A STUDY TO ASSESS THE KNOWLEDGE REGARDING 2009 GUIDELINES OF CATHETER ASSOCIATED URINARY TRACT INFECTION AMONG NEURO NURSES IN SCTIMST, TRIVANDRUM 695011

PROJECT REPORT

Submitted in partial fulfillment of the requirements for the Diploma in Neuro Nursing

Submitted By

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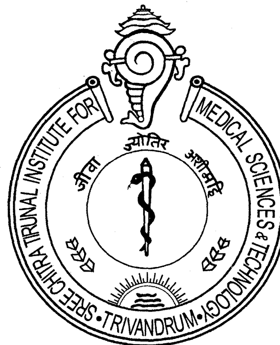

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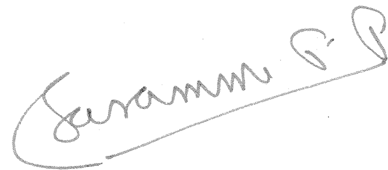
November 2011

CERTIFICATE FROM SUPERVISORY GUIDE

This is to certify that **Miss. Gayathry L** has completed the project work on "A study to assess the knowledge regarding 2009 Guide lines of Catheter Associated Urinary tract infections among nurses in Neurosurgery ICU at SCTIMST" under my direct supervision and guidance for the partial fulfillment of the Diploma in Neuro Nursing in the University of SCTIMST, Thiruvananthapuram. It is also certified that no part of the report has been included in any other thesis for procuring any other degree by the candidate.



Thiruvananthapuram
November 2011

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CERTIFICATE FROM THE CANDIDATE

This is to certify that the project report on " A STUDY TO ASSESS THE KNOWLEDGE REGARDING 2009 GUIDELINES OF CATHETER ASSOCIATED URINARY TRACT INFECTIONS AMONG NURSES IN NSICU" 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. It is also certified that this work has not been presented previously to any university for award of a degree, diploma, fellowship or other recognition.

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APPROVAL SHEET

This is to certify that Miss. Gayathry. L bearing code no: 6215, has been admitted to the Diploma in Neuro Nursing, in January 2011 and she has undertaken the project entitled "A study to assess the knowledge regarding 2009 Guidelines of catheter associated urinary tract infections among Nurses in Neuro surgery ICU at SCTIMST, Thiruvananthapuram, which is approved for the Diploma in Neuro Nursing, awarded by the Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, and is found satisfactory.

Place:

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

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GAYATHRY. L

ABSTRACT

Topic: "A study to assess the knowledge regarding 2009 Guidelines of Catheter Associated Urinary tract infection among Neuro Nurses".

Background: Urinary tract infections are the most common type of healthcare associated infections (HAI). 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 HAI. **Aim**: The objectives of the study were to assess the Neuro Nurses knowledge regarding 2009 Guidelines of Catheter associated urinary tract infections, to assess the relationship between Neuro Nurses knowledge regarding guidelines of CAUTI and selected variables. **Method:** This study was conducted in NSICU at SCTIMST; Trivandrum. Thirty Neuro Nurses were selected conveniently for this study. The total period of the study was from August to November 2011. A validated self-prepared questionnaire was used to assess the knowledge. **Results**: Eighty-five percentages (85%) of samples had above average knowledge and there was no statistically significant difference between the mean knowledge score with the age group, experience and job status.

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LIST OF ABBREVATIONS

CAUTI	Catheter Associated Urinary Tract Infections.
SCTIMST	Sree Chitra Tirunal Institute for Medical Science and Technology
GNM	General Nursing and Midwifery
HAI	Hospital Acquired Infections
IUC	Indwelling Urinary Catheter.
ICU	Intensive Care Unit

Chapter - 1
INTRODUCTION

1.1 Introduction

Nosocomial or hospital-acquired infections are called Health care associated infections (Burke 2003). Urinary tract infection (UTI) is the most frequent healthcare associated infection (HAI) (Stephan 2006). Presence of an indwelling urinary catheter is the main risk factor for infection (Tambyah 2001). Urinary catheterization is a common management option for bladder dysfunction. The incidence of UTI that increased during hospitalization is usually associated with catheterization procedures, and possibly from inadequate catheter care. Approximately 25% of patients cared for in acute care hospitals will have an indwelling catheter at some point in their hospital admission (Newman 2007) CAUTI is one of the commonest type of infection that are acquired in hospitals (Crouzet 2007). Catheter-associated urinary tract infection (CAUTI) is a well-recognized source of increased morbidity and economic burden in acute care services (Getliffe 2006). The greatest common strength of the guidelines relates to strategies to avoid unnecessary catheterization and to remove urinary catheters that are no longer necessary. UTI that occurs have an indwelling urinary catheter in place with in the 48-hour period before the onset of UTI. The diagnosis of UTI is typically confirmed on the basis of certain number of microorganisms in the urinary system. The patient with untreated UTI has potential for serious complications.

To deal with the CAUTI, long-term use of systemic antibiotic prophylaxis in patients with indwelling urinary catheter may pay some effort in protection and maintaining a good standard of care in the drainage system, is vital in reducing the incidence of CAUTI (Darouiche 2006). So it is important for the health care providers to develop a CAUTI preventive guideline in hospitals.

1.2 Background of the Study

Urinary tract infections are the most common type of hospital-acquired infection, accounting for more than 40% of all nosocomial infections (Parker 2009). Virtually all healthcare-associated UTIs are caused by instrumentation of the urinary tract. Catheter-associated urinary tract infection (CAUTI) has been associated with increased morbidity, mortality, hospital cost, and length of stay. In addition, bacteriuria commonly leads to unnecessary antimicrobial use, and urinary drainage systems are often reservoirs for multidrug-resistant bacteria and a source of transmission to other patients. The daily risk of bacteriuria with catheterization is 3% to 10% (HICPAC 2009).

