



**Nurses knowledge and attitudes about complication of enteral feeding by nasogastric tube at ICU in teaching basrah hospitals**

*A Research Project*

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*To the Council of*

*College of Nursing - University of Basrah*

*An*

*Partial Fulfillment of the Requirements for the Degree  
of Baccalaureate in Nursing Science*

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

{يَرْفَعِ اللَّهُ الَّذِينَ آمَنُوا مِنْكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ دَرَجَاتٍ ۗ وَاللَّهُ بِمَا تَعْمَلُونَ خَبِيرٌ}

صدق الله العلي العظيم

المجادلة (11)

## الاهداء

الى صاحب السيرة العطرة و الفكر المستنير

(والدي الحبيب)

الى من وضعتني على طريق الحياة و جعلتني رابط الجأش

( امي الغالية )

الى جميع اساتذتي الكرام ممن لم يتوانوا في مد يد العون لي

## ***Acknowledgments***

first and foremost, I would like to thank Allah to grant our wisdom the opportunity and force to complete this search successfully. I would like to express my deep thanks to Dr. Abdul ameer al-Mousawi. Dean of the Faculty of Nursing Basra University .

Special thanks to A.L. maher abdul ameer We would like to express our sincere thanks for the staff of the College of Nursing , Our great thanks to the teachers who participate and helped us in study

### **Supervisor certificate**

I certify that this project of research " Nurses knowledge and attitudes about complication of enteral feeding by nasogastric tube at ICU in teaching basra hospitals "

prepared under my supervision at the College of Nursing,  
University of Basra as partial fulfillment of the requirements for the  
degree of Bachelor in Nursing

## Abstract

### **Background:**

Enteral nutrition through a nasogastric tube is a technique used with hospitalized patients when they cannot use oral nutrition.

### **Objectives:**

To assess knowledge and attitudes about complication of enteral feeding by nasogastric tube at ICU in teaching basrah hospitals.

**Methodology** The study design is descriptive; the study was carried out between 7th December 2021 to 20th April 2022 on nurses in the intensive care unit at Al Basrah teaching hospitals .

**Results:** significant relationship between nurses' knowledge and their education level about nasogastric tube complications at a P-value  $\leq 0.05$ .

Also, the results of this table shows there is no significant relationship between nurses' (gender, age, marital status, years of experience, and years of experience in the intensive care unit) and their knowledge about nasogastric tube complications. Also, the results of this table shows there is no significant relationship between nurses' (gender, age, marital status, years of experience, and years of experience in the intensive care unit) and their attitudes about nasogastric tube complications.

### **Conclusions :**

the socio-demographic variables of the nurses in this study (50%) were female and also male equals (50%), age group was (20-30) years (67.3%). Most of them were married (54%). The highest percentage is seen in the secondary school (44%) regarding educational levels. Regarding years of experience, most nurses have 1-5 years of experience (48.7 %). Most of them have 1-5 years of experience in the intensive care unit (68.7%).

that most of the nurses (63.3%) have poor knowledge about nasogastric tube complications. most of the nurses (74%) have poor attitudes about nasogastric tube complications.

**Recommendations:**

Special Education Programs Medical professionals, specifically nurses working in intensive care units should be required to raise awareness of one of the most important complications of a nasogastric tube.

Encourage nursing staff in hospitals to participate in teaching patients, providing and maintaining necessary information about complications of the nasogastric tubes through lectures, and continuing education.

Further research should be conducted on a larger sample of cases of complications in nasogastric tubes in Iraq, urging the practical application of instructions and precautions, management methods, preventive measures, and monitoring its impact on a long-term lifestyle.

## List of Contents

Subject	page
<b>Acknowledgements</b>	<b>I</b>
<b>Abstract</b>	<b>III- VI</b>
<b>List of Contents</b>	<b>V-VII</b>
<b>List of Tables</b>	<b>VIII</b>
<b>Chapter One: Introduction</b>	<b>2-5</b>
<b>1.1. Introduction</b>	<b>2-4</b>
<b>1.2. Important of the Study</b>	<b>4-5</b>
<b>1.3. Question of research</b>	<b>5</b>
<b>1.4. Objective of the Study</b>	<b>5</b>
<b>1.5. Definition of the Terms</b>	<b>5</b>
<b>Chapter Two : Review of Literature</b>	<b>8-18</b>
<b>2.1. Overview of Enteral nutrition</b>	<b>8</b>
<b>2.2. Historical Perspective</b>	<b>8-10</b>
<b>2.3. Importance of Assessing Nutritional Status in the intensive care unit</b>	<b>10</b>
<b>2.4. Factors affecting Nutritional Status in Critical Patients</b>	<b>10-11</b>
<b>2.5. Nutritional Status Assessment</b>	<b>11</b>
<b>2.6. Critical patients feeding modes</b>	<b>12</b>
<b>2.7. Enteral feeding</b>	<b>12</b>
<b>2.8. Time to Initiation of Enteral Feeding</b>	<b>12</b>



<b>2.9. Routes of Enteral Feeding</b>	<b>12</b>
<b>2.10. Types of nasogastric tubes</b>	<b>12-13</b>
<b>2.11. Best Practice for Enteral Feeding</b>	<b>13-14</b>
<b>2.12. Placing a nasogastric tube.</b>	<b>14</b>
<b>2.13. Standard of Nursing Care for NG feeding</b>	<b>1 5</b>
<b>2.14. Promote Safe NG Drainage</b>	<b>15</b>
<b>2.15. Nasogastric tube feeding delivery techniques</b>	<b>15-16</b>
<b>2.16. Promote Safe Enteral Feeding</b>	<b>16-17</b>
<b>2.17. Administer Dietary Supplements</b>	<b>17</b>
<b>2.18. Document Dietary Supplements</b>	<b>17</b>
<b>2.19. Maintain Tube Patency</b>	<b>17</b>
<b>2 .20. Monitor Feeding</b>	<b>18</b>
<b>2.21. Nasogastric tube complications</b>	<b>18</b>
<b>Chapter Three Methodology</b>	<b>25-28</b>
<b>3.1. Design of the Study</b>	<b>25</b>
<b>3.2. Administrative Arrangements</b>	<b>25</b>
<b>3.3. The Setting of the Study</b>	<b>25</b>
<b>3.4. The Sample of the Study</b>	<b>25</b>
<b>3.5. Study Instrument</b>	<b>26</b>
<b>Part 1: Demographic Data Form</b>	<b>26</b>
<b>Part 2: nurses Knowledge</b>	<b>26</b>
<b>Part 3: complications of Nasogastric tube</b>	<b>26</b>
<b>Part 4: Attitudes about nasogastric tube complications</b>	<b>26</b>

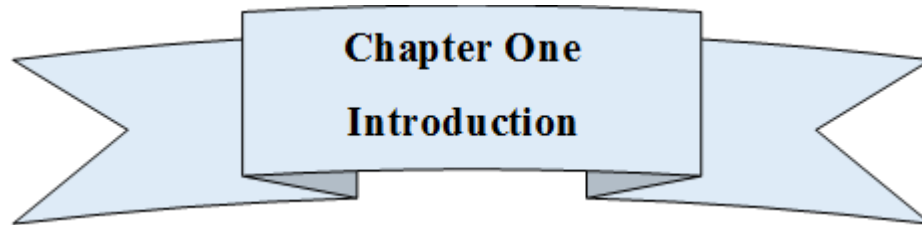
<b>3.6. Validity of the Instrument</b>	<b>26-27</b>
<b>3.7. Reliability of the Instrument</b>	<b>27</b>
<b>3.8. Rating and Scoring of the Study Instrument</b>	<b>28</b>
<b>3.9. Data collection</b>	<b>28</b>
<b>3.10. Statistical Data Analysis</b>	<b>28</b>
<b>Chapter Four: Result and Finding</b>	<b>30-34</b>
<b>Chapter Five: Results Discussion</b>	<b>36-38</b>
<b>5.1. Discussion of the patient Socio-Demographic Characteristics</b>	<b>36</b>
<b>5.2. Nurses' Knowledge toward Nasogastric Tube Complications</b>	<b>36-37</b>
<b>5.3. Relationships of Demographic Variables with Nurses' Knowledge</b>	<b>37</b>
<b>5.4. Nursing Staff's Attitudes Toward Nasogastric Tube Complications</b>	<b>37-38</b>
<b>5.5. Relationships of Demographic Variables with Nurses' Attitudes</b>	<b>38</b>
<b>Chapter Six: Conclusions And Recommendations</b>	<b>40-41</b>
<b>6.1. Conclusion</b>	<b>40</b>
<b>6.2. Recommendations</b>	<b>41</b>
<b>References</b>	<b>42-51</b>
<b>Appendices</b>	<b>52</b>

### List of Tables

<b>Ta</b>	<b>Table Title</b>	<b>Page</b>
4-1	Distribution of the Variables Related Demographic Characteristics	34
4-2	Nurses' Knowledge toward Nasogastric Tube Complications	35
4-3	Relationships of Demographic Variables with Nurses' Knowledge	36
4-4	Nurses' Attitudes toward Nasogastric Tube Complications	37
4-5	Relationships of Demographic Variables with Nurses' Attitudes	38



*Chapter One*  
*Introduction*



**Chapter One**  
**Introduction**

### **1.1. Introduction:**

Medical nutrition therapy of critically ill patients remains a challenge. Many study trials however have allowed us to improve the evaluation of the needs of patients throughout their critical care unit stay, integrating with the best understanding of the physiology. (Singer, et al., 2019)

Nutrition therapy is a basis for health care practices for critically ill patients. It is an assistant therapy whose main objective is to reduce the development of malnourishment. Its efficiency depends on a number of factors, such as the metabolic status of the patient and his/her response and behavior during the treatment(Araujo, et al., 2014)

Critical ill patients are a different group and a unique recommendation for each patient and condition cannot be suggested. Each diagnosis, each period of time (early, post resuscitated, stabilized, long stay), and any other complications must be taken into consideration. Nevertheless, these guidelines based on the best current knowledge and evidence provide a set of nutritional reports in the most frequent clinical situations encountered in daily practice in the critical units. (Singer, et al., 2019)

Nutritional support is of paramount significance for critical patients, because critical illness is usually associated with a catabolic state that energy needed is increased. The term “nutrition support” has been changed to “nutrition therapy”, indicating high awareness of the importance of nutrition for critical patients in the medical community. Nutrition can be given it enterally or intravenously. There is a large body of evidence favoring enteral nutrition to parenteral nutrition (PN) (Heidegger, et al, 2008).

PN is associated with nosocomial infection and prolonged staying in critical units, but not mortality (Elke G, et al, 2016, and Netto, et al 2015).

The most-updated nutrition support guideline recommends that EN should be started within 24 to 48 hours after admission of patients, while PN can be withheld for seven days depending on the risk of malnutrition (Taylor, et al 2016).

