A STUDY TO ASSESS THE KNOWLEDGE AND PRACTICE OF ENDOTRACHEAL SUCTIONING AMONG NEURONURSES SCTIMST

PROJECT REPORT

Submitted in partial fulfillment of the requirements

For the

Diploma in Neuro Nursing

Submitted by

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Code No: 6216

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November 2011

CERTIFICATE FROM THE SUPERVISORY GUIDE

This is to certify that Miss. NISHAMOL .Y N has completed the project work on ***"A study to assess the knowledge and practice of endotracheal suctioning among Neuro Nurses, SCTIMST"*** 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 report has been included in any other thesis for procuring any other degree by the candidate.

Saramma. P.P

Trivandrum,
October 2011

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CERTIFICATE FROM CANDIDATE

This is to certify that the project report on ***"A study to assess the knowledge and practice of Endotracheal suctioning among Neuro Nurses, SCTIMST"*** 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 degree, diploma, fellowship or any other recognition.

Trivandrum,
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APPROVAL SHEET

This is to certify that Miss. NISHAMOL .Y N bearing Roll No. 6216 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 and practice of Endotracheal suctioning among Neuro Nurses, SCTIMST"*** which is approved for the Diploma in Neuro Nursing awarded by Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum, as it is found satisfactory.

Place: Examiners

Date:

(1)_____

(2) _____

Guide

(1) _____

(2) _____

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NISHAMOL .Y. N

ABSTRACT

Topic: - ***A study to assess the knowledge and practice of endotracheal suctioning among Neuro Nurses.***

Background of the study: Tracheal suctioning is an essential aspect of effective airway management. It is imperative that nurses are aware of the risks and are able to practice according to current research recommendations. Making accurate and timely judgments based on knowledge is an essential skill in critical care nursing practice. **Objectives:** (1) To identify the knowledge of endotracheal suctioning among nurses in neuro medical ICU. (2) To check the practice of endotracheal suctioning among nurses in neuro medical ICU. **Method:** 30 Neuro Nurses include permanent and temporary were selected from neuro medical ICU in Sree Chitra Tirunal Institute for Medical Sciences and Technology ,Trivandrum. Convenient sampling technique was used for selecting sample. Total period of study was from August 2011 to November 2011. An observational checklist was maintained in order to record the steps of the procedure and the knowledge assessed by using questionnaire. **Result:** The knowledge score of staff nurse with less ICU experience ranged from 10 to 14 with a mean of 12.06 (1.48).The knowledge of staff nurse with more ICU experience ranged from 11 to 14 with a mean of 12.08 (1.19). There was no statistically significant difference in the mean knowledge score of both group. Thirty Endotracheal suctioning episodes of 19 staff nurses both permanent and temporary were observed during all three shifts. However there was no statistically difference in the mean practice score of both groups. **Conclusion**; This study was designed to identify t intensive care nurses' knowledge and practice of endotracheal suctioning. Based on the findings of the study Neuro Nurses have average knowledge about ET suctioning but in practice they are not practicing some critical care elements.

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LIST OF ABBREVIATION

NMICU - Neuro Medical Intensive Care Unit

SCTIMST - Sree Chitra Tirunal Institute of Medical Science and Technology

ETs - EndoTracheal Suctioning

STICU - Stroke ICU

Chapter - 1

1.1 Introduction

Endotracheal suctioning (ETS) is one of the most common procedure performed in patients with artificial airways. It is a component of bronchial hygiene therapy and mechanical ventilation that involves the mechanical aspiration of pulmonary secretions from a patient's artificial airway to prevent its obstruction the procedure include patient preparation, the suctioning event, post procedure care. Tracheobroncheal suctioning using the closed suctioning system has physiological benefits for critically ill patients. Because microaspiration of secretions is a risk factor for VAP, assessment of practices related to oral suctioning, oral care, and management of endotracheal tube is important.

Published guidelines provide little information related to use of closed system suctioning and airway management, and the guidelines may reflect current practices. Knowledge of practice may assist of determining interventions to improve patients outcomes. Comparing practices of nurses and respiratory therapists may also help as certain difference in practices and aid in establishing collaborative policies and procedures. (sole 2002)

It is an imperative requisite of a professional nurse to perform endotracheal suctioning with a standard protocol to prevent complications and to promote recovery. Studies reveal that the most frequent complication of endotracheal suctioning is hypoxia. Literature recommend standard endotracheal suctioning to prevent complication

1.2 Background of the study

A recent survey showed that 80% of respondents most often use closed-system suctioning devices for suctioning patients' airways. The devices are designed to prevent suction-induced hypoxemia, especially in patients who require high levels of positive end-expiratory pressure to maintain oxygenation . However, practices have changed with the advent of these devices. The devices are designed to suction only the lower part of the airway. Oral suctioning is no longer an integral part of the endotracheal suctioning procedure, and some equipment is used for both closed-system and oral suctioning. The changes in practice may result in less use of oral suctioning and in cross-contamination of equipment.

There are two method of endotracheal suctioning.

- Open suctioning
- Closed suctioning

Open suctioning is defined as suctioning the airway after the endotracheal tube has been disconnected from the ventilator.

Closed suctioning is defined as suctioning through a tight-fitting device on the endotracheal tube that allows the ventilator to be connected and working during suctioning. The suctioning system has a manually operated suction flow switch.

Artificial airways are indicated for patients with deceased level of, consciousness, airway obstruction, and mechanical ventilation and for removal of tracheal bronchial secretions. Artificial airways allow easy access to the patient's trachea for deep tracheal suctioning. This procedure may be required in an emergency situation or as part of a patient's planned care.

There are also two method of suctioning based on the catheter suction depth selected during the procedure they are,

1. Deep suctioning
2. Shallow suctioning

Patients will require suction to be performed for a number of reasons

1. Oropharyngeal suction may be required for a patient who has undergone head and neck surgery, or whose conscious level is impaired and /or has an absent or impaired swallowing reflex. Care should be taken to avoid trauma to the mucosa, particularly in patients with clotting disorders.

2. Tracheal suction may be indicated in patients who are unable to do so independently, due either to their underlying illness, following surgery , or because of an impaired conscious level. Lower airway secretions that are not cleared may provide a medium for bacterial growth. (wood,1998). Suctioning has been identified by patients as causing anxiety and discomfort

Tracheal suction can be performed via a variety of routes; orally using an oropharyngeal airway, nasally, using a nasopharyngeal airway (contraindicated if patients has clotting abnormalities or a fractured base of skull)

While tracheal /endotracheal suctioning may be a necessary procedure, it can be associated with some potentially harmful effects. These may include;

1. Hypoxia oxygen as well as secretions may be removed from the lungs when suctioning.
2. Vasovagal respones causing arrhythmias and hypotension
3. Mucosal trauma.
4. Cross infection

Suction procedure should therefore be as brief as possible, lasting approximately 15 seconds The instilling of 0.9%of saline via a tracheostomy or endotracheal tube prior to suctioning is sometime performed; however, there is little evidence to support this practice and it could potentially cause harm (akgul and Akyolcu 2002).

