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EFFECT OF AN EDUCATIONAL PROGRAM FOR MOTHERS REGARDING CARE OF THEIR CHILDREN HAVING INTESTINAL STOMAS

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Abstract:
Intestinal stoma is a surgical opening made by means of a hollow organ through the abdominal skin forming a mouth that is in contact with the external environment for the externalization of waste, secretions and/or feces. Nurses can take a key role in caring for children with a stoma, both pre and postoperatively and assisting parents, caregivers, in becoming confident and independent in the care of stoma by providing knowledge on a specific medical and surgical condition, the surgical procedure, stoma care, and pouching equipment choices. Therefore, the aim of this study was to assess the effect of an educational program for mothers regarding care of their children having intestinal stomas. The study included 40 mothers of children having intestinal stomas recruited over six month's period. The study was carried out at the inpatient pediatric surgery department in Mansoura University Children's Hospital (MUCH). ***Results:*** The results of this study revealed, that there was statistically significant difference of the studied mothers' knowledge & practices regarding care of their children having intestinal stomas pre/ post educational program. The study concluded that, there was a positive effect of the educational program in improving mothers' knowledge & practices regarding care for their children having intestinal stomas. ***Recommendations:*** refreshing periodical and educational programs for pediatric nurses are essential for upgrading the mothers' knowledge & practices regarding care of their children having intestinal stomas.

Key words: Stoma, Intestine, Mothers, Program, Children, Nurse.

Introduction:

A stoma (ostomy) is the deliberate creation of an opening that communicates between the lower GIT and the exterior. The purpose could be for bowel decompression, protecting distal anastomosis or other gut lesions, controlling fecal effluent in some cases of incontinence, or a combination of these indications. The basic types of stomas derive their names from the gastrointestinal segment in which they are sited. For example, ileostomy is cited in the ileum and colostomy in the colon **(1).**

The pediatric stomata are mostly temporary and performed in the neonatal period for treatment of congenital malformations as atresia and acquired diseases fortunately benign **(2).** The time may vary from months to years, depending on the disease, which was given its performance, and the number of surgeries performed throughout the life of this child **(3).**

There are a number of reasons for stoma formation in children. Regional centers across the UK perform between 100-200 stomas per year, and the majority of them are temporary stomas, which are reversed after a few months following corrective surgery **(4).**

Although great advances have been made with regards to stoma formation and management, both early and late complications are common. Fortunately, most pediatric stomas are temporary, and

many of the complications associated with intestinal stomas are eliminated when the stoma is closed. Understanding enterostomal construction and physiology is essential for providing these children with optimal care [5].

Parents may feel guilt and anger about the ostomy surgery when the child has any congenital anomalies or abnormalities. Therefore, when assessing the family and child approaching ostomy surgery, it is important to determine their ability to understand and accept the physical changes that will occur to their child [6].

The acceptance of colostomy by parents and medical personnel alike has long been considered controversial. The attitude of the family may influence adjustment to surgery, and the psychological impact on the child and family may be far reaching. So, when nursing a child who has undergone formation of a stoma, the needs of the family are important to be considered. It is crucial that they are given support and empowered to carry out their child's care [7].

The nurse acts as an effective bridge between education and health. The role gives the nurse ability to support work on health issues in hospital and helps facilitate making health services more assessable to parents and health team. Also, the nurse can plan and provide training, assessment and support for caregivers and other health staff on specific health needs and issues. The nurse will have special knowledge, with evidenced based practice care 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 [8].

The nurse plays an integral role in assisting parents, caregivers, and children in becoming confident and independent in the care of their stoma. This includes providing knowledge on a specific medical or surgical condition, the surgical procedure, stoma care, and pouching equipment choices [9]. So, this study aims to assess the effect of an educational program for mothers regarding care of their children having intestinal stomas.

Research hypothesis:

Mothers who attended the educational program have better knowledge & practices about care of their children having intestinal stoma than mothers do not attend the program.

Materials and Methods:

Materials:

Design:

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

Setting:

The study was carried out at the inpatient pediatric surgery department in Mansoura University Children's Hospital (MUCH).