The nutrition status of critical patients is closely linked with clinical outcomes, so recognizing the role of inflammation in affecting the nutrition status of a patient, and complications ( Lee, and Heyland, 2019)

Enteral nutrition is a fundamental phase of the care of the critical patient. The use of the gastric tube has become routine for more reasons, not only for the administration of enteral nutrition and medications but also for gastric decompression (Gubler, et al. 2006) Early enteral feeding improves clinical outcomes, reduces gastric intolerance, and promotes the early reestablishment of gastroduodenal motility (Sustic, et al.2009 and Doig, et al. 2009)

Enteral nutrition through a nasogastric tube is a technique used with hospitalized patients when they cannot use oral nutrition. After the admission, the enteral nutrition show several types of complications is appeared such as diarrhea, vomiting, constipation, lung aspiration, tube displacement, tube obstruction, hyperglycemia, and electrolytic disturbance. (Hidalgo, 2001)

Nordin, et al.,( 2015) evaluated the utility, complications, and opinions of caregivers toward NG tube feeding in an acute geriatric unit in a teaching hospital in Kuala Lumpur, they included 432 patients admitted in the critical care unit, 96 (22%), age  $\pm$  standard deviation =  $80.8 \pm 7.4$  years, received NG tube feeding. They concluded that the complication and mortality rates were 69% and 38%, respectively. Diabetes (odds ratio 3.34, aspiration pneumonia (8.15, impaired consciousness (3.13), and albumin  $\leq 26$  g/dl (4.43) were independent predictors of mortality.

Nasogastric tube procedure used for hospitalized patients, particularly critical patients. Though it seems a simple procedure, it may carry potential life-threatening complications due to misplacement. These complications may be exacerbated by the delay in recognition or

removal of the misplaced tubes. (Saif, et al.,2015)

Because the patients are critically ill and may require aggressive resuscitation and monitoring, it is usually not practical to transport them to radiology or endoscopy departments for insertion of feeding tubes under fluoroscopic or endoscopic guidance (Schattner, and Grossman, 2016).

it is well recognized that tube misplacement can occur with this procedure, blind insertion is assumed to be safe—that is, not result in life-threatening complications—if a portable x-ray is obtained to confirm the correct tube position in the stomach before feeding formula is infused. This assumption of safety from life-threatening injury is so widely accepted that blind insertion of feeding tubes is routinely performed by nurses who are not required to obtain specific certification for this procedure (Prabhakaran, et al.,2012; and Halloran. et al., 2011) .

Holland, (2016) stated that the inserted NG tube, it may lead to some discomfort as the tube passes through the nostril into the stomach. If an NG tube isn't inserted properly, it can cause injure the tissue inside the nose, sinuses, throat, esophagus, or stomach. the care provider may also mistakenly thread it through the windpipe into the lungs. If this happens, they may accidentally pass food or medicine into the lungs. This is known as aspiration. It can lead to pneumonia or other infections.NG tube feeding can cause abdominal cramping, abdominal swelling, diarrhea, nausea, vomiting, regurgitation of food or medicine. The NG tube can potentially become blocked, torn, or dislodged. This can lead to additional complications. Using an NG tube for too long can also cause ulcers or infections on the tissue of the sinuses, throat, esophagus, or stomach.

## **1. 2. Important of the Study**

Critical care unit patients are susceptible to malnutrition, low immunity, severe infections, multiple organ dysfunction, and death. Patients experiencing early enteral feeding (within 24 to 48 h following critical unit admission) demonstrate reduced gut permeability and cytokine release, compared to late enteral feeding patients (after 72 h)

Nasogastric tube feeding is a type of enteral tube feeding, that involves the delivery of nutrition via a tube into a gut. (NICE, 2006)

Nasogastric tube insertion is a common procedure it may carry severe complications, increasing the odds of morbidity and mortality. The interactions between patient and procedure risk factors probably aggravate the range of drawbacks. Training, observation, and evidence techniques would help to prevent or minimize the complication and provide safe practice. (AL Saif, et al, 2015)

To maintain patients' physiological and nutritional status, assisted feeding in the form of NG tube feeding is often the option and nurses play a critical role in the management of patients on this kind of management, nursing practices must be identified and corrected to ensure adequate delivery of nutrients is achieved.

### 1.3. Statement of the Problem:

Nurses knowledge and attitudes about complication of enteral feeding by nasogastric tube at ICU in teaching basrah hospitals.

### 1.3. Question of research

How are the complications of nasogastric feeding reduced?

### 1.4. Objective of the Study:

1. To assessment knowledge of nurses about complication nasogastric tube in intensive care unit
2. To find relationship between nurse's knowledge and demographic characteristics (age, gender, and educational level).
3. To find relationship between nurse's knowledge and attitudes.

### 1.5. Definition of the Terms:

#### 1.5.1. Complication:

is a problem or difficulty that makes a situation harder to deal with (Collins Online English Dictionary, 2019)

#### 1.5. 2: Enteral Feeding:

refers to way of feeding that uses the gastrointestinal tract to delivered the national elements required to critical patients (Kirby, and Parisian, 2019)



**1-5-3. Nasogastric Tube:**

is a sterile aplastic tube insertion through the through the nose, past the throat, and down into the stomach. (NICE, 2017)

**1.5.4. Knowledge:**

Knowledge is information and skills which the human beings gain by continuous searching process to improve their life and find the truth of self-development (Hislop, et al., 2018).

**1.5.5. Attitude :**

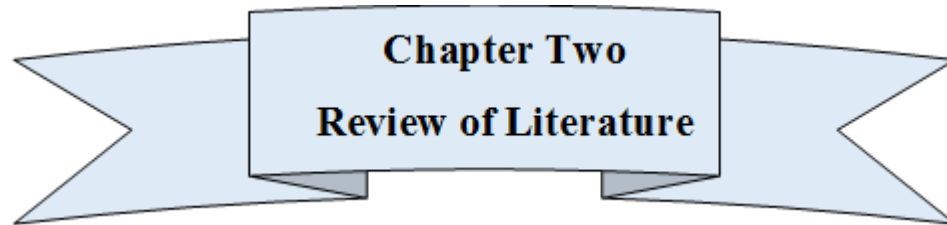
A psychological trait characterized by a favorable or unfavorable assessment of a certain entity (Eagly and Chaiken ,2007)

**1.5.6. nurses:**

Nursing is the autonomous and collaborative care of people of all ages, families, groups, and communities, in all settings, sick or well. Nursing encompasses the promotion of health, sickness prevention, and the care of the sick, disabled, and dying. (2002, ICN)



*Chapter Two*  
*Review*  
*of*  
*Literature*



**Chapter Two**  
**Review of Literature**

## **2.1 Overview of Enteral nutrition**

Enteral nutrition is a process of being fed with a medical device called a feeding tube. A feeding tube for enteral nutrition is mainly used for patients who have a moderate-to-severe neurological impairment that might be reduce of swallowing coordination and may exposes the patients to the risk of aspiration. The enteral feeding used for patients to improve their requirements. Using a feeding tube to deliver nutrition or supplement to critical patient is known as tube feeding, enteral feeding, or gavage. (Adeyinka, and Valentine, 2019)

Nutritional support is a vital component of patient's survival. In critical or medical units. (Taylor, et al., 2014)

Clinical improvement of critical patients is associated with nutritional status. Enteral nutrition has been shown to decrease length of time on the ventilator, decrease length of stay and ICU and decrease mortality. (Emmons, 2014)

The stress catabolism state predisposes critically ill patients to a high risk of malnutrition. This, coupled with inadequate or delayed nutrition provision, will lead to further impairment of nutrition status. Late diagnosis of malnutrition and iatrogenic underfeeding are associated with increased risk of adverse complications (Lee, and Heyland, 2019)

A nasogastric tube is a special tube used carries food and medicine to the stomach through the nose. A nasogastric tube for enteral nutrition is mainly used by patients who have a moderate-to-severe neurological impairment that might compromise the swallowing coordination and hence exposes the patients to the risk of aspiration ( Kartha,2018) .

## **2.2: Historical Perspective**

Enteral nutrition dates back to as far 3500 BC to the time of ancient Chinese, Egyptians and Indians. The concept of enteral feeding has existed since the time of Hippocrates, Avicenna and Celsius, and Platonic. These ancient physicians prepared special food for sick persons for recovery from acute or chronic illness. Around the latter

part of the 19th century, Ibn Zur constructed the first model of parenteral nutrition and Capivacceus in the 16th century insert the first tube for enteral nutrition. At the beginning of the 20 century, physicians detect the problem of feeding patients incapable of eating either because of prolong illness or its severity. Clouston in 1872 described a method of intragastric feeding that comprise a cocktail of milk, egg, jelly, and alcohol. In 1882, Bless tried to use the rectal route to deliver nutrition. At the beginning of the 20th century, developed the formulation of mixtures used for enteral feeding. The early and late 50s heralded the start of the space age when more research on food and nutrition mixtures for astronauts was done (Adeyinka, and Valentine, 2019)

Enteral nutrition has continued to expand in leaps and limited because clinicians were able to diagnosed the malnutrition as an independent risk factor for mortality. The malnourished patient is more patency to have prolonged staying in hospital, especially in critical units, more days on mechanical ventilation, delay wound healing. and a higher risk of mortality.( Reber, et al., 2019)

In the early 80s, chemically-defined and organ-specific diets were explored. Scientists made new improvement in the feeding tube. Access to the gut also improved with advances in endoscopic technique and interventional radiology, they proposed that translocation of bacteria from the gastrointestinal (GI) tract is a main causes of sepsis. Current research focuses on looking at the GI tract as an organ with hormonal, immune, and metabolic functions that acts a major barrier to pathogens and intraluminal toxins. (Vassilyadi, et al., 2013)

Nasogastric tube is used widely in clinical practice since its introduction in 1790 by Hunter. Although it is generally well tolerated rarely it can be associated with life threatening complications. Laryngeal injury due to NG tube was known for long (Iglauer, and Molt, 1939) however NG tube syndrome was first described in 1990 by Sofferman. The condition is identify clinically by the presence of throat pain, bilateral vocal cord paresis with NG tube. It is a rare complication, and only a few case reports are published worldwide. (Sofferman, and Haisch , 1990)

Sofferman and Hubbell in 1981 reported that NG syndrome is relatively a rare complication. The pathophysiology of this condition is unknown. It is believed that the NG tube exerts pressure against the posterior cricoid lamina on which the bodies of the posterior cricoarytenoid muscle lie. These lead to traumatic post cricoid ulceration. The extensive penetration of post cricoid inflammation into the posterior cricoarytenoid muscles can cause bilateral vocal cord abduction injury

The NG tube safety pack discovered by Leeds Medical School in the United Kingdom is an innovative approach to decrease complications that makes guideline recommendations accessible and easy to follow by incorporating them into the pack design. Innovations such as this can help anticipate and mitigate errors in the placement of an NG tube. (Shlamovitz, 2018)

### **2.3: Importance of Assessing Nutritional Status in the intensive care unit**

The aim of assessing a patient's nutritional status is to:

- Assess the pre-existing hydration and nutritional conditions.
- Assess the hydration and nutrition-related complications that could affect the health status.
- Identify the patient's nutritional requirements.
- Provide the optimum level of intake and promote adequate utilization of hydration and food to improve growth, healing, and recovery. (Cresci, 2005)

### **2.4: Factors affecting Nutritional Status in Critical Patients**

The most common factors that can affect nutritional status in critical patients include:

- unable to drink and eat;
- Vomiting and diarrhea;
- Constipation;
- Glucose intolerance;
- Renal dysfunction;

- Pain;
- Physical disability;
- Restricted fluid intake;
- Reduced gut motility;
- Fasting before procedures/investigations. (Jevon,2012)

## **2.5: Nutritional Status Assessment**

All patients should undergo nutritional screening on admission to hospital or healthcare settings. The physician and nurse should follow the local policies and protocols to identify patients at risk of malnutrition and dehydration. (NICE 2006).

### **2.5.1: Steps of management include**

#### **2.5.1.A: Screening:**

From the screening process, it is easy to recognize the risk of malnutrition nutritional care plan should be developed, and referral for nutritional support made to an expert/dietitian for a more detailed assessment (Kondrup et al. 2003).

