\geq 50\%$

SCORING FOR PRACTICE:

Totally 10 statements in which yes carries 1 mark and no carries 0 marks. The score is converted into percentage. The scoring interpretation for best practice is $>76\%$, good practice ranges between 51-75% and score for worst practice is $\leq 50\%$.

LEVEL	SCORES
Best Practice	$>76\%$
Good Practice	51-75%
Worst Practice	$<50\%$

VALIDITY OF THE TOOL

Content validity is defined as the “Extent to which an instrument accurately reflects the abstract construct (or concept) being examined”.

Suresh K Sharma, (2007)

Validity is the degree to which an instrument measures what it is intended to measure. Content validity is concerned with scope of coverage of the content area to be measured. It is a case of expert judgment about the content area included in the research instrument to measure a particular phenomenon.

The prepared data collection tool along with the problem statement, objectives, operational definitions, the blue-print and criteria checklist designed for validation

were submitted to ten experts including infectious disease specialist, medical surgical nurses and Bio- Statistician. The experts were requested to judge the items for relevance, appropriateness and degree of agreement for the study. All the experts approved the tool with necessary corrections.

PREPARATION OF TEACHING PLAN

The teaching plan was developed by reviewing the literature and considering the opinion of the experts. The points kept in mind while preparing teaching plan includes,

- Simplicity of language.
- Relevancy of the material.
- Appropriate pictures

CONTENT VALIDITY OF THE TEACHING PLAN

The initial draft was given to 10 experts along with criteria rating scale. The experts were requested to validate the teaching plan based on the criteria rating scale. The suggestions of experts were incorporated and teaching plan was modified and finalized with the opinion of research guide.

DESCRIPTION OF TEACHING PLAN

The teaching plan was titled as infection control measures. It consists of Introduction, definition, objectives, types of infection, chain of infection, hospital acquired infection, risk factors, modes of transmission ,common hospital acquired infection, standard precaution, hospital waste management, vaccinations and role of infection control professionals. These content were incorporated in PowerPoint slide for teaching.

RELIABILITY:

Reliability is defined as, “The degree of consistency or dependability with which an instrument measures an attribute”.

Denise F. Polit (2011)

Reliability of the tool was established using test retest reliability method. The reliability score was $r=1$, which showed a positive correlation. Hence the tool was considered reliable for proceeding the study.

PILOT STUDY

Pilot study is defined as, “A small-scale version or trial run, done in preparation of a major study”.

Denise F. Polit (2011)

In order to test the, feasibility, relevance and practicability of the study, pilot study was conducted. It was conducted in Annammal hospital, Kuzhithurai in the month of October for a period of one week with the permission granted from director of Annammal Hospital. The purpose was explained to staff nurses and confidentiality was assured and Consent was obtained. Pretest was conducted by structured questionnaire, attitude scale and observational checklist. After initiating the structured teaching programme posttest was also conducted using the same tool. The pilot study revealed that the study was feasible.

METHOD OF DATA COLLECTION

Data collection was done within the given period of 4 weeks. A formal written permission was obtained from the Chief medical officer of Annammal hospital, Kuzhithurai, and an oral and written consent were obtained from the staff nurses of each study samples before conducting the study.

Step 1

Pre intervention assessment

Pre-test was conducted in order to assess the level of knowledge, attitude and practice and also the socio demographic variables of staff nurses were collected for interpretation. After the conduction of pre-test the score of infection control measures were analyzed. The investigator had chosen 30staff nurses and knowledge questionnaire, attitude statements and practice check list.

Step 2

Administration of intervention

The intervention of structured teaching programme was conducted in a classroom. Total 125 slides containing PowerPoint regarding infection control measures. The staffs cooperated well during the time of presentation.

Step 3

Post intervention assessment

Post-test was conducted in order to assess the level of knowledge, attitude and practice of staff nurses after structured teaching programme using the same tool.

PLAN FOR DATA ANALYSIS:

The process of organizing and synthesizing and data so as to answer research question and test hypothesis is known as analysis.

(Polit and Beck 2010)

Data collected was analyzed using both descriptive and inferential statistics such as mean, standard deviation and paired test.

DESCRIPTIVE STATISTICS

- Frequency and percentage distribution of staff nurses with regard to demographic variables.
- Frequency and percentage distribution of level of knowledge of staff nurses regarding infection control measures.
- Frequency and percentage distribution of Attitude of staff nurses regarding infection control measures.
- Frequency and percentage distribution of practice level of staff nurses regarding infection control measures.

INFERENCE STATISTICS

Paired 't' test was used to compare the pretest and posttest of Level of knowledge, attitude and practice regarding infection control measures among staff nurses.

ETHICAL CONSIDERATION

In this study, the investigator look into consideration of the ethical issues. No ethical issues raised during the study period.

- Formal Permission was obtained from the ethical committee of Annammal College of nursing.
- Official Permission was obtained from the director of Annammal hospital
- Oral and Written consent was obtained from the study participants.
- The subjects were informed that the confidentiality of the data will be maintained.

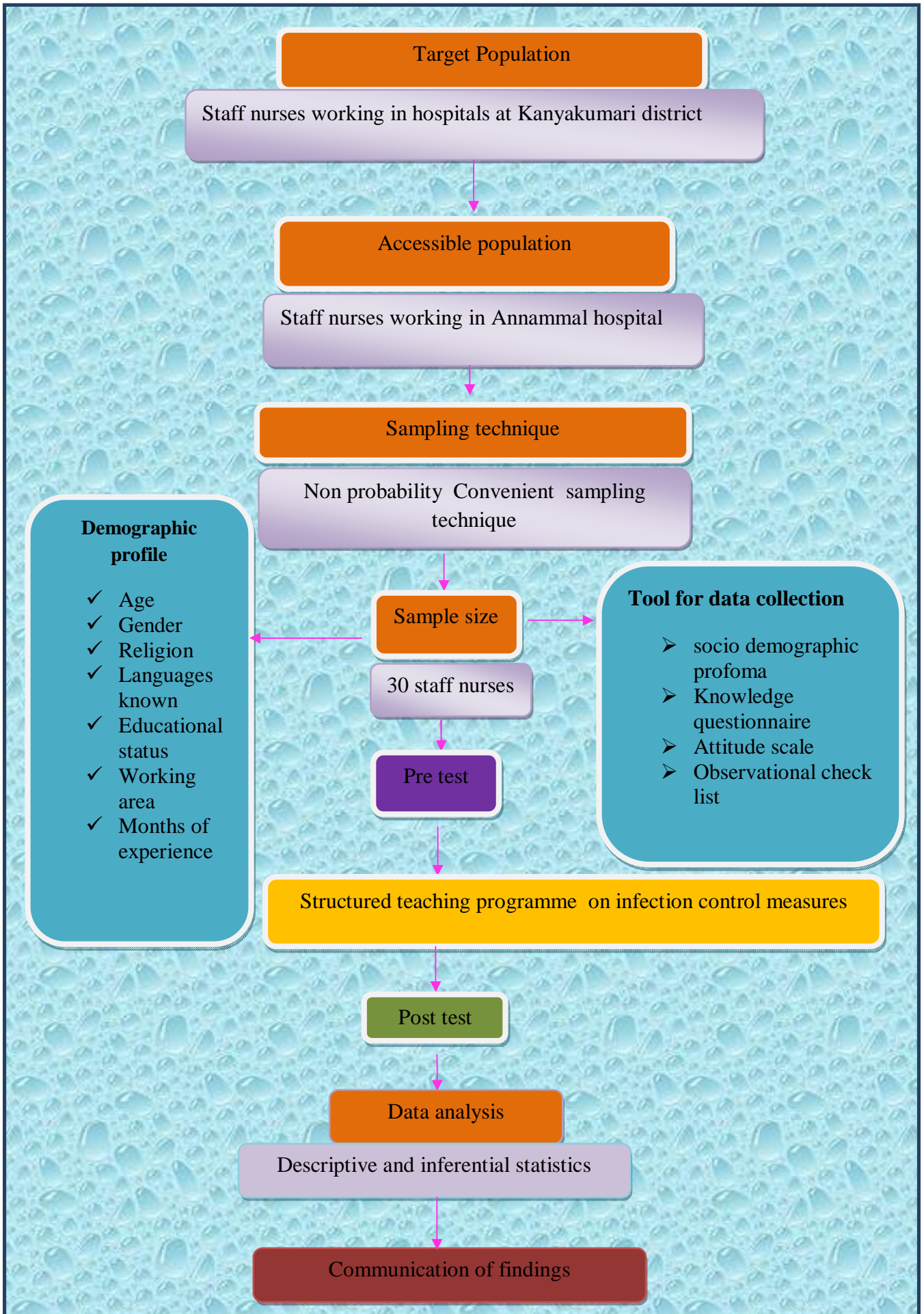


Fig: 2 SCHEMATIC REPRESENTATION OF RESEARCH METHODOLOGY

SUMMARY

This chapter included research methodology applied for the study. It includes Research approach, Research design, Variables, Settings, Population, Sample, Sample size, and Criteria for sample selection, Sampling technique, Description of tool, Content validity, Pilot study, Reliability, Method of data collection, plan for data analysis and Ethical consideration.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

The analysis is defined as the method of organizing data in such a way that the research questions can be answered. Interpretation is the process of the results and of examining the simplification of the findings with in a broader context.

(Polit and Beck, 2004)

This chapter deals with the analysis and interpretation including both descriptive and inferential statistics. Statistics is a field of study concerned with techniques or methods of collecting the data, classification, summarizing, Interpretation, drawing inferences, testing of hypotheses, making recommendations etc.

(Mahajan, 2004)

Analysis and interpretation of data of this study was done using the descriptive and inferential statistics.

OBJECTIVES OF STUDY

1. To evaluate the effectiveness of structured teaching program regarding infection control measures by comparing pretest and posttest level of knowledge, attitude and practice of staff nurse.
2. To associate the posttest level of knowledge, attitude and practice on infection control measures among staff nurses with selected socio demographic variable.

ORGANIZATION OF DATA

The collected data was edited, tabulated, analyzed, interpreted and findings obtained were presented in the form of tables and diagrams represented under the following sections.

SECTION A

- Data pertaining to frequency & percentage distribution of socio demographic variables.

SECTION B

- Data pertaining to frequency & percentage distribution of pre and posttest level of knowledge among staff nurses regarding infection control measures.
- Data pertaining to frequency & percentage distribution of pre and posttest level of attitude among staff nurses regarding infection control measures.
- Data pertaining to frequency & percentage distribution of pre and posttest level of practice among staff nurses regarding infection control measures.

SECTION C

- Data pertaining to effectiveness of structured teaching program on level of Knowledge, attitude and practice of staff nurses regarding infection control measures.

SECTION D

- Data pertaining to correlation between knowledge, attitude and practice regarding infection control measures among staff nurses.

SECTION E

- Data pertaining to association between posttest level of knowledge and socio demographic variables of staff nurse.
- Data pertaining to association between posttest level of attitude and socio demographic variables of staff nurse.
- Data pertaining to association between posttest level of practice and socio demographic variables of staff nurse.

SECTION-A

Table -1: Data pertaining to Frequency & percentage distribution of socio demographic variable

(N=30)

SL.NO	VARIABLES	FREQUENCY	PERCENTAGE
1	Age in years; a) 21-28 b) 29-36 c) 37-44 d) 45 year and above	4 20 6 0	13.33 66.67 20.00 0.00
2	Gender a) Female b) Male	30 0	100.00 0.00
3	Religion a) Hindu b) Muslim c) Christian d) Others	13 0 17 0	43.33 0.00 56.67 0.00
4	Language known a) Tamil b) Malayalam c) English d) Others	20 0 10 0	66.67 0.00 33.33 0.00
5	Educational status a) General nursing and midwifery b) Post basic bachelor of nursing c) Bachelor of nursing d) Master of nursing	21 5 4 0	70.00 16.67 13.33 0.00
6	Working area a) Emergency department b) Operational theater c) Ward d) Others	6 8 7 9	20.00 26.67 23.33 30.00
7	Months of experience a) 0-18 months b) 19-36 months c) 37-54 months d) 55 months and above	16 10 4 0	53.33 33.33 13.34 0.00
8	Area of experience a) Clinical side b) Teaching side	30 0	100.00 0.00

Table 1: It represents the frequency and percentage distribution of staff nurses with selected demographic variables such as age, gender, religion, languages known, educational status, working area, month of experience and area of experience.

With regard to age, the majority (66.7%) of them were in the age group of 29-36 years, 20% comes under the age group of 37-44 yrs.' and the remaining 13.33% were in the age group of 21-28 years.

With regard to gender all (100%) the samples comes under female category.

With regard to religion, the majorities (56.67%) of samples were Christians and 43.33% were Hindus.

With regard to language known 66.67% were Tamil and 33.33% were English Speakers.

With regard to educational Status, majority (70%) of samples under gone General Nursing and Midwifery course, 16.67% did Post Basic Bachelor of Nursing course and remaining 13.33% were B.Sc (N) Degree holders.