Proper techniques of catheter insertion, catheter maintenance and the proper use of catheter materials (such as antiseptic-impregnated catheters) will reduce the rate of CAUTI (HICPAC 2009)

Long-term catheterization is commonly used management option for older people and short-term catheterization is used in pre-op and post-op periods. Use of indwelling urinary catheter can lead to complications, most commonly Catheter-associated urinary tract infections. Duration of catheterization is the major risk factor. These infections can result in sepsis, prolonged hospitalization additional hospital costs, and morbidity (Elpern 2009). In non-acute care settings clean techniques used for intermittent catheterization is an acceptable and more practical alternative to sterile technique for patients requiring chronic intermittent catheterization (HICPAC 2009).

There are several well-documented risk factor for CAUTI. These include malnutrition, an underlying chronic condition such as diabetes, bacterial infections, and poor catheter care. The two main risk factor for the development of CAUTI are female gender and prolonged catheterization. CAUTIs are also associated with recurrent catheter encrustation and blockage.

The majority of the existing research on CAUTI has been conducted in acute care settings where catheters usually remain in place for <14 days, and the health of many patients is already compromised by co-morbidities. Much less is known about the prevalence of CAUTIs and other HAIs in primary and community care settings or about the potential for reduction in CAUTI and improved cost-benefits in the long-term catheterised population [Nicolle 2001].

In a recent study of 4010 older people (>65 years) receiving home care in 11 European countries, the prevalence of indwelling catheter use was 5.4% (range 0–23%), and the risk of a urinary tract infection was 6.5 times greater than that for non-catheterised individuals [Sorbye 2005]. Another study of 1004 frail older women living in the community reported a catheter prevalence rate of 38.1%. Prevalence of a urinary tract infection was 21% versus 10% in non-catheterised subjects ($P>0.001$), and catheterised subjects were more likely to die within a year (RR 1.44; 95% CI 1.01–2.07) [Landi 2004]. Calls have been made for further research in key areas of catheter care to include epidemiological studies of prevalence and incidence of bacteriuria and clinical UTI (asymptomatic and symptomatic CAUTI) during long-term catheterisation in different populations and different care settings.

1.3 Need and Significance of the Study

The affirming needs to prevent CAUTI by taking good care of the patients with the urinary drainage system. It is very important for the health care providers to develop guidelines on best practice of CAUTI preventive interventions in hospitals. This can avoid hospital-acquired infections and to identify gaps and controversy issues through the good use of best available evidence.

Maintaining a closed sterile drainage system is described as the most successful method to reduce the incidence of CAUTI, and is strongly

recommended for the control of CAUTI (Leone 2003). For the hospital the highest effectiveness of CAUTI preventive care on urinary drainage system can improve current practice and the quality of care. The hospitalization length of stay for managing CAUTI can also be reduced.

In our hospital settings after surgery, some of the neurological patients are hospitalized for a prolonged time. As a result of prolonged hospitalization there is a chance of getting many complications. In SCTIMST,so many studies have been conducted regarding these complications .But a very few studies have been conducted on CAUTI.

1.4 Statement of the Problem

A Study to assess the knowledge regarding "2009 Guidelines of CAUTI among Nurses in Neurosurgery ICU"

1.5 Objectives

1. To assess the knowledge of neuro nurses regarding 2009 guidelines of Catheter associated urinary tract infection.
2. To assess the Neuronurses' knowledge on 2009 Guidelines of CAUTI and its relation ship with the selected variables.

1.6 Operational Definition

Knowledge ; Information and skills acquired through experience or education.

Neuro nurses: Those who are working in neuro department. It may be temporary, permanent and student nurses

1.7 Methodology

Study samples; Nurses in Neurosurgery ICU at SCTIMST. Descriptive Survey approach is used to collect data.

1.8 Tool

A self structured Questionnaire.

1.9 Delimitations

The study is delimited to assessing knowledge of nurses working in Neurosurgery ICU only.

1.10 Organization of the Report

This chapter deals with the introduction, background of the study, need and significance of the study, statement of the problem, objectives, operational definitions, methodology and delimitations. Chapter 2 deals with the review of literature. Chapter 3 deals with the methodology. Chapter 4 deals with the analysis and interpretation of data. Chapter 5 includes summary, discussion, conclusion and recommendations. References and appendix are given towards the end.

Chapter - 2
REVIEW OF LITERATURE

2.1 Introduction

Review of literature can serve a number of important functions in the research process. It is the critical summary of research on a topic of interest, often prepared to put a research problem in context. Literature review help to lay the foundation for a study, and can also inspire into the problem and help 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 section.

2.2 Studies on preventive measures of Catheter Associated urinary tract infections.

2.3 Studies on knowledge and practice of Catheter Associated urinary tract infections.

2.4 Summary

2.2 Studies on Preventive Measures o f Catheter Associated Urinary Tract Infections

Parker et al; (2009) conducted a study about nursing actions for prevention of CAUTs, were identified based on search of electronic databases and Web-based search engines for national or international clinical practice guidelines. Evidence related to two common nursing interventions, selection of the material of construction and selection of catheter size, was identified by searching electronic databases. The result was, insertion of a silver alloy-coated catheter to reduce the risk of CAUTIs for up to 2 weeks in adult patients

managed by short-term indwelling catheterization and also found evidence supporting the insertion of an antibiotic-impregnated catheter for reduction of CAUTI risk for up to 7 days. There was insufficient evidence to determine whether regular use of an antimicrobial catheter reduces the risk of CAUTIs in adults managed with long-term indwelling catheterization and to determine whether selection of a latex catheter, hydrogel-coated latex catheter, silicone-coated latex catheter, or all- silicone catheter influences CAUTI risk. The researchers concluded as insertion of antimicrobial catheter is recommended for patients with short-term indwelling catheterization. Selection of smaller French sizes for short or long-term catheterization is thought to improve comfort and reduce CAUTI risk.

