Effectiveness of an Educational Program on Nurses' Performance Regarding Pre/Post-operative Care of Children with Hirschsprung And Intussusception

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Abstract

Background: Nursing education about intestinal obstruction is the key factors in recognizing the early warning signs of it to ensure safe management, reduce complications and promote optimal recovery. **The aim** of the study was to identify effectiveness of the educational program on nurses' performance regarding pre/post-operative care of children with Hirschsprung and Intussusception. **Research design:** A quasi- experimental design. **Subjects:** The study included 40 nurses and 53 children who suffered from Hirschsprung disease and Intussusception. **Tools of data collection:** Two tools were used in the current study. The first tool was a structured interview questionnaire sheet the second tool was observational checklists **Results:** The study showed that, 25% of the studied nurses had good total knowledge score about Hirschsprung pre health educational program which increased to 77.5% post health educational program. While 20% of the studied nurses had good total knowledge score about Intussusception pre compared to 75% post health educational program. In addition, 32.5% of the studied nurses had high total score of practice regarding Hirschsprung and Intussusception pre health educational program which increased to 95% post health educational program. Moreover, there was highly positive correlation between the studied nurses' total knowledge score regarding Hirschsprung and Intussusception and their total practice score pre and post health educational program. **Conclusion:** Based on the results of the present study, it was concluded that the studied nurses' knowledge and practice was improved after implementation of an educational program. **Recommendation:** Further educational and training program should be provided to nurses to improve their knowledge and practices about care provided for children with Hirschsprung and intussusception.

Keywords: *Hirschsprung, Intussusception, Pre/Post operative care.*

Introduction

Intestinal obstruction occurs when the forward flow of intestinal contents is interrupted or impaired by a mechanical cause. It is most commonly induced by intra-abdominal adhesions, malignancy, and herniation. The clinical presentation generally includes nausea, emesis, colicky abdominal pain, and cessation of passage of flatus and stool, although the severity of these clinical symptoms varies based on the acuity and anatomic score of obstruction. Abdominal distension, tympany to percussion, and high-pitched bowel sounds are classic findings ***(Isaac, et al, 2023).***

Hirschsprung's disease is a developmental disorder of the enteric nervous system and is characterized by an absence of ganglion cells in the distal colon resulting in a functional obstruction. Although this condition was described by Ruysch in 1691 and popularized by Hirschsprung in 1886, the

pathophysiology was not clearly determined until the middle of the 20th century when Whitehouse and Kernohan described the aganglionosis of the distal intestine as the cause of obstruction. Successful treatment then followed based on the surgical excision of the aganglionic segment and reanastomosis with ganglionated bowel ***(Duess, et al, 2020).***

The widespread practice and success of this surgery have made HSCR one of the successful surgical treatments of modern times. In 1949, Swenson described the first consistent definitive procedure for Hirschsprung's disease, rectosigmoidectomy with coloanal anastomosis. Since then, other operations have been described, including the Duhamel and Soave techniques. More recently, advances in surgical technique, including minimally invasive procedures, and earlier diagnosis have resulted in decreased morbidity and mortality for children with Hirschsprung's disease ***(Sutthatarn, et al, 2023).***

Intussusception was first described in 1793 by the Scottish surgeon James Hunter, and is defined as telescoping of one portion of the intestine (intussusceptum) into an adjacent segment (intussuscipiens). The telescoping segment obstructs the intestine and, if not treated, ultimately impairs blood flow to the intussuscepting segment. This results in ischemia, and eventually bowel necrosis, perforation and peritonitis if left untreated ***(Beres & Baird, 2019).***

Intussusception is after appendicitis, the second most common cause of an acute abdomen in children, and the most common cause of small bowel obstruction in young infants. There are different types of intussusceptions; the ileocolic, ileo-ileo-colic, ileo-ileal, jejuno-jejunal and the colo-colic type. The ileo-colic type, where the distal ileum invaginates through the ileocecal valve into the caecum, is the most frequent type of intussusception and accounts for 90% of the cases ***(Marsicovetere, et al, 2024).***

Treatment of intussusception has to start as soon as possible after suspicion of diagnosis with fluid resuscitation management. Early fluid resuscitation is important because most children with intussusception are dehydrated due to vomiting, decreased oral intake and third spacing. Non-operative management is indicated in hemodynamically and clinically stable children, with high clinical suspicion of intussusception or radiological evidence of intussusception, but without any evidence of bowel perforation. Non-operative management of intussusception uses an enema reduction technique ***(Okumus & Emektar, 2020).***

Preoperative care for intestinal obstruction focuses on stabilization, including intravenous (IV) fluids for dehydration, correction of electrolyte imbalances, nasogastric tube placement for decompression, and antibiotics to prevent infection, especially with potential ischemia or gangrene. Postoperative care emphasizes early ambulation, pain management, continued IV fluid support, and gradual reintroduction of a diet, often starting with a low-fiber or full-liquid diet, while monitoring for complications like wound infections or postoperative ileus ***(Elghazeery, et al, 2024).***

Significance of the study:

Hirschsprung and Intussusception are one of the commonest emergencies encountered in the pediatric age group. They have been recognized from many years as the principle challenge in their diagnosis, treatment and care. Thus come the significance of this study as the nurse is the key component of the health care team and her performance and education would affect in pre and post-operative care of these children.

