Knowledge and Practices of Pediatric Nurses about Pre and Postoperative Care of Intestinal Obstruction

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Abstract

Background: Intestinal obstruction in children is a partial or complete blockage that prevents food or liquid from passing through intestine. **Aim of the study:** Assess knowledge and practices of pediatric nurses about pre and postoperative care of Intestinal obstruction. **Design:** A descriptive correlational research design was applied on all available nurses (90 nurse) who are working in neonatal intensive care unit, pediatric intensive care unit and surgery department. **Tools of Data Collection:** A structured interview questionnaire sheet and observational checklists. **Results:** All studied nurses had unsatisfactory knowledge about intestinal obstruction in children and the majority of them had incompetent practice. Also, there was no statistical significant difference between total nurses' knowledge and their total practice. **Conclusion:** the study concluded that all studied nurses had unsatisfactory level of knowledge and the majority of them had incompetent level of practice about pre and postoperative care of intestinal obstruction in children with no statistical significant correlation between total nurses' knowledge and their total practices. **Recommendation:** Training educational programs and workshops regarding pre and postoperative care of intestinal obstruction should be provided.

***Keywords*:** Children, Intestinal Obstruction, Knowledge, Practice, Pediatric Nurses, Pre and Postoperative care.

1. Introduction

Intestinal obstruction in children may occur at any point in the gastrointestinal tract from the esophagus to the anus due to an anatomical abnormality that produces bowel movement failure or due to interruption in the forward flow of intestinal contents. The effect on whole-body fluid/electrolyte balances and the mechanical affect that increased pressure on intestinal perfusion are the most important concerns in relation to intestinal obstruction. Proximal to the point of obstruction, there will be dilatation of the intestinal tract as a result of intestinal secretions and swallowed air. The intestinal content will fail to pass as a result of the

obstruction which will lead to cessation of bowel movements **(Mohammed et al., 2017)**.

The mortality rates of intestinal obstruction in children range between 21% and 45% in developing countries and less than 15% in Europe. Sepsis followed by anastomotic leakage were the most common causes of mortality. Sepsis was mainly due to late management leading to perforation or in cases of meconium ileus leading to peritonitis **(Verma et al., 2016)**.

Causes of Intestinal obstruction in children include atresia, anorectal malformation, intussusceptions, malrotation and Hirschsprung's disease **(Alshareef et al., 2018)**. Anorectal malformations (41%) is the most frequent cause of intestinal obstruction is, followed by esophageal obstruction (24%) and duodenal obstruction (20%). Classification of intestinal obstruction include mechanical, which is either intrinsic (atresia, stenosis) or extrinsic (malrotation), functional, such as (Hirschsprung's disease) and according to the level of obstruction, which can be high, medium or low (**Vargas et al., 2018)**.

Signs of intestinal obstruction in children are vomiting, abdominal distension and failure to pass meconium in the first 24- 48 hours of life. Specific criteria of clinical manifestation help in determining the location of the obstruction. Nausea and vomiting which is projectile in nature, contain bile and vomiting usually relieves abdominal colic developed rapidly in children suffering from proximal small intestinal obstruction. Vomiting from more distal obstruction of the small intestine is more gradual in onset; the vomiting content may be organ-brown and foul smelling like feces. Persistent abdominal colic is seen with lower intestinal obstruction and colic that comes and goes in waves is the characteristic sign of mechanical obstruction **(Medscape, 2021)**.

The diagnosis of intestinal obstruction in children requires taking a detailed history, careful physical examination and radiographic imaging. A plain abdominal radiograph is very necessary to make a diagnosis because the gas pattern is distinctive and give a clue to the site of obstruction. Early diagnosis and treatment lead to a better outcome. Small bowel obstruction associated with atresia, volvulus and meconium peritonitis identified through the prenatal ultrasound examination. The lesions can then be anticipated and an

organized management plan developed for delivery and treatment of children **(Verma et al., 2016)**.

The treatment of intestinal obstruction in children includes two separate phases resuscitation and definitive surgical treatment. Surgery in children is a challenging issue, especially in developing countries. Significant advances in pediatric surgery have resulted in the improved survival of newborns with congenital malformations. Exploratory laparotomy was performed in all the cases and type of surgical intervention carried out as per the cause i.e. resection and anastomosis in jejunoileal atresia, end colostomy in Hirschsprung's disease and Ladd's procedure in malrotation gut. For type 1 duodenal and ileal atresia, duodenoplasty and enteroplasty were done **(Glasser, 2021)**

Pediatric nurses play a vital role in caring for children suffering from intestinal obstructions. Preoperative and postoperative nursing care include (administration of medications, parenteral feeding, enema administration, nasogastric decompression, measuring vital signs, check the nasogastric tube insertion). Also, preoperatively pediatric nurses check the routine laboratory tests before surgery such as (complete blood count, electrolyte tests and coagulation studies). In addition to the preparation of children and their parents for (temporary) colostomy is an important nursing issue requiring careful attention **(Potter et al., 2016)**.

Pediatric nurses have a critical role postoperatively for children suffering from intestinal obstruction as (suctioning, care of the wound, colostomy care, fluid and electrolyte balance, thermoregulation, positioning, prevention of infection, instructing parents about avoiding constipation and providing a diet rich with fibers) **(Robin et al., 2017)**.