The most widely used screening tool is the malnutrition universal screening tool (MUST) is a screening tool used in hospitals and other healthcare settings. It's a tool used to identify adults who are malnourished, at risk of malnutrition, or obese and it includes management guidelines that can be used to develop a care plan. (Russell and Elia 2011).

#### **2.5.1.B: Assessment:**

A full examination of nutritional, metabolic, and functional variables should be conducted, and consideration paid to patient history, current medication, laboratory results, and patient's ability to swallow and bowel function. The assessment should provide information leading to a special care plan (Mallet, 2013).

#### **2.5.1.C: Monitoring and Outcome:**

The effectiveness of the nutritional management should regularly be monitored, leading to adjustments in treatment as necessary throughout the patient's hospitalization.

#### **2.5.1.D: Communication:**

Screening and assessment results and the developed nutritional care

plan should be a consultant with other health professionals when the patient is transferred somewhere else.

## **2.6. Critical Patients Feeding Modes**

Oral nutrition is generally considered the first-line method, but patients who cannot tolerate oral feeding can be fed enterally or parenterally.

The type used will be based on:

- If the patient has a functioning GI tract system;
- Which route is suitable;
- How long feeding will be needed (Mallet,2013)

## **2.7: Enteral feeding**

Enteral feeding is feeding the patients by liquid feed composition through a tube inserted in the stomach or post-pyloric and is a route of choice for critically ill patients. This method is used if a patient has a functional and accessible GI tract (NICE, 2006).

## **2.8: Time to Initiation of Enteral Feeding**

The enteral feedings should begin within the first 24 to 48 hours following admission. Despite this recommendation, enteral feeding has often been significantly delayed for more than a day after hospital critical unit admission. The researcher has reported that the average time from admission to start of enteral feedings was from 39.7 hours up to 46.5 hours. Patients who received early enteral nutrition were shown to have a shorter time on the ventilator and a lower incidence of pneumonia, (Artinian et al., 2006; Khalid et al., 2010; and Woo et al., 2010).

## **2.9: Routes of Enteral Feeding**

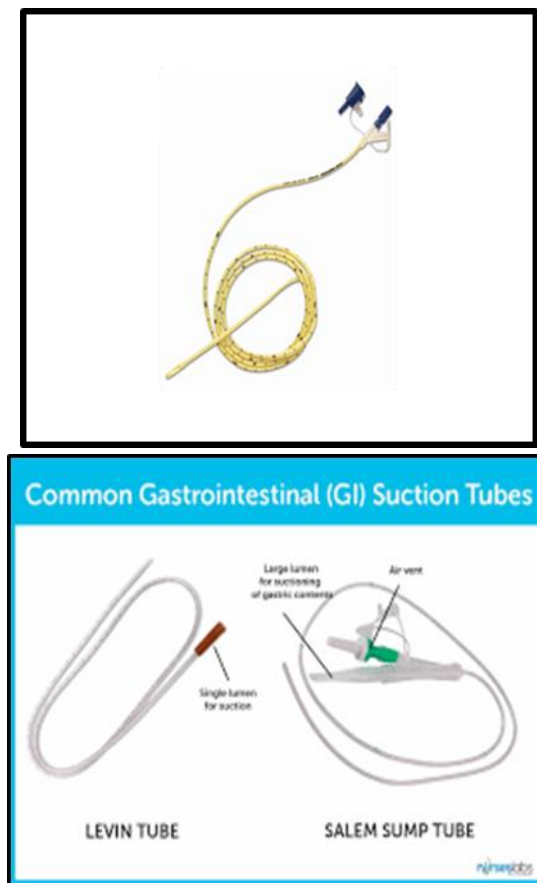
- Nasogastric: a tube through the nose into the stomach.
- Nasoduodenal: a tube through the nose into the duodenum.
- Nasojejunal: a tube through the nose into the jejunum (Marshall & Boyle 2007).

## **2.10: Types of nasogastric tubes include:**

2.10.A: Levin catheter: which is a single lumen, small-bore NG tube. It is more acceptable for the administration of medication or nutrition.

**2.10.B: Salem Sump catheter:** which is a large bore NG tube with a double lumen. This avails for aspiration in one lumen and venting in the other to reduce the negative pressure and prevent gastric mucosa from being pulled into the catheter. (Pierre, 2009)

**2.10.C: Dobhoff tube:** which is a small-bore NG tube with a weight at the end intended to pull it by gravity during insertion. (Allbee, et al., 2012)



**Figure: 2-1: Levin catheter , Salem Sump catheter, and Dobhoff tube**

## **2.11: Best Practice for Enteral Feeding**

- Adhere to best guideline practice of feeding protocols.



- Always check tube position before the commencement of feed.
- Always flush tubes before and after administration of medications.
- Check tube position during feeding regularly.
- Check the patient's vital signs, particularly the airway.
- Keep the head of the bed at 30-45 degrees while administering feed to reduce the risk of aspiration.
- Increase nutritional requirements following local guidelines.
- Ensure feed is in date and administered following production recommendations.
- Check absorption of feed and follow the order feeding regime.
- Maintain fluid balance.
- Assess bowel function.
- Evaluate the patient's blood chemistry. (Jevon,2012)

## **2.12: Placing a nasogastric tube.**

- Explain the procedure to the patient and they are relative.
- Mark the tube at a distance equal to that from the xiphisternum to the nose via the earlobe (50–60 cm).
- Lubricate the tube with gel/water and internally with water if a guidewire is present. Check the guidewire moves freely.
- Check nasal patency with each nostril occluded in turn. The clearer nostril can be sprayed with lignocaine to minimize discomfort.
- Sit the patient upright with the head level. Slide the tube gently backward along the floor of the clearer nostril until visible at the back of the pharynx (10–15 cm).
- If the patient is cooperative, ask them to take a mouthful of water and then advance the tube 5–10 cm as they swallow.
- Repeat the water swallow until the preset mark on the tube reaches the nostril.
- Withdraw the tube at any stage if the patient is distressed, coughing, or cyanosed.
- If there is difficulty passing the tube, ask the patient to tilt their head forwards or turn it to one side.
- Once in place, remove any guidewire and secure carefully.
- Check the position of the tube before use.
- Document tube insertion in the patient's chart. ( Stroud, et al, 2008)

## **2.13: Standard of Nursing Care for NG feeding**

### **2.13.A: Insert Oral/Nasal Gastric Tube**

Nurses in critical units may insert nasal or oral gastric tubes in patients who are intubated and ventilated.

Contraindications to ORAL or NASAL tube placement by a nurse:

- Esophageal varices (contact GI)
- Esophageal surgery, e.g., esophagectomy (contact surgical team)
- Recent ear nose and throat or gastric surgery (contact surgical team)
- Recent GI bleeding (contact GI or surgical team) (McClave, et al., 2015)

Contraindications to NASAL tube placement:

- Nasal fractures
- Anterior basal skull fracture
- Sinusitis
- Epistaxis ( Morgan, 2017)

## **2.14: Promote Safe NG Drainage**

- Connect NG tube to low, intermittent wall suction. Utilize six-foot drainage tubing with a "Y" connector. Set intermittent suction at no greater than 90 mmHg.
- Irrigate NG drainage tube with sterile sodium chloride solution (in bottles).
- Document the volume drained on the fluid balance record.
- If NG loss is > 125 ml per shift, review intravenous replacement therapy with the physician. (McClave, et al., 2015)

## **2.15: Nasogastric tube feeding delivery techniques**

Aldohaim, (2019) stated that there are several manners of delivery of enteral feeding which as:

### **2.15.A: Bolus Intermittent Feeding with a Bulb or Syringe**

Enteral feeding is delivered in volumes of about 100 to 400 ml over 5 to 10 minutes. It is mostly used in ambulatory settings. The risk of aspiration is high

### **2.15.B: Cyclic Intermittent Feeding**

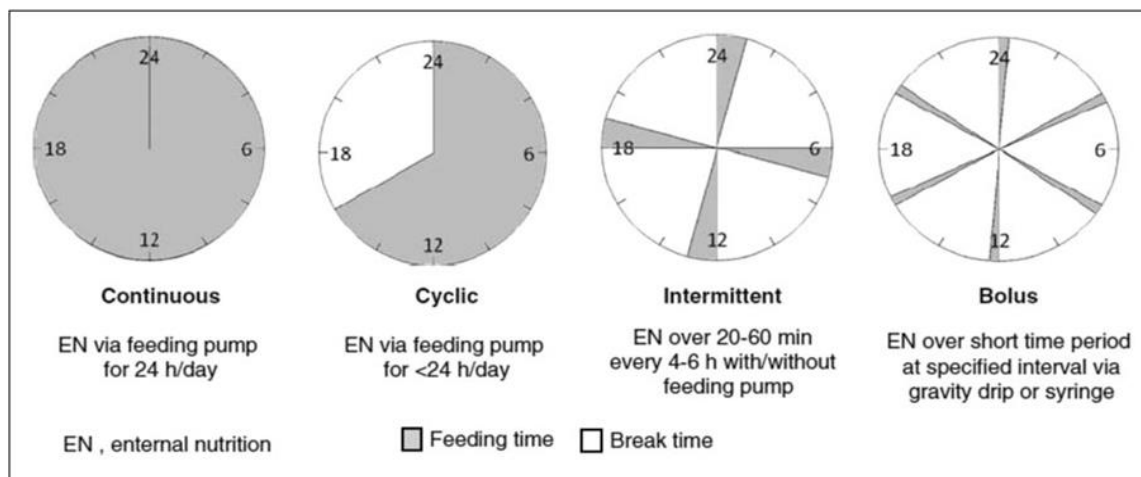
This method is used for patients in a semi-recumbent position. Enteral feeding is delivered through a pump or gravity. Enteral feedings are delivered over an 8- to 16-hour period

### 2.15. C: Intermittent Drip

This is popular for home enteral feeding. Approximately 1.5 to 2 liters of feeding can be delivered over an 8 to 16 hours period overnight. Feeding is delivered via gravity or pump.

#### 2.15.D: Constant Infusion

This method is used for bedridden patients. Feeding is usually delivered via gravity or pump. The head is put at an angle of 45% to reduce aspiration or regurgitation.



**Figure 2-1: Nasogastric tube feeding delivery techniques**

### 2.16. Promote Safe Enteral Feeding

- Maintain head of bed > 30 degrees if the patient has an endotracheal tube OR if the patient is being enterally fed unless contraindicated.
- The degree of elevation is documented in the graphic record. If the head of the bed cannot be elevated, the reason is documented in the AI record.

- If the backrest angle cannot be elevated (e.g., spinal precautions, obesity), consider using reverse Trendelenburg. (Morgan, 2017)

### **:2.17 Administer Dietary Supplements**

- When ordered, administer protein and/or glutamine supplements via the side port of the Y-Site feeding tube extension set.
- Supplements are provided as a powder.
- Mixing is best achieved by shaking the powder after addition to water. Add powder and 20-30 ml of sterile water to a sterile specimen container. Apply cap and shake vigorously to mix.
- If a dose of supplement is not given for any reason, document on the MAR (Medical Administration Record) and make a notation in the AI record and follow-up with a dietitian
- Flush well after administration. (McClave, et al., 2015)

### **2.18 Document Dietary Supplements:**

- Transcribe the supplement order to the Kardex.
- Document that administration of glutamine or protein boluses on the fluid balance record
- Record the volume given on the intake and output record.  
)Morgan, 2017)

### **2.19 Maintain Tube Patency:**

- Feeding tubes are flushed before and after enteral medication administration and q 6 h and using 30 ml sterile water. Oral meds and free water administration are done using sterile water (250-500 ml bottles).
- Document medication and flush volumes on the fluid balance record.
- Replace the cap on the syringe when not in use and flush with sterile water after use to remove residual medication. Change syringes Q 12 H and prn.
- Blocked tubes may be flushed with pancreatic enzymes dissolved in sodium bicarbonate.
- If tube blockage cannot be relieved, change the feeding tube promptly to avoid nutrition disruption.

