

## Improving Nurses' Knowledge and Practices Regarding the Care of Children with Intestinal Stomas

Sahar Farouk Hashem<sup>1</sup>, Fawzia El-Sayed Abusaad<sup>2</sup>

<sup>1,2</sup>Pediatric Nursing Department, Faculty of Nursing, Mansoura University, Egypt

**Abstract:** Stoma in infants and children may be occurred anywhere along the gastrointestinal tract because of the wide variety of congenital and acquired conditions that necessitate stoma formation. The nurse can play a clinically relevant role in the care of children undergoing ostomy surgery pre and post-operative education, counseling, discharge planning and out-patient follow up that facilitate adjustment, reduce complications and improve overall quality of life.

**Aim:** the study aims to improve nurses' knowledge and practices regarding care of children with intestinal stomas.

**Methods:** a quasi-experimental research design was conducted on 35 nurses caring of children with intestinal stomas who working at in-patient pediatric surgery department and pediatric surgery ICU at Mansoura University Children's Hospital. Two tools were used for data collection: structured interviewing questionnaire and observation checklist sheet.

**Results:** The results of this study revealed that, the majority (82.9%) of the studied nurses had poor knowledge before the program implementation while, 80% and all the them had good knowledge about the intestinal stoma and its care immediate post and after 3 months of program implementation. Also the majority of nurses (80%) had in-competent practice before the program implementation while the most majority (94.3%) of them had competent practice about care of children with intestinal stomas after 3 months of program implementation. Also, there was a statistically significant difference between the studied nurses' knowledge and practices regarding the intestinal stomas and its care in children after the educational program implementation.

**Conclusion:** The study concluded that, there was a positive effect of the educational program in improving nurses' knowledge and practices regarding care of children with intestinal stomas.

**Recommendations:** Periodical training courses and evidence based recommendations must be provided for pediatric nurses for upgrading their knowledge and practices regarding care of children with intestinal stomas.

**Keywords:** Stoma, Intestinal stoma, Nurses, Children, Educational program.

### I. Introduction

The word stoma derives from the Greek word meaning "mouth or opening". The intestinal stoma is an artificial opening that is created as a mean for evacuation of bowel contents when the large or small intestine is incapable of performing this function<sup>(1)</sup>. The opening (stoma) is made between the intestine and skin of the abdominal wall to divert the intestinal contents to the exterior<sup>(2)</sup>.

Stomas in infants and children are used for various purposes, including access, decompression, diversion and evacuation. Several types of intestinal stomas are recognized and the clinical condition often determines the segment of intestine selected, the type of stoma created and its external location<sup>(3)</sup> The main types of intestinal stomas are colostomy and ileostomy and can be either temporary or permanent stomas depending on the disease and the problems involved<sup>(4)</sup>.

Colostomy is one of the major pediatric surgeries in children which is carried out to divert one end of the large intestine (colon) through an opening in the abdominal wall<sup>(3)</sup>. It is needed for a number of reasons such as colon cancer, diverticular disease, trauma or injury, imperforate anus, inflammatory bowel disease, partial or complete intestinal blockage, Hirschsprungs' disease and fecal incontinence<sup>(5,1)</sup>. While, in ileostomy, the stoma surgery is restricted to the small intestine on the lower right abdominal wall and affects only the rectum. This surgery is indicated for some conditions as ulcerative colitis, Crohn's disease, polyposis and cancer in the colon or rectus<sup>(6,4)</sup>.

Although great advances have been made with regard to stoma formation and management, both early and late complications are common. Understanding enterostomal construction and physiology are essential for providing these children with optimal care<sup>(3)</sup>. Ostomy care is a nursing procedure and it is not delegated to unlicensed assist personnel. So, the nurse must always be prepared to provide appropriate care<sup>(1)</sup>.

Children with stoma face a number of psychosocial problems such as fear, embarrassment, distress and negative body image. They rely on nurses to effectively resolve these problems and suggest stoma care products that will relieve discomfort and anxiety<sup>(7)</sup>. So, it is important that, nurses should be prepared with the relevant knowledge

and practice, enabling them to identify the cause of these problems, care of them and provide reassurance to children with stomas and their families who may have misconceptions of stoma formation and its care<sup>(8)</sup>.

