

## **Effect of Implementing Educational Guidelines on Mothers' Performance Regarding Postoperative Gastrointestinal Motility for their Children with Abdominal Surgery**

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**Abstract:** *Background:* Gastrointestinal motility is very important after abdominal surgery. So, maintaining normal function of gastrointestinal motility after abdominal surgery. There for, mother's awareness, education and understanding of the importance of gastrointestinal motility are necessary component. **Aim:** evaluate the effect of implementing educational guidelines on mothers' performance regarding postoperative gastrointestinal motility for their children with abdominal surgery. **Design:** A quasi-experimental design was used to conduct the study. **Setting:** This study was conducted at pediatric surgical unit of Benha Specialized Pediatric Hospital. **Sample:** A convenience sample was comprised of 60 mothers with their children of school age admitted to previous mentioned setting having abdominal surgery. **Tools of data collection:** Three tools were used: tool (I) interviewing questionnaire included two parts, tool (II) mothers' knowledge related to gastrointestinal motility after abdominal surgery and tool (III) included two parts mothers' reported practices schedule and observation sheet were developed by researcher after reviewing related literature. **The results:** The results of this study revealed that: The designed guidelines for mothers having children undergoing abdominal surgery are effective method for improvement of their knowledge score as the minority (pre intervention), while more than three quarters of them had good knowledge (post intervention) and satisfactory practice as more than quarter (pre intervention), while more than three quarters (post intervention) that reflect on high improvement rates of gastrointestinal motility and health status of children in follow up sheet. **The study concluded that** the educational guidelines were effective in improving mothers' performance regarding improving gastrointestinal motility after abdominal surgery. **The study recommended that:** The nursing roles should be directed toward educating mothers about improving their knowledge and practice regarding gastrointestinal motility and how to improve it after abdominal surgery.

**Key words:** Educational guidelines, Mothers' performance, Gastrointestinal motility, Abdominal surgery.

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Date of Submission:

Date of acceptance:

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### **I. Introduction**

Normal gastrointestinal motility described as the contraction of the muscles in the gastrointestinal tract, these muscles contract in a synchronized way to move the food in one direction this called peristalsis. Also, the muscle at adjacent parts of the gastrointestinal tract squeeze more or less independently of each other this has the effect of mixing the contents but not moving them up or down both kinds of contraction patterns are called motility (Wikipedia, 2018).

Postoperative gastrointestinal dysmotility is widely reported up to 24 hours in the small intestine, 24 to 48 hours in the stomach, and 48 to 72 hours in the colon and cause "normal" physiologic postoperative ileus When ileus is prolonged, it leads to, child discomfort, dissatisfaction and prolonged hospitalization and it must be differentiated from mechanical bowel obstruction or other postoperative complication. Generally, gastric and small intestinal activity appears to return within hours of surgery, and colonic activity returns by second or third day postoperatively. Although the most affected parts of the intestine are those that have been manipulated during the surgery, there is experimental evidence that inflammation of the intestinal muscle extends from manipulated areas to non-manipulated parts of the intestinal tract (Wenliang Chen, 2017).

Delay gastrointestinal motility after abdominal surgery may cause ileus symptoms which include abdominal distention, cessation of defecation, nausea, vomiting, tenderness, and abdominal cramps. It can prolong postoperative recovery, and may increase morbidity and mortality during the hospitalization. Abdominal distention may increase the risks of ventral hernia and wound dehiscence. Postoperative nausea and vomiting affect enteral nutrition and increase the risk of

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malnutrition, resulting in impaired wound healing. Also, delay gastrointestinal motility prolongs the hospital stay of children (**Chin-peng, et al., 2013**).

Abdominal surgery is a broad classification of surgical procedures performed in the abdominal region to diagnose or treat a medical condition. It involves different techniques depending on which abdominal organ is involved. Most of these procedures traditionally require opening the abdomen with a large incision and are referred to as open abdomen surgeries or laparotomies, which are considered as major operations that are followed by extended recovery and down time period the way for laparoscopic surgeries only require significantly smaller incisions that leave less scarring and cause less post-operative pain (**McGrath, & Pomeantz, 2014**).

Immediately after surgery, the child's physical status may also prevent his or her direct communication with health professionals. Mothers have a unique role in children's pain management. Mothers should collaborate with health team members to help the child cope with post-surgery distress, so they need to be competent and prepared to interact collaboratively with professionals in deciding appropriate care for their children (**American Academy of Pediatrics, 2015**).

Postoperative care is the care that child receive after a surgical procedure. The type of postoperative care child need depends on the type of surgery your child have. It often includes pain management and wound care. It lasts for the duration of child hospital stay and may continue after the child has been discharged. Nurses should teach mothers about the potential side effects and complications after surgery, nurses also provide support and health education for mothers and their children to improve gastrointestinal motility after surgery and promoting adequate discharge planning (**Pietrangelo, 2016**). After child surgery is complete, child will be moved to a recovery room. While he is in the recovery room, the nurse should monitor his vital signs and ask the child to take deep breaths to assess his lung function. They may check the surgical site for signs of bleeding or infection (**Ann Pietrangelo, 2016**).

Nurses should provide appropriate support that allows for prevention of potential complications (**Liddle, 2018**). Also the nurse will report child's mother about the time that her child ready to be discharged. Will report child's mother about instructions that her child will need before leaving the hospital to promote recovery and improve gastrointestinal motility after surgery (**California Pacific Medical Center, 2015**).

### **Significance of the study**

Postoperative Gastrointestinal motility after abdominal surgery is very important to prevent child discomfort, dissatisfaction, prolonged hospitalization and increase costs (**Jory Ckaiff, 2017**). Children who have undergone an abdominal surgery are closely monitored for potential complications and risks such as adhesion which have a large negative effect on child health approximately 67% and higher, ileus which affecting 10 to 30% of children after abdominal surgery (**Venara, et al., 2016**). Nausea and vomiting are common and about 50.0% of children experience nausea and 30.0% experience vomiting (**Koutoukidis & Hughson, 2017**). Abdominal distension and tenderness, delay passage of flatus and Constipation is most common complaints in children with worldwide prevalence of 0.7% to 29.6% (**Merit & Laureen, 2015**).