Elpern et al; (2009) conducted a study to implement and evaluate the efficacy of an intervention to reduce catheter-associated urinary tract infections in a medical intensive care unit by decreasing use of urinary catheters. Indications for continuing urinary catheterization with indwelling devices were developed by unit clinicians. For a 6-month intervention period, patients in a medical intensive care unit who had indwelling urinary catheters were evaluated daily by using criteria for appropriate catheter continuance. Recommendations were made to discontinue indwelling urinary catheters in patients who did not meet the criteria. Days of use of a urinary catheter and rates of catheter-associated urinary tract infections during the intervention were compared with those of the preceding 11 months. The results was, during this study period, 337 patients had a total of 1432 days of urinary catheterization. With use of guidelines, duration of use was significantly reduced to a mean of 238.6 d/mo from the previous rate of 311.7 d/mo. The number of catheter-associated urinary tract infections per 1000 days of use was a mean of 4.7/mo before the intervention and zero during the 6-month intervention period. The researchers concluded that implementation of an intervention to judge appropriateness of indwelling urinary catheters might result in significant reductions in duration of catheterization and occurrences of catheter-associated urinary tract infections.

Ljubovic et al; (2009) conducted a study on catheter-related urinary tract infection in patients suffering from spinal cord injuries. In this study the researchers selected 145 patients suffering from spinal cord injuries, admitted to the Institute for physical medicine and rehabilitation, Centre for paraplegia of the Clinical Centre of the University of Sarajevo. The objective of this study was the update of etiology and antimicrobial susceptibility in urinary tract infections in this group of patients. In addition, possible correlations between UTI and the type of bladder management were examined. The patients were divided in three groups according to the method of bladder drainage: Group A (n=61) consisted of patients on clean intermittent catheterization; Group B (n=54) consisted of patients with indwelling catheters; Group C (n=30) consisted of patients who had performed self-catheterization. From a total of 4539 urine samples, 3963 (87,3%) were positive and 576 (12,7%) were sterile. More than 90% of the infected patients were asymptomatic. The overall rate of urinary infection amounted to about 2;1 episodes, and bacteriuria to 8;1 episodes per patient. 77% of infections (113/145) were acquired within seven days from catheterization. Infection was usually polymicrobial; the greatest number of urine samples 1770/3943 (44.9%) included more than one bacterium. The vast majority of cases of urinary tract infection and bacteriuria were caused by Gram-negative bacilli and enterococci, commensal organisms of the bowel and perineum, representative of those from the hospital environment. Providencia stuarti (18.9%) being the most common, followed by Proteus mirabilis (16.3%), Escherichia coli (11.8%), Pseudomonas aeruginosa (10.2%), Klebsiella pneumoniae (8.1%), Morganella morgani (5.4%), Acinetobacter baumannii (4.6%), Providencia rettgeri (3.5%). 15.7% of isolates were Gram-positive with Enterococcus faecalis (8.6%) as the most common. 55.3% of isolates were multidrug-resistant, and the highest rates of resistance were found among Acinetobacter baumannii (87.8%), Providencia rettgeri (86.7%), Pseudomonas aeruginosa (85.4%), Providencia stuarti (84.3%) and Morganella morgani (81.0%). Lower rates of resistance were found in Group C, i.e. patients on intermittent self-catheterisation. Eradication of organisms was

achieved in only 53 (10.05%) of patients; hence, antibiotic therapy had no or very low effect. Significant correlations were found between the method of catheterization and the frequency of bacteriuria and urinary tract infections. The analysis of Group C showed a rate of lower urinary tract infection and bacteriuria than the other two Groups of patients.

Saint S et al; (2008) conducted a study to Preventing Hospital-Acquired Urinary Tract Infection in the United States to examine the current practices used by hospitals to prevent UTI. The researchers mailed written surveys to infection control coordinators at a national random sample of non federal US hospitals with an ICU (n=600) and to all Veterans affairs(VA)hospitals (n=119). The survey asked about practices to prevent hospital-acquired UTI and other device-associated infections. In the result the response rate was 72%. Overall, 56% of hospitals did not have a system for monitoring which patients had urinary catheters placed, and 74% did not monitor catheter duration. Thirty percent of hospitals reported regularly using antimicrobial urinary catheters and portable bladder scanners; 14% used condom catheters, and 9% used catheter reminders. VA hospitals were more likely than non-VA hospitals to use portable bladder scanners (49% vs. 29%; P<.001), condom catheters (46% vs. 12%; P<.001), and suprapubic catheters (22% vs. 9%; P<.001); non-VA hospitals were more likely to use antimicrobial urinary catheters (30% vs. 14%; P=.002).the researchers concluded as a strong link between urinary catheters and subsequent UTI, but no strategy that appeared to be used to prevent hospital-acquired UTI. Most hospital-acquired UTIs are associated with urinary catheters. Up to 25% of hospitalized patients have a urinary catheter placed during their stay these catheters often cause considerable discomfort and embarrassment to patients The substantial morbidity associated with nosocomial UTI generates additional health care costs

Hazelett et al;(2006) conducted a study to determine the frequency and appropriateness of indwelling urinary catheter (IUC) use in the Emergency

Department, in elderly patients admitted to an acute care hospital, the percentage of elderly patients with an IUC who were discharged from the hospital with a diagnosis of UTI, the percentage of patients with IUCs who were diagnosed and treated for UTI in the ED or who had admission bacteriuria $\geq 10^5$ organisms/ml indicating preexisting UTI, and the percentage of patients with no indication of UTI on admission who had inappropriately placed IUCs and subsequently were diagnosed with a UTI. The result was Seventy three percent of patients who received an IUC in the ED were elderly (≥65 years old). During the study period, 277 elderly patients received an IUC prior to admission. Of these, 77 (28%) were diagnosed with UTI during their hospitalization. Fifty-three (69%) of those diagnosed with a UTI by discharge either had the UTI diagnosed in the ED or had bacteriuria $\geq 10^5$ organisms/ml prior to IUC placement. Of the 24 elderly patients who developed a catheter-associated UTI, 11 of the IUCs were placed inappropriately. Thus, 4% of elderly patients with no indication of UTI on admission who received an inappropriate IUC in the ED had a primary or secondary diagnosis of UTI by discharge. The overall rate of nosocomial UTI due to an inappropriately placed IUC was the same in males and females. The researchers concluded that the strong association between IUC use and UTI might partly be explained by the high prevalence of preexisting UTI prior to IUC placement. Further prospective studies are needed to clarify the true risk vs benefit ratio for IUC use in acutely ill elderly patients.

