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Original Research Article

Nurses Performance Evaluation Regarding Nasogastric Tube Feeding

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Abstract

Nasogastric feeding is recommended for nutritionally ill patients who cannot use a proper or safe oral diet. Nasogastric tube feeding refers to the delivery of nutrients and drugs through the feeding tube from nose into the stomach. Previous studies revealed that knowledge and practices regarding nasogastric tube feeding are inappropriate. The aim of this study was to evaluate the nurse's practices regarding NG tube feeding. It was a Quasi experimental observational study conducted in two hospitals of Lahore. Participants were registered nurses and random sampling technique was used to select the sample. Sample size was 200, margin of error was 0.5% and confidence level was 95% and data was collected through direct observation. The results showed that more than 50% nurses' practices were medium. Majority of the nurses had appropriate practices regarding NG tube feeding. Training intervention could improve nurses' performance regarding NGT feeding. Thus, it can be appropriate and useful in improving the quality of care for the patients.

Keywords: Knowledge, Nasogastric tube feeding, Nurses, Observation, Practices

INTRODUCTION

Previous studies revealed that knowledge and practices regarding nasogastric tube feeding are inappropriate. The best evidence-based nasogastric tube feeding management is essential to realize health care progress. However, tube feeding methods have been recognized in developed countries with a greater focus on ICU and critical setting. No studies have been done on this area in Government public hospitals. However, severe illness and need for enteral nutrition is common in some of the city largest hospitals. Some of these units have no clear guidelines for nasogastric tube feeding practices.(Pereira et al., 2020).

Nasogastric tube feeding refers to the delivery of nutrients and drugs through the feeding tube by nose into the stomach.(Burnand and Curry, 2019).

asogastric feeding is recommended for nutritionally ill patients who cannot use a proper or safe oral diet. Sufficient amount of food is required for proper cell functioning and patients admitted in hospital have different nutritional needs than a normal person. During the stay in intensive care unit, there are a lot of factors that lead to development of malnutrition such as appetite change, food ingestion and absorption difficulty, digestive system problems aggregate requirement of nutrition due to stress. Studies have predicted the malnourishment ratio for critical care patients to be 30-55%, which leads to immune deficiency and delayed wound healing. Patients with malnutrition suffer from a greater threat of infection, weakness of the breathing muscles, and difficulties in stopping of the patient from ventilator machine at the end duration of hospitalization increased. (Al-Jalil et al., 2019).

Nutrition is very essential part for treating the many diseases and directly interferes in pathophysiological

variations and serious outcome of the diseases. Most of the critical patients in ICU unable to ingest the essential nutrition as like common people. On the other hand, serious patients suffer from a serious illness or injury, which causes inflammatory and hormonal reactions to stress throughout the body. Therefore, an individual's life is at risk from severe metabolic changes. In addition, if nutritional support is insufficient, it may lead to nutritional deficiencies. (Babapour et al., 2016)

Nasogastric tube feeding for patients in intensive care units is a good nutritional method that nurses have the responsibility of implementing. Improving the performance of nurses in nasogastric tube feeding decreases hospital costs and produces improved clinical outcomes for patients (Mehrnoosh et al., 2018)

Tube feeding also known as enteral nutrition, can be given by nasogastric tube. Nasogastric tube feeding (NG) is used for relatively short periods of time, especially when used for feeding; it is a frequent use of enteral nutrition. NG feeding is for a patient who has a working GI track but is unable to take oral nutrition or adequate intake. The NG tube is a thin, soft tube that runs from nostril through the drainage, to the esophagus and then to the stomach through which the patient is feeding and medication. (Mohammed et al., 2019)

Intensive care units are most important for the care of critical patients. However, there is still a big difference between idealistic theory and real performance. Therefore, the use of a complete guide can decrease this gap and increase the excellence of nursing care in the intensive care unit (Ghahfarrokhi et al., 2016).

Proper nutrition support is essential for the comprehensive management of critical patients in intensive care units. Specialists always strive to improve the value of care and audit existing practices in the ICU, with the goal of improving healthcare delivery. Enteral feeding is an actual way of nurturing patients who cannot meet their nutritional needs by mouth.(Parrish and McCray, 2019)

In the duration of hospitalization, patients with critical disease have iron, vitamins, minerals and protein malnutrition, and require nutritional food and drug intervention via nasogastric tube.