The advancement in quality of care has nurses focused on education for stomates to promote independence and ensure holistic quality of care. Teaching the stomates about nutrition, skin care, and how to maintain their ostomy promotes a higher quality of life<sup>(9,5)</sup>

The stoma care nurses should have special knowledge and evidenced based practice and be able to access other health professionals therefore, making caregivers and other health staff better equipped to respond to health issues as they emerge<sup>(10)</sup>.

So, this study aims to improve nurse's knowledge and practices regarding care of children with intestinal stomas.

### **Research hypothesis:**

- 1- Nurses who attended the educational program have better knowledge and practices about care of children with intestinal stomas.
- 2- There is a relationship between nurses' characteristics specially their qualifications and experiences and their knowledge and practices regarding the intestinal stoma and its care in children.

## **II. Subjects and Method**

### **Design**

A quasi experimental study design was utilized for the conduction of this study.

### **Setting**

The study was carried out at the in-patient pediatric surgery department and pediatric surgery ICU in Mansoura University Children's Hospital.

### **Subjects**

A convenience sample of (35) nurses caring of children with intestinal stomas and work at the above mentioned study settings regardless of their age, qualification or years of experience were included in the study.

### **Tools**

Data was collected through the use of the following tools:

#### **Tool I: Structured interviewing questionnaire sheet (pre and post format):**

It was developed by the researcher after reviewing the related literature. This tool was written in an Arabic language. It was composed of the following parts:

**Part (1):** Characteristics of the studied nurses which included: age, educational level, years of experience, job, training courses or educational programs about the intestinal stomas and its care in children.

#### **Part (2):**

- a- *Nurses' knowledge about the intestinal stoma, which included:* definition, causes of applying stoma in children, types of stoma, characteristics of healthy stoma, complications of stoma.
- b- *Nurses' knowledge about care of children with intestinal stoma before and after operation which included:* Preparation of child for operation, factors which affect applying the stoma for child, diet regimen before operation, instructions for child and family before operation, aims of care of intestinal stoma, care of child with stoma immediately after operation, serious signs for surgeon consultation, daily care of stoma, methods of stoma dressing, type of dressing or pouch, criteria of changing dressing or pouch of stoma, child's privacy during stoma care, colon irrigation and its purposes.
- c- *Nurses' knowledge about problems facing children with intestinal stoma after operation and care of it which included:* Problems of intestinal stoma immediately after operation, actual skin problems, causes and its care, gastrointestinal (elimination) problems and its care, problems of colon irrigation, prevention of stoma problems and its complications.
- d- *Nurses' knowledge about discharge plan and home care of children with intestinal stoma which included:* Discharge plan for child with intestinal stoma, care of child with intestinal stoma at home, precautions and restrictions for child with stoma related to nutrition, activity, bathing, clothes and traveling.

### **Scoring system:**

- A score of two was given to each complete correct answer and one for incomplete correct answer and zero for incorrect answer or did not know.
- The total score for nurses' knowledge was 148 grades.
- The median score of all questions was calculated and converted into percent. Nurses' knowledge was graded as the following:
  - Good knowledge : (>75%)
  - Average knowledge : (60-75%)
  - Poor knowledge : (< 60%)

**Tool II: Observation checklist sheet:**

The researcher developed the observation checklist after reviewing the related literature. This tool was used to assess the practical steps of stoma care which performed by the nurse for children with intestinal stoma. It was composed of the following parts:

**Part (1):** Preparation of equipment for colostomy or ileostomy care.

**Part (2):** Colostomy or ileostomy care technique by using the same ostomy pouch, changing the ostomy pouch, using dressing.

**Scoring system:**

- A score of two was given to competent practices and a score less than two was given incompetent practices.
- The scores of equipment of stoma care were 10 grades for nurses who used pouch or change it during stoma care, but, the scores of equipment of stoma care were 7 grades for nurses who used dressing in stoma care.
- The scores of stoma care technique were 24 grades for nurses who used pouch or change it during stoma care, but, the scores of stoma care technique were 15 grades for nurses who used dressing during stoma care.
- Nurse's practices results were categorized as the following:
  - If nurses' practices grades more than 75% for each procedure, they had competent practice.
  - If nurses' practices grades between less than 75%, they had incompetent practices.