The aim of the study:

The aim of the study was to identify effectiveness of an educational program on nurses' performance regarding pre/post-operative care of children with Hirschsprung and Intussusception.

Research hypothesis:

Nurses' performance would be improved after implementation of an educational program regarding pre/postoperative care provided to children [intussusception and Hirschsprung disease.

Subjects & Methods:

A. Research design:

Aquasi- experimental design was used in this study.

B. Setting:

This study was conducted in the pediatric surgical department in surgery building (fourth floor) and emergency department in accidents and emergency building (second floor) at Zagazig University Hospitals.

C. Subject:

A- Purposive sample composed of 40 nurses who were worked in the previously mention setting and were compromised the following criteria:

Inclusion criteria:

- Nurses who gave direct care to children with Hirschsprung and Intussusception.
- Both sexes.
- All qualifications: diplome and high nurse.

B- convenient sample of 53 children who admitted Zagazig university with intestinal obstruction.

Tools of Data Collection:

Two tools were used in the current study:

Tool I: A structured interview questionnaire sheet:

It was developed by researcher under the supervision of supervisors to assess nurses' knowledge before and immediately after implementation of the educational program and it includes the following parts:

Part I:- Socio-demographic data for nurses which include; age, sex years of experience, Educational qualification, Job title and attending training courses on nursing care for children with intestinal obstruction.

- Personal characteristics of children included; Mothers' age, Gender, Residence and Consanguinity between parents
- Medical data to the studied children included; Diagnosis, Stage of surgery if diagnosis is Hirschsprung, Previous hospitalization related to intestinal obstruction, Present complain, Family history of congenital anomalies, Presence of complications.

Part II: Nurses' knowledge regarding Hirschsprung disease, Intussusception, pre and postoperative care.

Scoring system:

The scoring system of knowledge was calculated as follows (2) marks for correct and complete answer, and (1) mark for correct and incomplete answer, while (0) mark for don't know. For each question of knowledge, the score of the items was summed- up and the total divided by the number of items. These scores were converted into a percent score.

- Good when total score was >75%.
- Fair when the total score was 50 – 75%.
- Poor when total score was <50%.

Tool II: Observational checklists:

It was developed by the researcher to assess the actual nursing performance regarding care provided to children with intussusceptions and Hirschsprung disease before and after educational program in pediatric units in Zagazig university such as: nasogastric tube, pre/post-operative care, wound care, stoma care, physical assessment, measures to reduce fever, recording and reporting, enema administration and discharge plan.

The scoring system of practice regarding intestinal obstruction was calculated as follows (***1***) mark for done answer, while (0) mark for not done. For each question of practices, the score of the items was summed- up and the total divided by the number of items. These scores were converted into a percent score ***(Gonullu, et al, 2023).***

- Satisfactory practice when total score was >75%.
- Unsatisfactory when the total score was < 75%.

The program was developed through the following phases:

1- Assessment phase

The assessment phase aimed to evaluate the baseline knowledge and practice of nurses. Before the implementation of the educational training, each nurse was interviewed individually to assess their knowledge and practices (pretest) using Tool I (structured interview questionnaire) and Tool II (observation checklist). The researcher explained the purpose of the study and obtained oral consent from all participants before the data collection.

2- Planning phase

Based on the results of the pilot study, interview sheet, and observation checklist, along with a review of current local and international literature, the educational program was developed by the researcher. Identified deficiencies in knowledge and practice were translated into specific objectives and content areas of the program.

Teaching methods included lectures, group discussions, demonstrations and re-demonstrations, tailored to small groups. Educational materials such as handouts were designed to include both theoretical and practical components.

3-Implementation phase

The educational program was implemented over five sessions, each lasting 30–45 minutes. The studied nurses were divided into small groups for focused learning. Sessions covered topics such as anatomy of the gastrointestinal tract, definition and management of Hirschsprung's disease and intussusception, pre- and post-operative care and relevant nursing procedures.

Each session began with a review of the previous content and introduced new objectives. The sessions were delivered in simple Arabic and English to match the nurses' education scores. Motivation and feedback techniques were applied to encourage active participation and engagement.

4-**Evaluation phase**

The evaluation phase involved individual interviews with all nurses immediately after the program to assess improvement in knowledge and practices (posttest), using the same tools (Tool I and Tool II). These assessments confirmed statistically significant improvements in both knowledge and practice scores.

II-Operational design

The operational design included preparatory phase, content validity, pilot study and field work.

