

Effect of Nursing Instructions on Mothers' Knowledge and Practice of Colostomy Care

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Abstract

Background and aim: Colostomy is a surgical procedure that involves creating an opening in the abdominal wall to divert the flow of stool from the colon to a stoma. This procedure can have a profound impact on the lives of pediatric patients and their families, requiring specialized care and support. Therefore, this study aimed to evaluate the effect of Nursing Instructions on Mothers' Knowledge and Practice of Colostomy Care. **Methods:** A quasi-experimental design was used. A purposive sample of 60 mothers of children with colostomy was selected from the pediatric surgical unit at Cairo Specialized Pediatric Hospital. first 30 mothers considered control group and second 30 mothers considered as the study group, two tools were used a structured interview questionnaire and mothers' knowledge and observational checklist regarding colostomy to collect data, **Results:** There was a statistically significant difference between the study and control groups regarding knowledge and practice total mean scores ($p < 0.005$), with higher total mean scores in the study group than in the control group. **Conclusion:** mothers who receive nursing instruction related colostomy care have higher mean score of knowledge and practice than mothers who receive hospital routine care.

Keywords: Nursing Instructions, Colostomy, Mothers, Practice, Knowledge

Introduction:

Enterostomy is a frequently performed surgical intervention used to treat acute abdominal conditions resulting from abnormalities in the gastrointestinal tract. These abnormalities may include conditions like necrotizing enterocolitis, diseases affecting the ganglion cells in the intestines, anal atresia, and various malformations such as intestinal malrotation, atresia, strictures, or perforations (Wood & Levitt, 2018 and Li et al., 2019). A colostomy is a surgical procedure that involves creating an opening in the abdomen. This opening allows a portion of the large intestine to be brought outside the abdominal wall, forming a stoma. Through this stoma, partially digested food moves into an external pouching system for collection (Wound, Ostomy Continence Nurses Society, 2018 & Abd- Elhay et al., 2019).

In low-middle-income countries, there is a need for ostomies in various pediatric surgical conditions. These conditions can be either congenital, such as anorectal malformations (ARM) and Hirschsprung's Disease (HD) or acquired diseases like intestinal perforation caused by typhoid or gangrenous ileocolic intussusception (Muzira et al., 2018).

Children often undergo colostomies to alleviate blockages in the colon caused by

congenital abnormalities like colon atresia and imperforate anus. In some cases, colostomies are also performed for tumors or instances of rectal perforation. The commonly performed ostomy procedures in surgery are colostomy and ileostomy. However, there are other variations, such as the less common jejunostomy, which can be created to relieve pressure, cleanse, and divert the contents of the gastrointestinal tract (Massenga, et al., 2019).

Various types of stomas are created in the abdominal wall, with some being temporary and others permanent. Stomas that originate from the colon are referred to as colostomies, and their specific names are based on the part of the colon involved, such as sigmoid descending or transverse colostomies. Stomas originating from the small intestine are known as jejunostomies or ileostomies. If a stoma is created for urine drainage, it is called a urostomy, while a stoma created for feeding the patient through the stomach is known as a gastrostomy (Uddin et al., 2017 & Peter et al., 2018).

Numerous complications were observed, some of which resulted from errors in surgical techniques, while others were due to inadequate counseling of parents. The patients were categorized into two groups based on the reasons

for colostomy and the specific type of colostomy performed (Kurpad, et al., 2015 & Nasar, 2017). Furthermore, in a clinical study conducted by Mallik et al. in 2019 at a tertiary center, they examined 33 cases of pediatric colostomies in infants and children. The study revealed that the most frequent complications reported among these cases were skin excoriation, followed by wound infection.

In a study conducted by Uslu et al. in 2015 on the effectiveness of planned nursing intervention for caregivers of children with colostomy in Mumbai hospitals, it was found that lack of awareness among caregivers regarding proper stoma care contributed to complications and infections in children with colostomy, leading to readmissions, particularly due to skin excoriation. The study also highlighted commonly overlooked complications, such as the inability to recognize signs of skin breakdown and the presence of ribbon-like stool, which were often not reported promptly.

Another complication that can arise in children with colostomies is stoma prolapse. Stoma prolapse refers to the protrusion or telescoping of the stoma above the skin level. This can result in difficulty in maintaining a proper seal of the colostomy appliance, leading to leakage, skin irritation, and potential infection. In severe cases, stoma prolapse may require surgical intervention to correct the prolapsed stoma and ensure proper functioning (Tan Tanny et al., 2019).

Stoma retraction is another potential complication that may occur in children with colostomies. Stoma retraction refers to the sinking or pulling back of the stoma below the skin level. This can make it challenging to obtain a secure seal with the colostomy appliance, leading to leakage and skin irritation. In some cases, surgical revision may be necessary to adjust the stoma height and improve appliance adherence (Townley et al., 2018).

Complications such as stoma necrosis and ischemia are rare but can occur in children with colostomies. These complications result from inadequate blood supply to the stoma, leading to tissue death. Prompt recognition and intervention are critical to prevent further damage and potential serious complications. Surgical revision may be required to restore blood flow to the

affected area and prevent further tissue necrosis (Martynov et al., 2019).

Supportive care provided by nurses to mothers who are responsible for providing colostomy care for their children plays a crucial role in promoting optimal patient outcomes and enhancing the overall well-being of both the child and the mother. Nurses can provide various forms of support to these mothers, addressing their physical, emotional, and educational needs (Kassa, Engstrand & Engvall, 2019).

