Nurses’ Knowledge regarding Nursing Care of Insertion of Nasogastric Tube in Under Five in Wad Medani Pediatrics Teaching Hospital, Sudan (2014)

Ebtihaj Ahmed Elhassan Mohammed

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Date: ………………. 2016
Nurses’ Knowledge regarding Nursing Care of Insertion of Nasogastric Tube in Under Five in Wad Medani Pediatrics Teaching Hospital, Gezira State, Sudan (2014)

Ebtihaj Ahmed Elhassan Mohammed

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Date of Examination: …1/3 / 2016
Dedication

I Dedicate this work To:

My Mother.....

My Father.....

Husband ...........

Brothers......

lovely Kids ......

Ebtihaj
Acknowledgment

First of all, thanks are due to God Almighty, who gave me health and strength to fulfill this work.

I would like to express my Great thanks to my main supervisor Dr. Ietimad Ibrahim Abd Elrahman Kambal and Co-supervisor Dr. Bothyna Bassyonie Elssayed Etewa for their full encouragement and continuous patience. Without their guidance and good assistance my aims would not have been accomplished. Extended thanks are due to all teachers at the department of nursing, faculty of applied medical sciences, university of Gezira.

My thanks owed to gave a consideration to the members department of healthcare at university of Gezira.

Special thanks , got to my family, especially to my brother Dr. Farah Ahmed for his support.

Finally I would like to thank all staff in Pediatrics Teaching Hospital, Gezira State, for co-operation in this work. My thanks extend to everyone who helped me to achieve this work.
Nurses’ Knowledge regarding Nursing Care of Insertion of Nasogastric Tube in Under Five in Wad Medani Pediatrics Teaching Hospital, Gezira state, Sudan (2014)

Ebtihaj Ahmed Elhassan Mohammed

Abstract

Nasogastric tube feeding is one of the safe means of meeting nutritional requirement of child and providing adequate nutrition and an essential components for critically care. Nurses have biovital role in provide proper nursing care. A descriptive hospital based study was conducted in Wad Medani Pediatric Teaching Hospital, Aimed at assessing Nurses’ Knowledge regarding Nursing Care of Insertion of Nasogastric Tube in Under Five Children in Pediatrics Teaching Hospital Wad Medani, Gezira state, Sudan during the period (September to October 2014). Sample size consisted of all available nurses (57) who work in the hospital. Data was collected using a questionnaire designed for the purpose of the study. The data was analyzed using statistical package for social sciences (SPSS). The results showed that \(75.4\%\) and \(52.6\%\) of the study sample responded with correct complete answers regarding definition of nasogastric tube and causes of insertion of nasogastric tube respectively. \(35.1\%\) and \(57.9\%\) of the study sample responded with correct complete answers regarding the method of insertion of nasogastric tube and equipments needed for insertion of nasogastric tube respectively. \(35.1\%\) of the study sample responded with correct complete answers regarding complications of nasogastric tube. \(33.3\%, 35.1\%\) and \(29.8\%\) of the study sample responded with correct complete answers regarding nursing care before, during and after the insertion of nasogastric tube respectively. The study concluded that nurses’ knowledge regarding care of pediatric patients of insertion of nasogastric tube were. It recommended that proper and continues monitoring and supervision of nurses’ knowledge is essential.
معرفة الممرضين والممرضات للرعاية التمريضية حول إدخال أنبوب الأنف معدي للأطفال أقل من خمسة بمستشفى الأطفال التعليمي ومدني، ولاية الجزيرة، السودان، 2014

إبتهام أحمد الحسن محمد

ملفعر الدراسة

تغذية الأنبوب الأنفي معدي هي أحد الطرق الآمنة لتلبية متطلبات تغذية الأطفال وتعتبر واحدة من أهم مكونات العناية المرضية الحريجة. ولل켜ادر التمريضي دور مهم في نشر المعرفة وتوفر رعاية ترخيصية أمنة. أجريت هذه الدراسة الوصفية بمستشفى الأطفال التعليمي ومدني، ولاية الجزيرة، السودان خلال فترة الدراسة (من سبتمبر إلى أكتوبر 2014). بلغ حجم العينة (57) من الممرضين والممرضات الذين يعملون بالمستشفى. تم جمع البيانات باستخدام استمارة استبيان صممت لغرض الدراسة. تم تحليل البيانات باستخدام الحزمة الإحصائية للعلوم الاجتماعية (SPSS). أظهرت النتائج أن (75.4% و52.6%) من عينة الدراسة كانت إجاباتهم صحيحة كاملة فيما يتعلق بتعريف ودعاي استعمال الأنبوب الأنف معدي على التوالي. (31.5% و57.9%) من عينة الدراسة كانت إجاباتهم صحيحة كاملة عن طرق والأدوات المستخدمة في إدخال الأنبوب الأنف معدي على التوالي. 35.1% من عينة الدراسة كانت إجاباتهم صحيحة كاملة عن مضاعفات الأنبوب الأنف معدي. (33.3% و35.1% و29.8%) من عينة الدراسة كانت إجاباتهم صحيحة كاملة عن الرعاية التمريضية قبل، أثناء وبعد إدخال الأنبوب الأنفي معدي على التوالي. خلصت الدراسة إلى أن معظم معرفة الممرضين والممرضات بمستشفى الأطفال التعليمي عن الرعاية التمريضية حول إدخال الأنبوب الأنفي معدي للأطفال غير كافية. أوصت الدراسة بضرورة إقامة دورات تدريبية وإشراف ومراقبة الممرضين والممرضات بمستشفى الأطفال التعليمي.
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<td>GIT</td>
<td>Gastrointestinal Tract</td>
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<td>NGT</td>
<td>Nasogastric Tube</td>
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<td>WHO</td>
<td>World Health Organization</td>
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<td>SST</td>
<td>Salem Sump Tube</td>
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<td>PEM</td>
<td>Protein Energy Malnutrition</td>
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<td>RCH</td>
<td>Royal Children’s Hospital</td>
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<td>ICU</td>
<td>Intensive Care Unit</td>
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<td>NPSA</td>
<td>Nurses Pediatric Support Association</td>
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<td>PICU</td>
<td>Pediatric Intensive Care Unit</td>
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<td>NMC</td>
<td>Nursing and Midwifery Council</td>
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<tr>
<td>CCC</td>
<td>Critical Care Consultant</td>
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<td>NNHCSW</td>
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<td>NEX</td>
<td>Nose to Ear to Xiphoid</td>
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<td>CPG</td>
<td>Clinical Practice Guidelines</td>
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<td>SPSS</td>
<td>Statistical Package For Social Sciences</td>
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Nurses’ Knowledge regarding Nursing Care of Insertion of Nasogastric Tube in Under Five Children in Pediatrics Teaching Hospital Wad Medani, Gezira State, Sudan 2014

Ebtihaj Ahmed Elhassan Mohammed

B.Sc. in Nursing
University of Gezira (2005)

A Dissertation
Submitted to University of Gezira in Partial Fulfillment of the Requirements for the Award of the Degree of Master of Science in
Pediatric Nursing
Department of Nursing
Faculty of Applied Medical Sciences

2016
1. Introduction

1.1 Background:

The gastrointestinal tract (GIT) consists of a hollow muscular tube starting from the oral cavity, where food enters the mouth, continuing through the pharynx, oesophagus, stomach and intestine to the rectum and anus, where food is expelled. There are various accessory organs that assist the tract by secreting enzymes to help break down food into its component nutrients. Thus the salivary glands, liver pancreas and gall bladder have important functions in the digestive system. Food is propelled along the length of the GIT by peristaltic movements of the muscular walls. Nursing knowledge is a scientific knowledge and research findings have rapidly expanded over the last few years. Nursing practice for maintaining competence by continual learning is essential (WHO, 2009). Nutrition is a basic
human need that changes through the life cycle, and a long wellness continuum, food provides nutrition for both body and mind. Eating has involved from being simply necessarily, it may be a source of please, a pass time cultural emblem, social event, political statement, religious symbol or an integral component of medical treatment. As such food, eating and nutrition take on different meaning to different people and changing a persons eating behavior and may be difficult and slow process, because nutrition is vital for life and health, and because poor nutrition can seriously decrease ones level of wellness, its vital component of nursing. (WHO, 2005). Nurses have a curial role in prevent and control NGT complications, current investigate nurses' knowledge regarding of pediatric patient undergoing to insertion of nasogastric tubes is urgent. (Parthasarthy A. 2003).

Nasogastric tube feeding provides adequate nutrition and is an essential component of critical care. Nurses have to decrease the gap between theory and practice by performing proper clinical bed side procedure. A better understanding of nursing practice related to tube feeding is required for providing a better care. A successful NGT feeding performance requires an expert skilled procedure and monitoring the child efficiently. (Parthasarthy A. 2003).

1.2 Problem statement:

Worldwide Nursing knowledge is a scientific knowledge and research findings have rapidly expanded over the last few years. Nursing practice for maintaining competence by continual learning is essential (WHO, 2009). Nurses have a curial role in prevent and control NGT complications, current investigate nurses' knowledge regarding of pediatric patient undergoing to insertion of nasogastric tubes is urgent. (Parthasarthy A. 2003). Nasogastric tubes (NG tubes) are commonly used for aspiration of gastric contents and gastric decompression in patients with small obstruction. Placement of Nasogastric tubes tube causes discomfort and pain during insertion due in part to the large diameter of the tube. The project requires a nasgoastric a tube which is small enough to reduce
discomfort, while being functional. Secondary design specifications include pH sensitivity, to allow visual confirmation of when the tube reaches the stomach, and recyclability. (WHO, 2005)

Developed countries Children are very important and vulnerable group of overall population and constitute almost 1/3rd of the overall population, and they also have some rights such as protection, security, social identification, basic needs like air, water, food, clothes, shelter etc.(Mark M, 2004).

According to WHO report (2005) 11 million children across the world die due to low birth weight. Under nutrition or malnutrition affects every fourth in the world. Worldwide, 150 million children (26.7%) are underweight while 182 million (32.5%) are stunted. More than 70% of PEM (Protein Energy Malnutrition) children are in Asia. In India child malnutrition still remains a major health problem. The proportion of children under 3 years of age is more. (Parhasarthy A. 2003).