**The educational program:**

The educational program was designed by the researcher based on the actual need assessment of the studied nurses' through reviewing the related literature. The program was containing the theoretical and practical sessions about the intestinal stomas and its care in children. It was consisted of the following items:

- 1- Knowledge about stoma according to its type (colostomy or ileostomy).
- 2- Knowledge about nursing care of children with intestinal stoma before and after operation and care at home.
- 3- Practical skills according to the type of stoma regarding: preparation of equipment needed for stoma care, technique and steps of stoma and peristomal skin care using the same stoma pouch or by changing the stoma pouch or using dressing in the care.

**Method**

- 1- An official permission letter was obtained from the director of Mansoura University Children's Hospital (MUCH), and the head of pediatric surgery department and pediatric surgery intensive care unit of Mansoura University Children's Hospital to conduct this study.
- 2- The developed tool was submitted to a jury of five experts in the pediatric nursing field for its content validity. Based on their comments; necessary modifications were done. The reliability of the tool was done by measuring the internal consistency of its items using the Alpha Cronbach's coefficient: 0.87.
- 3- A pilot study was come out to test the study tools. It was conducted on 10% of the total sample size that included in the total sample in order to evaluate the research plan, the clarity of tools and applicability of the study tools.
- 4- Data collected of this study was carried out over a six months period that started from the beginning of June 2015 to the end of December 2015.
- 5- The studied nurses were divided into groups (5 in each group). The program was given in 4 sessions, two theoretical and two practical sessions (around 45minutes for each). Various teaching methods were used in the form of lectures, group discussion, demonstration and re-demonstrations. Various teaching media were used, such as colored posters, power point, and hand out. The program was carried out in the in-patient pediatric surgery department and pediatric surgery ICU.
- 6- Nurses' knowledge and practices were evaluated three times pre / immediate post and after three months of the educational program implementation using the previously mentioned study tools.

**Ethical considerations**

The researcher obtained oral consent from each nurse for her participation after explaining the aim of the study and confidentiality of data.

**Limitations of the study**

A small sample size in the present study was inadequate to generalize the results of the study.

**III. Data analysis**

The data in this study was analyzed using SPSS (Statistical Package for Social Sciences) version 15. Qualitative data was presented as number and percent. Comparison between groups was done by Chi-Square test. Wilcoxon signed ranks test was used for comparison within group. Quantitative data was presented as mean

±SD. Paired t-test was used for comparison within groups. Pearson's correlation coefficient was used to test correlation between variables. P<0.05 was considered to be statistically significant.

#### IV. Results

Characteristics of the studied nurses show in **Table (1)**, less than half of them (42.9%) aged between 25-30 years and their years of experience were 5-10 years. Regarding the level of education of these nurses, half of them (51.4%) got nursing diploma while, more than a quarter of them got bachelor of nursing and were nursing supervisors as revealed by (40% & 36.1%) of them respectively. Also, the most majority of studied nurses (97.1%) has not got training courses about intestinal stoma and its care.

**Fig. (1)** shows that, the majority of the studied nurses have poor level of knowledge regarding the intestinal stoma, problems facing children with intestinal stoma and its care and precautions and home care for children with intestinal stoma before program implementation as revealed by (80%, 85.7%, 85.7%) of them respectively while, all of them (100%) have good knowledge regarding care of children with intestinal stoma immediate post and after 3 months of program implementation.

**Table (2)** reveals that, there is a statistical significant difference between total nurses knowledge about the intestinal stoma and its care in children before, immediate post and after three months of program implementation.

In relation to the total level of nurses' practices regarding care of children with intestinal stoma before, after 3 months of program implementation, **Table (3)** shows that, the majority (80%) of the studied nurses have incompetent level of practices before program implementation while, the most majority of them (94.3%) have competent level of practices after 3 months of program implementation.

**Table (3)** illustrates that, there is a statistical significant differences between the total level of nurses' practices about care of children with intestinal stoma before, immediate post and after 3 months of program implementation (P<0.001).

Regarding relationship between nurses' characteristics and their total knowledge about the intestinal stoma and its care in children before, immediate post and after three months of program implementation, **Table (4)** reveals that, there is a statistical significant difference between nurses' knowledge about intestinal stoma and its care in children before program implementation and their education and job. Also, it is noticed that, approximately three quarters (72%) of nurses have poor knowledge about the intestinal stoma and its care before program but, immediate post & after 3 months of the program implementation, they had good knowledge as revealed by two thirds (64% & 62%) of them respectively.