Stephan et al; (2006) conducted a prospective study on reduction of urinary tract infection and antibiotic use after surgery. In a controlled, prospective, before and after intervention trial with 1328 adult patients scheduled for orthopedic or abdominal surgery, nosocomial infection surveillance was conducted until hospital discharge. A multifaceted intervention including specifically tailored, locally developed guidelines for the prevention of urinary tract infection was implemented for orthopedic surgery patients, and abdominal surgery patients served as control subjects. Infection and non-infectious complications, adherence to guidelines and antibiotic use were monitored before

and after the intervention and again two years later. The result was the incidence of urinary tract infection decreased from 10.4 to 3.9 episodes per 100 patients in the intervention group (incidence density ratio 0.41; 95% CI 0.20-0.79;p=0.004). Adherence to guidelines was 82.2%, both the frequency and the duration of urinary catheterization decreased following the intervention. Re-course to antibiotic therapy after surgery dropped in the intervention group from 17.9 to 15.6 defined daily doses per 100 patient days (p<0.005) because of a reduced need for the treatment of urinary tract infection (p<0.001). Follow up after two years revealed a sustained impact of the strategy and a subsequent low use of a antibiotics, consistent with stable adherence to guidelines 80.8%. The researchers concluded a multifaceted prevention strategy could dramatically decrease postoperative urinary tract infection and contribute to the reduction of the over all use of antibiotics after surgery.

2.3 Studies on Knowledge and Practice of Catheter Associated Urinary Tract Infections.

Dreconja et al; (2010) conducted an internet survey on the foley catheter practices and knowledge among Minnesota physicians including indications for Foley catheter placement, effectiveness of interventions for preventing CAUTI, and knowledge of and response to the changed reimbursement policy in Minnesota physicians. The results were a good knowledge regarding indications for catheterization, with the 2 indications most widely accepted as being valid (critical illness with tenuous volume status and urinary obstruction) receiving the highest appropriateness scores. Most respondents reported awareness of the changed reimbursement policy for CAUTI; fully one-third indicated that because of this change, they now removed catheters earlier than previously. The responses from primary care physicians and surgeons differed significantly in terms of indications for catheterization, methods to prevent CAUTI, and the impact of the policy change on their practice patterns. The researchers concluded that the physicians have good knowledge regarding Foley catheter use, and most

were aware of the changed CAUTI reimbursement policy. Surgeons. Efforts are needed to translate catheter-related knowledge into good clinical practice.

Drekonja et al; (2010) conducted an internet survey of foley catheter practices and knowledge among minnesota nurses and selected a random sample of registered nurses (RNs) in Minnesota. The survey contained demographic questions and 5-point Likert-scale questions regarding indications for Foley catheter placement and effectiveness of various interventions for preventing CAUTI. Nurses perceived early catheter removal as the most effective intervention to prevent CAUTI (mean score, 4.5; range 1-5). Compared with other RNs, those reporting additional catheter education were more likely to rate interventions to prevent CAUTI as effective, regardless of whether the interventions actually reduce the incidence of symptomatic CAUTI or a symptomatic bacteriuria/funguria. Intensive care unit RNs were significantly more likely than other RNs to endorse that a Foley catheter was indicated for any given clinical scenario and to endorse antimicrobial-coated catheters as effective in preventing CAUTI. Most respondents reported no institutional guidance regarding catheterization. The researchers concluded that the Minnesota RNs demonstrated high-level awareness of the utility of early Foley catheter removal for preventing CAUTI.

2.3 Summary

Review of literature enabled the investigator to have a deep knowledge and insight in to the problem. This chapter covered, review of literature related to preventive measures and knowledge and practice of CAUTI.

Chapter - 3
RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is a systemic way to solve the research problem. It includes the step that researcher adopts to study his problem with the logic behind (kothari 1990). It indicates the general pattern of organizing the procedure of gathering valid and reliable data for an investigation. This chapter provides a brief description of the method adopted by the investigator to conduct this study. This chapter includes the research approach, research design, setting of the study, the sample and sampling technique, development of tool, description of tool, pilot study, data collection procedure and plan for data analysis.

3.2 Research Approach

Descriptive survey approach was selected to assess the knowledge regarding the "2009 Guidelines of catheter associated urinary tract infections among nurses in NSICU" and to assess the relationship between the knowledge with the selected variables.

3.3 Research Design

To accomplish the objectives of the study a survey design is used for data collection and analysis of data. The data were collected from nurses by using self structured questionnaire including 14 questions based on the '2009 Guidelines of CAUTI".

3.4 Settings of the Study

The study was conducted in Neuro Surgery ICU at Sree Chitra Tirunal Institute for Medical Sciences & Technology (SCTIMST), Trivandrum.

3.5 Sample and Sampling Techniques

A convenient sampling technique was used to collect the samples. The samples were selected from the nursing staff working in Neuro Surgery ICU at Sree Chitra Tirunal Institute for Medical Sciences & Technology (SCTIMST), Trivandrum. The size of the sample was 30.The duration of study period was from September 2011 to November 2011.

3.6 Criteria for Sample Selection

The samples were selected on the following criteria.

Inclusion Criteria

- Nursing staff working in the Neuro Surgery ICU.
- Nurses who are willing to participate in the study.

Exclusion Criteria

- Nurses working in other departments.
- Nurses who are not willing to participate.

3.7 Development of Tool

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

3.8 Description of Tool

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

Section-1

Consist of Sociodemographic data such as age, sex, highest qualification, job status, total years of professional experience and ICU experience.

Section-2

Consist of 14 Multiple-choice questions to assess the knowledge of 2009 Guidelines of catheter associated urinary tract infections.

It includes

- Indications of indwelling catheterization
- Proper techniques of catheter insertion
- Risk factor for CAUTI
- Catheter management techniques
- Preferable time period for catheter removal
- Causative organism of CAUTI
- Techniques of catheter maintenance
- Complications of CAUTI
- Nursing action to prevent CAUTI
- Management of urinary obstruction, and
- Techniques of intermittent catheterization.