Preparatory phase:

The researcher was review local and international related literature to be aware of various aspects of the research problem.

Content validity and reliability:

The structured interview sheet and observational checklist were developed after a thorough reviewed of the related literature and then reviewed by three experts to test the content validity. Minor modifications were made based on feedback from the three experts and the final forms were ready for use.

Content reliability of the tool was done by using Chronbach's Alpha test reliability coefficient. The reliability of nurse's knowledge assessment tool (interview Questionnaire sheet) used was 0.***769*** which indicates Questionable internal consistency of the used tool. The reliability of nurse's practice assessment tool (Observational checklist sheet) used was ***0.806*** which indicates accepted internal consistency of the used tool.

Ethical considerations:

All ethical principles were strictly adhered to throughout every phase of the study. The researcher ensured confidentiality of all participants. Participation in the study was completely voluntary, and no nurse was obligated to take part. Prior to data collection, the aim of the study was clearly explained to each nurse, and oral consent was obtained. Nurses were informed of their right to withdraw from the study at any time without any negative consequences. Additionally, they were assured that all

information collected would remain strictly confidential and be used solely for the purposes of academic research and acceptance of zagazig university ethical committe.

Pilot study:

A pilot study was conducted on 10% of the nurses to assess the applicability of the data collection tools arrangements of items, estimate the time needed for each sheet and the feasibility of the study and acceptance to be involved in the study. Subjects who shared in the pilot study were included in the main study sample as no radical modifications were needed on the study tools.

Field of work:

Data collection for this study was conducted over a six-month period, from June 2024 to December 2024. Following the acquisition of official permissions, pilot testing of the study tools was carried out and analyzed for reliability and clarity. The researcher conducted data collection three days per week, during the morning shift from 9:00 a.m. to 12:00 p.m.

The participating nurses were divided into 10 small groups, with 4 nurses per group to ensure effective interaction and observation. The structured interviewing questionnaire sheet was completed by each nurse individually, while the observational checklists were filled by the researcher during the actual provision of care. The average time to complete each tool was approximately 30 to 45 minutes.

Throughout the data collection process, the researcher observed the nurses during real clinical interactions with pediatric patients. A brief explanation of the study's purpose was provided to all participants, and verbal consent was obtained before participation.

III-Administrative design

An official permission was granted by submission of an official letter from the Faculty of Nursing to the responsible authorities of the study setting to obtain their permission for data collection.

IV-Statistical design

Data collected from the studied sample was revised, coded and entered using Personal Computer (PC). Computerized data entry and statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version 22. Data were presented using descriptive statistics in the form of frequencies, percentages and Mean SD. A correlation coefficient “Pearson correlation” is a numerical measure of some type of correlation, meaning a statistical relationship between two variables. A t-test is a type of inferential statistic used to determine if there is a significant difference between the means of two groups .Cochran's Q Test is a non-parametric way to find differences in matched sets of three or more frequencies or proportions.

Significance of the results:

- Highly significant at p-value < 0.01.
- Statistically significant was considered at p-value < 0.05
- Non-significant at p-value ≥ 0.05

Results:

Table (1): Shows socio demographic characteristics of the studied nurses. It was found that 50% of the studied nurses were aged from 30 to less than 35 years old with mean age 28.30±4.97 years. Regarding to sex; 80% of the studied nurses were females, 40% had nursing technical institute qualification. As regard to job title, 67.5% were nurses, and 47.5% had from 10 to less than 15 years of experience in the field of pediatric surgical nursing.

Figure (1): illustrates that; only 37.5% of the studied nurses attended training courses, while 62.5% didn’t attend training courses on nursing care for children with Hirschsprung and Intussusception.

Table (2): shows frequency distribution of the studied children regarding their personal characteristics. It was found that; 75.5% of the studied children were males, 81.1% were living in rural areas, and 71.7% had consanguinity between parents. Regarding age of their mothers, 56.6% of the studied children’s mothers were aged from 30 to less than 35 years old with mean age was 31.56 ±3.59 years.

Table (3) reveals medical data of the studied children. Results displayed that; 66% of the studied

children were diagnosed with Hirschsprung's disease and 85.7% were stage one (colostomy) of surgery, 75.5% had previous hospitalization related to intestinal obstruction. It was also found that 88.7% had vomiting and constipation as present complain, 81.1% didn't had family history of congenital anomalies, and the presence of complications were seen in 86.8% of them.

Table (4) shows subtotal knowledge score of studied nurses regarding intestinal obstruction. It was found that; there were highly statistically significant difference of the studied nurses' subtotal knowledge score regarding intestinal obstruction pre and post health educational program ($P<0.001$). Regarding knowledge about intestinal obstruction, 37.5% of the studied nurses had poor knowledge score pre health educational program which decreased to 5% post health educational program. Meanwhile, 25% of the studied nurses had good knowledge score pre health educational program and this percentage increased to 77.5% post health educational program. Moreover, 37.5 had poor knowledge score regarding intussusceptions pre health educational program compared to 7.5% post health educational program.