Significance of the study:-

Intestinal obstruction in children occurs in 1/1500 live births in Egypt **(Franke et al., 2014)**.The mortality rates of intestinal obstruction in children range between 21% and 45% in developing countries and less than 15% in Europe as a result of postoperative complications **(Verma et al., 2016)**. According to patients' admission and discharge records in Suez Canal University Hospitals, the number of children suffering from intestinal obstruction admitted to hospital in (2021) was70 children (40 neonates admitted to neonatal intensive care unit (NICU), 10children admitted to pediatric

intensive care unit (PICU) and 20 children admitted to surgical unit).

Pediatric nurses are the primary caregiver for children suffering from intestinal obstruction and have a vital role in caring them and preventing postoperative complications. Accordingly, this study aims to assess knowledge and practices of pediatric nurses about pre and postoperative care of intestinal obstruction.

The aim of the study

This study aimed to assess knowledge and practices of pediatric nurses about pre and postoperative care of intestinal obstruction.

Research questions

1-Are pediatric nurses having satisfactory knowledge about pre and postoperative care of intestinal obstruction?

2-Are pediatric nurses having competent practices about pre and postoperative care of intestinal obstruction?

3-Is there a significant relationship between knowledge and practices of pediatric nurses about pre and postoperative care of intestinal obstruction?

2. Subject and Methods

Study design

A descriptive correlational research design was used in the study.

Study setting

The study was conducted in Neonatal Intensive Care Unit (NICU), Pediatric Intensive Care Unit (PICU) and Surgery Department affiliated to Suez Canal University Hospitals.

Study subjects

A comprehensive sample comprised all pediatric nurses (100) who working in the previously mentioned settings, where 50 working in NICU, 30 working in PICU and 20 working in the surgery department and caring of children suffering from intestinal obstruction regardless of the age, gender, years of experience and educational level.

Tools of data collection

Tool 1: A Structured Interview Questionnaire Sheet:

The tool was developed by the researcher after extensive review of recent and related literature and then translated into simple Arabic language to assess pediatric nurses' knowledge and practices about pre and postoperative care of intestinal obstruction. A questionnaire was filled by the pediatric nurses working in the previously mentioned settings. A questionnaire composed of the

following three parts:

Part I-Demographic characteristics of the studied nurses such as age, gender, years of experience, job position, level of education and place of work.

Part II-Studied nurses' theoretical knowledge about intestinal obstruction in children and pre and postoperative care, which included: General knowledge about intestinal obstruction in children as previous training about intestinal obstruction in children, definition, causes and clinical manifestations of pediatric intestinal obstruction and knowledge about causes of intestinal obstruction in children (duodenal obstruction, jejunoileal atresia, malrotation, meconium ileus, Hirschsprung disease, Intussusception , intraperitoneal adhesions, anorectal malformation and incarcerated pediatric inguinal hernia).

Part III-Studied nurses' practical knowledge about intestinal obstruction in children as diagnosis, treatment and pre and post operative care , Colostomy care , nasogastric tube feeding and enema administration.

Scoring System of Nurses' Knowledge:

The total number of questions that assess nurses' knowledge was 80. The studied nurses' answers scored as I don't know or incorrect answers had score "Zero" and correct answers had score "one". The total knowledge scores were 80. The scores were summed up and converted into percent score (100%).The knowledge level considered "satisfactory" if the total knowledge score was ≥85% and considered "unsatisfactory" if the total knowledge score was<85 %(Amin et al., 2020).

Tool 2 -Observational Checklists that were adapted based on Bowden& Greenberg, (2016), MacDonald, (2013):

Observational checklists used to assess the studied nurses' actual practices regarding care of children suffering from intestinal obstruction which included preoperative care, postoperative care, nasogastric tube insertion, nasogastric tube feeding (intermittent – continuous), gastric decompression , enema administration, stoma care and wound care.

Scoring system:-

The pediatric nurses' actual practices were classified as "not done" had a score "zero" and "done" had a score "one". Each observational checklist/procedure had a separate total/mean score and separate

competent level, the total practice mean score was calculated after considering each procedure mean score and the total mean score considered "competent" if the score was ≥85 % and considered "incompetent "if the score was <85%**(Abo Zeed et al., 2019).**

Validity of the study tools

The study tools was revised by three experts in the field of pediatric nursing and pediatric surgery for clarity, relevance, applicability, comprehensiveness, understanding and ease of implementation and according to their opinion minor modification were applied.

Reliability of the study tools

Internal consistency reliability of the tool was done according to Cronbach's Alpha and it was 7 for knowledge and practices.

Pilot study

The pilot study was carried out after developing the study tools and before starting data collection including 10% of the expected sample size that equal 10 pediatric nurse. The pilot study was done to evaluate the clarity and applicability of the study tool and to estimate time needed to fulfill the tool. After obtaining the results of the pilot study, modifications were done according to responses of pediatric nurses and the final form was developed. The sample of the pilot study was excluded from the study sample.

Field work

The actual fieldwork was carried out over a period of 6 month, which started from 1/5/ 2022 to 1/11/2022. The researcher was available permanently 3 days/week from 8.00 am to 2.00 pm in each setting for 8weeks as the following, NICU, PICU and surgery department by rotation to collect data, the data collected individually by interview.

Firstly. The researcher interviewed each nurse working in previously mentioned settings individually. The researcher introduced herself to the nurses and informed them about the aim of the study and the importance of assessing pediatric nurses' knowledge and practices about pre and postoperative care of intestinal obstruction.

After that, written consent was obtained from nurses after informing them about their rights. The questionnaire was filled by them; the approximate time to fill the questionnaire was 20:30 minutes.