The suction catheter diameter should be half the diameter less of the tracheal tube .This prevents the occlusion of the airway and avoid the generation of large negative intra thoracic pressures.

The negative pressure set on the suction machine needs to be sufficiently high to clear secretion while avoiding trauma to the bronchial mucosa.(Ashurst 1997) recommended a setting of 120mmHg. In practice, it is some time necessary to apply higher levels of negative pressure to clear thick ,tenacious secretions ;it should be done cautiously.

Potential indications for tracheal or endotracheal suctioning

Number	POTENTIAL INDICATIONS
1	Raised respiratory rate
2	Inability to clear secretion effectively.
3	Reduced air entry on auscultation
4	Audible secretion
5	Spontaneous but ineffective cough
6	Reduced oxygen saturation levels

Making accurate and timely judgments based on multiple ways of knowing is an essential skill in critical care nursing practice. Studies have

proposed that positive patient outcomes are linked to expert judgments in a variety of critical care situations; however, little is known about clinical judgments related to specific critical care nursing interventions.

Nursing administrators, educators, and advanced practice and staff nurses must take an active role in the creation, adoption, and critical review of these policies that ultimately influence nursing care.

1.3 Need of the study:

With an increasing demand for intensive care beds more nurses in acute and high dependency wards will be expected to care competently for patients with tracheostomy tubes. Tracheal suctioning is an essential aspect of effective airway management. It is imperative that nurses are aware of the risks and are able to practice according to current research recommendations.

The problems with implementing research findings that are based on empirical evidence and producing clinical guidelines and protocols in nursing have also been documented .These include issues such as lack of motivation or knowledge of the most up to date or current evidence. Endotracheal suctioning is one intervention that should be based on research evidence, as there have been a large number of studies published on the various aspects of this routine procedure. However, although one study has examined the indications for initiating suctioning and one further study investigated nurses' assessment skills prior to suctioning (Wood, 1998b), no other studies appear to have investigated how certain aspects of the suctioning procedure are performed in practice.

Endotracheal suctioning is a frequently performed procedure that has many associated risks and complications. This study was designed to examine to what extent intensive care nurses' knowledge and practice of endotracheal

suctioning is based on research evidence, to investigate the relationships between knowledge and practice,

1.4 Statement of the Problem

A study to assess the knowledge and practice regarding endotracheal suctioning among nurses in NMICU

1.5 Objectives

1. To assess the knowledge of nurses regarding endotracheal suctioning
2. To observe the practice of endotracheal suctioning among nurses in NMICU & STICU

1.6 Limitation

This study is limited to nursing staff working in neuro medical ICU $ STICU in SCTIMST

1.7 Operational definition

Knowledge

A state of awareness or understanding with conscious mind. In this study "knowledge" refers to awareness about endotracheal suctioning and its complication measured as the score obtained in the validated knowledge test

Neuro Nurses

Staff nurses and student nurses working in NMICU and STICU of SCTIMST

Practice

Practice referred to the psychomotor abilities necessary for a nurse to work efficiently and provide high-quality care to the patients. In this study the practice of endotracheal suctioning is the suctioning of the trachea in patients with artificial airway is observed with the help of an observational check list

1.8 Research Design and Methods:

Settings **:** NMICU and Stroke ICU,SCTIMST

Sample size **:** 30 staff nurse

Study design : descriptive survey

Tool **:** An observational checklist was maintained in order to record the steps of the procedure and the knowledge assessed by using questionnaire

1.9 Organization of the report

This chapter deals with introduction, back ground of the study ,need and significance of the study, statement of the problem, objective, operational definitions, methodology and limitations. Chapter 2 deals with review of literature. Chapter 3 deals with methodology and Chapter IV present analysis and interpretation of data & Chapter V include summary, discussion, conclusion, implication and recommendation. Reference and appendices are given towards the end.

1.10 Summary

This chapter includes the introduction, background of the study , need of the study, statement of problem, objectives, limitation of the study.

Chapter - 2

REVIEW OF LITERATURE

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2.1 Introduction

Review of literature is the key step in the research process which helps to lay a foundation for the study .The literature review provides a background for understanding current knowledge on a topic and illuminating the significance of the study .A literature review is a body of text that aim the review the critical point of current knowledge. Review of literature is an important aspect of any research project from beginning to end .It gives character insight into the problem and helps in selecting methodology, developing tool and also analyzing data.

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

2.1 Studies related to open and closed Endotracheal suction system in mechanically ventilated patients in I C U

2.2 Studies related to assessment of practice competence and scientific knowledge of endotracheal suctioning.

2.1 Studies Related to Open and Closed Endotracheal Suction System in Mechanically Ventilated Patients in I C U

Kelleher and Andrews. (2008); conducted an observational study to investigate open system endotracheal suctioning (ETS) practices of critical care nurses. Specific objectives were to examine nurses' practices prior to, during and post-ETS and to compare nurses' ETS practices with current research recommendations. In March 2005, a structured observational study was

conducted using a piloted 20-item observational schedule on two adult intensive-care units to determine how critical care nurses (n = 45) perform ETS in their daily practice and to establish whether the current best practice recommendations for ETS are being adhered to. The findings indicate that participants varied in their ETS practices; did not adhere to best practice suctioning recommendations; and consequently provided lower-quality ETS treatment than expected. Significant discrepancies were observed in the participants' respiratory assessment techniques, hyperoxygenation and infection control practices, patient reassurance and the level of negative pressure used to clear secretions. The authors concluded that the critical care nurses do not adhere to best practice recommendations when performing ETS.

IreneJongerden, et al (2007).,conducted a meta analysis on open and closed endotracheal suction systems in Mechanically Ventilated Intensive Care Patients. To review the effectiveness of CSS and OSS, with respect to patient outcome, bacterial contamination, and costs in adult intensive care unit patients. The date collected from MEDLINE, CINAHL, EMBASE, and Cochrane databases and a manual review of article bibliographies. Randomized controlled trials comparing CSS and OSS in adult intensive care unit patients were retrieved. Data were combined in meta-analyses by random effect models. Fifteen trials were identified. No significant differences were found in incidences of ventilator-associated pneumonia (eight studies, 1,272 patients) and mortality (four studies, 1,062 patients). No conclusions could be drawn with respect to arterial oxygen saturation (five studies, 109 patients), arterial oxygen tension (two studies, 19 patients), and secretion removal (two studies, 37 patients). Compared with OSS, endotracheal suctioning with CSS significantly reduced changes in heart rate (four studies, 85 patients; weighted mean difference, -6.33; 95% confidence interval, -10.80 to -1.87) and changes in mean arterial pressure (three studies, 59 patients; standardized mean difference, -0.43; 95% confidence interval, -0.87 to 0.00) but increased colonization (two studies, 126 patients; relative risk, 1.51; 95% confidence interval, 1.12-2.04). CSS seemed to be more

expensive than OSS the researchers highlighted that based on the results of this meta-analysis, there is no evidence to prefer CSS more than OSS.