Subjects:

The study included 40 mothers of children having intestinal stomas recruited over six month's period. Mothers are divided according to their children's type of intestinal stomas as the following: (35) mothers with children having colostomy & (5) mothers with children having ileostomy.

Mothers' inclusion criteria:

- Mothers of children having intestinal stomas regardless of their age and educational level, and attending the previously mentioned setting to manage their children.

Children's inclusion criteria:

- Age of children from birth up to 6 years regardless of their gender.
- Children had either temporary or permanent stoma related to lower gastrointestinal tract system namely ileostomy and colostomy.

Tools:

Data were collected using the following tools:

Tool I- Structured interviewing questionnaire sheet (pre & post questionnaire): It was developed by the researcher after reviewing the related literature. This tool was written in an Arabic language to suit the level of

understanding of mothers. It was composed of the following:

Part (1)

A- Characteristics of the studied mothers and families of the studied children, which included: age, educational level, occupation, family size, family income and family history of similar condition.

B- Characteristics of the studied children, which included: age, gender, birth order, diagnosis, type of stoma according to time of stoma formation, site of stoma and child's feeding pattern.

Part (2)

A- Mothers' knowledge about their children's stoma criteria, which included: definition, causes, function of stoma, characteristics of healthy stoma, methods of stoma dressing, potential complications of stoma, and serious signs for surgeon consultation.

B- Mothers' knowledge about their children's stoma care, which included:

- Methods of dressing and care frequency of stoma, which included: types of dressing or pouch used during stoma care and criteria of changing dressing or pouch of stoma.
- Child's privacy during stoma care.
- Child's bathing precautions.

C- Mothers' knowledge about their children's stoma precautions & restrictions that included:

- Characteristics of suitable clothes for children with stoma.
- Activity allowed for children with stoma.
- Characteristics of diet, including: allowed and prevented food for children with stoma.

D- Mothers' knowledge about their children's stoma problems, complications & its management, it included: actual skin problems, gastrointestinal problems and complication related to stoma, management and prevention of skin, gastrointestinal problems and complications.

Tool II – Observation checklist sheet:

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

Part (1)

Preparation of equipment for colostomy / ileostomy care.

Part (2)

Colostomy / ileostomy care technique (step by step).

Tool III- An educational program:

- The educational program was designed by the researcher to satisfy the mothers and their children educational needs in the light relevant related literature. The program was included knowledge and practices for mothers regarding care for their children having intestinal stomas The program was consisted of the following:

- Knowledge about stoma according to its type (ileostomy or colostomy):

Definition of stoma, reasons of stoma formation, types of stoma and its function, normal criteria of healthy stoma, immediate post-operative observation, in newly formed stoma, equipment needed for stoma care**, i**ndication for stoma care and its technique, management and prevention of stoma related problems, potential complications associated with stoma care and general counseling discharge plan.

- Practical skills according to type of stoma regarding the following:

- Preparation of equipment needed for care, steps and technique of stoma and peristomal skin care, bathing and hygienic care.

Methods:

An official permission was obtained from the Director of Mansoura University Children's Hospital (MUCH); and the Head of Pediatric surgical department (Inpatient) of Mansoura University

Children's Hospital (MUCH) to conduct the study.

A pilot study was carried out to test the study tools: It was conducted on 10% of the total sample size in order to evaluate the research plan, clarity of tools and applicability of the study tools. Minor modifications were done consequently.

- The program was given in three sessions, included two theoretical and one practical session. The time for each session was varied from 45 to 60 minutes.
- Mothers were divided in sessions of the program according to their availability and attendance at the previously mentioned setting, and their children's diagnosis and type of stoma. Various teaching methods were used in the form of simple guidelines, group discussion, demonstration and re- demonstration. Various teaching media were used, such as power point; handout guidelines regarding stoma care for their children. This program was conducted in the unit or in the class at Mansoura University Children's Hospital
- Mothers' knowledge and practices were reassessed immediately after the implementation of program (posttest), and three months later (follow up).
- Data collection of this study was carried out over a six months period that started from the beginning of January 2013 to the end of June 2013.