Ethical considerations

An approval number $(\frac{142}{2/2022})$. was obtained from the Research Ethics Committee of the Faculty of Nursing/Suez Canal University before the study conduction The aim of the study and the nature of the study were explained to the studied nurses to gain their cooperation. Written informed consent from the studied nurses who participated in the study was obtained. The topic of the study did not touch religious, moral, ethical and cultural issues. All data collected in the current study were confidential, used only for the research purpose. In addition, the studied nurses who participated in the study have the right to refuse participation in this study or withdraw at any time.

Data analysis

Data collected through the questionnaire were coded, entered and analyzed using Statistical Package for the Social Sciences (SPSS version 23). Correlation test was used to test relationships between knowledge and practice. Chi-square test was used to test difference between demographic data and level of practice, P- value was set at <0.05 for significant results.

The following statistical techniques were used:

Percentage.

Mean score degree $\overline{X}$.

Standard deviation SD.

Monte Carlo for Chi square test, Chi-square test

Fisher exact test

Pearson Correlation (r test)

Proportion probability of error (P- value) and confidence interval.

Significance of results:

- When P<0.05, there is a statistically significant difference.
- When P<0.01, there is a highly statistically significant difference.

3. Results

Table (1) shows that, 51.1% of the studied nurses' age was ranging from 26 to less than 31 years old with mean ± SD = 27.07±3.35, while 63.3% of them were females. Regarding work place, 50.0% of the studied nurses were working in NICU while, 83.3% of them were staff nurse. Regarding level of education, 75.6% of the studied nurses were graduated from technical institute of nursing. Adding to 71.1% of the studied nurses did not have

information about intestinal obstruction in children while, practical experience was the source of information about intestinal obstruction for 60% of the studied nurses.

Figure (1) shows that 76.7% of the studied nurses had years of experience ranging from one year to less than 10 years while 4.4% of them had years of experience equal or more than 20 years.

Figure (2) shows that 63.3%of the studied nurses did not attend training courses about care of children undergoing intestinal obstruction surgeries while 36.7% attended training courses about care of children undergoing intestinal obstruction surgeries.

Table (2) clarifies that 72.2% of the studied nurses had correct knowledge regarding definition of intestinal obstruction in children while 27.8% of them had incorrect knowledge. Regarding most common causes of intestinal obstruction in children, 12.2% of the studied nurses had correct knowledge while 87.8% of them had incorrect knowledge. Adding to most common signs and symptoms of intestinal obstruction in children 41.1% of the studied nurses had correct knowledge while 58.9% had incorrect knowledge.

Table (3) verifies that, 33.1%, 37.3%, 35%, 36.5%, 29.2%, 38.3%, 31.7%, 38.3% & 36.1% of the studied nurses had correct knowledge regarding duodenal obstruction, Jejunoileal atresia, malrotation, meconium ileus, hirschsprung's disease, intussusception, intraperitoneal adhesions, anorectal malformation and inguinal hernia as causes of intestinal obstruction in children while, 66.9%, 62.7%, 65%, 63.5%, 70.8%, 61.7%,38.3%,61.7%&63.9% of them had incorrect knowledge respectively with total mean score 17.1±3.1.

Table (4) shows that, 38.9%, 33.8%, 31.3% & 32.2% of the studied nurses had correct knowledge about diagnosis ,treatment ,pre and post-operative care, stoma care, nasogastric tube feeding and enema administration while, 61.1%,66.2%,68.7% & 67.8% of them had incorrect knowledge respectively with total mean score 10.53±3.6 .

Figure (3) clarifies that, all of the studied nurses had unsatisfactory level of knowledge about intestinal obstruction in children.

Table (5) verifies that, 92.2%, 86.7%&84.4% of the studied nurses had competent practice level regarding preoperative care, intermittent or bolus

feeding and continuous drip enteral feeding respectively. Meanwhile, 52.2%, 43.3%&54.4% of them had competent practice level regarding post-operative care, enema administration and wound care. Adding to 100% of the studied nurses had incompetent level of practice regarding nasogastric tube care and stoma care. While 68.9% of them had competent level of practice regarding gastric decompression with total mean score 86.68±7.82.

Figure (4): shows that, 87.8% of the studied nurses had incompetent level of practice regarding care of children suffering from intestinal obstruction while, 12.2% of them had competent level of practice.

Table (6): clarifies that there was no a statistical significant correlation between total nurses' knowledge and their total practice (*P* =.123).

Table (7): verifies that there was no a statistical significant relationship between studied nurses' demographic characteristics (age, gender, work place, educational level, job position, experience and training courses) and their levels of practice as *p* value=(.313 ^{MC} ,.137$^{\#}$,.913 $^{\$}$, .842 $^{\$}$, .616$^{\#}$, .890 ^{MC}and.412$^{\$}$) respectively.

4. Discussion

Intestinal Obstructions are the most common surgical emergencies in children. Early and accurate diagnosis of intestinal obstruction and preventing postoperative complications are paramount for proper management. Therefore, pre and postoperative care is very important to achieve successful management of intestinal obstructions in children. This study aimed to assess knowledge and practices of pediatric nurses about pre and postoperative care of intestinal obstruction **(Elbaih et al., 2018)**.

The results of the present study **table (1)**, clarified that, half of the studied nurses' age was between 26 to less than 31 years old. This finding similar to **Mahmoud et al. (2023),** in a study entitled "Assessment of Nurses' Performance Regarding Care of Neonates having Tracheoesophageal Fistula" who illustrated that, more than half of the studied nurses, their age ranged between 25: < 30 years. This finding was in disagreement with **Abd Elfatah et al. (2023),** in a study entitled "Nurses' Knowledge and Practices Regarding Care of Neonates Undergoing Esophageal Atresia Surgery", who verified that more than half of them ranged in age from 30 to less

than 35 years old. From the researcher point of view, this differences may be due to most of the studied nurses were newly graduated.