There are 14 questions. Each correct answers carries one mark, wrong answers carry zero mark and unanswered questions also will be given zero.

3.9 Pilot Study

A pilot study was conducted to find out the feasibility and practicability of the tool. Ten neuro nursing students (DNN) were taken for pilot study. The time taken for answering the questionnaire was about 10 minutes.

3.10 Data Collection

For data collection, formal permission was obtained from the authorities. Data was collected during the month of October 2011.The investigator first introduced and explained the need and purpose of the study. A Structured questionnaire was given to the nursing staff to answered it. The time taken for answering the questionnaire was about 10 minutes.

3.11 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.

3.12 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 and description of tool, pilot study, data collection procedure and plan of analysis.

Chapter - 4
ANALYSIS AND INTERPRETATIONS

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 2009 Guidelines 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 broader context. This chapter deals with the analysis and interpretation of data collected from 30 staff nurses working in Neuro surgery ICU at SCTIMST, Trivandrum.The aim of this study was to assess the Neuro Nurses knowledge regarding the "2009 Guide lines of catheter associated urinary tract infections".

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

4.2 Distribution of sample according to demographics data.

4.3 Neuro Nurses Knowledge regarding "2009 Guidelines of catheter associated urinary tract infections."

4.2 Distribution of sample according to demographic data.

Distribution of samples according to age group

Table 4.2a Distribution of samples by age

Age Group	Frequency	Percentage
21-30 years	17	56.67
31- 40 years	9	30
41-50 years	4	13.33
Total	30	100

The data given Table 4.2a shows that majority of nurses (86.67%) were below the age of 40 years. The age of the nurses ranged from 23 to 45 with a mean of 30.7

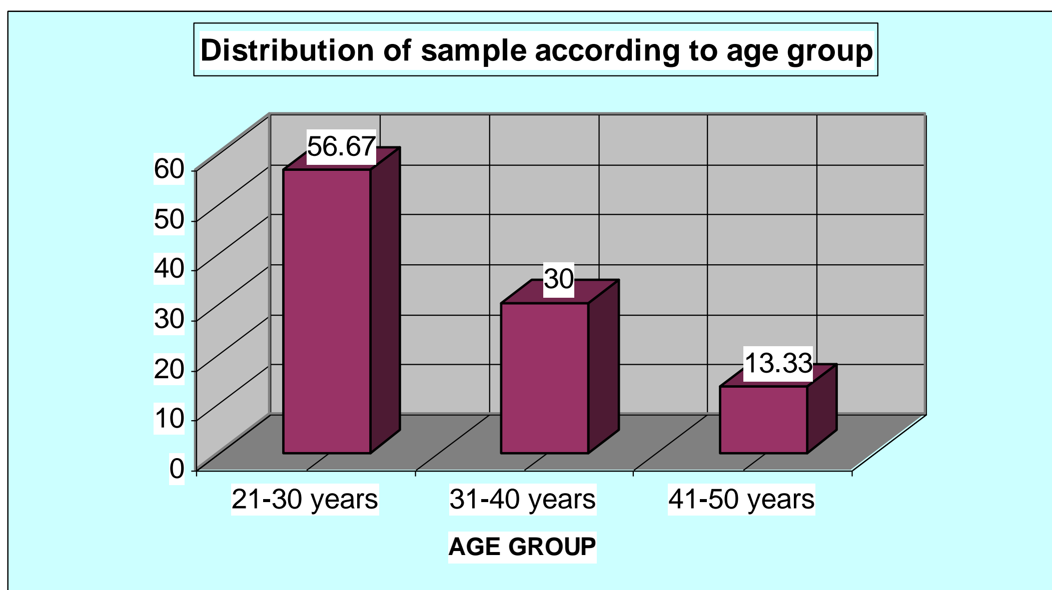

Figure 4.2 a shows that the distribution of samples by age

Distribution of samples according to the professional qualification

Table 4.2 b Distribution of samples by professional qualification

Professional qualification	Frequency	Percentage
GNM	21	70
Bsc.Nursing	8	26.67
Msc.Nursing	1	3.33
TOTAL	30	100

Table 4.2 b shows that 70% of samples having professional qualification of GNM, 27% having Bsc. Nursing and 3% having Msc. Nursing