Ethical Considerations

Ethical approval was obtained from the Research Ethics Committee of Faculty of Nursing / Mansoura University. The researcher obtained oral consent from each mother for her participation after explaining the aim of the study and confidentiality of data.

Data Analysis

Data were revised, coded, tabulated and analyzed by using the number, percentage distribution, mean and standard deviation. Data was analyzed using an IBM compatible personal computer using the statistical package for Social Sciences (SPSS) for windows version 15 (SPSS Inc., Chicago, IL, USA).

Mann- Whitney Z test and **Chi-square test** were used to estimate the statistical significance between variables of the study. P-value was considered significant if less than 0.05 & 0.001.

Scoring System:

Tool I: Interviewing questionnaire sheet

A score of **one** was given to each correct answer and **zero** for the incorrect answer or did not know.

The total score for mothers' knowledge were 68 grades which divided as the following:

- The scores of mothers' knowledge about stoma criteria were 15 grades.
- The scores of mothers' knowledge about stoma care were 5 grades.
- The scores of mothers' knowledge about stoma precautions & restriction were 23grades.
- The scores of mothers' knowledge about stoma problems, complications & its management were 25 grades.

The median score of each area was calculated and converted into percent.

Mothers' knowledge was graded as the following:

- Good knowledge: (> 75 score).
- Average knowledge: (50- 75 score).
- Poor knowledge: (· 50 score).

Tool II: Observation checklist sheet:

A score of **two** was given to satisfactory practices, **one** was given to partially satisfactory practices and **zero** was given to unsatisfactory practices.

The scores of equipment of stoma care were 10 grades for mothers used pouch in stoma care, but, the scores of equipment of stoma care were 9 grades for mothers used dressing in stoma care.

The scores of stoma care technique were 20 grades for mothers used pouch in stoma care but the scores of stoma care technique

were 14 grades for mothers used dressing in stoma care.

Mothers' practices results were categorized as the following:

- If mothers' practices grades more than 60% for each procedure, they had satisfactory practices.
- If mothers' practices grades less than 60% for each procedure, they had unsatisfactory practices.

Results:

Characteristics of the children, **are presented in figures (1&2),** the majority of the studied children (82.5%) aged less than one year, while 5% of them were aged 5-6 years. More than half of children (55%) were boys while 45% of them were girls.

Table (1) showed that, 42.5% of the studied children were ranked as the first child. As regards to diagnosis, about one third of them (30%) had anorectal malformations, while only 2.5% had meningiomylocele & necrotizing enterocolitis. Also, more than half of them (52.5%) had stoma formed from birth to 3 months, while only 2.5% of them had stoma since one year and more.

It is cleared from **Figure (3)** that, most of the studied children (97.5%) had temporary stoma, while the rest of them (2.5%) had permanent stoma.

In relation to the studied children's type of intestinal stoma, **Figure (4)** showed that, the majority of them (87.5%) had colostomy, while the rest of them (12.5%) had ileostomy.

In relation to the characteristics of mothers, **It is cleared from Figure (5)** that**,** more than half (57.5%) of the studied mothers aged 20< 30 years, while 12.5% of them aged less than 20 years.

Concerning the mothers' educational level, **Figure (6)** illustrated that**,** less than half (47.5%) of them had diploma education, while only 2.5% of them had primary education.

Table (2), Regarding to total mothers' knowledge score pre, immediate post and follow up educational program implementation, this table showed that, there was a statistically significant association ($P<0.05$) between total mothers' knowledge about their children's stoma (criteria, care, precautions & restrictions, problems, complications & its management pre program / immediate post and follow up educational program implementation.

In relation to the mothers' knowledge about their children's stoma criteria, it was noticed that more than two thirds of them (67.5%) had poor knowledge score pre program implementation while all of them (100%) had good knowledge immediately post the program and less than three quarters of them (70%) had good knowledge at follow up of educational program implementation.

Concerning the mothers' knowledge about their children's stoma care, it was observed that less than three quarter of them (72.5%) of them had poor knowledge scores pre program. While all of mothers (100%) had good knowledge score immediately post and the majority of them (87.5%) of them had good knowledge score at follow up of educational program implementation.