The current study revealed that, less than two thirds of the studied nurses were females. This finding disagreed with **Al-Sudani, (2022),** who verified that, the majority of the nurses were females. This finding also disagreed with **Mahmoud et al. (2023),** who illustrated that, the majority of the nurses were females. From the researcher point of view, this may be related to Egyptian universities have accepting and encouraging male involvement in the studying of nursing few years ago.

The current study showed that, slightly more than three quarter of the studied nurses had technical institute degree. This finding was in agreement with **Mahmoud et al. (2023)**, who reported that nearly half of the studied nurses were technical nursing institute graduates. These findings contradicted with **Al-Sudani, (2022),** who found that, more than half of the studied nurses were secondary nursing school graduate. From the researcher point of view, this may be due to most of bedside nurses in governmental hospitals were technical nurses because bachelor nurses in the governmental hospitals are working as head nurses and playing administrative roles .

The current study verified that more than three quarters of the studied nurses had years of experience ranging from one year to less than 10 years **(Figure 1)**. This finding disagreed with **Mahmoud et al. (2023),** who revealed that more than two fifths of the studied nurses had years of experience less than 5 years. From the researcher point of view, this differences may be due to most of the studied nurses who working with children were recently graduated, some of the older nursing staff in holidays related to born new baby, caring of their children and other causes. Other older nurses working in medical registration or medication and supplies store in the department.

The current study found that, less than two thirds of the studied nurses did not attend training courses about intestinal obstruction in children (**Figure 2)**. This finding was in agreement with **El-Sharkawy et al. (2019),** in the study entitled "Effect of Nursing Intervention Guidelines on Nurses' Performance and Clinical Outcomes Related to Problems Accompanying Infants with Hirschsprung Disease" who reported that 40% of the studied nurses group did not attend any conferences or training courses on Hirschsprung Disease or its related nursing care. This finding disagree with **Abd Elfatah**

et al. (2023), who reflected that the minority of them attended training courses. From the researcher point of view, this difference due to the pediatric surgery physicians did not provided training courses about care of children undergoing intestinal obstruction many years ago.

Regarding nurses' knowledge about intestinal obstruction in children, **table (2)**, the present study found that, around one third of the studied nurses had correct knowledge about definition, causes and clinical manifestations of intestinal obstruction in children. This finding was in agreement with **Abo Zeed et al. (2019),** who clarified that, less than half of the studied nurses had satisfactory knowledge related to definition and causes of neonatal intestinal obstruction. From the researcher point of view, this difference may be due to all of the studied nurses are newly graduated and not specialized in pediatric surgery nursing field and some of them are not pediatric nurses.

Regarding nurses' knowledge about hirschsprung's disease (HD), the current study revealed that less than one third of the studied nurses had correct knowledge. This finding was in agreement with **El-Sharkawy et al. (2019),** who reported that knowledge of the studied nurses about HD, were poor before implementation of the nursing intervention guidelines (IGs) and their performance in pre and postoperative care were unsatisfactory.

Regarding nurses' knowledge about incarcerated pediatric inguinal hernia, the current study revealed that more than one third of the studied nurses had correct knowledge. This findings was disagree with **Ali et al. (2020),** in a study entitled "Effect of an Educational Program on Nurses' Performance Regarding Nursing Intervention for Infants Undergoing Inguinal Hernia Repair" who clarified that less than one quarter of studied nurses had good knowledge regarding inguinal hernia and nursing intervention of infant undergoing inguinal hernia repair in preprogram intervention. This may be due to inguinal hernia is the most common cause of intestinal obstruction in children (IO) with highly incidence rate so studied nurses had experience in caring children with inguinal hernia.

Regarding pre and postoperative knowledge, the current study revealed that more than one third of the studied nurses had correct knowledge. This finding was in agreement with **El-Sharkawy et al. (2019)**,who reported that level of knowledge of the studied nurses about pre and postoperative nursing care of HD were poor

before implementation of the IGs.

Regarding stoma care, the current study clarified that, one third of the studied nurses had correct knowledge about colostomy care, this finding was disagree with **Shaikaldeen & Mohmed, (2022)**, in a study entitled "Assessment of Nurses, Knowledge Regarding Colostomy Care INPOLIC Hospital Sudan" who revealed that 72% of participants had adequate knowledge re-garding colostomy care.

Regarding nasogastric tube feeding, the current study showed that, one third of the studied nurses had correct knowledge. This finding was in agreement with **Gomaa et al. (2022)**, in the study entitled "Nurses' Knowledge & Practices toward Enteral Feeding and its Effect on Selected High-Risk Neonates' Outcomes" who clarified that, more than one-third of the studied nurses had satisfactory knowledge. This result was congruent with **Abo Elezz et al. (2021)**, in the study entitled "Assessment of Nursing Performance toward Enteral Feeding at Pediatric Critical Care Units" who proved that slightly more than half of the studied nurses had satisfactory knowledge related to enteral feeding. From the researcher's point of view, this could be due to a lack of nurses' attendance for training courses about enteral feeding, which can help them to improve their total level of knowledge about enteral feeding.