2.2 Studies related to assessment of practice competence and scientific knowledge of endotracheal suctioning.

Flynn and Sinclair. (2005); conducted a study to explore the relationship between nursing protocols and nursing practice in an Irish intensive care unit. This descriptive study employed a case study approach to examine the experiences of nurses in an Irish intensive care unit with a protocol on endotracheal tube suctioning. Focus group interviews of 17 nurses in six focus groups provided a significant insight into the experiences of these nurses in relation to policies, protocols and guidelines. Analysis of the data afforded some highly relevant findings, including the fact that nurses adapt clinical protocols as they see fit, thus demonstrating the importance they placed on their own professional judgement and autonomy.

Ahn .(2005); conducted a study that Concept analysis of endotracheal suctioning (ETS). Concept analysis was performed on the behavioral concept of endotracheal suctioning (ETS), to identify the goal, to develop a standardized clinical protocol, to identify the antecedents and consequences, and to differentiate the improper use of ETS. Walker & Avant's concept analysis was employed using clinical guidelines, books and review articles in which the procedures of ETS were written in detail and published in Pubmed within the last 20 years. The findings indicated that the macro-goal of ETS was to remove accumulated respiratory secretions. Three defining attributes of ETS were identified; catheter, suctioning and asepsis. Each attribute involved empirical references, such as the size and depth of the catheter, the suction pressure, duration and method for suctioning. The antecedents of ETS were identical to the clinical evidences for the need of ETS such as the nursing assessment data. The consequences of ETS serve as an evaluation criteria on the effects of ETS based

on the goal of ETS. The researchers concluded that concept analysis of ETS demonstrated an example of considering a specific nursing protocol of ETS as a behavioral concept, applying concept analysis to it to identify it's key behavioral components as defining attributes and empirical referents and then developing and applying the standard ETS protocol.

Wood . (1998); Conducted a controlled study to compare and contrast the differences in endotracheal suction outcomes in patients who received ritualized 2 hourly suctioning and those who received it following assessment. A group of qualified nurses in an Intensive Care Unit were taught auscultation skills to assess a patient's needs for suctioning and all the nurses received educational training regarding endotracheal suctioning. Short-term ventilated patients were allocated to receive endotracheal suctioning either when the need for it was determined by assessment only or routinely, using a standardized suctioning technique. The results demonstrated a clear increase in nurses' knowledge regarding endotracheal suctioning. The assessed group of patients demonstrated significantly better outcomes and less complication than the controlled group in relation to changes in peak airway pressures, heart rate and mean arterial pressure pre- and post-endotracheal suctioning, and the amount of secretions obtained on suctioning. Although only preliminary, these results provided support for the view that endotracheal suction only in response to assessment was better practice for short-term ventilated patients.

Day et al .(2002);conducted a study to explore nurses' knowledge and competence in performing tracheal suctioning in acute and high dependency ward areas and to investigate discrepancies between knowledge and practice using method triangulation. Twenty-eight nurses were observed using non participant observation and a structured observation schedule. Each subject was interviewed and questioned about their tracheal suctioning practices, and subsequently completed a knowledge-based questionnaire. Scores were allocated for knowledge and practice. The findings demonstrated a poor level of

knowledge for many subjects. This was also reflected in practice, as suctioning was performed against many of the research recommendations. Many nurses were unaware of recommended practice and a number demonstrated potentially unsafe practice. In addition, there was no significant relationship between knowledge and practice. However, during the interviews, many nurses were able to provide a rationale for specific aspects of practice that were perhaps not based on current research recommendations. The researchers concluded that the study raised concern about all aspects of tracheal suctioning and has highlighted the need for changes in practice, clinical guidelines and focused practice-based education.

Ania Gonzalez et al. (2004); conducted a study evaluate practical competence of the nurses, as well as the scientific knowledge about tracheal suctioning in a Polyvalent Intensive Care Unit. This descriptive study, performed in 34 nurses, analyzed the performance of tracheal suctioning by direct observation, using the data collection of a structured grid that included 19 aspects to evaluate, grouped into 6 categories. In the same way, knowledge on the procedure was analyzed, using a 19-item self-administered questionnaire, also grouped into 6 categories, which evaluated the same aspects observed. The total mean score obtained in the practice observation grid (P) was 12.09 for a maximum score of 19, while it was 14.24 in the knowledge questionnaire (Q). When analyzed by categories, discrepancies were obtained in the following aspects: in the need for hand washing prior to suctioning (P = 55.9%; Q = 97.1%), in cleaning of the suction catheter after each suctioning during the procedure (P = 0%; Q = 38.2%), in the correct performance of hyperoxygenation and hyperinflation, before, during and after the procedure (P = 11.8%; Q = 94.1%), in the correct selection of the size of suction catheter in relationship with endotracheal tubes internal lumen (P = 0%; Q = 52.9%), in the maximum time the catheter remained in the trachea (P = 100%; Q = 23.5%), in the maximum number of times that the catheter should be introduced in each suctioning (P = 100%; Q = 73.5%) and in the non-instillation of saline solution (P = 29.4%; Q =

58.8%). When the total scores obtained were compared, both in practice and knowledge, with the years of experience in ICU, no statistically significant differences were found. It is concluded that the study nurses had scientific knowledge of the suctioning procedure that were better than their practice competence. Discrepancies between practice and knowledge were also found in several of the aspects evaluated, indicating the specific needs of training in this procedure.

Pedersen et al .(2009) ;conducted a study . The suction procedure is associated with complications to review the available literature regarding endotracheal suctioning of adult intubated intensive care patients and to provide evidence-based recommendations The major recommendations are suctioning only when necessary, using a suction catheter occluding less than half the lumen of the endotracheal tube, using the lowest possible suction pressure, inserting the catheter no further than carina, suctioning no longer than 15s, performing continuous rather than intermittent suctioning, avoiding saline lavage, providing hyperoxygenation before and after the suction procedure, providing hyperinflation combined with hyperoxygenation on a non-routine basis, always using aseptic technique, and using either closed or open suction systems.

Morrow BM et all . (2008)., conducted a meta analysis to provide a comprehensive, evidence-based review of pediatric endotracheal suctioning. PubMed, Cumulative Index of Nursing and Allied Health Literature, and PEDro (Physiotherapy Evidence Database) electronic databases were searched for English language articles, published between 1962 and June 2007. Owing to the paucity of objective pediatric data, all reports dealing with this topic were examined, including adult and neonatal studies. One hundred eighteen references were included in the final review. Despite the widespread use of endotracheal suctioning, very little high-level evidence dealing with pediatric endotracheal suctioning existed. Studies of mechanically ventilated neonatal, pediatric, and adult patients have shown that suctioning causes a range of potentially serious

complications. Current practice guidelines were not based on evidence from controlled clinical trials. There is no clear evidence that endotracheal suctioning improves respiratory mechanics, with most studies pointing to the detrimental effect it has on lung mechanics. Suctioning should be performed when obstructive secretions are present rather than routinely. There was no clear evidence for the superiority of closed- or open-system suctioning, nor is there clear evidence for appropriate vacuum pressures and suction catheter size. Preoxygenation has short-term benefits, but the longer-term impact is unknown. Routine saline instillation before suctioning should not be performed. Recruitment maneuvers performed after suctioning have not been shown to be useful as standard practice. The researchers concluded that Endotracheal suctioning is a procedure used regularly in the pediatric intensive care unit. Despite this, good evidence supporting its practice is limited. Further, controlled clinical studies are needed to develop evidence-based protocols for endotracheal suctioning of infants and children, and to examine the impact of different suctioning techniques on the duration of ventilatory support, incidence of nosocomial infection, and length of pediatric intensive care unit and hospital stay.