**Table (5)** indicates that, there is a statistical significant difference between the total nurses' knowledge and their total practices about the intestinal stoma and its care in children after program implementation (P=0.011 & X<sup>2</sup>=9.059). Also, three quarters (75.9%) of nurses who had incompetent practices regarding care of children with intestinal stoma have poor knowledge about the intestinal stoma and its care in children before program implementation while, the most majority of them who have competent practices have good knowledge immediate post & after 3 months of program implementation as revealed by (96.4% & 94.3%) of them respectively.

**Table (1):** Socio-demographic characteristics of the studied nurses.

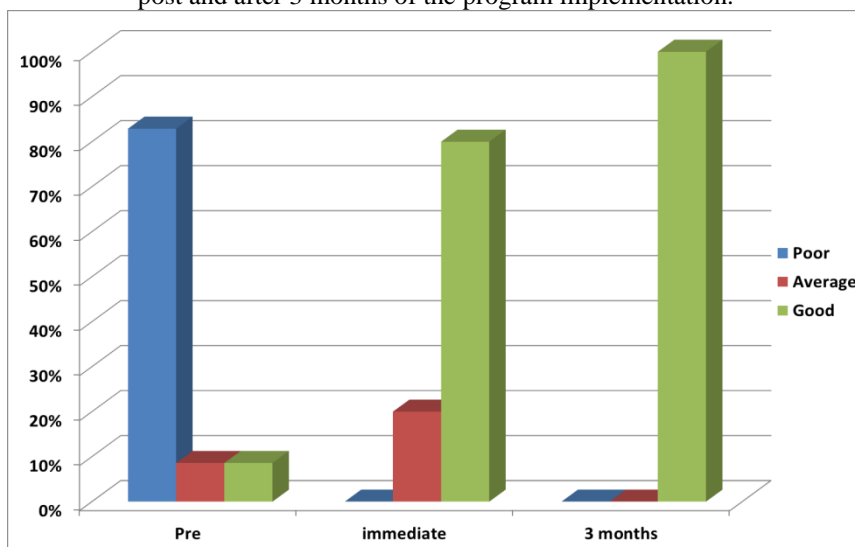
Nurses' characteristics	No (35)	100%
<b>Age</b>		
< 20-25 years	7	20
25-30	15	42.9
30-35 years	10	28.6
35-40 years	3	8.6
<b>Education</b>		
Nursing diploma	18	51.4
Diploma of nursing technician	3	8.6
Bachelor of nursing	14	40
<b>Job</b>		
Bedside nurse	22	61.1
Nursing supervisor	13	36.1
<b>Experiences</b>		
< 5 years	11	31.4
5-10 years	15	42.9
10-15years	7	20
15-20years	2	5.7
<b>Training courses</b>		
Yes	1	2.9
No	34	97.1

**Table (2):** Distribution the levels of nurses' knowledge about intestinal stoma and its care in children before, immediate post and after 3 months of the program implementation (No.=35).

Variable	Before		Immediate post		After 3 mon.		Pre vs. immediate post (Z1-test)	Pre vs. 3mon. (Z2-test)	Immediate post vs. 3mon. (Z3-test)
	No	%	No	%	No	%			
<b>Knowledge about the intestinal Stoma.</b>									
Poor	28	80	0	0	0	0	<0.001*	<0.001*	0.782
Average	3	8.6	7	20	6	17.1			
Good	4	11.4	28	80	29	82.9			
<b>Knowledge about care of child with intestinal stoma pre &amp; post operatively.</b>									
Poor	0	0	0	0	0	0	<0.001*	0.005*	1.0
Average	8	22.9	0	0	0	0			
Good	27	77.1	35	100	35	100			
<b>Knowledge about problems facing children with intestinal stoma and its care.</b>									
Poor	30	85.7	6	17.1	0	0	<0.001*	<0.001*	0.012*
Average	1	2.9	11	31.4	10	28.6			
Good	4	11.4	18	51.4	25	71.4			
<b>Knowledge about precautions and home care for children with intestinal stoma.</b>									
Poor	30	85.7	8	22.9	1	2.9	<0.001*	<0.001*	0.158
Average	4	11.4	14	40	20	57.1			
Good	1	2.9	13	37.1	14	40			

\* Statistical significant difference at P<0.05.