Concerning preoperative nursing care, 57.5% of the studied nurses had fair knowledge score pre health educational program compared to 20% post health educational program.

Figure (2): clarifies distribution of the studied nurses regarding their total knowledge score regarding intestinal obstruction (n=40). This figure displays that; 22.5% of the studied nurses had good knowledge score regarding intestinal obstruction pre health educational program which increased to 77.5% post health educational program. 47.5% of the studied nurses had fair knowledge score regarding intestinal obstruction pre health educational program which decreased to 17.5% post health educational program, while 30% of the studied nurses had poor knowledge score regarding intestinal obstruction pre health educational program which decreased to 5% post health educational program.

Figure (3): illustrates distribution of the studied nurses regarding their total practices regarding intestinal obstruction (n=40). This figure shows that; 32.5% of the studied nurses had satisfactory practice regarding Hirschsprung and Intussusception pre health educational program which increased to 95% post health educational program, while 67.5% of the studied nurses had unsatisfactory practice regarding Hirschsprung and Intussusception pre health educational program which decreased to 5% post health educational program.

Table (5): clarifies relation between nurses' knowledge score and sociodemographic data. It was illustrated that; there were highly statistically significant relation between the studied nurses' knowledge score and their educational qualification pre and post health education program ($P<0.001$). Also, there were statistically significant relation between the studied nurses' knowledge score and their age and number of years of experience in the field of pediatric surgical nursing pre and post health education program ($P<0.05$).In addition, there were no statistically significant relation between the studied nurses' knowledge score and their sex and job title pre and post health education program ($P>0.05$).

Table (6): clears relation between nurses' practices and sociodemographic data. It was found that; there were highly statistically significant relation between the studied nurses' practices score and their educational qualification pre and post health education program ($P<0.001$). Furthermore, there were statistically significant relation between the studied nurses' practices score and their age, job title and number of years of experience in the field of pediatric surgical nursing pre and post health education program ($P<0.05$). As well as, there were no statistically significant relation between the studied nurses' practices score and their sex pre and post health education program ($P>0.05$).

Table (7): shows correlation between nurses' total knowledge and practices scores. It was illustrated that; there were highly positive correlation between the studied nurses' total knowledge score regarding Hirschsprung and Intussusception and their total practice score pre and post health educational program ($P<0.001$).

Table (1): Socio demographic characteristics of the studied nurses (n=40).

Socio-demographic characteristics	No = 40	%
Age/years		
20 < 25 years	11	27.5
25 < 30 years	7	17.5
30 < 35 years	20	**50.0**
≥ 35 years	2	5.0
Mean ±SD 28.30±4.97		
Sex		
Male	8	20.0
Female	32	**80.0**
Educational qualification		
Nursing Diplome	9	22.5
Nursing Technical Institute	16	**40.0**
Bachelor of Nursing	12	30.0
Postgraduate studies in nursing	3	7.5
Job title		
Nurse	27	**67.5**
Supervisor	8	20.0
Head Nurse	5	12.5
Years of experience in the field of pediatric surgical nursing		
1 < 5 years	12	30.0
5 < 10 years	6	15.0
10 < 15 years	19	**47.5**
≥ 15 years	3	7.5

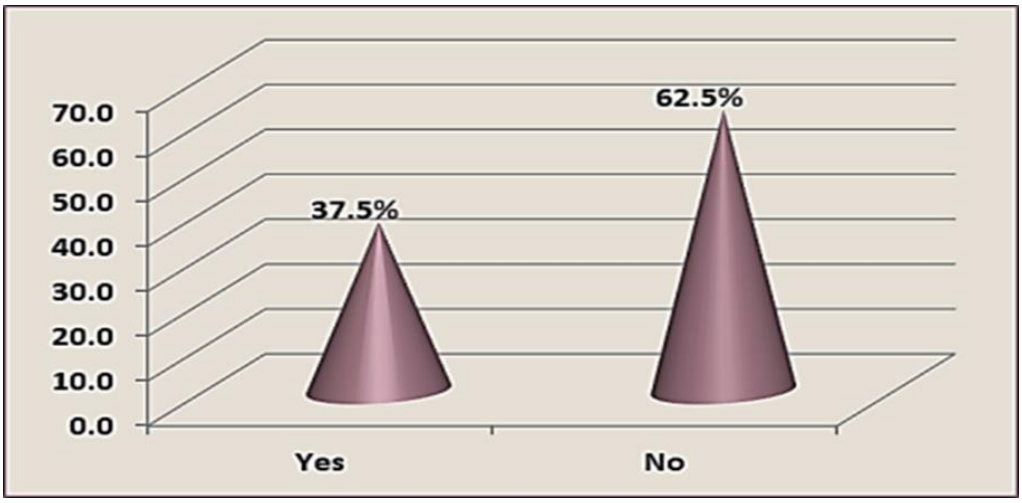

Figure (1): Percentage distribution of the studied nurses regarding attending training courses on nursing care for children with intestinal obstruction (n=40).

