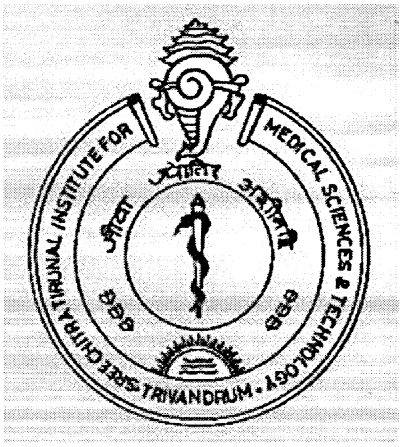
A STUDY TO ASSESS THE KNOWLEDGE REGARDING PREVENTION OF HEALTHCARE ASSOCIATED INFECTIONS AMONG NEURO NURSES



Project report

Submitted in partial fulfillment of the requirements for the

Diploma in Neuro Nursing

Submitted by

Anil Gopalakrishnan

Roll No: 5891

Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum

October 2009

CERTIFICATE FROM SUPERVISORY GUIDE

This is to certify that Mr. Anil Gopalakrishnan has completed the project work on **"A STUDY TO ASSESS THE KNOWLEDGE REGARDING PREVENTION OF HEALTHCARE ASSOCIATED INFECTIONS AMONG NEURO NURSES."** under my direct supervision and guidance for the partial fulfillment for the Diploma in Neuro Nursing in the University of Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum.

It is also certified that no part of this work report has been included in any other thesis for procuring any other degree by the candidate.

Saramma P.P

Thiruvananthapuram
October 2009

DR. Saramma P.P
Senior Lecturer in Nursing
SCTIMST
Trivandrum

CERTIFICATE FROM CANDIDATE

This is to certify that the project report on **"A STUDY TO ASSESS THE KNOWLEDGE REGARDING PREVENTION OF HEALTHCARE ASSOCIATED INFECTIONS AMONG NEURO NURSES."** is a genuine work done by me at the Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum under the guidance of Dr.Saramma .P.P, Senior Lecturer in Nursing SCTIMST ,TVM. It is also certified that this work has not been presented previously to any university for award of degree, diploma, fellowship or other recognition.

Thiruvananthapuram
October 2009

Anil Gopalakrishnan
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Approval Sheet

This is to certify that **Mr. ANIL GOPALAKRISHNAN**, bearing Roll no. 5891, has been admitted to the Diploma in neuro nursing in January 2009 and he has undertaken the project entitled **"A STUDY TO ASSESS THE KNOWLEDGE REGARDING PREVENTION OF HEALTHCARE ASSOCIATED INFECTIONS AMONG NEURO NURSES."** which is approved for the Diploma in Neuro Nursing under University as it is found satisfactory.

Examiners

_____

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Guide(s)

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Date:_____
Place:_____

ACKNOWLEDGEMENT

First of all let me thank God Almighty for unending love, care and blessing especially during the tenure of this study.

I take this opportunity to express my sincere thanks to Dr. Saramma P.P, Senior Lecturer in nursing, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum, for the guidance she provided for executing this study. Her advices regarding the concept, basic guidelines and analysis of data were very much encouraging. Her contributions and suggestions have been of great help for which I am extremely grateful.

I am thankful to all the staffs and departmental head of neurology unit, who helped for completion of this study at some time I am indebted to them.

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LIST OF ABBERIVATIONS

B Sc (N)	Bachelor of Science (Nursing)
BMA	British Medical Association
CAUTI	Catheter Associated urinary tract infection
CDC	Center for disease control and prevention
CRBI	Catheter Related Blood Stream Infection
CVC	Central Venous Catheter
GNM	General Nursing & Midwifery
HAI	Healthcare Associated infections
ICU	Intensive Care Unit
IDD	Incidence Density Difference
IDR	Incidence Density Rate
NSICU	Neuro Surgery Intensive Care Unit
NSWRD	Neuro Surgery Ward
SCTIMST	Sree Chitra Tirunal Institute for Medical Sciences & Technology
UTI	Urinary tract infection
WHO	World Health Organization

ABSTRACT

Topic: A study to assess the knowledge regarding prevention of healthcare associated infections among neuro nurses.

Background: - Nurses are the principal group of health care personnel in all health care settings. Nurses' lack of knowledge may be a barrier in prevention of healthcare associated infections. **Aim: -** The objectives of the study were to assess neuro nurses knowledge regarding prevention of healthcare associated infections, to assess the relationship between neuro nurses knowledge regarding healthcare associated infections and selected variables and to develop a protocol for neuro nurses in the prevention of healthcare associated infections. **Method**: - This study was conducted in NSICU, and NSWRD of Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum . Thirty-eight neuro nurses were selected conveniently for this study. The total period of the study was from September 2009 to October 2009. A validated self-prepared questionnaire was used to assess the knowledge. **Results:** 78.95% of the samples had average or good level of knowledge and 2.63% of samples had very good knowledge about prevention of health care associated infections. 18.42% had below average level knowledge. This study revealed that there was no significant difference between the knowledge of neuronurses about prevention of health care associated infections and their age or professional qualifications or experience in nursing. **Conclusion: -** The knowledge of nurses working in NSICU and NSWRD regarding prevention of healthcare associated infections shows that there is a lapse in knowledge which needs an improvement.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Infections, which arise in hospitals, are termed as hospital associated infections. Such infections have also been called 'Nosocomial Infections' and sometimes 'Hospital Acquired Infections'. As more health care is now provided in ambulant patients the term 'Healthcare Associated infections' (HAI) is also used. *(WHO., 2002)*

A Nosocomial infection also called Hospital Acquired Infections can be defined as an infection occurring in a patient in a hospital or other health care facility in whom the infection was not present or incubating at the time of admission. This includes infections acquired in the hospital but appearing after discharge and also occupational infection among staff of the facility. *(WHO., 2002)*

A wide variety of microorganism can be transmitted in healthcare setting, including bacteria, virus, fungi and mycoplasmas. They most commonly affect the urinary tract, lower respiratory tract, surgical wounds, skins and the blood stream. *(BMA., 2006)*