With regard to working area, 30% were posted in other departments, 26.67% were in Operation Theater, 23.33% were in wards, and 20% were in Emergency department.

With regard to month of experience, 53.33% were having 0-18 months of experience 33.33% were having 19-36 months of experience and remaining were having 37-54 months of experience.

With Regard to Area of experience 100% were in clinical side.

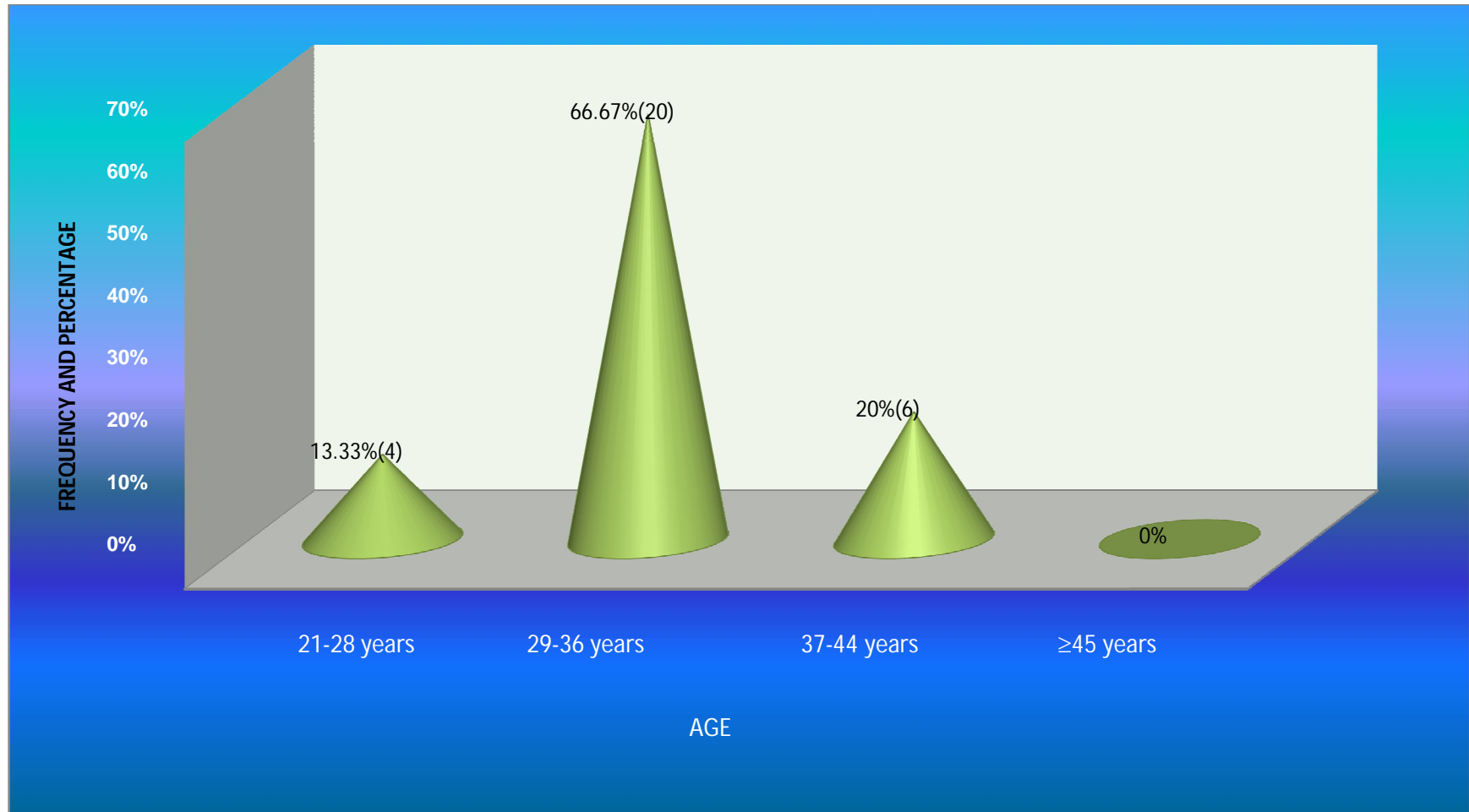


FIGURE 3: FREQUENCY AND PERCENTAGE DISTRIBUTION OF AGE AMONG STAFF NURSES

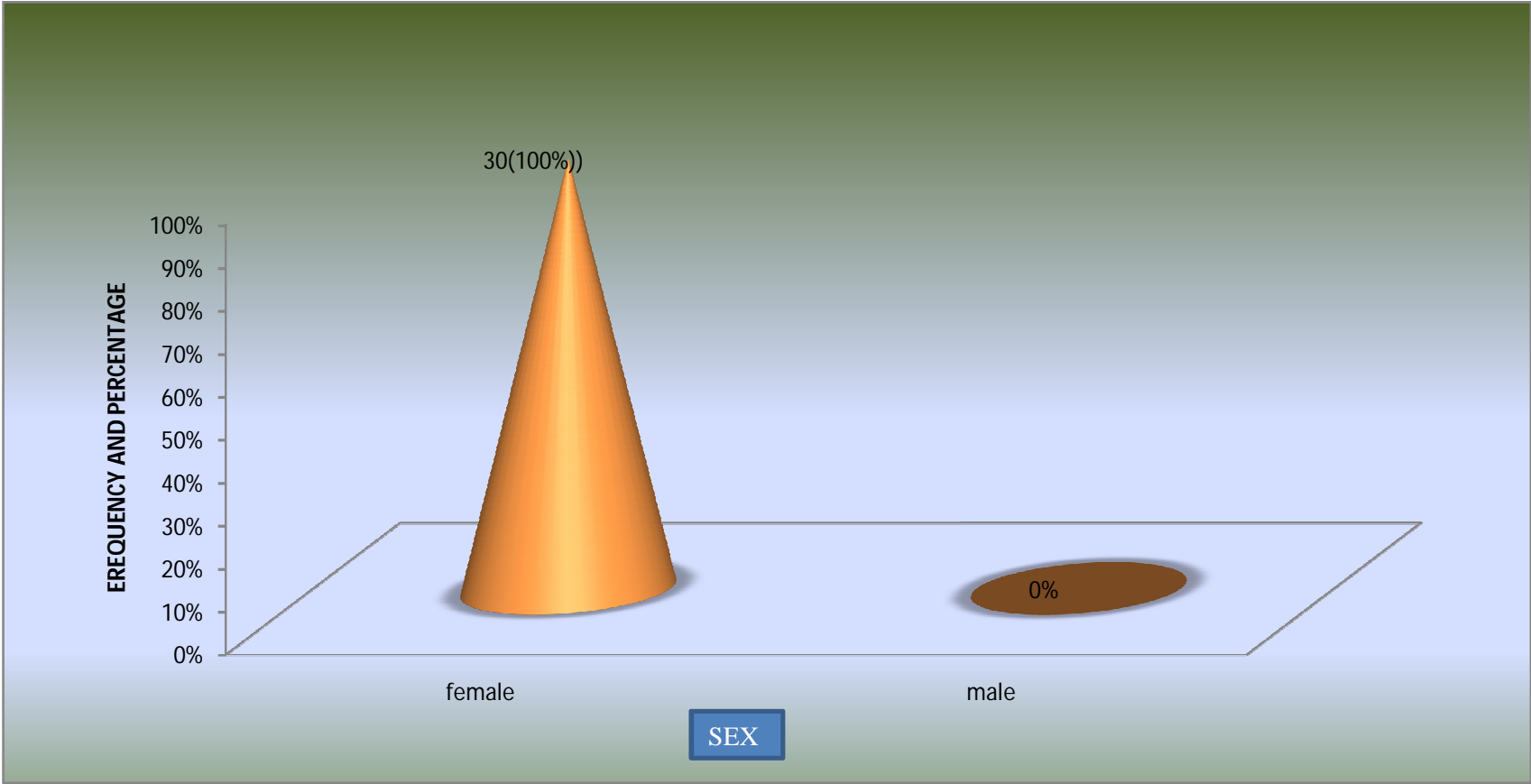


FIGURE 4: FREQUENCY AND PERCENTAGE DISTRIBUTION OF GENDER AMONG STAFF NURSES

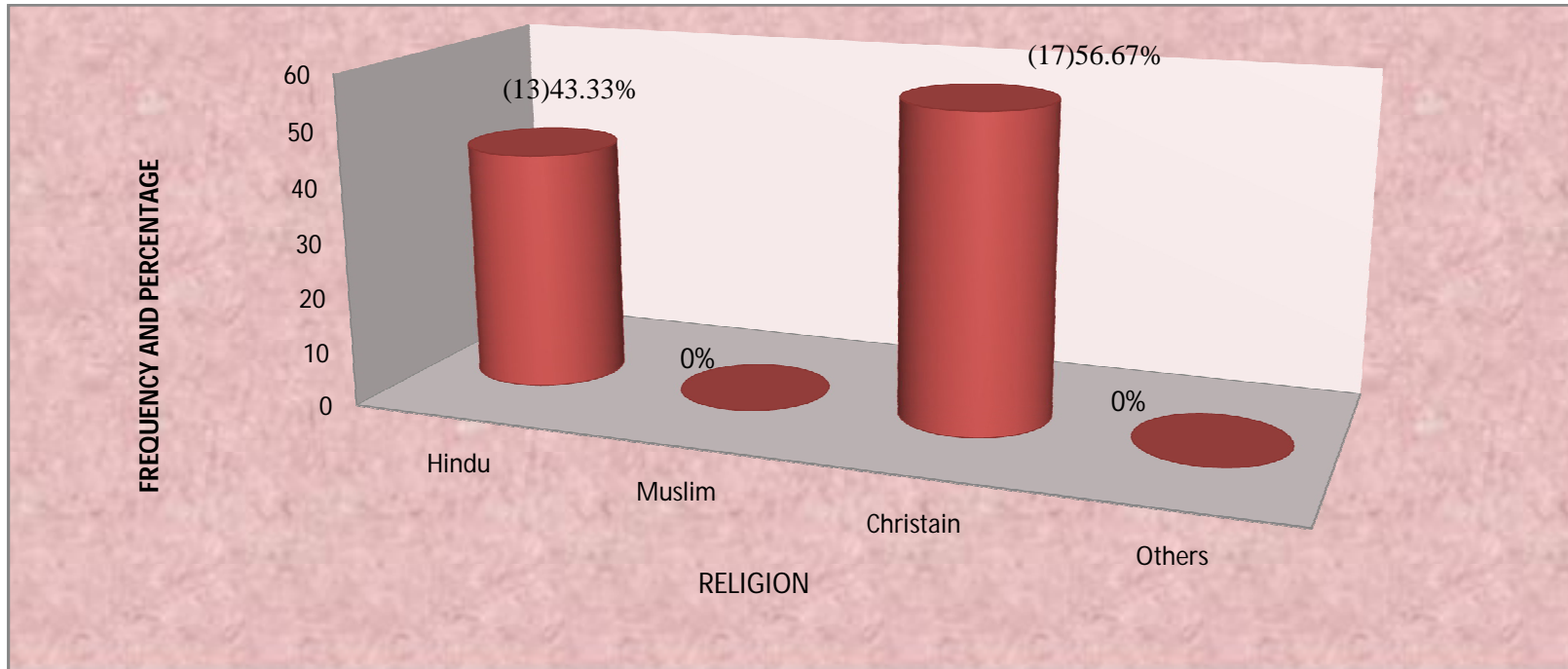


FIGURE: 5 FREQUENCY AND PERCENTAGE DISTRIBUTION OF RELIGION

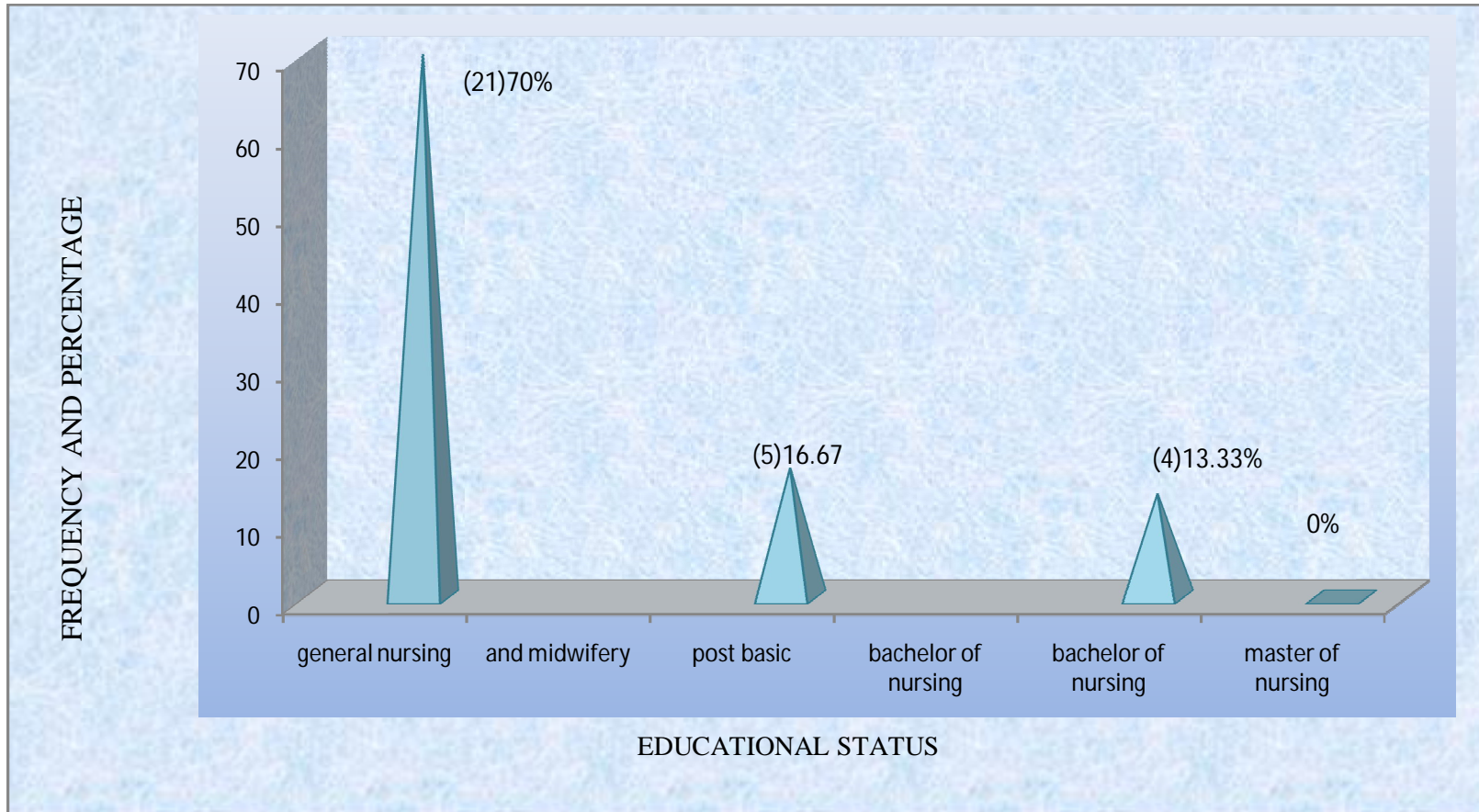


FIGURE 6: FREQUENCY AND PERCENTAGE DISTRIBUTION OF EDUCATIONAL STATUS AMONG STAFF NURSES



FIGURE7 :FREQUENCY AND PERCENTAGE DISTRIBUTION OF MONTHS OF EXPERIENCE AMONG STAFF NURSES

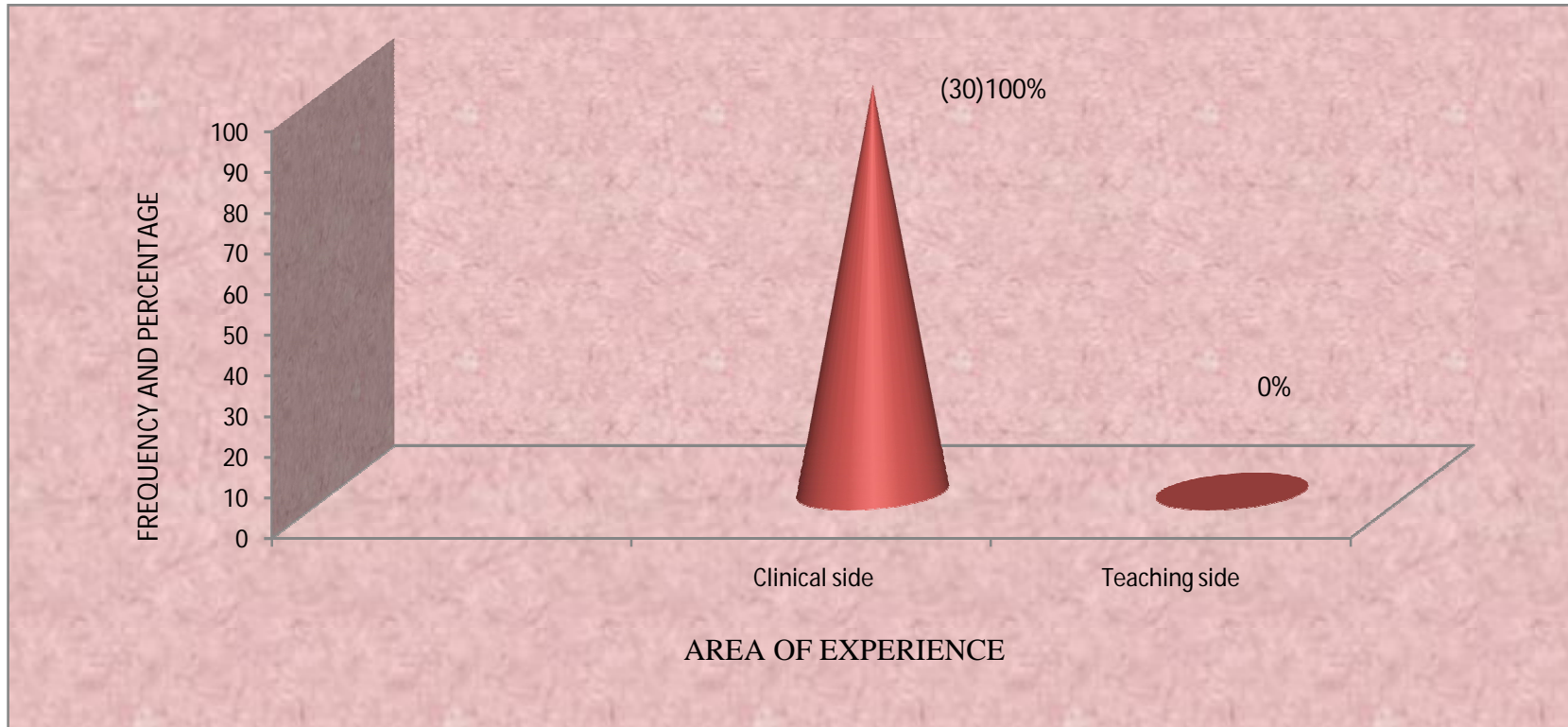


FIGURE 8: FREQUENCY AND PERCENTAGE DISTRIBUTION OF AREA OF MONTHS AMONG STAFF NURSES

SECTION B

TABLE-2: Data pertaining to Frequency & percentage distribution of pre and posttest level of knowledge among staff nurses regarding infection control measures.

N=30

SL. NO	VARIABLE	PRE TEST LEVEL OF KNOWLEDGE		POST TEST LEVEL OF KNOWLEDGE		CHI SQUARE	“P” VALUE
		frequency	percentage	frequency	percentage		
1	Adequate	0	0%	18	60%	38.18	2df (0.00) *
2	Moderately adequate	10	33.33%	12	40%		
3	Inadequate	20	66.66%	0	0		

***P<0.01**

Table 2 shows the frequency and percentage distribution of pre and posttest level of knowledge of the staff nurses regarding infection control measures. In the pretest 20(66.66%) staff nurses had inadequate and 10 (33.33%) had moderately adequate knowledge and none of them had adequate knowledge. In the post test 18 (60%) staff nurses had adequate and 12 (40%) had moderately adequate knowledge and none of them had adequate knowledge. The p value (0.00) is significant at the level of $p < 0.01$ hence, there is a difference between the level of pretest and post test level of knowledge.

SECTION B

Table -3: Data pertaining to Frequency & percentage distribution of pre and posttest level of attitude among staff nurses regarding infection control measures.

N=30

SL. NO	VARIABLE	PRE TEST LEVEL OF ATTITUDE		POST TEST LEVEL OF ATTITUDE		CHI SQUIRE	“P” VALUE
		frequency	Percentage	frequency	percentage		
1	Most favourable	0	0%	17	56.6%	38.72	2df (0.00)
2.	Favourable	9	30%	13	43.3%		*
3.	Unfavourable	21	70%	0	0%		

***P<0.01**

Table 3 shows the frequency and percentage distribution of pre and posttest level of attitude of the staff nurses regarding infection control measures. In the pretest 9(30%) staff nurses had favorable attitude and 21 (70%) had unfavorable attitude and none of them had favourable attitude. In the post test 17(56.6%) staff nurses had showed most favorable attitude and 13 (43.3%) showed favorable attitude and none of them showed unfavorable attitude. The p value (0.00) is significant at the level of $p < 0.01$. This indicates there is a difference between the level of pretest and post test level of attitude.

SECTION B

Table 4: Data pertaining to frequency & percentage distribution of pre and posttest level of practice among staff nurses regarding infection control measures.

N=30

SL. NO	VARIABLE	PRE TEST LEVEL OF PRACTICE		POST TEST LEVEL OF PRACTICE		CHI SQUIRE	“P” VALUE
		frequency	percentage	Frequency	percentage		
1	Best practice	0	0%	17	56.6%	38.72	2df (0.00) *
2.	Good practice	9	30%	13	43.3%		
3.	Worst practice	21	70%	0	0%		