Hence, these patients regularly need a nasogastric tube to confirm that their daily nutritive and medical needs are met. The design of these strategies allows the transmission of undesirable pathways such as intravenous rout such nutrition and medicines.(Gimenes et al., 2019)

Methods for confirmation of placement nasogastric tube feeding included pH paper test, X ray, litmus paper test, biochemical markers, ultrasound, electromagnetic, visualization, observation for presence of bubbling and manometer techniques (Fan et al., 2017)

Hand wash is essential practice for nasogastric tube feeding. (Marar et al., 2019)

Put the patient in semi-fowler's position for proper nasogastric tube feeding. Semi-fowler position comfort for gravity to unfilled abdomen after feeding and stop aspiration.(Potter et al., 2016)

Administration of food and drugs via nasogastric tube flush of sterile water given 30ml-50ml.Keep the food at room temperature for nasogastric feeding and check the expiry date .Food shake softly before using.(Burnand and Curry, 2019)

Every drug should be given separately in the same syringe or mortar and pestle to remove the risk of in relations between the drugs. Do not crush open capsules or tablets until another formulation or medication is unavailable. Some drugs are not crushed like enteric coated, cytotoxic drug, hormonal and modified release. (Reignier et al., 2013)

During nasogastric feeding oral care must be done for prevention of multiple infections like pneumonia. Risk of infection rate increase due to hospitalization (Hamuro et al., 2018)

Background

All living human beings need eatables to live a life. The European Council (2003) discussed that healthy and safe selection of food and nutrition is a basic need for all patients. Proper food and healthy nutrition is very essential for the wellbeing and health of both sick and well persons. Nasogastric tube feeding essential for those patients who have with orally intake advised by the doctor. The patients are managing tube feeding by nurses. For the technique of nasogastric tube feeding registered nurses and nurse technician's directly involve.

Problem Statement

Previous studies revealed that knowledge and practices regarding nasogastric tube feeding are inappropriate.

The best evidence-based nasogastric tube feeding management is essential to realize health care progress. However, tube feeding methods have been recognized in developed countries with a greater focus on ICU and critical setting; No studies have been done on this area in Government public hospitals. However, severe illness and need for internal nutrition are common in some of the city largest hospitals. Some of these units have no clear guidelines for nasogastric tube feeding practices.(Pereira et al., 2020)

In practice, these variations may be related to gaps in knowledge. The advice that has been suggested also that internal nutrition affects the nurses' decisions. Nasogastric tube feeding practice is seriously influence decision-making by nurses. Nurses report issues such as

persistent lack of gastric residual volume and non-management (Mohammed et al., 2019).

Purpose of Study

The purpose of this study is to evaluate the impact of educational intervention on nurse's knowledge and practices regarding drug and food execution through nasogastric tube. Assess the level of nurses' knowledge about drug and food execution through nasogastric tube. Determine the level of nurses' practice about drug and food execution through nasogastric tube. Provide enteral nutrition to adult critically ill patients in the ICU.

Research Question

1. Assess the level of nurses' knowledge about drug and food execution through nasogastric tube?
2. Determine the level of nurses' practice about drug and food execution through nasogastric tube?
3. What is the effect of educational intervention on nurses' practices regarding nasogastric tube feeding?
4. How do nurses provide enteral nutrition to adult critically ill patients in the ICU?

Conceptual Definitions

Nurses knowledge

Awareness, experience and skills of nurses about nursing procedures (McArthur et al., 2017)

Nurses Practice

Actual application or use of standards guidelines of any procedure by nurses (Berman et al., 2017).

Nasogastric tube feeding

A nasogastric tube is a thin small tube inserted into stomach via nose. Liquid diet is given to the patient through this tube. This process is called nasogastric tube feeding (Dysplasia, 2016).

Operational Definition

Nurses Knowledge

Information, facts, and ideas of nurses regarding nursing procedures.

Nurses Practices

Use the standard guidelines and policies regarding nursing procedures like nasogastric tube feeding.

Nasogastric tube feeding

A tube is inserted from nose to the stomach. Food and drugs are given through this tube.