Developing countries Confirmation of correct nasogastric feeding tube placement is essential to ensure the safe delivery of nutrition without the risk of morbidity and mortality associated with tube misplacement in the lung, which can result in aspiration, pneumonia, pneumothorax, or death. Previous studies indicate a pH ≤4 is indicative of gastric aspirate and hence a reliable indicator of correct NG tube placement. At the Royal Children’s Hospital (RCH) in Melbourne, the current practice is to use this pH cutoff, work, but a pH ≤4 is often considered too low to be clinically practical. The use of antacid medication and/or the presence of enteral feedings due to delayed gastric emptying may be contributing factors in a higher pH result, casting doubt on nasogastric tube position. A number of different clinical methods have been reported to determine nasogastric tube position, including auscultation, aspirate color, administering oral fluids, or flushing the NG tube with oral rehydration solution, but none are evidence-based methods. Radiographic confirmation is the gold standard but has limited application secondary to availability, cost, and radiation exposure. (Ellett M 2004).
1.3 Justification:

Pediatric nurse have always been strong advocates of providing high-quality patient care. The evidence-based practice process offers an opportunity to support updating nursing practice based on the strongest research evidence available, in combination with patient and family values and sound clinical judgment (Sackett, et al, 2010). Using the evidence-based practice process results in improved patient outcomes, often while reducing costs, and provide an opportunity for bedside clinicians to demonstrate an important impact on health care. Traditional nursing practices provide a wonderful opportunity to question practice and potentially improve patient care, which can be very empowering for staff nurses. Nasogastrioc tube placement is a routine procedure used for pediatric and neonatal patients. However, little research exists regarding the verification of NG tube in children. Several clinical studies and anecdote report questioning the use of auscultation to verify NG tube placement have been reported, some dating back more than 20 years (Ghahremani and Gould, 2006). However, the vast majority of nurses continue to check NG tube placement by auscultation of air insufflations over the abdomen.

1.4 Objectives

1.4.1 General objective:

- To study the Nurses’ Knowledge regarding Nursing Care of Insertion of Nasogastric Tube in Under Five Children in Pediatrics Teaching Hospital Wad Medani, Gezira State, Sudan during the period of study from (September to October 2014)

Specific Objectives:

- To assess nurses’ knowledge regarding care of child undergoing insertion of Nasogastric tubes at Wad Medani pediatrics teaching hospital during the period of study from (September to October 2014)
2. Literature Review

2.1 Introduction to the Gastrointestinal System:

The gastrointestinal tract (GIT) consists of a hollow muscular tube starting from the oral cavity, where food enters the mouth, continuing through the pharynx, oesphagus, stomach and intestine to the rectum and anus, where food is expelled. There are various accessory organs that assist the tract by secreting enzymes to help break down food into its component nutrients. Thus the salivary glands, liver pancreas and gall bladder have important functions in the digestive system. Food is propelled along the length of the GIT by persiticalties movements of the muscular walls. (Janet, 2003)

2.2 Anatomy and Physiology of Gastrointestinal tract:

The gastrointestinal tract plays an essential role in maintaining homeostasis by assimilating ingested nutrients and eliminating waste. Food enters the tract through the mouth and esophagus. Then undergoes successive digestive process as it passed through the stomach, small and large intestine, being broken down to its elemental compounds (nutrient fluid and electrolytes). Solid wastes that accumulate in the course of digestive process are excreted through the anorectum. Waste fluid are further broken by the kidneys and excreted as urine. (Whaley 2006).

Because all body functions are ultimately depend on nutritional status of body’s individual, any dysfunction of the gastrointestinal system affects all other systems to some degree. The individuals with disorders of this system make up a large part of client population in any health care facility and are commonly seen by nurses practicing in out patients setting and in the community. (Janet, 2003)

Food enters the alimentary canal through the mouth or puccal cavity, besides providing a portal of entry for nutrients and fluids, the mouth contain receptors for taste sensation. The initial preparation for food for the digestive process take place in
the mouth during mastication (chewing). When the food is ground into the pulp and mixed with the saliva. The flour of the mouth contains the tongue as well as muscles and three pairs of salivary glands. The mouth also contains the teeth which help in chewing. (Sukkar, 2003).

2.2.1 The Esophagus:

The sole function of the esophagus is to provide for the transient of food and fluid from pharynx to the stomach. The esophagus is located behind the trachea and passes through the diaphragm to connect with the stomach. The esophagus is a tubular structure. The upper portion of the esophagus composed of primary of striated muscles and the lower portion of smooth muscles, food passes from the esophagus into the stomach at the esophageal gastric junction. The lower esophageal sphincter controls the passage of food bolus into the stomach. (Sukkar, 2003).

2.2.2 Stomach:

The stomach is essential hollow pouch of muscular tissue that lies in the upper left quadrant of the abdomen. The major regions include the fundus (upper most apportion), the body and the anfrum (distal portion). At each end of the stomach there are sphincters. The lower esophageal sphincter at its entrance and pyloric sphincter where the stomach is joint with duodenum. The major function of the stomach include secretion, storage, emptying and mixing the food bolus with gastric juices and churned by stomach’s musculature. The food bolus is now referred to as chime which is a gradually released into the small intestine through the duodenum.(Sukkar, 2003).

2.3 Anatomy and physiology of upper air way by which nasogastric tube is inserted:

Upper respiratory tract, or airway consists of the nose, sinuses, pharynx, tonsils and a denoids. Larynx and the bones and cartilaginous structures in the nose
and they pharynx. The internal nose is divided into two passages and separated by the nasal septum. The lateral walls of the nasal cavity are formed by three bony structures on either sides – the superior, the middle, and the inferior – called turbinates. The entire nasal cavity is lined with highly vascular mucous membrane. Air passage through the nose is warmed by the blood vessels that line the air passages. The mucous secreted by the goblet cell traps small parties, such as dust and pollen in the inspired air. (Schperg, 2001).

2.3.1 Pharynx:

The pharynx or throat, is divided into three continuous areas. The nasopharynx, the oropharynx and the laryngeal pharynx. The nasoharynx is the area behind the nasal cavity the oropharynx and the laryngeal pharynx extends from the end of the oropharynx to the larynx the pharynx carrying air into the bronchi and lungs, and food and liquid into the esophagus. (Schperg, 2001).

2.4 Definition of Nasogastric tube NGT:

A tube that is passed through the nose and down through the nasopharynx and esophagus into the stomach. It is flexible tube made of rubber or plastic, and it has bidirectional potential. The word “nasogastric” is a hybrid of the Latin “naso” from “nasus” for nose or snout and the Freek “gastric” from “gaster” meaning the panch or belly. The term “nasogastric” was coined in 1942.

2.4.1 Tube lengths:

Have specialized on the fabrication of tube lengths. When doing so make use of the synergies resulting from the high purchasing volume of our sister company Seeberger Rohr – und Stahlhandel Gmbh. For our customers from different sectors of industry thus able to produce the lengths not only in a top quality but also at attractive prices. There are no special NG tube lengths. All lengths from 2-500mm are standard. The linear tolerance of the standard-tube lengths corresponds to the
DIN-mean – this keeps costs down more than tight tolerance do. Naturally the tolerance of the tube lengths may be cut to size to comply with the requirements (Seeberger, 2010)

2.4.2 Nasogastric Tube Diameter

The outer diameter may be specified, upon request even with minimum and maximum tolerances. However, standard tolerances are the most cost-effective solution. The inner diameter may be specified with minimum and maximum tolerances. Wall thicknesses are able to realize almost any wall thickness. Surfaces are able to supply almost any surface. (Seeberger, 2010)

2.5 Types of tube feeding regarding material and design:

Several types of nasogastric tubes are available, they may be made of rubber, plastic or silicone, diameter also vary. Lumen size vary from small to quite large. Several types are designed with style or fine metal wire those threads through the center of the tube. This make the tube, more rigid and easier to pass. Tsylet are radio opaque and be viewed by X-ray to verify placement the distal and of some nasogastric tubes are weighed so that when secretion or gas collect, they settle in the lower portion of the stomach. If necessary, weighted tubes can bass further down the alimentary tract into small intestine. (Eilis, J, 2002).

The most common type of tube is made of rigid clear plastic with a number of measured black circular marks to denote the appropriate tube length for insertion.

Read most common type of tube is made of rigid clear plastic with a number of measured black circular marks to denote the appropriate tube length for insertion.

Read rubber tubes of the same design also are available, but now are not used because it caused irritation to throat.
2.5.1 Gastric sump tubes: Salem sump tube:

The gastric sump tube has a double lumen with two distinct tube at distal portion. It’s advantage is that, the smaller open end (color-coded tube) is open to room air allowing equalization of pressure and at the same time sustaining steadily suction without damage. (Eilis, J, 2002).

2.5.2 Small bore silicone rubber feeding tubes:

A variety of small-bore, silicone rubber feeding tubes are available, their soft material and small size decrease the irritation of the nose and throat, in addition to the cardiac sphincter closes more tightly around them assessing the possibility of regurgitation and aspiration. Although the soft and small size make them prescribed for the patient, they are more difficult in insertion. (Eilis, J, 2002).

2.5.3 Keo feed tube:

It is small in diameter and made of soft silicon with weighted end the rubber comes from manufacture with firm metal style threaded, through its lumen to facilitate insertion final position is usually verified by X-ray with stylet in place then stylet is removed. The stylet should be saved because the tube might be lubricant to facilitate its reinsertion so the tube can be reinserted into the patient. Because the end of tube is weighted, it will move tension the nose. (Eilis, J, 2002).

2.5.4 Duo-feed tube: dudo-tube:

Another variation of weight tube is the duo-feed tube. This clear plastic tube surrounds a silicone radiopaque catheter. After lubrication with a water soluble lubricant, the duo tube is inserted into the stomach in the same manner as other nasogasrtic tubes. (Eilis, J, 2002).

