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Graduate School of Health Sciences



Master of Science Thesis

**ASSESSMENT OF THE KNOWLEDGE AND PRACTICES OF
CRITICAL CARE NURSES ABOUT ENDOTRACHEAL
SUCTIONING IN ADULT PATIENTS IN AL DIWANIYAH
CITY HOSPITALS AT IRAQ**

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SUCTIONING IN ADULT PATIENTS IN AL DIWANIYAH CITY
HOSPITALS AT IRAQ**

BY

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**The Institute of Health Sciences
The Department of Nursing**

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ACCEPTANCE AND APPROVAL

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ETHICS STATEMENT

The thesis entitled “Assessment of the knowledge and practices of critical care nurses about Endotracheal Suctioning in adult patients in Al Diwaniyah city hospitals at Iraq” which was prepared and presented as a thesis, was written by myself and in accordance with the scientific, academic rules and ethical conduct. The idea/hypothesis of my thesis solely belongs to my supervisor and to me. The research pertaining to the thesis was conducted by myself and therefore, all of the used sentences and interpretations within the work belongs to me.

I declare the aforementioned issues to be correct.

Signature

24.01.2024

Azhar Wannas Shnawa ALHAMZA

ABSTRACT

ASSESSMENT OF THE KNOWLEDGE AND PRACTICES OF CRITICAL CARE NURSES ABOUT ENDOTRACHEAL SUCTIONING IN ADULT PATIENTS IN AL DIWANIYAH CITY HOSPITALS AT IRAQ

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Master of Science in Nursing

Advisor: Assoc. Prof. Dr. Huri Seval GÖNDEREN ÇAKMAK

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Background: In intensive care units, endotracheal suctioning (ETS) is an necessary technique. It involves taking lung excretions out of a patient who is using an artificial airway. When administering this technique, all intensive care nurses must be aware of any possible risks a patient may be exposed to and should make every attempt to prevent or reduce these risks. **Objectives :** The goal of the research is to determine Assessment of the knowledge and practice of critical care nurses about ETS in hospitals determine the relationship between demographic characteristic data with nurse's knowledge and practices. **Methodology:** The type of the study is descriptive & cross-sectional was performed in Al-Diwaniyah city hospitals on Suitability sample of 109 critical-care nurses from three hospitals to assess the practices & knowledge of critical care nurses about ETS for elderly patients. It was carried out in the period from (1/4/2022) to (1/7/2022). **Results:** The biggest percentage of the research samples are men (70%) and the rest are women, and the current research shows that (60%) of the research samples are among the ages of (20-29) years, and the educational level represents The biggest percentage of them (54%) were from the Faculty of Nursing, and (34%) for not more than a year were employees in the ICU, and most of them (58) were employees (1-5) years of working in nursing field , (68%) of them had a teaching course In the (ICU) category (1-2) workshops were 54.1%. **conclusions :** nurses have practical level higher than the knowledge and there is no association among demographic data with nurse's knowledge and practices To prevent risks on patients life and get the greatest results, nurses doing this practice must be skilled and well-educated. So there is an urgent need for the necessity of broadening the knowledge horizon of the staff of nurses through continuous education and continuous training courses .

2024, 56 pages

Keywords: Assessment, knowledge ,practices, intensive care unit nurses, endotracheal suctioning



ÖZET

IRAK, AL DIWANIYAH ŞEHİR HASTANELERİNDEKİ YOĞUN BAKIM ÜNİTESİ HEMŞİRELERİNİN YETİŞKİN HASTALAR İÇİN ENDOTRAKEAL ASPIRASYON HAKKINDAKİ BİLGİ VE UYGULAMALARININ DEĞERLENDİRİLMESİ

Azhar Wannas Shnawa ALHAMZA

Hemşirelik, Yüksek Lisans

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Amaç: Yoğun bakım ünitelerinde endotrakeal aspirasyon (ETS) gerekli bir tekniktir. Yapay hava yolu kullanan bir hastanın akciğer atılımlarının alınmasını içerir. Bu tekniği uygularken tüm yoğun bakım hemşireleri hastanın maruz kalabileceği olası risklerin farkında olmalı ve bu riskleri önlemek veya azaltmak için her türlü çabayı göstermelidir. **Amaç :** Araştırmanın amacı, hastanelerdeki yoğun bakım hemşirelerinin ETS konusundaki bilgi ve uygulamalarının değerlendirilmesi, demografik karakteristik veriler ile hemşirenin bilgi ve uygulamaları arasındaki ilişkinin belirlenmesidir.

Metodoloji: Araştırmanın türü tanımlayıcı ve kesitsel olup, yoğun bakım hemşirelerinin yaşlı hastalar için ETS ile ilgili uygulamalarını ve bilgilerini değerlendirmek amacıyla Al-Diwaniyah şehir hastanelerinde üç hastaneden 109 yoğun bakım hemşiresinin Uygunluk örnekleme üzerinde gerçekleştirildi. (1/4/2022) - (1/7/2022) döneminde gerçekleştirildi. **Bulgular:** Araştırma örneklemelerinin en büyük yüzdesinin erkeklerden (%70) geri kalanının kadınlardan oluştuğu ve mevcut araştırma, araştırma örneklemelerinin (%60) yaşları (20-29) arasında olduğunu ve eğitim düzeyi temsil etmektedir Bunların en büyük yüzdesi (%54) Hemşirelik Fakültesi'ndendi ve (%34) bir yıldan fazla olmayan bir süredir yoğun bakımda çalışanlardı ve bunların çoğu (58) (1-5) yıllık çalışanlardı Hemşirelik alanında çalışan kişilerin (%68'i) öğretmenlik kursu vardı. (YBÜ) kategorisinde (1-2) atölye çalışmaları ise %54,1 idi. **Sonuç:** Hemşirelerin uygulama düzeyi bilgiden daha yüksektir ve demografik veriler ile hemşirenin bilgi ve uygulamaları arasında ilişki yoktur Hastanın yaşamına yönelik riskleri önlemek ve en iyi sonuçları almak için bu uygulamayı yapan hemşirelerin yetenekli ve iyi eğitilmiş olması gerekir. Bu nedenle hemşire kadrosunun bilgi ufğunun sürekli eğitim ve sürekli yetiştirme kursları yoluyla genişletilmesi gerekliliğine acil ihtiyaç vardır.

2024, 56 sayfa

Anahtar Kelimeler: Değerlendirme, bilgi, uygulamalar, yoğun bakım ünitesi hemşireleri, endotrakeal aspirasyon.



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INDEX OF ABBREVIATIONS AND SYMBOLS

% The percent sign



LIST OF ABBREVIATIONS

ETS	Endotracheal suctioning
ICU	Intensive care unit
ETT	ENDOTRACHEALTUBE
CSS	CLOSED SUCTIONING SYSTEM
VAP	Ventilator-associated Pneumonia
CCNs	Critical care nurses
SSD	Subglottic secretion drainage
MV	Mechanical ventilation
CTSS	Closed tracheal aspiration system
Otss	Open endotracheal aspiration system

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1. INTRODUCTION

In intensive care units, endotracheal suctioning (ETS) is a necessary technique. It involves taking lung excretions out of a patient who is using an artificial airway. When administering this technique, all intensive care nurses must be aware of any possible risks a patient may be exposed to and should make every attempt to prevent or reduce these risks (Yılmaz and Özden 2021).

Mechanical suction of bronchial secretions from a patient's artificial airway is used as part of respiratory hygiene care and automated ventilation to prevent obstruction. The procedure core functions preparing the patient, doing the suctioning, and providing follow up. For severely ill patients, tracheobronchial suctioning with a closed suctioning device has physiological advantages. Evaluation of oral suctioning, oral hygiene, and endotracheal tube management procedures is crucial since micro aspiration of ooze is a potential susceptibility for Ventilator-associated Pneumonia. Because the glottis cannot be closed, the intubation and the mechanical breathing hinder the movement of a mucus in the respiratory passages and prevent effective expectoration by coughing. This is the justification for the use of routine tracheal suction in these critically ill patients. ETS traditionally involves removing the patient from the ventilator, manually inflating the endotracheal tube ("bagging"), putting a suction catheter into the ETT and respiratory airways, and using a negative pressure to clear collected the secretion. The normal Saline could be injected in between suction cycles to trigger cough reflexes and minimize secretions. (Schulz *et al.* 2021)

There are two systems closed suction & open suction catheters. Suctioning the respiratory airway as soon as removing the endotracheal pipe from the life support machine is known as "open suctioning" and Suctioning through a snug-fitting device on the endotracheal tube, which enables the ventilator to be connected and operating during suctioning, is referred to as closed suctioning. A manually operated suction flow switch is part of the suctioning system. If suctioning an endotracheal tube or a patient with a tracheostomy, either a closed suctioning system (in-line suctioning) or an open suction

catheter may be used. Utilization of the correct size catheter is necessary to ensure it will pass without difficulty through whatever artificial airway is in place (Ghafari *et al.* 2020)

Most patients require a 12 or 14 Fr catheter when executing nasal-tracheal suctioning. Gloves, a self-inflating bag for possible resuscitation, a suction canister, and connecting tubing are other equipment that are required. Lubricant is also required if nasal-tracheal suctioning is done.

For patients who require mechanical respiration, artificial airways, a decreased level of consciousness, and the elimination of tracheal bronchial secretions. Entrance to the patient's trachea for deep tracheal suctioning is made simple by artificial airways. This surgery might be necessary in an emergency or as part of the patient's predetermined course of treatment

Additionally, there are two suctioning techniques depending on the catheter suction depth chosen throughout the process. They are, 1-deep suctioning 2.shallow suctioning

Suction is necessary for patients for a wide range of conditions:

1- For patients who have had head and neck surgery, have reduced consciousness, or who lack or have a compromised swallowing reflex, oropharyngeal suction could be necessary. Mucosal trauma should be avoided, especially in patients with coagulation abnormalities.