## **2.20 Monitor Feeding:**

- Review feeding orders and ensure Kardex is accurate.
- Monitor bowel sounds and bowel elimination status q shift. Document in the daily assessment record and on the graphic record. Review bowel routine orders daily and administer medications as ordered to ensure regular bowel function.
- Inspect buccal/nasal cavity q shift for evidence of skin breakdown. If the mucosal injury is noted, change tube position or placement. Inspect bridge of nose q shift for signs of skin breakdown.
- If nasal tube is in place, monitor q shift for evidence of nasal discharge, increased white count, or fever that could suggest sinusitis. (Morgan, 2017)

## **2.21 . Nasogastric tube complications**

Hidalgo, et al., (2001) presented a prospective and observational study carried out in an Internal Medicine Unit with 64 patients who were fed by a nasogastric tube. Their results saw that older people represented a majority (the average age was 76.2 years), and difficulty in swallowing was the main reason for beginning enteral nutrition. The complications which appeared were: tube dislodgement (48.5%); electrolytic alterations (45.5%); hyperglycemia (34.5%); diarrhea (32.8%); constipation (29.7%); vomiting (20.4%); tube clogging (12.5%); and lung aspiration (3.1%). They revealed that there was a relationship between the different factors associated with the enteral nutrition procedure and the occurrence of these complications.

The nasogastric tube feeding complication is divided into the followings

### **2.21A. Tube-Related (Mechanical complication)**

The mechanical complication from tube feeding is listed below.

- Tube malposition
- Tube obstruction
- Accidental dislodgment of tube
- Breakage of the feeding tube
- Leakage of the feeding tube

- Erosion and ulceration near the site of insertion
- Intestinal obstruction
- Bleeding

Nasogastric tube insertion is mostly done blindly by the bedside with about 0.5% to 16% mispositioning in the pleura, trachea, or bronchial trees. This can cause the infusion of enteral feeds in the tracheobronchial tree causing a pulmonary abscess or pneumothorax. Installation of air or auscultation is not an accurate method of determining proper tube placement. The best test is with radiography. Failure of bedside nasoenteral tube placement is an indication for fluoroscopy or endoscopy-guided tube insertion. (Scott, and Bowling, 2015)

### **.2.21B: Infectious Complications**

- Infection at the site of tube insertion
- Aspiration pneumonia
- Ear and nasopharyngeal infection
- Infective gastroenteritis with diarrhea
- Peritonitis

Tube placement in enteral feeding is sometimes associated with infectious processes. Aspiration pneumonia is reported in closed 89% of patients on enteral feeding with no clear benefit of mesenteric feeding over nasogastric. This is a potentially life-threatening complication from enteral feeding. It occurs because of aspiration of oral secretion and or gastric with enteric secretions. Aspiration is more common when patients are fed through a nasogastric tube in a supine position.

The cause of aspiration pneumonia in enteral feeding are multifactorial.

- Gravitational backflow
- Lower esophageal sphincter impairment
- Infrequent contract of the esophagus

- The presence of a tube near the gastric cardia
- Impaired level of consciousness
- Poor gag and cough reflex is seen in neurologically impaired patients with stroke or dementia

To prevent aspiration, place the enteral feeding tube about 40 cm distal to the ligament of Treitz. This applies to patients with a higher risk of aspiration. ( Jack, et al., 2010)

### **.2.21 C: Gastrointestinal Complications**

Enteral feeding is associated with several gastrointestinal complications which as

- Nausea and vomiting
- Diarrhea
- Constipation
- Cramps and bloating
- Regurgitation

Nausea

Nausea and vomiting are common after the initiation of enteral feeding about 20% to 30% incidence. Non-occlusive bowel necrosis . This is associated with high mortality. ( Blumenstein, et al., 2014)

Diarrhea

This is the most gastrointestinal complication seen in enteral feeding. Diarrhea occurs in about 30% of patients admitted to the medical or surgical units and in about 80% in patients in the critical units

Diarrhea in enteral feeding is as a result of many factors. Using antibiotics and other medications in enteral feeding is a common cause of diarrhea. Medications like antacids, oral magnesium or phosphate, antacids, and prokinetic agents. The sorbitol-containing solution can also trigger profuse diarrhea in patients on enteral feeding. Use of fiber based on the result of meta-analysis has been found to be able to

significantly reduce the incidence of enteral feeding associated diarrhea especially in high-risk patients both post-surgically and in the critically ill. (Adeyinka, and Valentine, 2019)

### Constipation

This is a less common complication that is associated with enteral feeding. Constipation is more common in patients on long-term enteral feeds. Some studies suggest that use of fiber supplementation might help reduce the reporting of constipation in enteral feeding among patients.

Abdominal pain or distension may be caused by constipation, build-up of gas or gastrointestinal obstruction. The following should be considered when seeking to improve or investigate further:

- Check bowel function.
- Minimize any air going into the feeding tube.
- Appropriateness of feeding regimen, including method, volume, rate, fiber content and concentration of feed.
- Gut motility agents.
  - Gastric venting. Attach large (60ml) open ended syringe to feeding tube and allow gas to escape.
- Temperature of feed.(BAPEN, 2016)

### **.2.21D: Metabolic Complications**

Metabolic complications of enteral nutrition are similar to those that occur during PN, although the incidence and severity may be less. Careful monitoring can minimize or prevent metabolic complications.



**Table 2-1: Metabolic Complication (Gottschlich, 2001)**

<b>Problem</b>	<b>Cause</b>	<b>Treatment</b>
Hyponatremia	Overhydration	Change formula Restrict fluids
Hypernatremia	Inadequate fluid intake	Increase free water
Hyperglycemia	Too many calories Lack of adequate insulin	Evaluate caloric intake Adjust insulin
Hypokalemia	Refeeding syndrome Diarrhea	Replace K Evaluate causes of diarrhea
Hyperkalemia	Excess K intake Renal insufficiency	Change formula

Refeeding of severely malnourished patients may result in "refeeding syndrome" in which there are acute decreases in circulating levels of potassium, magnesium, and phosphate. The sequelae of refeeding syndrome adversely affect nearly every organ system and include cardiac dysrhythmias, heart failure, acute respiratory failure, coma, paralysis, nephropathy, and liver dysfunction. The primary cause of the metabolic response to refeeding is the shift from stored body fat to carbohydrate as the primary fuel source. Serum insulin levels rise, causing intracellular movement of electrolytes for use in metabolism. The best advice when initiating nutritional support is to "start low and go slow".

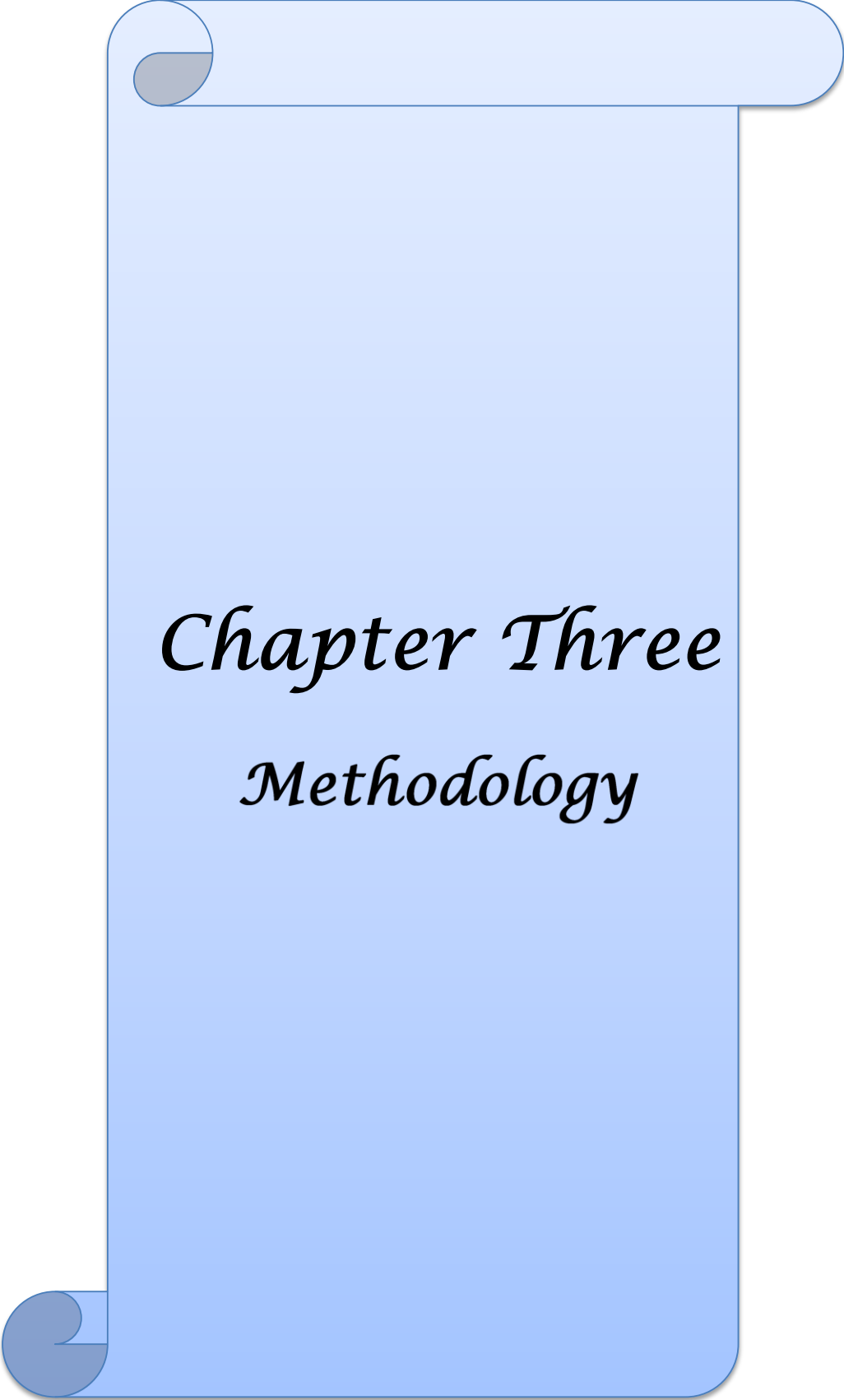
Recommendations to reduce the risk of refeeding syndrome include:

1. reform electrolyte abnormalities before starting nutritional support
2. Administer volume and energy slowly
3. Check pulse, I/O, electrolytes closely
4. Provide appropriate vitamin supplementation
5. prevent overfeeding (Gottschlich, 2001)

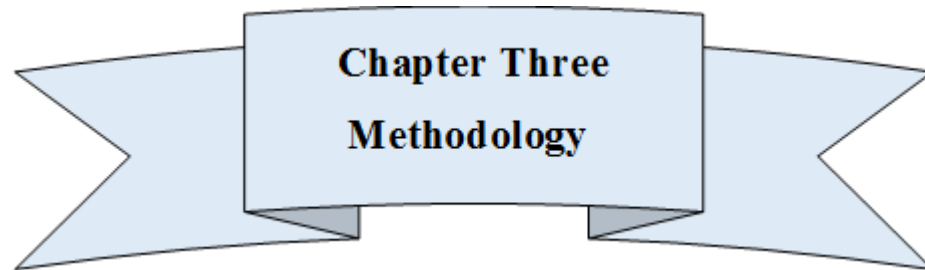
### **2.21. E- Medication-related complications**

The clinicians supposed diarrhea in patients receiving enteral feedings stemmed from malabsorption and feeding intolerance.