Incisional hernia occurs in 10-15% of abdominal wounds usually appearing in first year (**Bellows, et al., 2013**) and other complications as loss of muscle, wound infection, bleeding and others. According to information provided from **Central Statistical Office in Benha Specialized Pediatric Hospital**, total number of children admitted to Benha Specialized Pediatric Hospital in **2015** was 1650 children done abdominal surgery. So that, the current study carried out to assess mothers' performance toward their children with abdominal surgery to help them in improving recovery of gastrointestinal function and prevent complications.

### **Aim of the study**

The Aim of the study was to evaluate the effect of implementing educational guidelines on mothers' performance regarding postoperative gastrointestinal motility for their children with abdominal surgery through:-

1-Assessing mothers' knowledge and practice about postoperative care of their children having abdominal surgery to improve gastrointestinal motility.

2- Designing and implementing guidelines for mothers about postoperative care of their children with abdominal surgery to improve gastrointestinal motility.

3- Evaluating the effect of implementing educational guidelines on postoperative gastrointestinal motility on children having abdominal surgery.

### **Research hypothesis**

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Mothers' performance regarding postoperative gastrointestinal motility of children having abdominal surgery was improved after implementation of educational guidelines.

## **II. Subjects and method**

### **Technical design**

Technical design for the current study included research design, research setting, subjects, as well as tools of data collection.

### **Research Design**

A quasi-experimental research design was used in carrying out the study.

### **Settings**

This study was conducted at Pediatric Surgical Unit of Benha Specialized Pediatric Hospital which affiliated to Ministry of Health where it consisted of intermediate ICU which includes 5 beds and other 2 rooms for stable cases each room consists of 8 beds.

### **Sample**

A convenient sample composed of 60 mothers with their children of school age having abdominal surgery from the previously mentioned setting included in the study through six months from the beginning of April 2018 to the end of September 2018.

### **Inclusion criteria:**

- Age of children from 6 to 12 years old.
- Children with abdominal surgery as appendectomy, intestinal obstruction, hernia.
- Both sexes.
- Oriented and able to follow instruction.

### **Tools of data collection**

Data was collected by using the following tools:

#### **Tool (I): A structured interview sheet:-**

It was developed by the researcher in Arabic language and consists of two parts as following:

Part (I): Mothers characteristics as age, level of education, occupation, number of children and residence.

Part (II): Children characteristics as age, gender, type of surgery, Medical history, signs and symptoms appear.

**Tool (II): Mothers' knowledge** regarding gastrointestinal motility after abdominal surgery for their children based on (Hsin-Tsai, et al., 2014) to assess:

#### **1- Mothers' knowledge about gastrointestinal motility which include the following:**

- a) Definition of gastrointestinal motility.
- b) Importance of gastrointestinal motility.
- c) Effect of abdominal surgery on gastrointestinal motility.

#### **2- Mothers' knowledge about gastrointestinal motility after abdominal surgery which include the following:**

- a) Gastrointestinal motility disorders.
- b) Timing of start oral fluids and feeding postoperatively.
- c) Time of starting ambulation after abdominal surgery.
- d) Importance of early ambulation after abdominal surgery.
- e) How mothers help child to get out of the bed.
- f) What mothers do if child doesn't pass flatus after abdominal surgery?
- g) Factors that helping in improving gastrointestinal motility after abdominal surgery.
- h) Importance of chewing gum.
- i) Importance of drinking coffee.
- j) Importance of taking deep breathing and coughing exercise.
- k) Doing deep breathing and coughing exercise.
- l) Importance of avoiding pain killer.

#### **The total scoring system of mothers' knowledge:**

Three level of scoring for questions was as the following, correct and complete answer was scored (2), correct and incomplete answer was scored (1) and wrong answer or don't know and was scored (0). So the total score of 15 questions were 30 degree.

#### **The Total scoring system of mothers' knowledge was calculated and classified into three levels as the following:**

- (75≤100%) was considered good knowledge.
- (60≤75%) was considered fair knowledge.
- (>60%) was considered poor knowledge.

#### **Tool (III): It consists of two parts.**

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**Part (I): Mothers' reported practice:**

It was developed by researcher and reviewing of three experts and it was check list to observe mothers' practice regarding care of their children to improve gastrointestinal motility through the following:

- 1- Getting out from the bed and starting to walk (4 Items).
- 2- Early ambulation after abdominal surgery (4Items).
- 3- Wound care by supporting wound during movement (2 Items).
- 4- Early starting oral clear fluids (4 Items).
- 5- Chewing gum (2 Items).
- 6- Coughing and deep breathing exercise (6 Items).

**Scoring system for mothers' practice was as the following:**

- The scoring system for mother's practices was calculated as follows done correctly and complete was scored (1), done incorrect or not done well scored (0). The score of the items was summed-up and the total divided by the number of the items, giving a mean score for the part. These scores were converted into a present score. So the total scores of 22 questions were 22 degree.

**- Scoring system for mothers' practice was calculated as following:**

- (75≤100%) was considered satisfactory.
- Less than (>75%) was considered unsatisfactory.

**Part (II): Observation sheet:**

It was adapted from (Thomas, 2016)&(Modsen, 2006) and developed by the researcher after reviewing the related literature and under thesis supervisors to suit the nature of the study as (time of stopping IV fluids, time of starting clear oral fluids) to determine the effects of implementing educational guidelines to mothers on their child gastrointestinal motility to measure the progress by assess benefits and improvement in children' status and including symptoms still present, worse or improved these symptoms such as (first abdominal sound, first bass flatus, time of starting feeding, nasogastric tube removal and finally if child condition improved or need farther stay on hospital.

**2- Operational design:**

This phase include: preparatory phase, validity and reliability, ethical and legal consideration, pilot study, field of work.

**a) Preparatory phase:**

The researcher reviewed the local and international related literatures to cover the various aspect of the study problem and develop this study tool by using books, articles, periodicals and magazines of line reference.