Regarding nurses' total level of knowledge about intestinal obstruction in children **(Figure 3)**. The current study showed that all of the studied nurses had unsatisfactory knowledge about intestinal obstruction in children. This result was in agreement with **Abo Zeed et al. (2019),** who reported that, less than two thirds of the studied nurses had unsatisfactory knowledge related to care of neonatal intestinal obstruction. This result disagree with **Hamed et al. (2021),** in a study in Egypt entitled "Assessment of Nurses' Knowledge and Practices Regarding Children Undergoing Gastrointestinal Surgery" showed that less than two thirds had satisfactory level of total knowledge of gastrointestinal disease and surgical intervention. From the researcher point of view, this may be due to the studied nurses did not specialized in pediatric surgery nursing and most of them are not pediatric nurses.

Regarding pre and postoperative care The current study revealed that, the majority of the studied nurses had competent practice This finding was disagree with **El-Sharkawy et al. (2019)**,who reported that the studied nurses' performance in pre and postoperative care

were unsatisfactory.

Regarding nasogastric tube insertion, the current study showed that, all of the studied nurses had incompetent level of practice. This finding was in agreement with **Abo Zeed et al. (2019)**, who reported that, a few of the studied nurses had competent practice about nasogastric insertion.

Regarding nasogastric tube feeding, the current study revealed that the majority of the studied nurses had competent practice; this finding was in agreement with **Gomaa et al. (2022),** who demonstrated that more than half of the studied nurses had satisfactory practice regarding enteral feeding of high-risk neonates. This result also in agreement with **Abo Elezz et al. (2021)**, who found that less than three-quarters of the studied nurses had a competent practice regarding enteral feeding in the pediatric critical care unit.

Regarding stoma care, the current study verified that, all of the studied nurse had incompetent practice .This finding was in agreement with **Rashed et al. (2020),** in a study entitled "Stoma Care for Children having Colostomy in Menoufia University Hospital" , who showed that total practice level regarding the colostomy care was poor level. This may be due to all studied nurses did not have enough information about stoma care; the hospital did not provide training courses about stoma care and did not provide all supplies needed to perform stoma care for children. **Marquis and Huston (2019),** in the study entitled "Leadership Roles and Management Functions in Nursing" reported that, each organization and profession must set standards and objectives to guide individuals and practitioners in performing safe and effective care.

Regarding wound care, the current study revealed that more than half of the studied nurses had competent practice. This finding disagreed with **Khalafallha et al. (2018),** in a study entitled "Effect of Designed Wound Care Guidelines for Pediatric Nurses on Occurrence of Surgical Site Complications" who found that the highest percentage of the nurses had insufficient practice as regards wound assessment and wound care.

Regarding total level of practice, the current study showed that, the majority of the studied nurses had incompetent practical level regarding care of children suffering from intestinal obstruction **(Figure 4)**. This finding was in agreement with **Abo Zeed et al. (2019),** who reported that, less than three quarters of the studied nurses had incompetent practice regarding care of neonates with

intestinal obstruction. These findings were also disagree with **Hamed et al. (2021),** who revealed that more than two-thirds of studied nurses had competence in actual practice surgery about total GIT practice. The researcher point of view, it might be due to all nurses had unsatisfactory knowledge regarding care of children suffering from intestinal obstruction and depending on practical experience which may be not scientific and not evidenced based practice.

Regarding relationship between the studied nurses' demographic characteristics and their total practice. The current study clarified that there was no statistical significant relationship between to studied nurses' age, gender, work place, educational level, job position, experience and training courses and their levels of practice as *p*-value=(0.313 ^{MC} ,0.137$^{\#}$,0.913 $^{\$}$, 0.842 $^{\$}$, 0.616$^{\#}$, 0.890 ^{MC}and0.412$^{\$}$) respectively.

The finding of the current study disagreed with **Hamed et al. (2021),** revealed that a strong positive correlation between nurses' age and their total practice regarding care of children undergoing gastrointestinal surgeries, where more than one third of nurses who aged less than 25 years had competent practice.

Regarding the relationship between the studied nurses' practices and their years of experience, the current study was in agreement with **Abo Zeed et al. (2019),** who reported that, there were no statistical significance differences between the studied nurses' practice and their years of experience. While these findings were disagreed with **Hamed et al. (2021),** who revealed that, there is a strong positive correlation between years of experience of nurses and their practice regarding care of children undergoing gastrointestinal surgery. This may be related to older nurses depend on younger nurses in work and they prefer to play administrative role only which lead to younger nurses have more skills and more experience in few years and the older nurse decreased in competency as a result of decrease their practice.

Regarding the relationship between the studied nurses' practices and their level of education, the current study showed that there was no a statistical significant relationship. This result was in agreement with **Abo Zeed et al. (2019),** who reported that, there were no statistically significant relation between the nurses' level of practice and their level of education toward care of neonates with intestinal obstruction. This finding disagreed with **Hamed et al. (2021),** revealed that there was correlation between nurses' qualification

and total actual practice regarding care of children undergoing gastrointestinal surgeries.

Regarding the correlation between total nurses' knowledge and their total practices, the current study revealed that there was no a statistical significant correlation between total nurses' knowledge and their total practice. This finding disagreed with **Hamed et al. (2021),** who revealed that there is a strong positive correlation between nurses' total knowledge and their total actual practice regarding care of children undergoing gastrointestinal surgeries. This finding disagreed with **Abo Zeed et al. (2019),** who revealed that, there was a statistically significant relation between nurses' knowledge and practice; all studied nurses who had satisfactory level of knowledge had competent level of practice. The studied nurses in the current study had unsatisfactory level of knowledge and incompetent level of practice. This may be due to most of the studied nurses did not study pediatric surgery or attending training courses about care of children with intestinal obstruction and some of them not pediatric nurses and not specialized in pediatric surgery.