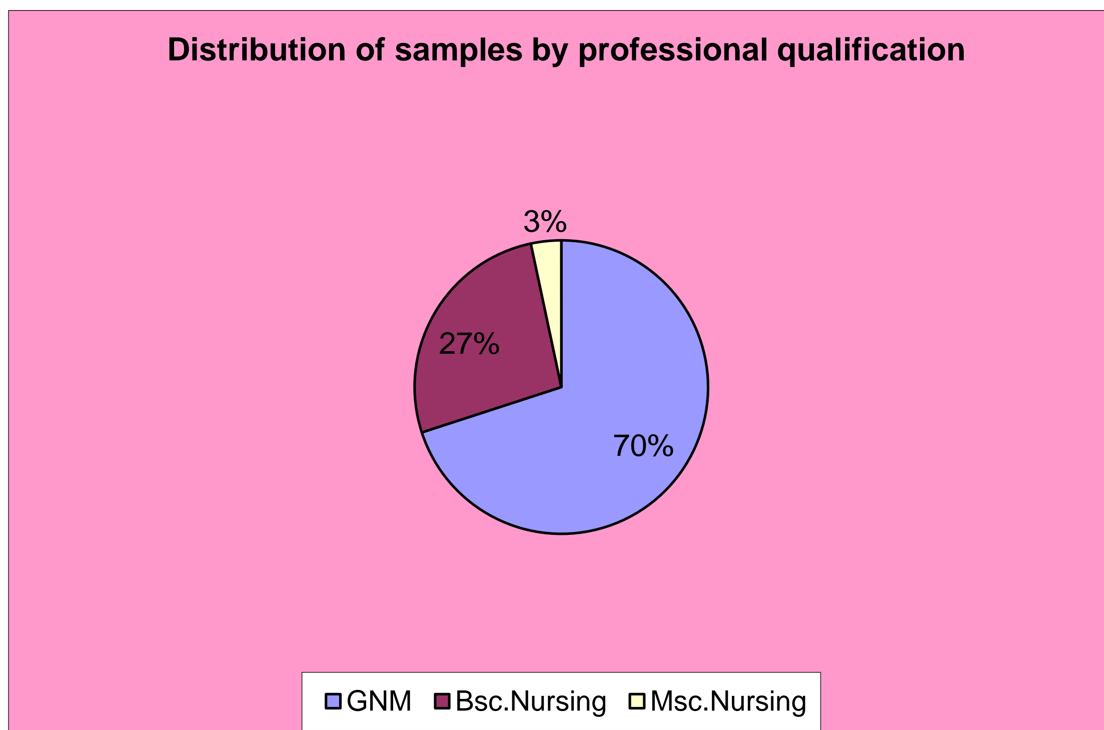

Figure 4.2 b pie diagrams shows the distribution of samples according to professional qualification

Distribution of samples according to the job status

Table 4.2 c Distribution of samples by job status

Job status	Frequency	Percentage
Permanent Nurse	18	60
Student Nurse	10	33.33
Temporary Nurse	2	6.67
TOTAL	30	100

Table 4.2 c shows that majority of nurses were permanent staff

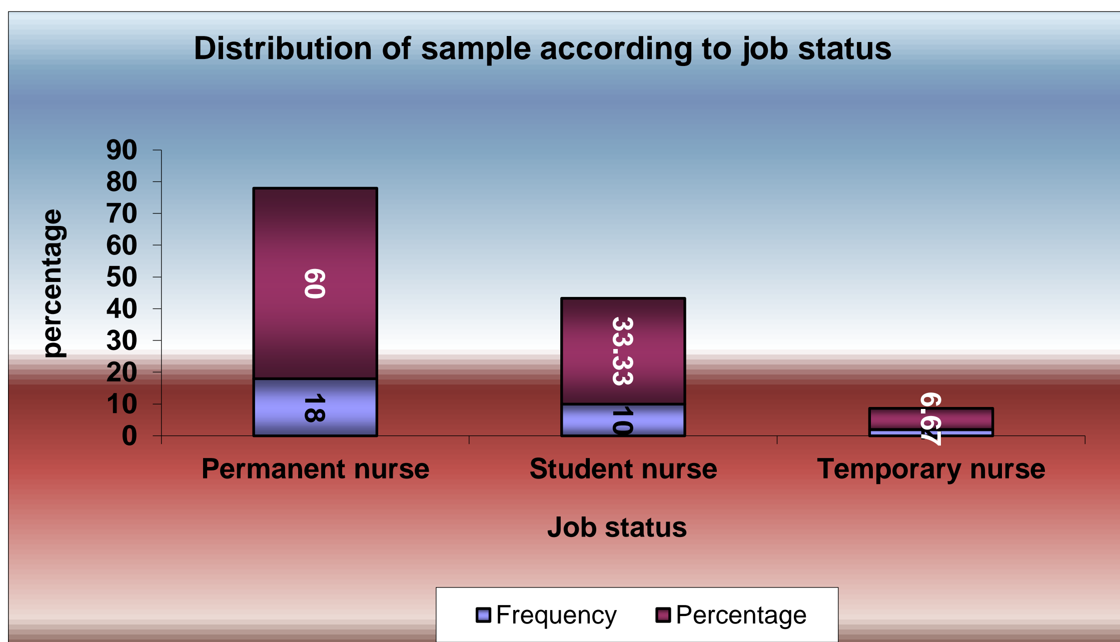

Figure 4.2 c shows that the distribution of samples according to the job status

Distribution of samples according to experience

Table 4.2 d Distribution of samples by experience

Experience	Frequency	Percentage
1 – 5 years	16	53.33
6 – 10 years	6	20
11 – 15 years	5	16.67
16-20 years	3	10
TOTAL	30	100

Table 4.2 d shows that 53.33% of samples having experience between 1-5 years, 20% having experience between 6-10 years, 16.67% having experience between 11-15 years and 10% having experience between 16-20 years.

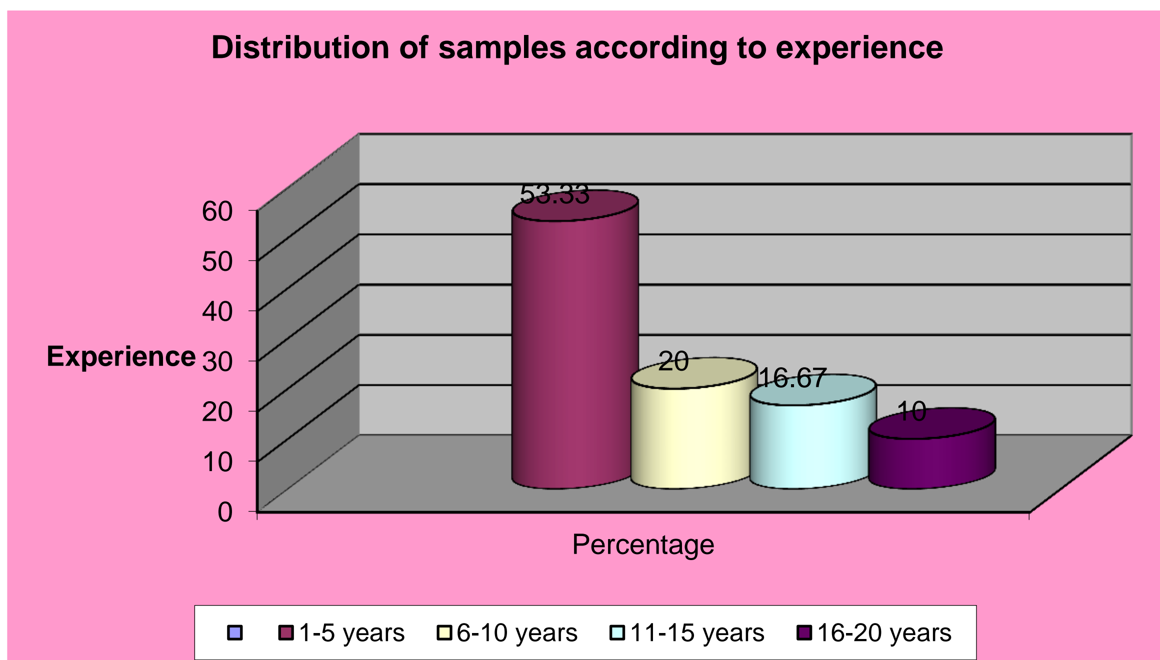

Figure 4.2 d shows that the distribution of sample according to experience

4.3 Neuro nurses' knowledge regarding 2009 Guidelines of CAUTI

Table 4.3 Distribution of samples according to percentage of knowledge score about 2009 Guidelines of CAUTI among Neuro nurses