Scope of the study

Assess the nurses' level of enteral nutritional knowledge in the critical units. Assess the current practice of nurses in enteral nutritional support. The environmental factors affecting nurses' practice in enteral nutrition in the critical units

Limitations

The sample size is 200 nurses and study duration is short. Data is collected from three differenthospitals so findings could not be generalized to all hospitals.

Significance of the study

Although the statement which claimed that "best practices should be applied without delay, rather than data collection, which can reasonably demand the extent of the problem.

In order to get the proper support and to pay more attention when solving it, it is considered necessary to present the scientific evidence of the problem in the order of hospital setting. Who point out that before improving nutrition support practices, it is important to know what is in practice, since identifying the difference between best practice and current practice will help in strategic intervention. Therefore, addressing this problem should begin with identifying the current status of nurses' knowledge and practices. Without good internal nutrition knowledge, nurses cannot provide proper nutritional support. It is important to study the current level of knowledge and practice regarding nasogastric tube feeding nutrition in developing country where nurses have never been studied (Pereira et al., 2019).

Framework

Conceptual models that identify the link among nurses' competencies and patient characteristics are important, because they confirm high excellence care results. A

conceptual model of this study was developed from the American Association of Critical Care Nurses (AACN) coordination models for patient care.

This model assisted to separate the variables in study and describe their relationships. The three components of the model that make up a professional model of practice are: nurse competence, patient characteristics, and health care environment or system. The authors also say that the eight nurses 'abilities have been developed as a framework for clarifying nurses' work and that they can be used to differentiate practices, and to ensure that the nurse's competence links to the needs of the patient. The 12 model environments identify the circumstances in which the patient is needed and the nurse's competence.

Literature review

An observational study conducted in Nairobi. Sample size was 26. The data was collected between April 15th and 26th in 2019. An observation sheet has been used as a helpful tool in collecting data during the observations. Results showed that percentage of hand washing before doing any procedure is very low n=5 (Leppänen, 2019).
Put the patient in semi-fowler's position for proper nasogastric tube feeding. Semi-fowler position comfort for gravity to unfilled abdomen after feeding and stop aspiration (Potter et al., 2016).

A case control study was conducted in shahid Faghihi and Nemazee hospital. Study duration was March 2014 to May 2016. Sample size was n=82. Data was collected through questionnare. The study results revealed that before and after the administration of food and drugs via nasogastric tube, flush of sterile water 30ml-50ml should be given. Keep the food at room temperature for nasogastric feeding and check the expiry date. Food shake softly before using (Burnand and Curry, 2019).

A randomized trial study was conducted in France. Study duration was May 2010 to March 2011. Sample size was n=499. According to this study every drug should be given separately in the same syringe or mortar and pestle to remove the risk of in relations between the drugs. Do not crush open capsules or tablets until another formulation or medication is unavailable. Some drugs are not crushed like enteric coated, cytotoxic drug, hormonal and modified release. During nasogastric feeding, oral care must be done for prevention of multiple infections like pneumonia. Risk of infection rate increases due to hospitalization (Hamuro et al., 2018).
A quasi-experimental study was conducted in central hospital Taiwan. Sample size was 54 staff nurses. According to this study, methods for confirmation of placement nasogastric tube feeding included pH paper test, auscultation with insufflations of air, X ray, litmus paper test, biochemical markers, ultrasound, electromagnetic, visualization, observation for presence of bubbling and manometer techniques.

A descriptive analytical cross-section was done by Alhassan et al., in 2019. This study revealed the nurses adherence to standard guidelines on nasogastric tube feeding. Sample size was 113 nurses. Data was collected through four ponit likert scale. Results showed nurses practices regarding nasogasrtric feeding were inappropriate. Nurses's trainings required to update the knowledge and upgrade the practices according to standard protocols (Alhassan et al., 2019).