Summary

The review of literature gave a brief idea about the importance of nurses knowledge and relation to practice of endotracheal suctioning

Chapter - 3
METHODOLOGY

Research methodology is the systemic way to solve the research problem. It includes the step that researchers 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 the study. This chapter includes the research approach, research design, setting of the study and sampling technique. It further deals with the development of the tool, procedure for the data collection and plan for data analysis.

3.2Research Approach

The survey was selected as the objectives of the study were (1) to assess the knowledge among nurses regarding ETS in neuromedical ICU (2) to assess the practices of ETS among nurses in neuromedical ICU.

3.3Research Design

To accomplish the objectives of the study a survey design is used for data collection and analysis of the data. In order to assess the knowledge of ETS data were collected from nurses by self prepared questionnaire including 15 questions.

3.4 Setting of the Study

This study was conducted in neuro medical intensive care unit in Sree Chitra Tirunal Institute For Medical Sciences and Technology. Neuro medical

ICU is situated in the 1st block 4th floor. Neuro medical ICU consists of 9 bed around 60% of patients on mechanical ventilator.

3.5 Study Population

The target population of the study was both male and female permanent, temporary staff nurses in the neuro medical intensive care unit.

3.6 Sample and Sampling Techniques

A purposive sampling technique was used to select the samples for the study.. 30 samples were selected for the final study. Sample was selected from NMICU and STICU. The study was conducted on October2011.

3.7 Criteria for Sample Selection

The samples were based on the following criteria.

3.7.a Inclusion Criteria

- Nursing staff working in NMICU
- Nurses who are willing to participate

3.7.b Exclusion Criteria

- Nurses working in other departments other than NMICU and STICU

3.8 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 validated questionnaire

was used as a tool for the study to collect data. The research tool was finalized according to expert's opinion.

3.9 Description of the Study

The structured questionnaire consists of two sections

Section I

Part one consists of socio economic data such as age ,sex, professional qualifications , place of work, total year of experience in years and experience in ICU

Section II

Knowledge was assessed by using a self-prepared questionnaire with multiple choice questions with 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. Total 15 questions included in the questionnaire. Total obtainable score is 15.

Section II consists of two part.

- ❖ Knowledge of nurses in ETS.
- ❖ Nursing practices on ETS

The first part includes 15 questions each correct answer carry one mark, wrong answers carry zero marks . total duration of time is 10 minutes.

The second part include an endotracheal practice based question check list which contain 21critical care performance elements. which is used to assess the practice of endotracheal suction in neuro medical ICU staff each correct point carry one mark and incorrect technique carry zero mark.

3.10 Pilot study

A pilot study was conducted to find out the feasibility and practicability of the tool and methodology. Seven nursing students were taken for answering

the questionnaire. The time taken was about 10-15 minutes. The pilot study samples were also included in the study.

3.11 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 study. The nursing staff was interviewed with the self prepared tool. The time taken for answering the questionnaire was about 15 minutes. Non participant observation was used to assess the practice of Ets. Thirty suctioning episode of 19 nurses were collected.

3.12Plan 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.

3.13 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 INTERPERTATION OF DATA

4.1 Introduction

Analysis is the process of organizing and synthesizing of data in such a way that project question can be answered. The overall analysis is to organize structure and to elicit meaning from collected data (Polit & Beck 2006).

Interpretation is the process of making sense of the result and examining of the implication of finding of the study. The finding of the study were arranged and analyzed under the following sections. The data collected were analyzed using Epi Info version 3.5.1 and the findings of the study were arranged under the following sections.

4.2 Distribution of sample according to socio demographic data

(1) Distribution of sample according to age

The age of sample ranged from 23-48 with an average age of 27.36, median of 25.5

Table 4.1 Distribution of sample according to age category

Age	Frequency	Percentage
20-29	25	83.33
30-39	3	10
40-49	2	6.67
Total	30	100

Age categories were made based on the age distribution of sample so as to have a minimum number under each class. The data given in table 4.1 shows the majority of sample belongs to the younger age category (20-29)