One important aspect of supportive care is education. Nurses can provide comprehensive and tailored education to mothers regarding colostomy care, including stoma hygiene, appliance management, and recognizing risk signs to avoid incidence of complications (Carmel, Colwell, and Goldberg, 2016). By equipping mothers with the necessary knowledge and skills, nurses empower them to care for their child's colostomy confidently and effectively. Education can also help alleviate anxiety and fear, providing mothers with a sense of control and competence in managing their child's condition (Rahman, 2015 & Weheida et al., 2016).

Emotional support is another essential component of nursing care for mothers providing colostomy care (Karadag & Dursun, 2017). Caring for a child with a colostomy can be emotionally challenging for mothers, as they may experience feelings of guilt, stress, and worry. Nurses can offer a safe and non-judgmental environment where mothers can express their concerns and emotions. By actively listening, providing empathy, and offering reassurance, nurses can help mothers navigate the emotional aspects of colostomy care, promoting their mental well-being (Chao, Wang, & Wang, 2019 & Nam et al., 2019).

Practical support is also crucial in assisting mothers in their caregiving role. Nurses can guide mothers in choosing appropriate colostomy supplies, assist in troubleshooting common problems with appliance management, and provide information on community resources and support groups (Yeh, & Chang, 2018). By offering practical guidance and resources, nurses can help mothers feel supported and empowered in their role as primary caregivers (Worede, & Wordofa, 2017 & Cengiz, Demir, Karadag, & Yildirim, 2018).

Additionally, nurses can facilitate peer support among mothers caring for children with colostomies. Creating opportunities for mothers to connect with and learn from each other can be invaluable. This can be achieved through support groups, online communities, or organized events where mothers can share experiences, exchange tips, and provide mutual support. Peer support can help reduce feelings of isolation and provide a sense of belonging, as mothers realize that they are not alone in their caregiving journey (Bezerra, Elisa, Maria, and Gisela., 2019).

Significance:

According to Uslu et al. (2015), their study found that caregivers of children with colostomy admitted in hospitals in Mumbai lacked awareness about effective stoma care. This lack of knowledge led to complications and infections in the children, resulting in readmissions primarily due to skin excoriation. Some commonly overlooked complications include the inability to recognize signs of skin breakdown and the passage of ribbon-like stool. Additionally, Dabas et al. (2016) noted that there is a scarcity of teaching aids specifically addressing colostomy care for children and their caregivers, with most resources focusing on adult care.

From the researcher empirical experience most of mothers admitted performing colostomy for their children had poor knowledge and practice which lead to lots of problems whether they faced or their children which affect the outcome and may increase the hospital stay and elongate the period of recovery of their children.

Additionally, colostomy care can be a complex and challenging task, especially for mothers who are responsible for their child's daily care. This study focuses on the impact of nursing instructions on mothers' knowledge, aiming to enhance their understanding of colostomy care. By improving maternal knowledge, this research has the potential to empower mothers with the necessary skills and confidence to provide optimal care for their child's colostomy.

As mothers are the primary caregivers for their children with colostomy. By focusing on mothers' knowledge and practices, the study acknowledges the importance of empowering mothers in their caregiving role. Providing mothers with comprehensive nursing instructions

can help them feel more confident and competent in managing their child's colostomy, leading to improved outcomes and better overall care.

Aim of the study

The study aims to evaluate the effect of Nursing Instructions on Mothers' Knowledge and Practice of Colostomy Care.

Research hypotheses:

H1: Mothers who receive nursing instructions will have higher mean score of knowledge related to colostomy care of children than those who will not.

H2: Mothers who receive nursing instructions will have higher mean score of practice related to colostomy care of children than those who will not.

Research design:

Quasi -experimental research design was utilized to fit the aim of the current study. A quasi-experimental design is a type of experimental design that is very similar to the true experimental design except there is loss one criteria. Time series studies are often conducted for the purpose of determining the intervention or treatment effect. Multiple observations are obtained before and after the intervention (Gray, Emeritus, Grove, & Sutherland, 2018).

Sample:

A purposive sample of 60 mothers of children with colostomy of both sexes participated in the current study, the first 30 parents were considered as a control group whose children were received the hospital routine care. The second 30 mothers were considered as the study group who were exposed to the nursing instructions. The number of participants was calculated based on the following formula ([https:// byjus. com/ sample- size-formula/](https://byjus.com/sample-size-formula/)).

$$n = \frac{T^2 \times p(1-p)}{m^2}$$

Description:

n = required sample size.

t = confidence level at 95% (standard value of 1.96).

p = estimated prevalence of children with colostomy 2018 at CUSPH =0.76)
m = margin of error at 5% (standard value of 0.05).

$$n = \frac{(1.96)^2 \times 0.76(1-0.76)}{(0.05)^2} = 30$$

Setting:

The study conducted at Cairo University Specialized Pediatric Hospital (CUSPH) in the right side of pediatric surgical unit at the fourth floor which composed of 2 parts of inpatient the left part receives pediatric several specialties as orthopedic, renal and CNS surgeries the right part for gastrointestinal and plastic surgeries which contain 5 rooms 2 with one bed in each room and other 3 rooms with 3 beds and 1 room with 6 beds. Which received children in need for gastrointestinal and plastic surgical interventions such as Hirschsprung's, imperforated anus, intussusception, appendicitis, hemangiomas, hypospadias, epispadias, and other congenital anomalies including orofacial anomalies from all over Egypt.