Knowledge score	Frequency	Percentage
<11	15	50
>11	15	50
TOTAL	30	1OO

There were fourteen questions in the knowledge test regarding 2009 guidelines of CAUTI with the maximum score of fourteen. Total knowledge score obtained ranged from 10-14 with a mean of 11.9,standard deviations of 1.3,median of 11.5,mode of 11.majority of nurses have above average knowledge about the 2009 Guidelines of CAUTI.

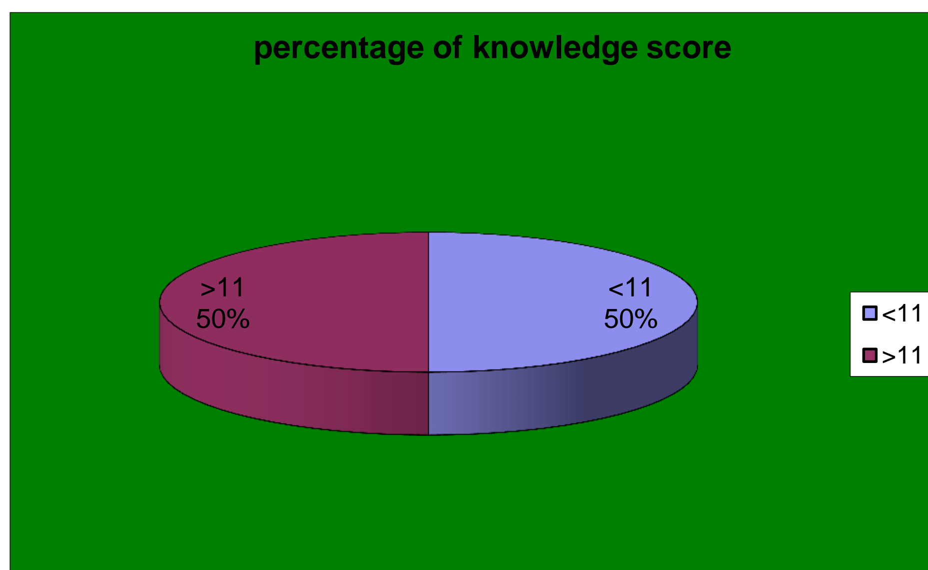

Figure 4.3 the pie diagram shows that the percentage of knowledge of neuro nurses

4.4 Percentage of score in the area of knowledge about 2009 guidelines of CAUTI

The data given in Table 4.4 shows the percentage of knowledge obtained in each item on Guidelines of CAUTI. The areas of lesser knowledge (<60%) are, types of catheter materials used to reduce the rate of CAUTI (36.7%) and complications of CAUTI (60%). Neuro nurses scored more than 90% in nine out of fourteen questions, indicating better knowledge about most of the 2009 CAUTI guidelines.

Area of knowledge	Frequency	Percentage
Indication of indwelling catheterization	30	100
Proper techniques of catheter insertion	30	100
Risk factors of CAUTI	30	100
The population have highest risk of mortality from indwelling catheterization	30	100
Catheter management techniques	23	76.67
Preferable time used for catheter removal	29	96.67
Causative organism of CAUTI	27	90
Techniques of catheter maintenance	30	100
Complication of CAUTI	18	60
Types of catheter materials used to reduce the rate of CAUTI	11	36.67
Nursing action to prevent CAUTI	21	70
Contributing factor of CAUTI in females	29	96.67
Management of urinary obstruction	21	70
Techniques of intermittent catheterization	28	93.33

Table 4.4 Percentage of knowledge about 2009 Guidelines of CAUTI in each item of knowledge test among neuro nurses

4.3 Comparison of Mean, Standard deviation and P-value for knowledge and selected variables

Table 4.3 a shows that mean, standard deviation and p-value for knowledge by age group

Age group	Mean	Standard deviation	P-value
<30 years	11.6	0.99	0.21
>30 years	12.2	1.52	

Table 4.3 a shows the relationship between age group and mean knowledge score. The younger age group had a mean score of 11.6 and standard deviation 0.99 and the older age group had a mean score of 12.2 and standard deviation 1.52.In students' ' t ' test, the P-value of 0.21 shows that there was no statistically significant difference between mean knowledge score of younger and older age group.

Table 4.3 b mean, standard deviation and p-value for knowledge by experience

Experience	Mean	Standard deviation	P-value
<5 years	11.56	0.96	0.13
>5 years	12.29	1.54	

Table 4.3 b shows the relationship between knowledge and experience. In the group with experience <5 years, the mean score was 11.56 and standard deviation was 0.96.In the group with experience >5 years, the mean score was 12.29 and standard deviation was 1.54.In students' ' t ' test the p-value of 0.13

shows that there was no significant relationship between knowledge and experience.

Table 4.3c Mean, standard deviation and p-value for knowledge and job status

Job status	Mean	Standard deviation	P-value
Staff nurse	12.06	1.43	0.43
Student nurse	11.67	1.07	

Table 4.3 c shows the relationship between the knowledge and job status. The mean knowledge score of staff nurses was 12.06 and standard deviation was 1.43 and in the group of student nurse the mean score was 11.67 and standard deviation was 1.07.In students'' t ' test the p-value of 0.43 shows that there was no significant relationship between knowledge and job status.