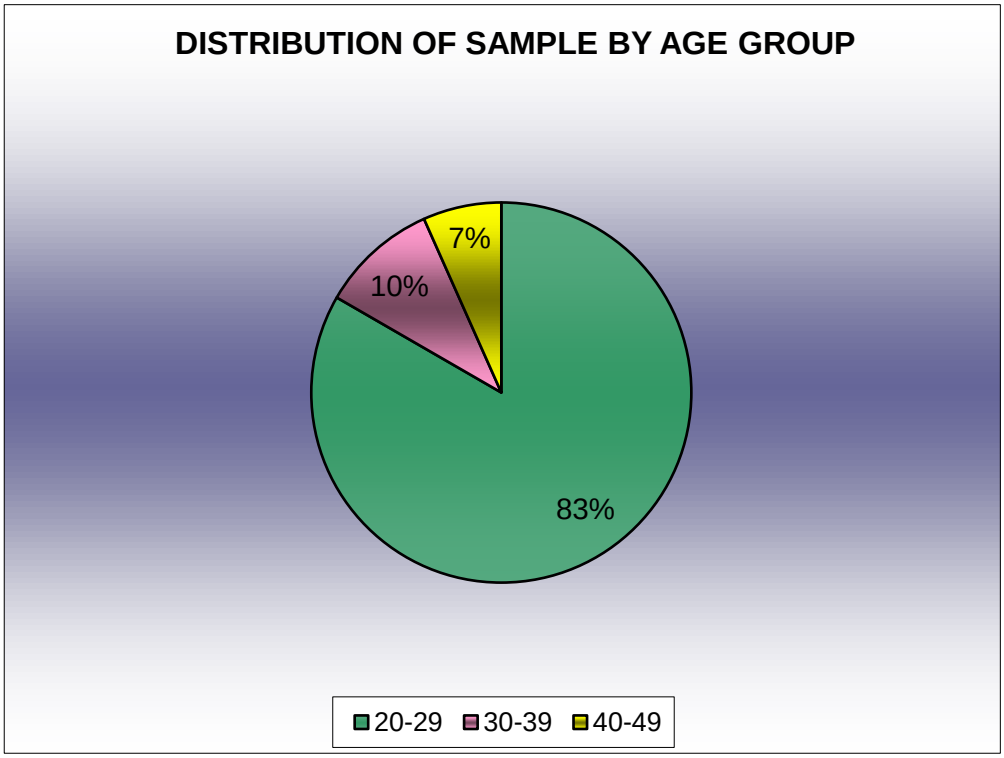


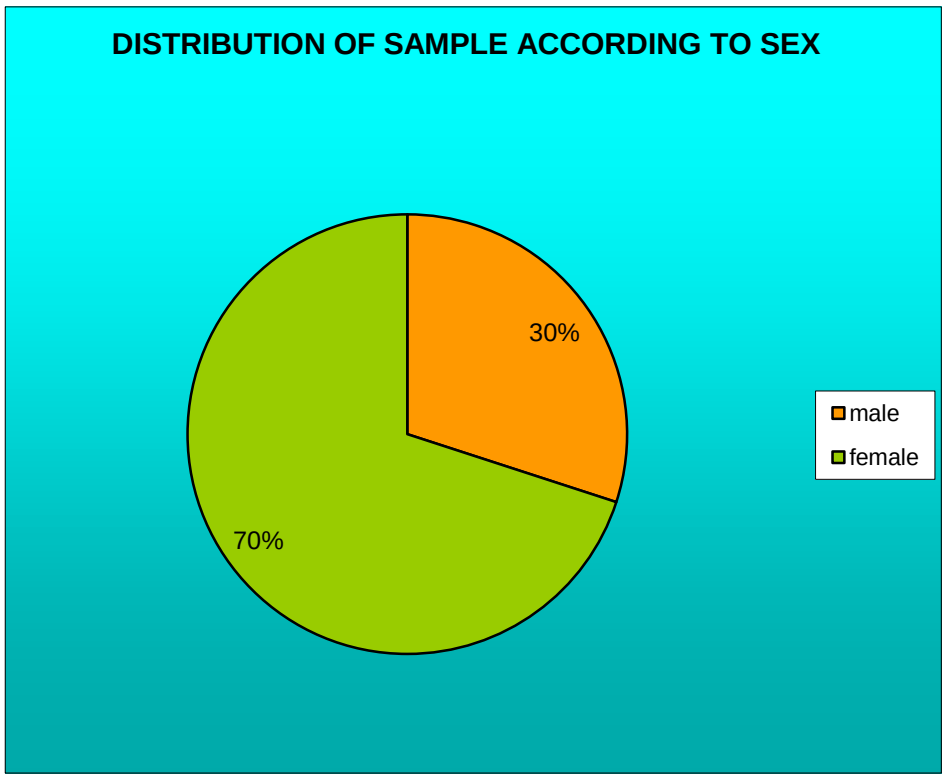
FIG 4.1THE PIE DIAGRAM SHOWING THE DISTRIBUTION OF SAMPLE ACCORDING TO AGE CATEGORY

4 (2) Distribution of sample according to sex

Data presented in the table denotes that females 70% greater than males.

Table 4.2 Distribution of sample according to sex category Data shown in pie diagram

Sex	Frequency	Percentage
Female	21	70
Male	9	30
Total	30	100



4 .3 Distribution of sample according to educational qualification

Table 4.3 Distribution of sample according to educational qualification

Professional Qualification	Frequency	Percentage
GNM	18	60
BSc	12	40
Total	30	100

The data given in Table 4.3 shows majority of nurses were GNM

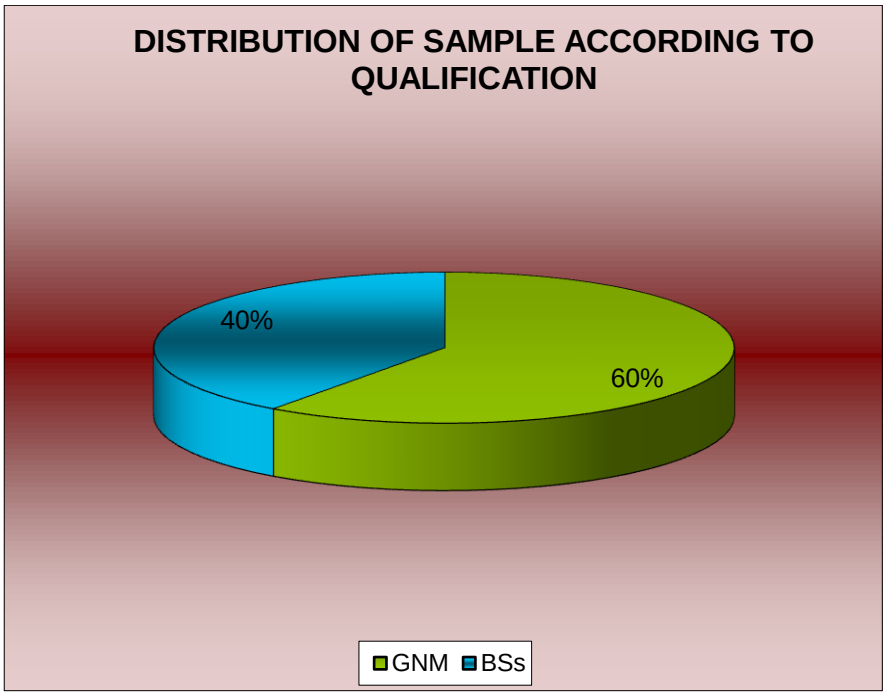


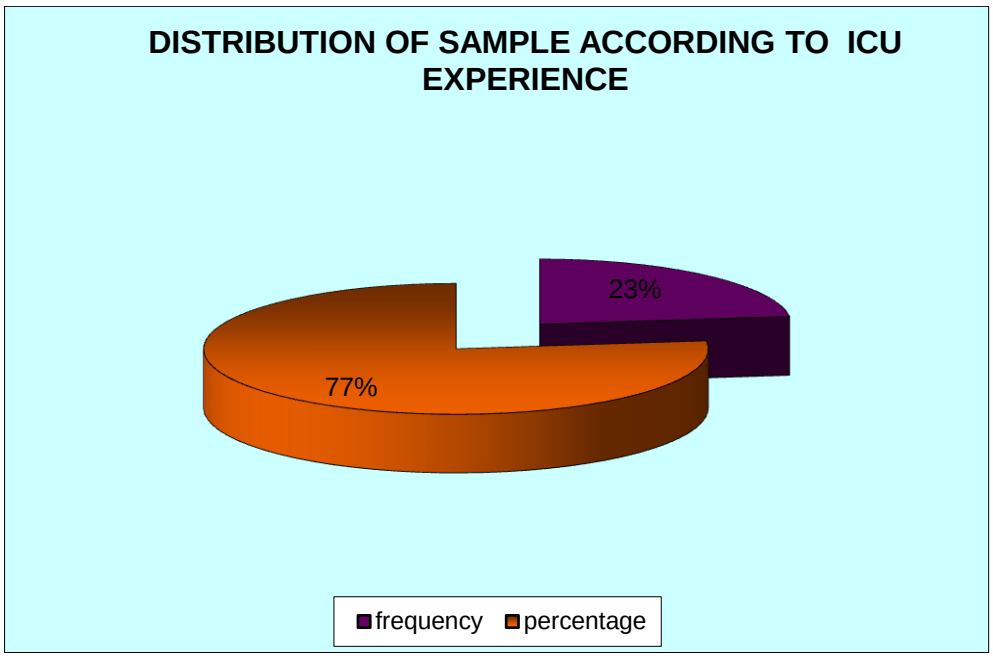
Fig 4.3 pie diagram shows the distribution of sample according to qualification.