Data collection tools:

The required tools were developed by the researcher after reviewing the related literature through the following tools:

1- Structured interview questionnaire: it is developed by the researcher and composed of three parts:

Part I: It involves 4 items regarding mother's personal data about (age, level of education, occupation, place of residence).

Part II: It contains 5 items related to data about child (age, gender, rank in the family, Diagnosis, siblings).

2- Mothers' Knowledge regarding colostomy:

It was developed by the researcher and involved 10 items regarding the colostomy (definition, causes, types, shape, problems and 5 risk signs).

Scoring system: each correct response took 1 score and incorrect or not know took 0 score then total score converted to 100% and categorized as level of knowledge of less than 60% (< 6) considered unsatisfactory while level

of knowledge of 60% and more (6 and more) considered satisfactory.

Mothers' observational Colostomy care checklist: - developed by the research investigator involves 12 items related to colostomy routine care.

Scoring system: each correct response took 1 score and incorrect response, incomplete or don't know took 0 score. Total score of mother's observational colostomy care checklist is 12 converted to 100 % then categorized as total score of less than 70% (< 8.4) considered unsatisfactory, while score of 70% and more (8.4 and more) considered satisfactory.

Validity and reliability:

Content validity:

Data collection (tool I) was developed after extensive reviewing of literature. The tools were reviewed by 5 experts in pediatric surgery nursing, and pediatric plastic surgery to test the content validity of the tools. The tools were examined for content coverage, clarity, relevance, applicability, wording, length, format, and overall appearance. Based on experts' comments and recommendations; minor modifications had been made such as rephrasing and rearrangements of some sentences.

Tool (II) was developed by the research investigator after extensive review of the related recent literature. The content of the data collection tool was submitted to a panel of five experts in the field of pediatric nursing to test the content validity. Modifications of the tool were done according to the panel judgment on clarity of sentences, appropriateness of content and sequence of items.

Reliability of the tool (1, 2) the internal consistency was measured to identify the extent to which the items of tools measure the same concept and correlate with each other. Internal consistency estimate's reliability by grouping questions in a questionnaire that measure the same concept. One common way of computing correlation value among the question instruments is by using Cronbach's alpha. Regarding the reliability of this study tool, the coefficient alpha of the questionnaire sheet was 0.70.

Data collection procedure:

Official permission was obtained from the director of CUSPH and the head of the pediatric surgery unit. The purpose and nature of the study was explained to each mother individually in their bedside area and then a written consent obtained from each mother to get her acceptance as well as to gain her cooperation.

Personal data from the mothers and their children collected using (tool I, parts 1 & 2) on an individual basis at their bedside area on the day of admission. Assessment of mothers' knowledge utilizing (tool II) as first visit assessment. Evaluation done using observational checklists (tool II) as first visit assessment of mothers' practice by observing mothers while providing colostomy care for their children in the pediatric inpatient surgery unit. As regards the control group researcher assess the mothers' knowledge and practice in the second day as a second time assessment and at time of discharge mainly after one week as follow up (3rd time assessment).

The nursing educational sessions were explained to the mothers in the study group on the second visit in their bed side in the pediatric surgery unit through 2 educational sessions (1 theoretical and 1 practical session). Each session takes about 15–20 minutes on an individual basis and sometimes for a group of 3–5 mothers. The first nursing educational session encompasses knowledge related to colostomy definition, purpose, types, problems, and risk signs. The sessions were conducted using an illustrated Arabic booklet, pictures, videos, and PowerPoint presentation by the research investigator. As regards the practical sessions, the second visit for mothers was focused on how to provide colostomy care. The session was demonstrated by the researcher using a doll and other realistic and virtual computer-based materials and videos. The practical sessions validated by re-demonstration by the mothers (two times).

Assessment done as following in the first visit (pretest) using (tool II first part) at the department before the theoretical session on an individual basis then second assessment done immediately after giving the theoretical session

(immediate post-test) then follow up (follow up posttest) test after 7 days for mothers.

For the practical part in the first visit on a doll (pretest) using (tool II second part) in an individual basis then immediately after the practical session (immediate posttest) and eventually after one week follow up on their children (follow up posttest).

Ethical considerations:

Approval obtained from the research ethics committee in the Faculty of Nursing, Cairo University. Written informed consent obtained from the mothers of children after a complete description of the purpose and nature of the study. Mothers informed that participation in the study is voluntary; mothers have the right to withdraw from the study at any time without giving any reason and without any effect on the care of their children. Confidentiality assured for each mother.

Statistical analysis:

A compatible personal computer (PC) used to store and analyze data. The Statistical Package for Social Studies (SPSS), version 21.0, used. Data coded and summarized using mean, standard deviation, and crosstabs for quantitative variables and percent for qualitative variables. A comparison between qualitative variables carried out using the parametric Chi-square test. A comparison of means performed using a paired-sample t-test. Correlation among variables done using the Pearson correlation coefficient. The level of significance at P 0.05, 0.001 is used as the cut-off value for statistical significance.