Table (2): Frequency distribution of the studied children regarding their personal characteristics (n=53)

Personal characteristics of the children	No = 53	%
Mothers' age		
25 < 30 years	14	26.4
30 < 35 years	30	**56.6**
≥ 35 years	9	17.0
Mean ±SD 31.56 ±3.59		
Gender		
Male	40	**75.5**
Female	13	24.5
Residence		
Rural area	43	**81.1**
Urban area	10	18.9
Consanguinity between parents		
Yes	38	**71.7**
No	15	28.3

Table (3): Frequency distribution of the studied children regarding their medical data (n=53)

Medical data		No = 53	%
Diagnosis			
Hirschsprung's disease		35	**66.0**
Intussusceptions		11	20.8
Complication from surgery		7	13.2
Stage of surgery if diagnosis is hirshsprung (n=35)			
Stage one (colostomy)		30	**85.7**
Stage two (pullthroughl)		5	14.3
Previous hospitalization related to intestinal obstruction			
Yes		40	**75.5**
No		13	24.5
***Present complain**			
Abdominal distention	Yes	39	73.6
	No	14	26.4
Vomiting	Yes	47	**88.7**
	No	6	11.3
Constipation	Yes	47	**88.7**
	No	6	11.3
Abdominal pain	Yes	45	84.9
	No	8	15.1
Family history of congenital anomalies			
Yes		10	18.9
No		43	**81.1**
Presence of complications			
Yes		46	**86.8**
No		7	13.2

Table (4): Frequency distribution of the studied nurses regarding their subtotal knowledge score about intestinal obstruction pre and post implementation of an educational program. (n=40).

Subtotal knowledge score regarding intestinal obstruction	Pre-health educational program						Post-health educationalprogram						X^2	P value
	Good		Fair		Poor		Good		Fair		Poor			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Knowledge regarding intestinal obstruction	8	20.0	17	42.5	15	**37.5**	29	72.5	9	22.5	2	**5.0**	24.32	.000**
Knowledge about Hirschsprung's disease	10	25.0	16	40.0	14	35.0	31	77.5	7	17.5	2	5.0	20.50	.000**
Knowledge about intussusceptions	8	20.0	17	42.5	15	**37.5**	30	75.0	7	17.5	3	**7.5**	24.90	.000**
Knowledge about preoperative nursing care	7	17.5	23	**57.5**	10	25.0	30	75.0	8	**20.0**	2	5.0	26.89	.000**
Knowledge about post-operative nursing care	10	25.0	19	47.5	11	27.5	31	77.5	8	20.0	1	2.5	23.57	.000**

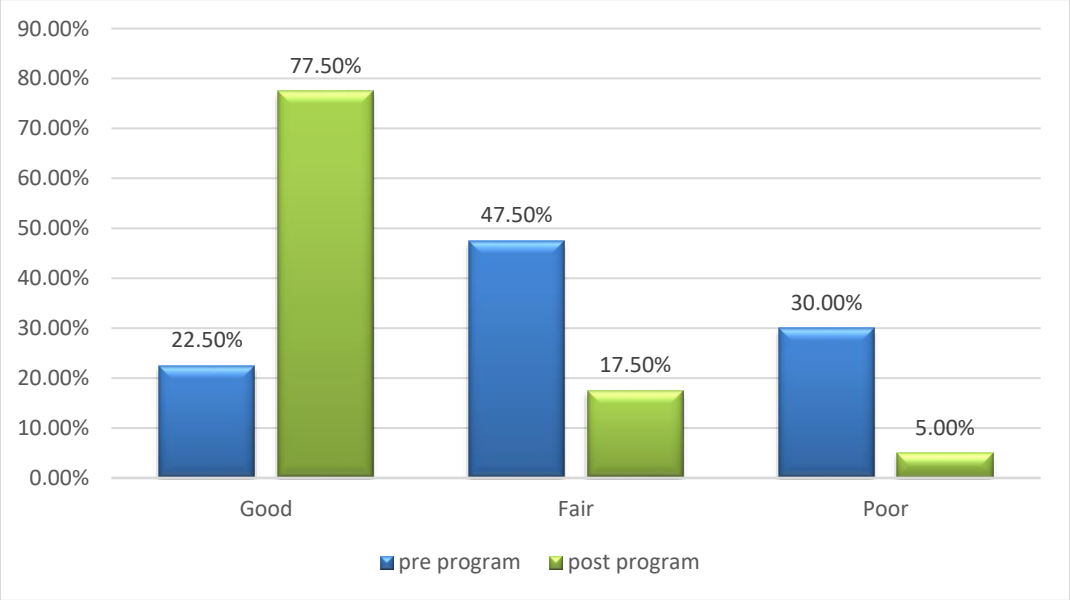

Figure (2): Distribution of the studied nurses regarding their total knowledge score about Hirschsprung and Intussusception (n=40).