**Figure (1):** Total level of nurses' knowledge about intestinal stoma and its care in children before, immediate post and after 3 months of the program implementation.



Z1: Pre vs. immediate post (<0.001\*)

Z2: Pre vs. after 3 months (<0.001\*)

Z3: Post after 3 months (0.008\*)

**Table (3):** Distribution of the total nurses' practices about care of children with intestinal stoma before, immediate post and after 3 months of the program implementation.

Nurses' practices	Pre		Immediate post		3 months		Pre vs. immediate post (Z1-test)	Pre vs. 3mon. (Z2-test)	Immediate post vs. 3m (Z3-test)
	No	%	No	%	No	%			
Incompetent	28	80	4	11.4	2	5.7	<0.001*	<0.001*	0.157
Competent	7	20	31	88.6	33	94.3			

\* Statistical significant difference at P<0.05.

**Table (4):** Relationship between the characteristics of the studied nurses and their total knowledge about the intestinal stoma and its care in children before, immediate post and after 3 months of program implementation.

Variables	Before						$\chi^2$	P	Immediate post				$\chi^2$	P	After 3 months		$\chi^2$	P
	Poor (n = 29)		Average (n = 3)		Good (n = 3)				Average (n = 7)		Good (n = 28)				Good (n = 35)			
	No	%	No	%	No	%			No	%	No	%			No	%		
<b>Age</b>																		
<20-25 years	5	17.2%	0	0%	2	66.7%	6.015	0.421	1	14.3%	6	21.4%	3.185	0.364	7	20%	-	-
25-30	12	41.4%	2	66.7%	1	33.3%			5	71.4%	10	35.7%			15	42.9%		
30-35 years	9	31%	1	33.3%	0	0%			1	14.3%	9	32.1%			10	28.6%		
35-40 years	3	10.3%	0	0%	0	0%			0	0%	3	10.7%			3	8.6%		
<b>Education</b>																		
Nursing diploma	18	62.1%	0	0%	0	0%	10.038	0.040*	3	42.9%	15	53.6%	1.518	0.468	18	51.4%	-	-
Diploma of nursing technician	2	6.9%	1	33.3%	0	0%			0	0%	3	10.7%			3	8.6%		
Bachelor of nursing	9	31%	2	66.7%	3	100%			4	57.1%	10	35.7%			14	40%		
<b>Job</b>																		
Nurse	21	72.4%	1	33.3%	0	0%	7.331	0.026*	4	57.1%	18	64.3%	0.122	0.726	22	62.9%	-	-
Nursing supervisor	8	27.6%	2	66.7%	3	100%			3	42.9%	10	35.7%			13	37.1%		
<b>Experiences</b>																		
<5 years	8	27.6%	0	0%	3	100%	8.564	0.200	3	42.9%	8	28.6%	1.006	0.800	11	31.4%	-	-
5-10 years	13	44.8%	2	66.7%	0	0%			3	42.9%	12	42.9%			15	42.9%		
10-15 years	6	20.7%	1	33.3%	0	0%			1	14.3%	6	21.4%			7	20%		
15-20 years	2	6.9%	0	0%	0	0%			0	0%	2	7.1%			2	5.7%		
<b>Training courses</b>																		
Yes	0	0%	1	33.3%	0	0%	-	-	7	100%	28	100%	-	-	35	100%	-	-
No	29	100%	2	66.7%	3	100%			0	0%	0	0%			0	0%		

\* Statistical significant difference at P<0.05.

**Table (5):** Relationship between the total knowledge of the studied nurses and their total practices about the intestinal stoma and its care in children before, immediate post and after 3 months of the program implementation.

Time	Total Practices	Total Knowledge						$\chi^2$	P
		Poor		Average		Good			
		No	%	No	%	No	%		
Pre	competent	7	24.1%	0	0%	0	0%	4.089	0.394
	incompetent	22	75.9%	3	100%	3	100%		
Immediate Post	competent	0	0%	4	57.1%	27	96.4%	9.059	0.011*
	incompetent	0	0%	3	42.9%	1	3.6%		
After 3 months.	competent	0	0%	0	0%	33	94.3%	-	-
	incompetent	0	0%	0	0%	2	5.7%		

\* Statistical significant difference at P<0.05.