Results:

Table (1): table 1 shows that half of the study group age ranged between 25- 30 years old with mean 29.2 while about two thirds 60% of mothers in the control group between 20-25 and 30-35 years old respectively with mean 28.5 and there was no statistically significant difference between the study and control groups. Regarding level of education, half of mothers in the study group and two fifths in the control groups were secondary school graduates. As for most of both control group and study were housewives. Regarding place of residence, more than half of mothers in study

and two thirds of control group were from rural areas.

Table (2) revealed that more than two fifths 43.3 % of children in the study group age less than one months with mean 11.67 months while about half of children 46.4 % in the control group age were ranged from 12 to less than two years with mean 12.37 months however there were no statistically significant difference between the study and control group ($t = 0.250$, $p = 0.804$). Regarding diagnosis, more than half 56.7 % of children in the study and control group 53.3 % were diagnosed with Hirschsprung's disease. Concerning rank of the child in the family; about two thirds 60% of the study and more than two fifths of the control were 4th or 5th or even more however there were no statistically significance differences between study and control group ($X^2 = 2.216$, $p = .330$).

Figure (1): revealed that most of children in the study and control groups were males.

Table 3 revealed that most of mothers in the study 93.3 % and control group 99 % had incomplete knowledge about definition of colostomy in the first time while in the second and follow up time about two thirds 66.7 % of the study group had knowledge about definition of colostomy in the first time the majority of mothers not oriented about normal appearance in the study 90% and control 86.6% while 100% of the study group oriented about normal appearance in the second and follow up time. all mothers in control and study group 100 % not oriented about problems in the first time in study and all times of assessment in the control group, while most mothers in the study 76.7 % oriented about problems result from colostomy and about two thirds of them 60% oriented about it in the follow up time.

Table 4 revealed that all mothers not performing hand washing before colostomy care while all of them apply hand washing in the second time and about two thirds in the follow up time in the study group. Majority of mothers in the study 80 % and control group 76.7 % not clean the stoma well using warm

water in first time of assessment while 100 of mothers in the study group apply it in the second and follow up time hence, about two fifths 40 % of control group apply it in the second time and about two thirds 60 % apply it in the follow up time. Regarding inspection of the stoma and peristomal, more than two fifths of the study group provide it in the second time and more than one third in the follow up time. Regarding hand washing about two fifths 43.3 % did not apply it and all mothers apply it in the second and follow up time in the study group while more than two thirds 70% of the control group did not apply it in the first time and half of them 50 % did not apply it in the second time and more than half 56.7 % apply it in the follow up time.

Table 5 clarified that there was no statistically significance difference in total mean score of knowledge between the control ($t = 0.891$ $p = 0.380$) and there were high statistically significant difference in the second time ($t = 22.06$ $p = 0.000^*$) and follow up time of assessment ($t = 7.54$ $P = 0.001^*$).

Table 6 revealed that there was no statistically significant difference in total mean score of mothers practice of colostomy care between control and study group in first time of assessment ($t = 1.030$, $p = 0.312$) while there were a statistically significant difference in second time of assessment ($t = 21.40$, $p = 0.000$) and follow up time ($t = 13.88$, $p = 0.000$).

Figure 3 showed that there was a satisfactory level of knowledge of all mothers in the study group while all mothers in the control group had unsatisfactory level of knowledge in all assessment times.

Figure 4 revealed that there was a satisfactory level of practice in almost mothers of the study group compared with the level of practice of those in the control group in which all of them had unsatisfactory level of practice.

.028, $r = .280$, $p = .030$). in addition, there was a statistically significant correlation between mothers' total mean score of knowledge and mothers work status in the follow up time ($r = .282$, $p = .020$).

Table (1): Percentage Distribution of mothers' Characteristics in Study and Control Group (n=60).

Mothers' personal data	Study group (n=30)		Control group (n=30)		Test of significance	P-value
	N	%	N	%		
Age /years:						
<20	1	3.3	0	0		
20-25	5	16.7	9	30.0		
25-30	15	50.0	7	23.3		
30-35	7	23.3	9	30.0		
>40	2	6.7	5	16.7		
$\bar{X} \pm SD$	29.2 \pm 5.3		28.5 \pm 5.0		t = 0.629	P=.534
Level of education:						
Not read and write	0	0	2	6.7	X ² = 5.198	P=.817
Just read/write.	5	16.7	7	23.3		
Basic education	10	33.3	5	16.7		
Secondary school education	15	50	13	43.3		
University education	0	0	3	10		
Occupation: -						
Housewives	24	80	28	93.3	X ² = .536	P = .464
Working mothers	6	20	2	6.7		
Place of residence:						
Urban	14	46.7	10	33.3	X ² = 1.023	P .312
Rural	16	53.3	20	66.7		

Table (2): Percentage Distribution of Characteristics of Children with Colostomy in Study and Control Group (n=60).