Healthcare Associated infections affect patients in a variety of ways, from increased discomfort and pain to severe chronic illness, permanent disability and in some cases may cause death. Infection can also lead to extended lengths of stay of affected patients, bed and ward closure, and increased diagnostic and

treatment costs, especially when an antimicrobial resistant microorganism causes infection. (BMA., *2006)*

Nosocomial infections are widespread. They are important contributors to morbidity and mortality. They will become even more important as a public health problem with increasing economic and human impact because of increasing numbers and crowding of people, more frequent impaired immunity (age, illness, treatments), new microorganisms and increasing bacterial resistance to antibiotics

(WHO., 2002)

1.2 Background of study

Central venous catheter related blood stream infection

Central venous catheters are life-sustaining devices but are associated with a risk for infections that can increase morbidity and mortality and the cost of care.1-5 Infections associated with intravascular catheters account for 10% to 20% of all nosocomial infections. The mean rate of CVC-related bloodstream infection in the intensive care unit is 5.3 per 1000 catheter days. From 10% to 70% of all CVC-related infections are preventable. (Labeau et al., 2009)

Intravascular catheters are indispensable in modern-day medical practice, particularly in intensive care units (ICUs). Although such catheters provide necessary vascular access, their use puts patients at risk for local and systemic infectious complications, including local site infection, CRBSI, septic

thrombophlebitis, endocarditic, and other metastatic infections (e.g., lung abscess, brain abscess, osteomyelitis, and endophthalmitis). (P Naomi et al 2002).

Ventilator-associated pneumonia

Ventilator-associated pneumonia is defined as pneumonia that develops more than 48 to 72 hours after initiation of mechanical ventilation. With an incidence of 8% to 68%, Ventilator-associated pneumonia is the most common hospital-acquired infection among patients who require ventilator support. Moreover, Ventilator-associated pneumonia is associated with high morbidity and mortality rates, increased duration of ventilator support and hospitalization, and increased use of healthcare resources. Prevention of Ventilator associated pneumonia focuses on avoiding micro aspiration of subglottic secretions, preventing oropharyngeal colonization with exogenous pathogens, and preventing contamination of ventilator equipment. (Labeau et al., 2009)

Ventilator-associated pneumonia is the most frequent intensive care unit (ICU)-acquired infection among patients receiving mechanical ventilation. (Chastre 2005). Nurses lack of knowledge may be a barrier to adherence to evidence based guidelines for preventing ventilator associated pneumonia. (Lebeau et al 2007)

Catheter associated urinary tract infections

Urinary tract infections (UTIs) are the commonest healthcare associated infections, accounting for up to 30% of all. Most are associated with the use of urinary drainage devices, such as bladder catheters. The risk of acquiring

bacteriuria in a catheterized patient increased with the duration of catheterization raising from approximately 5% per day during the first week to almost 100% at 4 weeks.1-4% of patients with bacteriuria will ultimately develop clinically significant infection, e.g., cystitis, pyelonephritis and septicemia. (Damani et al., 2004)

Burden of Catheter associated urinary tract infections

Urinary tract infection is the most common hospital acquired infection; 80% of these infections are attributable to an indwelling urethral catheter.

Twelve to sixteen percent of hospital inpatients will have a urinary catheter at some time during their hospital stay. The daily risk of acquisition of urinary infection varies from 3% to 7% when an indwelling urethral catheter remains in situ. Outcomes associated with Catheter associated urinary tract infections

Urinary tract infection is the most important adverse outcome of urinary catheter use. Bacteremia and sepsis may occur in a small proportion of infected patients. Morbidity attributable to any single episode of catheterization is limited,3 but the high frequency of catheter use in hospitalized patients means that the cumulative burden of CAUTI is substantial.Catheter use is also associated with negative outcomes other than infection, including nonbacterial urethral inflammation, urethral strictures and mechanical trauma. Risk factors for development of Catheter associated urinary tract infections.The duration of catheterization is the most important risk factor for development of infection. Limiting catheter use and, when a catheter is indicated, minimizing the duration the catheter remains in situ are primary strategies for CAUTI prevention. Additional risk factors include

female sex, older age, and not maintaining a closed drainage system. (Lo E et al, 2008)

Urinary tract infections (UTIs) are the most common type of nosocomial (hospital-acquired) infections, accounting for 40% of all infections in hospitals per year (Burke and Zavasky 1999) Organisms attacking any portion of the urinary system cause urinary tract infections: the kidneys (pyelonephritis), bladder (cystitis), prostate (prostatitis), urethra (urethritis) or urine (bacteriuria). Once bacteria infect any site, all other areas are at risk.

In the Neuro surgical units of SCTIMST many patients are, receiving mechanical ventilator and with urinary & central venous catheters. Adherence to the best nursing practice guidelines is recommended for prevention of Health care associated infections.

1.3 Need and Significance of study

Healthcare associated infections represents a major health problem because of the excess mortality and morbidity rate in hospital and also this infections will aggravate the underlying disease process worsening the condition of the patients. In a press release on 13th October 2005 WHO states that "Preventable Hospital infections are a major cause of death and disability for the patients".

Healthcare associated infections is an important issue of patients who are critically ill. In NSICU during August 2009,a total 124 patients got admitted or transferred in from other departments for surgical management. In 124 patients total 8 patients were identified to have Healthcare associated infections, it include

6 lung infections, 1 surgical site infection, 6 urinary tract infections and 3 meningitis. Adequate knowledge regarding prevention of healthcare associated infections can reduce the mortality and morbidity rates.

1.4 Statement of the problem

A study to assess the knowledge regarding prevention of healthcare associated infections among neuro nurses.

1.5 Objective of the study

1. To assess neuro nurses knowledge regarding prevention of healthcare associated infections.
2. To develop a protocol for neuro nurses in the prevention of healthcare associated infections.
3. To assess the relationship between neuro nurses knowledge and selected variables

1.6 Operational Definitions

Healthcare associated infections: Healthcare associated infections are the infections that patients acquire during the course of receiving treatment with in the hospital settings.

Ventilator-associated infections: Ventilator-associated infection is defined as the lung infection that develops after initiation of mechanical ventilation.

Central venous catheter associated infections: Central venous catheter associated infections can be defined as the blood stream infection that develops to the patients with central venous catheter.