2- Patients who are unable to do so on their own due to an underlying condition, after surgery, or due to a reduced aware level may benefit from tracheal suction. Uncleared lower airway secretions may act as a breeding ground for bacteria. (wood 1998). Patients have reported that suctioning makes they feel anxious and uncomfortable. There are several ways to accomplish tracheal suction: orally using an oropharyngeal airway, nasally using a nasopharyngeal airway, etc (contraindicated if patients has

clotting abnormalities or a fractured base of skull). Tracheal/endotracheal suctioning can have certain highly dangerous side effects, despite the fact that it may be a required surgery some of these are hypoxia, where suctioning can remove both oxygen and secretions from the lung , Arrhythmias and hypotension brought on by vasovagal responses , Mucosal trauma, Cross contamination

Indications that could suggest using an endotracheal or tracheal suction :

Inability to clear secretion effectively , Reduced air entry on auscultation , Raised respiratory rate Audible secretion , Spontaneous but ineffective cough , Reduced oxygen saturation levels. The use of closed system suctioning and airway control are largely covered by latest guidelines, which may also be an accurate reflection of current procedures. Knowledge of practice may facilitate of selecting steps to enhance patient's results. In order to build cooperative rules and procedures, it may also be helpful to compare the actions of respiratory therapists and nurses.. (Pinto *et al.* 2019)

A skilled nurse according to a set protocol in order to avoid complications and speed up recovery must do endotracheal suctioning. According to studies, hypoxia is the most common side effect of endotracheal suctioning.

Standard endotracheal suctioning is advised literature to prevent complications the need to conduct this study emerged due to the observation of some problems in implementing this method according to research evidence and nursing protocols. These problems include a lack of sufficient knowledge or motivation to adhere to the latest evidence and current evidence. Endotracheal aspiration is a measure based on research evidence and there are many published studies regarding this routine procedure, so there is a need until the nursing staff possesses the knowledge and practice required to achieve the best results for patients and avoid potential complications. These rules that greatly affects nursing care must be developed, adopted, and critically reviewed by nursing administrators, educators, advanced practice nurses, and staff nurses (Tembhare and Singh 2021).

1.1 Importance of the Thesis

Mechanical ventilation is a vital, life-saving therapy for clients with dangerous illness and respiratory disorder. Endotracheal tube suction is a procedure which aims to maintain clear pathway by mechanically expelling accumulated pulmonary excretions, in patients with artificial airways.¹ This procedure is associated with consequences and risks: haemorrhage, lesions of the tracheal mucosa, infections, atelectasis, cardiovascular disorder, hypoxemia and increase intracranial pressure (Majeed 2017).

The ETA is a vital part in airway path management in clients on artificial ventilation, being one of the most commonly conducted invasive procedures in the Intensive Care Unit (ICU). Its major aim is to evacuate accumulated lung excretion in order to keep the air pathways permeability; provide sufficient oxygenation; avoid the risk of ventilator-associated pneumonia (VAP) and prevent atelectasis and pulmonary consolidation. Suctioning for intubated and ventilated patients is a routine nursing procedure, but performance differs between doctors and hospitals (American Association of Respiratory Care 2010).

Endotracheal suctioning is one of the actions most important in nursing care, directed at expelling secretions and, through this, consolidation of the upkeep of the airways' permeability, as well as optimizing ventilation and oxygenation. The procedure is main for the stability of respiratory function, as the presence of a ventilator prosthesis interferes in the physiology of coughing and of the mucociliary system, which can inhibit the enough clearance of excretions from the tracheobronchial tree and cause stasis of this content (Pedersen *et al.* 2009).

As this procedure is associated with several complications and risks, nurses should have an adequate knowledge on how to perform the procedure according to the evidence-based practice. Previously only a few studies have analysed nurses' knowledge of the guidelines on endotracheal suctioning (Negro)

That performing aspiration by well-educated nurses based on validation of the patient's need has better results and fewer side effects than routinely performing it every two hours (Mwakanyanga *et al.* 2018).

Clinical practice guidelines are “systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances as a type of high-level evidence in the evidence hierarchy, guidelines provide clinicians trust worthy recommendations and can be used to reduce inappropriate practice variations and promote the delivery of high-quality care (Jansson *et al.* 2013).

1.2 OBJECTIVE OF THE THESIS

The aim of the study is to determine Assessment of the knowledge and practice of critical care nurses about ETS in hospitals determine the relationship between demographic characteristic data with nurse's knowledge and practices.

1.3 Statement of the Problem

A study to assess the knowledge and practices of intensive care unit nurses about endotracheal suctioning for adult patients in Al Diwaniyah city hospitals, Iraq

1.4 Hypothesis of the study

The main hypothesis of the study are as follows:

H0: there is no relationship between demographic characteristic data with nurse's knowledge and practices.

H1: there is relationship between demographic characteristic data with nurse's knowledge and practices.

1.5 Limitations:

- Time limits: 2022
- Place limits ICU unit in Al Diwaniyah city hospitals, Iraq

2. GENERAL INFORMATION

The literature approval step is one of the most important steps of the research to enhance the foundations of the study to review the literature, where the literature review provides basic information to understand what is known in the current situation as a topic where the importance of the research project has been highlighted, and the literature review is a set of writings for the purpose of examining the most prominent aspects of From the beginning to the end of each study project, where the literature review is a critical component, it enhances the selection of the methodology, the creation of tools and the conduct of data analysis, in addition to providing insight into the personality of the problem. This aspect was concerned with reviewing the literature related to aspiration as follows:

- Research studies associated with ventilated ETT systems in critical care units.
- Research studies related to the assessment of nursing competence and knowledge in this aspect
- Research studies related to closed and open suction systems for patients in critical care units

2.1 Research studies associated with ventilated ETT systems in critical care units.

The study was conducted by Maryanne *et al.* 2017 a method of suctioning subglottic secretions after the endotracheal tube cuff (ETT) in a developed method with ventilators associated pneumonia (VAP). The experiment performed subglottic secretion drainage (SSD) to reduce ETTs by suctioning subglottic secretions and showing lower rates of VAP. Seven performance SSD ETTs were compared against non-SSD ETTs to prevent suction of bulging handcuffs. The experiment relied on placing ETTs in a vertical manner in cylinders with a diameter of two cm, and four ml of microbial suspension was added to be measured over the swollen limbs after an hour

alone, and the suction was measured through ETTs, which showed the absence of leakage of rotational movement and evaluation over the twenty-four hours. The collected inhaled liquid was used to inoculate the agar and incubated it aerobically at thirty-seven degrees Celsius for twenty-four hours. The study found, through ETTs, a large variation of aspiration of fluids and its associated design materials, the change in performance was the most likely due to the random way in which the involuntary folds in the cuff ETT are overgrown, and the PneuX ETT is the ETT that has the ability to prevent aspiration significantly. Continuous through the cuff in all experiments.

Taha Ismail study, 2019, which agreed with the current study regarding the association of the VAP ventilator with endotracheal tube placement (ETT) and the possibility of increasing the risk of developing VAP. Patients subjected to mechanical ventilation and admitted to intensive care units, and similarly, the study worked to determine the diagnosis by matching four of the controlled elements in ten years for a specific age group. The first is in the time of ETT entry in medical files, in addition to demographic factors, which are among the most important factors for its development. Similar to this study, the study used logistic regression analysis to test the association between changing the location of ETT and VAP.

A study by Tharangani, 2020 indicated the knowledge and practices of nurses who take care of patients with an endotracheal tube admitted in the intensive care units of the National Hospital of Sri Lanka, where the study explained what is used as the method of artificial air so that mechanical ventilation is facilitated and the most used of the endotracheal tube, The purpose was to assess the knowledge and practice of intensive care unit nurses, and the study followed the descriptive analytical approach, and reached results indicating that the majority of nurses are sufficiently familiar with the current protocols and guidelines associated with ET tube care, especially that deficiencies are related to tracheal complications, activities that cause tracheal trauma, etc. It may cause dangerous diseases.

Research studies related to the assessment of nursing competence and knowledge this aspect

Study by Asmaa 2022 and Al-Loum 2016. The study conducted a statistical and theoretical analysis of endotracheal aspiration (ETS) operations that are performed through the introduction of (ETS) to remove the accumulated mucus in the endotracheal tube, trachea and lower airways for patients who need intubation, as the intervention results from this variety of cardiopulmonary interventions that cause serious complications. For nurses, the main objective of the study was to explore the knowledge of nurses with ETS. Where the cross-sectional study was conducted through a self-administered questionnaire to know the nurses in performing endotracheal aspiration for patients in the intensive care unit. The results of this study showed that the majority of nurses were familiar with ETS with an average score of 71.7 ± 10.8 . Where this study is also one of the studies interested in many different aspects of endotracheal aspiration among critical care nurses, (CCNs) and the results indicated the need for educational intervention to improve knowledge of ETS services.

The study of Ali 2022 agreed on the importance of evaluating the practice of nurses about endotracheal tube care for patients in the intensive care unit in hospitals, especially that the death rate has spread in hospitals due to medical errors, so it was worth emphasizing the need for nurses to deal with the endotracheal suction tube, especially With regard to ETT and Tong Care to reduce complications, the study took care of dealing with the intensive care unit and relied through the study samples on the electronic questionnaire for evaluation. Review-based knowledge of process evaluation, data analysis used in SPSS statistical processing software, Which refers to the percentage of tube installation 44% about the nurses' knowledge of how to install the tube despite the technique (12 10% knowledge), where the nurses' knowledge of endotracheal intubation was 58%, despite the advantages of endotracheal intubation, and the nurses' knowledge of the types of airway humidifiers was 2%, and nurses' poor knowledge about types of airway humidifiers is likely to be lost. Similar to the foregoing, the study reached results with the knowledge of the nurses: 25.26% the

knowledge of the nurse is good, 27.36% have medium knowledge and 47.26% have poor knowledge, and the percentage is good, which is consistent with our current study.