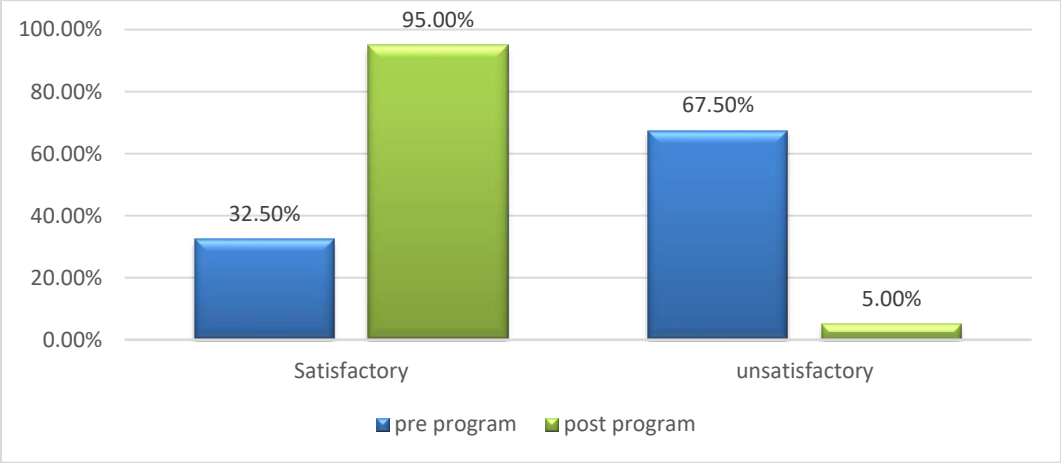

Figure (3): Distribution of the studied nurses regarding their total practices about Hirschsprung and Intussusception (n=40).

Table (5): Relation between the studied nurses' knowledge score pre and post implementation of an educational program and their socio-demographic characteristics (n=40).

Socio-demographic characteristics	Total knowledge score												Pre		Post	
	Pre-health educational program						Post-health educationalprogram						Chi-Square			
	Good (n=9)		Fair (n=19)		Poor (n=12)		Good (n=31)		Fair (n=7)		Poor (n=2)		$x^2 1$	p-value	$x^2 2$	p-value
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%				
Age/year																
20 < 25 years	5	55.6	6	31.6	0	0.0	7	22.6	4	57.1	0	0.0	7.87	0.02*	9.62	0.049*
25 < 30 years	2	22.2	5	26.3	0	0.0	6	19.4	1	14.3	0	0.0				
30 < 35 years	2	22.2	8	42.1	10	83.3	17	54.8	1	14.3	2	100.0				
≥ 35 years	0	0.0	0	0.0	2	16.7	1	3.2	1	14.3	0	0.0				
Sex																
Male	3	33.3	3	15.8	2	16.7	5	16.1	2	28.6	1	50.0	1.44	0.48	1.18	0.55
Female	6	66.7	16	84.2	10	83.3	26	83.9	5	71.4	1	50.0				
Educational qualification																
Nursing Diploma	0	0.0	0	0.0	9	75.0	0	0.0	7	100.0	2	100.0	16.34	0.000**	19.24	0.000**
Nursing Technical Institute	4	44.4	9	47.4	3	25.0	16	51.6	0	0.0	0	0.0				
Bachelor of Nursing	2	22.2	10	52.6	0	0.0	12	38.7	0	0.0	0	0.0				
Postgraduate studies in nursing	3	33.3	0	0.0	0	0.0	3	9.7	0	0.0	0	0.0				
Job title																
Nurse	3	33.3	15	78.9	9	75.0	25	80.6	2	28.6	0	0.0	0.87	0.92	2.69	0.61
Supervisor	3	33.3	3	15.8	2	16.7	3	9.7	3	42.9	2	50.0				
Head Nurse	3	33.3	1	5.3	1	8.3	3	9.7	2	28.6	0	0.0				
Number of years of experience in the field of pediatric surgical nursing																
1 < 5 years	5	55.6	4	21.1	3	25.0	9	29.0	2	28.6	1	50.0	6.35	0.036*	8.39	0.047*
5 < 10 years	2	22.2	3	15.8	1	8.3	6	19.4	0	0.0	0	0.0				
10 < 15 years	1	11.1	11	57.9	7	58.3	15	48.4	4	57.1	0	0.0				
≥ 15 years	1	11.1	1	5.3	1	8.3	1	3.2	1	14.3	1	50.0				

Table (6): Relation between the studied nurses' practices score pre and post implementation of an educational program and their socio-demographic characteristics (n=40).