***P<0.01**

Table 4 shows the frequency and percentage distribution of pre and posttest level of practice of the staff nurses regarding infection control measures. In the pre test 9(30%) staff nurses had Good Practice of infection control measures and 21 (70%) had Worst Practice and none of them had best practice. In the post test 17(56.6%) staff nurses had best practice and 13 (43.3%) had good practice and none of them had worst practice. The p value (0.00) is significant at the level of p <0.01 this indicates there is a difference between the pretest and post test level of practice.

SECTION C

Table-5 : Data pertaining to effectiveness of structured teaching program on level of Knowledge of staff nurses regarding infection control measures.

N=30

		Mean and SD	Mean difference	Paired 't' test	P value(5% level of significance)
Level of knowledge	Pre test	16.5 ± 3.8	11	14.61	29df
	Post test	27.97 ± 4.93			0.0001 ***

*****P<0.001**

Table 5 reveals that the level of pretest mean value was 16.5 and the level of post test mean was as 27.97. The difference between the pretest and posttest mean value was 11. This indicates the level of knowledge was increased after structure teaching programe.

P value is 0.001 which is highly significant and it shows that there was a difference between pre-test and posttest level of knowledge. Hence the H₁ was accepted.

SECTION C

Table-6: Data pertaining to effectiveness of structured teaching program on level of attitude of staff nurses regarding infection control measures

N=30

		Mean and SD	Mean difference	Paired 't' test	P value(5% level of significance)
Level of attitude	Pre test	5.4 ± 2.16	3	7.83	29df
	Post test	8.8 ± 2.93			0.0001 ***

*****P<0.001**

Table 6 reveals that level of pretest mean value was 5.4 and the level of posttest mean was 8.8. The difference between the pretest and posttest mean value is 3 this indicate the level of attitude was increased after structure teaching programme.

P value is 0.001 which is highly significant it shows there is a difference between pre-test and posttest level of attitude. Hence the H_1 was accepted.

SECTION-C

Table 7: Data pertaining to effectiveness of structured teaching program on level of practice of staff nurses regarding infection control measures

N=30

		Mean and SD	Mean difference	Paired 't' test	P value(5% level of significance)
Level of practice	Pre test	5.4 ± 2.16	3	7.83	29df
	Post test	8.8 ± 2.93			0.0001 ***

*****P<0.001**

Table 7 reveals that level of pretest mean value was 5.4 and the level of post test mean was 8.8. The difference between the pretest and posttest mean value was 3. This indicates that level of practice was increased after structure teaching programme.

P value is 0.001 which is highly significant and shows there is a difference between pre-test and posttest level of practice. Hence the H_1 was accepted.

SECTION - D

Table : 8 Data pertaining to correlation between knowledge, attitude and practice regarding infection control measures among staff nurses.

N=30

Sl.No	Variable	Post mean \pm SD	Correlation "r" value	Interpretation
1	Knowledge Attitude	27.97 \pm 4.93 8.8 \pm 2.93	0.89	High degree positive correlation
2	Attitude Practice	8.8 \pm 2.93 8.50 \pm 2.8	0.86	High degree positive correlation
3	Knowledge Practice	27.97 \pm 4.93 8.50 \pm 2.8	0.83	High degree positive correlation

Table 8 reveals the correlation between knowledge, attitude and practice regarding infection control measures among staff nurses. It indicates that there is a high degree of positive correlation between knowledge, attitude and practice.

SECTION-E

Table -9: Data pertaining to association between posttest level of knowledge and socio demographic variables of staff nurse.