The study by bakım *et al.* 2020 aims to identify the most common invasive procedures for tracheal aspiration and procedures taken by intensive care nurses for patients receiving mechanical ventilation to provide adequate maintenance of oxygen, alveolar ventilation, gas exchange, prevent pulmonary consolidation and emphysema, as well as reduce arranged risks. The main objective of the study was to assess the knowledge and behavior of nurses working in intensive care units for endotracheal aspiration applications. The model is based on tracheal aspiration information, a nurse-monitoring model of tracheal aspiration, and data assessment used for numbers and percentages. Studies measuring the reduction of defective and wrong practices in the trachea The results of the study indicated that 90.7 nurses working in the intensive care have the ambition to receive trainings related to their study in a positive and enhanced manner, especially that the study indicated that the participants applied the required procedures incorrectly, and on the other hand, The nurses participating in the study were designed to apply incorrect procedures during endotracheal aspiration to finish procedures that would cause a patient's heart rate to drop by 20 beats/min or more, or increase by 40 beats/min. or more, or arrhythmia (98.1%), which refers to the assessment of the patient's heart rate, and 83.3% were determined to record the endotracheal aspiration process, and it was noted that the nurses did not apply the steps she indicated for the study. The patient's pulse rate was evaluated from the Shah and compared to the pulse value, the patient's blood pressure was evaluated, and the study specifically explained. The average degree of nurses' knowledge regarding tracheal aspiration, which did not agree with the current study, which indicated that there is no relationship between the level of knowledge of the study sample members and their social and demographic variables, which indicates that there are no statistically significant differences in the level of knowledge due to the socio-demographic variables of individuals The study sample was at a significance level of 0.05. , where the value of statistical significance for all relationships between the level of knowledge and socio-demographic variables is greater than the value of 0.05.

The study by Wenjun Chen 2021 aimed to find out and determine the method of intensive care nurses' practice of evidence-based recommendations for tracheal suctioning, as it was based on the endotracheal suctioning method as one of the invasive procedures that are frequently performed by intensive care nurses, and to focus on the nurses' sufficient skill to perform suction. Tracheal, and the study concluded with large gaps of evidence and practices in educational testing services between caring practices, and emphasized the need to focus additional research to detect barriers and facilitators to implement evidence-based intratracheal sucking practices and develop context-appropriate interventions for the implementation of the guideline and rely on an integrated strategic approach.

2.2 Research studies related to closed and open suction systems for patients in critical care units

The study of Seyed Ardahli 2020 indicated that the commonly used endotracheal suction is used to clean the airway of patients under mechanical ventilation (MV). The main objective was to compare the effect of open and closed suction paper on the occurrence of ventilator-associated pneumonia (VAP), and the study relied The method of comparison with adult intensive care unit (ICU) patients, patients were randomly allocated and divided into two groups, the first with closed tracheal aspiration system (CTSS) and the second with open endotracheal aspiration system (OTSS). The results of the study were relatively in agreement with the current study in terms of demographic characteristics, which accounted for (56.7% males) and the two groups were similar in terms of age and gender in distribution, but the most prevalent bacterial pathogens were *Acinetobacter_Baumannii* (72.7%), *Klebsiella pneumoniae* (18.2%), The study indicated in the results and recommendations that the type of endotracheal aspiration (OSST versus CSST) has no effect on the occurrence of VAP, but other outcomes such as the duration of need for MV and ICU as well as mortality.

The study of Sayed, 2019 aimed to determine the method of tracheal suction as a procedure used to remove secretions to maintain a clean airway, as there are a number of side effects, especially after blood pressure, heart rate, respiratory rate and

differences in oxygen saturation are among the first problems of suction, and the aim was The main study is to compare the effects of open versus closed suction system on cardiorespiratory parameters and suction duration among patients with critical condition of mechanical ventilation. The study designed a comparative quasi-experimental research to achieve this goal, and the random sample included sixty patients in critical condition and undergoing mechanical ventilation, taken from the general intensive care in the hospital. Such as oxygen saturation, heart rate, average arterial blood pressure and respiratory rates, and the results of the study concluded that the average length of stay in the intensive care unit and the duration of endotracheal aspiration for seriously ill adult patients in open and closed suction, and the mean arterial blood pressure of seriously ill adult patients who are subject to ventilation The mechanical methods in the methods of open and closed suction systems, so that the study indicated that there were no statistically significant differences in the four successive measurements, and a group of closed suction systems had a higher average oxygen saturation than the one in the open group during suction and directly after suction measurements, and the study concluded that Application of a closed suction system to reduce instability in cardiac and respiratory parameters Compared with open suction systems among adult patients with serious illnesses under mechanical ventilation, the recommendation indicated by the study is the possibility of repeating more research on this eye and the possibility of comparing suction methods with infections acquired in intensive care units.

3. MATERIAL METHODS

In this section, the methodology that will be used in the study is explained, and this includes the research method, the place of the study, the responsive sample, the questionnaire, the ethical principles and the analysis of the data.

3.1 Location of the research

The research is being carried out in Al-diwanayah City | Al-diwanayah health directorate Al-diwanayah City Hospitals (Intensive Care Unit).

3.2 Ethical Committed Approval

Prior to initiating this study, approvals were attained from the behavioural Research and Ethics Boards of Çankiri Karatiken University to ascertain on this research study complies with the ethical and safety standards of the participants. After the approval of the Behavioural Research and Ethics Councils, the researcher presented a comprehensive explanation that involves the study's aims and approach to the Iraqi Ministry of Health to attain formal approval, And it has been submitted to the diwanayah Health Directorate.

3.3 Study Design

The type of the study is descriptive & cross-sectional was performed in Al-Diwanayah city hospitals for determining the Knowledge and Practices of ICU nurses about (ETS) for the elderly patients. It was carried out in the period from) 1/4/2022) to (1/7/2022).

3.4 Study Sample

Purposive sampling approaches was used With the aim of selection the suitable sample for the study 109 samples it was choosed at the end for taking part in the research . Questionnaires were performed person to person with the nurses and informed consent was attained.

3.4.1 Implication Standards

1. Nurses from various learning levels (Nursing Preparatory School, Nursing Institute, College of Nursing and nurses with master's degrees) working in ICU
2. Nurses who would like to take part in in the research

3.4.2 exception standards

Nurses who rejected to take part in the research according to their own desire and nurses from other departments who do not work in the intensive care unit .

3.5 Data Instrument

A person-to-person interview will be carried out with the ICU nurses to answer the questionnaire after attaining approval from the establishment. The researcher will attain the consent of each nurse play a part in the research and will display the study form. Statistics gathered between (1/4/2022) (1/7/2022).

This questionnaire was designed and managed in Iraq by researchers (Majeed, H. M. (2017). in Iraq, and approval was attained from the researcher to use the questionnaire.

The research instrument will be a questionnaire consist of :

two instruments: The major instrument was a questionnaire for measuring knowledge relate to ETS which represents the level knowledge of critical care nurses about ETS and measured by the correct reply to the elements via using of two choices for replying (1: Incorrect response, 2: Correct response), the another instrument which used was a list for measuring nursing execution about ETS process which represents the choices were designed for preforming the action or not (1: Not done, 2:Done) Contain 31 Questions

3.6 Statistics Analysis

The statistics attained in this research were analysed by the (spss) package program, and two arithmetical methods were used in the research Statistics analysis to decide whether the research had achieved its objectives. It is thought that the outcomes involved big importance. The importance level was taken as $p \leq 0.05$.

3.7 Pilot Study

This experimental study was performed to reveal the strength and trustworthiness of the study instrument, precision and its effectiveness which authenticated , and typical time required to gather statistics for every topic which can assessed throughout the conversation processes and to discover obstacles that could face.

The experimental study targeted to accomplish the next Aims:

3. Capability of study tools improvement and examining
4. Estimate of the tool's viability.
5. Identifying any problems that can arise as an outcome of the suggested methods.
6. Assessment of suggested statistics analysis methods for the discovery of possible problems.

7. The researcher's time evaluation throughout data gathering.

3.7.1 Outcomes of the Experimental Study

8. The inquiry form (questionnaire) is trustworthy.
9. The whole time needed for replying the questionnaire reached from (20-25) minutes.
10. The elements of the tool were explained and the basis on which the study was based was identified.

The questionnaire went through a number of stages before it appeared in its final form:

- 1) Identifying the data that will be gathered during the questionnaire in relation to the study inquires.
- 2) Choose the manner and setup of the questionnaire.
- 3) Identifying the kind of standard that controls the nature of answer in the questionnaire.
- 4) Submitting the questionnaire to the supervisor so that he gives his own opinion and observations on improving and developing the questionnaire and amending the questionnaire based on these observations
- 5) The questionnaire was presented to a group of experts to obtain their opinion and observations about the questionnaire and how to develop and amend it based on these observations.
- 6) Conducting a reliability test on it by distributing the questionnaire to a sample of 20 nurses.
- 7) Writing the questionnaire in its final form, then printing, reviewing and distributing it.

3.7.2 Reliability of the Questionnaire:

Reliability of the Studied Questionnaire (n=20)

The trustworthiness coefficient for the scale was obtained using Alpha cronbach method, and The trustworthiness value reached (0.867), which is an suitable value that displays the high level of trustworthiness of the research tool and permits the tool to be used to the intention of the research.

3.8 Approach of statistical data analysis

All analyzes and statistics were carried out by spss program. mono analysis of variation and independent sample t-test with Bonferroni post-hoc tests were carried out for association of incessant variables among groupings. descriptive statistics are offered as mean $\pm$ sd for incessant variables and percentage for categorical variables. Pearson's correlation analysis was used for evaluating the amount of the association among variables. $p < 0.05$ was counted as arithmetically important.

3.8.1 Descriptive Method

Descriptive statistics comprises a group of arithmetical & statistical approaches that are assumed to express the chief types of a statistics quantitatively via benefit from tables & graphs. descriptive statistics always target to submit and express the data which is needed to be treated, systematized, shortened and classified, in addition to displaying them in a easy and obvious approach that makes it simpler for the receiver to distinguish and know its subject. The analysis carried out via using :

1- Arithmetical indices "Frequencies and percent" as follows:

$$\% = \frac{\text{Frequency}}{\text{Sample Size}} \times 100$$

2- Average of the grades M.s & the total average grade (M±).