**b) Validity and reliability of study tools:**

The data collection tools were revised by a panel of three experts in the field of pediatric surgery and pediatric nursing to determine the extent to which the items in the questionnaire were related to each other, test clarity, relevance, comprehensiveness, simplicity and applicability. Reliability of the tools was applied by the researcher for testing the internal consistency of the tools by administration of the same tool to the same subjects under similar condition, it done by using cronbach's co-efficiency alpha test. Reliability of knowledge equal 77.1 reliability for practice equal 87.2.

**c) Ethical and legal consideration:**

The researcher explained the aim, nature and expected outcomes of the study to the mothers and their children. They were informed that the study is harmless for the subject. The researcher secured that all of the gathered data are confidential and are used for research purpose only. The mothers were informed that they are optionally allowed either to participate or not in the study and they have the right to withdraw from the participation at any time. An oral consent was taken from the mothers and their children.

**d) Pilot study:**

A pilot study was carried out during April 2018 involved 10% of the sample size (6 mothers) to evaluate the reliability and applicability of the tool and estimate the proper time required for answering the questionnaire. All participants in the pilot study were included in the sample, where no radical modification was carried out in the study tools as revealed from the pilot study.

**e) Field work:**

The actual field work was carried out from the beginning of April (2018) up to the end of September (2018). The researcher was available in the study setting three days weekly (morning and afternoon shifts) to collect the data by using previous tools. The researcher interviewed each mother. First introduced her to the participants and explained the aim of the study in order to obtain their acceptance to participate in the study prior to data collection, then the researcher assessed mothers knowledge and reported practice regarding care for children with abdominal surgery to improve gastrointestinal motility using questionnaire sheet.

The educational guidelines implemented in 9 sessions in front of all mothers included in the study (5 sessions for the theoretical part and 4 sessions for practices), the time required for each session ranged from 30-60 minutes. The total number of the studied mothers was 60 who divided in to 10 groups each group consisted of 6 mothers. The researcher asked questions in simple Arabic language and recorded the response of mothers on the sheet. Different teaching methods was used as

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booklet, pictures, group discussion and demonstration, evaluation were carried out by using a posttest as the same pretest format. Motivation of the studied mothers by encouraging words to gain their participation, the data was collected from mothers and their children attended in the previously mentioned setting through an interview with them.

### **a- Assessment phase:**

The questionnaire sheet were administer by the researcher to mothers individually to assess their knowledge and reported practices about the postoperative care provided to their children with abdominal surgery and explanation of the questionnaire sheet was done by the researcher. The average time needed for the completion of each interview (by mothers) was between 25-35 minutes.

### **b- Planning phase:**

After determining the needed knowledge and practice, the researcher designed guidelines about mothers' performance regarding postoperative gastrointestinal motility for their children with abdominal surgery.

### **c- Implementing phase:**

Implementation phase was achieved through 9 sessions at a period of 3days. Each session started by a summary of the previous session and objectives of new one. Take in to consideration, the use of the Arabic language that suits the mothers' educational level. Motivation and reinforcement during session were used in order to enhance motivation for sharing in this study. The total numbers of session were 9. It was divided as follows:-

Five sessions for knowledge and four for practice, each session were taken one hour. Different teaching methods and media were used during the implementation of educational guidelines. The mothers were assessed after the implementation educational guidelines. The educational guidelines were implemented in 9 sessions in front of all mothers included in the study.

#### **First session: it was focused on**

- Definition of gastrointestinal motility.
- Important of gastrointestinal motility.
- Effect of abdominal surgery on gastrointestinal motility.
- Gastrointestinal motility disorder.

#### **Second session: it was focused on**

- Timing of start oral fluids and feeding postoperatively.
- Time of starting ambulation after abdominal surgery.
- Importance of early ambulation after abdominal surgery.
- How mothers help child to get out of the bed.

#### **Third session: it was focused on**

- Steps that the mothers do if child doesn't pass flatus after abdominal surgery.
- Factors that helping in improving gastrointestinal motility after abdominal surgery.
- Importance of chewing gum.
- Importance of drinking coffee.

#### **Fourth session: it was focused on**

- Importance of taking deep breathing and coughing exercise.
- Importance of avoiding pain killer.

#### **Fifth session: it was focused on**

- Getting out from the bed and starting to walk.

#### **Sixth session: it was focused on**

- Improving gastrointestinal function through early ambulation.
- Supporting wound during movement.

#### **Seventh session: it was focused on**

- Early starting oral clear fluids.
- Chewing gum.

#### **Eighth session: it was focused on**

- Steps of taking deep breathing and coughing exercise.

#### **Ninth session: it was focused on**

- Symptoms still present, worse or improved.
- Time of first intestinal sound, pass flatus, starting oral fluids, nasogastric tube removal and time of stopping IV fluids.

#### **The following specific objectives were developed to:**

- Define gastrointestinal motility.
  - Identify important of gastrointestinal motility and motility disorder.
  - Identify time of starting to wake up from the bed to begin to walk.
  - Discuss how Improve gastrointestinal function after abdominal surgery through early ambulation, chewing gum, drinking coffee, reduce pain killer, taking deep breathing and coughing exercise
  - Provide designed guidelines to improve gastrointestinal function.
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**d- Evaluation phase:**

After implementation of educational guidelines for mothers' performance regarding postoperative gastrointestinal motility for their children with abdominal surgery using tool (1), (2) and (3). An immediate posttest was carried out after the intervention to assess mothers' performance, using the same forms of the pretest. This helped to evaluate the effect of the implemented guidelines. Observation sheet for their children was conducted in the third day of conducting educational guidelines based on assessment of gastrointestinal motility after abdominal surgery.

**3- Statistical design:**

Data collected were organized, tabulated and analyzed using an electronic computer and statistical analysis was done by using Statistical Package for Social Science (SPSS version 20). Which were used frequencies and percentages for qualitative descriptive data, and chi-square was used for relation tests, mean and standard deviation was used for quantitative data, Person correlation coefficient (r) was used for correlation analysis and degree of significance was identified.