Weighted tube is dobbhoff tube, which is made of soft plastic material and coated on both its inner and outer surfaces with a water soluble lubricant. The stylet is hollow so that air can be injected through it to check tube placement before stuyle
is removed. The distal end of the tubes is weighted with tungsten rather than mercury. If rupture occur (which is rare), tungsten is consider of less hazardous to patients than mercury. (Eilis, J, 2002).

2.5.5 Special purpose tube Ewald tube:

Has a very long lumen, it ranges in size from 26-30 French and is used for lavage usually for patients who has ingested positonous agents. The ewald tube is also for diagnostic test. It use uncommon on general nursing units.

2.5.6 Cantor tube:

The cantor tube is long single lumen with a bag attached to its distal tip medical personal inject 30ml of mercury into the bag using needle and syringe. Insertion of this tube is uncomfortable, because the bag is large. This tube is inserted by a physician, who use a topical anesthesia in the nose and posterior pharynx to make insertion more tolerable for the patient. The mercury is to facilitate the passage of the tube. When cantor tube is used, consideration should protect the patient from the mercury, which can cause poisoning. (Eilis, J, 2002).

2.5.7 The miller – abbot tube:

The miller-abbot tube is longer double lumen rubber tube. One lumen leads to a rubber bag at the tubes end. This lumen can be filled with air or fluid to provide a larger objects at the end so that persitalsis can advance the tube into small intestine. The other lumen is used for suction and irrigation. The miller-abbott tube is inserted in the some manner as nasogastric tube, the bag is inflated with air or fluid through its lumen. If the tube is not secure with tape to patient nose, it will gradually advance into the small bowel. This is desirable when small bowel obstruction is suspected. It is important to keep the opening to each lumen clearly marked so suction is attached correctly. (Eilis, J, 2002).
Common tubes that are used in nasogastric feeding are Levin tubes and gastric sump tubes (Salem Sump Tube) (Eilis, J, 2002).

### 2.6 Nasogastric tubes size:

#### Size selection for child and infant nasogastric tubes:

<table>
<thead>
<tr>
<th>Indication</th>
<th>Action</th>
<th>Rationale</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paralytic ileus / gastrointestinal disease / gut surgery</td>
<td>Size 6 as standard, but may require size 8. Low birth weight infants may require a size 5 tube</td>
<td>To minimize occlusion of nasal passage</td>
<td>Shiaa et al 1995.</td>
</tr>
<tr>
<td>Ventilated infants</td>
<td>Below 1.5kg, size 4 Above 1.5kg, size 5 Above 5kg, size 6</td>
<td>To reduce trauma to nasal passages in small pre-term/s infants</td>
<td>Rogahn 1998</td>
</tr>
<tr>
<td>Enteral feeding/ obtaining gastric content for diagnostic purposes</td>
<td>Below 1.5kg, size 4 Above 1.5kg, size 5 Above 5kg, size 6 An infant/child may need a size 8 tube to accommodate at thicker feed</td>
<td>To minimize occlusion of nasal passages whilst facilitating feeding/gastric aspirate The tube size may be dependent upon the viscosity of the feed. If in doubt discuss with dietician</td>
<td>Shiaa et al 1995</td>
</tr>
<tr>
<td>Gastric lavage barium x-ray</td>
<td>Appropriate size for medium</td>
<td>Age appropriate</td>
<td></td>
</tr>
</tbody>
</table>

(Eilis, J, 2002).

### 2.7 Objectives of Nasogastric Tubes:

- Feeding and giving medication: child may not be able to meet their nutritional requirements, or they may not be able to swallow softly so
the child required alternative mean feeding either intravenous supplementation or by nasogastric tube.

- Decompress distension of the stomach by removing accumulated gas secretion.
- Obtaining specimens of gastric contents.
- Perform stomach lavage (the process of washing out an organ or for therapeutic purposes in case of active bleeding or poisoning.
- Prevent postoperative stress on suture lines by removing gas and secretion.
- Prevent aspiration of fluid into the lungs in unconscious patient. (Sukkar, 2003).

2.8 Indications of nasogastric tube:

- Relief of gastrointestinal obstruction or ileus, i.e. mechanical bowel obstruction or following abdominal surgery.
- Administration of medications or enteral feeding – when the patient is unable to swallow.
- Diagnostic or motility studies i.e. pharmaceutics monitoring or the determine the motor activity of GI tract.
- Obtain specimen of gastric contents for diagnostic purposes, i.e. pyloric or intestinal obstruction.
- Gastric lavage for overdose in some centers.
- Diagnosis and therapy of upper GI bleeding (controversial). (David, L 2009).

2.9 Contraindications:

In the following circumstances, these may require referral to specialist teams. E.g., ENT radiography of nutrition support team:

- Patients with maxilla-facial disorders surgery or trauma. (registered nurses working within the maxillo-facial disorders speciality, who have been assessed
as competent can pass nasoasrtic tube on patients with certain maxilla-facial disorders.

- Patients with oesophageal tumours or related oesophageal surgery.
- Patient post-lartngectomy.
- Patients who have had oropharyngeal tumours or oropharyngeal surgery.
- Patients with confirmed or suspected skill fractures.
- Patients with unstable spinal injuries (involving vertebrae 4 or above).
- In patients with established clotting problems/disorders, the clotting time should be returned to as close to normal range as possible before attempting to insert the nasogastric tube. (Eilis, J, 2012)

2.10 Common problems of Nasogastric feeding tube:

All nasogastric tube causes some irritation to the nostrils and to the throat through which they pass when being inserted. They may also cause gagging and vomiting, if this occurs, the patient should be placed in high fowler’s position to prevent regurgitation stomach contents into esophageal, which can possible be aspirated into the lungs.

Problem: The child chokes, coughs, has trouble breathing or turns pale while you are putting in the NG tube.

May be due to: NG

How to treat it: Immediately remove the tube, let you child or infant relax and recover. Remeasure the tube length. Try to insert again, following the steps. If your child does not recover, call their doctor. (Schperg, 2011)

How to prevent it: Measure the length and mark it on the tube. Insert the tube in gently and smoothly Encourage your child to swallow while the NG tube is going down. Give your infant a soother to suck while you are putting in the tube. (David, L 2009)
Problem: The child vomits or stomach is bloated during the feeding.

May be due to: Too much formula in the tube.

How to treat it: Stop the feed for 10 to 15min and start again more slowly.

How to prevent it: Run the feed at the rate to give the feed as instructed. Make sure you are giving the correct amount.

Problem: The mark you made on the tube is on longer at the nosing.

May be due to: The tube may have moved too far in or out of your child.

How to treat it: If you cannot see the mark on the tube then pull back the tube and retape. Check the tube placement using two methods.

How to prevent it: Make sure the tube is taped securely so it will not move. Place the outside of the tube into the child’s shirt to pulling.

Problem: The child has diarrhea.

May be due to: The feeds maybe going too fast..Your child may have a stomach infection. How to treat it: Talk to your child’s doctor about treatment. Throw away equipment and start with new. Wash your hands well before and after handing the equipment. (Schperg, 2001)

How to prevent it: Make sure the feeds run as instructed is prepared in a clean way and the equipment cleaned well after every use.

Problem: The skin on your child’s irritated by the tape

May be due to: Too much tape. Sweating drooling that gets the tapes wet. Sensitivity to tape.

How to treat it: Talk to your doctor or nurse about other kinds to apes that may help. Secure tape to different locations on the face to allow skin to recover.
How to prevent it: Use only enough tape to keep the tube in place. Use only hypoallergenic tape. Keep your child’s soap and water and drywell before putting on tape. Replace wet or dirty tape right away. (Mark M, 2004)

2.11 Diseases need NGT:

- Prematurity – poor suction.
- Abnormalities of the anatomy of gastrointestinal tract: child with cleft palate and lip.
- Ulcer of the mouth.
- Dysphagia (difficulty in swallowing).
- Gastroesophageal reflex.
- Severe gastrointestinal disease (gastroenteritis). (Schperg, 2001)

2.12 Procedures

Equipment required:

- Apron, clinical waste bags. And Clean J tray.
- Nasogastric tube of appropriate size (with guidewire if appropriate).
- Sterile water (cooled boiled water for use in the community).
- Hypoallergenic tape, or other securing device (fixative).
- Sterile syringe of appropriate size.
- Dummy, feeding bottle or drink if appropriate.
- pH paper (please note order information for pH paper available from the nutrition nurse specialist).
- Working suction equipment, if appropriate.
- Working resuscitation equipment, if appropriate. (Mark M, 2004)

2.13 Post-insertion care of nasogastric tubes in the child and infant patients:

2.13.1 Tube securing:

Once fully advanced and correct confirmed, the tube should be safety secured to the side of the face by a hypoallergenic tape to help prevent accidental dislodgement.
• Ensure skin in clean, dry and free from any creams, oils, mucus or feed to promote adhesion.
• Check for any known allergy specific types of tape.
• Consider the use of hydrocolloid dressing (e.g. duoderm extra thin/comfeel extra thin) beneath the tube, for pressure relief and prevention of skin soreness.
• Consider the child/infant’s preference for the positioning of the tube, with regard for their physical appearance.
• Regularly check the security of the tube to help prevent accidental dislodgement.

2.13.2 Hand hygiene:

For obtaining aspiration, tube flushing or feed administration:

• After careful hand washing:
  o Healthcare professionals should wear non-sterile, powder-free, latex-free gloves and apron
  o Education and nursery staff should wear the appropriate gloves.

2.13.3 Tube position check:

How to obtain a gastric aspirate, confirm correct tube position and risk assessment for the child and infant patient.

Feeding tubes are incorrectly positioned if the feeding ports are located in the respiratory tract or oesophagus, or past the pylorus for tubes intended for gastric feeding (Huffman et al, 2004).