It is possible to extract the average score in the following method:

$$M.S = \frac{\sum r_i = 1F_i \times S_i}{\sum r_i = 1F_i} \times 100$$

For Knowledge Questionnaire

M.s=1-1.33 were poor responses

M.s.=1.34-1.66 were fair responses

M.s.=1.67-2 were good responses

The complete replies be in harmony with entire mean of score, which follow:

$$\text{total mean of scores} = \frac{\text{Maximum total sores} - \text{munimum total sores}}{3}$$

M=33-44 were Poor Knowledge

M=44.1-55 were Moderate Knowledge

M=55.1-66 were Good Knowledge

c- SD test ±standard deviation

$$SD = \sqrt{\frac{1}{n-1} \sum_{i=1}^n (X_i - \bar{X})^2}$$

d- Can be using correlational factor "Cronbach alpha" worked in calculating the interior stability of the research instrument, which could be determined via applying the next equation:

$$\alpha = \frac{K}{K-1} \left[1 - \frac{\sum_{i=1}^K \sigma_{ii}}{\sum_{i=1}^K \sum_{j=1}^K \sigma_{ij}} \right]$$

3.8.2 Inferential method

1- (ANOVA) Test

For parity of means, (variation test should be used when the mean factor differs).

Source of variance	Sum of square	d.f	Mean square	F
Between Groups	$\frac{(\sum xPI)^2}{n} - \frac{(\sum xP)^2}{N}$ $SS_B =$	$df_B = K-1$	$\frac{MS_B}{MS_W}$	
Within Groups	$\frac{(\sum xPI)^2}{N} - \frac{(\sum xP)^2}{N}$ $SS_W =$	$df_w = N-k$	$\frac{SS_W}{DF_W}$	$\frac{MS_B}{MS_W}$
Total	$\frac{(\sum xPI)^2}{N} - \frac{(\sum xP)^2}{N}$ $SS_T =$	$df_t = N-1$		
$P\text{-value } (\leq 0.05)$				

4. RESULTS

4.1 Sociodemographic variables of intensive care nurses

Table 4.1 sociodemographic variables of ICU nurses (n=109 nurses)

Variable	N	%	CP(cumulative percent)
Age group (per Years)			
20-25 years	33	30.3	30.3
26-30 years	58	53.2	83.5
31-36 years	18	16.5	100
gender(sexual category)			
Male	71	65.1	65.1
female	38	34.9	100
Level of education			
Nursing junior high	7	6.4	6.4
Nursing Institute	43	39.4	45.8
Bachelor of Nursing	46	42.3	88.1
Master's degree and above	13	11.9	100
Years of employment in nursing			
1-4	50	45.9	45.9
5-8	55	50.5	96.4
9 and above	4	3.6	100
Years of employment in ICU			
1-3	90	82.6	82.6
4-6	18	16.5	91.1
7 and above	1	0.9	100
The number of training workshops you have participated in during your work at ICU			
I didn't get training	12	11.0	11.0
1-2	59	54.1	65.1
3-4	31	28.5	93.6
5 and above	7	6.4	100

In table 4.1 It was found that the highest age group was the category (26-30) years with 53.2%, followed by the category (20-25) years with 30.3%, then the category (31-36) years with 16.5%

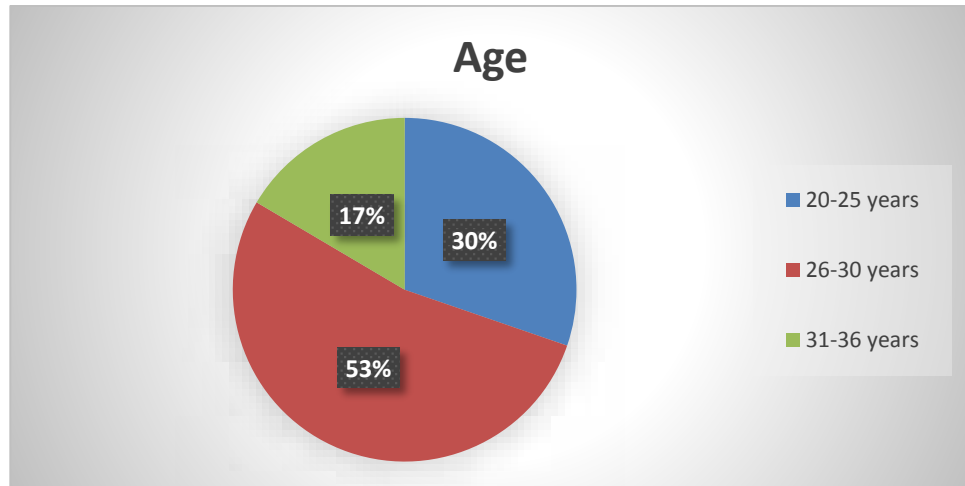


Figure 4.1 Division of the research sample associated to age

It was found that a highest Gender group was the category (Male) with 65.1%, then the category (Female) with 34.9%

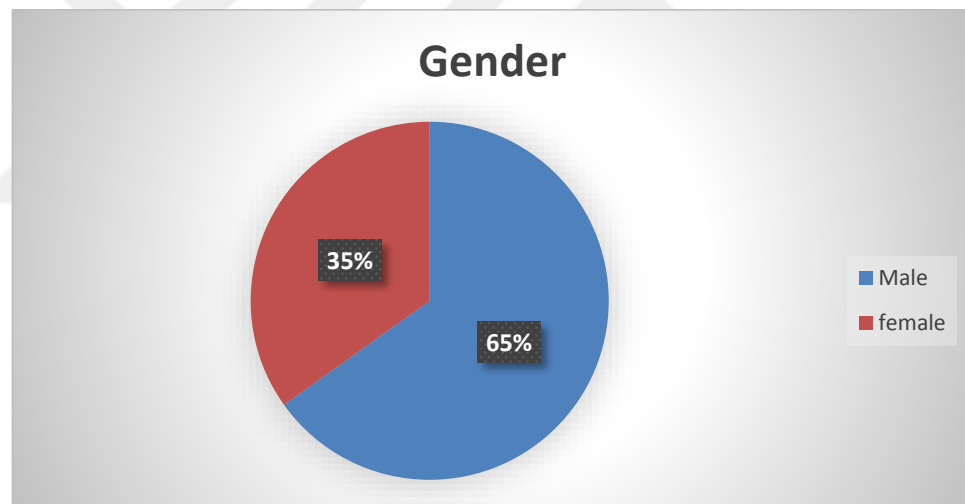


Figure 4.2 Division of the research sample associated to sexual category

in Table 4.1 It was found that the highest Level of education group was the category (Bachelor of Nursing) with 42.3%, followed by the category (Nursing Institute) with 39.4%, then the category (Master's degree and above) with 11.9% and the category (Nursing junior high) with 6.4%.

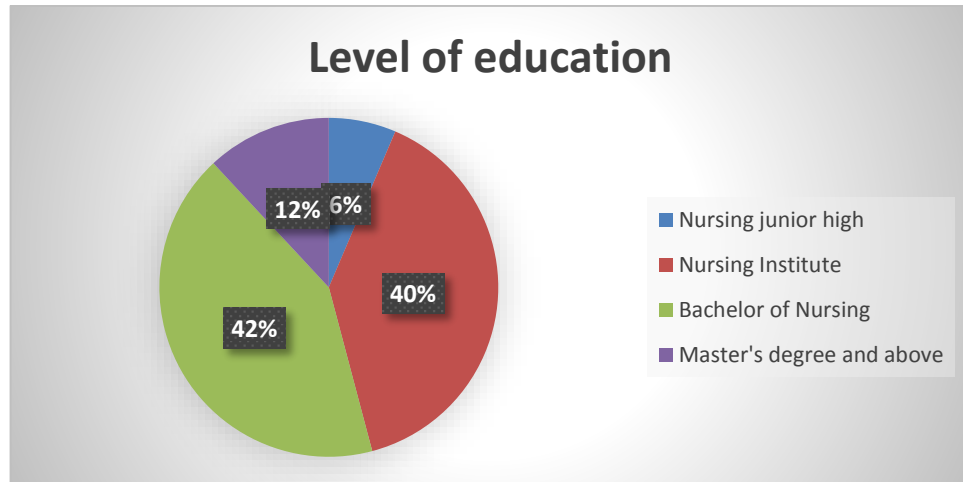


Figure 4.3 Division of the research sample associated to degree of teaching

In table 4.1 It was found that the highest Years of employment in nursing group was the category (5-8) years with 50.5%, followed by the category (1-4) years with 45.9%, then the category (9 and above) years with 3.6%.

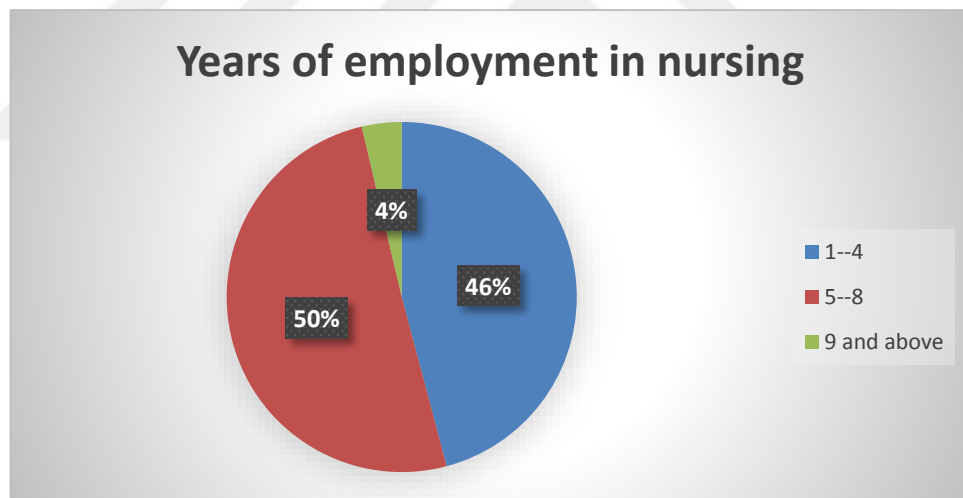


Figure 4.4 Division of the research sample associated to years of the employment in nursing

In table 4.1 It was found that the highest Years of employment in ICU group was the category (1-3) years with 82.6%, followed by the category (4-6) years with 16.5%, then the category (7 and above) years with 0.9%.