Socio-demographic characteristics	Total practices score								Pre		Post	
	Pre-health educational program				Post-health educational program				Chi-Square			
	Satisfactory (n=13)		unsatisfactory (n=27)		Satisfactory (n=38)		unsatisfactory (n=2)		$x^2 1$	p-value	$x^2 2$	p-value
	No.	%	No.	No.	%	No.	%	No.				
Age/year												
20 < 25 years	7	53.8	4	14.8	11	28.9	0	0.0	6.97	0.037*	9.97	0.029*
25 < 30 years	4	30.8	3	11.1	7	18.4	0	0.0				
30 < 35 years	2	15.4	18	66.7	19	50.0	1	50.0				
≥ 35 years	0	0.0	2	7.4	1	2.6	1	50.0				
Sex												
Male	7	53.8	1	3.7	8	21.1	0	0.0	1.44	0.89	1.18	0.75
Female	6	46.2	26	96.3	30	78.9	2	100.0				
Educational qualification												
Nursing Diploma	0	0.0	9	33.3	7	18.4	2	100.0	25.27	0.000**	27.82	0.000**
Nursing Technical Institute	4	30.8	12	44.4	16	42.1	0	0.0				
Bachelor of Nursing	6	46.2	6	22.2	12	31.6	0	0.0				
Postgraduate studies in nursing	3	23.1	0	0.0	3	7.9	0	0.0				
Job title												
Nurse	11	84.6	16	59.3	26	68.4	1	50.0	7.45	0.032*	8.94	0.021*
Supervisor	2	15.4	6	22.2	8	21.1	0	0.0				
Head Nurse	0	0.0	5	18.5	4	10.5	1	50.0				
Number of years of experience in the field of pediatric surgical nursing												
1 < 5 years	9	69.2	3	11.1	11	28.9	1	50.0	8.45	0.026*	9.39	0.013*
5 < 10 years	2	15.4	4	14.8	6	15.8	0	0.0				
10 < 15 years	1	7.7	18	66.7	19	50.0	0	0.0				
≥ 15 years	1	7.7	2	7.4	2	5.3	1	50.0				

Table (7): Correlation between the studied nurses' total knowledge score regarding Hirschsprung and Intussusception and their total practice score (n=40).

Items		Total knowledge score		Total practice score	
		r	p-value	r	p-value
Pre educational program	Total knowledge score	1	-	.845	.000**
	Total practice score	.845	.000**	1	-
Post educational program	Total knowledge score	1	-	.918	.000**
	Total practice score	.918	.000**	1	-

Discussion

The nurse plays a vital role in caring for infants with HD. Recognizing physiological and psychological needs are essential skills for the pediatric surgical nurse who should interpret them in the form of nursing intervention through providing care preoperatively ; to ensure hours of fasting before surgery, frequent assessment of vital signs and abdominal circumference, rectal washouts with repeated warm saline enema, observing intake -output, care of nasogastric tube if needed, providing intravenous fluids, care of urinary catheterization if needed and preparing child and parents for (temporary)colostomy if needed ***(Robin, et al,2018).***

Regarding subtotal knowledge score about Hirschsprung and Intussusception, the findings of the present study was reported that less than one quarter of the studied nurses had good knowledge score before implementation of an educational program. This improvement focus on the vital role of the health educational programs in enhancing knowledge and practice of nurses and the lack of knowledge before implementing the program was due to that more than half of studied nurses were not recently graduated and their knowledge wasn't updated.

Similar results were reported by ***El-Sharkawy et al., (2019)*** who examined the impact of nursing intervention guidelines on nurses' performance and the clinical outcomes related to complications in infants with Hirschsprung's disease. Their study found that prior the implementation of the guidelines, 86.7% of the studied nurses had poor score of knowledge. However, this significantly improved after the intervention, with 83.3% of nurses having a good knowledge score.

In contrast, these findings differed from those of ***Hamed et al. (2021),*** who conducted a study in Egypt to assess nurses' knowledge and practices regarding children undergoing gastrointestinal surgery. Their study revealed that less than two-thirds of nurses had a good score of total knowledge about gastrointestinal diseases and surgical interventions.

Related to nurses' subtotal practice regarding Hirschsprung and Intussusception, there were highly statistically significant relation of the studied nurses' subtotal practices pre and post health educational program ($P<0.001$). The result showed that nearly one third of the studied nurses had satisfactory practice regarding Hirschsprung and Intussusception pre health educational program. While after implementation of the program, almost all of the studied nurses demonstrated satisfactory practice. From the researcher's point of view, it might be due to majority of nurses had poor knowledge regarding care of children suffering from intestinal obstruction especially Hirschsprung and Intussusception prior to implementation of educational program and depending on practical experience which may be not scientific and not evidenced based practice.