**4-Administrative design:**

Official letter issued permission was obtained from the Dean of Faculty of Nursing, Benha University concerned the title, objectives, tools and official approval was obtained from the administrators of the study settings to carry out the study. A clear explanation was given about the nature, importance and expected outcome of the study to administrators and study sample

**III- Results**

**Table (1)** illustrated mothers' characteristics, it was observed that less than half (48.3%) of mother's aged  $20 < 30$  years and their mean age was  $23.8 \pm 0.461$  years. Also, half (50.0%) of them had secondary education. Regarding to their job it was found that less than two thirds (61.7%) of them were working, while more than one third (38.3%) of them not working. Regarding their residence, it was observed that less than three quarters (73.3%) of mothers were living in rural area. while more than one quarter (26.67%) of them were living in urban area.

**Table (2)** showed personal characteristics of studied children. It was found that more than half (53.3%) of children aged  $6 < 9$  years and their mean age was  $8.83 \pm 1.51$  years. Regarding to gender, less than two thirds (60.0%) of studied children was male, while more than one third (40.0%) of them was female. Regarding to type of surgery, half (50.0%) of the studied children have appendectomy.

**Table (3)** reported mothers' knowledge regarding postoperative gastrointestinal motility for their children after abdominal surgery and indicated that all mothers (100%) had correct answer post intervention regarding time of starting ambulation after abdominal surgery, how mothers help child to ambulate after surgery, what can mothers do in case of no pass flatus, importance of drinking coffee after abdominal surgery and importance of avoiding excessive analgesics after abdominal surgery. While the importance of chewing gum after abdominal surgery was improved from (20.0%) pre to (88.3%) post. This table also illustrated that the designed guidelines reveals a highly statistically significant difference ( $P < 0.001^{**}$ ) in mother's knowledge pre and post intervention.

**Table (4)** reported distribution of the studied mothers according to their reported practices regarding improvement of gastrointestinal motility regarding their children after abdominal surgery pre and post the educational guidelines. There was improvement in all items. The most improvement was found in how child gets out from the bed and start to walk and supporting wound during ambulation from (16.7%) to (100%) and (51.7%) to (96.7%) respectively. The less improvement is found in early ambulation according to health status of child and having oral fluids from (5.0%) to (73.3%) and (13.3%) to (75.0%) respectively. There was a highly statistically significant difference ( $P < 0.001$ ) between reported practices pre and post intervention.

**Table (5)** demonstrated distribution of the studied children regarding postoperative gastrointestinal motility after abdominal surgery during observation time. It was found that all children (100%) have intestinal sound and pass flatus in the second day. By the third day, the majority (83.3%) of children improved in having oral fluids, while (80%) of them removed nasogastric tube and IV fluids was stopped by the third day. Also, there were statistical significant difference ( $P < 0.05^*$ ) between children through observation time.

**Table (6)** highlighted the relation between mothers' characteristics and total score of mothers' knowledge. There was a statistical significant difference ( $P < 0.05$ ) between total knowledge and mothers' characteristics.

**Table (7)** highlighted the relation between mothers' characteristics and total reported practices score. There was a statistical significant difference ( $P < 0.05$ ) between total reported practices and mother's characteristics.

**Table (8)** showed correlation between total knowledge and total reported practices of mothers. It was found that there was a positive correlation between total knowledge of the studied mothers and their total reported practices at pre and post intervention.

**Figure (1):** reported that, the total mothers' knowledge about gastrointestinal motility after abdominal surgery pre intervention was only (3.3%) that had good knowledge compared to (76.6%) post intervention.

**Figure (2):** illustrate that, the total mother's reported practices about gastrointestinal motility for their children after abdominal surgery pre the intervention was (33.3%) that had satisfactory reported practice. Compared to (80.0%) post intervention.

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**Table (1): Distribution of the studied mothers according to their personal characteristics (n= 60).**

Mothers characteristics	No	%
<b>Age(years)</b>		
- < 20	6	10.0
- 20 < 30	29	48.3
- 30 < 40	21	35.0
- 40 and more	4	6.7
<b>Mean ± SD</b>		<b>23.8 ± 0.761</b>
<b>Level of education</b>		
- Illiterate or read and write	3	5.0
- Primary education	0	0.0
- preparatory education	6	10.0
- Secondary education	30	50.0
- University education	21	35.0
<b>Occupation</b>		
- Occupied	37	61.7
- Not occupied	23	38.3
<b>Number of Children</b>		
- One	1	1.7
- Two	13	21.7
- Three	26	43.3
- Four	14	23.3
- Five	6	10.0
<b>Residence</b>		
- Urban	16	26.7
- Rural	44	73.3
<b>Total</b>	<b>60</b>	<b>100</b>

**Table (2): Distribution of the studied children according to their personal characteristics (n= 60).**

Children characteristics	No	%
<b>Age(years)</b>		
- 6 < 9	32	53.3
- 9 ≤ 12	28	46.7
<b>Mean ± SD</b>		<b>8.83 ± 1.51 years</b>
<b>Gender</b>		
- Male	36	60.0
- Female	24	40.0
<b>Type of surgery</b>		
- Appendectomy	30	50.0
- Intestinal obstruction	15	25.0
- Inguinal hernia	3	5.0
- Cholecystectomy	6	10.0
- Supra pubic bladder opening	6	10.0