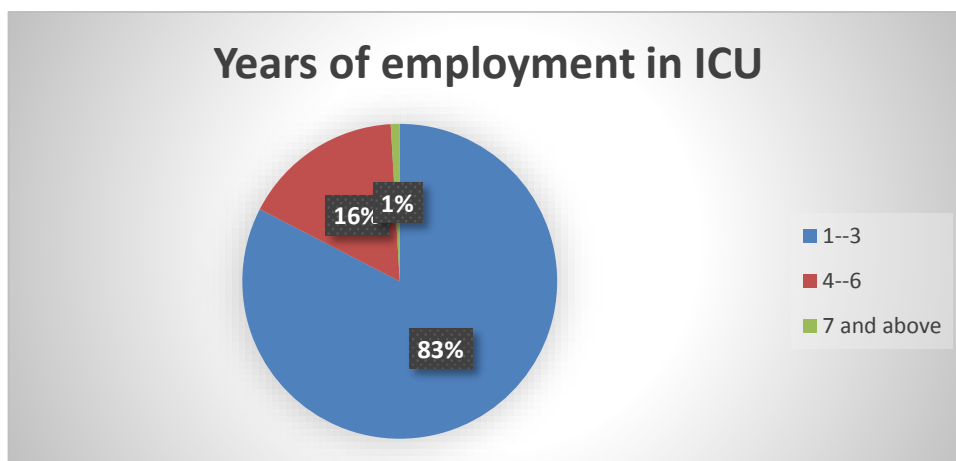


Figure 4.5 Division of the research sample associated to years of the employment in ICU

In table 4.1 It was found that the highest the number of training workshops participated in during work at ICU group was the category (1-2) workshops with 54.1%, followed by the category (3-4) workshops with 28.5%, then the category (I didn't get training) with 11% and the category (5 and above) workshops with 6.4%

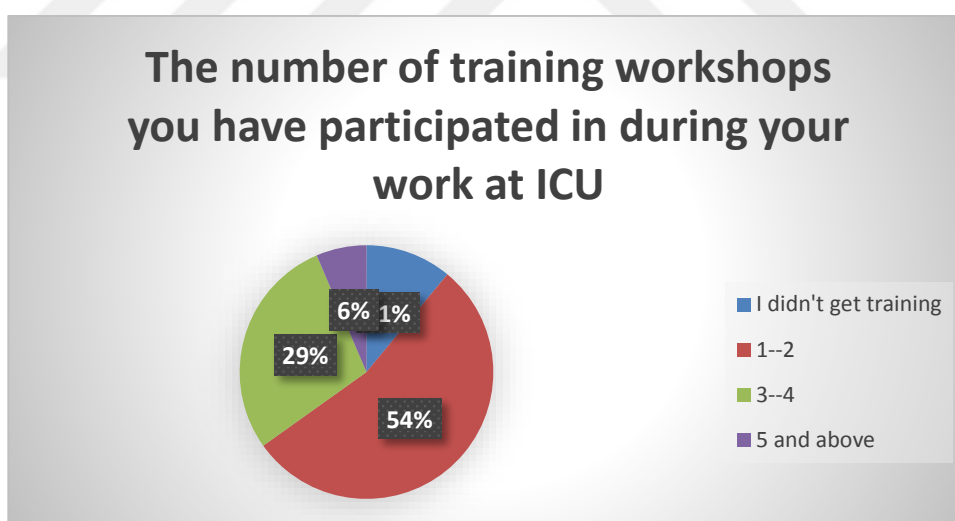


Figure 4.6 Division of the research sample associated to the number of training workshops participated in during work at ICU

4.2 Respondents Knowledge about TEST ABOUT ENDOTRACHEAL SUCTIONING

The degree of information (knowledge) was divided into (3) degrees (1-1.333) low knowledge, (1.334 – 1.666) medium knowledge, (1.667 – 2) high knowledge

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

It was found that (29.4%) of the study sample, members had their correct answer which is (When required) while the rest of the study sample members were wrong (70.6%).

Table 4.2 How frequently should the endotracheal /tracheal suctioning be done?

Categories	N	%	Mean	Standard deviation	Level
Every 2 hrs.	47	43.1	1.294	0.458	low
Every 1 hr.	23	21.1			
When required	32	29.4			
Don't know	7	6.4			
Total	109	100			

2 – "Which is the best method of suctioning?"

It was found that (46.8%) of the study sample members had their correct answer which is (Closed method) while the rest of the study sample members were wrong (53.2%)

Table 4.3 Which is the best method of suctioning?

Categories	N	%	Mean	Standard deviation	Level
Closed method	51	46.8	1.468	0.501	medium
Open method	37	33.9			
Both a& b	12	11.0			
Don't know	9	8.3			
Total	109	100			

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

It was found that (40.4%) of the study sample members had their correct answer which is (16 –20 cm) while the rest of the study sample members were wrong (59.6%).

Table 4.4 While giving nasotracheal suctioning to an adult patient, suction catheter should be inserted up to?

Categories	N	%	Mean	Standard deviation	Level
10 –15 cm	51	46.8	1.404	0.493	medium
16 –20 cm	44	40.4			
21 –25 cm	12	11.0			
26 – 30 cm	2	1.8			
Total	109	100			

4-"Which of the following is true regarding endotracheal suctioning?"

It was found that (42.2%) of the study sample members had their correct answer which is (To be done while withdrawing the catheter) while the rest of the study sample members were wrong (57.8%).

Table 4.5 Which of the following is true regarding endotracheal suctioning?

Categories	N	%	Mean	Standard deviation	Level
To be done while inserting the catheter	46	42.2	1.358	0.482	medium
To be done while withdrawing the catheter	39	35.8			
Both a & b	11	10.1			
don't know	13	11.9			
Total	109	100			

5-“Maximum time limit for an endotracheal suctioning is?”

It was found that (53.2%) of the study sample members had their correct answer which is (15 sec) while the rest of the study sample members were wrong (46.8%).

Table 4.6 Maximum time limit for an endotracheal suctioning is?

Categories	N	%	Mean	Standard deviation	Level
15 sec	58	53.2	1.532	0.501	medium
20 sec	31	28.4			
25 sec	9	8.3			
30 sec	11	10.1			
Total	109	100			

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

It was found that (44%) of the study sample members had their correct answer which is (semi-Fowler’s position) while the rest of the study sample members were wrong (56%).

Table 4.7 Which is the most appropriate position for giving endotracheal suctioning?

Categories	N	%	Mean	Standard deviation	Level
semi-Fowler’s position	48	44.0	1.440	0.499	medium
right lateral position	21	19.3			
left lateral position	13	11.9			
supine position d) left lateral position	27	24.8			
Total	109	100			

7-“Successful suctioning is confirmed by which method?”

It was found that (45%) of the study sample members had their correct answer which is (Auscultation of the lung) while the rest of the study sample members were wrong (55%).

Table 4.8 Successful suctioning is confirmed by which method?

Categories	N	%	Mean	Standard deviation	Level
Auscultation of the lung	49	45.0	1.450	0.500	medium
no visible secretion in the ET tube	38	34.9			
improvement in SPO2 level	13	11.9			
don't know	9	8.3			
Total	109	100			

8-“which of the nerve is stimulated during endotracheal suctioning?”

It was found that (46.8%) of the study sample members had their correct answer which is (vagus nerve) while the rest of the study sample members were wrong (53.2%)

Table 4.9 which of the nerve is stimulated during endotracheal suctioning?

Categories	N	%	Mean	Standard deviation	Level
facial nerve	17	15.6	1.468	0.501	medium
vagus nerve	51	46.8			
glossopharyngeal nerve	26	23.9			
both b & c	15	13.8			
Total	109	100			

9- “which will be the possible complication of suctioning due to irritation of carina?”

It was found that (51.4%) of the study sample members had their correct answer which is (paroxysmal cough) while the rest of the study sample members were wrong (45.9%).

Table 4.10 which will be the possible complication of suctioning due to irritation of carina?”

Categories	N	%	Mean	Standard deviation	Level
persistent cough	56	51.4	1.239	0.428	low
paroxysmal cough	26	23.9			
both a & b	18	16.5			
don't know	9	8.3			
Total	109	100			

10-“what is the recommended suction pressure for endotracheal suctioning in adults?”

It was found that (75.2%) of the study sample members had their correct answer which is (-80 to -120 mmHg) while the rest of the study sample members were wrong (24.8%).

Table 4.11 what is the recommended suction pressure for endotracheal suctioning in adults?

Categories	N	%	Mean	Standard deviation	Level
-60 to -79 mmHg	5	4.6	1.752	0.434	high
-80 to -120 mmHg	82	75.2			
-121 to -180mmHg	14	12.8			
-181 to -200mmHg	8	7.3			
Total	109	100			

11-“How frequently should the ET suction catheter be changed?”

It was found that (25.7%) of the study sample members had their correct answer which is (After each suctioning) while the rest of the study sample members were wrong (74.3%).

Table 4.12 How frequently should the ET suction catheter be changed?

Categories	N	%	Mean	Standard deviation	Level
After each suctioning	28	25.7	1.257	0.439	low
After 12 hrs	60	55.0			
After 24 hrs	15	13.8			
After 48 hrs	6	5.5			
Total	109	100			

12-“Which one of the following complications can arise due to absence of hyperventilation before giving suctioning?”

It was found that (63.3%) of the study sample members had their correct answer which is (hypoxia) while the rest of the study sample members were wrong (36.7%).

Table 4.13 Which one of the following complications can arise due to absence of hyperventilation before giving suctioning?

Categories	N	%	Mean	Standard deviation	Level
hypotension	24	22.0	1.633	0.484	medium
hypoxia	69	63.3			
decreased ICP	6	5.5			
don't know	10	9.2			
Total	109	100			

13- "Sodium bicarbonate should not be instilled through the ET tube why?"

It was found that (48.6%) of the study sample members had their correct answer which is (It damages lung tissue) while the rest of the study sample members were wrong (51.4%).

Table 4.14 Sodium bicarbonate should not be instilled through the ET tube why?

Categories	N	%	Mean	Standard deviation	Level
It rises pH of the blood	30	27.5	1.486	0.502	medium
It damages lung tissue	53	48.6			
It accumulates CO ₂	13	11.9			
don't know	13	11.9			
Total	109	100			

14- "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"

It was found that (42.2%) of the study sample members had their correct answer which is (12 F) while the rest of the study sample members were wrong (57.8%).