N=30

Sl.No	Socio demographic variable	Level of knowledge		X ²	5% level of significance
		Adequate	Moderate		
1	Age in years			3.40	2df 0.182
	a) 21-28	1	3		
	b) 29-36	12	8		
	c) 37-44	5	1		
	d) 45 and above	0	0		
2	Religion			0.023	1df 0.879
	a) Hindu	8	5		
	b) Christian	10	7		
	c) Muslim	0	0		
	d) Others	0	0		
3	Language			0.625	1df 0.429
	a) Tamil	11	9		
	b) English	7	3		
	c) Malayalam	0	0		
	d) Hindi	0	0		
4	Education			4.008	2df 0.134
	a) GNM	11	10		
	b) PBBSC	5	0		
	c) BSC	2	2		
	d) MSC	0	0		
5	Working area			3.023	3df 0.388
	a) Emergency	3	3		
	b) Operation theater	6	2		
	c) Ward	4	3		
	d) Others	3	6		
6	Experience in months			4.844	2df 0.088
	a) 0-18	7	9		
	b) 19-36	7	3		
	c) 37-54	4	0		
	d) 55 months and above	0	0		

Table 9 shows the data pertaining to association and this shows that there is no association between the level of knowledge and the selected socio demographic variables.

SECTION -E

Table-10: Data pertaining to association between posttest level of attitude and Socio demographic variables of staff nurse.

N=30

Sl.No	Socio demographic variable	Level of knowledge		X ²	5% level of significance
		Adequate	Moderate		
1	Age in years a) 21-28 b) 29-36 c) 37-44 d) 45 and above	1 11 5 0	3 9 1 0	3.394	2df 0.183
2	Religion a) Hindu b) Christian c) Muslim d) Others	7 10 0 0	6 7 0 0	0.074	1df 0.785
3	Language a) Tamil b) English c) Malayalam d) Hindi	10 7 0 0	10 3 0 0	1.08	1df 0.297
4	Education a) GNM b) PBBSC c) BSC d) MSC	10 5 2 0	11 0 2 0	4.596	2df 0.100
5	Working area a) Emergency b) Operation theater c) Ward d) Others	3 5 4 4	2 3 3 6	1.114	3df 0.773
6	Experience in months a) 0-18 b) 19-36 c) 37-54 d) 55 months and above	6 7 0 0	10 3 4 0	6.176	2df 0.045 *

***indicate p<0.05**

Table 10 shows the data pertaining to association. This shows that there is no association between the level of attitude and the socio demographic variables except experience in months. Hence, H₂ is accepted.

SECTION- E

Table-11: Data pertaining to association between posttest level of practice and socio demographic variables of staff nurse.

N=30

Sl.No	Socio demographic variable	Level of knowledge		X ²	5% level of significance
		Adequate	Moderate		
1	Age in years			3.394	2df 0.183
	a) 21-28	1	3		
	b) 29-36	11	9		
	c) 37-44	5	1		
	d) 45 and above	0	0		
2	Religion			0.074	1df 0.785
	a) Hindu	7	6		
	b) Christian	10	7		
	c) Muslim	0	0		
	d) Others	0	0		
3	Language			1.08	1df 0.297
	a) Tamil	10	10		
	b) English	7	3		
	c) Malayalam	0	0		
	d) Hindi	0	0		
4	Education			4.596	2df 0.100
	a) GNM	10	11		
	b) PBBSC	5	0		
	c) BSC	2	2		
	d) MSC	0	0		
5	Working area			1.114	3df 0.773
	a) Emergency	3	2		
	b) Operation theater	5	3		
	c) Ward	4	3		
	d) Others	4	6		
6	Experience in months			6.176	2df 0.045 *
	a) 0-18	6	10		
	b) 19-36	7	3		
	c) 37-54	0	4		
	d) 55 months and above	0	0		

***indicate p<0.05**

Table 11 shows the data pertaining to association. This shows that there is no association between the level of practice and the selected socio demographic variables except experience in months. Hence H₂ is accepted.

SUMMARY

This chapter dealt with analysis and interpretation of data obtained by the researcher. The analyses of the results have shown that the level of knowledge attitude and practice has improved after structured teaching program.

CHAPTER V

DISCUSSION

CHAPTER V

DISCUSSION

This chapter deals with the discussion of the data analyzed based on the objective and hypothesis of the study. The problem stated was “A study to evaluate the effectiveness of structured teaching programme on knowledge, attitude and practice regarding infection control measures among staff nurses in Annammal Hospital at Kanyakumari District,.

The discussion was based on the objectives of the study and the hypotheses mentioned in the study.

OBJECTIVES OF THE STUDY

- 1 To evaluate the effectiveness of structured teaching program regarding infection control measures by comparing pretest and posttest level of knowledge, attitude and practice of staff nurse.
- 2 To associate the posttest level of knowledge, attitude and practice on infection control measures among staff nurses with selected socio demographic variables.

DEMOGRAPHIC VARIABLES OF STAFF NURSES

It represents the frequency and percentage distribution of staff nurses with selected demographic variables such as age, gender, religion, languages known, educational status, working area, month of experience and area of experience.

With regard to age, the majority (66.7%) of them were in the age group of 29-36 years, 20% comes under the age group of 37-44 years and the remaining 13.33% were in the age group of 21-28 years.

With regard to gender all (100%) the samples comes under female category.

With regard to religion, the majorities (56.67%) of samples were Christians and 43.33% were Hindus.

With regard to language known 66.67% were Tamil and 33.33% were English Speakers.

With regard to educational Status, majority (70%) of samples under gone General Nursing and Midwifery course, 16.67% did Post Basic Bachelor of Nursing course and remaining 13.33% were B.Sc (N) Degree holders.

With regard to working area, 30% were posted in other departments, 26.67% were in Operation Theater, 23.33% were in wards, and 20% were in Emergency department.

With regard to month of experience, 53.33% were having 0-18 months of experience 33.33% were having 19-36 months of experience and remaining were having 37-54 months of experience.

With Regard to Area of experience 100% were in clinical side.

Objective 1: To evaluate the effectiveness of structured teaching program of knowledge, attitude and practice of staff nurses regarding infection control measures by comparing pretest and posttest level.

The Data on frequency and percentage distribution of pre and posttest level of knowledge of the staff nurses regarding infection control measures. In the pretest 20(66.66%) staff nurses had inadequate and 10 (33.33%) had moderately adequate knowledge and none of them had adequate knowledge. In the post test 18 (60%) staff nurses had adequate and 12 (40%) had moderately adequate knowledge and none of them had adequate knowledge. The pretest mean value was is 16.5 and the level of post test mean was as 27.97. The difference between the pretest and posttest mean value was 11. This indicates the level of knowledge was increased after structure teaching programme. P value is 0.001 which is highly significant and it shows that there was a difference between pre-test and posttest level of knowledge. Hence the H_1 was accepted.

The Data on the frequency and percentage distribution of pre and posttest level of attitude of the staff nurses regarding infection control measures. In the pretest 9(30%) staff nurses had favorable attitude and 21 (70%) had unfavorable attitude and none of them had favourable attitude. In the post test 17(56.6%) staff nurses had showed most favorable attitude and 13 (43.3%) showed favorable attitude and none of them showed unfavorable attitude. The pretest mean value was 5.4 and the level of posttest mean was 8.8. The difference between the pretest and posttest mean value is 3 this indicate the level of attitude was increased after structure teaching programme. P value is

0.001 which is highly significant it shows there is a difference between pre-test and posttest level of attitude. Hence the H_1 was accepted.

The data on frequency and percentage distribution of pre and posttest level of practice of the staff nurses regarding infection control measures. In the pre test 9(30%) staff nurses had Good Practice of infection control measures and 21 (70%) had Worst Practice and none of them had best practice. In the post test 17(56.6%) staff nurses had best practice and 13 (43.3%) had good practice and none of them had worst practice. The mean pretest value was 5.4 and the level of post test mean was 8.8. The difference between the pretest and posttest mean value was 3. This indicates that level of practice was increased after structure teaching programme. P value is 0.001 which is highly significant and shows there is a difference between pre-test and posttest level of practice. Hence the H_1 was accepted.

Objective 2: To associate the posttest level of knowledge, attitude and practice on infection control measures among staff nurses with selected demographic variable.

The data pertaining to association and this shows that there is no association between the level of knowledge and the selected socio demographic variables.

The data pertaining to association. This shows that there is no association between the level of attitude and the socio demographic variables except experience in months. Hence, H_2 is accepted.

The data pertaining to association. This shows that there is no association between the level of practice and the selected socio demographic variables except experience in months. Hence H_2 is accepted.

SUMMARY

This chapter dealt with the objectives of the study, major findings of the selected demographic variable of staff nurses description of level of knowledge, attitude and practice among staff nurses before and after structured teaching programme relation between post test score of level of knowledge, attitude and practice.

CHAPTER VI

SUMMARY

CONCLUSION

IMPLICATIONS

RECOMMENDATIONS

CHAPTER VI
SUMMARY, CONCLUSION, NURSING
IMPLICATIONS AND RECOMMENDATIONS

This chapter deals with the summary of the study, findings, conclusion drawn, nursing implications and recommendations of the study.

SUMMARY

The summary includes the, objectives of the study, description of procedure used, major findings, conclusion and recommendations for further research study.

“A study to evaluate the effectiveness of structured teaching programe on knowledge, attitude and practice regarding infection control measures among staff nurses in Annammal hospital at Kanyakumari district.”

THE OBJECTIVES OF THE STUDY

1. To evaluate the effectiveness of structured teaching program regarding infection control measures by comparing pretest and posttest level of knowledge, attitude and practice of staff nurse.
2. To associate the posttest level of knowledge, attitude and practice on infection control measures among staff nurses with selected socio demographic variables.

RESERCH HYPOTHESES

- **H₁**-There will be a significant difference between pretest and posttest level of knowledge, attitude and practice regarding infection control measures among staff nurses.
- **H₂**-.There will be a significant association between posttest level of knowledge, attitude and practice regarding infection control measures and the selected demographic variables.

A conceptual framework selected for the study was based on **Ernestine wiedenbach “The Helping Art of Clinical Nursing”**. Wiedenbach’s **prescriptive theory** may be described as a system of concepturatic invented for a purpose. Prescriptive theory may be described as one that conceptualizes both the desired situations and the perception by which it is to be brought about as an outcome this helps to evaluate effectiveness of structured teaching programme on knowledge, attitude and practice regarding infection control measures.

In this study the researcher organized the **review of literature** into three sections they are

Section A: Empirical studies related to prevalence and types of hospital acquired infections.

Section B: Empirical Studies related to infection control measures.

Section C: Empirical Studies related to knowledge, attitude and practice regarding infection control measures.

In the methodology, the investigator selected one group pretest posttest design with 30 samples were selected for the study from Annammal hospital by convenient sampling technique to evaluate the Knowledge, attitude and practice. The variable used in this study was as follows.

Independent variable-structured teaching programme regarding infection control measures.

Dependent variables- knowledge, attitude, practice regarding infection control measures.

Demographic variables- the demographic variable comprise of Age, gender, place of residence, monthly income, qualification, year of experience, area of experience, etc.

Study was conducted in Annammal hospital with 30 samples. The test retest method was adopted for the reliability for $r=1$ and for attitude $r=1$ and for practice $r=1$ which showed positive correlation. The score indicates a high correlation and

the tool were considered as highly reliable. Convenient sampling technique was used.

The tool consisted of structured knowledge questionnaire, attitude statements of 3 point likert scale and practice check list. Structured knowledge questionnaire consisted of 30 questions. Attitude statements include 10 questions, the practice check list consist 10 statements was used to evaluate the level of knowledge, attitude and practice of staff nurses regarding infection control measures.

The tool was given to staff nurses to obtain necessary data. Structured teaching programme was given on next day and post test was conducted using same questionnaire. Data collected were analyzed using both descriptive and inferential statistics such as mean, standard deviation, correlation coefficient, and paired t test.

MAJOR FINDINGS OF THE STUDY

Major findings of the study are presented under the following:

Findings related to demographic variables of staff nurses

It represents the frequency and percentage distribution of staff nurses with selected demographic variables such as age, gender, religion, languages known, educational status, working area, month of experience and area of experience.

With regard to age, the majority (66.7%) of them were in the age group of 29-36 years, 20% comes under the age group of 37-44 yrs.' and the remaining 13.33% were in the age group of 21-28 years. With regard to gender all (100%) the samples comes under female category.

With regard to religion, the majorities (56.67%) of samples were Christians and 43.33% were Hindus. With regard to language known 66.67% were Tamil and 33.33% were English Speakers.

With regard to educational Status, majority (70%) of samples under gone General Nursing and Midwifery course, 16.67% did Post Basic Bachelor of Nursing course and remaining 13.33% were B.Sc (N) Degree holders.

With regard to working area, 30% were posted in other departments, 26.67% were in Operation Theater, 23.33% were in wards, and 20% were in Emergency department.

With regard to month of experience, 53.33% were having 0-18 months of experience 33.33% were having 19-36 months of experience and remaining were having 37-54 months of experience. With Regard to Area of experience 100% were in clinical side.

Findings related to effectiveness of structured teaching programme

The Data on frequency and percentage distribution of pre and posttest level of knowledge of the staff nurses regarding infection control measures. In the pretest 20(66.66%) staff nurses had inadequate and 10 (33.33%) had moderately adequate knowledge and none of them had adequate knowledge. In the post test 18 (60%) staff nurses had adequate and 12 (40%) had moderately adequate knowledge and none of them had adequate knowledge. The pretest mean value was 16.5 and the level of post test mean was as 27.97. The difference between the pretest and posttest mean value was 11. This indicates the level of knowledge was increased after structure teaching programme. P value is 0.001 which is highly significant and it shows that there was a difference between pre-test and posttest level of knowledge. Hence the H_1 was accepted.