Children' Characteristics	Study group (n=30)		Control group (n=30)		test of significance	P-value
	N	%	N	%		
Age/months-						
> 1	13	43.3	7	23.3	t = .250	P=.804
1 > 12	4	13.3	8	26.7		
12 > 24	8	26.7	14	46.4		
24 > 48	5	16.7	1	3.3		
$\bar{X} \pm SD$	11.67 \pm 11.1		12.37 \pm 7.98			
Diagnosis: -						
Hirschsprung's disease	17	56.7	16	53.3	X ² = 2.216	P=.330
Imperforated Anus	13	43.3	13	43.3		
intussusception	0	0	1	3.3		
Rank within the family: -						
2 nd	2	6.7	2	6.7	X ² = 3.952	P=.683
3 rd	10	33.3	14	46.7		
4 th and more	18	60	14	46.7		

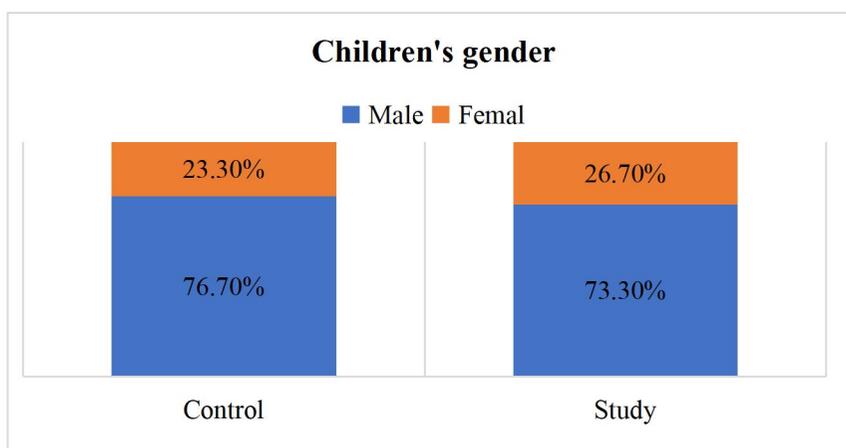
**Figure (1):** Percentage Distribution of Children' Gender in Study and Control Group (n=60).

Table (3): Percentage Distribution of Mothers' Knowledge related to colostomy care in Study and Control Group (n=60).

Mothers' knowledge	Study group (n=30)						Control group (n=30)					
	First visit		Second visit		follow up		First visit		Second visit		Follow up	
	N	%	N	%	N	%	N	%	N	%	N	%
Definition of colostomy												
Complete	2	6.7	20	66.7	17	56.7	2	6.7	3	10	8	26.7
Incomplete	23	76.7	9	30	13	43.3	24	80	27	90	22	73.3
Not know	5	16.7	1	3.3	0	0	4	13.3	0	0	0	0
Purpose of colostomy												
Complete	10	33.3	30	100	30	100	14	45.7	15	50	18	60
Incomplete	0	0	0	0	0	0	0	0	0	0	12	40
Not know	20	66.7	0	0	0	0	16	53.3	15	50	0	0
Types of colostomies												
Complete	2	6.7	20	66.7	20	66.7	0	0	0	0	2	6.7
Incomplete	24	80	7	23.3	9	30	8	26.7	29	96.7	28	93.3
Not know	4	13.3	3	10	1	3.3	22	73.3	1	3.3	0	0
Normal appearance of colostomy												
Complete	3	10	30	100	30	100	4	13.3	7	23.3	10	33.3
Incomplete	27	90	0	0	0	0	13	43.3	10	33.3	20	66.7
Not know	0	0	0	0	0	0	13	43.3	13	43.3	0	0
Problems												
Complete	1	3.3	23	76.7	18	60	0	0	4	13.3	8	26.7
Incomplete	25	83.3	4	13.3	12	40	9	30	22	73.3	22	73.3
Not know	4	13.3	3	10	0	0	21	70	4	13.3	0	0
Risk signs to seek help												
Complete	0	0	18	60	11	36.7	0	0	0	0	0	0
Incomplete	10	33.3	12	40	19	63.3	28	93.3	30	100	30	100
Not know	20	66.7	0	0	0	0	2	6.7	0	0	0	0

Table (4): Percentage Distribution of Mothers' practice related to colostomy care in Study and Control Groups (n=60).

Mothers' practice	Study group (n=30)						Control group (n=30)					
	First visit		Second visit		follow up		First visit		Second visit		follow up	
	N	%	N	%	N	%	N	%	N	%	N	%
Hand washing												
done	0	0	30	100	19	63.3	0	0	9	30	11	36.7
Not done	30	100	0	0	11	36.7	30	100	21	70	19	63.3
Prepare all needed equipment												
done	1	3.3	20	66.7	20	66.7	0	0	0	0	0	0
Not done	29	97.7	10	33.3	10	33.3	30	100	30	100	30	100
Place the child in comfortable position												
done	27	90	30	100	30	100	30	100	30	100	30	100
Not done	3	10	0	0	0	0	0	0	0	0	0	0
Remove old appliance or dressing												
done	30	100	30	100	30	100	30	100	30	100	30	100
Not done		0	0	0	0	0	0	0	0	0	0	0
Clean the stoma well with warm water												
done	6	20	30	100	30	100	7	23.3	12	40	18	60
Not done	24	80	0	0	0	0	23	76.7	18	60	12	40
comment	0	0	0	0	0	0	0	0	0	0	0	0
Wipe the peristomal skin and dry it well												
done	11	36.7	30	100	30	100	6	20	8	26.7	17	56.7
Not done	19	63.3	0	0	0	0	24	80	22	73.3	13	43.3
comment	0	0	0	0	0	0	0	0	0	0	0	0
Inspect the stoma and peristomal skin												
done	0	0	14	46.7	11	36.7	0	0	0	0	0	0
Not done	30	100	16	53.3	19	63.3	30	100	30	100	30	100
Provide care if bag present or not												
done	0	0	30	100	30	100	0	0	30	100	30	100
Not done	23	76.7	0	0	0	0	14	46.7	0	0	0	0
comment	7	23.3	0	0	0	0	16	53.3	0	0	0	0
Hand washing												
done	17	56.7	30	100	30	100	9	30	13	43.3	17	56.7
Not done	13	43.3	0	0	0	0	21	70	15	50	13	43.3
comment	0	0	0	0	0	0	0	0	2	6.7	0	0

Table (5): Comparison between the total Mean scores of mothers' knowledge in the Study and Control Group (n=60).