Shahin et al., done a study in 2012. According to this study chances of malnutrition increases in critically ill patients due to high metabolic rate and stresssors. In order to meet their nutritional needs, nasogastric tube feeding is preferred method. It is harmless and non expensive method. Nurse has a major role in nasogastric tube and feeding so nurses knowledge and practices regarding nasogastric tube feeding impact patient outcome. Qausi experimental design was used in this study. Sample size was 85 nurses working in intensive care unit. Convenient sampling technique was used in this study. Data was collected through questionnaire and check list. Participants were educated through an instructional programs. Results showed that instructional program has a positive impact on nurses knowledge and practices. Knowledge and practices of nurses improved. The study suggested that written updated guidelines regarding nasogastric tube feeding should be provided to the nurses to ensure safe nursing practices (Shahin et al., 2012)

Another descriptive correlational study was conducted by Babapour et al., in 2016. This study describes that the patients who are unable of oral intake feed through nasogastric tube. Inappropriate use of this procedure causes many side effects. This research was conducted to explore nurse's practices regarding nasogastric tube feeding in intensive care unit. Sample size was 100 nurses and data was collected through check list. Participants were observed directly. Results revealed that the mean score of nurses' performances regarding nasogastric tube feeding was intermediate (57.49%) which was less than standard score. Nasogastric tube clamping before feeding, lavage of 30ml water and measurement of stomach content residual were weakest practices. This study concluded that continue educational programs were required to update the practices regarding nasogastric feeding (Babapour et al., 2016).
A cross sectional descriptive study about nurse's performance regarding nasogastric feeding was done by Al-Hawaly et al., in 2016. Study included 70 participants working in three different hospitals. Nurses knowledge was assessed by questionnaire and practices were observed by direct observation. Observation is done by a check list. Results revealed that knowledge and practices were up to satisfactory level (60%). The study concluded

that there is a gap between knowledge and skills of doing nasogastric tube feeding. Educational trainings required to update the knowledge and practices regarding nasogastric tube feeding procedure (Al-hawaly et al., 2016)

Das et al. (2015) did a cross sectional descriptive study to evaluate the knowledge and practices of nurses about nasogastric tube feeding in selected hospitals. Purposive sampling was used and data was collected from one hundred nurses. Data was collected through structured interview schedule. Results revealed that 44% nurses had above average knowledge and 44% had below average knowledge. 80% nurses have practical skills before giving feeding, 74% nurses have practical skills during giving nasogastric feeding and 73% nurses have practical skills after giving nasogastric feeding. There is a gap between knowledge and practices of staff nurses. The study concluded that seminars and workshops should be arranged for staff nurses to improve the knowledge and skills (Das et al., 2015)

METHODOLOGY

Problem statement

Previous studies revealed that knowledge and practices regarding nasogastric tube feeding are inappropriate.

Research design

Qausi experimental study design is used in this study**.**

Study Area

Data will be collected from three different hospitals in Lahore.

Target population

The target population of the study is 200.

Sample size

Sample size is calculated through online sample size calculation. Sample size n=132, confidence level is 95% and margin of error is 5%.

Inclusion criteria

Registered nurses working in medical, surgical and ICU wards are included in this study.
Nurses willing to participate in the study.
Nurses who have at least six months experience.

Exclusion Criteria

Nurses who were not willing to participate in the study.
New appointed nurses who have less than six months experience.
Student nurses were excluded.

Sampling technique

Random sampling technique is used in this study.

Sample Instrument

Nurse's practices will be observed by check list consist on 18 variables.

Reliability

The reliability of the instrument is checked by Crohnbach alpha which is 0.83

Data collection technique

Data is collected through check list which contain two sections. First section contains demographic data which include gender, age, work shift, and employment status. Second section contain 18 question. Each question has two options "yes" and "no". Scoring is based on responses of yes(1) and no(2). Minimum score is "1" and maximum score is "18". Nurses performance is distributed in three categories, (0-6) weak, (7-12) medium and (13-18) excellent.

Data analyzing procedure

Data will be entered on computer software SPSS version 21 for evaluation.

Ethical consideration

- Written approval will be taken from the participants.
- Data collected from the participants will be kept confidential.
- Participants will remain unspecified throughout the study.

Table 1. Demographic data

S/NO	Variables	Before Intervention			After Intervention	
		Frequency		Percent	Frequency	Percent
Q.1	AGE	20-30	130	65%	130	65%
		31-40	70	35%	70	35%
		41-50	0	0%	0	0%
Q.2	EXPERIENCE	< 1YEAR	0	0%	0	0%
		1YER-5YERS	60	30%	60	30%
		6YERS-10YERS	90	45%	90	45%
		11YERS-15YERS	50	25%	50	25%
		TOTAL	200	100%	200	100%
Q.3	QULIFICTION	MSN	29	14.5%	29	14.5%
		BSN	74	37%	74	37%
		G. NURSING	97	48.5%	97	48.5%
		TOTAL	200	100%	200	100%
Q.4	DUTY SHIFT	MORNING	80	40%	80	40%
		EVENING	90	45%	90	45%
		NIGHT	30	15%	30	15%
		TOTAL	200	100%	200	100%

- It will be informed to the participants that there is no risk or harm during the study.
- It will also inform to participants that they can withdraw at any time during the process of the study.
- Data will be kept under key and lock. In laptop it will be kept under password.