The Data on the frequency and percentage distribution of pre and posttest level of attitude of the staff nurses regarding infection control measures. In the pretest 9(30%) staff nurses had favorable attitude and 21 (70%) had unfavorable attitude and none of them had favourable attitude. In the post test 17(56.6%) staff nurses had showed most favorable attitude and 13 (43.3%) showed favorable attitude and none of them showed unfavorable attitude. The pretest mean value was 5.4 and the level of posttest mean was 8.8. The difference between the pretest and posttest mean value is 3 this indicate the level of attitude was increased after structure teaching programme. P value is 0.001 which is highly significant it shows there is a difference between pre-test and posttest level of attitude. Hence the H_1 was accepted.

The data on frequency and percentage distribution of pre and posttest level of practice of the staff nurses regarding infection control measures. In the pre test 9(30%) staff nurses had Good Practice of infection control measures and 21 (70%) had Worst Practice and none of them had best practice. In the post test 17(56.6%) staff nurses had best practice and 13 (43.3%) had good practice and none of them had worst practice. The mean pretest value was 5.4 and the level of post test mean was 8.8. The difference between the pretest and posttest mean value was 3. This indicates that level of practice was increased after structure teaching programme. P value is 0.001 which is highly significant and shows there is a difference between pre-test and posttest level of practice. Hence the H_1 was accepted.

Relationship between posttest level of knowledge, attitude and practice on infection control measures among staff nurses with selected demographic variable.

The data pertaining to association and this shows that there is no association between the level of knowledge and the selected socio demographic variables.

The data pertaining to association. This shows that there is no association between the level of attitude and the socio demographic variables except experience in months. Hence, H_2 is accepted.

The data pertaining to association. This shows that there is no association between the level of practice and the selected socio demographic variables except experience in months. Hence H_2 is accepted.

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The data pertaining to association, this shows that there is no association between the level of practice and the socio demographic variable except experience in months.. Hence H_2 was accepted

IMPLICATIONS

The findings of the study reveals the effectiveness of structured teaching programme can be implemented in nursing practice, nursing education, nursing research and nursing administration.

IMPLICATIONS TO NURSING PRACTICE

- All the health care workers are able to make significant contributions to promote knowledge, attitude and practice among staff nurses regarding infection control measures.
- The health team members reveal the importance of formulating and implementing structured teaching programme regarding infection control measures.
- Nurses are the back bone of the health care set up of any country.
- The expanded role of professional nurse emphasizes the activities, which includes promotive, preventive, curative and rehabilitative aspects.
- Nurses play an important role in disease prevention and health promotion.
- Health information and knowledge on infection control can be imparted through various methods like mass media, lecture and structured teaching programme.
- Study findings shows that nurses need to update their knowledge related to hospital acquired infection focusing on aspects like causes, spread of infection, prevention and complications. This will enable them to utilize standard practices like standard precaution, hand washing, disinfection and sterilization, biomedical waste management on day to day basis.
- The outcome of such practices can be checked in terms of parameters like prevalence of ventilator associated pneumonia, urinary tract infection, blood stream infection and surgical wound infections.

IMPLICATION IN NURSING EDUCATION:

- One of the leading functions of education is imparting education with newer knowledge.
- Nurse educators can make use of this structured teaching programme, to orient the new recruits.

- The study finding reveals that structured teaching program was beneficial in improving knowledge mainly for newer practices.

NURSING ADMINISTRATION

- Hospital is an organization which provides a higher level of care especially nurses and the nursing students.
- Based on the study findings it is necessary to include such programs as induction classes for newly joined staff nurses. This will improve their knowledge and adhere these aspects to their practical area. Even such teaching programs can be in co-operated to in-service and continuing nursing education so that they will update their knowledge.

NURSING RESEARCH:

- Study findings have added to the body of knowledge regarding knowledge levels of nurses in HAI. The prepared tool can be tested in various setting.
- various methods can be invented by the nurse researchers
- Disseminate the findings through conference, workshop.

RECOMMENDATIONS:

- The study can be replicated on a larger sample.
- A true experimental study can be done using random sampling technique.
- A comparative study can be done between nursing students pursuing GNM, BSc and P.B. B.Sc nursing in different colleges

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ANNEXURES

ANNEXURE I

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY.



Annammal College of Nursing

(Approved by Govt. of Tamilnadu, TN Nurses & Midwives Council,
Indian Nursing Council and Affiliated to The Tamilnadu Dr. MGR Medical University)
Annammal Hospital Campus, KUZHITHURAI - 629 163
K.K. Dist, Tamil Nadu. Ph : 04651 - 260614, Fax : 04651 - 260605
www.annammalnursing college.com Email : annammalcollege2007@yahoo.co.in

Dr. Sheeba Jayalal MBBS, DGO
Chairperson

Date :

From

Mrs.J.M.JerlinPriya M.Sc(N), Ph.D.,
Principal.
Annammal College of Nursing,
Kuzhithurai.

To

The Administrative Officer,
Annammal Hospital,
Kuzhithurai.

Respected Sir.

Sub: Seeking permission to conduct the research study.

Mrs. Regin Sathya Golda S.S. II year M.Sc (N) student of Annammal College of Nursing, Kuzhithurai is approaching you to conduct a research on "A study to evaluate the effectiveness of structured teaching program on knowledge, attitude and practice regarding infection control measures among staff nurses in Annammal Hospital at Kanyakumari District". Which she has to complete as a partial fulfillment of university requirement for the award of Master of science in nursing degree.

In this regards I humbly request you to give permission to conduct the study in your hospital.

Thanking you

Yours faithfully,




Principal

Principal
Annammal College of Nursing
Kuzhithurai, K.K. Dist.,- 629 163

Our Motto : "Lead us to Heal others"

"What we are is gift of god and What we become is gift to god"

ANNEXURE II

LETTER GRANTING PERMISSION CONDUCTED THE STUDY



Annammal Hospital, Kuzhithurai, K.K.Dist - 629163
Phone: 04651-260555, 260511 | Cell: +91 9788860031 - 24, Fax: 04651-260605
E-mail: annammalhospital@yahoo.in

26-11-2014

Regin Sathya Golda S.S a student of MSc (Nursing) program from Annammal College of Nursing, Kuzhithurai., conducted a study on

“A study to evaluate the effectiveness of structured teaching programme on knowledge, attitude, and practice regarding infection control measures among staff nurses in Annammal hospital at Kanyakumari district”

As part of her study she educated the staff regarding infection control measures also she conducted her research in our hospital in an excellent manner with good dedication and in a pleasant way.

We wish all the very best to **Regin Sathya Golda S.S** for a very successful and fruitful career.


Chief Medical Officer
Dr. SHEEBA JAYALAL MOHAN
REG NO: 200000000000
CHIEF MEDICAL OFFICER
ANNAMMAL HOSPITAL
KUZHITHURAI

What we are is Gift of God and
What we become is Gift to God

ANNEXURE III

ETHICAL COMMITTEE LETTER

ETHICAL CLEARANCE CERTIFICATE

Valid from : 2014

Valid to : 2015

Name of the Investigator: Regin Sathya Golda S.S

The Ethical committee meeting held on 24-01-2014 had reviewed the project titled "A study to evaluate the effectiveness of structured teaching programe on knowledge, attitude and practice regarding infection control measures among staff nurses in Annammal Hospital at Kanyakumari District". The proposal was submitted before the ethical committee for the acceptance and found to be acceptable on ethical grounds. The ethical committee held responsibility and accountability for the investigator for any other administrative /regulatory approvals that may pertain to this research. This has to be carried out according to the conditions outlined in the original protocol submitted for ethical review.

This certificate of approval is valid for the time period provided, there is no change in the methodology protocol or consent process and documents.

Any significant change should be reported to guide for its considerations in advance for its implementation.

Signature of Research Committee members :

1. Dr. Sheeba Jayalal M.B.B.S.,D.G.O.,
Chief Medical Officer

2. Dr. Jayalal M.S.,F.I.C.S.,(Germany),M.B.A.,F.I.A.G.E.S
Chief Surgeon

3. Dr. Solomon M.B.B.S
Physician

4. Dr. Shanthi Appavu M.Sc(N),,PhD
Nursing Research Advisor

5. Mrs. Jerlin PriyaM.Sc (N),,PhD
Guide

ANNEXURE-IV

LETTER SEEKING EXPERTS OPINION FOR THE
VALIDITY OF THE TOOL



Annammal College of Nursing

(Approved by Govt. of Tamilnadu, TN Nurses & Midwives Council,
Indian Nursing Council and Affiliated to The Tamilnadu Dr. MGR Medical University)
Annammal Hospital Campus, KUZHITHURAI - 629 163
K.K. Dist, Tamil Nadu. Ph : 04651 - 260614, Fax : 04651 - 260605
www.annammalnursing college.com Email : annammalcollege2007@yahoo.co.in

Dr. Sheeba Jayalal MBBS, DGO
Chairperson

Date :

To

Madam/Sir,

Sub: M.Sc Nursing Programme-Dissertation-Validation of study tool
request-reg.

Mrs. Regin Sathya Golda S.S, a bonafide II year M.Sc Nursing student
of Annammal college of nursing is approaching you to obtain validation his
study tool pertaining to her dissertation in partial fulfillment of the
requirements for the degree of Master of Science in Nursing. The selected
topic is "A study to evaluate the effectiveness of structured teaching program
on knowledge, attitude and practice regarding infection control measures
among staff nurses in Annammal Hospital at Kanyakumari District"

In this regard I request you to kindly extent possible technical
guidance and support for successful completion of dissertation.

I enclosed here with a checklist for your evaluation.

Thanking you

Yours sincerely,





Principal
Annammal College of Nursing
Kuzhithurai, K.K. Dist., - 629 163

Our Motto : "Lead us to Head others"

"What we are is gift of god and What we become is gift to god"

ANNEXURE -V

EVALUATION CRITERIA CHECK LIST FOR VALIDATING THE TOOL

Instructions:

The expert is requested to go through the following criteria for evaluation. Three columns are given for responses and a column for remarks. Kindly place tick mark in the appropriate column and give remarks.

Interpretation of column:

Column I : Meets the criteria.

Column II : Partially meets the criteria.

Column III :Does not meet the criteria.

S.NO	CRITERIA	1	2	3	REMARKS
1	Content <ul style="list-style-type: none">• Adequacy• Relevance• Organized				
2	Language <ul style="list-style-type: none">• Simplicity• Clarity• Relevant				
3	Scoring <ul style="list-style-type: none">• Easy To Score• Clarity				
4	Practicability <ul style="list-style-type: none">• Procedure• Utility• Feasibility				

Signature:

Name :

Designation :

Signature of the expert

ANNEXURE VI

LIST OF EXPERTS

1. **Dr.J.A. Jayalal M,S.,F.I.CS(Germany),MBA,F.I.A.G.E.S.,**
Laprosopic surgeon,
Annammal Hospital,
Kuzhuthirai,
Kanyakumari District.
2. **Dr. shereek MD.,**
Infectious, disease specialist
NIMS Hospital
Neyyatamkara,.
3. **Dr. (Mrs.) S.S Sharmila, Jansi Rani ,M.Sc(N), Phd.,**
Professor,
Christian college of Nursing,
Neyyoor,
Kanyakumari District.
4. **Mr. George, M.Sc,(N),,**
Professor,
St. Xavier's college of Nursing,
Chunkankadai,
Kanyakumari District.
5. **Mr. Joseph Merlin, M.Sc,(N),,**
Asst..Professor,
Saraswathy college of Nursing,
Parassala,
Trivandrum District.
6. **Mrs. AjithaJothy, S.T M.Sc,(N),**
Asso..Professor,
CSI College of Nursing,
Karakonam,
Trivandrum District.
7. **Mrs. Sheeba, M.Sc,(N),**
Reader,
Christian college of Nursing,
Neyyoor,
Kanyakumari District.
8. **Mrs. Sherlin,M.Sc,(N),**
Asst. Professor,

CSI College of Nursing,
Karakonam,
Trivandrum District.

9. Mrs.Mercy,M.Sc,(N),,

Lecturer,
NIMS College of Nursing,
Neyyattinkara,
Trivandrum District.

10. Mr. Anto John Britto, M.Sc., M.Ed., M.Phill., P.G., BBM.,

Bio Statistician,
Scott Christian college,
Nagercoil.

ANNEXURE VII
RESEARCH PARTICIPANT CONSENT FORM

Dear participant,

I am a M.Sc., Nursing student of Annammal College of Nursing, Kuzhithurai. As apart of my study, a research on 'A study to evaluate the effectiveness of structured teaching program on knowledge, attitude and practice regarding infection control measures among staff nurses in Annammal Hospital at KanyaKumari District'. The findings of the study will be helpful in improving the knowledge, attitude and practice level. I hereby seek your consent and co-operation to participate in the study. Please be frank and honest in answering your responses. The information collected will be kept confidential and anonymity will be maintained.