4.4 Summary

This chapter deals with the analysis and interpretation of data collected from 30 Neuro Nurses SCTIMST, Trivandrum. Descriptive and inferential statistics were used for the analysis. Bar diagram and pie diagram were used to illustrate the findings of the study.

Chapter - 5
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 the 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 among Neuro Nurses regarding 2009 Guidelines of catheter associated urinary tract infections and to identify the relationship between knowledge on Guidelines of CAUTI" and selected variables. A review of related research literature helped the investigator to get a clear concept about the topic undertaken as well as to develop tools, methodology of the study and to decide plan of analysis

The `study was conducted in Neuro Surgery ICU at SCTIMST; the size of sample was 30.Staff nurses in NSICU were included in this study. The duration of the study was from August 2011 to November 2011.A self validated questionnaire was used for collecting data; it contained 14 questions about knowledge regarding "2009 Guidelines of CAUTI" and demographic data were also collected. The data was analyzed and interpreted using descriptive and inferential statistics.

5.3 Objectives of the Study

- To assess the knowledge of neuro nurses regarding "2009 Guidelines of catheter associated urinary tract infection".

- To assess the Neuro nurses' knowledge on "2009 Guidelines of CAUTI" and its relationship with the selected variables.

5.4 Limitation

The study is limited to staff nurses working in NSICU. The sample size is only 30.

5.5 Major Findings of the Study

This study shows that neuro nurses knowledge on 2009 guidelines of CAUTI is above average (11.9/15). There was no statistically significant difference between the mean knowledge score with the age group, experience and the job status.

5.6 Recommendation

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

- Similar study can be repeated in other intensive care units and wards of this institute.

- Similar study can be repeated by increasing the size of sample.

5.7 Discussion

There are many studies related knowledge regarding "Guidelines of CAUTI" among nurses. The present study emphasized to assess the knowledge regarding the " 2009 Guidelines of CAUTI" among Neuro Nurses using a self-prepared questionnaire. The present study revealed that the mean knowledge of neuro nurses regarding "2009 Guidelines of CAUTI " is about eighty-five percentage (85%) that is (11.9/14).

5.8 Conclusion

Based on the findings of the study, the following conclusions were drawn. The knowledge of Neuro nurses about the 2009 Guidelines of CAUTI is above average and the study shows that there was no statistically significant difference between the mean knowledge score with the age group, experience and the job status.

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KNOWLEDGE TEST ON "CATHETER ASSOCIATED URINARY TRACT INFECTION GUIDELINES 2009" AMONG NURSES IN NSICU.

SOCIO DEMOGRAPHIC DATA

1 Age :

2. Sex : Male / Female

3. Highest Qualification

a) GNM b) DNN/PBNN c) Bsc (N) d) Msc (N)

4. Job status : (Student Nurse/Temporary/Permanent)

5. Total years of professional experience:

6.Total years of ICU experience:

Note: Encircle the most appropriate answer. Total 14 questions. Each question carries one mark.

1) Which one is not an indication for indwelling urinary catheterization?

A) Acute urinary retention and bladder obstruction.

B) Need for accurate measurements of urinary output in Critically ill.

C) Patients who receive large volume infusion during Surgery.

D) Obtaining urine for culture.

2) Which is the proper technique used for indwelling urinary catheter Insertion?

A) Using clean technique.

B) Using aseptic technique with sterile equipments

C) Using clean technique with sterile equipments

D) I don't know

3) Which of the following is <u>not</u> a risk factor for catheter associated urinary tract infection?

A) Prolonged catheterization.

B) Impaired immunity.

C) Diabetes mellitus.

D) Hypertension.

4) Which population with severe illness is at the highest risk of mortality from indwelling urinary catheters?

A) Men below 50 yrs of age.

B) Young adults.

C) Old age over 70 yrs of age.

D) Children

5) According to "2009 Guidelines for prevention of Catheter associated urinary tract infection "Which of the following is <u>not</u> used in catheter management techniques?

A) Antimicrobial prophylaxis.

B) Urinary antiseptics.

C) Bladder irrigation and catheter cleansing.

D) All the above.

6) For operative patients who have an indication for an indwelling catheter, remove the catheter as soon as possible post operatively, preferably with in--------hours?

A) 12

B) 24

C) 36

D) 48

7) Which of the following is <u>not</u> a causative organism of catheter associated urinary tract infection?

A) Escherchia coli (E.coli)
B) Klebsiella.
C) Streptococcus
D) Enterobacter

8) According to 2009 guidelines, which of the following is <u>not</u> included in techniques of urinary catheter maintenance?

A) Maintain a closed drainage system
B) Maintain an unobstructed urine flow
C) Using standard precautions
D) Using systemic antimicrobials.

9) Which of the following is <u>not</u> a complication of catheter associated urinary tract infection?

A) Bladder spasms
B) Hemorrhage
C) Pressure necrosis
D) Urethral strictures

10) According to 2009 Guidelines, Which type of catheter material is used to reduce the rate of catheter associated urinary tract infection

A) Antiseptic-impregnated catheter
B) Silicone catheter
C) Hydrophilic catheter
D) Latex catheter

11) Which nursing action can used in Guidelines to prevent infection from indwelling urinary catheters?

A) Cleansing the perineum with antiseptic

B) Encouraging adequate fluids

C) Irrigating the catheter once daily

D) Cleanse the meatus surface during daily bathing.

12) The female has a higher risk for developing urinary tract infection than male. Which is the most common contributing factor to this increased risk?

A) Altered urinary PH

B) Proximity of the urethra to the anus

C) Juxta position of the bladder

D) Hormonal secretions.

13) A client with indwelling urinary catheter having urinary obstruction. What should the nurse do?

A) Notify the physician

B) Milk the tubing gently

C) Change the catheter

D) Irrigate the catheter with prescribed solution

14) Which technique is used for intermittent catheterization in ***non- acute*** care settings?

A) Aseptic technique

B) Clean technique

C) Clean hand technique

D) I don't know.

ANSWER KEY

1. D 2.B 3.D 4.C 5.D 6.B 7.C 8.D 9.B

10.A 11.D 12.B 13.C 14.B