4.4 Distribution of sample according to ICU experience.

Table 4.4 Shows distribution of sample according to ICU experience.

ICU Experience	Frequency	Percentage
Below 10 year	26	86.67
Above 10 year	4	13.33
Total	30	100

The data given in table 4.4 shows that the majority of nurses have below 10 year experience

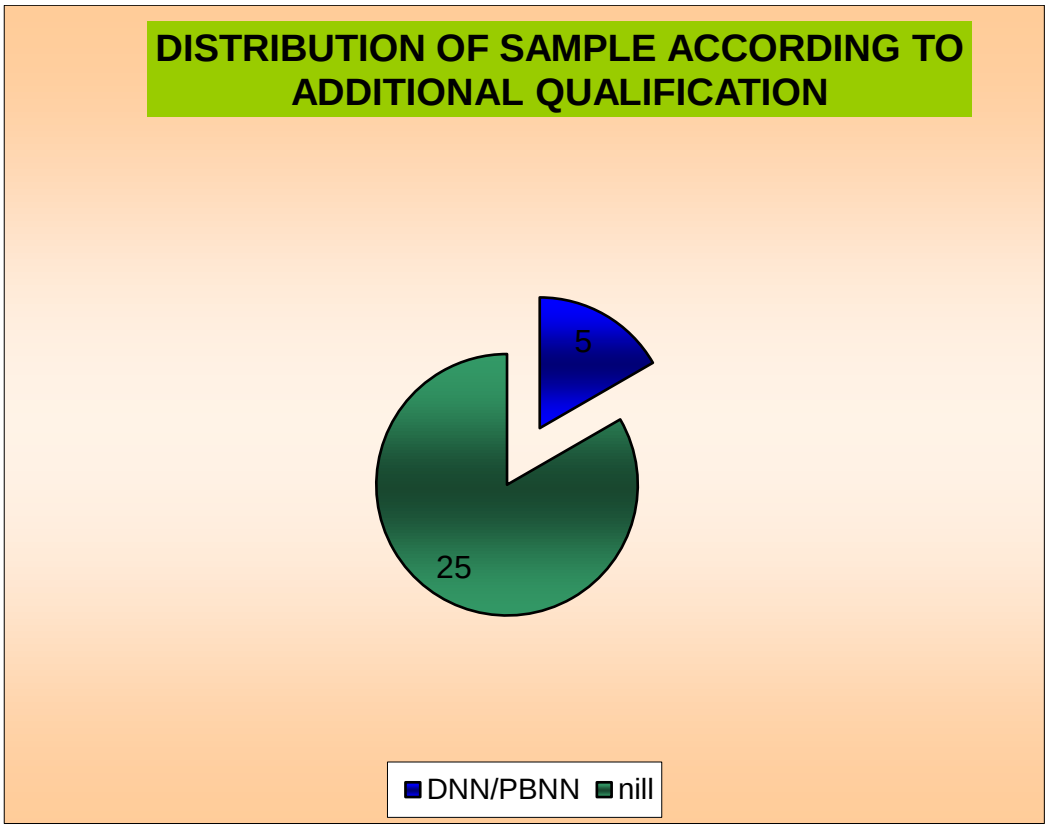


The pie diagram shows that the distribution of sample according to ICU experience

4.5 Distribution of sample according to additional qualification

Table 4.5 Shows distribution of sample according to additional qualification

Additional qualification	Frequency	Percentage
DNN/PBNN	5	16.67
Nil	25	83.33
Total	30	100



The pie diagram shows that distribution of sample according to additional qualification

4.6 Mean ,standard deviation and P value of mean knowledge by age

Age	Mean	Standard deviation	P value
<25.5	12.4	1.18	0.18
>25.5	11.73	1.44	

The student 't' test was used find out whether there is any significant difference in the mean knowledge between two age groups. The knowledge of younger age group ranged from 12 to14 with a median and mean of 12. The knowledge of older age group is 11 to 14 with a mean and median of 11 each . However the observed increase in mean knowledge was not statistically significant (P value 0.18).

4.7 Mean, standard deviation and P value of mean knowledge by ICU experience of the staff nurse.

ICU experience	Mean	Standard deviation	P value
<2 year	12.6	1.48	0.97
>2 year	12.8	1.19	

Median was used to divide the group in to two. Those who had experience of two year or less experience in the ICU were considered as less experience and those who were having more than 2 year of experience were considered as having more ICU experience. The knowledge of staff nurse with less ICU experience ranged from 10 to 14 with a mean of 12.06 (1.48).The knowledge of staff nurse with more ICU experience ranged from 11 to 14 with a mean of 12.08 (1.19). The student 't' test was used find out whether there is any significant

difference in the mean knowledge of two groups. There was no statistically significant different in the mean total knowledge of the two groups (p =0.97).

The table shows the distribution of knowledge in different critical care elements of endotracheal suctioning.

Question No	Knowledge Question	Frequency	Percentage
1	How frequently should the endotracheal /tracheal suctioning be done .	20	66.6
2	Which is the best method of suctioning .	30	100
3	While giving nasotracheal suctioning to an adult patient , suction catheter should be inserted up to .	13	43.33
4	Which of the following is true regarding endotracheal suctioning .	30	100
5	Maximum time limit for an endotracheal suctioning is .	28	93.33
6	Which is the most appropriate position for giving endotracheal suctioning .	19	63.33
7	During suctioning the suction catheter has to be rotated at.	19	63.33
8	Successful suctioning is confirmed by which method .	26	86.66
9	which of the nerve is stimulated during edotracheal suctioning .	22	73.33
10	which will be the possible complication of suctioning due to irritation of carina.	24	80

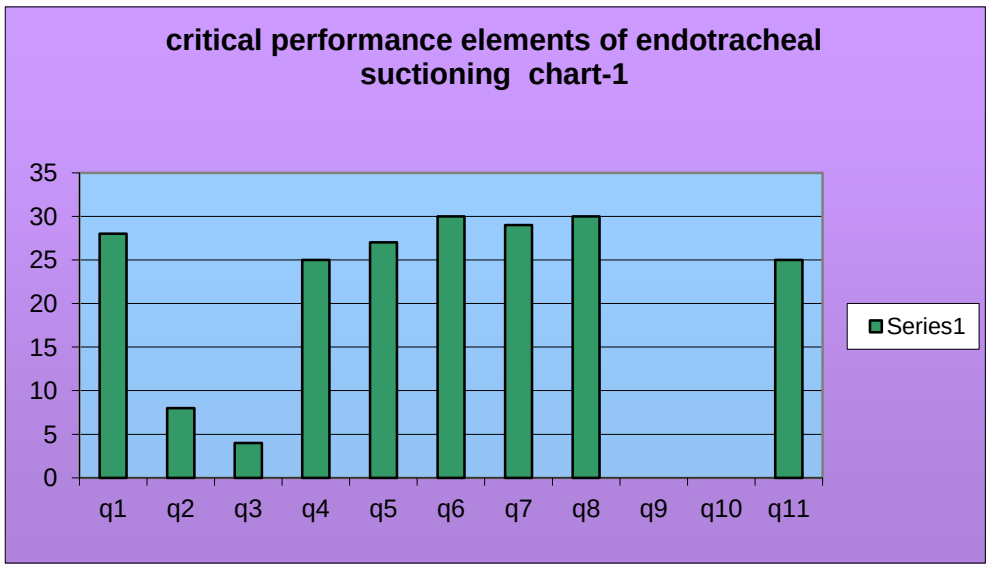
11	what is the recommended suction pressure for endotracheal suctioning in adults.	29	96.66
12	You are being asked to do an endotracheal suctioning for a patient with ET tube size 8mm. Appropriate size of suction catheter you will choose for this patient is.	22	73.33
13	How frequently should the ET suction catheter be changed	29	96.66
14	Which one of the following complication can arise due to absence of hyperventilation before giving suctioning	30	100
15	Sodium bicarbonate should not be instilled through the ET tube why	20	66.6