2.13.4 Tube position check by aspiration:

The tube position must be checked by aspiration:

• Following initial insertion.
• Before administering any fluids-feed, water or medication via the tube.
• Following vomiting, retching, coughing or forceful sneezing.
• Evidence of actual or possible tube displacement: coil of tube in mouth, visible tube from nostril appear longer or looped, or if the tape becomes loose.
• If the infant/child is showing sings of cyanosis or respiratory distress.
• At least once daily during continuous pump delivered feeding – prior to
  commencing each feed container and additionally following evidence of
  any of the above points. This would be normal practice taught to parents to
  continue in the home setting.
• In hospital, children and infants receiving mechanical ventilation, those who
  have reduced conscious level or severe respiratory problems and babies
  receiving feed via a syringe pump, it is advisable to check tube position 4
  hourly during the feed. (Mark M, 2004)

2.13.5 Tube position check by x-ray:

Although x-ray is a recognized method of confirming correct placement,
radiography should not be used routinely for this purpose and its limitation when
used for children should be acknowledged. (NPSA 2005).

• The x-ray is only accurate at the time it is taken. The tube may be displaced
  before feeding commences.
• The x-ray can not be used for ongoing confirmation.
• Consideration should be given to minimize the exposure of children to
  radiation.
• Waiting for x-ray and results can increase loss of feeding time, handling and
  movement of the infant/child.
• X-ray facilities are not available in the community. If x-ray is used to verify
  feeding tube position, it is mandatory that the film is reported in writing by a
  radiologist or checked and documented in medical notes by a pediatric registrar
  or consultant.

2.13.6 How to obtain a gastric aspirate and confirm tube position:

Methods of obtaining a nasogastric aspirate:

• Use the appropriate size syringe:
  o 50ml for all polyurethane tubes-long term tubes, (commonly known
    as silk tubes).
  o 20ml for PVC-short term tubes, though 5ml can be used for neonates
    and small infants.
• If this is not following tube insertion, gently insert 1-6mls of air to free
  feeding ports from mucosa and clear ports of debris and water or feed.
  o 1ml of air for size 4-5 tubes.
  o 5ml of air for size 6-8 tubes.
6ml of air for “Ryles tubes (sometimes used post op or in P.I.C.U or A and E departments for drainage of gastric fluid or decompression).
Ryles tubes should not be used routinely for feeding purposes.

This is not a method of confirming tube position, auscultation or whoosh test is not reliable and should not be used.

Gently aspirate 0.2ml – 1ml of gastric content and place on pH paper or stick.

If unable to obtain a gastric aspirate try:

- On initial insertion, gently advance or retract tube and reaspirate at approximately 1cm intervals, for subsequent testing, check for signs of tube displacement and reposition if necessary, and document changes.
- Reposition the infant/child on their left side.
- If appropriate offer oral fluid.
- If appropriate gently change infant/child’s position or encourage activity or movement to stimulate gastric secretions.
- Offer infant a dummy and encourage sucking.
- If appropriate wait a further 15 min and retry aspirating.

If still unable to obtain a gastric aspirate try:

- Consider tube may be blocked or misplaced, discuss with more experienced staff if appropriate remove and replace tube unless contraindicated, e.g., after oesophageal/ gastric surgery, in which case contact senior member of surgical team. (Huffman et al, 2004)

2.13.7 Checking correct tube position:

Place aspirate onto pH paper/ stick and wait for 10 second before reading. Document result.

If pH 5.5 or less should indicate correct tube placement and feed may be given if required where a minimal quantity of feed is given, aspirate may be re-administered to maintain nutritional needs.

If pH 6.0 caution tube may be in the intestine or oesophagus, try the following:

- Check the external tube length is the same as previously documented, are there obvious signs of tube displacement? Reposition and reaspirate.
• To increase gastric secretion, encourage sucking on dummy, gently change position of infant/child or encourage activity, if appropriate and retry, wait 15 min, if appropriate before re-aspirating.

• Look at timing of acid suppressant medication, it may take an hour post medication for gastric pH to rise.

• Offer acid based drink or fluid containing food colouring, if appropriate and reaspirate. (Pancarbo Hidalgo P.L., 2005).

If still pH 6.0 see risk assessment below:

If pH 7.0 or above- Stop: this may indicate re-aspiratory secretions, do not feed:

• Check for tube displacement as above.
• Try stimulating gastric secretions as above.
• If still pH 7 or above – discuss with senior medical staff and consider removing and replacing tube unless contraindicated. (David, L 2009)

2.13.8 Risk assessment:

Consider:

• Factors witch may increase gastric ph – (ensure measures outlined in section 3 above entitled (if pH 6.0 – caution) have been completed.
  o Dilution of gastric acid by enteral feed, due to frequency (<2 hours/continuous) or poor gut motility/emptying.
  o Medication: e.g., acid suppressants i.e., ranitidine, lansoprazole, omperazone, gaviscon, sucraflate and sodium bicarbonate.
  o New born infants have a lower gastric secretion, plus the possible presence of aminotic fluid in immediate neonatal period (<48 hours). (Julia B, 2000)

• What has been the trend of previous pH recording?
• How much aspirate was obtained?
• Has the infant/child shown signs of general distress or respiratory depression.
• Distress now or during previous feed?
• Is the external length of the tube displacement?
• Are there any obvious signs of tube displacement?
• Can any medication be safely delayed or given via another route? (Pancarbo Hidalgo P.L., 2005).

**Special caution needs to be observed in the following infants/children:**

• Reduced conscious level.
• Those receiving mechanical ventilation.
• Absent/reduced gag reflex.
• Chronic, prolonged coughing.
• Difficulty experienced when passing the tube.

Staff should carry out an individual clinical assessment based on balancing the risk between not administering feed/medicine in the short term, with feeding when there is the possibility of tube misplacement. This should be discussed with a senior member of the multidisciplinary team and all actions taken and rationale documented. (Premji S.S., 2005).

**The following methods must not used to check tube position:**

• Auscultation of air insufflated through the feeding tube (whoosh test).
• Testing acidity/alkalinity of aspirate using blue litmus paper.
• Interpreting absence of respiratory distress as an indicator of correct positioning.
• Do not use appearance of feeding tube aspirates as the primary method to rule out misplacement. (Premji S.S., 2005).

**Tube flushing:**

If the tube is not flushed adequately and appropriately, it will become blocked and require replacing:

• The tube must be flushed before and after administering feed, before and after medications and between each medication when more than one is given.
• To maintain patency, the tube should be flushed 6 hourly if not in use, unless child is fluid restricted.
• Using the appropriate size syringe for the tube, the tube should be flushed with sterile water (within hospital) or cooled boiled water (within the community).
• Consult the infant/child’s individual feeding plan/fluid requirements, for appropriate quantity of flush.
• If it is not possible to flush a tube, consider replacing. Attempting to flush a blocked tube may result in tube rupture with damage to surrounding structures or aspiration of fluid if excessive force is used. (Julia B, 2000)

Tube replacement:

The tube is intended for either single use (BSI 1997) or single patient use. Please note the manufacturers’ instructions. If the tube is for single patient use and re-insertion is appropriate. (Pancarbo Hidalgo P.L., 2005).

Routine monitoring observations:

Careful monitoring of the infant/child is required throughout the time the tube is in situ:

Respiratory status: observe for changes in usual respiratory pattern indicating respiratory distress.

• Increase/depression of respiratory rate.
• Coughing or increased mucus production (including increased salivation and dribbling).
• Pyrexia or tachycardia which may indicate chest infection
• Skin pallor /cyanosis.
• Oxygen saturation level if being monitored.
• Change in conscious level/response or behavior which may indicate hypoxia.
Tube trauma:

- Bleeding soreness or ulceration visible in the nasal cavity.
- Coughing/vomiting bloodstained fluid. Awareness of increase in swallowing action, especially if the infant/child is predominantly in a recumbent position, which may indicate post-nasal bleed due to tube trauma.
- Skin integrity compromised by adhesive or tube pressure. (David, L 2009).

Fluid/nutritional observations:

- Within UHL a children’s hospital nutritional screening tool should be completed before feeding commenced and reassessed weekly.
- All enteral and oral intake vomit, urine and nasogastric aspirate should be recorded on the appropriate fluid balance or feeding chart.
- Check tube for signs of leakage from feeding ports or possible tear to prevent loss of gastric or nutritional fluid.
- All infants/children receiving enteral nutrition should be weighed twice weekly unless otherwise directed. (Premji S.S., 2005).

2.14 Nasogastric Tube Feeding Care

- Understanding the Equipment
  Before giving patient feeding, you will need:
  1. 60cc syringe.
  2. Liquid food prescribed by patient’s doctor
  3. Clean food container.
  4. IV pole or wall hook to hang the food container while receiving the feeding.

To giving liquid food, you attach the tube from the end of the food container to the end of your NG feeding tube. See below:

- Giving the Tube Feeding
  1. Always wash your hands thoroughly before touching the NG feeding tube, food, or container.
  2. Check the placement of patient’s feeding tube:
(1) Attach a 60cc syringe to the end of feeding tube.

(2) Pull back on the plunger. You should see some gastric juices (yellow-green fluid).

This is stomach content and tells you the tube is in patient’s stomach.

(3) If the pull back more than 15cc of fluid, do not give food for patient. Inject the stomach content, which contains important minerals, back into the tube. Then flush with water. Tell the patient’s responsible nurse or doctor if this occurs.

● If stomach content does not show when you pull back on the plunger, you can use another method to check placement:

1. Draw up 20cc of air into syringe
2. Insert the air into feeding tube while holding one hand over patient’s stomach.
3. With your hand, you should be able to feel the air as it “bubbles” into patient’s stomach. If you cannot feel the air bubble, try again.
4. Call patient’s responsible nurse if you see no stomach content and feel no air bubbles. This may indicate the tube has been displaced.

● To give patient the feeding, follow these steps:

1. Insert the tip of the tube from the food container into patient’s feeding tube.
2. Open the clamp slowly to adjust the speed of the feeding.
3. Meal should last 45 minutes to an hour. It is important to sit up or prop patient’s head up while receiving feeding. If patient’s has choking or difficulty breathing during a feeding, stop the feeding and call nurses immediately.

4. When the feeding is done, fill the food container with the amount of water patient’s doctor prescribes. This provides fluids for patient and flushes out the tube.