Regarding to the mothers' knowledge about their children's stoma precautions and restrictions, it was found that most of the studied mothers (95%) had poor knowledge score pre program. While all of mothers (100%) had good knowledge immediately post and more than two thirds of them (70%) had good knowledge score at follow up of educational program implementation.

As regards total mothers' knowledge about their children's stoma problems, complications and its management, it was noticed that the most of the studied mothers (95%) had poor knowledge score pre program. While all of them (100%)

had good knowledge immediately post and three quarters of them (75%) had good knowledge at follow up of educational program implementation.

Table (3) indicated that, There were statistical significant differences between the mothers' total practices scores about their children with intestinal stoma pre / immediate post and follow up educational program implementation. In relation to total mothers' practices, it was found that more than three quarters of them (77.5%) had unsatisfactory practices level pre educational program implementation, while all of them (100%) had satisfactory practices level immediately post & follow up educational program implementation.

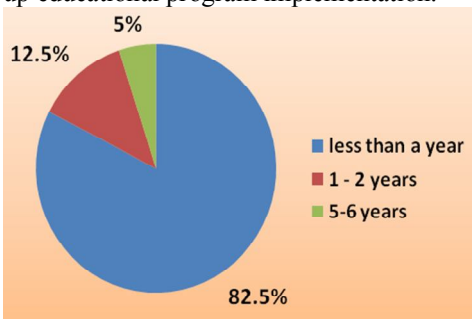

Figure (1): Distribution of the studied children according to their age.

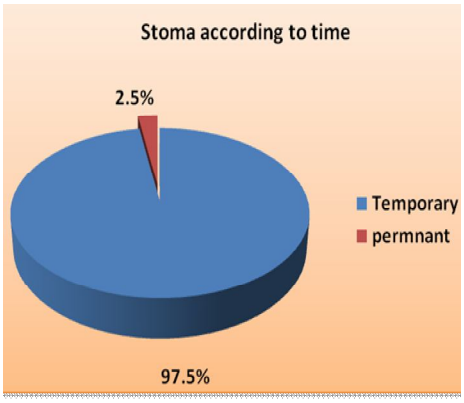

Figure (3): Distribution of the studied children according to their intestinal stoma time

Table (4) showed that, there was statistical significant difference between the studied mothers' total knowledge score about ileostomy & colostomy pre, post & post 3 months of program implementation and their age, educational level and family income. It was noticed that 7.5% & 50% of mothers were aged 20 < 30 years had average & good knowledge follow up of educational program respectively. In addition, it was found from this table that 45% & 2.5% of them had diploma certificates had poor & average knowledge pre program, while 12.5% & 35% of them had average & good knowledge follow up of educational program respectively.

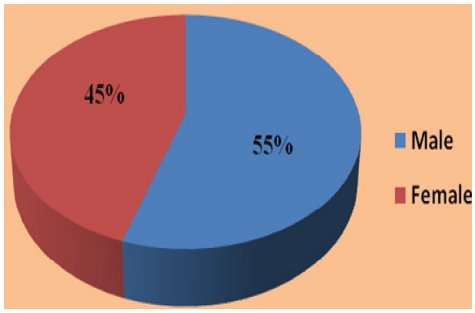

Figure (2): Distribution of the studied children according to their gender.

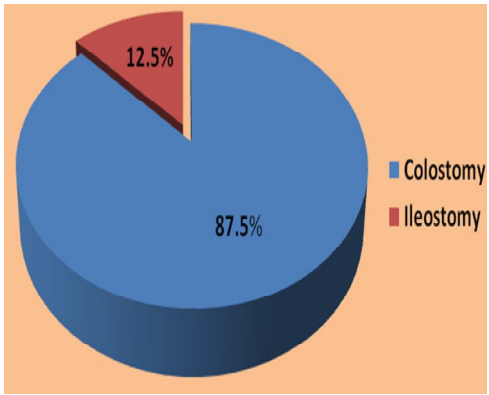

Figure (4): Distribution of the studied children according to their type of intestinal stoma.