Catheter associated urinary tract infections: Catheter associated urinary tract infections can be defined as the urinary tract infection that develops to the patients with urinary catheter.

Knowledge: Knowledge is defined as the fact information and skills acquired by a person through experience and education. In this study knowledge of eidence-based guidelines is measured as the score obtained in the knowledge test administered by the investigator.

1.7 Methodology

The survey approach was used in this study. After obtaining permission from the authorities data was collected from staff nurses working in NSICU & NSWRD of SCTIMST with a self-prepared multiple-choice questionnaire. The questionnaire is related to the prevention of healthcare associated infections. The duration of the study is August to October 2009.

1.8 Delimitation

The study is limited to staff nurses working in Neuro surgery units of SCTIMST.

1.9 Summary

This chapter deal with introduction, background of study, need and significance of study, statement of the problem, definition of terms, objective of the study, methodology and limitations.

1.10 Organization of report

The chapter II deals with summary of related reviewed. Chapter III deals with methodology of study. Chapter IV deals with methodology of the study.

Chapter V consists of summary, conclusion, implication and limitation of the study and recommendations. This report also includes a selected bibliography and appendix.

CHAPTER II

Review of Literature

2.1 Introduction

Review of Literature is an important aspect of any research project from beginning to end. It gives character insight in to the problem and helps in selecting methodology, developing tool and also analyzing data. With these in view an intensive review of Literature has been done.

The review of literature relevant to this study is presented in the following sections.

2.2 Studies related to prevention of healthcare associated infections

2.2.1 Studies related to prevention of central venous catheter associated infections

2.2.2 Studies related to prevention of ventilator associated infections

2.2.3 Studies related to prevention of catheter-associated urinary tract infections

2.3 Studies related to knowledge assessment regarding health care associated infections

2.2 Studies related to prevention of healthcare associated infections

Harbarth et al; 1996 conducted a one-week period-prevalence survey, aimed at assessing the scale of nosocomial infections, in medical, surgical, and intensive care wards of 4 Swiss university hospitals. A total of 176 nosocomial infections were found among 156 of the 1349 surveyed patients (prevalence

11.6%; interhospital range 9.8–13.5%). Surgical site infections were most prevalent (30% of all nosocomial infections), followed by urinary tract (22%), lower respiratory tract (15%), and bloodstream infections (13%). The most frequently isolated microorganisms were Enterobacteriaceae (n = 44; 28%), S. aureus (n = 20; 13%), Pseudomonas spp (n = 17; 11%), and Candida spp (n = 16; 10%). The overall prevalence of nosocomial infections in surgical patients (n = 562) was 16.2% compared to 8.6% for non-surgical patients (prevalence ratio, 1.9; 95% confidence interval [CI95], 1.4–2.5). This study offers a reliable measure of the prevalence of nosocomial infections in selected wards at 4 Swiss university hospitals and confirms the importance of nosocomial infections as a heavy burden on health services at the end of this century

2.2.1 Studies related to prevention of central venous catheter associated infections

Sarah et al; 2007, conducted a study to examine the extent to which US acute care hospitals have adopted recommended practices to prevent central venous catheter-related bloodstream infections. A survey of infection control coordinators was conducted at a national random sample of nonfederal hospitals with an intensive care unit and more than 50 hospital beds (n=600) and at all Department of Veterans Affairs (VA) medical centers (n=119). Primary outcomes were regular use of 5 specific practices and a composite approach for preventing catheter-related bloodstream infections. The overall survey response rate was 72% (n=516). The authors concluded that the most US hospitals are using maximal sterile barrier precautions and chlorhexidine gluconate, 2 of the most

strongly recommended practices to prevent catheter-related bloodstream infections

2.2.2 Studies related to prevention of ventilator associated infections

Labeau et al; (2007) assessed the knowledge of critical care nurses in preventing ventilator associated pneumonia using a questionnaire. Ten nursing related interventions were identified from a review of evidence-based guidelines for preventing ventilator-associated pneumonia. Researchers assessed the knowledge of 638 nurses who were working in critical care units in Belgium. The result of this study led to the detection of wide misconceptions among critical care nurses. Researchers concluded that, the result of survey could be used to focus educational programs on preventing ventilator-associated pneumonia.

Soh et al; (2006) conducted a study to assess critical care nurses knowledge in preventing nosocomial Pneumonia. This study was conducted in 134 critical care nurses in New Zealand. The objective of this was to identify knowledge deficits concerning nosocomial pneumonia preventions among critical care nurses. The study also determined whether nosocomial pneumonia knowledge was associated with nurse characteristics. The result of this study was the nosocomial pneumonia score ranged from 21% to 92%. The mean was 48%. Items related to knowledge about nosocomial pneumonia risk had highest mean score (67%) compared to items addressing. Nosocomial pneumonia prevention (43%) or the role of device in the transmission of the Nosocomial pneumonia (45%). No nurse demographic or workplace characteristic was associated with nosocomial pneumonia knowledge. And they 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.

2.2.3 Studies related to prevention of catheter-associated urinary tract infections

Niël-Weise & Broek; 2009, conducted a study to to determine certain catheter policies are better than others in terms of effectiveness, complications, quality of life and cost-effectiveness in long-term catheterized adults and children. All patients requiring long-term catheterization for urinary incontinence or retention that cannot be managed by another method were included in this study. All randomized and quasi-randomized trials comparing catheter policies (route of insertion and use of antibiotics) for long-term (more than 14 days) catheterization in adults and children. Data were extracted by both reviewers independently and compared. Disagreements were resolved by discussion. Data were processed as described in the Cochrane Handbook. If the data in trials have not been fully reported, clarifications were sought from the authors. When necessary, the incidence-density rates (IDR) and/or the incidence-density differences (IDD) within a certain time period were calculated. Seven trials met the inclusion criteria involving 328 patients in four crossovers and three parallel-group randomized controlled trials. Only two of the pre-stated six comparisons were addressed in these trials. Three trials compared antibiotic prophylaxis with antibiotics when clinically indicated. For patients using intermittent catheterization, there were inconsistent findings about the effect of antibiotic

prophylaxis on symptomatic urinary tract infection. For patients using indwelling urethral catheterization, one small trial reported fewer episodes of symptomatic UTI in the prophylaxis group. No eligible trials were identified that compared alternative routes of catheter insertion. The data from seven trials comparing differing antibiotic policies were sparse, particularly when intermittent catheterization was considered separately from in-dwelling catheterization. Possible benefits of antibiotic prophylaxis must be balanced against possible adverse effects, such as development of antibiotic resistant bacteria; these cannot be reliably estimated from currently available trials.