Table 4.15 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

Categories	N	%	Mean	Standard deviation	Level
10 F	17	15.6	1.422	0.496	medium
12 F	46	42.2			
14 F	38	34.9			
16 F	8	7.3			
Total	109	100			

15-“Prevention of nosocomial infections”

It was found that (64.2%) of the study sample members had their correct answer which is (Wash hands and maintain aseptic technique) while the rest of the research sample members were wrong (35.8%).

Table 4.16 Prevention of nosocomial infections

Categories	N	%	Mean	Standard deviation	Level
Wash hands and maintain aseptic technique	70	64.2	1.642	0.482	medium
sterile technique	26	23.9			
administration of antibiotics	8	7.3			
don't know	5	4.6			
Total	109	100			

16-“Effect of Preoxygenation in ETS”

It was found that (62.4%) of the study sample members had their correct answer which is (It minimizes hypoxia) while the rest of the study sample members were wrong (37.6%).

Table 4.17 Effect of Preoxygenation in ETS

Categories	N	%	Mean	Standard deviation	Level
It minimizes hypoxia	68	62.4	1.624	0.487	medium
improve suctioning	30	27.5			
decrease ICP	11	10.1			
Total	109	100			

17-“Contraindications for ETS”

It was found that (22%) of the study sample members had their correct answer which is (Both pts with an increased intracranial pressure & pt. with severe HTN) while the rest of the study sample members were wrong (78%).

Table 4.18 Contraindications for ETS

Categories	N	%	Mean	Standard deviation	Level
pts with an increased intracranial pressure	42	38.5	1.220	0.416	low
pt. with severe HTN	37	33.9			
Both pts with an increased intracranial pressure & pt. with severe HTN	24	22.0			
don't know	6	5.5			
Total	109	100			

18-“Normal Saline instillation during ETS”

It was found that (12.8%) of the study sample members had their correct answer which is (Not recommended) while the rest of the study sample members were wrong (87.6%).

Table 4.19 Normal Saline instillation during ETS

Categories	N	%	Mean	Standard deviation	Level
instilling facility suction	64	58.7	1.128	0.336	low
reduce infection	24	22.0			
Not recommended	14	12.8			
don't know	7	6.4			
Total	109	100			

19-“the reason behind discontinuation of procedure”

It was found that (49.5%) of the study sample members had their correct answer which is (Heart rate is above or below normal level and cardiac ectopy) while the rest of the study sample members were wrong (50.5%).

Table 4.20 the reason behind discontinuation of procedure

Categories	N	%	Mean	Standard deviation	Level
drop blood pressure	33	30.3	1.495	0.502	medium
Heart rate is above or below normal level and cardiac ectopy	54	49.5			
Decrease cardiac output	9	8.3			

don't know	13	11.9			
Total	109	100			

20-“Effect of increased ETS frequency”

It was found that (10.1%) of the study sample members had their correct answer which is (Atelectasis) while the rest of the study sample members were wrong (89.9%).

Table 4.21 Effect of increased ETS frequency”

Categories	N	%	Mean	Standard deviation	Level
Emphysema	53	48.6	1.101	0.303	low
alveolar collapse	32	29.4			
Atelectasis	11	10.1			
don't know	13	11.9			
Total	109	100			

From table (2 – 21) It was found that the knowledge level phrases 6 of them came at the low level, 13 phrases at the medium level, and one phrase at the high level and it was found that there is a medium level of knowledge among the study sample members from intensive care unit nurses in Al Diwaniyah city hospitals, Iraq about TEST ABOUT ENDOTRACHEAL SUCTIONING where mean is 1.404 and S.D 0.488

4.3 Respondent's practices about TEST ABOUT ENDOTRACHEAL SUCTIONING

The level of practices was divided into three levels (1-1.333) low practices, (1.334 – 1.666) medium practices, (1.667 – 2) high practice

Table 4.22 Practices about test about endotracheal suctioning

No	Items	Done		Not done		Mean	Standard deviation	Level
		N	%	N	%	1.936	0.246	high
1	Assemble equipment	102	93.6	7	6.4	1.982	0.135	high
2	Check function of suction	10	98.2	2	1.8	1.954	0.210	high

No	Items	Done		Not done		Mean	Standard deviation	Level
	apparatus	7						
3	Monitor vital signs	10 4	95.4	5	4.6	1.982	0.135	high
4	Monitor oxygen saturation	10 7	98.2	2	1.8	1.835	0.373	high
5	Auscultate breath sounds.	91	83.5	18	16.5	1.908	0.290	high
6	Explain the procedure to the patient	99	90.8	10	9.2	1.972	0.164	high
7	Identifies indications for suctioning.	10 6	97.2	3	2.8	1.862	0.346	high
8	Places the patient in supine position with head slightly extended.	94	86.2	15	13.8	1.954	0.210	high
9	Prepares ambu bag and oxygen supply	10 4	95.4	5	4.6	1.954	0.210	high
10	Checks suction device with connecting tubing	10 4	95.4	5	4.6	1.954	0.210	high
11	Attaches sterile suction catheter.	10 4	95.4	5	4.6	1.945	0.229	high
12	Pour normal saline into the bowl for cleaning tubing	10 3	94.5	6	5.5	1.954	0.210	high
13	Wash hands	10 4	95.4	5	4.6	1.936	0.246	high
14	Puts on mask	10 2	93.6	7	6.4	1.963	0.189	high
15	Place the sterile gloves on the towel/bed table	10 5	96.3	4	3.7	1.945	0.229	high
16	Put on the sterile gloves	10 3	94.5	6	5.5	1.908	0.290	high
17	Place the sterile towel on the patient's chest	99	90.8	10	9.2	1.936	0.246	high
18	Hyper oxygenate the patient before suctioning	10 2	93.6	7	6.4	1.881	0.326	high
19	Don't apply suction while inserting the catheter	96	88.1	13	11.9	1.890	0.314	high
20	Removes catheter in rotating movement	97	89.0	12	11.0	1.908	0.290	high
21	Limits suction time to 10-15 seconds	99	90.8	10	9.2	1.945	0.229	high
22	Discontinue if heart rate is below or above normal	10 3	94.5	6	5.5	1.927	0.262	high
23	Resumes oxygen delivery system	10 1	92.7	8	7.3	1.899	0.303	high
24	Rinse catheter and suction tube with normal saline	98	89.9	11	10.1	1.954	0.210	high

No	Items	Done		Not done		Mean	Standard deviation	Level
	until clear							
25	After suctioning hyper oxygenates ventilator 100% O2	10 4	95.4	5	4.6	1.908	0.290	high
26	Reassess patient's respiratory status.	99	90.8	10	9.2	1.881	0.326	high
27	Don't perform more than 4 suction per suctioning	96	88.1	13	11.9	1.945	0.229	high
28	Discards equipment after suction	10 3	94.5	6	5.5	1.972	0.164	high
29	Perform hand wash 100	10 6	97.2	3	2.8	1.954	0.210	high
30	Monitor any changes in the vital signs	10 4	95.4	5	4.6	1.936	0.246	high
31	Document of suction procedure	10 2	93.6	7	6.4	1.936	0.246	high
	Total	31 48		23 1		1.932	0.244	high

From table (22) 93 % From the study sample (Assemble equipment) , 98.2 % (Check function of suction apparatus), 95.4 % (Monitor vital signs), 98.2 % (Monitor oxygen saturation), 83.5 % (Auscultate breath sounds), 90.8 % (Explain the procedure to the patient), 97.2 % (Identifies indications for suctioning), 86.2 % (Places the patient in supine position with head slightly extended) , 95.4 % (Prepares ambu bag and oxygen supply) and (Checks suction device with connecting tubing) and (Attaches sterile suction catheter.), 94.5 % (Pour normal saline into the bowl for cleaning tubing), 95.4 % (Wash hands), 93.6 % (Puts on mask), 96.3 % (Place the sterile gloves on the towel/bed table), 94.5 % (Put on the sterile gloves), 90.8 % (Place the sterile towel on the patient's chest), 93.6 % (Hyper oxygenate the patient before suctioning), 88.1 % (Don't apply suction while inserting the catheter), 89 % (Removes catheter in rotating movement), 90.8 % (Limits suction time to 10-15 seconds), 94.5 % (Discontinue if heart rate is below or above normal), 92.7 % (Resumes oxygen delivery system), 89.9 % (Rinse catheter and suction tube with normal saline until clear), 95.4 % (After suctioning hyper oxygenates ventilator 100% O2), 90.8 % (Reassess patient's respiratory status), 88.1 % (Don't perform more than 4 suction per suctioning), 94.5 % (Discards equipment after suction), 97.2 % (Perform hand wash 100), 95.4 % (Monitor any changes in the vital signs) and 93.6 % (Document of suction procedure)

It was found that the all-practices level phrases 6 at the high level and it was found that there is a high level of practices among the study sample members from intensive care unit nurses in Al Diwaniyah city hospitals, Iraq about test about endotracheal suctioning where mean is 1.932 and S.D 0.244

The association among nurses' knowledge & choosed sociodemographic variables

Table 4.23 The association among nurses' knowledge & choosed sociodemographic variables

Variable nurse's knowledge	Sum of squares	Df	Mean Square	F	Sig.
Age					
among Groups	5.119	2	2.559	0.434	0.649
Inside Groups	625.303	106	5.899		
Total	630.422	108			
Gender					
Between Groups	.070	1	.070	.012	.914
Within Groups	630.352	107	5.891		
Total	630.422	108			
Level of education					
Between Groups	37.420	3	12.473	2.209	.091
Within Groups	593.002	105	5.648		
Total	630.422	108			
Years of employment in nursing					
Between Groups	113.517	10	11.352	2.152	0.77
Within Groups	516.905	98	5.275		
Total	630.422	108			
Years of employment in ICU					
Between Groups	52.612	6	8.769	1.548	.170
Within Groups	577.810	102	5.665		
Total	630.422	108			
The number of training workshops you have participated in during your work at ICU					
Between Groups	12.361	3	4.120	.700	.554
Within Groups	618.061	105	5.886		
Total	630.422	108			

F = Difference test (ANOVA) , D.F = Degrees of Freedom , Sig = Statistical significance

Table (23) shows there is no relationship between the degree of knowledge of the research sample members & their sociodemographic variables, which shows that

there are no arithmetically important variances in the information (knowledge) level due to the sociodemographic variables of the research sample members at the degree of importance of 0.05, where the estimate of the arithmetical importance for all relationships between The level of knowledge and sociodemographic variables is greater than a value of 0.05