### V. Discussion

Children who are living with ostomies require specialized care and management to sustain physical health and quality of life. The provision of nursing care for children with intestinal stoma begins pre-operatively and continues throughout the post-operative and rehabilitative period and throughout the child's life time with an ostomy <sup>(11)</sup>.

The importance of pre-operative counseling, proper education and support for ostomates is important to ensure that they recognize and know how to prevent and treat complications of stoma and peristomal skin <sup>(12)</sup>.

The results of this study showed that, approximately half of the studied nurses had nursing diploma and acted as bedside nurse and less than half of them had bachelor of nursing and acted as nursing supervisor in the pediatric surgery department **table (1)**. This finding was similar to the view of **Subih and Neil (2016)** <sup>(13)</sup> in their study in Jordan that ostomy care is a responsibility of the bedside nurses who act as stoma care nurses both pre and post-operatively. This result in our study may be due to increase the number of diploma nurses than qualified nurses in surgical department but in ICU pediatric surgery, the qualified nurses who had bachelor of nursing are increased.

In relation to training courses for nurses, in the current study, the most majority of the studied nurses didn't take any training courses in the pediatric surgery department and pediatric surgery ICU and only one nurse had training courses about stoma care in children. This finding agree with the study by **Swearingen, (2013)** <sup>(4)</sup> who reported that, ostomy care is not a major topic of discussion and is not practiced as a nursing skill. Therefore, many nurses have inadequate training to know how to discuss ostomy pre-operative and post-operative treatment with the pediatric patient.

Also, a study by **McEvoy, (2015)<sup>(14)</sup>** in Ireland hospitals, who clarified that, the stoma care nurse is a qualified nurse who has specialist training courses to deliver a holistic and comprehensive service of care to persons with stoma surgery. This finding reveals to the importance of participation of all pediatric nurses who work with ostomates in an educational and informational meetings and courses organized by the health associations or hospitals to develop their knowledge and practice related to stoma care in order to ensure optional patient care and to be good resource for children with stoma and their families.

In relation to the nurses' knowledge about intestinal stoma and its care in children **table (2)**, the finding of the present study clarified that, there was a statistically significant differences related to nurses' knowledge about the intestinal stoma, stoma care pre and post-operatively, problems facing children with intestinal stoma, precautions and home care of children after discharge before, immediate post and after 3 months of the educational program implementation. This result was supported by **Bales, (2010)<sup>(15)</sup>** who stated that, nurses reported statistically significant increase in knowledge of ostomy care and increased confidence in their ability to provide care after completing the educational program. Also, this finding is supported by **Lidor et al., (2011)<sup>(16)</sup>** who reported that, nurses who provide pre and immediate post operative education and follow up can help in adjustment, reduce complications and improve overall quality of life of children with intestinal stomas.

Also, the current study showed that the majority of nurses had knowledge related to the intestinal stoma and its care in children pre and post operatively immediate post and after three months of program implementation. This finding agree with a study by **Eder, Lodyga, Lykowska et al., (2013)<sup>(17)</sup>** who reported that, there is a need for continuous improvement of knowledge and exchange of experience by the nursing staff working in multidisciplinary teams involved in the care for children with stoma. However, less than half of the studied nurses had good knowledge immediate post and after 3 months of program implementation. This finding agree with a study by **Pearson and Helistrom, (2002)<sup>(18)</sup>** who reported that, there are a serious defects in the nursing care and the information provided by the nurse was unsatisfactory as it did not address psychosocial and emotional issues related to colostomy and ileostomy. These results indicate that, all stoma care nurses need constant updating of their knowledge and incorporating ostomy evidence-based care in the undergraduate nursing curriculum that will increases nurses' professional knowledge and develop better educators in ostomy knowledge and self care regarding intestinal stoma and its care.

Regarding the total nurses' practices about care of children with intestinal stoma **table (3)** the finding in the current study clarified that, there was a satisfactory level of nurses' practice about care of children with intestinal stoma immediate post and after 3 months of the educational program implementation. This finding was supported by **Richboarg, Thorpe and Rapp, (2007)<sup>(19)</sup>** who reported in their study in Jordan that, stoma care nurses who are received specialized ostomy care experience and education can reduce ostomy-related complications.