But more recent study points to medications, especially those high in sorbitol, as the main culprit. So be sure to rule out medications as the cause of diarrhea before looking for other causes, including malabsorption and rapid delivery rates. The sorbitol content of certain premade liquid drugs (such as potassium chloride, acetaminophen, and theophylline) can cause a rapid fluid shift into the intestines, leading to hyperosmolarity and diarrhea. This effect rises when sorbitol based liquid medications are given through a Jejunal tube. (Gastric acid in the stomach acts as a buffer to medications and reduces osmolarity of fluid entering the small intestine.) Consider a pharmacy consult for patients who experience diarrhea while receiving multiple sorbitol-based drugs. Changing the administration time as appropriate or switching to a non-sorbitol-based alternative may relieve diarrhea without necessitating feeding-rate adjustment. Medications administered through a feeding tube also may cause obstruction, especially if they're crushed. Don't give medications that must be crushed through a J tube, because the clogging risk is greater than with a gastric tube. Take additional precautions with medications linked to a higher clogging risk, including psyllium, ciprofloxacin suspension, sevelamer, and potassium chloride tablets that can be dissolved in water. Know that tube replacement due to clogging is costly and subjects the patient to anesthesia. To help prevent obstruction, maintain proper tube maintenance and flushing. For instance, massage potential clots in the tube, irrigate with warm water, administer alkalinized enzymes as ordered. Be aware that some medications must be given on an empty stomach to ensure effective absorption, including phenytoin, carbamazepine, alendronate, carbidopa levodopa, and levothyroxine. You may need to withhold tube feedings for 1 to 2 hours before and after administering these medications. For a patient with a GJ tube, as long as medications are given through the gastric port, you needn't withhold feedings from the jejunal port; follow pharmacy guidelines. Keep in mind that patients receiving multiple drugs may have absorption problems due to extended withholding of feedings, causing dehydration and malnutrition. (Houston, and Fuldauer, 2017)



*Chapter Three*  
*Methodology*



**Chapter Three**  
**Methodology**

### **3.1. Design of the Study:**

The study design is descriptive; the study was carried out between 7th December 2021 to 20th April 2022 on nurses in the intensive care unit at Al Basrah teaching hospitals

### **3.2. Administrative Arrangements:**

Written official permissions have been obtained from the Ministry of Planning Central Statistical System for approval of the questionnaire draft, another one from al Basrah Health Director to facilitate the data collection (Appendix B).

### **3.3. The Setting of the Study**

The study was carried out at Al Basrah teaching hospitals: Basra Teaching Hospital, Al Faiha Teaching Hospital, and Basra Teaching Hospital.

### **3.4. The Sample of the Study**

The research sample includes (150) nurses at Al Basrah teaching hospitals

Non-probability sampling (purposive sample) is chosen (150) nurses divided from three teaching hospitals: (50) nurses from Basra Teaching Hospital and (50) nurses from Al Faiha Teaching Hospital, and (50) nurses from Basra Teaching Hospital.

#### **3.4.1. Inclusion Criteria of the Sample:**

**3.4.1.1. The nurses who agree to participate in the project.**

**3.4.1.2. the nurses who work in intensive care unit**

### **3.5 Study Instrument**

#### **Part 1: Demographic Data Form:**

This part consists of (5) items which include: (nurse' age, gender, level of education, Experience years, and Experience years in ICU) (Appendix C ).

#### **Part 2: nurses Knowledge**

This part is related to the evaluation of the Nurse's knowledge and attitudes about complications of enteral feeding by nasogastric tube at ICU in teaching Basrah hospitals.

The knowledge instrument consists of (15) items, the items were choice questions these choices were rated as (3) for agree to answers, (2) for neutral an answer, and (1) for don't agree (Appendix C ).

#### **Part 3: complications of Nasogastric tube**

The complication instrument consists of (5) item, the items were choice questions these choices were rated as (3) for agree to answers, (2) for neutral an answer, and (1) for don't agree

#### **Part 4: Attitudes about nasogastric tube complications**

The attitudes instrument consists of (10) item, the items were choice questions these choices were rated as (3) for agree to answers, (2) for neutral an answer, and (1) for don't agree

### **3.6. Validity of the Instrument**

The instrument validity was done by a panel of experts and content validity was obtained. Furthermore, the questionnaire items were changed according to the notes and recommendations of experts (appendix A).

Content validity of the instrument was determined by a panel of experts who have had more than 5 years of experience in their field in relation to exploring the lucidity, relevance, and adequacy of the questionnaire in order to accomplish the goals of the present study (Appendix A). The correction of the question items was done and changed according to the notes and recommendations of the experts.

A preliminary copy of the questionnaire is designed and distributed to the (7) experts. They are ( 7) faculty members from the College of Nursing/

University of Basrah. Results show that the majority of experts have agreed that the questionnaire is appropriately designed and developed to measure the phenomena underlying the study.

The experts' suggestions and recommendations were taken into consideration and the final copy of the constructed instrument has become acceptable as a tool for conducting the study and achieving the purpose.

### 3.7. Reliability of the Instrument.

Reliability is concerned with the consistency and dependability of a research instrument to measure a variable. Determination of reliability of the questionnaire is based on the Cronbach's Alpha reliability (Table- ). It was determined through use of the following formula (Yount, 2006).

$$\alpha = \frac{K}{K-1} \left( 1 - \frac{\sum_{i=1}^K \sigma_{Y_i}^2}{\sigma_X^2} \right)$$

$K$  = components (K-items or test lets):

$\sigma_X^2$  = The variance of the observed total test scores

$\sigma_{Y_i}^2$  = The variance of component i for the current sample of persons

The degree of reliability is usually determined by the use of correlation procedures. Reliability coefficient normally range from (-1.00) through (.00) to (+1.00), reliability coefficient above (0.70) are considered satisfactory (Yount, 2006).

**Table ( 3-2) Reliability Coefficient of the Study Instruments**

Study scale	Number of items	Cronbach's alpha	Report
Knowledge items	30	0.96	Excellent

Table (3) is statistically formed for testing the reliability coefficient of the instrument of the present study, its result shows that there is an acceptable level of Cronbach's Alpha reliability value for scale.

### **3.8. Rating and Scoring of the Study Instrument:**

The questionnaire form style was the question of a choice for the nurse's knowledge, it has been scored and rated on two levels dichotomous scale (3) points for the agree to answer and (2) points for the neutral answer and (1) point for don't agree on an answer which assessed by cutoff point (0.66) due to scores (1,2 and 3) respectively. Scores of responses are categorized according to the following level of patients' knowledge: (1-1.66) = low level of knowledge, (1.67-2.33) = moderate level of knowledge, and (2.33-2.99) = high level of knowledge.

### **3.9. Data Collection**

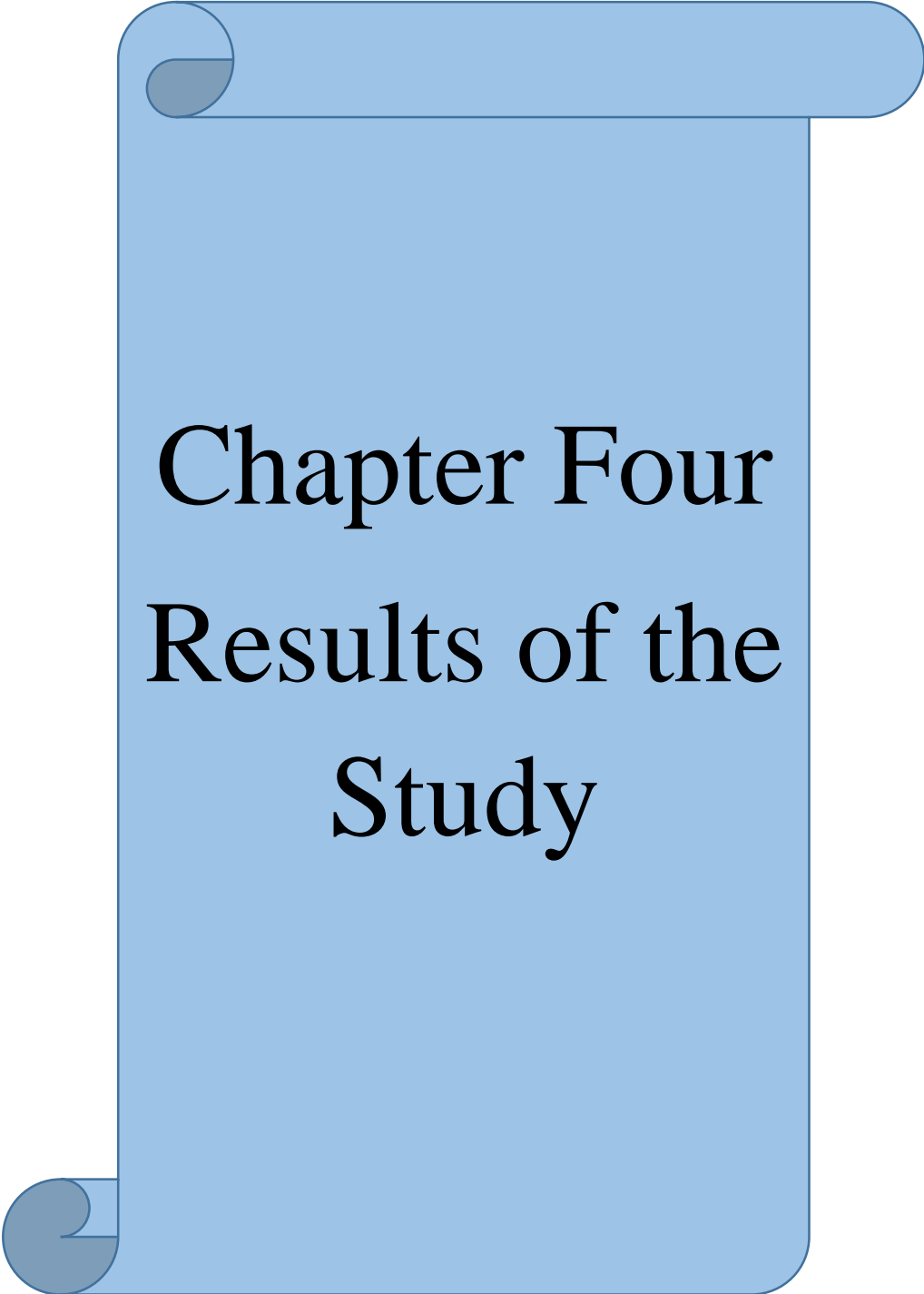
The process of gathering information was conducted from (10th December 2021 to 15th April 2022). The study and the objectives were explained to the study sample by the investigator, the nurses' verbal consent has been taken and the answering of questions has been done by using the self-administrative method and interview method.

### **3.10. Statistical Data Analysis:**

The statistical analysis of the data of the study is done by using Microsoft office excel 2007 and SPSS package ver. 26.