Table (1): Distribution of the studied children according to their characteristics

Children Characteristics	Total number = 40(100%)	
	No	%
Birth order:		
First	17	42.5
Second	14	35
Third	6	15
Fourth	2	5
Fifth	1	2.5
Diagnosis:		
Imperforated anus with ano-vestibular fistula	7	17.5
Persistent cloacae with imperforated anus	4	10
Meningiomylocele	1	2.5
Anorectal malformations	12	30
Congenital megacolon	6	15
Intestinal obstruction and perforation	5	12.5
Neonatal obstruction (intestinal)	2	5
Necrotizing entorocolitis	1	2.5
Complicated intussusption	2	5
Duration of having stoma:		
Birth – < 3 months	21	52.5
3 - < 6 months	8	20
6 - < a year	10	25
one year and more	1	2.5
Child's feeding pattern:*		
Breastfeeding	26	65
Breastfeeding and artificial feeding	7	17.5
In weaning phase	15	37.5
Normal food as an adult	7	17.5

***Numbers are not mutually exclusive.**

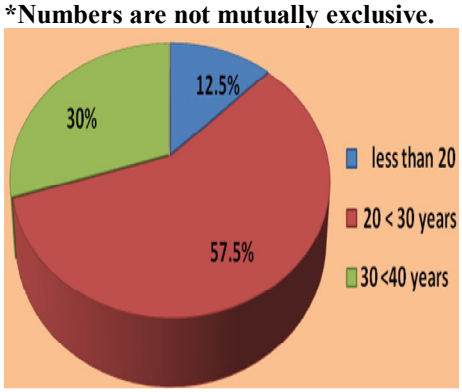

Figure (5): Distribution of the studied mothers according to their age in years.

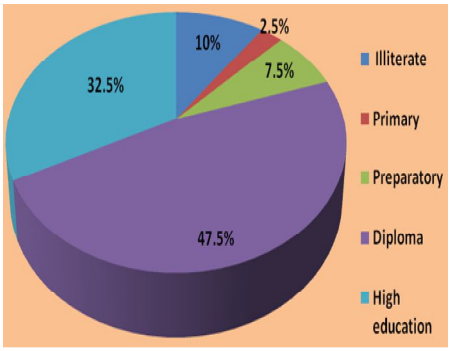

Figure (6): Distribution of the studied mothers according to their educational level.

Table (2): Distribution of total mothers' knowledge about their children's intestinal stoma & its care pre, immediate post & follow up educational program implementation (N=40)

Variables	(Pre program)		(immediate Post program)		(follow up)		Test of significance (pre/ immediate post)		Test of significance (pre/follow up)		Test of significance (immediate post/ follow up)	
	No	%	No	%	No	%	Z1	P1	Z2	P2	Z3	P3
Mothers' knowledge about their children stoma criteria:												
Poor	**27**	**67.5**	**0**	**0**	**0**	**0**						
Average	**13**	**32.5**	**0**	**0**	**12**	**30**	**5.752**	**000***	**5.548**	**000***	**3.464**	**.001***
Good	**0**	**0**	**40**	**100**	**28**	**70**						
Mothers' knowledge about their children's stoma care:	**29**	**72.5**	**0**	**0**	**0**	**0**						
Poor	**11**	**27.5**	**0**	**0**	**5**	**12.5**	**5.798**	**.000***	**5.657**	**000***	**2.236**	**.025***
Average	**0**	**0**	**40**	**100**	**35**	**87.5**						
Good												
Mothers' knowledge about their children's stoma precautions & restrictions:	**38**	**95**	**0**	**0**	**0**	**0**						
Poor	**2**	**5**	**0**	**0**	**12**	**30**	**6.186**	**.000***	**5.734**	**000***	**3.464**	**.001***
Average	**0**	**0**	**40**	**100**	**28**	**70**						
Good												
Mothers' knowledge about their children's stoma problems, complications & its management:	**36**	**90**	**0**	**0**	**0**	**0**						
Poor	**4**	**10**	**0**	**0**	**10**	**25**	**6.070**	**.000***	**5.695**	**000***	**3.162**	**.002***
Average	**0**	**0**	**40**	**100**	**30**	**75**						
Good												
Total mothers' knowledge about their children stoma & its care (68 grades):	**38**	**95**	**0**	**0**	**0**	**0**						
Poor	**2**	**5**	**0**	**0**	**11**	**27.5**	**6.186**	**000***	**5.752**	**000***	**3.317**	**.001***
Average	**0**	**0**	**40**	**100**	**29**	**72.5**						
Good												

(*) statistically significant differences at P< 0.05

- Good knowledge: (> 75 score).
- Average knowledge: (50- 75 score).
- Poor knowledge: (· 50 score).