Signature of the researcher

I hereby consent to participate and undergo the study.

Place:

Date:

Signature of the participant

ANNEXURE VIII
CERTIFICATE FOR ENGLISH EDITING

CERTIFICATE OF ENGLISH EDITING

To whom so ever it may concern

This is to certify that the dissertation, "A study to evaluate the effectiveness of structured teaching program on knowledge, attitude and practice regarding infection control measures among staff nurses in Annammal Hospital at KanyaKumari District.", by Mrs. Regin sathya golda S.S 2nd year M.Sc. (N) student, Annammal college of Nursing was edited for English Language used is lucid,unambiguous free of grammatical or spelling errors and apt for the purpose.


Signature

Mrs. Vidhya V.S.

Asst. prof of English.
MAR CHRYSOSTOM COLLEGE OF EDUCATION
MALANKARA AVENUE, KIRIATIPU-626 100
KANYAKUMARI DISTRICT, TAMIL NADU

ANNEXURE IX
CERTIFICATE FOR STATISTICAL ANALYSIS AND
INTERPRETATION

CERTIFICATE OF STATISTICAL ANALYSIS

To whom so ever it may concern

This is to certify that the dissertation, "A study to evaluate the effectiveness of structured teaching programme on knowledge, attitude and practice regarding infection control measures among staff nurses in Annammal Hospital at KanyaKumari District.", by Mrs. Regin sathya golda S.S has been checked for the accuracy of statistical analysis and interpretation and was apt for its purpose.

Pmto.
P. Anto Paulin Brinko
Asst. Prof. of Bio-Statistics,
Scott Christian College,
Signature Nageroil.

ANNEXURE X

TOOL FOR DATA COLLECTION (ENGLISH)

Tool I -SOCIO DEMOGRAPHIC PROFORMA

Tool II –KNOWLEDGE QUESTIONNAIRE

Tool III-ATTITUDE STATEMENT

Tool IV-OBSERVATION CHECK LIST

TOOL – I

SOCIODEMOGRAPHIC VARIABLES

Sample No:

1. Age in years:
 - 21-28
 - 29-36
 - 37-44
 - 45year and above
- 2 Gender
 - Female
 - Male
3. Religion
 - Hindu
 - Muslim
 - Christian
 - Others
4. Language known:
 - Tamil
 - Malayalam
 - English
 - Others

5. Educational status:

- General nursing and midwifery
- Post basic bachelor of nursing
- Bachelor of nursing
- Master of nursing

6. Working area

- Emergency department
- Operation theatre
- Ward
- Others

7. Months of experience

- 0-18months
- 19-36months
- 37-54months
- 55months and above

8. Area of experience

- clinical side
- teaching side

TOOL-II

SAMPLE NO:

KNOWLEDGE QUESTIONNAIRE ON INFECTION CONTROL MEASURES

Choose the appropriate answer and tick (\checkmark) in the given space provided

1. Incidence rate of respiratory infection in world is
 - a) 12% ()
 - b) 18% ()
 - c) 47% ()
2. Incidence rate of urinary tract infection in India is
 - a) 17% ()
 - b) 7% ()
 - c) 28% ()
3. Microorganisms invades the tissue or cells and cause
 - a) Inflammation ()
 - b) Injury ()
 - c) Infection ()
4. Infection which is confined to a local area of the body is
 - a) Localized infection ()
 - b) Chronic infection ()
 - c) Acute infection ()
5. Infection which is spread throughout the body
 - a) Systemic infection ()
 - b) Partial infection ()
 - c) Localized infection ()
6. Components of chain of infection includes
 - a) Infectious agent, reservoir, portal of entry and exit, mode of transmission and susceptible host ()
 - b) Mode of transmission, reservoir and host. ()
 - c) Portal of entry and exit and reservoir. ()

7. Risk factors for hospital acquired infection is
- a) Long stay in hospital ()
 - b) Short in hospital ()
 - c) Entry in highly infected area ()
8. Common virus transmitted through parenteral route is
- a) Hepatitis B and C ()
 - b) HIV virus ()
 - c) All the above ()
9. Urinary tract infection is caused by
- a) Pseudomonas species ()
 - b) Hepatitis B virus ()
 - c) Hepatitis C virus ()
10. The catheter should be changed within ____days of insertion
- a) 2 days ()
 - b) 4 days ()
 - c) 7 days ()
11. Clinical features like redness, edema, pus and warmth can be seen in which type of infection
- a) Wound infection ()
 - b) Urinary tract infection ()
 - c) Respiratory infection ()
12. Blood stream infections are due to
- a) Aseptic technique ()
 - b) Contamination of IV fluids ()
 - c) Proper hygienic practices ()
13. Common sites of blood stream infections are
- a) Central venous catheter line ()
 - b) Arterial and peripheral line ()
 - c) All the above ()

- 14.** Other name of Nosocomial infection
- a) Health care associated infection ()
 - b) Fungal infection ()
 - c) Bacterial infection ()
- 15.** The type of hand washing which is done for cleaning the hands socially is
- a) Hygienic hand washing ()
 - b) Antiseptic hand washing ()
 - c) Surgical hand washing ()
- 16.** How many steps are therein hand washing
- a) Six steps ()
 - b) Eight steps ()
 - c) Seven steps ()
- 17.** The following is not included in personal protective equipment
- a) Medicines ()
 - b) Goggles, gown and mask ()
 - c) Goggles boots cover ()
- 18.** Use of sterilized equipment's
- a) Reduces infection ()
 - b) Increases infection ()
 - c) Can use more times ()
- 19.** The process that eliminates all microorganism with exception of bacterial spores
- a) Sterilization ()
 - b) Disinfection ()
 - c) Cleaning ()
- 20.** Common disinfections are
- a) Iodine and chlorine compounds ()
 - b) Alcohols and hydrogen peroxide ()
 - c) All the above ()

- 21.** The proportion of chlorine compound is
- a) 1:1 ()
 - b) 1:2 ()
 - c) 1:5 ()
- 22.** The disinfectant used for dental equipment
- a) Glutraldehyde ()
 - b) Alcohols ()
 - c) Chlorine compound ()
- 23.** The disinfectant which is used for respiratory equipment
- a) Alcohol ()
 - b) Chlorine compound ()
 - c) Hydrogen peroxide ()
- 24.** The disinfectant which is used as preservative of anatomical specimen is
- a) Alcohol ()
 - b) Glutraldehyde ()
 - c) Formaldehyde ()
- 25.** The process of killing or removal of microorganism including bacterial spore is
- a) Washing ()
 - b) Disinfectant ()
 - c) Sterilization ()
- 26.** Oldest and cheapest method of sterilization is
- a) Autoclaving ()
 - b) Dry heat sterilization ()
 - c) Ethylene oxide sterilization ()
- 27.** Emergency equipment should be sterilized
- a) Immediately after use ()
 - b) Within 24 hrs. after use ()
 - c) During their shift period ()

28. Heat sensitive instruments like endoscopes are sterilized using
- a) Ethylene oxide ()
 - b) Low-pressure – steam formaldehyde ()
 - c) Radiation sterilization ()
29. Sharp waste are under which type of category
- a) Category No: 4 ()
 - b) Category No: 6 ()
 - c) Category No: 3 ()
30. Collected waste's should not be stored more than
- a) 2 days ()
 - b) 24 hrs. ()
 - c) 12 hrs. ()

SCORING OF KNOWLEDGE QUESTIONARE

SCORE 1-Correct answer

SCORE 0- Incorrect answer

Total attainable score is 30 which is converted into percentage.

Adequate knowledge- 76 to 100%

Moderate knowledge- 51 to 75%

Inadequate knowledge- Below 50%

TOOL –III

SAMPLE NO:

ATTITUDE STATEMENT(PUT TICK(\checkmark) MARK AGAINST THE CORRECT OPTIONS)

SL.NO	STATEMENTS	AGREE	UNCERTAIN	DISAGREE
1	Perform hand hygiene before and after doing any procedures			
2	Use maximal sterile barrier precautions when required (i.e. mask, cap, gown, sterile gloves etc.....)			
3	Adhere to aseptic technique			
4	Use antiseptics in correct proportion.			
5	Maintain checklist for all procedures to ensure safety and maximal efficiency			
6	Hospital should adhere to hospital waste management systems to minimize infection.			
7	Hospital should have facilities and policies to combat needle stick, sharp and other injuries.			
8	At least one individual trained in infection prevention is employed to the facility.			
9	All health care professional should be immunized.			
10	Periodical surveillance of infection in hospital to minimize the rate of nosocomial infection.			

SCORING OF ATTITUDE SCALE

Score3- for Agree

Score2-for Uncertain

Score 1- for Disagree.

Maximum attainable score for attitude is 30.

LEVEL	SCORES
Most Favourable attitude	86.3 – 100%
Favourable attitude	53.3 – 83.3%
Unfavourable attitude	≥50%

TOOL IV SAMPLE NO:

OBSERVATION CHECK LIST FOR ASSESSING THE PRACTICE

THE RESEARCHER WILL PUT TICK (✓)MARK AGAINST THE CORRECT OPTIONS

SL.NO	STATEMENTS	YES	NO
1	The staff nurse does medical hand washing before doing every procedures		
2	The nurse educates the patient regarding various hygienic practices		
3	The nurse follows appropriate barrier techniques when required		
4	The nurse does hand washing after completing the procedure		
5	The nurse restricts the visitors to visit the patient		
6	The nurse changes the IV cannulation every 3 days		
7	The nurse disposes needles/sharps/catheters in designated container as per protocol.		
8	The nurse participates in routine checking of emergency chart, supplies and equipment.		
9	The nurse uses antiseptics in right proportion.		
10	The nurse maintains clean organized and safe environment		

SCORING FOR PRACTICE:

Mark 1 is provided for YES and Mark 0 is provided for NO and is converted into percentage.

Scoring interpretation:

Best practice	-	76-100%
Good practice	-	51-75%
Worst practice	-	≤50%

KEY ANSWERS OF KNOWLEDGE QUESTIONNAIRE

Item no	Correct response
1	C
2	C
3	C
4	A
5	A
6	A
7	A
8	C
9	A
10	C
11	B
12	B
13	C
14	A
15	A
16	B
17	A
18	A
19	B
20	C
21	A
22	A
23	C
24	C
25	C
26	A
27	B
28	C
29	A
30	B

KEY ANSWERS FOR ASSESSING ATTITUDE

	A	b	c
1	3	2	1
2	3	2	1
3	3	2	1
4	3	2	1
5	3	2	1
6	3	2	1
7	3	2	1
8	3	2	1
9	3	2	1
10	3	2	1

KEY ANSWERS OF CHECK LIST FOR ASSESSING PRACTICE

Item no	Favourable response
1	Yes
2	Yes
3	Yes
4	Yes
5	Yes
6	Yes
7	Yes
8	Yes
9	Yes
10	Yes

**ANNEXURE XI
MASTER CODE SHEET**

Sl.No	Age	gender	Religion	Language Known	Education	Working area	Months of experience	Area of experience
1	a	a	a	a	b	a	a	a
2	a	a	c	b	b	b	b	a
3	a	a	c	a	b	b	a	a
4	b	a	c	a	a	a	a	a
5	a	a	c	a	a	b	a	a
6	a	a	c	a	a	a	a	a
7	a	a	a	b	a	b	a	a
8	a	a	a	a	b	a	a	a
9	a	a	a	a	b	b	a	a
10	b	a	a	b	a	a	a	a
11	a	a	c	a	a	a	a	a
12	b	a	c	a	a	b	b	a
13	a	a	a	a	a	b	a	a
14	a	a	a	b	c	c	a	a
15	a	a	a	a	a	c	b	a
16	a	a	a	a	a	c	a	a
17	a	a	a	a	a	c	b	a
18	a	a	a	b	c	d	a	a
19	b	a	c	b	a	d	c	a
20	b	a	c	a	a	d	b	a
21	b	a	c	a	a	c	b	a
22	c	a	c	a	c	c	b	a
23	a	a	c	a	a	d	b	a
24	a	a	a	b	a	d	c	a
25	c	a	a	a	a	c	a	a
26	c	a	c	a	b	d	a	a
27	c	a	c	a	a	d	c	a
28	b	a	c	a	a	d	b	a
29	c	a	c	a	a	d	b	a
30	b	a	c	b	a	d	c	a

ANNEXURE XII
OBSERVING THE PRACTICE



STRUCTURED TEACHING PROGRAMME



STRUCTURED TEACHING LESSION PLAN ON INFECTION CONTROL MEASURES

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Name of the Institution : Annammal College of Nursing Kuzhithurai

Course of the study : M.Sc Nursing II year

Subject : Medical Surgical Nursing

Topic : Infection Control Measures

Group : Staff Nurses

Place : Annammal Hospital

Method of teaching : Structured Teaching Programme

GENERAL OBJECTIVES

At the end of the structured teaching programme the staff nurses will get adequate knowledge regarding infection control measures which helps them to develop positive attitude.