#### **3.10.1. Descriptive Data Analysis:**

**Statistical tables (Frequencies and percentages).**



**Chapter Four**  
**Results of the**  
**Study**



## Chapter Four

### Results of the Study

(4-1): Distribution of the Variables Related Demographic Characteristics  
N=150 nursing staff

<b>Table 4.1.1 Descriptive Statistics of Demographic Characteristics</b>			
<b>Demographic Variables</b>	<b>Variables Classes</b>	<b>F</b>	<b>Percent</b>
<b>Gender</b>	<b>Male</b>	<b>75</b>	<b>50 %</b>
	<b>Female</b>	<b>75</b>	<b>50 %</b>
	<b>Total</b>	<b>150</b>	<b>100 %</b>
<b>Age</b>	<b>20-30</b>	<b>101</b>	<b>67.3 %</b>
	<b>31-40</b>	<b>37</b>	<b>24.7 %</b>
	<b>41-50</b>	<b>12</b>	<b>8 %</b>
	<b>Total</b>	<b>150</b>	<b>100 %</b>
<b>Marital status</b>	<b>Single</b>	<b>53</b>	<b>35.3 %</b>
	<b>Married</b>	<b>81</b>	<b>54 %</b>
	<b>Divorced</b>	<b>16</b>	<b>10.7 %</b>
	<b>Total</b>	<b>150</b>	<b>100 %</b>
<b>Education level</b>	<b>Secondary School</b>	<b>66</b>	<b>44 %</b>
	<b>Nursing Institute</b>	<b>55</b>	<b>36.7 %</b>
	<b>College of Nursing</b>	<b>29</b>	<b>19.3 %</b>
	<b>Total</b>	<b>150</b>	<b>100 %</b>
<b>Years of experience</b>	<b>1-10</b>	<b>73</b>	<b>48.7 %</b>
	<b>11-20</b>	<b>55</b>	<b>36.6 %</b>
	<b>21-30</b>	<b>22</b>	<b>14.7 %</b>
	<b>Total</b>	<b>150</b>	<b>100 %</b>
<b>Years of experience in the Intensive Care Unit</b>	<b>1-5</b>	<b>103</b>	<b>68.7 %</b>
	<b>6-10</b>	<b>41</b>	<b>27.3 %</b>
	<b>11-20</b>	<b>6</b>	<b>4 %</b>
	<b>Total</b>	<b>150</b>	<b>100 %</b>

F = frequency

According to this table shows, the socio-demographic variables of the nurses in this study (50%) were female and also male equals (50%), age group was (20-30) years (67.3%). Most of them were married (54%). The highest percentage is seen in the secondary school (44%) regarding educational levels. Regarding years of experience, most nurses have 1-5 years of experience (48.7 %). Most of them have 1-5 years of experience in the intensive care unit (68.7%).

#### **(4-2): Nurses' Knowledge toward Nasogastric Tube Complications**

**Table (4.2.2): Nursing Staff's Knowledge toward Nasogastric Tube Complications**

<b>Nursing Staff's Knowledge</b>						
<b>Assessment levels</b>	<b>F</b>	<b>%</b>	<b>Scale</b>	<b>Total</b>		
				<b>MS</b>	<b>Sd</b>	<b>Ass.</b>
<b>Poor</b>	<b>95</b>	<b>63.3%</b>	<b>1 – 1.66</b>	<b>1.65</b>	<b>0.758</b>	<b>Poor</b>
<b>Moderate</b>	<b>40</b>	<b>26.7%</b>	<b>1.67 – 2.33</b>			
<b>Good</b>	<b>15</b>	<b>10%</b>	<b>2.34 – 3</b>			
<b>Total</b>	<b>150</b>	<b>100 %</b>				

F = frequency, % = Percent, MS = Mean Score, Ass. = Assessment, Sd=Standard Deviation.

The results of this table indicate that most of the nurses (63.3%) have poor knowledge about nasogastric tube complications, (26.7%) of them have moderate knowledge, and (10%) of them have a good knowledge at the mean score and standard level deviation= (1.65+0.758).

**Table (4.3.): Relationships of Demographic Variables with Nurses' Knowledge (all domains)**

Demographic Variables	Variables Classes	Knowledge			Chi-Square (X <sup>2</sup> )	df	P-Value	Sig.
		Don't Agree	Uncertain	Agree				
Gender	Male	41	25	9	4.879	2	0.087	NS
	Female	54	15	6				
Age	20-30	61	27	13	4.303	4	0.367	NS
	31-40	24	11	2				
	41-50	10	2	0				
Marital status	Single	35	13	5	1.779	4	0.776	NS
	Married	51	23	7				
	Divorced	9	4	3				
Education level	Secondary School	64	1	1	111.741	4	0.000	HS
	Nursing Institute	31	24	0				
	College of Nursing	0	15	14				
Years of Experience	1-10	42	22	9	2.572	4	0.632	NS
	11-20	37	13	5				
	21-30	16	5	1				
Years of Experience in ICU	1-5	65	27	11	0.770	4	0.942	NS
	6-10	26	11	4				
	11-20	4	2	0				

**Df: Degree of freedom, P: Probability Value, Sig= Significant, NS: Not Significant, HS: High Significance**

This table shows a significant relationship between nurses' knowledge and their education level about nasogastric tube complications at a P-value  $\leq$  0.05.

Also, the results of this table shows there is no significant relationship between nurses' (gender, age, marital status, years of experience, and years of experience in the intensive care unit) and their knowledge about nasogastric tube complications at a P-value  $>$  0.05.

**(4-4): Nurses' Attitudes toward Nasogastric Tube Complications****Table (4.4.1): Nursing Staff's Attitudes toward Nasogastric Tube Complications**

<b>Nursing Staff's Knowledge</b>						
<b>Assessment levels</b>	<b>F</b>	<b>%</b>	<b>Scale</b>	<b>Total</b>		
				<b>MS</b>	<b>Sd</b>	<b>Ass.</b>
<b>Poor</b>	<b>111</b>	<b>74%</b>	<b>1 – 1.66</b>	<b>1.59</b>	<b>0.788</b>	<b>Poor</b>
<b>Moderate</b>	<b>17</b>	<b>11.3%</b>	<b>1.67 – 2.33</b>			
<b>Good</b>	<b>22</b>	<b>14.7%</b>	<b>2.34 – 3</b>			
<b>Total</b>	<b>150</b>	<b>100 %</b>				

**F = frequency, % = Percent, MS = Mean Score, Ass. = Assessment, Sd=Standard Deviation.**

The results of this table indicate that most of the nurses (74%) have poor attitudes about nasogastric tube complications, (11.3%) of them have moderate attitudes, and (14.7%) of them have good attitudes at the mean score and standard level deviation= (1.59+0.788).

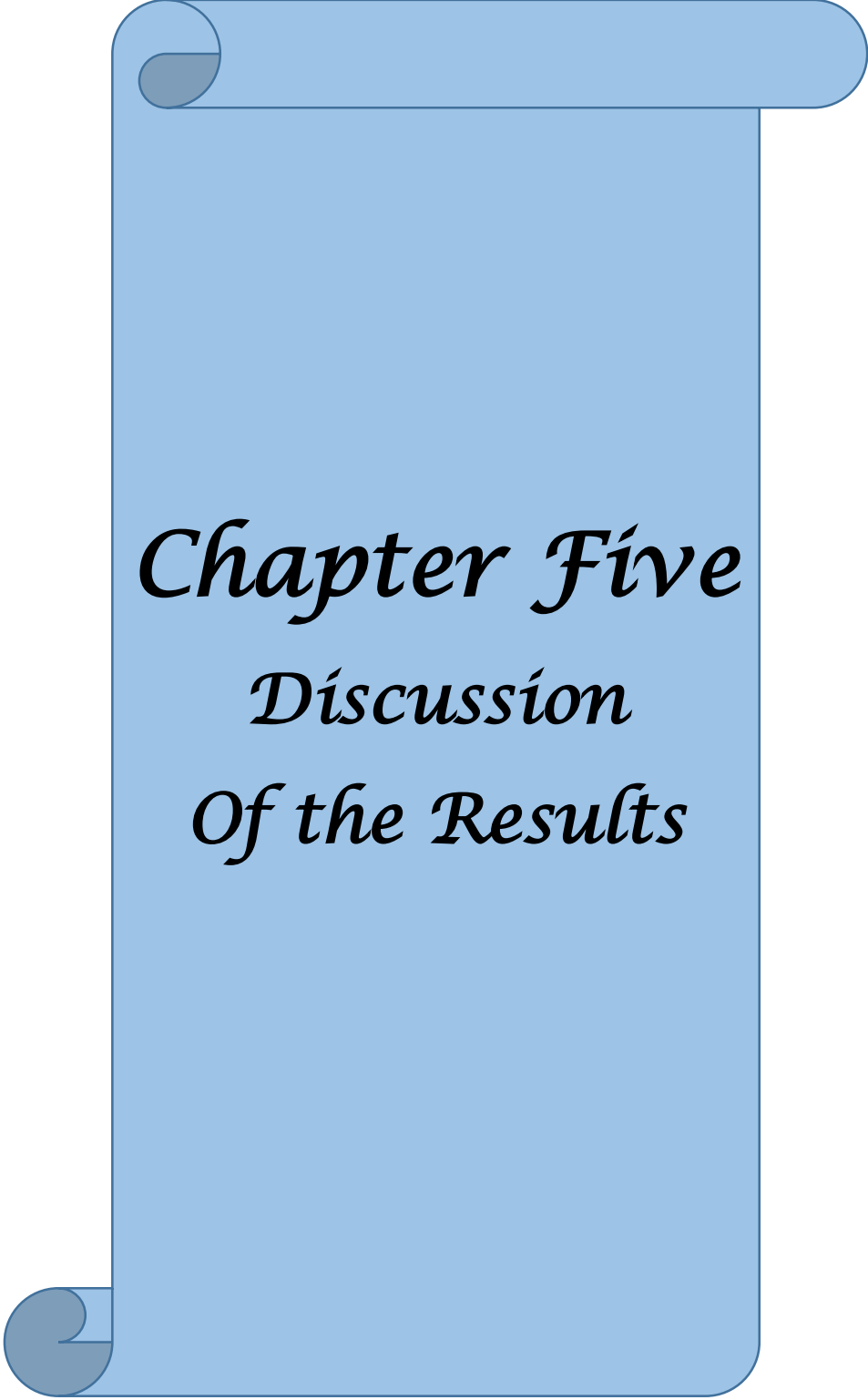
**Table (4.5.): Relationships of Demographic Variables with Nurses' Attitudes**

Demographic Variables	Variables Classes	Knowledge			Chi-Square (X <sup>2</sup> )	df	P-Value	Sig.
		Don't Agree	Uncertain	Agree				
Gender	Male	52	9	14	2.137	2	0.344	NS
	Female	59	8	8				
Age	20-30	72	12	17	5.621	4	0.229	NS
	31-40	30	2	5				
	41-50	9	3	0				
Marital status	Single	34	9	10	7.502	4	0.112	NS
	Married	67	5	9				
	Divorced	10	3	3				
Education level	Secondary School	65	1	0	130.372	4	0.000	HS
	Nursing Institute	46	9	0				
	College of Nursing	0	7	22				
Years of Experience	1-10	53	8	12	0.500	4	0.974	NS
	11-20	42	6	7				
	21-30	16	3	3				
Years of Experience in ICU	1-5	78	9	16	4.245	4	0.374	NS
	6-10	28	8	5				
	11-20	5	0	1				

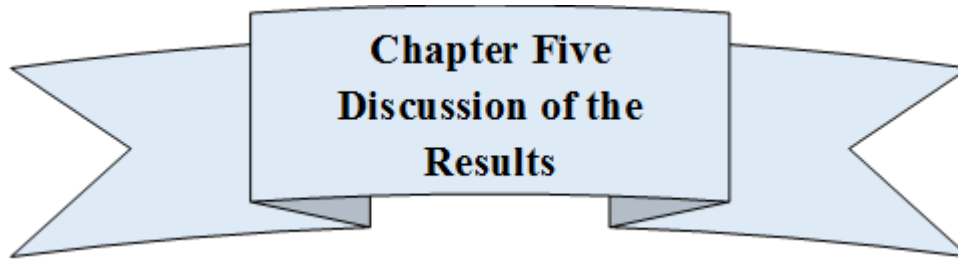
Df: Degree of freedom, P: Probability Value, Sig= Significant, NS: Not Significant, HS: High Significance

This table shows a significant relationship between nurses' attitudes and their education level about nasogastric tube complications at a P-value  $\leq 0.05$ .