This finding was in agreement with ***Abo Zeed, (2019)*** who verified that, less than three quarters of the studied nurses demonstrated incompetent practice regarding care of neonates with intestinal obstruction. These findings also matched with ***Hussein, (2016)*** who conducted a study to evaluate the effect of an educational program on nurses' knowledge regarding preoperative care of children with intestinal obstruction. The study revealed that more than two thirds of the studied nurses had incompetent score of practice regarding care of neonatal with intestinal obstruction.

While these findings disagreed with ***Hamed et al. (2021),*** who showed in their study that more than two-thirds of studied nurses had competence in actual practice surgery about total total gastrointestinal tract (GIT) practice.

As regard to relation between knowledge and year of experience, the current study showed that there was statistically significant relation between the studied nurses' knowledge score and their age and number of years of experience in the field of pediatric surgical nursing pre and post health education program ($P<0.05$). From the researcher's point of view this may be due to the fact that nurses with few years of experience are young and may have fresh knowledge, better learning abilities, motivation and enthusiasm than others and receive different teaching methods that are supported with new technology.

This finding was similar to *Abo* ***Zeed, (2019)*** who revealed that there was a statistically significant

difference between nurses' knowledge scores with their years of experience toward care of neonates with intestinal obstruction. This finding also agreed with ***El Sharkawy, (2019)*** who showed that, nurses with years of experience less than 5 years had higher mean score of knowledge after implementation IGs than nurses with more years of experience.

While this result was in disagreement with ***Shahin & Mohammed (2020)*** who concluded that there was significant statistical negative correlation between the nurses' years of experience and scores of knowledges regarding enteral feeding in pre-program.

Concerning relation between studied nurses' practice and year of experience, the current study stated that there was statistically significant relation between the studied nurses' practices score and their number of years of experience in the field of pediatric surgical nursing pre and post health education program ($P<0.05$).This may be explained by the fact that nurses with more years of experience generally acquire broader practical knowledge and clinical skills through repeated exposure to various situations in pediatric surgical nursing. Their accumulated experience allows them to apply clinical guidelines more effectively and respond more competently in practice. Moreover, the health education program further enhanced their knowledge and skills, reinforcing the positive effect of their previous experience. Therefore, both experience and the educational intervention contributed to the improvement in practice levels.

This finding was on the same line with ***Hamed et al. (2021)*** who revealed in their study that, there was a strong positive correlation between years of experience of nurses and their practice regarding care of children undergoing gastrointestinal surgery.

On the other hand, the current study was in disagreement with ***Abo Zeed, (2019),*** who reported that, there were no statistical significance differences between the studied nurses' practice and their years of experience.

Regarding relation between studied nurses' practice and education, the present study cleared that; there was highly statistically significant relation between the studied nurses' practices score and their educational qualification pre and post health education program ($P<0.001$). This may be attributed to nurses who completed the BSC education degree and above were more likely to have satisfactory practice as years of education is more than those of technical and diploma.

This result was in agreement with ***Hamed et al. (2021),*** who revealed that there was correlation between nurses' qualification and total actual practice regarding care of children undergoing gastrointestinal surgeries.

While this result disagreed with ***Abo Zeed, (2019),*** who reported that, there were no statistically significant relation between the nurses' score of practice and their level of education toward care of neonates with intestinal obstruction. On the same line, ***Hussein, (2016)*** found that there is no significant difference between nurses practice about care of neonates with intestinal obstruction and their level of education.

Finally, regarding relation between knowledge and practice, the present study illustrated that; there were highly positive correlation between the studied nurses' total knowledge score regarding Hirschsprung and Intussusception and their total practice score pre and post health educational program ($P<0.001$). These findings may be due to that the studied nurses had good score of knowledge and apply this knowledge in their practice.

This finding agreed 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 good score of knowledge had competent level of practice. These studies also were in agreement with *Ammar, (2016)* who found in his study about neonatal intestinal obstruction, that there were statistically significant differences between the nurses' knowledge score and their practice.

While this finding was contradicted with ***Salem, (2024)*** who revealed that there was no a statistically significant correlation between total nurses' knowledge and their total practice.

Conclusion:

Based on the results of the present study, it was concluded that the studied nurses' knowledge and practice was improved after implementation of an educational program. In addition, there was highly positive correlation between the studied nurses' total knowledge score regarding intestinal obstruction and their total practice score pre and post health educational program (P<0.001).

Recommendation:

In the light of the finding of the current study the following recommendations are suggested:

1. Collaboration and continuing education of the staff are vital to improve their knowledge and practices about care provided for children with Hirschsprung and Intussusception.
2. Counseling services regarding prevention, detection and management of Hirschsprung and Intussusception should be available in each study setting in addition to brochures, booklets, intervention media program containing simple information about needs and problems of children.
3. Further studies are recommended to investigate the factors influencing the clinical competencies of nurses.
4. The hospital management should be encouraged to upgrade nurses with diplome educational score to a BSc degree or higher score to be more qualified nurses

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