The association among nurses' practices and choosed sociodemographic variables

Table 4.24 The association among nurses' practices and choosed sociodemographic variables

Variable nurse's knowledge	Sum of squares	Df	Mean Square	F	Sig.
Age					
among Groups	12.836	2	6.418	.841	.434
Within Groups	808.614	106	7.628		
Total	821.450	108			
Gender					
Between Groups	1.208	1	1.208	.158	.692
Within Groups	820.242	107	7.666		
Total	821.450	108			
Level of education					
Between Groups	19.621	3	6.540	.856	.466
Within Groups	801.829	105	7.636		
Total	821.450	108			
Years of employment in nursing					
Between Groups	42.867	10	4.287	1.054	0.399
Within Groups	398.583	98	4.067		
Total	821.450	108			
Years of employment in ICU					
Between Groups	16.914	6	2.819	0.444	0.931
Within Groups	653.536	102	6.407		
Total	821.450	108			
The number of training workshops you have participated in during your work at ICU					
Between Groups	19.637	3	6.546	0.952	.423
Within Groups	721.812	105	6.874		
Total	821.450	108			

F = Difference test (ANOVA) , D.F = Degrees of the Freedom , Sig = Statistical importance

Table (24) displays there is no relationship between the degree of practices of the research sample members & their sociodemographic variables, which shows that there are no statistically important variances in the practices level due to the sociodemographic variables of the research sample members at the degree of importance of 0.05, where the estimate of the arithmetical importance for all relationships between The level of practices and sociodemographic variables is greater than a value of 0.05

The highest age group was the category (26-30) years with 53.2%, the highest Gender group was the category (Male) with 65.1%, the highest Level of education group was the category (Bachelor of Nursing) with 42.3%, the highest Years of employment in nursing group was the category (5-8) years with 50.5%, the highest Years of employment in ICU group was the category (1-3) years with 82.6% and the highest the number of training workshops participated in during work at ICU group was the category (1-2) workshops with 54.1%.

1. (29.4%) of the study sample members had their correct answer which is (When required) the endotracheal /tracheal suctioning be done
2. (46.8%) of the study sample members had their correct answer which is (Closed method) best method of suctioning
3. (40.4%) of the study sample members had their correct answer which is suction catheter should be inserted up to (16 –20 cm) While giving nasotracheal suctioning to an adult patient,
4. (42.2%) of the study sample members had their correct answer which is (To be done while withdrawing the catheter) is true regarding endotracheal suctioning
5. (53.2%) of the study sample members had their correct answer which is (15 sec) Maximum time limit for an endotracheal suctioning
6. (44%) of the study sample members had their correct answer which is (semi-Fowler's position) is the most appropriate position for giving endotracheal suctioning
7. (45%) of the study sample members had their correct answer which is (Auscultation of the lung) this is how successful suctioning is confirmed

8. (46.8%) of the study sample members had their correct answer which is (vagus nerve) is stimulated during endotracheal suctioning
9. (51.4%) of the study sample members had their correct answer which is (paroxysmal cough) will be the possible complication of suctioning due to irritation of carina
10. (75.2%) of the study sample members had their correct answer which is (-80 to -120 mmHg) is the recommended suction pressure for endotracheal suctioning in adults
11. (25.7%) of the study sample members had their correct answer which is (After each suctioning) the ET suction catheter be changed
12. 63.3%) of the study sample members had their correct answer which is (hypoxia) can arise due to absence of hyperventilation before giving suctioning
13. (48.6%) of the study sample members had their correct answer which is Sodium bicarbonate should not be instilled through the ET tube because this causes (It damages lung tissue)
14. 42.2%) of the study sample members had their correct answer which is (12 F) is Appropriate size of suction catheter an endotracheal a patient with ET tube size 8mm.
15. (64.2%) of the study sample members had their correct answer which is (Wash hands and maintain aseptic technique) are Prevention of nosocomial infections
16. (62.4%) of the study sample members had their correct answer which is (It minimizes hypoxia) is Effect of Preoxygenation in ETS
17. (22%) of the study sample members had their correct answer which is (Both pts with an increased intracranial pressure & pt. with severe HTN) is Contraindications for ETS
18. (12.8%) of the study sample members had their correct answer which is (Not recommended) to Normal Saline instillation during ETS
19. (49.5%) of the study sample members had their correct answer which is (Heart rate is above or below normal level and cardiac ectopy) is the reason behind discontinuation of procedure
20. (10.1%) of the study sample members had their correct answer which is (Atelectasis) is Effect of increased ETS frequency

21. There is a medium level of knowledge among the study sample members from intensive care unit nurses in Al Diwaniyah city hospitals, Iraq about TEST ABOUT ENDOTRACHEAL SUCTIONING where mean is 1.404 and S.D 0.488
22. there is a high level of practices among the study sample members from intensive care unit nurses in Al Diwaniyah city hospitals, Iraq about TEST ABOUT ENDOTRACHEAL SUCTIONING where mean is 1.932 and S.D 0.244
23. There is no association among the degree of information of the research sample members and their sociodemographic variables, which displays that there are no arithmetically important variations in the information level due to the sociodemographic variables of the research sample members at the degree of importance of 0.05, where the estimate of the arithmetical importance for all relationships between the level of knowledge and sociodemographic variables is greater than a value of 0.05
24. There is no association among the degree of practices of the research sample members and their sociodemographic variables, which displays that there are no arithmetically important variances in the practices level due to the sociodemographic variables of the research sample members at the degree of importance of 0.05, where the estimate of the arithmetical importance for all relationships among The degree of practices and sociodemographic variables is greater than a value of 0.05

5. DISCUSSION

Throughout the path of analysing the statistics of the current research, the results showed The biggest percentage of the research samples are men (70%) and the rest are women , and the current research shows that (60%) of the research samples are among the ages of (20-29) years, and the educational level represents The biggest percentage of them (54%) were from the Faculty of Nursing, and (34%) for not more than a year were employees in the ICU, and most of them (58) were employees (1-5) years of working in nursing field , (68%) of them had a teaching course In the (ICU) category (1-2) workshops were 54.1%.

The result is also supported by the results mentioned by the study, that the results of about two-thirds of the participants included in the study were males, as the results were consistent with what the researchers obtained in their study between participation and the questionnaire, and the average age of males was (26-30), and it was found that the highest gender category The category (males) was 65.1%, then the category (females) was 34.9%. The average age of the patients is 30 years, with ages ranging from 18 to 45, and the results are similar to what the researcher obtained with all those who obtained a master's degree as an educational level.

The level of education for the category (Bachelor of Nursing) is 42.3%, and most of them are employees, where the years of employment (1-3) years accounted for 82.6%, and some of them have a teaching course to work in ICU , and the results were consistent with what the researcher obtained, which indicates that two-thirds of Nursing personnel 54.1% . Regulated tracheal suction service nurses in the hospital represent (53.2%) of the study sample, which constitutes two-thirds of the employees.

One of the main aims of the research is to evaluation the knowledge level of the nursing staff at the icu , regarding endotracheal tube aspiration for patients, as the research showed that (29.4%) represents a medium degree, and the levels of practices were classified into three levels (1-1.333) low practices, (1.334-1.666) practices

Medium, (1.667 - 2) high practices, and the research discovered that the expressions of the level of all 6 practices are at the high level, and it was found that there is a high level of practices among the research sample of intensive care unit nurses in the hospitals of the city of Diwaniyah, Iraq about the endotracheal suctioning , where it means 1.932 and 0.244 SD

This result, which was indicated by the researcher, agrees with the research sample and their social and demographic variables, which indicates that there are no statistically important variances in the level of knowledge due to the social and demographic variables of the research sample at the regional level. And the absence of a relationship between the degree of practices of the research sample and their social and demographic variables, which indicates that there are no statistically important variances in the level of practices attributed to the social & demographic variables of the research sample at the regional level. Importance level 0.05, where the rate of statistical importance for all relationships between the level of practices and social and demographic variables is greater than the value of 0.05 . Thus, in this study these results are identical to the null hypothesis (H0)

6. CONCLUSION

6.1 Conclusion

According to the statistical treatment carried out by the study and the support of these results with previous studies, the study summarized the following conclusions:

First: Determining the associations of ventilated ETT systems in intensive care units, as ETT is one of the prerequisites for avoiding VAP and minimizing its risks, and the discrepancy in its efficacy was evident as it is likely to be one of the most important reasons for this. Its danger lies in its random use, but the trials that have indicated it. The present study suggests that there are biomarkers to determine whether these findings are clinical and by evaluating the information & practices of ICU nurses about ETS that the greater part of ICU nurses have skills. The desired effect on endotracheal suctioning, and the educational intervention on endotracheal aspiration has a helpful impact on the nurse's information and practice of this subject.

Second: By evaluating the nursing competence and knowledge of tracheal aspiration, and the study concluded the importance of the role of the nursing staff in this regard, especially if the patient is in critical care, where the level of nursing is experienced and practical knowledge. Higher levels of knowledge without the practical experience that led the practice. The actual installation of the endotracheal suction tube, and they are superior to them with scientific and practical knowledge, where the study indicated by determining the relationship between the data of demographic characteristics and the nurse's cognitive practices that there is no relationship between the degree of practices of the research sample members and their social and demographic variables, which displays that there are no arithmetically important variances in the level of practices It is attributed to the socio-demographic variables of the research sample at the significance level of 0.05. , where the value of statistical importance for all relationships between the level of practices and social and demographic variables is greater than the value of 0.05

Third: The usage of the system closed suction and its role in reducing disturbances related to cardiac and respiratory parameters, particularly in respirational rate, O₂ saturation, the heart rate and average arterial blood stream pressure associated to open suction systems in adult patients who are subject to mechanical ventilation and those who suffer from serious diseases.

Depriving the patient of automated ventilation and oxygen provision causes serious illnesses

The system of close suction is one of the top methods of suctioning patients, the seriously ill, and ICU.