Mothers' knowledge	Study group (n=30)	Control group (n=30)	t	P
First time:				
X̄ ± SD	1.60 ± 0.49	1.73 ± 0.69	.891	.380
Second time:				
X̄ ± SD	8.33 ± 1.39	1.93 ± 0.74	22.06	.000*
Follow up:				
X̄ ± SD	6.96 ± 1.15	2.53 ± 1.00	7.54	.001*

* Statistically significant difference at p < 0.05

Table (6): Comparison between the total Mean scores of mothers' practice in the Study and Control Group (n=60)

Mothers' practice	Study group (n=30)	Control group (n=30)	t	P
First time:				
X̄ ± SD	3.93 ± 0.73	3.73 ± 0.87	1.030	.312
Second time:				
X̄ ± SD	10.46 ± 1.19	4.40 ± 1.13	21.40	.000*
Follow up:				
X̄ ± SD	9.50 ± 1.16	5.57 ± 1.25	13.88	.000*

* Statistically significant difference at p < 0.05

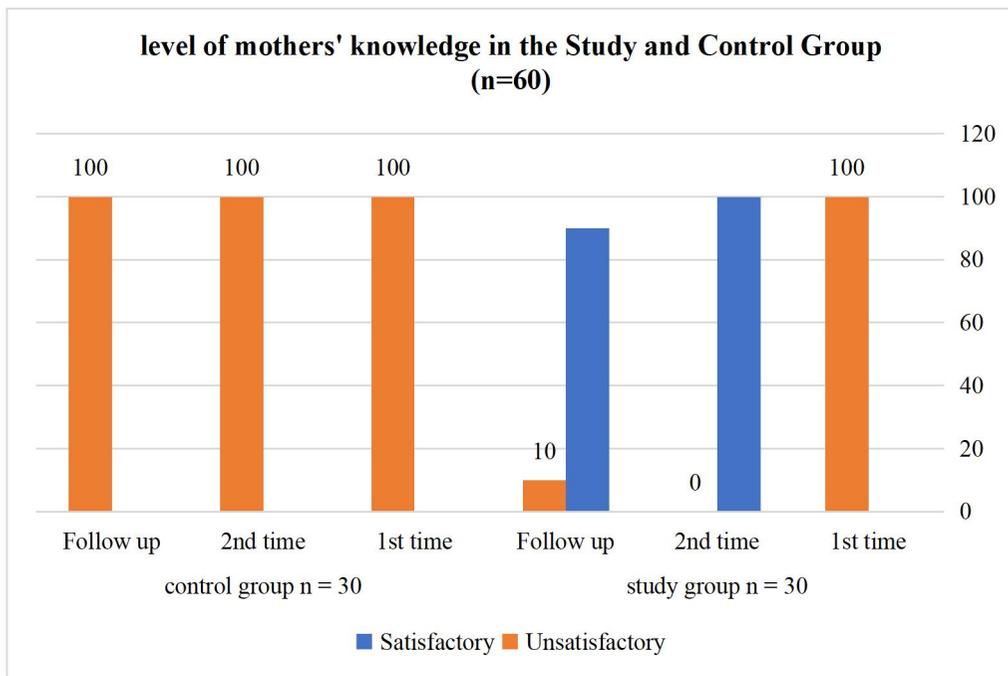


Figure (3): Comparison between the level of mothers' knowledge in the Study and Control Group (n=60)