Also, the results of this table shows there is no significant relationship between nurses' (gender, age, marital status, years of experience, and years of experience in the intensive care unit) and their attitudes about nasogastric tube complications at a P-value  $> 0.05$ .



*Chapter Five*  
*Discussion*  
*Of the Results*



**Chapter Five  
Discussion of the  
Results**

### **5.1. Discussion of the patient Socio-Demographic**

#### **Characteristics (table 1):**

According to this table shows, the socio-demographic variables of the nurses in this study (50%) were female and also male equals (50%), age group was (20-30) years (67.3%). Most of them were married (54%). The highest percentage is seen in the secondary school (44%) regarding educational levels. Regarding years of experience, most nurses have 1-5 years of experience (48.7%). Most of them have 1-5 years of experience in the intensive care unit (68.7%).

These results agree with findings Hayashi, et al., (2019), who found that the majority of demographic in Analysis of the effect of early versus conventional nasogastric tube removal on postoperative complications after transthoracic esophagectomy: a single-center, randomized controlled trial.

Hayashi, M., Kawakubo, H., Shoji, Y., Mayanagi, S., Nakamura, R., Suda, K., ... & Kitagawa, Y. (2019). Analysis of the effect of early versus conventional nasogastric tube removal on postoperative complications after transthoracic esophagectomy: a single-center, randomized controlled trial. *World Journal of Surgery*, 43(2), 580-589.

### **5.2. Nurses' Knowledge toward Nasogastric Tube Complications**

The results of this table indicate that most of the nurses (63.3%) have poor knowledge about nasogastric tube complications, (26.7%) of them have

moderate knowledge, and (10%) of them have a good knowledge at the mean score and standard level deviation= (1.65+0.758).

These findings agreed with Rodriguez-Diaz, et al, (2021), who found that low level of patients' knowledge during Fatal Complications of Nasogastric Tube Misplacement. the results disagree with Cotter, et al. (2019), who show that the level patients' knowledge were high during Transected nasogastric tube: a rare complication of nasogastric feeding.

### **5.3. Relationships of Demographic Variables with Nurses' Knowledge**

This table shows a significant relationship between nurses' knowledge and their education level about nasogastric tube complications at a P-value  $\leq 0.05$ .

Also, the results of this table shows there is no significant relationship between nurses' (gender, age, marital status, years of experience, and years of experience in the intensive care unit) and their knowledge about nasogastric tube complications at a P-value  $> 0.05$ .

This results supported with the study establishment by O'Connell, et al., (2021), in Emergency department approach to gastric tube complications and review of the literature. *The American Journal of Emergency Medicine*, who found that most of participant poor level of patients' knowledge.

### **5.4. Nursing Staff's Attitudes Toward Nasogastric Tube Complications**

The findings of the study in table (4) indicate that most of the nurses (74%) have poor attitudes about nasogastric tube complications, (11.3%) of them have moderate attitudes, and (14.7%) of them have good attitudes at the mean score and standard level deviation= (1.59+0.788).

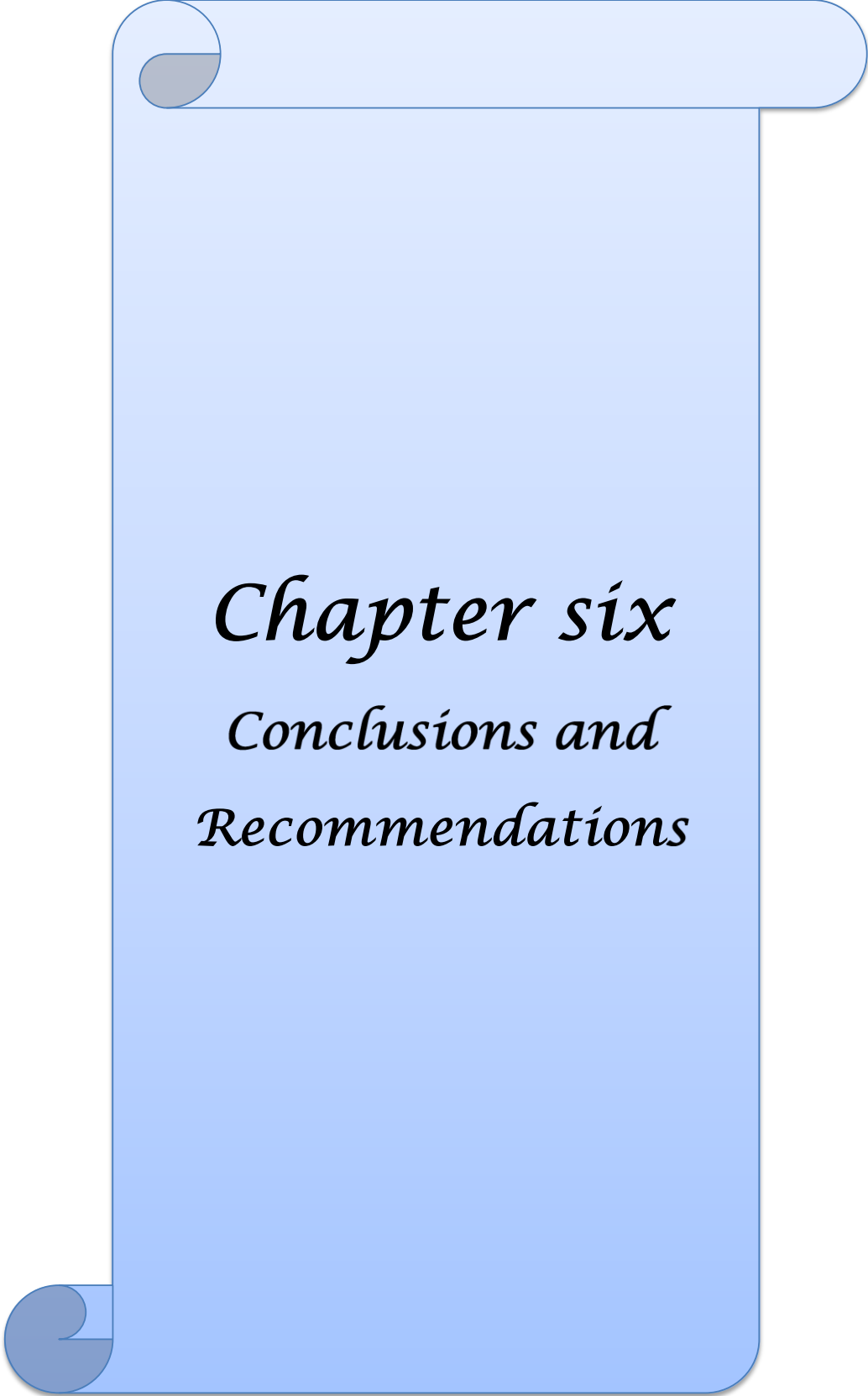


These results agree by Quarenghi, et al., (2022) in complication of nasogastric tube. *Journal of the American College of Emergency Physicians Open*.

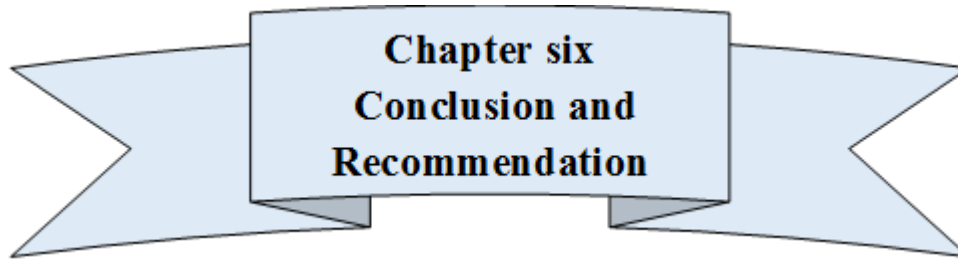
### **5.5. Relationships of Demographic Variables with Nurses' Attitudes**

This table shows a significant relationship between nurses' attitudes and their education level about nasogastric tube complications at a P-value  $\leq 0.05$ . Also, the results of this table shows there is no significant relationship between nurses' (gender, age, marital status, years of experience, and years of experience in the intensive care unit) and their attitudes about nasogastric tube complications at a P-value  $> 0.05$ .

This results agree by Rabaut, et al. (2022), who found that significant difference at  $P < 0.05$ . in Clinical Outcomes and Patient Safety of Nasogastric Tube in Acute Stroke Patients. *Dysphagia*.



*Chapter six*  
*Conclusions and*  
*Recommendations*



**Chapter six  
Conclusion and  
Recommendation**

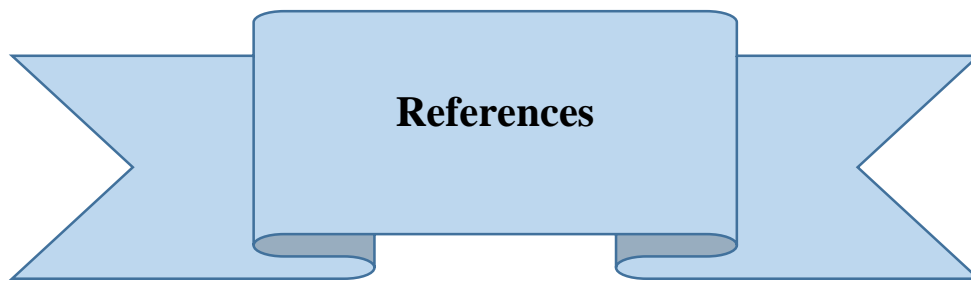
## **6.1. Conclusion**

The present study concluded that

1. the socio-demographic variables of the nurses in this study (50%) were female and also male equals (50%), age group was (20-30) years (67.3%). Most of them were married (54%). The highest percentage is seen in the secondary school (44%) regarding educational levels. Regarding years of experience, most nurses have 1-5 years of experience (48.7 %). Most of them have 1-5 years of experience in the intensive care unit (68.7%).
2. that most of the nurses (63.3%) have poor knowledge about nasogastric tube complications, (26.7%) of them have moderate knowledge, and (10%) of them have a good knowledge at the mean score and standard level deviation= (1.65+0.758).
3. a significant relationship between nurses' knowledge and their education level about nasogastric tube complications at a P-value  $\leq$  0.05.
4. most of the nurses (74%) have poor attitudes about nasogastric tube complications, (11.3%) of them have moderate attitudes, and (14.7%) of them have good attitudes at the mean score and standard level deviation= (1.59+0.788).
5. a significant relationship between nurses' attitudes and their education level about nasogastric tube complications at a P-value  $\leq$  0.05.

## 6.2. Recommendations

1. Special Education Programs Medical professionals, specifically nurses working in intensive care units should be required to raise awareness of one of the most important complications of a nasogastric tube.
2. Encourage nursing staff in hospitals to participate in teaching patients, providing and maintaining necessary information about complications of the nasogastric tubes through lectures, and continuing education.
3. Further research should be conducted on a larger sample of cases of complications in nasogastric tubes in Iraq, urging the practical application of instructions and precautions, management methods, preventive measures, and monitoring its impact on a long-term lifestyle.
4. Continuing education and rigorous clinical trials are needed to address the importance of early identification and management of complications of nasogastric tubes



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## **Appendices**

APPENDIX- A: ADMINSTRATIVE ARRANGEMETS.