5. After the water is given, roll the clamp down to turn off and disconnect the food container.

● Wash out the food container after each use:

1. Use dishwashing liquid and water to wash the container
2. Rinse the container thoroughly
3. Use a clean food container for each feeding

● Mouth and Tube Care
1. Brush patient’s teeth at least twice daily
2. Clean the area where the nasogastric tube goes into patient’s nostrils daily. Use a cotton-tip applicator moistened with warm water. If patient’s nose becomes sore, you may apply water-soluble lubricant (such as Surgilube or K-Y jelly)
3. Nurse changes patient’s nasal tape every day regularly or when it is loose.

2.15 Complications of insertion of nasogastric tube:

- Wrong insertion: e.g., inter the trachea.
- Epistaxis: due to excessive force during insertion of tube by causing laceration of mucus membrane.
- Esophageal erosion: caused by prolong pressure against esophageal wall by firm tube.
- Gastric bleeding:
  - This occurs by excessive suction applied to gastric. Mcosa.
  - Nasal erosion:
- This tube to pressure on nasal from the tube during insertion. (Vander, T. (1983).
2.16 Nursing care plan:

Medical Staff

As part of a multi-disciplinary team, make the decision to insert tube following appropriate assessment and consultation with the patient /carer and other team members.

☐ Medical staff must ensure that x-ray request form states that the purpose of the x-ray is to identify the position of a nasogastric feeding tube, and reason for the x-ray, i.e. aspirate not obtained or pH level not between 1-5.5.

☐ X-ray checking procedures must be timely and carried out by clinicians assessed as competent to do so. All results should be documented and communicated to the relevant nursing staff.(NPSA 2011)

☐ If ward/ unit diagnosis is required then diagnosis should only be performed using specific ‘grey screen’ workstations as the resolution on normal computer screens may be inadequate to diagnose misplaced tubes.(NPSA 2007)

☐ Where there is a continuous difficulty obtaining aspirate with a pH of less than 5.5, it may be necessary for the senior medical staff to make a decision on how to manage the nasogastric tube feeding. All decisions and rationale should be documented. (NPSA 2011)

Radiographer

The radiographer must ensure that the x-ray exposure:

☐ is adjusted to allow the nasogastric tube to be visible to the bottom of the film.

☐ is centred lower than a normal chest x-ray so that it shows the abdomen as far as possible below the diaphragm.

☐ shows the bottom of both hemi-diaphragms in the midline.
X-rays that are not as described above will not allow accurate interpretation of nasogastric tube placement and should not be allowed out of the x-ray department.

Radiologist

The radiologist report of the film must document the position of the nasogastric tube and tip, AND whether it is safe to proceed with the administration of any liquids via the tube.

Registered Nurse/Midwife (and other Healthcare Professionals, as appropriate)

- To complete the clinical skills training package Passing a Fine Bore Feeding Tube for Enteral Feeding and be assessed as competent.

- As part of a multi-disciplinary team, make the decision to insert tube following appropriate assessment and consultation with the patient /carer and other team members.

- Gain consent and provide patient information.

- Insert the nasogastric feeding tube and confirm it is correctly sited.

- Confirm correct placement of the nasogastric feeding tube prior to every use.

- When there are continuous difficulties obtaining an aspirate with a pH less than 5.5 seek advice from senior medical staff.

- Assess patient comfort and safety through regular observation.

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- Complete documentation regarding procedure and determine a written plan of care, which includes feeding regime, and management of tube.

- Maintain appropriate clinical records.

- Liaise with the Dietician regarding feeding regime.
☐ Provide patients and carers with information about the care and management of the tube.

☐ As an individual or part of a multi-disciplinary team assess when to remove the tube.

☐ Perform procedure for removal.

☐ For patients discharged with the tube in situ, ensure appropriate education, advice and competency of the patient / carer.

☐ The individual nurse or Healthcare Professional must ensure they keep up-to-date and use evidence-based practice.

Support staff

The role of Health Care Assistants / Health Care Support Workers / Nursery Nurses and other support staff is to assist the health care professional inserting the nasogastric tube.

Ward Sister / Charge Nurse

☐ Identify which members of staff are required to undertake various aspects of feeding and management of nasogastric feeding tubes.

☐ Ensure training and assessment of competence is undertaken and documented.

☐ Monitor standards of practice in their environment in relation to feeding and management of nasogastric feeding tubes.

☐ In consultation with the Consultant Dietitian, facilitate audit of nasogastric feeding as agreed with Matron and advise the CSU Matron of audit results and resulting action plan.

Matrons: ☐ Ensure training and assessment of competence is undertaken and documented in each clinical area.
6. Procedure

Nasogastric Tube Insertion

A nasogastric tube may be recommended for:

- Gastric aspiration. If a patient requires aspiration/drainage of gastric contents, a Ryle’s tube may be passed for this purpose. The procedural guideline for this can be found in appendix 1.

- Enteral feeding

A patient may require enteral feeding because their nutritional requirements cannot be met orally. It is important that only fine bore nasogastric tubes, which are radiopaque throughout the entire length and have externally visible markings, are used. General use of Ryle’s/other tubes are not appropriate since they are more likely to cause nasal and oesophageal irritation, corrosion, and discomfort. In some circumstances, they may be used for short term enteral feeding within the Intensive Care/High Dependency environment. Fine bore tubes minimise the risk of damage as well as being more comfortable and allowing the patient to eat and drink more easily if condition allows.

Contraindications:

The following patients may require referral to a specialist team i.e. ENT, radiography, endoscopy for consideration of their suitability of nasogastric tube insertion:

- Maxillo – facial disorders, surgery or Trauma

- Oesophageal tumours, fistula or surgery
☐ Laryngectomy

☐ Skull fractures

☐ Head and neck surgery

☐ Tracheostomy (unless in ICU)

☐ Patient who is known to have coagulopathy, is receiving anticoagulant medication, or is known to have oesophageal varices without first taking advice from senior medical staff.

Transanastamotic nasogastric tubes require special consideration and are not within the scope of this policy.

Risk Assessment

Before inserting, a nasogastric feeding tube careful assessment of the risks and benefits must be performed by at least 2 competent health care professionals, including the senior doctor responsible for the patient’s care. The rationale for the final decision must be recorded in the patient’s medical notes.

Patients who are confused, comatose, have swallowing dysfunction or recurrent retching or vomiting, have higher risks of placement errors or migration of the tube.

Unless clinically urgent, if there is insufficient experienced support staff to accurately confirm nasogastric tube placement (for example at night) then placement should be delayed until support is available. The rationale for any decisions made must be documented in the patient’s medical notes.

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Method for Confirming Correct Placement of Nasogastric Feeding Tube

Correct placement of a nasogastric feeding tube should be established by aspirating and placing a drop of aspirated fluid on pH Indicator strips, (CE Marked) which
must be available in all wards and departments. If pH is between 1 and 5.5 feeding may be commenced. If pH is between 5 & 6 a 2nd competent nurse should check the result or retest.

DO NOT USE THE TUBE if an aspirate with a pH level of 6 or above is obtained.

Do NOT USE THE TUBE if there is any doubt about its correct placement and seek advice from senior staff.

Aspiration, feeding and flushing of tubes should be undertaken using a 50, 20 or 10 ml syringe depending on patient group Oral / Enteral or Catheter tip syringes should be used where available.

All staff undertaking pH testing must be trained and assessed as competent in the technique.

It is not necessary to routinely X-ray patients following insertion of a nasogastric feeding tube. Consider performing an X-ray if

- Nasogastric aspirate unobtainable
- A ph of 6 or above is recorded.
- Clinical judgement indicates that an x-ray is necessary.

DO NOT under any circumstances use the following methods to ascertain correct placement of a nasogastric feeding tube.

- Litmus paper
- whoosh test
- Interpreting absence of respiratory distress as an indicator of correct positioning
- Monitoring bubbling when tube placed under water,
- Observing and relying on the appearance of nasogastric aspirate.
Full procedural guidelines are outlined in appendix 2

When Should Testing take Place?

☐ Following insertion of the nasogastric feeding tube

☐ Before the administration of each feed

☐ Before giving medication (If feed not already in progress)

☐ At least once a day during continuous feeding in adults and children, and prior to changing syringe feeds in infants and neonates

☐ Following episodes of vomiting, retching or coughing

☐ Following evidence of tube displacement, e.g. visible external tube length is longer than previously recorded, loose tapes

Limitations of pH Testing Method

While none of the existing bedside methods for testing the position of nasogastric feeding tubes are totally reliable, there is evidence to suggest that a pH reading of between 1 and 5.5 can reliably exclude pulmonary placement. A pH between 1 and 5.5 does not necessarily confirm gastric placement of the nasogastric feeding tube and there is a small possibility that the tube is sitting in the oesophagus, which carries a higher risk of aspiration.

Policy Number: PAT/T 17 v.3

Medication and feeding frequently can affect the pH of the stomach. Continuous feeding may prevent the build up of acid and pH readings greater than 5.5 may be recorded.

Gestation and postnatal age, presence of amniotic fluid in the stomach, may affect the pH.
Obtaining aspirate from fine bore nasogastric tubes can sometimes be difficult, but this is often a result of poor technique, which can be overcome with training and education.

Radiography may need to be used for these groups of patient’s.

pH test strips should be used and stored according to manufacturers instructions.

X- Ray Confirmation

X-ray is used only as a second line test when no aspirate could be obtained or PH indicator strips have failed to confirm the location of the nasogastric feeding tube.

☐ The request form must clearly state that the purpose of the x-ray is to establish the position of the nasogastric tube for feeding.

☐ The radiographer must ensure that the nasogastric feeding tube can be clearly seen on the x-ray to confirm its position.

☐ X-rays must be interpreted and nasogastric tube position confirmed by someone competent to do so.

☐ If there is any difficulty in interpretation the advice of the radiologist should be sought.

Any nasogastric feeding tube found in the lung should be removed immediately whether in the x-ray dept or clinical area.

In situations such as when patients are fed continuously, or when acid reducing medication is in use, it may not be possible to obtain aspirate with a pH between 1 and 5.5 and daily x-rays are not safe or practical.