Getlife. & Newton ; 2006, conducted a study to examine the criteria and outcome measures used in reporting Catheter-associated urinary tract infection, to identify sources and quality of data recorded on Catheter-associated urinary tract infection and to determine a base-line prevalence rate for Catheter-associated urinary tract infection in community settings. A mapping exercise to identify local, national and international sources of data on for Catheter-associated urinary tract infections and a retrospective prevalence survey of for Catheter-associated urinary tract infection, recorded within three Primary Care Trusts in England during 1 month. The result of this study was; published or other recorded data on Catheter-associated urinary tract infections in community settings were very limited. Criteria and outcome measures were variable and commonly failed to distinguish between symptomatic and asymptomatic Catheter-associated urinary tract infections. A prevalence rate of 8.5% was determined by retrospective survey of patient records.

2.3 Studies related to knowledge assessment regarding health care associated infections

Asteria et al ;(2008) conducted a study to assess nurses knowledge, clinical practice and patients views in preventing ICU infections in Tanzanian nurses. Aim of this study was to investigate nurses' knowledge and clinical practice regarding care of patients with ICU in prevention of nosocomial infections and to investigate patients' views regarding the care given relating to ICUs, in a developing country. The study had a descriptive and an observational design and was performed in hospitals in Dar es salaam, Tanzania. And researchers selected 150 nurses and 60 inpatients in ICU. Nurses' knowledge regarding indwelling catheter care was assessed using a structured questionnaire and patients views about ICU were investigated by interviewing the patients using a specific interview guide containing questions; the researcher interviewed the patients verbally and wrote down each response immediately. The main results showed that the overall knowledge was good, but there was a discrepancy between their knowledge and clinical practice in areas such as hand washing and stabilizing of catheter. Also, the patients expressed frustration regarding the care of ICU. Daily care of patient in this study appeared to be insufficient in relationship to the nursing hygiene. The conclusion of this study was most of the problems found were related to the logistic of the wards and lack of staff, which are risk factors in causing nosocomial infections in patients.

Labeau et al; (2007) assessed the knowledge of critical care nurses in preventing Infections Associated with Central Venous Catheters using a questionnaire. Ten nursing related interventions were identified from a review of evidence-based guidelines for Infections Associated with Central Venous Catheters. Researchers assessed the knowledge of 762 nurses who were working in critical care units in Belgium. The result of this study led to the detection of wide misconceptions among critical care nurses. Researchers concluded that, the result of survey with this questionnaire could be used to focus on better educational programs on Infections Associated with use of Central Venous Catheters

Csomós et al; (2006) conducted a study to determine intensive care unit (ICU) nurses' knowledge of evidence-based guidelines for preventing central venous catheter (CVC) related infection. Researchers used a validated multiple-choice questionnaire that was distributed to 178 Hungarian nurses in 11 intensive care units. The result showed that Knowledge regarding CVC-related infection is poor among Hungarian nurses. Researchers concluded that Prevention guidelines should be included in the nurse education curriculum as well as in continuing refresher nursing education programs.

CHAPTER III

METHODOLOGY

3.1 Introduction

This chapter provides a brief description of different steps taken to conduct this study. It deals with the research approach, research design, setting, the sample and sampling technique, development of tool, description of tool, pilot study, data collection procedure and plan of analysis.

3.2 Research approach

This survey approach was selected as objective of study were based on Neuro Nurses Knowledge regarding Prevention of health care associated infections in NSICU and NSWRD at Srēe Chitra Tirunal Institute for Medical Sciences & Technology (SCTIMST), Trivandrum.

3.3 Settings of the study

The study was conducted in NSICU and NSWRD at Sree Chitra Tirunal Institute for Medical Sciences & Technology (SCTIMST), Trivandrum.

3.4 Sample and Sampling Techniques

A purposive sampling technique was used to collect the samples. The samples were selected from the nursing staff working in NSICU and NSWRD of

Sree Chitra Tirunal Institute for Medical Sciences & Technology (SCTIMST), Trivandrum. The size of the sample was 38. The duration of study period was from August 2009 to 0ctober 2009.

3.5 Criteria for sample collection

3.5.1 Inclusion Criteria

Nursing staff working in NSICU and NSWRD of Sree Chitra Tirunal Institute for Medical Sciences & Technology (SCTIMST), Trivandrum.

3.5.2 Exclusion Criteria

Nursing staff working in departments other than NSICU and NSWRD .

3.6 Development of Tool

Data collection tool refers to instrument, which was constructed to obtain relevant data. An extensive review and study of literature helped in preparing items for tool. The investigator used a self-prepared questionnaire as tool for the study. The tool was validated by experts of Sree Chitra Tirunal Institute for Medical Sciences & Technology (SCTIMST), Trivandrum.

3.7 Description of Tool

The tool used in the present study consisted of two parts.

Part I

Part one Consists of Socio demographic data such as Age, Sex, professional qualification, place of work, experience in years and experience in Neuro Surgery Unit.

Part II

Knowledge was assessed by using a self-prepared questionnaire with multiple-choice questions with 4 responses was developed for each item on the list. For each test item, the response alternatives included the phrase "I do not know" to avoid gambling by the respondents.

Part II consist of three sections;

- Prevention of central venous catheter associated infections
- Prevention of ventilator associated infections
- Prevention of catheter associated urinary tract infections

Each section contains five questions. 15 minutes was given to answer the questionnaire, each correct answer carry one mark, wrong answers carry

Zero marks and 'I don't know' answers was also evaluated as zero. Marks was converted into percentage.

Less than 40% = Below average

40-59% = Average

60-80%= Good

Above 80%= Very Good

3.8 Pilot Study

A pilot study was conducted to find out the feasibility and practicability of the tool and methodology. Ten nursing students were taken for pilot study. The time taken for answering the questionnaire was about 10-15 minutes. The pilot study samples were excluded from the main study.