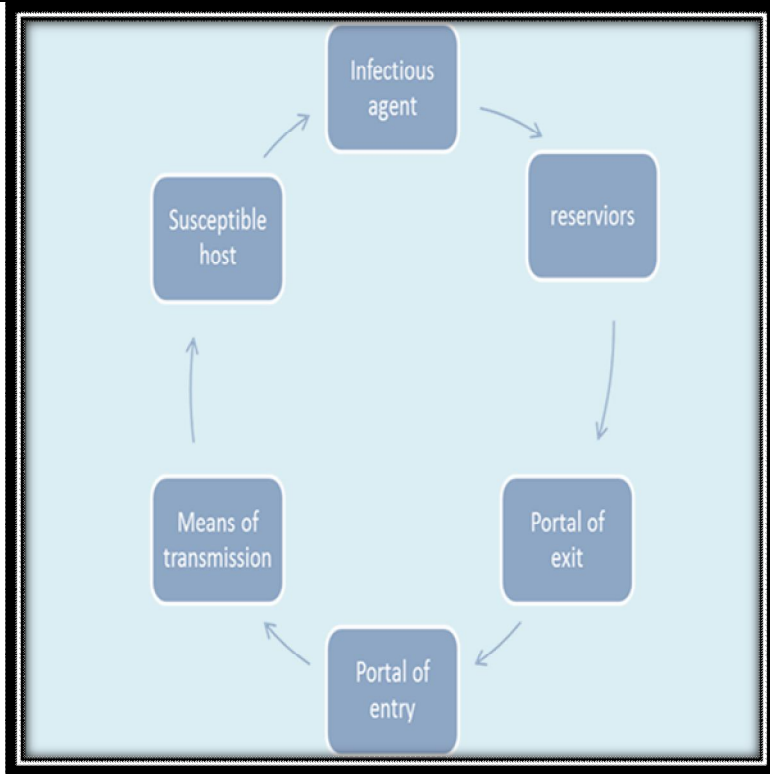
SPECIFIC OBJECTIVES

- ❖ define infection
- ❖ list the types of infection
- ❖ explain the chain of infection
- ❖ define nosocomial infection
- ❖ list the risk factors of hospital acquired infection
- ❖ explain the mode of transmission
- ❖ enumerate the common hospital acquired infection
- ❖ define infection control
- ❖ list down the standard precautions
- ❖ list the indications in hand washing
- ❖ list the types of hand washing
- ❖ enumerate the personal protective equipment
- ❖ explain sterilization and disinfection

- ❖ enumerate hospital waste management
- ❖ explain the treatment of waste management
- ❖ define vaccination
- ❖ list the need of vaccination
- ❖ enlist the vaccine needed for health care professionals
- ❖ enumerate the role of health care professionals re

Define infection	2.42 mts	<ul style="list-style-type: none"> • Bloodstream infection -12% • Urinary tract infection -18% • Other infections -16% <p>DEFINITION</p> <p>Infection indicates a host interaction with an organism which is recognized by the host reaction & by laboratory based evidence of WBC reaction and microbiologic organism identification.</p> <p style="text-align: right;">Brunner & suddarth</p> <p>An infection involves invasion of tissues or cells by microorganisms such as bacteria, viruses, and parasites that are not normally present within the body</p> <p style="text-align: right;">-Lewis Heitkemper Dirksen</p>	E X P L A I N I N G	O B S E R V I N G	P O W E R P O I N T	What is infection ?
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List the types of infection	1 mts	<p>TYPES OF INFECTION</p> <p>LOCALIZED-</p> <ul style="list-style-type: none"> Localized infection is where the infection is confined to a local area of the body. Eg :Infectious ulcer in toe. <p>SYSTEMIC-</p> <ul style="list-style-type: none"> Systemic is where the infection has spread throughout the body.Eg: influenza affects the entire body. 	E X P L A I N I N G	O B S E R V I N G	P O W E R P O I N T	What are the types of infection ?
Enumerate the chain of infection control	2 mts	<p>CHAIN OF INFECTION CONTROL</p>				What is mean by chain of infection control



INFECTIOUS AGENT

An infectious agent is the agent capable of producing infection.

Eg: Bacteria, virus, fungi and protozoa.

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	<p>RESERVOIR</p> <p>Reservoir is a place where a pathogen can survive but may or may not multiply. Eg: The most common reservoir is human body, Animals, plants, soil etc.</p> <p>PORTAL OF EXIT</p> <p>A portal of exit is the way through which the organism exit from the reservoir E.g.: Skin, mucous membrane, respiratory tract, urinary tract etc..</p> <p>MODE OF TRANSMISSION</p> <p>Mode of transmission is the way through which pathogen enter into a host. E.g.: contact, air, vehicles etc..</p> <p>PORTAL OF ENTRY</p> <p>Portal of entry is the fifth link in the chain of transmission. E.g.: Tuberculosis and influenza involves respiratory tract, Hepatitis-B and HIV through blood transmission.</p> <p>SUCESPTIBLE HOST</p> <p>Susceptibility depends on the individual; the Last main link</p>	<p>E X P L A I N I N G</p>	<p>O B S E R V I N G</p>	<p>P O W E R P O I N T</p>	
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<p>Define Hospital Acquired infection</p>	<p>2 mts</p>	<p>involves the necessity for susceptible host. It is one's ability to mount a local inflammatory response provides yet another e.g. Human being it depend on Age → being either very younger or elderly associated with decreased resistance.</p> <ul style="list-style-type: none"> • Other factor presence of choice disease will alter the host resistance. e.g. Diabetes, blood disorder <p>HOSPITAL ACQUIRED INFECTION</p> <p>DEFINITION</p> <p>Nosocomial infections or hospital acquired infections are infections which are result of treatment in a hospital, health care or service unit, but secondary to the patient's original condition.</p> <p style="text-align: right;">- Brunner & suddarth</p> <p>Infections are considered nosocomial if they first appears 48hrs more after hospital admission.</p> <p style="text-align: right;">-Lewis Heitkemper Dirksen</p>	<p>E X P L A I N I N G</p>	<p>O B S E R V I N G</p>	<p>P O W E R P O I N T</p>	<p>What is HAI?</p>
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<p>Enlist the risk factors of hospital acquired infection</p>	<p>2 mts</p>	<p>Health care-associated infections is defined as (HAIs) as infections acquired while in the health care setting (e.g., inpatient hospital admission, hemodialysis unit, or same-day surgery), with a lack of evidence that the infection was present or incubating at the time of entry into the health care setting.</p> <p>- Centers for Disease Control and Prevention (CDC)</p> <p>RISK FACTORS FOR HOSPITAL ACQUIRED INFECTION</p> <ul style="list-style-type: none"> • Patients with weakened immunity . • Long stay in hospitals. • Inadequate aseptic techniques while doing surgical and medical procedures. • Inadequate hand washing techniques. • Improper use of hospital equipment's. • Inadequate biomedical waste management facilities. • Improper care of wound, incisions and burns. • Specific areas in hospital such as ICUs, laboratories, operation theatres etc..are prone for infections. • Inadequate use of personal protective equipment's. 	<p>E X P L A I N I N G</p>	<p>O B S E R V I N G</p>	<p>P O W E R P O I N T</p>	<p>What are the risk factors of hospital acquired infection ?</p>
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Enumerate the mode of transmission	3 mts	<p>MODE OF TRANSMISSION</p> <ul style="list-style-type: none"> ➤ Transmission by air ➤ Transmission by direct contact ➤ Transmission by oral route ➤ Transmission by parenteral route <p>AIRBORNE TRANSMISSION</p> <p>It is the way In which infections may be transmitted by air borne droplets; dust particles. Air borne droplets transmits Mycobacterium tuberculosis. Pathogens such as staphylococcus aureus, pseudomonas aeruginosa and aerosoloa produced by the nebulizer's, humidifiers and air conditioning apparatus</p> <p>TRANSMISSION BY DIRECT CONTACT</p> <p>Direct contact with hands and clothing's of medical personnel & from one person to another. pathogens transmitted by direct contact are Staphylococcus aureus and pyogens are two important pathogens that are transmitted by hand contact</p> <p>TRANSMISSION BY ORAL ROUTE</p> <p>Certain gastrointestinal pathogens may be transmitted by hospital foods served to hospitalized patients. Pathogens transmitted through oral route are pseudomonas aeruginosa, E.coli, klebsiella species and other pathogens.</p>	E X P L A I N I N G	O B S E R V I N G	P O W E R P O I N T	Explain the mode of transmission ?
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<p>Explain the common hospital acquired infection</p>	<p>3 mts</p>	<p>TRANSMISSION BY PARENTERAL ROUTE</p> <p>Transmitted by transfusion of blood or blood products through contaminated needles or sharp instruments and that have not been properly disinfected. pathogens transmitted through parenteral route such as hepatitis B and C, HIV virus may be transmitted by transfusion of blood.</p> <p>COMMON HOSPITAL ACQUIRED INFECTIONS</p> <ul style="list-style-type: none"> ➤ Urinary tract infection ➤ Wound infection ➤ Respiratory infection ➤ Blood stream infections <p>URINARY TRACT INFECTION</p> <p>It account for 40-45%of nosocomial infections.the common pathogens associated with urinary tract infection are E.coli, Klebsiella species, Enterobacter, Pseudomonas, candida and staphylococcus epidermis.signs and symptoms associated with urinary tract infection are pain or burning sensation, flank pain, cloudy urine, presence of hematuria, fever>104, chills.Prevention aspect are proper hand hygiene technique by the health care professionals, change the catheter after 7 days of insertion, encourage hydration.</p>	<p>E X P L A I N I N G</p>	<p>O B S E R V I N G</p>	<p>P O W E R P O I N T</p>	<p>What the common hospital acquired infection ?</p>
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	<p>WOUND INFECTION</p> <p>It account for nearly 30% of all hospital infections.</p> <p>Common pathogens associated are staphylococcusaureus, pseudomonas aeruginosa, Acinebacter,E.coli, Staphylococcuspyogens.clinical features of surgical wound infections are localized pain, redness, edema, pus discharge and warmth at the site.</p> <p>RESPIRATORY INFECTION</p> <p>It accounts for 15-20% of nosocomial infections</p> <p>Caused by aspiration of endogenous or hospital acquired oro pharyngeal flora .Common pathogens causing ventilator associated pneumonia are klebsiella species, staphylococcusaureus, E.coli, pseudomonas species, Acinebacter species, proteus species. Preventive aspect are provide semi recumbent position , patient who has difficulty swallowing needs assistance in eating, drinking and taking medications to prevent aspiration.The nurses must careful to avoid over sedation during respiratory care.</p> <p>BLOOD STREAM INFECTION</p> <p>Blood stream infections are due to contamination IV fluids by tubing or needle changes, Insertion of drug additives to IV fluids. Improper care of needle insertion site, contaminated needles or catheters. Improper hand washing, Improper care of peritoneal and</p>	<p>E X P L A I N I N G</p>	<p>O B S E R V I N G</p>	<p>P O W E R P O I N T</p>	
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Define infection control	1 mt	<p>hemodialysis. Common sites of blood stream infection central venous catheter line, arterial line and peripheral line.</p> <p>Signs and symptoms are pain, redness, swelling, oozing from the site, fever, chills, bradycardia hypotension. Preventive aspects are proper hand washing technique, use of gloves before touching the lines; flushing the lines after drug administration.</p> <p>INFECTION CONTROL</p> <p>It is the Measure in identifying and reducing the risk of infections developing or spreading, Infection control is the discipline concerned with preventing nosocomial or healthcare-associated infection, a practical (rather than academic) sub-discipline of epidemiology and a part of the infrastructure of health care.</p> <p>STANDARD PRECAUTION</p> <p>The standard precautions apply to all body fluids, secretions, excretions, non-intact skin and mucous membranes.</p> <ul style="list-style-type: none"> • Hand Washing • Use of personal protective equipment • Sterilization and Disinfection • Hospital Waste Management • Vaccination. 	E X P L A I N I N G	O B S E R V I N G	P O W E R P O I N T	<p>What is infection control ?</p> <p>What are the standard precaution's ?</p>
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<p>Explain the standard precaution's</p>	<p>5 mts</p>	<p>Hand Washing</p> <p>Hand washing in which wet hands with water, apply soap, rub hands together for at least 15 seconds then rinse and dry with disposable towel. Hands are washed between client contacts, after contact with blood , body fluids, secretions, excretions and after contact with equipment or articles contaminated and immediately after gloves are removed.</p> <p>INDICATIONS OF HAND WASHING</p> <ul style="list-style-type: none"> • Before patient contact. • Before wearing gloves for procedures such as insertion of central lines, urinary catheters, peripheral Ivs. • After contact with a patients skin. • After contact with body fluids or extractions. • Before surgery. • Before handling equipment . • Before and after dressing. • Before and after touching the environment of patient. 	<p>E X P L A I N I N G</p>	<p>O B S E R V I N G</p>	<p>P O W E R P O I N T</p>	<p>What is hand washing ?</p> <p>What are the indication of hand washing ?</p>
<p>Define hand washing</p> <p>List down the indication of hand washing</p>		<p>TYPES OF HAND WASHING</p> <ul style="list-style-type: none"> • Routine (or) social hand washing • Surgical hand washing • Antiseptic hand washing 				<p>What are the types of hand washing ?</p>

Enumerate the types of hand washing		<p>Routine hand washing</p> <p>It is the most common form and makes the hands socially clean. This type of hand washing is performed using plain soap and water for 15- 30 second. It remove transient organisms and dirt, food or blood or other organic Matter.</p> <p>Antiseptic hand washing</p> <p>It is a another technique and time reduced to perform routine hand washing. In antiseptic hand washing the use of antiseptic disinfectant removes dirt and transient organism as well as destroying or inhibiting the growth of resident Micro organism. It is done during procedures such as urinary catheterization</p>	E X P L A I N I N G	O B S E R V I N G	P O W E R P O I N T	
Enlist the five moments in hand washing		<p>FIVE MOMENTS IN HAND WASHING;</p> <ul style="list-style-type: none"> ➤ Before touching a patient ➤ Before clean/ aseptic procedure ➤ After body fluid exposures ➤ After touching a patient ➤ After touching patient surroundings 				What are the five moments in hand washing ?
List the steps in		<p>STEPS IN HAND WASHING</p> <ul style="list-style-type: none"> ✓ Step 1- palm to palm ✓ Step 2- Between fingers ✓ Step 3- Back of hands ✓ Step 4- Base of thumbs 				Mention the steps in hand washing ?