If initial placement was appropriately confirmed and there is no reason to suspect displacement the only practical method of determining if the tube remains correctly placed prior to each feed may be through external observation of the tube. Documentation should include confirmation that the external tube length remains
identical to that recorded initially in the patient’s notes, and that fixation tapes have not moved or worked loose.

Documentation

At insertion of the nasogastric feeding tube record the following

- Type and size of tube
- External length of tube
- pH of aspirate

At each subsequent test document

- the external tube length measurement checked against the initial external length for movement.

7. Training

All nurses and midwives have a responsibility to ensure that they have sufficient knowledge, skills and competence to perform any procedure as outlined by the Nursing and Midwifery Council (NMC 2008). It is expected that student nurses/midwives will gain the knowledge and skills necessary to perform wide bore (Ryles tube) nasogastric insertion during their education. Upon registration they will gain competence under guidance of a preceptor until they can complete the procedure independently. For fine bore nasogastric insertion, registered nurses/midwives must extend their scope of practice and undertake additional education and training using the Trust Clinical Skills Training Package.

All nurses, midwives and medical staff have a responsibility to ensure that they have received training and been assessed as competent on the use of pH indicator strips and the NPSA Guidelines for confirming the correct placement of nasogastric feeding tubes. The NPSA have released a training resource on x-ray interpretation of nasogastric feeding tube position. www.trainingngt.co.uk.
8. Monitoring Compliance with the Procedural Document

Audit of compliance with the policy will be ongoing; this will be in the form of spot check audits co-ordinated by the matrons.

9. Incident Reporting

Misplaced nasogastric feeding tube incidents must be reported through the Trust Policy for reporting incidents and near misses

10. Exceptional Circumstances

Patients in Intensive Care

The majority of level 3 critical care patients are not able to have oral diet because of; risks of aspiration, reduced consciousness, mechanical ventilation. In these patients the benefits outweigh the risks. The documented reason for these patients to receive NG or NJ feeding will be recorded as ‘Level 3 patient’ on the Critical Care NG/NJ feeding sticker.

Critical Care patients will be only be fed and receive medication via tubes which are radio-opaque throughout the full length. Wide bore tubes that only have a radio-opaque tip will only be used for gastric drainage.

The minimal documentation for all patients in critical care will contain

☐ Type of tube and insertion length in cm (specify if external length measurement is used) documented on daily chart

☐ Critical Care NG/NJ feeding sticker inserted in patient’s medical notes when a NG/NJ tube is inserted or feeding is commenced in an existing tube

☐ TDS position confirmation of the feeding tube in patients who are receiving continuous feed by pH testing documented on the daily chart. If pH less than 5.5 cannot be achieved a risk assessment should be performed and documented in the nursing notes.
Patients on intermittent feed or medication should have confirmation of the feeding tube position by pH testing prior to instillation documented on the daily chart. If pH less than 5.5 cannot be achieved a risk assessment (see below) should be performed and documented in the nursing notes. (Marsden Manual 2011)

Ulcer prophylaxis in critical care patients increases the pH of the stomach and the jejunum has a higher pH therefore it may not be possible to achieve pH <5.5. To maintain feeding in these patients and reduce the need for repeated CXR a risk assessment should be performed by the nurse allocated to the patient for that shift.

Risk assessment should comprise:

- Checking against the documented insertion position to ensure the tube has not moved

- Ensuring the tube is securely fixed in position

- Assessing the patient’s mouth to ensure the tube is not coiled there

- Checking whether any other device has been removed from the oesophagus that may have altered the position of the feeding tube (If this is the case the tube position must be confirmed on CXR if pH testing is not possible)

- Ensuring that the patient has not dislodged the tube by excessive vomiting

If there are any concerns following the risk assessment, feed or medication must not be given via the tube until authorised by the Critical Care Consultant.

CXR interpretation to determine NG or NJ placement will be performed by a doctor who is competent at interpreting X-rays in critically ill patients. Details of this interpretation will be recorded in the patient’s medical notes and affirmation of correct feeding tube position on the Critical Care NG/NJ feeding sticker. When any CXR has been performed and is interpreted, all visible invasive devices (endotracheal tube, central venous access lines, NG tubes) will be routinely checked and positions documented in the patient’s medical notes. (Marsden Manual 2011)
11. Children and Young People

Children’s Wards

Nurses on the children’s wards follow the procedure laid out in appendix 4.

Parents/carers should be involved in the care plan and assist in the tube management and feeding as appropriate.

Neonates

Nurses on the Neonatal Unit and Special Care Baby Unit follow the procedural guidance. Nursery Nurses and Health Care Support Workers may be involved in the care plan and assist with tube management and feeding as appropriate. It is the responsibility of the Senior Nurse for Neonatal Services to ensure that training and assessment of competence is undertaken and document. (Marsden Manual 2011)

2.17 Previous Studies:

Worldwide: A study was conducted on complication associated with enteral nutrition by nasogastric tube in an internal medicine unit among 64 patients who were fed by nasogastric tube. The result showed several kinds of complications such as diarrhoea, vomiting, constipation, lung aspiration, tube dislodgement, tube clogging, hyperglycaemia and electrolytic alteration. Hence the researcher suggested that need of nursing intervention by checking the gastric residue periodically, attempting to place the tube in the duodenum in the unconscious patients and the use of protective mittens in disturbed patients (Pancarbo Hidalgo P.L., 2005).

An experimental study was conducted on prevalence of feeding tube placement errors and associated risk factors in children. The tube placement error was defined as tube tip or orifices in the oesophagus or intestines. The hospital records of 201 children having both an enteral tube and at least one radiograph showing tube placement were retrospectically reviewed. Hence researcher concluded that nurses need to be especially careful in assessing tube placement if
the paediatric patient has one or more of the identified risk factors. (Ellet Marsha L., 2008).

**Developed countries:** A study has been conducted for identifying non-invasive techniques and criteria for predicting the proper length for insertion of nasogastric tube such that the tube would be located in the fundus of the stomach. A revive of literature and existing practices revealed unsubstantiated and discrepant methods currently in use and justified the need for the research. The study involved relating several external body measurements from the tip of the nose to the lower oesophageal sphincter, via the oesophagus. A variety of analysis including stepwise multiple regression, were used and are presented. A formula is presented and stated to provide 91% confidence level of tube tip placement in the stomach between 1 and 10 cm. this is compared to a confidence level of 72% using the traditional nose to ear to xiphoid measurement. The formula is \((\text{NEX} - 50\,\text{cm})/2)+50\,\text{cm}\) where NEX is the distance from the tip of the earlobe to the xiphoid. Thus complications can be prevented by proper placement of the tube. (Julia B, 2000).

**Developing countries:** A study was conducted on evidenced based feeding guidelines of very low-birth weight infants, and focused on development of research based enteral feeding CPG (Clinical Practice Guidelines) on infants weighing <1500gms. The CPG was based on an extensive literature review and was developed through a process of consensus decision made by a team of clinical researchers. Infants who weigh less than 1000gms initiate minimal enteral nutrition at 48hrs, whereas nutritional feeding begins in 5-6 days of life. For infants between 1000 and 1500gms, nutritional feeding begins at 48hrs and is advanced a rate of less than 30ml/kg/day. The benefit and risks of continuous verses intermittent tube feeding were inconclusive. (Premji S.S., 2005).

A descriptive study was conducted among 350 randomly selected staff nurses to identify variation in practices in the care of patients with the nasogastric tube. The result shows that wide variations were found in the gastric residual, considered as excessive in stomach. A large percentage of nurses rely on physicians order for
gavage feeding rate, giving additional water and using the liquid form of medication. The researcher concluded that there is a need for improvement in theory-practice gap (Scmeiding, 2007).

A retrospective study was conducted on feeding dysfunctions in infants with severe chronic renal failure among 15 patients. The result showed that 13 patients had significant and persistent eating difficulty, with difficulty in chewing and swallowing in 7 and food refusal in 6. For 2 patients panic attacks from swallowing were repeatedly reported. Theses problem persisted for more than year in 5 patients and between 1 and 6 months in 4. The researcher concluded that a possible means of overcoming the difficulties that may follow nasogastric tube feeding might include: encouraging the use of a pacifier, proposing water for spontaneous consumption, leaving the child the possibility of eating food spontaneously during the day time, and increased support for the parents during weaning. (Scaife C. 1999).

A study was conducted on mechanical problem with small diameter enteral feeding tubes. They have suggested that the use of nasogastric feeding for nutritional support of hospitalised and home bound chronically ill individuals has been expanding during the past ten years. Nasogastric and naso enteral dimension is safer and more cost effective than total parenteral nutrition. Mechanical problem related to slowing of the formula and/or clogging of the tube have been reported, but have received little attention in the research literature. This explanatory survey was designed to determine the extend of mechanical problems and the procedures used to care for enteral feeding tubes. 58% of 91 hospitals reported a significant occurrence of mechanical problems with small diameter enteral feeding tubes, and only 31% had written procedure for care of the tube. (Petrosino B.M. et al, 2007)

A study was conducted on mechanical problem with small diameter enteral feeding tubes. They have suggested that the use of nasogastric feeding for nutritional support of hospitalised and home bound chronically ill individuals has been expanding during the past ten years. Nasogastric and naso enteral dimension is safer and more cost effective than total parenteral nutrition. Mechanical problem
related to slowing of the formula and/or clogging of the tube have been reported, but have received little attention in the research literature. This explanatory survey was designed to determine the extent of mechanical problems and the procedures used to care for enteral feeding tubes. 58% of 91 hospitals reported a significant occurrence of mechanical problems with small diameter enteral feeding tubes, and only 31% had written procedure for care of the tube.
3. Materials and Methods

3.1 Study Design:

A descriptive cross-sectional hospital based study was conducted in Wad Medani Pediatric Teaching Hospital aimed at assessing Nurses’ Knowledge regarding Nursing Care of Insertion of Nasogastric Tube in Under Five Children in Pediatrics Teaching Hospital Wad Medani, Gezira State, Sudan during the period of study from (September to October 2014)

3.2 Study area:

The study was conducted in Wad Medani Pediatric Teaching Hospital, the capital of Gezira state which is a large agricultural area, located in the central region of Sudan which was opened in 1987. The locality is about 189km south to Khartoum state. Pediatric teaching hospital is a level one district hospital serves about a lot of poor rural people. It receives patients from the whole state and neighboring states (Algadarif and Sinnar). There are 16 wards in this hospital one out of them are for gastroenteritis.