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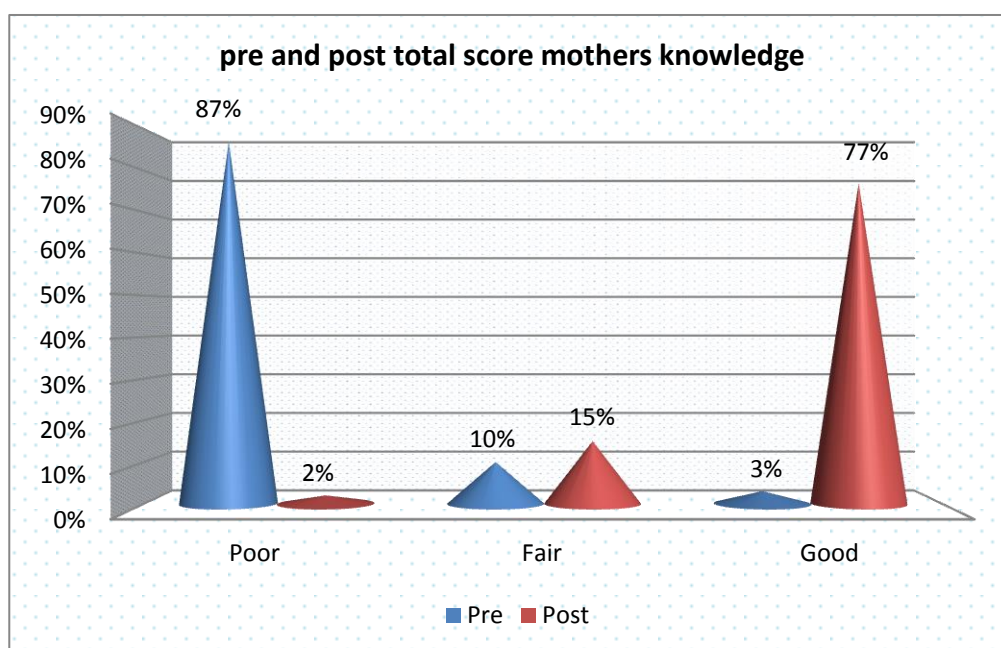
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**Table (3): Distribution of the studied mothers according to their knowledge regarding postoperative gastrointestinal motility for their children after abdominal surgery (n = 60).**

Mothers' knowledge	Pre intervention						Post intervention						X <sup>2</sup>	P-Value
	Correct answer		In complete correct		Incorrect answer or Don't know		Correct answer		Incomplete correct		Incorrect answer or Don't know			
	No	%	No	%	No	%	No	%	No	%	No	%		
1-Definition of gastrointestinal Motility	26	43.3	24	40.0	10	16.7	44	55.0	15	25.0	1	1.66	55.70	P<0.05*
2-Importance of gastrointestinal Motility	34	56.6	13	21.7	13	21.7	55	91.6	5	8.33	0	0.0	42.73	P<0.05*
3-Effect of abdominal surgery on gastrointestinal motility	36	60.0	9	15.0	15	25.0	56	93.3	4	6.6	0	0.0	78.08	P<0.05*
4-Disorder of gastro intestinal motility after abdominal surgery	33	55.0	11	18.3	16	26.7	52	86.6	7	11.6	1	1.66	91	P<0.05*
5-Time of starting oral fluids after abdominal surgery	46	76.7	14	23.3	0	0.0	56	93.3	4	6.66	0	0.0	62.13	P<0.05*
6-Time of starting ambulation after abdominal surgery	33	55.0	17	28.3	10	16.7	60	100	0	0.0	0	0.0	94.46	P<0.05*
7-Importance of ambulation after abdominal surgery	38	63.3	8	13.3	14	23.3	50	83.3	10	16.7	0	0.0	59.33	P<0.05*
8-How mothers help child to ambulate after surgery	29	48.3	31	51.7	0	0.0	60	100	0	0.0	0	0.0	33.05	P<0.05*
9-What can mothers do in case of no Pass flatus.	25	41.7	15	25.0	20	33.3	60	100	0	0.0	0	0.0	66.46	P<0.05*
10-Factors that help improving gastrointestinal motility after abdominal surgery.	35	58.3	10	16.7	15	25.0	55	91.6	5	8.33	0	0.0	71.66	P<0.05*
11-Importance of chewing Gum after abdominal surgery	12	20.0	24	40.0	24	40.0	53	88.3	7	11.7	0	0.0	45.0	P<0.05*
12-Importance of drinking coffee after abdominal surgery	36	60.0	22	36.7	2	3.3	60	100	0	0.0	0	0.0	59.46	P<0.05*
13-Importance of coughing and deep breathing exercise	24	40.0	20	33.3	16	26.7	52	86.7	8	13.3	0	0.0	41.20	P<0.05*
14-How child does cough and deep breathing exercise.	36	60.0	14	23.3	10	16.7	46	76.7	11	18.3	3	5.0	71.90	P<0.05*
15-Importance of avoiding excessive analgesics after abdominal surgery	34	56.7	16	26.7	10	16.7	60	100	0	0.0	0	0.0	50.40	P<0.05*

Statistical significant at P value <0.05\*





**Figure (1):** Distribution of the studied mothers regarding to their total knowledge pre and post the educational guidelines (n=66).

**Table (4):** Distribution of the studied mothers according to their reported practices regarding improvement of gastrointestinal motility after abdominal surgery (n=60).

Mothers' reported practices	Practices								X <sup>2</sup>	P-Value
	Pre intervention				Post intervention					
	Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory			
	No	%	No	%	No	%	No	%		
1) Getting out from the bed and start to walk	10	16.7	50	83.3	60	100	0	0.0	4.83	P<0.001*
2) Early ambulation after abdominal surgery	3	5.0	57	95.0	44	73.3	16	26.7	2.94	P<0.001*
3) Wound care by supporting wound during movement.	31	51.7	29	48.3	58	96.7	2	3.3	46	P<0.001*
4) Early starting oral clear fluids	8	13.3	52	86.7	45	75.0	15	25.0	1.22	P<0.001*
5) Chewing gum	3	5.0	57	95.0	50	83.3	10	16.7	80	P<0.001*
6) Coughing and deep breathing exercise	1	1.7	59	98.3	48	80.0	12	20.0	1.32	P<0.001*