Table (3): Distribution of total mothers' practices about stoma care for their children pre, immediate post & follow up educational program implementation (N=40)

Variables	(Pre program)		(Immediate post program)		(Follow up)		Test of significance (pre / immediate post)		Test of significance (pre/ follow up)		Test of significance (immediate post / follow up)	
	No	%	No	%	No	%	Z1	P1	Z2	P2	Z3	P3
Total mothers' practices:												
Unsatisfactory	31	77.5	0	0	0	0						
Satisfactory	9	22.5	40	100	40	100	5.568	.000*	5.568	.000*	.000	1.000

(*) statistically significant differences at P< 0.05

- Unsatisfactory practices: less than 60%.
- Satisfactory practices: more than 60%.

Table (4); Relationship between the characteristics of the studied mothers and their total knowledge about ileostomy & colostomy pre, post & post 3 months of educational program implementation (N= 40)

Knowledge / Mothers' Characteristics	Pre		Immediate post	Follow up		Test of significance	
	Poor%	Average%	Good%	Average%	Good%	X^2 & P_1	X^2 & P_2
Mothers' age:							
Less than 20	12.5	0	12.5	10	2.5		
20 < 30 years	52.5	5	57.5	7.5	50	1.556	9.528
30 > 40 years	30	0	30	10	20	.459	.009*
Level of education:							
Illiterate	10	0	10	5	5		
Primary	2.5	0	2.5	2.5	0		
Preparatory	7.5	0	7.5	5	2.5		
Diploma	45	2.5	47.5	12.5	35	.622	8.532
High education	30	2.5	32.5	2.5	30	.961	074*
Mothers' job:							
House wife	72.5	0	72.5	27.5	45		
Worker	2.5	0	2.5	0	2.5	6.316	5.755
Employee	20	5	25	0	25	.043*	056*
Residence:							
Urban	40	5	45	5	40	2.573	4.409
Rural	55	0	55	22.5	32.5	.109	.036*
Family size/ person:							
Three	37.5	2.5	40	12.5	27.5		
Four	35	2.5	37.5	5	32.5	.614	2.959
Five	17.5	0	17.5	7.5	10	.893	.398
More than five	5	0	5	2.5	2.5		
Family income:							
Medium	62.5	0	62.5	25	37.5	3.509	5.225
High	32.5	5	37.5	2.5	35	.061*	.022*

P_1: comparison between pre & immediate post **P_2:** comparison between pre & post 3months

(*) statistically significant at $P < 0.05$

Discussion:

Bowel Stomas play vital role in the management of variety of congenital and acquired gastrointestinal conditions in pediatric population. Colostomy is a commonly constructed intestinal stoma in infants and children and among its major indication are anorectal malformations and Hirschsprung's disease. The basic purpose of performing this procedure is diversion of fecal matter till the definitive procedure is performed. Contrary to adults, colostomy in children is a temporary procedure carried out for benign conditions [(10)].

The morbidity and parental distress caused by a stoma are significant and have implications for the quality of life of children and the psychosocial issues arising among the parents [(11, 12)]. The location and type of colostomy have strongly been debated and the stoma complications that are frequently reported may be avoidable by careful technique, nursing and parental expertise and modern ostomy appliances [(13, 14)].

The results of this study showed that, the highest percentage of the studied children aged less than one year **figure (1).** This finding was similar to the view of **Uba & Chirdan (2003),** who studied colostomy complications in children and reported that, more than two thirds of the studied children were aged one year or below [(15)]. However, this result was not

consistent with that of **Zmora et al. (2003),** who studied colon and rectal surgery without mechanical bowel preparation and found that, the mean age of children was nearly five years [16]. This contraindication might be related to the difference in the study setting and methodology.