5. Conclusion

The study concluded that all of the studied nurses had unsatisfactory knowledge and the majority of them had incompetent practices about care of intestinal obstruction in children. There was no statistical significant correlation between total nurses' knowledge and their total practices.

6. Recommendations

1- A training educational programs and workshops about pre and postoperative care of intestinal obstruction in children should be provided continuously to nurses working in NICU, PICU and surgery department to improve the quality of care.

2- Further studies are recommended to evaluate the effect of training program about pre and postoperative care of intestinal obstruction in children on nurses' performance and consequently on the health of the children, preventing postoperative complications and decrease mortality rate.

3- Instituting special pediatric surgery department in Suez Canal University Hospitals with nurses specialized in pediatric surgery nursing.

Table (1): Percentage distribution of the studied nurses according to their demographic characteristics (n=90)

Items	Total Sample (n=90)	
	No.	**%**
Age (Years)		
21:<26	36	40.0
26:<31	46	**51.1**
31:<36	5	5.6
36:<41	3	3.3
$\overline{X}$ **±SD**	27.07±3.35	
Gender		
Male	33	36.7
Female	57	**63.3**
Work place		
Neonatal intensive care unit (NICU)	45	**50.0**
Pediatric intensive care unit (PICU)	27	30.0
Surgery Department	18	20.0
Job position		
Staff Nurse	75	**83.3**
Head nurse	15	16.7
Education		
Secondary school of nursing	7	7.8
Diplom of Technical nursing institute	68	**75.6**
Bachelor of nursing	15	16.7
Having Information about Intestinal Obstruction in Children?		
Yes	64	**71.1**
No	26	28.9
Sources of your Information #		
Media	3	3.3
Practical Experience	54	**60**
Training Courses	33	36.6

Figure (1): Percentage Distribution of Studied Nurses according to their Years of Experience

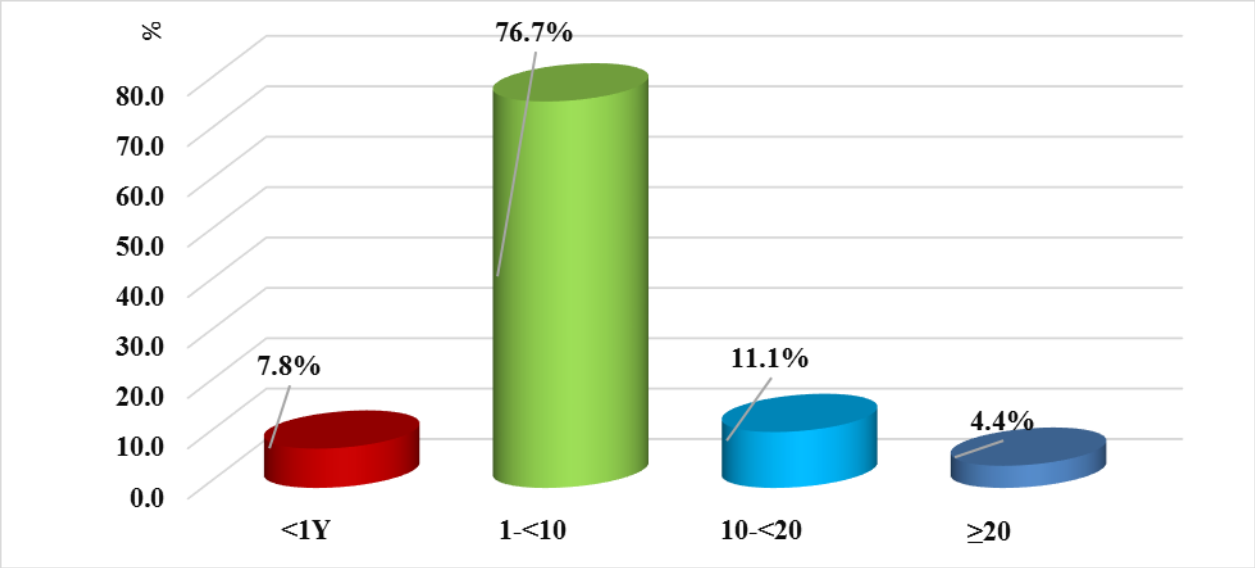

Figure (2): Percentage Distribution of Studied Nurses regarding Training Courses about Intestinal Obstruction in Children