Highly statistical significant at P value <0.001\*\*

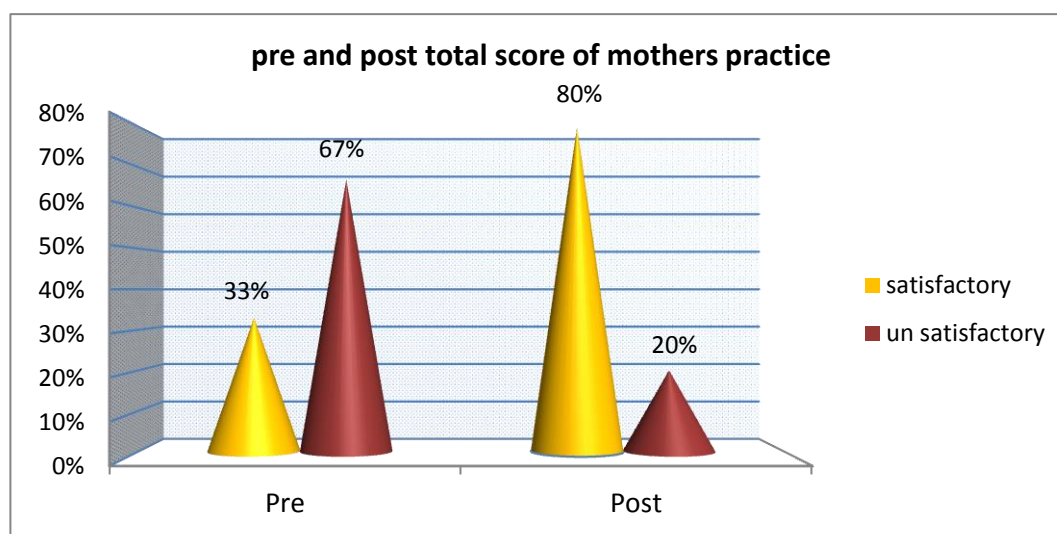


Figure (2): Distribution of the studied mothers according to their reported practice to improve gastrointestinal motility for their children after abdominal surgery pre and post intervention.

Table (5): Distribution of studied children regarding postoperative gastrointestinal motility after abdominal surgery during observation time (n=60).

Observation items	First day		Second day		Third day		More than 3 days		X <sup>2</sup>	P-Value								
	Improved		Not Improved		Improved		Not Improved											
	No	%	No	%	No	%	No	%										
First intestinal sound	40	66.7	20	33.3	60	100	0	0.0	60	100	0	0.0	60	100	0	0.0	88.1	P<0.05*
Time of first pass flatus	38	63.3	22	36.7	60	100	0	0.0	0	0.0	0	0.0	60	100	0	0.0	72.9	P<0.05*
Time of start oral fluids	38	63.3	22	36.7	40	66.7	20	33.3	50	83.3	10	16.7	55	86.7	5	8.3	47.8	P<0.05*
Time of removing nasogastric tube	30	50.0	30	50.0	40	66.7	20	33.3	48	80.0	12	20.0	55	86.7	5	8.3	64.8	P<0.05*
Time of stopping IV fluids	0	0.0	60	100	38	63.3	22	36.7	48	80.0	12	20.0	55	86.7	5	8.3	73.3	P<0.05*

Statistical significant at P value <0.05\*

Table (6): Relationship between mothers' characteristics and total score of mother's knowledge.

Total score of mothers' knowledge and mothers' characteristics	Pre intervention						Post intervention						X <sup>2</sup>	P-Value	
	Good		Average		Poor		Good		Average		Poor				
	No	%	No	%	No	%	No	%	No	%	No	%			
<b>Age/ Years:</b>														45.7	P<0.05*
< 20 years	0	0.0	2	3.3	4	6.7	2	3.3	3	5.0	1	1.7			
20 < 30 years	2	3.3	1	1.7	26	43.3	11	18.3	6	10.0	5	8.3			
30 < 40 years	0	0.0	3	5.0	18	30.0	10	16.7	8	13.3	3	5.0			
40 and more	0	0.0	0	0.0	4	6.7	9	15.0	1	1.7	1	1.7			
<b>Level of education</b>														53.06	P<0.05*
illiterate or read or write	0	0.0	0	0.0	3	5.0	2	3.3	0	0.0	1	1.7			
Primary school	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0			
Preparatory school	0	0.0	1	1.6	5	8.3	3	5.0	2	3.3	1	1.7			
Secondary school	4	6.7	4	6.7	25	41.7	15	25.0	7	11.7	6	10.0			
University education	2	3.3	6	10.0	10	16.7	12	20.0	5	8.3	4	6.7			

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Others	0	0.0	0	0.0	0	0.0	2	3.3	0	0.0	0	0.0		
<b>Occupation</b>														
Working	2	3.3	4	6.7	17	28.3	6	10.0	13	21.7	4	6.7	69.31	P<0.05*
Not working	0	0.0	2	3.3	35	58.3	7	11.7	19	31.6	11	18.3		
<b>Residence</b>														
Rural	1	1.7	5	8.3	38	63.3	21	35.0	15	25.0	8	13.3	98.9	P<0.05*
Urban	4	6.7	3	5.0	9	15.0	10	16.7	2	3.3	4	6.7		

Statistical significant at P value <0.05\*

**Table (7): Relationship between mothers' characteristics and total score of mothers' reported practices (n = 60).**

Total score of mothers' reported practices and mothers' characteristics	Practices								X <sup>2</sup>	P-Value
	Pre intervention				Post intervention					
	Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory			
	No	%	No	%	No	%	No	%		
<b>Age/ Years</b>										
< 20 years	3	5.0	3	5.0	5	8.3	1	1.7	49	P<0.05*
20 < 30 years	14	23.3	15	25.0	25	41.6	4	6.7		
30 < 40 years	10	16.7	11	18.3	18	30.0	3	5.0		
40 and more	2	3.3	2	3.3	3	5.0	1	1.7		
<b>Level of education</b>										
illiterate or read or write	3	5.0	0	0.0	3	5.0	0	0.0	21.9	P<0.05*
Primary school	0	0.0	0	0.0	0	0.0	0	0.0		
Preparatory school	2	3.3	4	6.7	4	6.7	2	3.3		
Secondary school	14	23.3	16	26.7	25	41.7	5	8.3		
University education	10	16.7	11	18.3	20	33.3	1	1.7		
<b>Occupation</b>										
Working	10	16.7	13	21.6	20	33.3	3	5.0	22.60	P<0.05*
Not working	19	31.6	18	30.0	27	45.0	10	16.7		
<b>Residence</b>										
Rural	22	36.6	22	36.6	39	65.0	5	8.3	63.04	P<0.05*
Urban	9	15.0	7	11.7	14	23.3	2	3.3		

Statistical significant at P value <0.05\*

**Table (8): Correlation between mother knowledge and reported practices regarding gastrointestinal motility after abdominal surgery (n = 60).**

Correlation (r)	Mothers' Knowledge			
	Pre intervention		Post intervention	
	r	P. value	r	P. value
Mothers' total reported practices	0.10	0.41	0.37	P<0.001**

#### IV- Discussion

Abdominal surgery is a transitory condition during which the abdominal functions are stalled purposely for a specified period of time in order to facilitate the surgical procedure. However, the primary focus is to restore the abdominal functions to normal routine within the minimum possible time. Passing of flatus is one of the important functions of that is impaired during and after the abdominal surgery (Atul & Mahendra , 2015). Gastrointestinal motility and functional motility disorders are

common after abdominal surgery and are associated with persistent symptoms that can often result in a poor quality of life (**Henary & Parkman, 2010**).