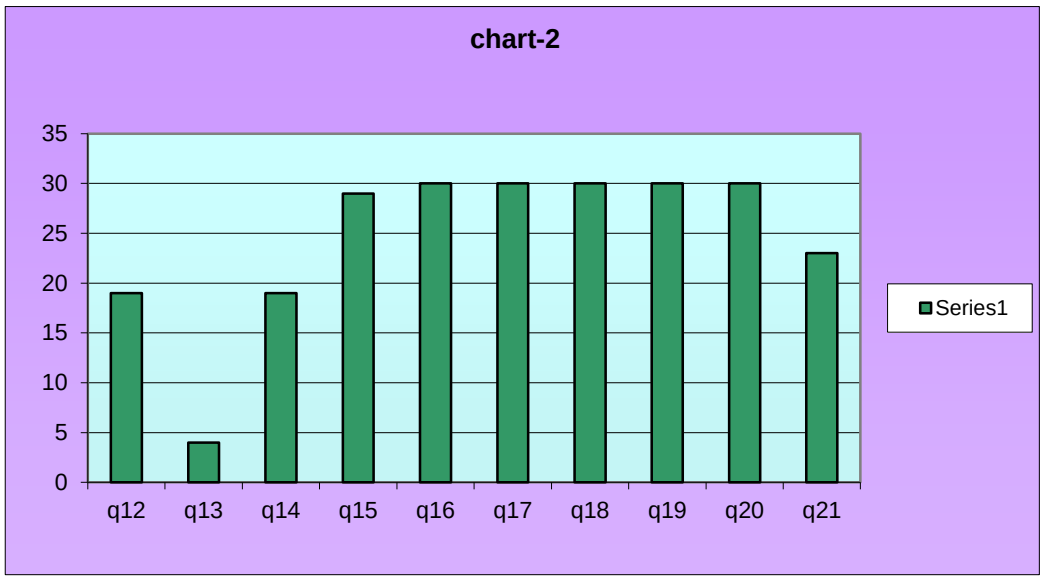
Sl. No	**Critical Performance Elements**	**Frequency**	**Percentage**
1	Wash hands	28	93.33
2	Identifies indications for suctioning.	8	26.66
3	Explain procedure to patient.	4	13.33
4	Prepares ambu bag and oxygen supply	25	83.33
5	Checks suction device with connecting tubing	27	90
6	Attaches sterile suction catheter .	30	100

7	Checks the availability of sterile normal saline or distilled water for cleaning tubing.	29	96.66
8	Dons sterile gloves and mask	30	100
9	Checks to make sure suction pressure at 80-120 mm Hg.	0	0
10	Detaches the patient circuit and maintain its sterility	0	0
11	Hyperoxygenates and hyperinflates before and suctioning.	25	83.33
12	Applies no suction while inserting the catheter	19	63.33
13	Applies continuous suction ,in 360^{o} rotation while withdrawing the catheter.	4	13.33
14	Restricts each suction time to 10-15 seconds	19	63.33
15	Resumes oxygen delivery system	29	96.66
16	Flush catheter and suction tubing until clear.	30	100
17	Hyperoxygenates and hyperinflates after suctioning (using ventilator 100% O2 setting and manual/sigh breaths or ambu bag).	30	100
18	Reassesses patient's respiratory status for expected and unexpected outcomes.	30	100
19	Discards used supplies after the procedure	30	100
20	Wash hands	30	100
21	Document need for suctioning and results in the nurse's note at least once per shift and with any changes.	23	76.67

4.8 The table shows the distribution of practice in different critical care elements in the performance of endotracheal suction

30 Endotracheal suctioning episode of 19 staff nurses was observed during all three shifts in NMICU and Stroke ICU The study period was October 2011. Total time taken for each suctioning episode is from 10- 15 minutes. The practice is assessed by using a Critical Performance Elements checklist. The check list consists of 21 points. The correct practice getting one mark and the incorrect practice getting zero mark. The total practice score obtainable was 21. Out of the 21 correct practice the observed correct practice ranged from12 (57.14%)to 17 (81%) The average correct practice observed were 15.07.(71.7%) .It is also observed that name of the nurses were practicing some of the critical performance elements of Ets that is checking to make sure suction pressure at 80-120 mm Hg.(0%), Detaches the patient circuit and maintain its sterility (0%), Applies continuous suction ,in 360^{o} rotation while withdrawing the catheter(13.33%).





The bar diagram shows the distribution of practice in different area of critical care elements performance of endotracheal suctioning

4.9 Mean, Standard deviation and p value of practice score by position of the staff nurse.

Position	**Mean**	**Standard deviation**	**P valu**
Temporary	14.8	1.21	0.27
Permanent	15.3	1.4	

The mean practice score of temporary staff nurse 13 to 17 with a median and mode of 13 each .The practice score of permanent staff nurse ranged from 12 to 17 with a median and mode of 16 each. However the student "t" test showed that there was no statistically difference in the mean practice score of both group. (P value=0.27)

Chapter - 5
SUMMARY, CONCLUSION, LIMITATION, DISCUSSION AND RECOMMENDATION

5.1 Introduction

This chapter gives a brief account of the present study including conclusion drawn from the findings and possible application of the results. Recommendations for further research and suggestion for improving the present study are also presented.

5.2 Summary

This study was undertaken to assess the knowledge and practice of endotracheal suctioning among nurses in NMICU and STICU, SCTIMST, Trivandrum.

The specific objectives of this study:-

a. To identify the knowledge of endotracheal suctioning among nero nurses.
b. To check the practice of endotracheal suctioning among neuro nurses.

Need for the study was that many studies done so far revealed that knowledge and practice of endotracheal suctioning critical nurses is not satisfactory. Most of the neurological patients need mechanical ventilator which has many potential risks. Each nurse should be aware of indication, contraindication, adverse effects of endotracheal suctioning.