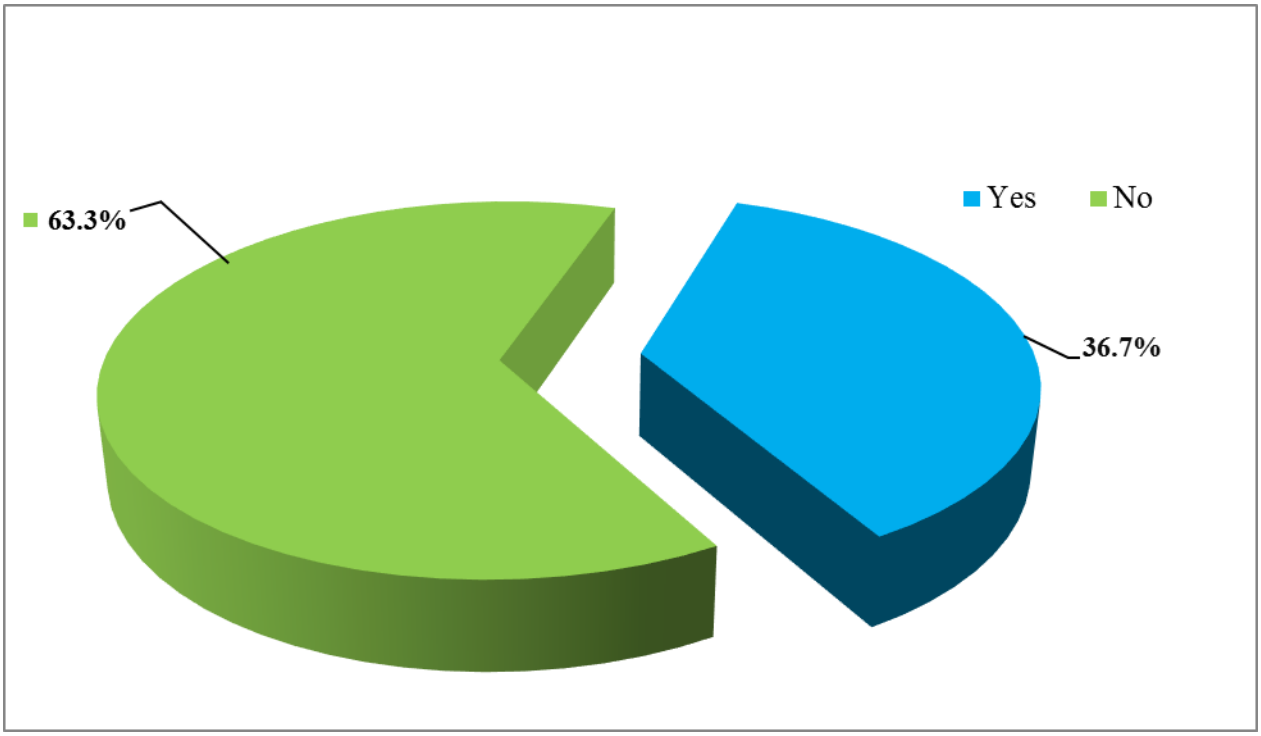

Table (2): Percentage Distribution of Studied Nurses' Knowledge about Intestinal Obstruction in Children (n=90)

Intestinal Obstruction	Correct		Incorrect	
	No	%	No	%
1. Definition	65	72.2	25	27.8
2. Most Common Causes	11	12.2	79	87.8
3. Most Common Signs and symptoms	37	41.1	53	58.9

Table (3): Percentage Distribution of Studied Nurses' Total Knowledge about Causes of

Causes of Intestinal Obstruction	Total Percentage (%)	
	Correct	Incorrect
1. Duodenal Obstruction	33.1	66.9
2. Jejunoileal Atresia	37.3	62.7
3. Malrotation	35	65
4. Meconium Ileus	36.5	63.5
5. Hirschsprung's Disease	29.2	70.8
6. Intussusception	38.3	61.7
7. Intraperitoneal Adhesions	31.7	38.3
8. Anorectal Malformation	38.3	61.7
9. Inguinal Hernia	36.1	63.9
Mean Score of Total Knowledge	**17.1±3.1**	

Intestinal Obstruction in Children (n=90)

Table (4): Percentage Distribution of Studied Nurses' Total Level of Practical Knowledge about Care of Intestinal Obstruction in Children: (n=90)

Care of Intestinal Obstruction in Children	Total Percentage (%)	
	Correct	Incorrect
Diagnosis ,Treatment and Pre and Post-Operative Care	**38.9**	**61.1**
Stoma Care	**33.8**	**66.2**
Nasogastric Tube Feeding	**31.3**	**68.7**
Enema Administration	**32.2**	**67.8**
Total Practical Knowledge Mean Score	**10.53±3.6**	

Figure (3): Distribution of Studied Nurses' Level of Knowledge about Intestinal Obstruction in children

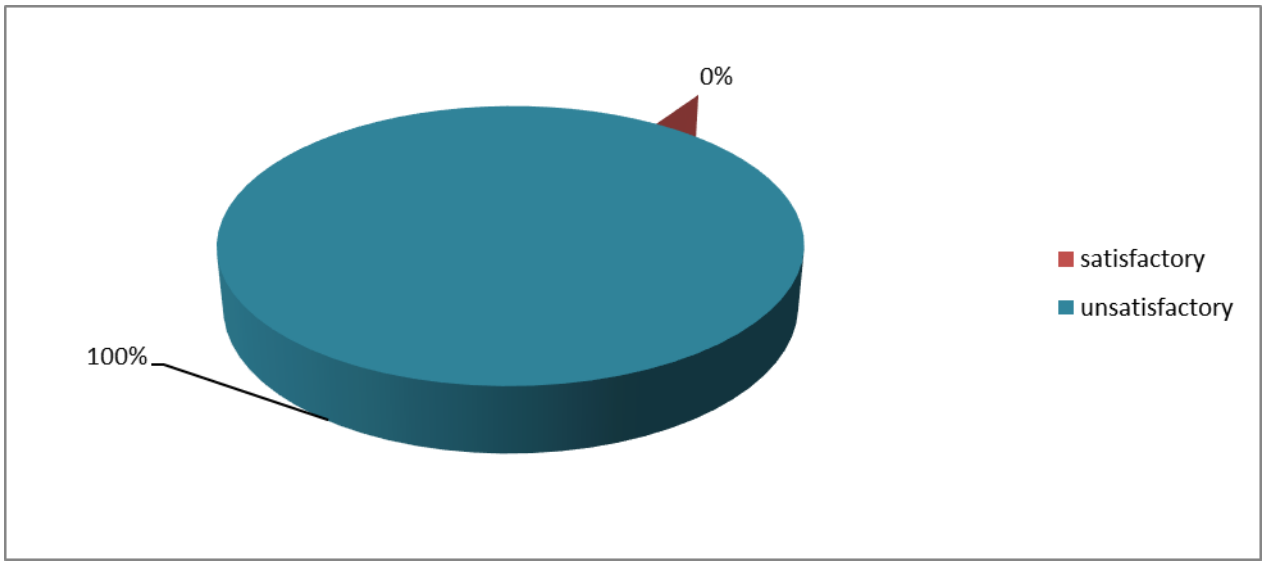

Table (5): Percentage Distribution of Studied Nurses' Practice regarding Care of Intestinal Obstruction in Children (n=90)