The capacity of the pediatric teaching hospital is about 204 beds. There are 8 beds and 18 tables of rehydration therapy for the gastrointestinal unit of the pediatric wards, which are almost fully occupied throughout the year. The hospital statistic record showed that the duration admission of diarrheal and dehydrated patients in the ward ranged between two to five patients days some of them referred from another units like kwashiorkor and medical units (statistical Department of Pediatric Teaching Hospital 2014).
Table (3.1) Distribution of Manpower in Pediatric Teaching Hospital:

<table>
<thead>
<tr>
<th>Position</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultants</td>
<td>13</td>
</tr>
<tr>
<td>Registrars</td>
<td>21</td>
</tr>
<tr>
<td>Medical officers</td>
<td>10</td>
</tr>
<tr>
<td>House officers</td>
<td>49</td>
</tr>
<tr>
<td>Sisters</td>
<td>7</td>
</tr>
<tr>
<td>Nurses</td>
<td>165</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>7</td>
</tr>
<tr>
<td>Assistant pharmacists</td>
<td>5</td>
</tr>
<tr>
<td>Nutritionists</td>
<td>5</td>
</tr>
<tr>
<td>Assistant nutritionists</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>293</td>
</tr>
</tbody>
</table>

Source: Statistical Department of Pediatric Teaching Hospital 2014.

3.3 Study Population:

All (57) registered staff pediatric nurses working at the hospital wards, during the period of the study were included in the study.

3.3.1 Inclusion criteria:

All available registered nurses who work at hospital and come contact with pediatric patients undergoing insertion of nasogastric tube were included in the study.

3.3.2 Exclusion criteria:

Under training nurses were not involved in this study.

3.4 Sample Size:

All (57) available nurses who work in the hospital were included in the study during the period from
3.5 Data Collection tool:

The data was collected by a structured questionnaire was designed by the researcher for the study and utilized for two purposes as follow:

**First socio-demographic data:** characteristic data of the study sample such as: age, gender, years of experiences … etc).

**Second Nurses' Knowledge:** nurses' knowledge about nasogastric tube such as (definition, indication, types, length, insertion, complication management) regarding nursing care of child undergoing insertion of nasogastric tube such as nursing role and nursing care plan and etc..

3.6 Sample technique:

- Official letters for the head manager and matron of pediatric teaching hospital at Wad Medani for approval to collect the data.
- Explanation for the pediatric nurses about questionnaire of the study.
- Questionnaire was distributed for each available nurse to fill within 15 – 30 minutes under the researcher guidance.

3.7 Data analysis:

The data collected was incorporated and entered in the computer, described and analyzed. Unvaried and using statistical package for social sciences (SPSS).
4.1 Results

Table (4.1): Distribution of the study sample according to their gender and age groups:

<table>
<thead>
<tr>
<th>Gender</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Female</td>
<td>57</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age groups</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 – 30 years</td>
<td>12</td>
<td>21.1</td>
</tr>
<tr>
<td>31 – 40 years</td>
<td>34</td>
<td>59.6</td>
</tr>
<tr>
<td>More than 40 years</td>
<td>11</td>
<td>19.3</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>100</td>
</tr>
</tbody>
</table>

Table (4.1) shows that all {100%} of the study sample were females and {59.6%} of them at age range between 31 – 40 years.
Table {4.2}: Distribution of the study sample according to their level of education and year of experience:

<table>
<thead>
<tr>
<th>Educational level</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical diploma</td>
<td>15</td>
<td>26.3</td>
</tr>
<tr>
<td>Bachelor</td>
<td>35</td>
<td>61.4</td>
</tr>
<tr>
<td>Post graduate</td>
<td>7</td>
<td>12.3</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year of experience</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than one year</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>From year to 5 years</td>
<td>27</td>
<td>47.4</td>
</tr>
<tr>
<td>From 6 to 10 years</td>
<td>25</td>
<td>43.8</td>
</tr>
<tr>
<td>More than 10 years</td>
<td>5</td>
<td>8.8</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>100</td>
</tr>
</tbody>
</table>

Table {4.2} revealed that (61.4%) of the study sample their level of education were bachelor degree. 47.4% of the study sample their year of experience range from 1 to 5 years
Figure 4.1 Distribution of the study sample according to their source of knowledge about care of nasogastric tube

Figure 4.1 illustrate that 85.9% of the study sample their source of knowledge about care of nasogastric tube from university.
Figure 4.2 Distribution of the study sample according to receiving training program before about care of nasogastric tube:

Figure 4.2 illustrate that only 39% of the study sample had received training program regarding care of nasogastric tube before.
Table {4.3}: Distribution of the study sample according to their knowledge regarding Definition and indications of insertion of nasogastric tube:

<table>
<thead>
<tr>
<th>Nurses’ knowledge</th>
<th>Correct complete answers</th>
<th>Correct incomplete answers</th>
<th>Incorrect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Definition of nasogastric tube</td>
<td>43</td>
<td>75.4</td>
<td>12</td>
<td>21.1</td>
</tr>
<tr>
<td>Indications of insertion of nasogastric tube</td>
<td>39</td>
<td>68.4</td>
<td>15</td>
<td>26.3</td>
</tr>
</tbody>
</table>

Table {4.3} shows that {75.4%} of the study sample responded with correct complete answers regarding definition of nasogastric tube. 68.4% of the study sample responded with correct complete answers regarding indications of nasogastric tube.
Table 4.4: Distribution of the study sample according to their knowledge regarding cause and Steps of insertion of nasogastric tube

<table>
<thead>
<tr>
<th>Nurses’ knowledge</th>
<th>Correct complete answers</th>
<th>Correct incomplete answers</th>
<th>Incorrect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causes of insertion of nasogastric tube</td>
<td>30 52.6</td>
<td>22 38.6</td>
<td>5 8.8</td>
<td>57 100</td>
</tr>
<tr>
<td>Steps of insertion of nasogastric tube</td>
<td>28 49.1</td>
<td>23 40.4</td>
<td>6 10.5</td>
<td>57 100</td>
</tr>
</tbody>
</table>

Table 4.4 shows that {52.6%} of the study sample responded with correct complete answers regarding causes of insertion of nasogastric tube. 49.1% of the study sample responded with correct complete answers regarding steps of insertion of nasogastric tube.
Table {4.5}: Distribution of the study sample according to their knowledge regarding Method of insertion and Methods to measure of nasogastric tube

<table>
<thead>
<tr>
<th>Nurses’ knowledge</th>
<th>Correct complete answers</th>
<th>Correct incomplete answers</th>
<th>Incorrect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Method of insertion of nasogastric tube</td>
<td>20</td>
<td>35.1</td>
<td>31</td>
<td>54.4</td>
</tr>
<tr>
<td>Methods to measure of nasogastric tube</td>
<td>18</td>
<td>31.6</td>
<td>32</td>
<td>56.1</td>
</tr>
</tbody>
</table>

Table {4.5} shows that {35.1%} of the study sample responded with correct complete answers regarding the method of insertion of nasogastric tube and 38.6% of them responded with correct incomplete answers.
Table {4.6}: Distribution of the study sample according to their knowledge regarding Equipments needed Complications of nasogastric tube

<table>
<thead>
<tr>
<th>Nurses’ knowledge</th>
<th>Correct complete answers</th>
<th>Correct incomplete answers</th>
<th>Incorrect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipments needed for insertion of nasogastric tube</td>
<td>33 57.9</td>
<td>20 35.1</td>
<td>4 7.0</td>
<td>57 100</td>
</tr>
<tr>
<td>Complications of nasogastric tube</td>
<td>20 35.1</td>
<td>34 59.6</td>
<td>3 5.3</td>
<td>57 100</td>
</tr>
</tbody>
</table>

Table {4.6} shows that {57.9%} of the study sample responded with correct complete answers regarding equipments needed for insertion of nasogastric tube. 35.1% of the study sample responded with correct complete answers regarding complications of nasogastric tube.
Table {4.7}: Distribution of the study sample according to their knowledge regarding Position of the child and The size of nasogastric tube:

Table {4.7} shows that {33.3%} of the study sample responded with correct complete answers regarding the position of the child. 36.8% of the study sample responded with correct complete answers regarding the size of nasogastric tube.
Table (4.8): Distribution of the study sample according to their knowledge regarding Duration of the nasogastric tube and When to change of NGT

<table>
<thead>
<tr>
<th>Nurses’ knowledge</th>
<th>Correct complete answers</th>
<th>Correct incomplete answers</th>
<th>Incorrect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Duration of the nasogastric tube</td>
<td>17</td>
<td>29.8</td>
<td>36</td>
<td>63.2</td>
</tr>
<tr>
<td>When to change of NGT</td>
<td>18</td>
<td>31.6</td>
<td>31</td>
<td>54.4</td>
</tr>
</tbody>
</table>

Table (4.8) shows that 29.8% of the study sample responded with correct complete answers regarding the duration of nasogastric tube and 63.2% of them responded with correct incomplete answers. 31.6% of the study sample responded with correct complete answers regarding when to change of the nasogastric tube, while 59.6% of them responded with correct incomplete answers.
Table 4.9: Distribution of the study sample according to their knowledge about nursing care before, during and after the insertion of nasogastric tube:

<table>
<thead>
<tr>
<th>Nurses’ knowledge</th>
<th>Correct complete answers</th>
<th>Correct incomplete answers</th>
<th>Incorrect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Nursing care before the insertion of nasogastric tube</td>
<td>19</td>
<td>33.3</td>
<td>31</td>
<td>54.4</td>
</tr>
<tr>
<td>Nursing care during the insertion of nasogastric tube</td>
<td>20</td>
<td>35.1</td>
<td>33</td>
<td>57.9</td>
</tr>
<tr>
<td>Nursing care after the insertion of nasogastric tube</td>
<td>17</td>
<td>29.8</td>
<td>34</td>
<td>59.6</td>
</tr>
</tbody>
</table>

Table 4.9 shows that 33.3% of the study sample responded with correct complete answers regarding nursing care before the insertion of nasogastric tube.
4.2 Discussion

Nasogastric tube NGT: it is a tube that is passed through the nose and down through the nasopharynx and esophagus into the stomach. It is flexible tube made of rubber or plastic, and it has bidirectional potential. Nursing knowledge is a scientific knowledge and research findings have rapidly expanded over the last few years. Nursing practice for maintaining competence by continual learning is essential (WHO, 2009). Nutrition is a basic human need that changes through the life cycle, and a long wellness continuum, food provides nutrition for both body and mind. Eating has involved from being simply necessarily. A descriptive hospital based study was conducted in Wad Medani Pediatric Teaching Hospital aimed at assessing pediatric nurses’ knowledge regarding care of child undergoing insertion of nasogastric tube during the period 2014. Sample Size: All (57) available nurses who work in the hospital were included in the study during the period of the study. Data was collected by using a structured interview questionnaire was designed by the researcher for the purpose of the study. The data collected was incorporated and entered in the computer, described and analyzed. Unvaried and using statistical package for social sciences (SPSS).