Dependent Variable

Nurses' performance is dependent variable.

Independent Variable

Nasogastric tube feeding is independent variable. This article will show that fine-bore nasogastric tube feeding can be facilitated for patients when long term percutaneous endoscopic gastrostomy (PEG) or radiologically inserted gastrostomy (RIG) options are not suitable.

RESULT

Findings showed that there was no statistically significant difference between demographic characteristics before intervention and after.

Table 1 shows the socio-demographic characteristics of studied nurses. Most of the studied nurses had 20 years (65%) and less than 30 years (35%). As regard graduation, about two third of them had secondary diploma (48.5%). As regard years of experience, about half of them had more than 6-10 years of experience (45%). Most of the studied competent nurses (40%) had morning shift and 45% performed evening shift.

According to the checklist scoring, nurses' performance scores were considered excellent (13-18), medium (7-12), and weak (0-6). Table 2 shows scores of nurses' performance in "before intervention" were medium. After intervention, scores of nurse's performances reached the excellent level.

In this study, before intervention 20% participants have good practices and after intervention 60% participants have good practices regarding proper hand wash according to standard protocol.

Table 2 and variable 2 according to this table, 85.5% before intervention and 94.5% after intervention tightens the nasogastric tube with tape to prevent displacement feeding tube and 14.5% did not. 5.5% did not after proper application according to standard protocols.

Table 2 and variable 3 according to this table, 84.5% before intervention and 87.5% after intervention participants put the patients in semi-fowler's and fowler's position and 15.5% before and 12.5% after did not put the patients in proper position before nasogastric tube feeding.

Table 2 variable 4 according to this study, 60% before and 72% after intervention participants ensure the NGT stays in the correct location and 40% before and 28% after did not ensure correct location. In all sections ensured proper placement of the enteral nutrition tube in the patients before the gavage, and their heads were

Table 2. Knowledge regarding nasogastric tube feeding

	Variables		**Before Intervention**		**After Intervention**	
S/NO	Items		Frequency	Percent	Frequency	Percent
Q.1	He/she washes his/her hands before starting the feeding.	YES	40	20.0%	120	60.0%
		NO	160	80.0%	80	40.0%
Q.2	He/she tightens the tube to the patient's nose with a piece of tape to prevent displacement.	YES	171	85.5%	189	94.5%
		NO	29	14.5%	11	5.5%
Q.3	He/she puts the patient in fowler's or semi-fowler's position.	YES	169	84.5%	175	87.5%
		NO	31	15.5%	25	12.5%
Q,4	He/she ensures the NGT stays in the correct location.	YES	120	60.0%	144	72.0%
		NO	80	40.0%	56	28.0%
Q.5	He/she controls food temperature.	YES	170	85.0%	172	86.0%
		NO	30	15.0%	29	14.0%
Q.6	He/she closes the NGT by pressing his/her finger before attaching the syringe to the tube to prevent entry of air to stomach.	YES	180	90.0%	182	91.0%
		NO	20	10.0%	18	9.0%
Q.7	He/she gavages 30 mL water before food or drug gavage.	YES	128	64.0%	172	86.0%
		NO	72	36.0%	28	14.0%
		TOTAL	200	100%	200	100%
Q.8	He/she clamps the tube and attaches the tip of the syringe containing food materials to the NGT.	YES	146	73.0%	160	80.0%
		NO	54	27.0%	40	20.0%
		TOTAL	200	100%	200	100%
Q.9	He/she holds the syringe upright so the food will enter the stomach by gravity.	YES	170	85.0%	190	95.0%
		NO	30	15.0%	10	5.0%
		TOTAL	200	100%	200	100%
Q.10	He/she inserts food gently into the NGT.	YES	170	85.0%	180	90.0%
		NO	30	15.0%	20	10.0%
		TOTAL	200	100%	200	100%