Nurses' Practices regarding:	Incompetent		Competent	
	No.	%	No.	%
1. Preoperative Care	7	7.8	83	92.2
2. Postoperative Care	43	47.8	47	52.2
3. Nasogastric Tube Care	90	100	0	0
4. Gastric Decompression	28	31.1	62	68.9
5. Intermittent or Bolus Feeding	12	13.3	78	86.7
6. Continuous Drip Enteral Feeding	14	15.6	76	84.4
7. Stoma Care	90	100	0	0
8. Enema Administration	51	56.7	39	43.3
9. Wound Care	41	45.6	49	54.4
Total Practice Mean Score	**86.68±7.82**			

Figure (4): Percentage Distribution of Studied Nurses according to their Level of Practice regarding Care of Intestinal Obstruction in Children

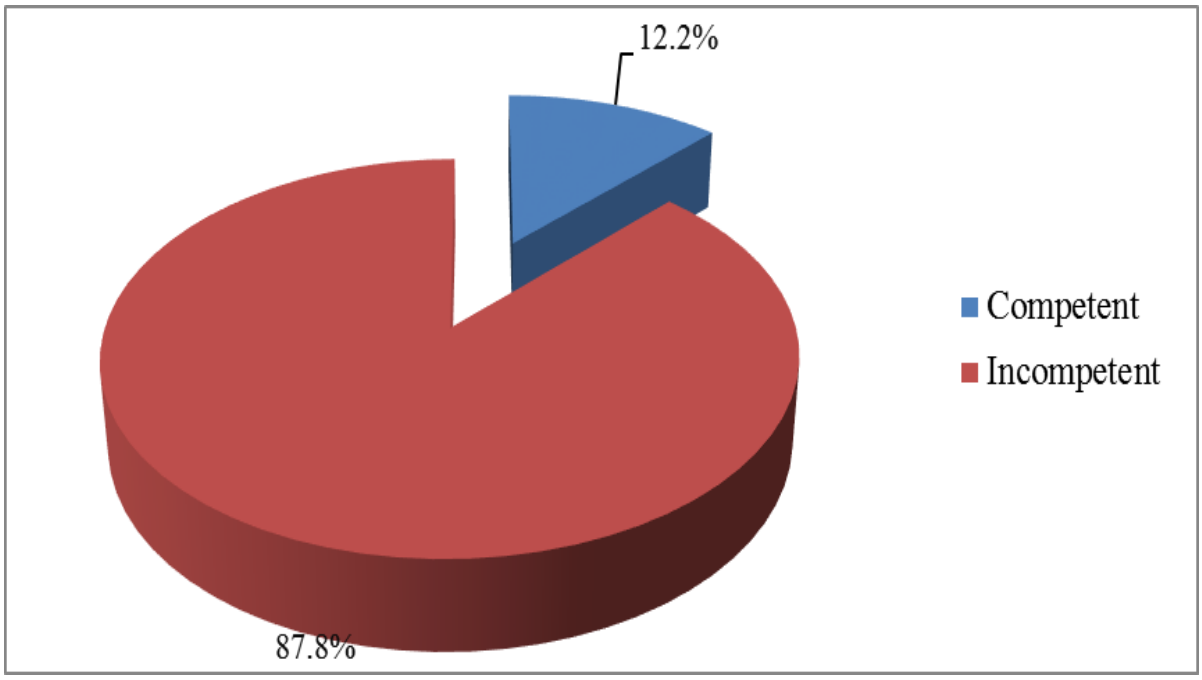

Table (6): Correlation between Total Nurses' Knowledge and Total Practices about Care of Intestinal Obstruction in Children (n=90)

Items	Total practice	
	r	*P*- value
Total Knowledge	0.164	0.123

r is Pearson correlation & P value is significant (two tailed significance) ≤.05

Table (7): Relationship between Demographic Characteristics of Studied Nurses and their Levels of Practice (n=90)

Items	Levels of Practice			
	Incompetent		Competent	
	No.	%	No.	%
Age (Years)				
21:<26	31	86.1	5	13.9
26:<31	44	95.7	2	4.3
31:<36	4	80	1	20
36:<41	3	100	0	0
Gender				
Male	28	84.8	5	15.2
Female	54	94.7	3	5.3
Work Place				
Neonatal intensive care unit	41	91.1	4	8.9
Pediatric intensive care unit	25	92.6	2	7.4
Surgical Department	16	88.9	2	11.1
Educational				
Technical	6	85.7	1	14.3
Diploma	62	91.2	6	8.8
Bachelor	14	93.3	1	6.7
Job Position				
Staff Nurse	69	92	6	8
Nursing Specialist	13	86.7	2	13.3
Experience				
≤1 year	7	100	0	0
1: >10 years	62	89.9	7	10.1
10: >20 years	9	90	1	10
≥20 years old	4	100	0	0
Training Courses				
Yes	53	93	4	7
No	29	87.9	4	12.1

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