3.9 Data Collection

For data collection, formal permission was obtained from the authorities. Data was collected during the month of October 2009. The investigator first introduced and explained the need and purpose of study. The nursing staff was interviewed with the self prepared tool. The time taken for answering the questionnaire was about 15 minutes

3.10 Plan of Analysis

The investigator developed a plan for data analysis after the pilot study. The data obtained from the nursing staff was analyzed by descriptive statistics and is presented in the form of bar and pie diagram

3.11 Summary

The Chapter presented the research approach used for the study research design of the study, setting of the study, sample and sampling techniques development of description of tool, pilot study, data collection procedure and plan of analysis.

CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

4.1 Introduction

Analyses are a process of organizing and synthesizing data in such a way research questions can be answered. The questionnaire was based on prevention of central venous catheter associated infections, prevention of ventilator-associated infections and prevention of catheter associated urinary tract infections. Interpretation refers to a process of making sense of the result and examining the implications of the findings in a boarder context. This chapter will analysis and interprets data collected from 38 staff nurses working in NSICU & NSWRD of SCTIMST, Trivandrum. The aim of this study was to assess the Neuro Nurses knowledge regarding prevention of Healthcare Associated infections.

The findings of the study was arranged and analysed under the following sections.

4.2 Distribution of sample according to demographic data.

4.3 Neuro nurses knowledge in prevention of health care associated infections

4.2 Distribution of sample according to demographic data.

The age of the nurses ranged from 23 to 52 with a mean of 35.42.

Table 4.1 Distribution of samples by age

Age group	Frequency	Percentage
<30 years	14	36.84
31-40 years	14	36.84
>55 years	10	26.31
Total	38	100%

The data given Table 4.1 shows that majority of nurses (73.68%) were below the age of 40 years.

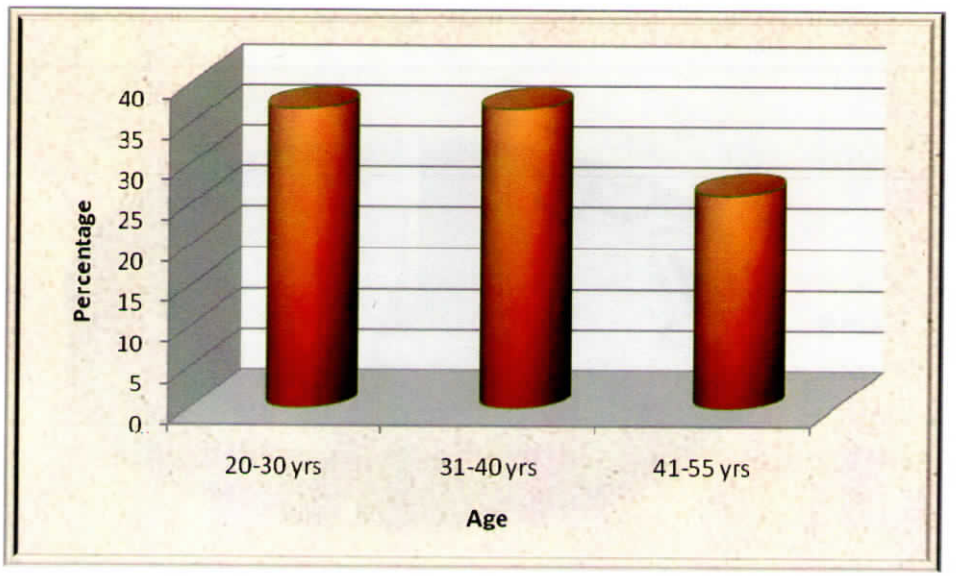

Figure 4.1 shows the distribution of samples by age

Distribution of sample according to area of work is given in Table 4.2

Table 4.2 Distribution of samples by area of work

Area of work	Frequency	Percentage
NSICU	20	52.63
NSWRD	18	47.36
Total	38	100%

Table 4.2 shows that distribution of samples 52.63% from NSICU and 47.36% from NSWRD.

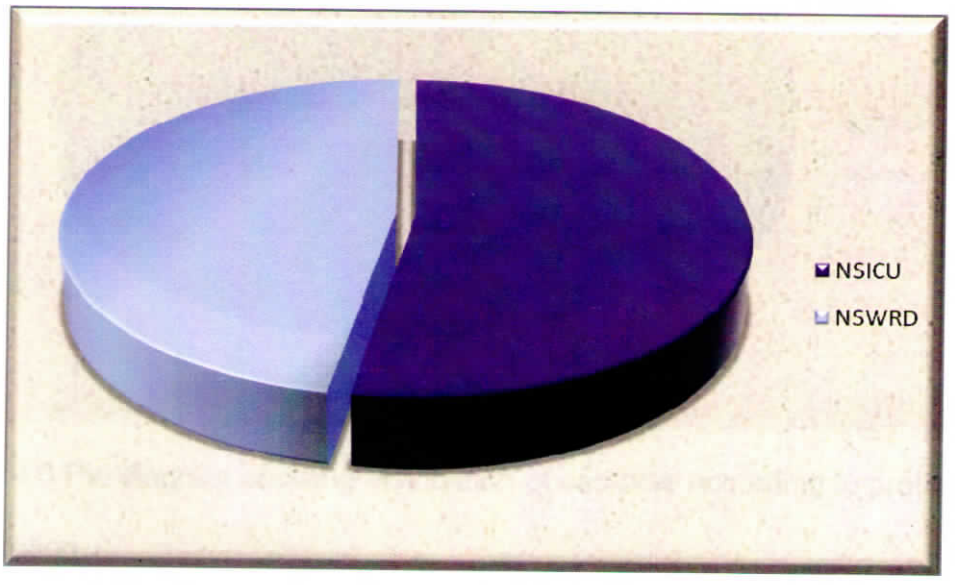

Figure 4.2 Pie Diagram showing distribution of samples according to the area of work

Distribution of samples according to the professional qualification is given in Table 4.3 and Figure 4.3

Table 4.1 Distribution of samples by professional qualification

Professional Qualification	Frequency	Percentage
GNM	27	71.1%
B Sc (N)	11	28.9%
Total	38	100%

Table4.3 shows that 71.1% of samples having professional qualification of GNM and 28.9% having B.Sc (N).