Table 2. Continue

Q.11	He/she gavages 50 mL of water after food or drug gavage to wash the NGT.	YES	180	90.0%	190
		NO	20	10.0%	10
		TOTAL	200	100%	200
Q.12	He/she puts the patient in semi-fowler's position for at l,l;'east half an hour.	YES	110	55.0%	143
		NO	90	45,0%	67
		TOTAL	200	100%	200
Q.13	He/she stops the gavage and calls the doctor if the patient doesn't tolerate the gavage.	YES	110	55.0%	136
		NO	90	45.0%	64
		TOTAL	200	100%	200
Q.14	He/she measures and records amount, time of gavage, and intolerance of the patient.	YES	126	63.0%	152
		NO	74	37.0%	48
		TOTAL	200	100%	200
Q.15	He/she avoids drug wastage while crushing.	YES	180	90.0%	190
		NO	20	10.0%	10
		TOTAL	200	100%	200
Q.16	He/she washes the mortar after each application.	YES	32	16.0%	147
		NO	168	84.0%	53
		TOTAL	200	100%	200
Q.17	He/she cares for the mouth routinely.	YES	160	80.0%	167
		NO	40	20.0%	33
		TOTAL	200	100%	200
Q.18	He/she records the patient's response during all stages of gavage.	YES	131	65.5%	160
		NO	69	34.5%	40

placed at 30-45 degree. In the results Xu et al. showed that 43% of nurses checked the location of the tube before feeding after intervention. Also, the majority of nurses controlled the patient's head to be placed in 30-45-degree positions before feeding. which was different from the results of this study.

Table 2 variable 5 according to this study, 85% before intervention and 86% after participants control food temperature and 15% before intervention and 14% after not proper check food temperature before nasogastric tube feeding.

Table 2 variable 6 according to this study 90%, before intervention and 91% after participants attached the syringe to the tube to prevent entry of air to stomach and 10% before and 9% after were not proper prevent regarding air entry.

Table# 2 variable 7 according to this study, 64% before intervention and 86% after 30 ml water before food or drug gavage and 36% before intervention and 14% after not in proper way according to stander protocols.

Table 2 variable 8 according to this study, 73% before intervention and 80% after participants were clamping the tube and attached the tip of the syringe containing food materials to the NGT and 27% before intervention and 20% after were not in proper way according to stander nursing protocols.

Table 2 variable 9 according to this study, 85% before intervention and 95%after participants holds the syringe upright so the food will enter the stomach by gravity 15% before and 5%after were not holds proper.

Table 2 variable 10 according to this study, 85% before and 90% after intervention participants insert food gently in to the NGT and1 5% before and 5% after not insert food gently properly.

Table 2 variable 11 according to this study. 90% before and 95% after intervention participants were gavages 50 ml of water after food or drug gavage to wash the NGT 10% before and 5% after were not proper according to nursing protocols.

Table# 2 variable 12 according to this study, 55% before and 71.5% after intervention participants were put the patients in semi-fowler's position for at least half an hour and 45% before and 28.5% after not make proper position after feeding.

Table 2 variable 13 according to this study, 55% before and 68% after intervention participants were stopping the gavage and call the doctor if the patient doesn't tolerate the gavage and 45% before and 32% after were not inform to the doctor.

Table 2 variable 14 according to this study 63% before and 76% after intervention measures and records amount, time of gavage and intolerance of the of the patients and 37% before and 24% were not measures and records the gavage.

Table 2 variable 15 according to this study 90% before and 96% after intervention participants were avoiding drug wastage while crushing and 10% before and 4% after waste drug during NGT.

Table 2 variable 16 according to this study 16% before and 73.5% after intervention participants washes the mortar after each application and 84% before and 26.5% after were not proper wash according to standard protocols. Theses finding were supported by Zhu LL et al., 60% of the nurses did not have enough knowledge about dosage forms; 30% did not have enough knowledge.

About the possibility of crushing or opening the drugs, and 80% got all prescription drugs to patients via NGT at the same time with the same syringe

Table 2 variable 17 according to this study 80% before and 83.5% after mouth care routinely and 20% before and 16.5%after not properly.

Table 2 variable18 according to this study65.5% before and 80% after intervention participants records the patient's response during all stages of gavage 34.5% before and 20% not maintained records properly.