This study aimed to evaluate the effectiveness of educational guidelines on mothers' performance regarding postoperative gastrointestinal motility for their children with abdominal surgery. This aim was achieved through educational guidelines to increase their awareness about gastrointestinal motility and improving their knowledge and practice about improving gastrointestinal motility after abdominal surgery.

In the current study, characteristics of studied mothers revealed that, less than half of the studied mothers' their age ranged from  $20 \leq 30$  years, and half of them had secondary school. This result disagrees with the result of **Abd Elhafeez, (2011)** who conducted a study about "Effect of preoperative instruction among school age children on postoperative gastrointestinal motility undergoing abdominal surgery in surgical unit at specialized pediatric hospital ", who found that the age of mothers ranged from  $30 \leq 40$  years and the highest percentage can read and write, as well as had primary school. The researcher observed that, during clinical practice the educated mothers were more co-operative and care than literacy ones.

Regarding occupation this current study showed that less than two thirds of the studied mothers were occupied and less than two fifth of them were not occupied. From the researcher point of view it could be due to different sample selection. This finding disagrees with the result of **Hassan, (2019)** who studied "The Effect of a planned play program as a nursing intervention in reducing post-operative pain among children undergoing abdominal surgeries" who found that the majority of mother's children in the control and experimental groups respectively were housewives.

Concerning of level of mother education, this study found that half of mothers had secondary education, this finding disagrees with the result of **Hassan, (2019)** who found that less than half of mothers in the control group hadn't educated, while more than half of them in the experimental group received technical education.

In the current study, personal characteristics of school age children showed that, mean age of children with abdominal surgery was  $(8.83 \pm 1.51)$  years old and less than two thirds of them were males. These findings were paralleled with **Shahrivar (2014)** who studied "The effect of post-operative play interventions for children on reducing pain and anxiety." who found that mean age of children was  $(8.84 \pm 1.50)$  and most of them were males.

This findings supported by **Fernandes, et al., (2014)** who conducted study about " Providing preoperative information for children undergoing surgery a randomized study testing different types of educational material to reduce children's preoperative worries." who found that studied children was male more than female, but differ in age of studied children was approximately between 8 and 12 years old with mean age was  $(10.09 \pm 1.43)$ . From the researcher point of view this difference could be due to large sample size of their studied sample (125 children).

Regarding to child's type of surgery, the results of the current study revealed that, half of the children were done appendectomy, while minority of them done inguinal hernia. This result disagrees with **Abd Elhafeez, (2011)** who found that, almost of children in the study and control groups were undergoing splenectomy, while the minority of them was undergoing removal of renal stones. Concerning knowledge of mothers about improving gastrointestinal motility after abdominal surgery before educational guidelines, the current study reported that majority of mothers had poor knowledge, but after implementing the educational guidelines, the current study reported that improvement in knowledge of more than three quarters had good knowledge after educational guidelines.

Concerning knowledge of mothers about improving gastrointestinal motility after abdominal surgery, the current study reported that majority of mothers had poor knowledge before educational guidelines before educational guidelines, while more than three quarters had good knowledge after educational guidelines after implementing the educational guidelines. This finding consistent with **Fernandes, et al., (2014)** who found that interventional preparation programs that provide educational information positively tend to affect parents and their children. Improvement of the child's cooperation with the healthcare professionals, promote the child's sense of self-control, decrease of unrealistic expectations and of inappropriate concerns with hospitalization and surgery, greater trust and confidence on the healthcare professionals.

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This finding also consistent with **Sonaz, et al., (2014)** who conducted a study about "The important of education on performing postoperative exercise based on health belief model.", who found that a strong positive correlation between receiving education and performing exercises. This means, receiving education effects children' exercise performing statuses positively.

This current study showed that less than three quarters of mothers had satisfactory reported practice regarding importance of early ambulation after abdominal surgery in improving gastrointestinal motility post intervention. This finding was consistent with **Morisawa, et al., (2015)** who conducted a study about "The effect of physiotherapy intervention on intestinal motility" who found that majority of patients who performing physiotherapy such as early ambulation and range of motion had intestinal motility after abdominal surgery and found that there was highly significant difference between before and after performing physiotherapy.

Regarding deep breathing exercise, this study shows that majority of mothers had satisfactory reported practice regarding importance of breathing exercise post intervention and learn how perform this exercise, so this study found positive improvement after guidelines intervention. This finding also was consistent with **Kivanc & Unver, (2018)** who conduct a study about "Deep breathing exercise education receiving and performing status of patients undergoing abdominal surgery." who found that positive improvement of patients' knowledge and performance after nursing education. For the future, focusing on the positive effect of educating the breathing exercise teaching for children, effects of organized clinical exercise protocols to be followed after surgeries may be studied.

Regarding total reported practices of mothers about improving gastrointestinal motility after abdominal surgery, the current study reported that nearly two thirds of mothers had unsatisfactory practice before educational guidelines while the majority of them had satisfactory practice after implementing educational guidelines. So this result show highly statistical significant difference pre and post educational guidelines. From the researcher point of view it could be due to the effect of educational guidelines discussed with mothers and their children is very important for improving gastrointestinal motility after abdominal surgery, reduce long stay in hospital, reduce financial costs, improve health status of children and prevent occurrence of complications.