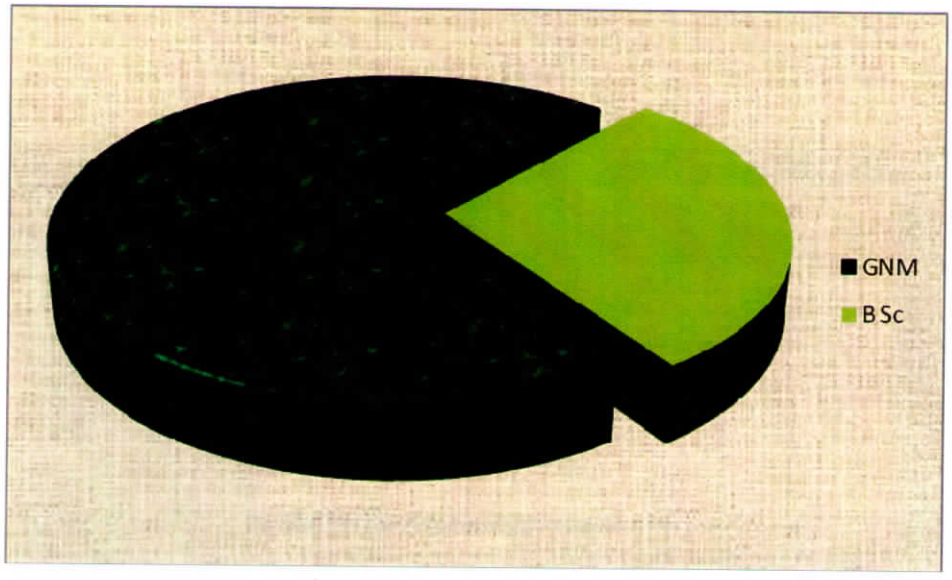

Figure 4.3 Pie diagram showing distribution of samples According to professional qualification

Distribution of samples according to Experience is given in Table 4.4

Table 4.2 Distribution of samples by Experience

Experience	Frequency	Percentage
0-5 years	10	26.31%
6-10 years	6	15.79%
11-15 years	9	23.68%
16-20 years	11	28.94%
21-25 years	0	0.00%
26-30 years	2	5.26%
Total	38	100%

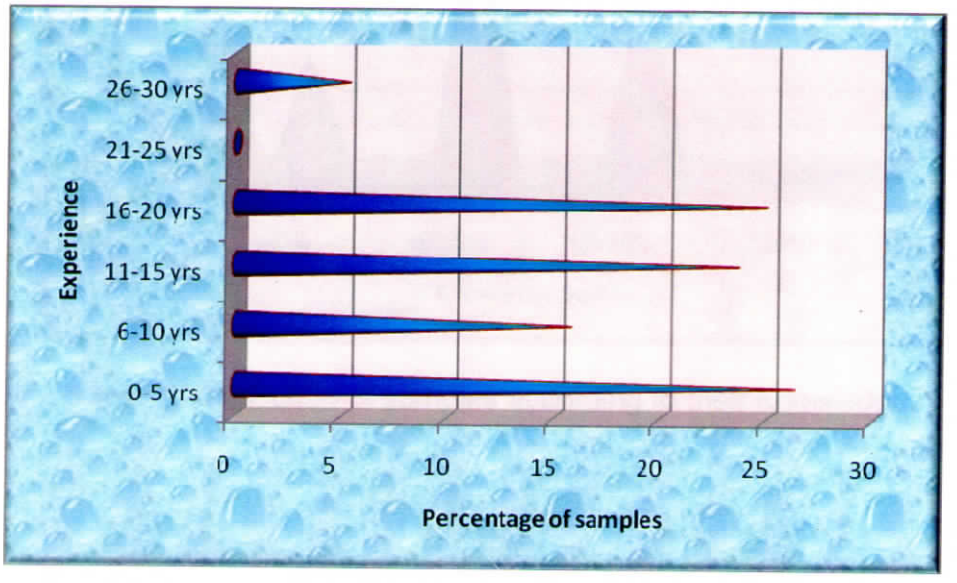

Figure 4.4, shows distribution of samples according to Experience

4.3 Neuro nurses knowledge regarding Prevention of Healthcare associated infections

Table 4.5. Distribution samples according to their knowledge scores

Knowledge	Frequency	Percentage
<40%	7	18.42%
40-59%	18	47.37%
60-80%	12	31.58%
>80%	1	2.63%

Table 4.5 Shows that 31.58% of samples had good knowledge, 47.37% of samples had average knowledge and 2.63% of samples had very good knowledge. 18.42% had below average knowledge.

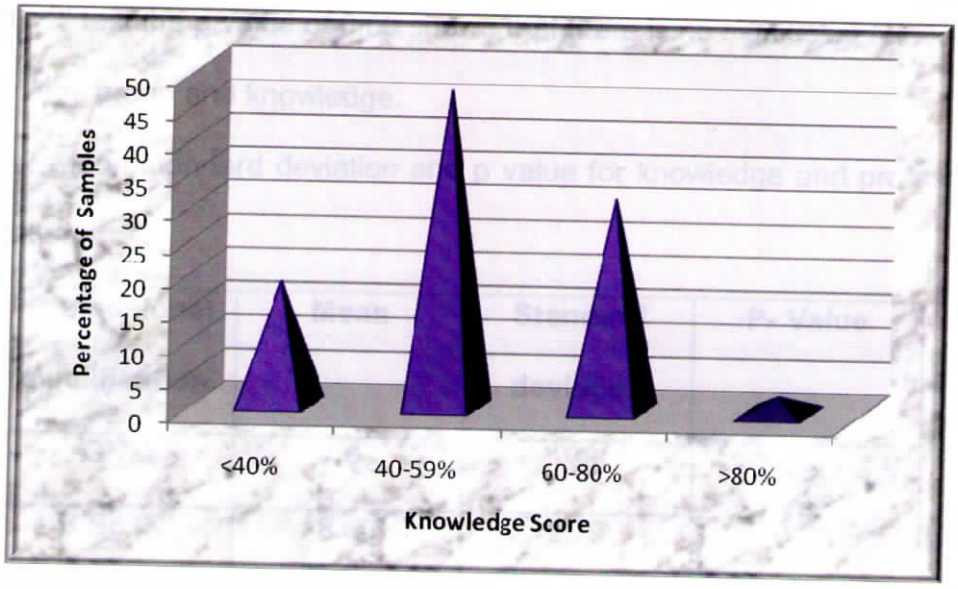

Figure 4.5 shows distribution of samples according to their Knowledge.