This finding is supported by **Golik et al., (2014)<sup>(20)</sup>** who stated that, continuous learning is one of the duties of nursing staff and the specificity of nursing care of stomates requires additional and competent skills and experience. This clarifies that, the clinical practice of stoma care need updating skills and adequate knowledge in dealing with patients with stoma specially the children and their family.

As regards the relationship between the characteristics of the studied nurses and their total knowledge **Table (4)**, the present study showed that, there was a significant relationship between the education and job of the studied nurses and their total knowledge regarding the intestinal stoma and its care in children before implementation of the educational program.

Also, it is clarified from this study that two thirds of nursing supervisors who had bachelor of nursing had average level of knowledge than the bedside nurses who had diploma of nursing technician before program implementation while, more than half of bedside nurses had good knowledge after program implementation. These findings were supported by **Golik et al., (2014)<sup>(20)</sup>** and **Swierzewski, (2015)<sup>(21)</sup>** who reported that, nurses who provide advanced care for patients with stoma should have a bachelor degree in nursing and experience to be able to advise both patients and staff from other units, engage in educational activities and work closely with doctors specializing in the care of stomates.

In relation to training course taken by the studied nurses, the result of the present study showed that, two thirds of nurses who did not take any training courses had average knowledge regarding intestinal stoma and its care before program implementation while, all of them had good knowledge after 3 months of program implementation **Table (4)**. This result is agree with the **American Cancer Society (2014)<sup>(22)</sup>** which represented that, the ostomy nurse should has special training in ostomy management and can teaches and takes care ostomy patients. Also, this result was supported by **Deshpande, (2015)<sup>(23)</sup>** who stated that, the basic nursing knowledge imparted during the health teaching helped the efficiency of the care giver to provide a better quality care to colostomy child.

Regarding the relation between the total knowledge and the total practices of the studied nurses **Table (5)**, the current study clarified that, there was a statistically significant difference between nurses' knowledge and their practices regarding care of children with intestinal stoma immediate post the educational program

implementation. This finding is in accordance with **Lodyga, Eder and Bartnik et al., (2012)<sup>(24)</sup>** who reported that, working with children with stoma requires constant updating of knowledge and practice and in-patient and out-patient treatment experience within the field of surgical nursing and treatment of chronic wounds. Also, this agreed with **Doughty, (2000)<sup>(25)</sup>** who stated that nursing education and practice have an interdependent relationship, each stimulates and reflects the other's progress and each is affected by changes in the other.

Also, it was revealed from the present study **Table (5)**, that the most majority of nurses who had good knowledge had competent practices after three months of program implementation while, more than half of them who had poor knowledge had incompetent practices related to the intestinal stoma and its care in children before program implementation. This finding proves that, the nursing educational program intervention had a positive impact in the knowledge and practice scores of stoma care and knowledge in the studied nurses after intervention of the program.

## VI. Conclusion

Based on the findings of the current study, it was concluded that there was a positive effect of the educational program for nurses regarding care of children with intestinal stoma.

## VII. Recommendations

Based on the findings of the present study, the following recommendations are to be considered: The nurses certified in ostomy and wound care should deliver specialized evidence-based care to ostomates and the hospitals should organize internal training courses on the advanced methods of intestinal stoma care for all pediatric surgery nurses in the work place and help them to participate in the external training courses and conferences to upgrade their knowledge and practices in their field.

## Acknowledgments

I would like to thank all the nurses who participated in the study, children of the in-patient pediatric surgery department and ICU pediatric surgery of Mansoura University Children's Hospital for their help and cooperation during the study period.