DISCUSSION

The findings of this study showed that performance scores of nurses in the field of NGT was at a medium level. The reasons for this can be lack of involvement of pharmacists in clinical rounds inadequate knowledge of nurses in the field of nutrition using NGTs workload of nurses, high rate of patients under care lack of interaction and collaboration between physicians and nurses. A study by Marshall AP and West SH, revealed that nurses play a major role in appropriate management of NGT, but there were different nursing skills, and knowledge was insufficient in relation to the type of feeding

The present study included 200 nurses, all of them participants were female 65.0%participants were 21-30yrs old and 35.0 % were 31-40yrs old. In this study 30% participants have 1-5yre experience, 45% 6-10yrs experience and 50% have 11-15yrs experience. According to this study 5% participants were MSN,40% were BSN and 55% general nursing. According to this research 40% participants have morning, 45% have evening and 15% have night shift. According to the results, there was a significant difference in the number of nasogastric tubing feeding and the variables of age, job status, medical work experience, work experience of the intensive care unit, education level and nasogastric tube placement. In consistent to this finding, Ahmadli (2015) also found no statistical, significant relationship between nursing function and the variables of marital status, employment status and working experience. Furthermore, Bedier et al (2016) and Abdullah (2014) also revealed no statistical, significant difference between

nursing performance and age, working experience and ICU working experience.

Nurses' practices observing with evidence-based guidelines about nasogastric tube feeding have conclusive influence on preventing most of the complications of the patients. The present study elucidated that only a few nurses had adequate level of performance after intervention finding of this study should be improve moderate to excellent. With regard to practice, it was found that more than half (80%) of the respondent nurses did not wash hands before intervention NGT feeding and after intervention (60%) hand wash practice improve regarding NGT feeding. Theses finding were supported by Sima-Sadat Hejazi et al(2019) one of the pre-feeding nursing cares evaluated in this study was washing and disinfecting hands before care, which was properly done by 14%, inappropriately done by 1.8%, and was not done by 84.3%. In a study that aimed to sanitize nurses' hands in intensive care units, only 16.98% had taken hygienic measures, which was far less than expected. Results of Ahmadli and Dehghani et al are relevant with the aforementioned findings. In this study (40%) of the participants did not ensures the NGT stays in the correct location before intervention 94.5% participants improve after intervention. Theses finding were not supported by In Chan et al (93.2%) of nurses confirmed tube proper positioning before feeding. Whereas, Gupta et al demonstrated that merely 9.09% of the nurses lacked control of tube proper positioning and all nurses controlled the stomach residual content. Lack of controlling stomach residual content is one cause of aspiration and its side effects. Therefore, it essentially requires proper functioning of nurses to prevent any side effects. In contrast, majority (36%) participants did not flushed tube with 30 ml water before feeding. Regarding clamps the tube and attaches the tip of the syringe containing food material to the NGT (27%) participants did not proper according to stander protocols. Regarding oral and nasal hygiene, it was found that only (80%) of nurses performed mouth and nasal care but not don before and after feeding properly. In contrast, majority (84%) participants did not washes mortar after each application of drug. Concerning patient position, it was observed that (45%) of the participant nurses kept the patients in the semi fowler position after feeding at least half an hour to prevent patients from aspiration whereas, (37%) measure and records amount, time of gavage intolerance of the patients. Mulaet al.(2014) found that majority of the respondents were having moderate practices specially checking the nasal patency, gastric residual volume and documentation, because all nurses involved in tube feeding had not received in-service training on tube feeding.

According to Abdullah et al (2014), low performance is associated to low level of knowledge, increase in number of patients and nurses' workloads as well as performance of nasogastric tube feeding by repetition and imitation; in this regard, continuous education based on evidence and global guidelines may be effective. In the present study, intervention improved the performance of nurses from moderate to excellent, this result is consistent with those of previous studies. In the study of Hazrati-Marangloo A et al., knowledge and performance of the intervention changed optimally after education so that 97.1% of the nurses were promoted to a good level.

CONCLUSION

Training intervention could improve nurses' performance regarding NGT feeding. Thus, it can be appropriate and useful in improving the quality of care for the patients. It is recommended to consider training interventions as effective, convenient, and cheap in all nursing care

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