The results showed that all \{100\%\} of the study sample were females and \{59.6\%\} of them at age range between 31 – 40 years. \{61.4\%\} of the study sample their level of education were bachelor, while \{26.3\%\} were technical diploma and only 12.3\% post graduate. Regarding year of experience this table shows that 47.4\% of the study sample their year of experience range from 1 to 5 years and 43.8\% of them were at experience range from 6 to 10 years.

85.9\% of the study sample their source of knowledge about care of nasogastric tube from university while 7.0\% of them from colleagues. only 39\% of the study sample had received training program regarding care of nasogastric tube before while 61.0\% of them didn’t. This result is similar to study done by Scaife Courteney (2009). A retrospective study was conducted on feeding
dysfunctions in infants with severe chronic renal failure among 15 patients. The result showed that 13 patients had significant and persistent eating difficulty, with difficulty in chewing and swallowing in 7 and food refusal in 6. for 2 patients panic attacks from swallowing were repeatedly reported. Theses problem persisted for more than year in 5 patients and between 1 and 6 months in 4. The researcher concluded that a possible means of overcoming the difficulties that may follow nasogastric tube feeding might include: encouraging the use of a pacifier, proposing water for spontaneous consumption, leaving the child the possibility of eating food spontaneously during the day time, and increased support for the parents during weaning.

Regarding nurses' knowledge this results showed that \(75.4\%\) of the study sample responded with correct complete answers regarding definition of nasogastric tube. This result is similar to study done by (Ellet Marsha L. 2008) which said that (85\%) of the subject responded with correct complete answers regarding definition of nasogastric tube. (Ellet Marsha L. 2008)

21.1\% of them responded with correct incomplete answers. 68.4\% of the study sample responded with correct complete answers regarding indications of nasogastric tube, while 26.3\% of them responded with correct incomplete answers.

Also this results revealed that \(52.6\%\) of the study sample responded with correct complete answers regarding causes of insertion of nasogastric tube and 38.6\% of them responded with correct incomplete answers. 49.1\% of the study sample responded with correct complete answers regarding steps of insertion of nasogastric tube, while 40.4\% of them responded with correct incomplete answers. \(35.1\%\) of the study sample responded with correct complete answers regarding the method of insertion of nasogastric tube and 38.6\% of them responded with correct incomplete answers. This result is differ to study done by Petrosino B.M .et al, (2007) which revealed that 89.7\% of the study sample responded with correct

On the other hand {57.9%} of the study sample responded with correct complete answers regarding equipments needed for insertion of nasogastric tube and 35.1% of them responded with correct incomplete answers. 35.1% of the study sample responded with correct complete answers regarding complications of nasogastric tube, while 59.6% of them responded with correct incomplete answers.

{33.3%} of the study sample responded with correct complete answers regarding the position of the child during the insertion of nasogastric tube and 59.6% of them responded with correct incomplete answers. 36.8% of the study sample responded with correct complete answers regarding the size of nasogastric tube, while 47.4% of them responded with correct incomplete answers. {29.8%} of the study sample responded with correct complete answers regarding the duration of nasogastric tube and 63.2% of them responded with correct incomplete answers. 31.6% of the study sample responded with correct complete answers regarding when to change of the nasogastric tube, while 59.6% of them responded with correct incomplete answers.

{33.3%} of the study sample responded with correct complete answers regarding nursing care before the insertion of nasogastric tube and 54.4% of them responded with correct incomplete answers. 35.1% of the study sample responded with correct complete answers regarding nursing care during the insertion of nasogastric tube, while 57.9% of them responded with correct incomplete answers. 29.8% of the study sample responded with correct complete answers regarding nursing care after the insertion of nasogastric tube, while 59.6% of them responded with correct incomplete answers.
5. Conclusion and Recommendations

5.1 Conclusion:

It is concluded that:

- Nurses’ knowledge regarding care of pediatric patients undergoing insertion of nasogastric tube were inadequate especially regarding definition, indications, equipments needed and complication of nasogastric tube.
5.2 Recommendations:

Based on the conclusion of this study it recommended that:

- Proper and continues monitoring and supervision of nurses’ performance is essential.
- Routine and periodic training program must be done to all nurses to improve their knowledge and attitudes regarding care of pediatrics patient undergoing of insertion nasogastric tube in pediatric teaching hospital.
- Logbook for care of pediatric patients with nasogastric tube must be design and available in the hospital.
REFERENCES


Marsden Manual (2011) 8.1 Procedural guideline for the insertion of a nasogastric tube without using an introducer e.g. Ryles tube.


استبيان لتقييم معرفة الممرضات اتجاه الأنبوب الأنفي المعوي بمستشفى الأطفال التعليمي ود مدني، السودان

(1) معلومات شخصية:
1. النوع: ذكر ( ) أنثى ( )
2. العمر: 0-10 ( ) 11-20 ( ) 21-30 ( ) 31-40 ( ) أكثر من 40 ( )
3. المؤهل التعليمي:
   a) فني تمريض ( )
   b) دبلوم تمريض ( )
   c) بكالوريوس تمريض ( )
   d) أخرى ( )
4. عدد سنوات الخبرة:
   a) أقل من سنة ( )
   b) من سنة – 5 سنوات ( )
   c) أكثر من 10 سنوات ( )
   d) 6 – 10 سنوات ( )
5. هل حضرت دورات تدريبية تضم معلومات وممارسات عن الأنبوب الأنفي المعوي؟
   a) نعم ( )
   b) لا ( )

(2) معلومات الممرضات عن الأنبوب الأنفي المعوي:
1. عرف الأنبوب الأنفي المعوي؟
2. دواعي استخدام الأنبوب الأنفي المعوي؟
أ) التغذية
ب) السحب
ج) إعطاء الأدوية
د) حماية الجهاز التنفسي
هـ) أخرى

3. الحالات التي يتم فيها اللجو للأنبوب الأنفي المعوي:
أ) الجفاف الحاد
ب) الغيبوبة
ج) الالتهاب الرئوي
د) سوء التغذية
هـ) أخرى

4. خطوات إدخال الأنبوب الأنفي المعوي:

5. طريقة التأكد من دخول الأنبوب الأنفي المعوي؟
أ) سحب سائل المعدة
ب) عن طريق صورة الأشعة
ج) حقن 10-20مل هواء والتسمع بالسماعة
د) عن طريق ورق عباد الشمس
هـ) أخرى

6. طريقة القياس لأنبوب المعدة:

7. ما هي الأدوات اللازمة لتركيب أنبوبة المعدة:
أ) سماعة طبيب
ب) جل أو فازلين
ج) حوض كلوي
د) جونتات
هـ) أخرى

8. هل تقومين بتسجيل هذه العملية لتركيب أنبوبة المعدة؟
أ) نعم
ب) لا

في حالة الإجابة بنعم ماذا تكتب:
9. مضاعفات الأنبوب الأنفي المعوي:
   
   (أ) الدخول في القصبة الهوائية (ب) تقرحات في الأغشية المخاطية للأنف والرئي (ج) نزيف في مجرى الأنبوب (د) أخرى
   
10. وضع الطفل أثناء الإطعام بالأنبوب:
   
   (أ) يكون الطفل في الوضع الشبيه بالجالس (ب) على الجانب الأيسر (ج) على الجانب الأيمن (د) وضع الرأس عالياً بمعتدل 30 درجة (ه) أخرى

11. ما هو حجم الأنبوب المناسب للأطفال:
   
   (أ) مقاس 5 (ب) 5 – 10 أيام (ج) مقاس 10 (د) تحسين خروج المريض

12. الفترة المتاحة لوجود الأنبوب في أنف المريض:
   
   (أ) من يوم – 5 أيام (ب) 5 – 10 أيام (ج) أكثر من 10 أيام (د) تحسين خروج المريض

13. متى يتم تغيير أنبوب المعدة:
   
   (أ) في حالة شعور الطفل بعد الراحة والكحة والازرقاق (ب) في حالة حدوث الاستفراغ (د) في حالة قفل الأنبوب وعدم سريان السوائل (ه) أخرى

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14. العناية التمريضية اللازمة قبل تركيب الأنبوب الأنف معوي:
   
   أ) غسل اليدين وليس القفازات
   
   ب) اخطار الأم بأهمية عملية تركيب الأنبوب
   
   ج) تحضير الأدوات اللازمة
   
   د) وضع الطفل في الوضع المناسب

15. العناية التمريضية اللازمة أثناء وجدو بالطفل:

16. العناية التمريضية بعد إزالة الأنبوب الأنف معوي:

   أ) غسل اليدين وليس القفازات
   
   ب) اخطار الأم
   
   ج) إخراج الأنبوب برفق
   
   د) قياس العلامات الحيوية