Table 4.6 Mean, standard deviation and p value for knowledge and age group.

Age in Years	Mean Knowledge	Standard deviation	P- value
<35	7.50	2.79	0.69
>35	7.20	1.64	

Table 4.6 shows the relationship between age group below mean & above mean and marks. With in the age group below mean having 18 samples with mean of mark 7.5 and standard deviation 2.79. And in the age group above median having 20 samples with mean mark of 7.20 and standard deviation is 1.64 In Student's 't' test the p value of 0.69 shows that there is no significant relationship between age group and knowledge.

Table 4.7 Mean standard deviation and p value for knowledge and professional Qualification.

Professional Qualification.	Mean	Standard deviation	P- Value
GNM	7.07	1.96	
B.Sc (N)	8.00	2.79	0.25

Table 4.7 shows the relationship between professional qualification and knowledge. Samples with GNM qualification had a mean score of 7.07 and standard deviation of 1.96 Samples with B Sc (N) qualification had a mean score of 8.00 and standard deviation of 2.79. There was an increase in the mean

knowledge score of samples with B Sc (N) qualification though it was not statistically significant at 0.05 levels in students t test. (p=0.25)

Table 4.8 Mean standard deviation and p value for Knowledge and Experience in years.

Experience in years	Mean	Standard Deviation	P-Value
<15 Years	7.32	2.39	0.93
>15 Years	7.38	1.98	

Table4.9 shows relationship between knowledge and experience. In the group with experience <15 years, the mean score was 7.32 and standard deviation 2.39. In-group with experience >15 years mean score was 7.38 and standard deviation is 1.98. In Students t test' the p value is 0.93 shows that there is no significant statistical relationship between knowledge and experience.

4.4 Summary

This chapter deals with analysis and interpretation of data collected from 38 Neuro Nurses of SCTIMST; TVM. Descriptive inferential statistics were use for the analysis. Bar and pie diagram were used to illustrate the findings of the study.

CHAPTER V

Summary, Conclusions, Discussion and Recommendations

5.1 Introduction

A brief account of the study is given in this chapter, which cover objectives, findings of the study and possible application of the result. Recommendation for future research and suggestion for improving the present study are also presented.

5.2 Summary

This study was conducted with the objectives to assess the knowledge regarding prevention of Healthcare associated infections among neuro nurses and to identify the relationship between selected variables. A review of related research literature helped the investigator to get a clear concept about the topic under taken, as well as to develop tools, methodology of the study and decide plan of data analysis

The study was conducted in NSICU and NSWRD of SCTIMST; the size of the sample was 38. Staff nurses who are working in NSICU and NSWRD were included in this study. The duration of the study was from August 2009 to October 2009. A self-prepared questionnaire was used for collecting data, it contains 15 questions regarding prevention of healthcare associated infections and demographic data were also collected. The data was analyzed and interpreted using descriptive statistics.

5.3 Objectives of the study

- To assess neuro nurses knowledge regarding prevention of healthcare associated infections.
- To develop a protocol for neuro nurses in the prevention of healthcare associated infections.
- To assess the relationship between neuro nurses knowledge regarding prevention of healthcare associated infection and selected variables.

5.4 Limitation.

The study is limited to staff nurses working in NSICU, and NSWRD of SCTIMST

5.5 Major findings of the study.

Knowledge of 38 neuro nurses regarding prevention of healthcare associated infection ranged from 20% to 86.66%. 78.95% of the samples had above average level of knowledge. 2.63% had very good knowledge. The age of the nurses ranged from 23 to 52 with a mean of 35.42. Student's t test shows that there is no significant relationship between knowledge and selected variables (Age, Professional qualification and years of experience). There was an increase in mean knowledge score of samples with B Sc (N), but it was not statistically significant at 0.05 level (p=. 25)

5.6 Recommendations

Keeping in mind the findings and limitations of the study, the following recommendation were made for future research.

- Similar study would be reported in other intensive care units and wards of this institute.
- Similar study can be reported by increasing the size of the sample.

5.7 Discussion.

There are many studies related healthcare associated infections among nurses. This present study emphasized to assess the knowledge regarding prevention of healthcare associated infections among neuronurses using a self-prepared questionnaire. The present study revealed that there is no significant statistical relationship between nurses' knowledge and selected variables and 78.95% of the samples had average or good knowledge and 2.63% had very good knowledge. Labeau.,et al (2007) conducted a study to asses the critical care nurses knowledge of evidance based guidlines for preventing ventilator associated pneumonia revealed that the quality of the response alternatives led to the detection of widespread misconceptions among critical care nurses.

5.8 Conclusion.

Based on the findings of the study, the following conclusions were drawn. The knowledge of nurses working in NSICU and NSWRD regarding preventions of healthcare associated infections shows that majority of the samples had above average level of knowledge. There was no significant difference between knowledge of nurses regarding preventions of healthcare associated infections with regard to their age, professional qualification and experience.

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PROTOCOL FOR PREVENTION OF HEALTH CARE ASSOCIATED INFECTIONS

Prevention of healthcare associated infections include four distinct intervention

- hand hygiene
- the use of personal protective equipment
- the safe use and disposal of sharps
- education of patients and healthcare personnel.