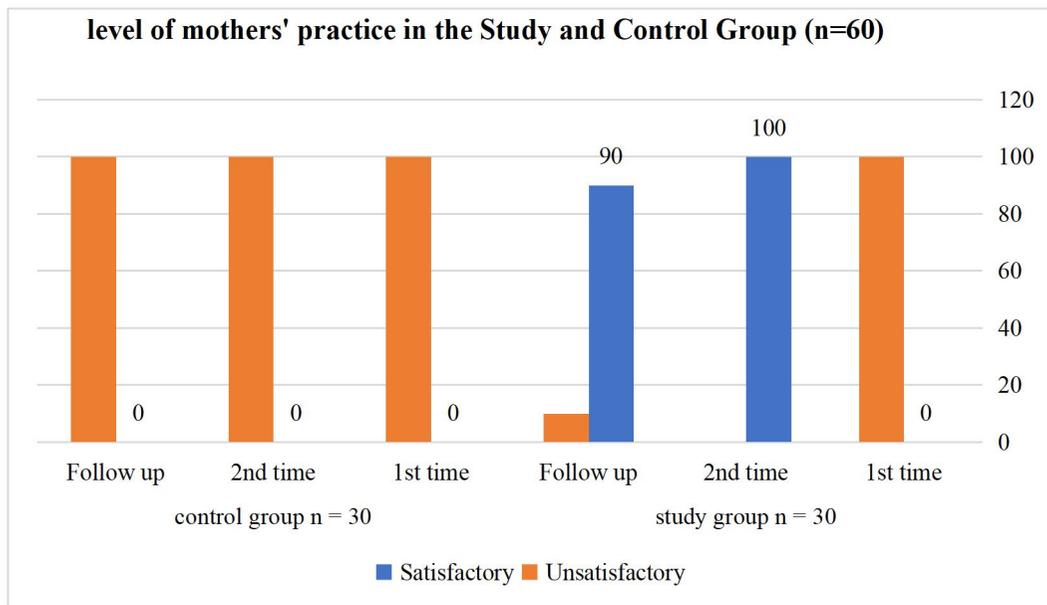


Figure (4): Comparison between the level of mothers' practice in the Study and Control Group (n=60)

Discussion:

Regarding mothers' personal data the result of the current study showed that mothers' age in the study and control groups ranged from 20- 35 years old with a mean of 29.2 to 28.5. Regarding education, the majority of mothers 86.7 % in both groups were secondary school graduates. As for occupation the vast majority of mothers were housewives. Concerning residence, most mothers are from rural areas. The analysis of the data showed that there was no statistically significant difference in age between the study and control group. This means that the distribution of personal data in both groups was not significantly different, and any observed differences in outcomes between the groups cannot be attributed to personal data differences.

The result of the current study agrees with the result of a study conducted 2016 aimed to assess the level of efficiency of instructional package on colostomy care among mothers in which most of mothers ranged from 20-35 years old, and majority of them were secondary school graduates and about two thirds of them were housewives (Maheswari, Poonguzhali, and vairamuthuraju, 2016). It is worth noting that the personal data about Egyptian mothers of children with colostomy being secondary school graduates, aged 20 to 35 years old, rural resident

and housewives provides some context to the study population.

Regarding children characteristics the current study revealed that most of children in the study and control groups were males. About two fifths of the study groups were less than one month and two fifths of control group 12 to less than 24 months. Related to diagnosis, more than half in both groups had Hirschsprung's disease and about two thirds in the study and more than two fifths of the control group were the third or more in the rank of the children in the family. These results contrast with the result of Nasar 2017 in their study to evaluate colostomy indications and complications on 80 children, who found that majority of children participated in the study were males and diagnosed with Hirschsprung's disease.

The predominance of males in this study may be attributed to the higher incidence of Hirschsprung's disease in males compared to females. It is estimated that this condition affects approximately 1 in 5,000 live births, with a male-to-female ratio of 4:1. (Weldearegawi, Melaku, & Abera, 2015, Kyle, & Carman, 2019) As a result, the majority of children with Hirschsprung's disease who require colostomy care are more likely to be male. It is worth noting that while the majority of participants in this

study were diagnosed with Hirschsprung's disease, but there also other underlying conditions or reasons for colostomy placement among the study and control group which was imperforated anus and intussusception. Prevalence of conditions: Hirschsprung's disease, imperforated anus, and Intussusception are relatively common conditions that can require surgical intervention and may lead to the need for colostomy. Nevertheless, there were no statistically significance differences between the study and control group regarding children's characteristics that could influence the outcomes being studied.

Regarding mothers' knowledge about colostomy the current study revealed that most of mothers in the study and control group had incomplete and not know definition of colostomy in the first time while in the second and follow up time about two thirds of the study group had knowledge about definition of colostomy. Regarding normal appearance of colostomy in the first time most mothers were not oriented about normal appearance in the study and control while all the study group oriented about normal appearance in the second and follow up time. Regarding problems occur from the presence of colostomy, all mothers in control and study group were not oriented about it in the first time in study and all times of assessment in the control group. This result parallel with a study conducted at Egypt in Menoufia University Hospital to assess mothers' knowledge and practice regarding colostomy care and with a study conducted by Alpert, and Glatter, (2017) stated that mothers included in the study had unsatisfied level of knowledge regarding colostomy (Alpert, & Glatter, 2017, Rashed, Khalifa, Zein El Dein, & Omar, 2020).

While the majority of mothers in the study oriented about problems result from colostomy and about two thirds of them oriented about it in the follow up time. Regarding knowledge of mothers about risk signs that could happen to the child all mothers in the control group not fully oriented in the first, second and follow up times of assessment while about two thirds of the study and more than one third in follow up time were fully oriented about risk signs. There was a significance increase in the study group's total mean score of mothers' knowledge from 1.60 ± 0.49 to 8.33 ± 1.39 and 6.96 ± 1.15 with $P = 0.000$ maximum score 10).

This result is consistent with a study provide teaching through video to enhance mothers' knowledge of colostomy care conducted among 30 mothers attending pediatric surgery departments hence, the mother's knowledge changed from 10.9 ± 2.5 to 16.4 ± 1.67 and 15.9 ± 4.02 , $P = 0.001$ (Dabas, Sharma, Joshi, & Agarwala, 2016). So, this result agrees with the first hypothesis of the current study.

As regard the mothers practice of colostomy care the result of the current study illustrated that all mothers do not apply hand washing before colostomy care while all of them apply hand washing in the second time and about two thirds in the follow up time in the study group. Regarding preparation of needed equipment all mothers in control for all times of assessment and study group in the first time did not prepare all needed equipment while two thirds of mothers in the study group prepare all needed equipment second and at time of follow up assessment.