APPENDIX-B: QUESTIONAIRE IN ARABIC LANGUAGE.

APPENDIX-C: PANEL OF EXPERTS.

ت	الاسم	اللقب العلمي	الشهادة	الاختصاص	مكان العمل
1	محفوظ فالح	أستاذ مساعد	دكتوراه	فسلجة	كلية التمريض
2	سجاد سالم	أستاذ مساعد	بور	طب اسرة	كلية التمريض
3	سميرة محمد	أستاذ مساعد	دكتوراه	طب اسرة	كلية التمريض
4	وصفي ظاهر	استاذ مساعد	دكتوراه	فسلجة	كلية التمريض
5	سندس باقر	أستاذ مساعد	دكتوراه	تمريض الام والوليد	كلية التمريض
6	عادل علي	مدرس دكتور	دكتوراه	تمريض أطفال	كلية التمريض
7	أفكار فاضل	مدرس	ماجستير	تمريض نفسية و عقلية	كلية التمريض
8	علي مالك	مدرس مساعد	ماجستير	تمريض بالغين	كلية التمريض



**First: demographic data :**

1- sex : male  female

2- age :

3- Years of Experience :

4- Years of service in ICU :

5- education level :

Preparatory  Diploma  Bachelor's

6- Social status :

Single  single

**Second :**

	Knowledge about the nasogastric tube	Agree	Uncertain	don't agree
1	Nasogastric tube is a small tube that is placed either through the nose or ends at its end in the stomach.			
2	Stomach pressure is one of the reasons for using the nasogastric tube?			
3	Nasogastric tubes are used for patients with adequate gastric emptying who need short-term feeding?			
4	Size Fr (18) What is the common size of an adult nasogastric tube?			
5	Can enteral nutrition be given continuously or intermittently?			
6	Bed position (Trendenbug) Head tilt lower than body or legs in supine position Is the position appropriate for the patient when inserting a nasogastric tube?			
7	After the nasogastric tube is inserted, does the nurse need to listen for wheezing with a stethoscope to make sure the tube is inserted into the stomach?			
8	Gastric Lavage Another term for gastric lavage?			
9	Can we still use the nasogastric tube even if the patient had recent nasal surgery because it is important to feed the patient?			
10	Perhaps sinusitis is a contraindication to the placement of the nasogastric tube?			
11	Gastric gavage means supplying the stomach with nutrients directly?			
12	Nurses need to note these signs and symptoms while giving nasogastric tube feeding such as cyanosis, coughing and vomiting?			
13	Intermittent enteral feeding consists of feeding 300-500 ml several times a day and the feeding should be every 30 minutes at least?			
14	Aspiration of stomach contents and pH measurement is a way to check the position of the nasogastric tube?			

15	Needs to elevate the head after enteral feeding for at least an hour?			
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	Nasogastric tube complications	Agree	Uncertain	don't agree
1	Aspiration of the lung is a rare complication of the nasogastric tube?			
2	Hyperglycemia is a complication of nasogastric tubes in the intensive care unit?			
3	Esophageal perforation during enteral feeding?			
4	Esophageal varices are contraindications to placing an oral or nasal tube by nurses in the intensive care unit?			
5	Is nosebleed and sore throat a complication of the nasogastric tube?			
6	What is the most common complication of a nasogastric tube?			
7	Can a patient who is dependent on enteral feeding get constipated?			
8	Tube obstruction is not a complication of nasogastric tube?			
9	Can electrolyte changes lead to nasogastric tube complications?			

Attitudes about nasogastric tube complications		Agree	uncertain	don't agree
1	Do you feel comfortable inserting the nasogastric tube?			
2	Will you allow any of your family members to use a nasogastric tube?			
3	Would you suggest to your fellow health workers the use of the nasogastric tube to patients who have tube indications?			
4	If I were a patient, would you have accepted the use of a nasogastric tube?			
5	I think all patients feel uncomfortable when inserting a nasogastric tube?			

## الخلاصة

### المقدمة :

التغذية المعوية من خلال الأنبوب الأنفي المعدي هي تقنية تستخدم مع المرضى في المستشفى عندما لا يستطيعون استخدام التغذية الفموية. بعد الإدخال تظهر التغذية المعوية عدة أنواع من المضاعفات تظهر مثل الإسهال والقيء والإمساك وشفط الرئة وإزاحة الأنبوب وانسداد الأنبوب وارتفاع السكر في الدم واضطراب التحليل الكهربائي .

### الاهداف :

لتقييم المعرفة والمواقف حول مضاعفات التغذية المعوية بواسطة الأنبوب الأنفي المعدي في وحدة العناية المركزة في مستشفيات البصرة التعليمية لإيجاد علاقة بين معرفة الممرض والخصائص الديموغرافية (العمر والجنس والمستوى التعليمي).

### الطريقة :

المنهجية تصميم الدراسة وصفي. أجريت الدراسة في الفترة من 7 ديسمبر 2021 إلى 20 أبريل 2022 على الممرضين في وحدة العناية المركزة في مستشفيات البصرة التعليمية. يتكون الاستبيان من أسئلة بما في ذلك

البيانات الديموغرافية يتكون هذا الجزء من (5) عناصر تشمل: (عمر الممرض ، والجنس ، ومستوى التعليم ، وسنوات الخبرة ، وسنوات الخبرة في وحدة العناية المركزة )

معرفة الممرضين تتكون أداة المعرفة من (15) عنصرًا ، وكانت العناصر عبارة عن أسئلة اختيار ، وقد تم تصنيف هذه الاختيارات على أنها (3) للموافقة على الإجابات ، و (2) للإجابة المحايدة ، و (1) للإجابة غير موافق. مضاعفات الأنبوب الأنفي المعدي تتكون أداة المضاعفات من (5) عناصر ، وكانت العناصر أسئلة اختيار تم تصنيف هذه الاختيارات على أنها (3) للموافقة على الإجابات ، (2) للإجابة المحايدة ، و (1) لا توافق. المواقف حول مضاعفات الأنبوب الأنفي المعدي تتكون أداة المواقف من (10) عناصر ، وكانت العناصر أسئلة اختيار تم تصنيف هذه الاختيارات على أنها (3) للموافقة على الإجابات ، و (2) للإجابة المحايدة ، و (1) لعدم الموافقة .

## النتائج:

كانت نتائج المتغيرات الاجتماعية والديموغرافية للمرضيين في هذه الدراسة (50%) من الإناث والذكور (50%) ، وكانت الفئة العمرية (20-30) سنة (67.3%). معظمهم متزوجات (54%). أعلى نسبة في المرحلة الثانوية (44%) من حيث المستويات التعليمية. فيما يتعلق بسنوات الخبرة ، فإن معظم المرضيين لديهم خبرة 1-5 سنوات (48.7%). معظمهم من 1-5 سنوات خبرة في وحدة العناية المركزة (68.7%). معظم المرضيين (63.3%) لديهم معرفة ضعيفة بمضاعفات الأنبوب الأنفي المعدي ، (26.7%) منهم لديهم معرفة متوسطة ، و (10%) منهم لديهم معرفة جيدة بمتوسط الدرجة والانحراف المعياري للمستوى = (0.758 + 1.65)

علاقة ذات دلالة إحصائية بين معرفة المرضيين ومستوى تعليمهم حول مضاعفات الأنبوب الأنفي المعدي بقيمة P 0.05.

كما توضح نتائج هذا الجدول عدم وجود علاقة ذات دلالة إحصائية بين المرضيين (الجنس والعمر والحالة الاجتماعية وسنوات الخبرة وسنوات الخبرة في وحدة العناية المركزة) ومعرفة مضاعفات الأنبوب الأنفي المعدي بقيمة  $P > 0.05$ . معظم المرضيين (74%) لديهم مواقف ضعيفة تجاه مضاعفات الأنبوب الأنفي المعدي ، (11.3%) منهن مواقف معتدلة ، و (14.7%) منهن مواقف جيدة عند متوسط الدرجة وانحراف المستوى المعياري = (0.788 + 1.59) . علاقة ذات دلالة إحصائية بين مواقف المرضيات ومستوى تعليمهم حول مضاعفات الأنبوب الأنفي المعدي عند قيمة P 0.05.

كما تظهر نتائج هذا الجدول أنه لا توجد علاقة ذات دلالة إحصائية بين المرضيين (الجنس ، والعمر ، والحالة الاجتماعية ، وسنوات الخبرة ، وسنوات الخبرة في وحدة العناية المركزة) ومواقفهم من مضاعفات الأنبوب الأنفي المعدي عند قيمة  $P. > 0.05$ .

## الاستنتاجات:

كانت المتغيرات الاجتماعية والديموغرافية للمرضيين في هذه الدراسة (50%) من الإناث والذكور (50%) ، وكانت الفئة العمرية (20-30) سنة (67.3%). معظمهم متزوجات (54%). أعلى نسبة في المرحلة الثانوية (44%) من حيث المستويات التعليمية. فيما يتعلق بسنوات الخبرة ، فإن معظم المرضيين لديهم خبرة 1-5 سنوات (48.7%). معظمهم من 1-5 سنوات خبرة في وحدة العناية المركزة (68.7%).

أن معظم المرضيين (63.3%) لديهم معرفة ضعيفة بمضاعفات الأنبوب الأنفي المعدي ، وأن (26.7%) منهم لديهم معرفة متوسطة ، و (10%) منهم لديهم معرفة جيدة بمتوسط الدرجة والانحراف المعياري = (0.758 + 1.65).

معظم المرضيين (74%) لديهم مواقف ضعيفة تجاه مضاعفات الأنبوب الأنفي المعدي ، (11.3%) منهن مواقف معتدلة ، و (14.7%) منهن مواقف جيدة عند متوسط الدرجة والانحراف المعياري = (0.788 + 1.59).

## التوصيات:

برامج التعليم الخاص يجب أن يُطلب من المهنيين الطبيين ، وتحديدًا الممرضين العاملات في وحدات العناية المركزة ، رفع مستوى الوعي بأحد أهم مضاعفات الأنبوب الأنفي المعدي.

تشجيع طاقم التمريض في المستشفيات على المشاركة في تعليم المرضى ، وتوفير المعلومات اللازمة حول مضاعفات الأنبوب الأنفي المعدي والمحافظة عليها من خلال المحاضرات والتعليم المستمر.

يجب إجراء مزيد من البحث على عينة أكبر من حالات المضاعفات في الأنابيب الأنفية المعوية في العراق ، والحث على التطبيق العملي للتعليمات والاحتياطات ، وطرق الإدارة ، والتدابير الوقائية ، ومراقبة تأثيرها على نمط الحياة طويل المدى.



جامعة البصرة

كلية التمريض

معرفة واتجاهات الممرضات حول مضاعفات التغذية المعوية بواسطة الأنبوب  
الأنفي المعدي في وحدة العناية المركزة في مستشفيات البصرة التعليمية

مشروع البحث

قدم الى مجلس كلية التمريض في جامعة البصرة في تحقيق جزء من متطلبات  
الحصول على درجة البكالوريوس في علوم التمريض

من قبل الطلبة

محمد مظاهر كريم

زهراء عبدالعزيز عبدالزهره

علي جواد كاظم

2022\_ 2021

بإشراف : م.م ماهر عبد الأمير عطية