This finding also supported with **Abd Elhafeez, (2011)** who found that the improvement of knowledge and practice gained by mothers and their children might be due to use of educational materials as booklet developed by the researcher containing very attractive designs and colors, simple description, and meaningful related pictures found to be helpful to make mothers and their children understand these instruction.

On the same context, **Fernandes, et al., (2014)** reported that these benefits may also reduce postoperative maladaptive emotional and behavioral responses, decrease pain perception and foster recovery. The research has also shown that providing educational information using books, medical play and peer modeling videos (i.e. observation of appropriate behaviors executed by a similar model) are the most appropriate and effective methods for children to learn effective strategies for coping with surgery. This study revealed importance of this factor in improving motility as all of the studied children have intestinal sound, pass flatus in the second day of the surgery. This finding was congruent with **Eamudokarn, et al., (2018)** who conducted a study about "Effect of postoperative coffee consumption on gastrointestinal function after abdominal surgery". It was found that postoperative coffee consumption significantly reduced the time to first defecation, time to first flatus, time to first audible bowel sound, and time to tolerance of solid food. Also slightly reduced the length of hospital stay, the time to passage of first flatus and defecation are two of the main factors that determine the postoperative child comfort.

Regarding to importance of drinking coffee as playing an important role in improving gastrointestinal motility after abdominal surgery. Caffeinated coffee was concluded to stimulate colonic motor activity. A recently performed randomized controlled trial at the University of Heidelberg showed that the consumption of regular black coffee after colectomy is safe and is associated with a significantly faster resumption of intestinal motility (**Muller, et al., 2015**). Also, chewing gum helps in improving gastrointestinal motility after abdominal surgery. Gum is postulated to activate the cephalic-vagal reflex, which is usually enhanced by food, and to increase the production of the gastrointestinal hormones associated with bowel motility (**Brunner, et al., 2016**). From the researchers point of view, the

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importance of these factors in improving motility as all of the studied children have first intestinal sound, pass flatus in the second day of the surgery.

This finding was congruent with **Wei Ge & Gang Chen, (2015)** who conducted a study about "Effect of chewing gum on postoperative recovery of gastrointestinal function after abdominal surgery". Who found that the first heard sound and pass flatus was after 24hrs through the 2nd day after the surgery.

This result was differing with **Kumar, et al, (2018)** who conducted a study about "Effect of chewing gum on bowel motility in postoperative patients following abdominal surgery". Who found that first abdominal sound heard was through 3rd day and first flatus was through 4th day.

This finding also was consistent with **Terziogluf & Sahin, (2015)** who conducted a study about "The Effect of gum chewing, early oral hydration, and early mobilization on intestinal motility after abdominal surgery" who found that majority of the patient's intestinal sounds were heard earlier, gas was passed earlier, and bowel movements were earlier through second day in the first group that received all interventions compared to the other groups that not received intervention.

The result of the current study showed that, all of children had intestinal sound in the second day. The previous results go on the same line with the study of **Karaman, (2009)** who studied "The effect of gum chewing to reduce postoperative ileus after intestinal resection in children". Who reported that, first bowel movement revealed statistically significant difference in the study group rather than control group.

The result of the present study founded that, the majority of studied children improved in having oral fluid in the third day after surgery. This finding was in agreement with **Azizi & Amanollahi, (2013)** who studied "The outcome of early and late oral feeding in intestinal anastomosis surgeries in children". Who found that, the mean starting time of oral feeding in the study group was  $2.5 \pm 0.7$  days but it was  $5.3 \pm 0.6$  days in control group and had less hospital stay and lower costs.

On the same line, **Liu, et al., (2014)** who conducted study about "Early oral feeding after abdominal surgery." who found that, early oral fluids can improve the return of GIT function and lead to a shorter length of hospital stay in abdominal surgery.

In relation to the time of removing of NGT, results of the current study revealed that, nearly two thirds of children remove NGT in the second day. This result was supported by **Goudar, et al., (2017)** who conducted study about "Early nasogastric tube removal and early oral feeding thus follows the principle of achieving anatomical and physiological continuity heralding early recovery." who found that it was safe to remove nasogastric tube early (within 24 hours) in patients undergoing abdominal surgeries.

**Nivatvongs & Gordon, (2018)** stated that, food intake elicits a reflex response that is propulsive in action. In addition, the presence of food stimulates the secretion of various intestinal hormones, with an overall stimulation effect gastrointestinal motility. In additionally, oral feeding has been delayed after an abdominal surgery until any ileus has resolved clinically. At that point a liquid diet is administered gradually progressive to solid food.

Through the findings of the current study, it was found that majority of mothers had improvement in their performance toward their children post educational guidelines implementation, so gastrointestinal motility improved through early heard intestinal sound, pass flatus and early starting oral fluids through second day this lead to removing nasogastric tube, stopping IV fluids and decrease hospital stay of their children. This finding relatively consistent with **Terziogluf & Sahin, (2015)** who found that gastrointestinal motility improved through early heard intestinal sound, pass flatus and early starting oral fluids through second day this lead to removing nasogastric tube, stopping IV fluids and decrease hospital stay.

## V- Conclusion

In the light of present study findings, it was concluded that, the educational guidelines for mothers with their children with abdominal surgery were effective method for improvement of their performance, and subsequently lead to high rates of improvement of gastrointestinal motility after abdominal surgery.

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## VI- Recommendations

Based on the findings of present study, the following recommendations are suggested:

- 1- The nurse should emphasize the importance of implementing the educational guidelines for the mothers regarding improving gastrointestinal motility after abdominal surgery and describing in details, because this can reduce the risk of unnecessary postoperative subsequent complications.
- 2- Follow up program of the children with abdominal surgery to improve gastrointestinal motility should be applied and organized in the hospitals for proper conservative management application, improving gastrointestinal motility and prevent complications.
- 3- The importance of training the pediatric nurses, about proper care of children with abdominal surgery to improve gastrointestinal motility and raising the awareness of nurses about the nature of gastrointestinal motility after abdominal surgery, different forms of management, complication of delayed intestinal function and its prognosis.

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