## References

- [1] **JDGopez, R.N.** Colostomy Care Nursing Procedure. Runspeak.com, **2015**.
- [2] **Taylor, J., Crodes, W., Parker, M., Watts, J. and Whitehead, D.** Guideline for care of a patient with a stoma. Nottingham University Hospitals NHS trust, supporting policy, working in new ways package, updated October, **2012**.
- [3] **Minkes, R.K. and Grewal, H.** Stomas of the small and large intestine, by web MDLLC. UK. Updated: April 27, **2015**.
- [4] **Swearingen, S.** Introduction to the physical, psychological, emotional and spiritual care for ostomy patients-improving the quality of life. The Ohio Nurses Association. (OBN-001-91), November, **2014**; CE4 Nurses.
- [5] **Wittenauer, J.** Caring of the ostomy patient. National Center of Continuing Education, Inc, **2008**.
- [6] **Doublement, J.** Ostomy lol: Colostomy, Ileostomy, and Urostomy. Wound Care Advisor. October, **2013**.
- [7] **Calvert, S., Disley, H. and Jowett, A.** Stoma care clinical nursing standards. 3<sup>rd</sup> ed., Securi Care, Stoma Care Clinical Nursing Standards. www.securicaremedical.com. UK, **2012**.
- [8] **Peate, J.** Free Stoma Care Supplement. BJN, **2014**.
- [9] **Dorman, C.** Ostomy basis: The nurse's personal feelings toward ostomies play a role in patient outcomes. www.rnweb.com, **2009**; [RN], 22-27.
- [10] **Rollins, H.** The psychosocial impact on parents of tube feeding their child. Pediatric Nursing . May, **2006**; 18(4): 20-24.
- [11] **Re Calla, S., English, K., Nazarali, R., Mayo, S., Miller, D. and Gray, M.** Ostomy Care and Management, A systematic Review. J Wound, Ostomy and Continence Nurse Society JOWCN, Lippincott Williams & Wilkins. September/October, **2013**; 40(5): 489-500.
- [12] **Williams, J., Gwillam, B., Sutherland, N. et al.** Evaluating skin care problems in people with stomas. Br J Nur. **2010**; 19(17): S6-S15.
- [13] **Subih, M.M. and Neill, J.M.** Ostomy educational program for nurses in Jordan. Wound Clinic Business. September, **2016**.
- [14] **McEvay, G.** Life after a colostomy. Irish health.com, **2015**. Med Media Group.
- [15] **Bales, I.** Testing a Computer Based Ostomy Care Training Resource for Staff Nurses. Ostomy Wound Manage. **2010**; 56(5): 60-69.
- [16] **Lidor, A.O., Gearhart, S.L., Wu, A.W. and Chang, D.C.** Effect of race and insurance status on presentation treatment, and mortality in patients undergoing surgery for diverticulties. Arch Surg. **2011**; 143(12): 1160-1165.
- [17] **Eder, P., Lodyga, M., Lykowska-Szuber, L., et al.** Guidelines for the management of ulcerative colitis. Recommendations of the working group of the Polish National Consultant in Gastroenterology and the Polish Society of Gastroenterology [Polish] Prz Gastroenterol. **2013**; 8: 1-20.



- [18] **Pearson, E. and Helistrom, A.L.** Experiences of Swedish men and women 6 to 12 weeks after ostomy surgery. *Journal of Wound Ostomy and Continence Nurses*, **2002**; 29: 103-8.
- [19] **Richboarg, L., Thorpe, J.M. and Rapp, C.G.** Difficulties experienced by the ostomate after hospital discharge. *J Wound Ostomy Continence Nws.* **2007**; 34(1): 70-79.
- [20] **Golik, M., Kurek, M., Poteralska, A., Bieniek, E., Marynka, A., Pabich, G., Liebert, A., Klopocka, M. and Ryzewska G.** Working group guidelines on the nursing roles in caring for patients with Crohn's disease and ulcerative colitis in Poland. *Prz Gastroenterol.* **2014**; 9(4): 179-193.
- [21] **Swierzewski, S.** Gastrointestinal surgery, colostomy post-operative care and complications. NON Code standard for trust worthy health information, September, **2015**.
- [22] **American Cancer Society.** Ileostomy: A guide. 1-800-227-2345 or [www.cancer.org](http://www.cancer.org), **2014**.
- [23] **Deshpande, R.** Effectiveness of planned nursing intervention an knowledge and practice of selected aspects of care provided by care giver of children with colostomy admitted in hospitals of Mumbai. *Innovational Journal of Nursing and Health Care (IJNH)*, **2015**; 1(2): 151-556.
- [24] **Lodyga, P., Eder, P., Bartnik, W., et al.** Guidliness for the management of Crohn's disease. Recommendations of the Working Group of the Polish National Consultant in Gastroenterology and the Polish Society of Gastroenterology [Polish] *Prz Gastroenterol.* **2012**; 7: 317-38.
- [25] **Doughty, D.** Integrating Advanced Practice and WOC Nursing EEducation. *J Wound Ostomy Continence Nurs.* **2000**; 27:65-6