The investigator's experience in neuro medical intensive care units in Sree Chitra Tirunal Institute for Medical Sciences and Technology, shown that

the nurses need to have much knowledge about the endotracheal suctioning but there practice is in average level. So this study was done to understand nurses knowledge and practice. A self-administered questionnaire was used for collecting data from 30 samples. Questionnaire had two parts, first part consists of socio demographic data and second part consists of 15 questions on endotracheal suctioning. Practice is assessed by critical care performance elements check list consists of 21 points. Practice is assessed by 30 observation in 19 staff during all three shift. Data collection done from the month of August 2011 to October 2011, analyzed and interpreted using descriptive and inferential statistics.

5.3 Limitations

The study was limited to Neuro Nurses working in NMICU and STICU in SCTIMST, Trivandrum. The sample size is limited to 30.

5.4 Major findings of the study

Knowledge of 30 staff nurses in neuro medical ICU related to endotracheal suctioning. Median was used to divide the group in to two.

The total knowledge ranged from 10-14. The knowledge of staff nurse with less ICU experience ranged from 10 to 14 with a mean of 12.06 (1.48).The knowledge of staff nurse with more ICU experience ranged from 11 to 14 with a mean of 12.08 (1.19). There was no statistically significant different in the mean total knowledge of the two groups. The knowledge of younger age group ranged from 12 to14 with a median and mean of 12. Were the knowledge of older age group is 11 to 14 with a mean and median of 11 each however the observed increase in mean knowledge was not statistically significant. The practice is assessed by 19 staff nurses including temporary staff nurses and permanent staff nurse. The mean practice score of temporary staff nurse 13 to 17 with a median and mode of 13 each .The practice score of permanent staff nurse ranged from 12

to 17 with a median and mode of 16 each. However there was no statistically difference in the mean practice score of both groups.

5.5 Recommendations

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

1. Similar study would be repeated in other intensive care units .
2. Similar study can be repeated by increasing the size of the sample.

5.6 Discussion

The findings of the study were discussed with reference to the objectives and with the findings from other studies. The objective of the study were to identify the knowledge of endotracheal suctioning among nurses in neuro medical ICU and to check the practice of endotracheal suctioning among nurse in neuro medical ICU by using a critical care performance elements check list. In this study 15 items survey includes specific questions regarding endotracheal suctioning. A total of 30 no neuro nursing staff responded to the survey. The data given table 4.7 shows that nearly half of the sample had above average knowledge on endotracheal suctioning. In this study the practice was assessed by critical care performance check list include 21 points. Study shown that Neuro Nurses had above average knowledge level but the practice is less than the knowledge

5.7 Conclusion

A descriptive study was undertaken to assess the knowledge and practice of endotracheal suctioning among nurses in neuro medical ICU in SCTIMST, Trivandrum. The study was conducted in a relatively small sample of 30 nurses. This study clearly portrays that nearly half of the nurses had above average knowledge score.

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KNOWLEDGE TEST ABOUT ENDOTRACHEAL SUCTIONING AMONG NURSES IN NEURO MEDICAL ICU

Note : Fill up or tick mark appropriately

1. Age :_____ years

2. Sex : Male /Female

3. Designation : Temporary/ permanent

Qualification : GNM BSc (N) MSc (N) DCN /PBCN

Total years of professional experience : _____

Total years of ICU experience : _____

Note : encircle (0) the most appropriate answer . Total 15 questions, each question carries one mark

1 How frequently should the endotracheal /tracheal suctioning be done ?

a) every 2 hrs b) every 1 hr
c) when required d) don'know

2 Which is the best mehod of suctioniong ?

a) closed method b) open method
c) both a& b d) don't know

3 While giving nasotracheal suctioning to an adult patient , suction catheter should be inserted up to ?

a)10 –15 cm b)16 –20 cm

c)21 –25 cm d)26 – 30 cm

4 Which of the following is true regarding endotracheal suctioning ?

a) To be done while inserting the catheter
b) To be done while withdrawing the catheter
c) Both a & b
d) Don't know

5 Maximum time limit for an endotracheal suctioning is ?

a)15 sec b)20 sec

c)25 sec d)30 sec

6 Which is the most appropriate position for giving endotracheal suctioning ?

a)semi Fowler's position b) right lateral position

c)supine position d) left lateral position

7 During suctioning the suction catheter has to be rotated at ?

a) 90˚ b)120˚ c) 180˚ d) 360˚

8 Successful suctioning is confirmed by which method ?

a) auscultation of the lung
b) no visibile secretion in the ET tube
c) improvement in SPO_2 level
d) don't know

9 which of the nerve is stimulated during endotracheal suctioning ?

a) facial nerve
b) vagus nerve
c) glossopharyngeal nerve
d) both b & c

10 which will be the possible complication of suctioning due to irritation of carina?

a) persistant cough
b) paroxysmal cough
c) both a & b
d) don't know

11 what is the recommended suction pressure for endotracheal suctioning in adults ?

a) -60 to -79 mmHg
b) -80 to -120 mmHg
c) -121 to -180mmHg
d) –181 to -200mmHg

12 You are being asked to do an endotracheal suctioning for a patient with ET tube size 8mm. Appropriate size of suction catheter you will choose for this patient is

a) 10 F b) 12 F
c) 14 F d) 16 F

13 How frequently should the ET suction catheter be changed ?

a) After each suctioning
b) After 12 hrs
c) After 24 hrs
d) After 48 hrs

14 Which one of the following complication can arise due to absence of hyperventilation before giving suctioning ?

a) hypotension
b) hypoxia
c) decreased ICP
d) don't know

15 Sodium bicarbonate should not be instilled through the ET tube why ?

a) It rises pH of the blood
b) It damages lung tissue
c) It accumulates CO2
d) don't know

ANSWER KEY

1 ©, 2 (a), 3 (b), 4 (b) 5 (a) 6 (a) 7 (d) 8 (a) 9 (b) 10 (b) 11 (b) 12 (b) 13 (a) 14 (b) 15(b)

Critical Performance Elements Check List

SL NO	Critical Performance Elements	Yes	No
1	Wash hands		
2	Identifies indications for suctioning.		
3	Explain procedure to patient.		
4	Prepares ambu bag and oxygen supply		
5	checks suction device with connecting tubing		
6	Attaches sterile suction catheter .		
7	Checkes the availability of sterile normal saline or distilled water for cleaning tubing.		
8	Dons sterile gloves and mask		
9	Checks to make sure suction pressure at 80-120 mm Hg.		
10	Detaches the patient circuit and maintain its sterility		
11	Hyperoxygenates and hyperinflates before and suctioning (using ventilator 100% O2 setting and manual/sigh breaths or ambu bag).		
12	Applies no suction while inserting the catheter		
13	Applies continuous suction ,in 360^{o} rotation while withdrawing the catheter.		
14	Restricts each suction time to 10-15 seconds		
15	Resumes oxygen delivery system		
16	Flush catheter and suction tubing until clear.		
17	Hyperoxygenates and hyperinflates after suctioning (using ventilator 100% O2 setting and manual/sigh breaths or ambu bag).		
18	Reassesses patient's respiratory status for expected and unexpected outcomes.		
19	Discards used supplies after the procedure		
20	Wash hands		
21	Document need for suctioning and results in the nurse's note at least once per shift and with any changes.		