		<p>USE OF PERSONAL PROTECTIVE EQUIPMENT</p> <ul style="list-style-type: none"> • Google's / Safety glasses <p>These are used while handling hot solids, liquids (or) Molten Metals Can use when flying particles from turning, Shaping, Cutting etc.</p> <ul style="list-style-type: none"> • Gloves <p>These are used to protect hand protection from skin absorption of harmful substances, lacerations, sever cuts, abrasions, punctures, handful temperature, Chemical beans irritation etc.</p> <ul style="list-style-type: none"> • Gown <p>Body protection gown is used to protect the skin from hazardous agent.</p> <ul style="list-style-type: none"> • Cap <p>It covers the head and sometimes facial hair of members of surgical team it is to avoid contamination of the surgical wound.</p> <ul style="list-style-type: none"> • Boots <p>Boots are is used to protect against injury.</p> <ul style="list-style-type: none"> • Shoe cover <p>It is used to reduce the transfer of microorganism.</p> <ul style="list-style-type: none"> • Facemask <p>It is to protect the face form hazardous agent.</p> <p>DISINFECTION AND STERLIZATION</p> <p>It is a process that eliminates many or all micro organisms, with the exception of bacterial spores.</p>	<p>E X P L A I N I N G</p>	<p>O B S E R V I N G</p>	<p>P O W E R P O I N T</p>	<p>What is disinfection ?</p>
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<p>Define Disinfection</p> <p>Enlist common disinfectant's</p>	<p>5 mts</p>	<p>COMMON DISINFECTANT</p> <ul style="list-style-type: none"> Alcohols- Ethyl and isopropyl Chlorine compounds Iodine compounds Glutaraldehyde Formaldehyde Hydrogen peroxide <p>ALCOHOLS</p> <p>70% of isopropyl alcohol or ethyl alcohol or its mixture is used health care setting. Its use-disinfection of medical instruments and used as hand wipe.</p> <p>CHLORINE COMPOUNDS</p> <p>The proportion of chlorine compound is 1:5 in water one percentage of chlorine with five percentage of water.</p> <p>Widely used and have a broad spectrum of antimicrobial activity.</p> <p>IODINE COMPOUNDS</p> <p>The proportion of this solution of 2% iodine in 50% alcohol. It is used as antiseptic on skin (or) tissue .</p> <p>GLUTRALDEHYDE</p> <p>2% glutraldehyde with 1.0 methanol. Use-Disinfection of medical, surgical and dental equipment's.</p>	<p>E X P L A I N I N G</p>	<p>O B S E R V I N G</p>	<p>P O W E R P O I N T</p>	<p>What are the common Disinfectant's?</p>
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		<p>FORMALDEHYDE</p> <p>10% formalin is 1:10 dilution of 100% formalin in water. Use-as a disinfectant & as a preservative for anatomical specimen.</p> <p>HYDROGEN PEROXIDE</p> <p>The commercially available 3% solution is an effective low level disinfectant and 6% have been used for the disinfestation of soft contact lenses and for some respiratory equipment. It has microbial effect against a variety of bacteria, fungi and virus.</p> <p>STERLIZATION</p> <p>Sterilization is the killing or removal of all microorganisms, including bacterial spores which are highly resistant.</p> <p>TYPES OF STERLIZATION</p> <ul style="list-style-type: none"> • Autoclaving/steam sterilization. • Dry heat sterilization. • Ethylene oxide sterilization • Low pressure steam formaldehyde sterilization. • Radiation sterilization <p>AUTOCLAVING</p> <p>It is an oldest, safest, cheapest and most understandable method of sterilization available in health care facilities. This methods recommended for sterilization of all those items that can with stand moisture and temperature.</p>	<p>E X P L A I N I N G</p>	<p>O B S E R V I N G</p>	<p>P O W E R P O I N T</p>	<p>What is sterilization ? What are the types of sterilization ?</p>
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<p>Define sterilization</p> <p>List down the types of sterilization</p>		<p>In this method water is heated at standard atmosphere pressure, the temperature of the water increases as heat energy is more than 121⁰C or higher commonly autoclaved items in healthcare items are gown, gauze, forceps and other instatements</p> <p>DRY HEAT</p> <p>It is a method of sterilization in which dry heat is concerned.</p> <p>The time temperature relationships for sterilization is 160⁰C for 120 minutes 150⁰C for 150 minutes. Dry heat is used to sterilize those materials that cannot be sterilized by steam.</p> <p>ETHYLENE OXIDE</p> <p>It is a method of sterilization in which ethylene oxide is used. The common ethylene oxide sterilization things in health care system are gauze, cotton bowls etc..</p> <p>LOW PREASSURE STEAM FORMALDEHYDE</p> <p>Low-pressure steam formaldehyde method of sterilization is for materials or instruments which cannot stand the heat of such process normally 121⁰C and above.</p> <p>E.g. All heat sensitive instrument Like cryo instruments, endoscope.</p> <p>RADIATION</p> <p>Radiation sterilization may be performed by using either Gama rays from a radio isotope source (or) an electron beam (or) x-ray irradiation These will cause inactivatation of the contaminating micro organisms and by using Gama radiation a radio isotope.</p>	<p>E X P L A I N I N G</p>	<p>O B S E R V I N G</p>	<p>P O W E R P O I N T</p>	<p>What is</p>
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<p>Explain hospital waste management</p>		<p>HOSPITAL WASTE MANAGEMENT</p> <p>Hospital waste management is any waste, which is generated during the diagnosis, treatment, or immunization of human beings or in research activities pertaining there to or in the production or testing of biological and enchanting categories.</p> <p>CATEGORIES</p> <p>There are ten categories</p> <p>categories I</p> <p>categories II</p> <p>categories III</p> <p>categories IV</p> <p>categories V</p> <p>categories VI</p> <p>categories VII</p> <p>categories VIII</p> <p>categories IX</p> <p>categories X</p> <p>PROCESS</p> <ul style="list-style-type: none"> • Segregation of waste • Collection of Biomedical waste • Transportation of waste • Treatment of waste 	<p>E X P L A I N I N G</p>	<p>O B S E R V I N G</p>	<p>P O W E R P O I N T</p>	<p>hospital waste management ?</p> <p>List the categories of hospital waste management ?</p> <p>Explain the process of hospital waste management ?</p>
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<p>Explain the categories of hospital waste management</p>	<p>3 mts</p>	<p>SEGREGATION OF WASTE</p> <p>It should be done at the source of generation of biomedical waste.</p> <p>E.g. All patient care activity areas, diagnostic service areas labour rooms, operation theaters treatment rooms etc.</p> <p>COLLECTION OF WASTE</p> <p>Collection of waste in which the waste will be collected according to the color coded bins. The collected waste should not be stored for more than 24 hrs. E.g. Green bin General waste.</p> <p>TRANSPORTATION</p> <p>Transportation of waste is according to the pre- defined route within the hospital separate time should be ear marked for transportation of biomedical waste. Use separate trolley and it should be disinfected before and after transportation</p> <p>TREATMENT OF HOSPITAL WASTE</p> <p>Treatment of hospital waste is to reduce the volume of the waste and to reduce infection.</p> <p>METHODS</p> <ul style="list-style-type: none"> • Land fill • Encapsulation • Waste Immobilization • Microwave Irradiation 	<p>E X P L A I N G</p>	<p>O B S E R V I N G</p>	<p>P O W E R P O I N T</p>	<p>What are the methods of waste disposal ?</p>
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<p>Describe the methods of waste disposal</p>		<ul style="list-style-type: none"> • Minimum temperature Incineration • Chemical decomposition <p>LAND FILL</p> <p>In this method waste are directly disposed into a land disposal site.</p> <p>ENCAPSULATION</p> <p>This involves putting the pharmaceuticals in a steel or plastic drum then with that waste cement lime mixture will be added and the lid is sealed by spot welding and it will be placed at the base of a land fill and cover with municipal waste.</p> <p>WASTE IMMOBILIZATION</p> <p>In this method the waste will be converted to liquid state after removal of packing plastic from drug then the liquid will be poured in normal urban waste.</p> <p>MICRO WAVE IRRADIATION</p> <p>Most microorganisms are destroyed by the action of microwave of frequency of about 2450 MHZ and a wave length of 12.24mm the water contained within the waste is rapidly heated and the infection components are destroyed by heat conduction.</p> <p>MINIMUM TEMPRATURE INCINERATION</p> <p>In this 1% halogenated compound used by two champers incinerator of about 550⁰C temperature with minimum temperature to destroy the infectious components.</p>	<p>E X P L A I N I N G</p>	<p>O B S E R V I N G</p>	<p>P O W E R P O I N T</p>	
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<p>Define vaccination</p> <p>List down the needs of vaccination</p>		<p>HIGH TEMPRATURE INCINERATION</p> <p>In this the incinerator will have cement clinker product this observes the waste like chemical waste used oils explored pharmaceuticals organic wastes toxic combustion products etc. at a temperature of 1450⁰C to 20000⁰C and the products are observed or removed in heat exchange equipment.</p> <p>CHEMICAL DECOMPOSITION</p> <p>This method need expert personnel, only small quantities can be discarded by this usually less than 40-50 kg even small quantifier need respected application for complete degradation .Disposal of Antineoplastic drugs</p> <p>VACCINATION</p> <p>Definition</p> <p>Vaccine is an immune- biological substance designed to produce specific protection against a given disease.</p> <p>NEED OF VACCINATION</p> <ul style="list-style-type: none"> • Protection against a disease • Stimulates the production of protective antibody and other immune mechanism. <p>VACCINES FOR HEALTH CARE PROFESSIONALS</p> <ul style="list-style-type: none"> • Hepatics B. Vaccine • Tetanus Vaccine 	<p>E X P L A I N I N G</p>	<p>O B S E R V I N G</p>	<p>P O W E R P O I N T</p>	<p>What is vaccination ?</p> <p>What is need of the vaccination ?</p>
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<p>Enlist the roles of infection control professionals</p>	<p>2 mts</p>	<p>HEPATITIS –B VACCINE</p> <p>In include plasma derived and yeast derived the dose is 1.0 ml dose (plasma) yeast derived the dose is 10-20 mcg.</p> <p>TETANUS VACCINE</p> <p>It is best prevented by active immunization the dose in 0.01 IU/ml</p> <p>ROLE OF INFECTION CONTROL PROFESSIONALS</p> <ul style="list-style-type: none"> • Provide staff and client education on infection control and prevention • Develop and review infection prevention and control policies and procedures • Recommended Isolation procedures • Screen client records for community acquired infections • Consult with health department regarding prevention and control of spread of infection • Gather statistics regarding Epidemiology(cause and effect) of health care associated infection. • Notify the public health department of incidences of communicable diseases with in the facility. • Consult with all hospital departments to investigate unusual events of infection. • Clients equipments should be properly cleaned and single use items are discarded. 	<p>E X P L A I N I N G</p>	<p>O B S E R V I N G</p>	<p>P O W E R P O I N T</p>	<p>What is the role of infection control professional ?</p>
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- Contaminated linen is placed in leak proof bag and handled, so as to prevent skin and mucous membrane exposure.
- All sharp instruments and needles are discarded in a puncture resistant container.

CONCLUSION

Health care-associated infections (HAIs) are the most common complication of hospital care. According to the Centers for Disease Control and Prevention (CDC), nearly 1.7 million HAIs occur yearly, leading to approximately 99,000 deaths every year. Such infections were long accepted by clinicians as an inevitable hazard of hospitalization