The present study showed that, more than half of the children were boys while the rest of them were girls **figure (2).** This finding was in an agreement with **Charles et al., (2005) and Lukong, et al., (2012),** who reported that boys represented higher proportion than girls [17, 18]. However, the present study disagrees with **Öjmyr-Joelsson, et al., (2009),** who studied a Gender perspective on the extent to which mothers and fathers each take responsibility for care of a child with high and intermediate imperforate anus**,** found that, more than half of children were girls while the rest of them were boys [19]. This finding may be due that anorectal malformations are common among boys compared to girls.

In relation to characteristics of the studied children, as regards the child's diagnosis, it was found that, less than one third of the studied children had anorectal malformations **table (1).** This finding disagrees with **Van-Geldere, et al., (2002),** who found that nearly the same percentage of their studied sample had congenital megacolon [20]. It was contradict also by **Chandramouli, et al., (2004),** who performed study about morbidity and mortality and its closure in children and stated that, hirschsprung's disease, are more prevalent rather than anorectal malformations [14]. On the other hand, **Soomro, et al., (2010),** reported that more than three quarters of the studied sample had anorectal malformations [21].

Regarding to stoma time, the current study finding that, most of the studied children had temporary stoma, while the rest of them had permanent stoma **(figure 3).** This finding was similar to the view of **Bucher, et al., (2003),** who reported that all of the studied sample having temporary colostomy [22]. This result could be due to the fact that, the majority of study sample was primary diagnosed imperforated anus & hirschsprung's disease and the first line of management of these problems was temporary stoma

As regards the studied mothers' characteristics, the findings of the present study revealed that, more than half of them aged 20< 30 years **(figure 5).** This finding is in an agreement with **Olejnik, et al., (2005)** who studied educational and nursing problems of parents of children with stoma and found that, mothers 20-30 years old compromised half of the age group study [23].

There were statistically significant differences in relation to the studied mothers' total knowledge about stoma & its care pre, immediate post and follow up educational program implementation **table (II).** This finding is supported by **Osifo, et al., (2008) and Kyle & Carman, (2013),** who found that providing parents and their children having intestinal stoma with comprehensive information preoperative and post stoma formation leading to decrease complications and more dealing correctly with their children's stoma [24,25].

There were statistically significant differences in relation to the studied mothers' total practices pre, immediate post and follow up educational program implementation **table (III).** The present study illustrated that more than three quarters of the studied mothers had unsatisfactory practices about stoma care procedure pre program. On the other hand, all of the studied mothers had satisfactory practices about their children stoma care procedure immediate post and follow up educational program. This finding is in accordance with **Olejnik, et al., (2003) and Khan, et al., (2005)** who stated that the active participation of parents (caregivers) in the process of care was important for improving the health of their children. Also, Parents learned how to deal with the stoma; change stomal sacks communicate with the child and cope with problems of everyday with correct way [23,26].

There was statistical significant difference between the studied mothers' total knowledge about colostomy & ileostomy pre and follow up of educational program implementation and their age, level of education, job, residence and family income **(Table V)**. This finding is

supported by **Callery, (2011) and Health department of health, (2004),** who stated that health professionals who care for children are able to listen to them, respect their need for information and to be prepared to give information in the right amount and in a way that is suitable for the child's age, so they can participate in decisions about their care. This respect applies to children and their parents who seek comprehensive information as well as those who choose to receive minimal information [27, 28].

Conclusion:

Based on the findings of the current study, it was concluded that there was a positive effect of the educational program for mothers regarding care for their children having intestinal stomas.

Recommendation:

Based on the findings of the present study, the following recommendations are to be considered:

1. Regular and continuous educational programs are essential for improving the mothers' knowledge and practices regarding care for their children having intestinal stomas.
2. Periodical meetings are to be held with all mothers having children with intestinal stomas to discuss prevention methods and early detection of problems associated with stoma opening and different ways of management.

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