Majority of mothers in the study and control group did not clean the stoma well using warm water in first time of assessment while all of mothers in the study group apply it in the second and follow up time hence, about two fifths of control group apply it in the second time and about two thirds apply it in the follow up time. Regarding wipe the peristomal skin and dry it well one third of study provide it in the first time and all mothers in the second time and follow up time. While in the control group about one fifth wipe the peristomal skin and dry it well in the second time and more than half provide it in the follow up time.

Regarding inspection of the stoma and peristomal, more than two fifths of the study group provide it in the second time and more than one third in the follow up time. Concerning providing care if bag present or not all mothers in both groups did not apply it in first time while all mothers in both groups apply it in the second and follow up time. Regarding hand washing about two fifths did not apply it and all mothers apply it in the second and follow up time in the study group while more than two thirds of the control group did not apply it in the first time and half of them did not apply it in the second time and more than half apply it in the follow up time.

Eventually there were statistically significant differences between mothers practice from 3.93 ± 0.73 to 10.46 ± 1.19 and 9.50 ± 1.16 , $P = 0.000$ of maximum score of 12 this result matched with Dabas, et. al, 2016 in which skill scores as assessed by the observation checklist from 5.6 ± 2.0 to 9.8 ± 1.6 and 8.6 ± 2.1 , $P = 0.001$, maximum score 12. Also agree with a study conducted at Egypt in pediatric surgery department-Mansoura University included 40 mothers of children with stoma the study revealed that there was a statistically significant difference of the studied mothers 'practice after application of education regarding colostomy care (El-Wasefy, Ouda, Waly, & Hashem, 2015). Based on this result the second hypothesis of the current study has been accepted.

Conclusion:

The current study concluded that mothers who receive nursing instruction related to colostomy care have higher mean score of knowledge and practice than mothers who receive hospital routine care.

The implications of the study:

The implications of the study; the effect of nursing instructions on mothers' knowledge and practice of colostomy care for nursing practice are as follows:

1. Enhanced patient education: The study highlights the importance of providing comprehensive and tailored nursing instructions to mothers caring for children with colostomies. Nurses can play a crucial role in educating mothers about colostomy care, including stoma hygiene, appliance management, and recognizing signs of complications. This can empower mothers to confidently and effectively care for their child's colostomy.
2. Improved patient outcomes: By providing clear and concise nursing instructions, nurses can help mothers develop a better understanding of colostomy care. This can lead to improved knowledge and practice, ultimately resulting in better patient outcomes. Mothers who receive effective nursing instructions are more likely to prevent complications, such as skin excoriation and infections, and reduce the need for readmissions.

3. Tailored support: Nursing instructions should be individualized to meet the unique needs of each mother and child. Nurses should assess the mother's level of understanding, cultural background, and any potential barriers to learning. By tailoring the instructions, nurses can ensure that mothers receive the necessary information and support to confidently manage their child's colostomy.
4. Collaboration and continuity of care: Nurses should collaborate with other healthcare professionals, such as surgeons, pediatricians, and ostomy nurses, to provide comprehensive and coordinated care for children with colostomies. This collaboration ensures that nursing instructions align with the overall care plan and that mothers receive consistent and accurate information.

Overall, the study emphasizes the crucial role of nursing instructions in improving mothers' knowledge and practice of colostomy care. By incorporating effective supportive education strategies into nursing practice, nurses can empower mothers to provide high-quality care for their children with colostomies, leading to improved patient outcomes and overall well-being.

Recommendations:

- 1- Develop and implement a standardized nursing education program for mothers who have children undergone colostomy surgery. This program should be evidence-based and cover all aspects of colostomy care.
- 2- Incorporate nursing instruction on colostomy care: Hospitals and healthcare facilities should prioritize providing nursing instruction on colostomy care to mothers of children with colostomies. This can be done through structured educational programs, workshops, or one-on-one sessions with trained nurses. By equipping mothers with the necessary knowledge, they will be better prepared to provide effective care for their children.
- 3- Utilize interactive teaching methods: Incorporate interactive teaching methods, such as hands-on demonstrations, role-playing, and case studies, to enhance mothers' understanding and retention of colostomy care information. This can help ensure that

the instructions are practical, engaging, and applicable to real-life situations.

- 4- Provide written educational materials: Develop comprehensive and easy-to-understand written educational materials on colostomy care for mothers. These materials should include clear instructions, diagrams, and step-by-step guides on various care procedures. Providing written materials ensures that mothers have a reference to consult when needed and can reinforce the knowledge gained during the nursing instruction sessions.

Recommendation for Further research:

1. Comparative study: Compare the effectiveness of different methods of delivering nursing instructions, such as face-to-face instructions, video-based instructions, or mobile application-based instructions. This research can help identify the most effective and accessible method for educating mothers on colostomy care.
2. Study on the role of support systems: Investigate the impact of support systems, such as support groups or online communities, on mothers' knowledge and practice of colostomy care. This research can explore how social support influences mothers' ability to adhere to colostomy care instructions and manage the challenges associated with caring for a child with a colostomy.
3. Impact on psychosocial well-being: Explore the psychological and emotional impact of nursing instructions on mothers caring for children with colostomies. This research can assess the effects of improved knowledge and practice on mothers' confidence, anxiety levels, and overall psychosocial well-being.

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