Hand hygiene

- Hands must be decontaminated immediately before each and every episode of direct patient contact or care and after any activity or contact that could potentially result in hands becoming contaminated.
- Hands that are visibly soiled, or potentially grossly contaminated with dirt or organic material, must be washed with liquid soap and water.
- Hands must be decontaminated, preferably with an alcohol-based hand rub unless hands are visibly soiled, between caring for different patients or between different care activities for the same patient.
- Before regular hand decontamination begins, all wrist and ideally hand jewellery should be removed. Cuts and abrasions must be covered with waterproof dressings. Fingernails should be kept short, clean and free from nail polish.
- An effective hand washing technique involves three stages: preparation, washing and rinsing, and drying. Preparation requires wetting hands under tepid running water **before** applying liquid soap or an antimicrobial

preparation. The hand wash solution must come into contact with **all** of the surfaces of the hand. The hands must be **rubbed** together vigorously for a minimum of 10-15 seconds, paying particular attention to the tips of the fingers, the thumbs and the areas between the fingers. Hands should be rinsed thoroughly before drying with good quality paper towels.

- When decontaminating hands using an alcohol handrub, hands should be free from dirt and organic material. The handrub solution must come into contact with all surfaces of the hand. The hands must be **rubbed** together vigorously, paying particular attention to the tips of the fingers, the thumbs and the areas between the fingers, until the solution has evaporated and the hands are dry.

Use of personal protective equipment

- Gloves must be worn for invasive procedures
- Disposable plastic aprons should be worn when there is a risk that clothing may become exposed to blood, body fluids, secretions or excretions, with the exception of sweat.
- Face masks and eye protection must be worn where there is a risk of blood, body fluids, secretions or excretions splashing into the face and eyes.
- Gloves aprons and face masks must be disposed of as clinical waste and hands decontaminated after the gloves have been removed.

Safe use and disposal of sharps

- Needles must not be recapped, bent, broken or disassembled before use or disposal.
- Used sharps must be discarded into a sharps container

Care of patients with urinary catheters

- All catheterizations carried out by healthcare personnel should be aseptic procedures.
- For urethral catheterizations, the meatus should be cleaned before insertion of the catheter
- Indwelling catheters should be connected to a sterile closed urinary drainage system
- Urinary drainage bags should be positioned below the level of the bladder, and should not be in contact with the floor.
- Urine samples must be obtained from a sampling port using an aseptic technique.
- The urinary drainage bag should be emptied frequently enough to maintain urine flow and prevent reflux, and should be changed when clinically indicated.
- Bladder instillations or washouts must not be used to prevent catheter-associated infection.
- Catheters should be changed only when clinically indicated

Care of patients with central venous catheters

- An aseptic technique must be used for catheter site care and for accessing the system.

- A Sterile, transparent, semi permeable polyurethane dressing should be used to cover the catheter site and should be changed every 7 days or indicated.
- An aqueous solution of chlorhexidine gluconate should be used to clean the catheter site during dressing changes

Care of patients on ventilator

- In the absence of medical contraindications, elevate head of the bed at an angle of 30-45 degrees for a patient at high risk for aspiration
- Less frequent changes do not lead to increased incidence of ventilator-associated pneumonia. Circuit changes should occur when visibly soiled rather than routinely
- Closed Sterile suction system should be used

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A Questionnaire to Assess the Knowledge Regarding Prevention of Healthcare Associated Infections.

SOCIO DEMOGRAPHIC DATA

AGE : ☐ YEARS

SEX : MALE ☐ FEMALE ☐

QUALIFICATION : GNM ☐ BSc.Nursing ☐ MSc.Nursing ☐

ADITIONAL QUALIFIATION if any :

PLACE OF WORK : NSICU ☐ NSWRD ☐

YEARS OF EXPERIENCE : ☐ YEARS

EXPERIENCE IN NEURO SURGERY : ☐ YEARS

(Please mark (√) the most appropriate answer for the following questions)

PREVENTION OF CENTRAL VENOUS CATHETER ASSOCIATED INFECTIONS.

1. What is the ideal time to replace CVP pressure transducers and tubing?

   A. Every 4 days
   B. Every 8 days
   C. Only when indicated
   D. I do not know

2. What is the ideal time to change the dressing on the catheter insertion site?

   A. On a daily basis
   B. Every 3 days
   C. When indicated and at least weekly
   D. I do not know

3. What dressing should be used to cover the catheter insertion site?

A. Polyurethane dressing
B. Gauze dressing
C. Both are recommended
D. I do not know

4. What disinfectant should be used to clean the catheter insertion site?

A. 2% aqueous chlorhexidine
B. 0.5% alcoholic chlorhexidine
C. 10% povidone-iodine
D. I do not know

5. What antibiotic ointment should be applied at the catheter insertion site?

A. Povidone Iodine
B. Metrogyl gel
C. Not required
D. I do not know

Prevention of ventilator associated infections

1. What is the ideal time to change the ventilator circuit?

A. Every 48 hours (or when clinically indicated)
B. Every week (or when clinically indicated)
C. For every new patient (or when clinically indicated)
D. I do not know

2. What type of airway humidifier should be used in ventilator?

A. Heated humidifiers
B. Heat and moisture exchangers
C. Both types
D. I do not know

3. What is the ideal time to change ventilator humidifiers?

A. Every 48 hours (or when clinically indicated)
B. Every 72 hours (or when clinically indicated)
C. Every week (or when clinically indicated)
D. I do not know

4. What type of suction system should be used in ventilator patients?

A. Open suction systems
B. Closed suction systems
C. Both systems can be used
D. I do not know

5. What is the ideal position for a patient on mechanical ventilation?

A. Supine position is recommended
B. Semi recumbent position is recommended
C. Prone position
D. I do not know

Prevention of catheter associated urinary tract infections

1. What type of antiseptic solution should be added into the urinary drainage bag to prevent urinary tract infection?

A. Povidone Iodine
B. 2% aqueous chlorhexidine
C. Not recommended
D. I do not know

2. What is the ideal time to change urinary catheter?

A. Every week
B. Every month
C. Only when indicated
D. I do not know

3. What type of drainage system should be used in patients with continuous bladder drainage system?

A. Sterile Open drainage systems
B. Sterile Closed drainage systems
C. Both systems Can be used
D. I do not know

4. What should be the level to place the urine bag?

A. Above the level of patient's bladder.
B. At the level of patient's bladder
C. Below the level of patient's bladder.
D. I do not know

5. What type of bladder irrigation should be used for patients on Continuous bladder drainage to prevent infection?

A. Continuous irrigation with antiseptic solution
B. Intermittent irrigation with antiseptic solution
C. No irrigation is recommended
D. I do not know