By comparing a system using open suction or closed suction systems, the study noted the popularity of the open system as it is considered one of the traditional systems in temporarily separating the patient from the ventilator, which reduces in a relatively short period the supply of meat and oxygen unlike Closed suction, which is less expensive and less effective in suctioning secretions, and despite the obvious differences in the methods of practice and reliability between the two, the assumption of the two procedures differently affects the pulmonary and cardiovascular parameters after suction

6.2 RECOMMENDATIONS

Grounded on the outcomes of the research, it recommended the following things :

1. The researcher recommends, through the research , the necessity of broadening the informational horizon of the personnel of nurses through continuous education and continuous training courses.
2. The study recommends the need to shed light on the nurse's awareness of the behaviours associated with practices in the first period of work, which lacks training experience and requires intensive practical training for the nursing staff.
3. The study recommends the adoption of more research studies for nursing education, the cornerstone of engaging with the health care team and formulating a practical approach through these researches, especially those interested in the clinical environment.
4. The study also recommends repeating more research on a larger sample and comparing the methods of suction to infections acquired in the intensive care unit, where the appliance of the (css) is implemented to reduce instability in the factors of the heart and respiratory system compared to the amphog system that is done for adult patients with serious diseases under Mechanical ventilation

REFERENCES

- Abo Eldahab, A. M. I., Saey, A., Ali, O. E., & Allam, Z. A. (2022). Barriers Facing Nurses' Implementation of Suction Techniques at Intensive Care Units. *Tanta Scientific Nursing Journal*, 26(3), 222-232.
- Ahmed Sayed, Z. (2019). Effect of open versus closed suction system on cardiorespiratory parameters and suction duration among critically ill mechanically ventilated patients. *Egyptian Journal of Health Care*, 10(2), 409-418.
- Ali, N. M. A. (2020.). Assessment knowledge and practical of nurses regarding endotracheal tube care in critical care Omdurman hospital. *International Journal of Allied Medical Sciences and Clinical Research - DrSriram Publications*. <https://doi.org/10.61096/ijamscr.v10.iss1.2022.51-59>
- American Association for Respiratory Care. (2010). Endotracheal suctioning of mechanically ventilated patients with artificial airways 2010. *Respiratory care*, 55(6), 758-764.
- Ardehali, S. H., Fatemi, A., Rezaei, S. F., Forouzanfar, M. M., & Zolghadr, Z. (2020). The effects of open and closed suction methods on occurrence of ventilator associated pneumonia; A comparative study. *Archives of academic emergency medicine*, 8(1).
- Bozan, S., & Güven, Ş. D. (2020). Evaluation of knowledge and behavior of nurses working in intensive care units for endotracheal aspiration application. *Journal of Surgery and Medicine*, 4(4), 296-300.
- Colombage, T. D., & Goonewardena, C. S. (2020). Knowledge and practices of nurses caring for patients with endotracheal tube admitted to intensive care units in National Hospital of Sri Lanka. *Sri Lankan Journal of Anaesthesiology*, 28(2), 94-100.
- Ismaeil, T., Alfunaysan, L., Alotaibi, N., Alkadi, S., & Othman, F. (2019). Repositioning of endotracheal tube and risk of ventilator-associated pneumonia among adult patients: A matched case-control study. *Annals of Thoracic Medicine*, 14(4), 264.

- Jansson, M., Ala-Kokko, T., Ylipalosaari, P., & Kyngäs, H. (2013). Evaluation of endotracheal-suctioning practices of critical care nurses: an observational correlation study.
- Kadhim, J. J., & Mhabes, F. G. (2021). Nurse Educator-Led an Educational Intervention on Critical Care Nurses' Knowledge Regarding Endotracheal Suctioning. *Indian Journal of Forensic Medicine & Toxicology*, 15(1).
- Khayer, F., Ghafari, S., Saghaei, M., Yazdannik, A., & Atashi, V. (2020). Effects of open and closed tracheal suctioning on pain in mechanically ventilated patients. *Iranian Journal of Nursing and Midwifery Research*, 25(5), 426.
- Majeed, H. M. (2017). Assessment of knowledge and practices of intensive care unit nurses about endotracheal suctioning for adult patients in Baghdad teaching hospitals, Iraq. *Int J Res Med Sci*, 5(4), 1396-1404.
- Mariyaselvam, M. Z., Marsh, L. L., Bamford, S., Smith, A., Wise, M. P., & Williams, D. W. (2017). Endotracheal tubes and fluid aspiration: an in vitro evaluation of new cuff technologies. *BMC anesthesiology*, 17(1), 1-9.
- Mwakanyanga, E. T., Masika, G. M., & Tarimo, E. A. (2018). Intensive care nurses' knowledge and practice on endotracheal suctioning of the intubated patient: A quantitative cross-sectional observational study. *PloS one*, 13(8), e0201743.
- Negro, A., Ranzani, R., Villa, M., & Manara, D. (2014). Survey of Italian intensive care unit nurses' knowledge about endotracheal suctioning guidelines. *Intensive and Critical Care Nursing*, 30(6), 339-345.
- Pedersen, C. M., Rosendahl-Nielsen, M., Hjermand, J., & Egerod, I. (2009). Endotracheal suctioning of the adult intubated patient—what is the evidence?. *Intensive and Critical Care Nursing*, 25(1), 21-30.
- Pinto, H. J., D'silva, F., & Sanil, T. S. (2020). Knowledge and practices of endotracheal suctioning amongst nursing professionals: a systematic review. *Indian Journal of Critical Care Medicine: Peer-reviewed, Official Publication of Indian Society of Critical Care Medicine*, 24(1), 23.
- Schults, J. A., Mitchell, M. L., Cooke, M., Long, D. A., Ferguson, A., & Morrow, B. (2021). Endotracheal suction interventions in mechanically ventilated children: an integrative review to inform evidence-based practice. *Australian Critical Care*, 34(1), 92-102.

- Tembhare, V., & Singh, S. (2021). Effectiveness of Protocol on Endotracheal Tube Suctioning among ICU Staff Nurses. *Int J Cur Res Rev*, 13(8), 71.
- Yılmaz, İ., & Özden, D. (2021). Evidence-based knowledge and emotional experiences of undergraduate nursing students regarding endotracheal suctioning: A cross-sectional, descriptive study. *Intensive and Critical Care Nursing*, 65, 103040.



APPENDICES

APPENDIX 1. Data collection form

We invite you to the research titled (Assessment of knowledge and practices of intensive care unit nurses about endotracheal suctioning for adult patients in Al Diwaniyah

city hospitals ,Iraq) conducted by AZHAR WANNAS SHNAWA ALHAMZAH and DR.ÖĞR.ÜYESİ HURİ SEVAL GÖNDEREN ÇAKMAK ,Before you decide to participate in this research, you need to know why and how the research will be done. Therefore, it is very important to read and understand this form. If you don't understand, if there is any information that is not clear to you, or if you want more information, ask us. Participation in this study is completely voluntary. You have the right not to participate in the study or to leave the study after participating. Your response to the study will be interpreted as your consent to participate in the study. Do not be under pressure or suggestion from anyone while answering the questions in the forms given to you. Personal information obtained from these forms will be kept completely confidential and will be used for research purposes only.

Part one: Respondents Knowledge TEST ABOUT ENDOTRACHEAL SUCTIONING

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

- a) Every 2 hrs.
- b) Every 1 hr.
- c) When required
- d) Don't know

2 Which is the best method of suctioning ?

- 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- Successful suctioning is confirmed by which method ?

- a) Auscultation of the lung
- b) no visible secretion in the ET tube
- c) improvement in SPO2 level
- d) don't know

8- Which of the nerve is stimulated during endotracheal suctioning ?

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

9- Which will be the possible complication of suctioning due to irritation of carina?

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

10- What is the recommended suction pressure for endotracheal suctioning in adults ?

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

11- 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

12-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

13- 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

14-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

15-Prevention of nosocomial infections

A) Wash hands and maintain aseptic technique

b)sterile technique

c) administration of antibiotics

d) don't know

16-Effect of Preoxygenation in ETS

a) It minimizes hypoxia

b) improve suctioning

c) decrease ICP

17-Contraindications for ETS

A) pts with an increased intracranial pressure

B) pt with severe HTN

C) Both pts with an increased intracranial pressure & pt with severe HTN

d) don't know

18-Normal Saline instillation during ETS

A) instilling facility suction

b) reduce infection

c) Not recommended

d) don't know

19-the reason behind discontinuation of procedure

- a) drop blood pressure
- b) Heart rate is above or below normal level and cardiac ectopy
- c) Decrease cardiac output
- d) don't know

20-Effect of increased ETS frequency

- a) Emphysema
- b) alveolar collapse
- c) Atelectasis
- d) don't know

Part two : Critical Performance Elements Check List

No	Items	Done	Not done
1.	Assemble equipment		
2.	Check function of suction apparatus		
3.	Monitor vital signs		
4.	Monitor oxygen saturation		
5.	Auscultate breath sounds.		
6.	Explain the procedure to the patient		
7.	Identifies indications for suctioning.		
8.	Places the patient in supine position with head slightly extended.		
9.	Prepares ambu bag and oxygen supply		
10.	Checks suction device with connecting tubing		
11.	Attaches sterile suction catheter.		
12.	Pour normal saline into the bowl for cleaning tubing		
13.	Wash hands		
14.	Puts on mask		
15.	Place the sterile gloves on the towel/bed table		
16.	Put on the sterile gloves		
17.	Place the sterile towel on the patient's chest		
18.	Hyper oxygenate the patient before suctioning		
19.	Don't apply suction while inserting the catheter		
20.	Removes catheter in rotating movement		
21.	Limits suction time to 10-15 seconds		
22.	Discontinue if heart rate is below or above normal		
23.	Resumes oxygen delivery system		
24.	Rinse catheter and suction tube with normal saline until clear		
25.	After suctioning hyper oxygenates ventilator 100% O ₂		

26.	Reassess patient's respiratory status.		
27.	Don't perform more than 4suction per suctioning		
28.	Discards equipment after suction		
29.	Perform hand wash 100		
30.	Monitor any changes in the vital signs		
31.	Document of suction procedure		
32.	Total		

APPENDIX 2. Ethics committee permission



APPENDIX 3. Permission to use scale



CURRICULUM VITAE

Personal Information

Name and Surname : AZHAR WANNAS SHNAWA ALHAMZA

