

The Effect of Pre-Operative Preparation Program and Mothers Presence during Induction on Anxiety Level and Behavior Change in Young Children Undergoing Elective Surgery

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Abstract: Perioperative anxiety is a complex combination of fear, apprehension and worry often accompanied by physical sensations. Preoperative preparation programs allow reduce anxiety, it is effective and can prevent many behavioral and physiologic manifestations of anxiety as well. The study aimed to evaluate The effect of pre-operative preparation program and mothers presence during induction on anxiety level and behavior change in young children undergoing elective surgery. This study was carried out in the Pediatric Surgery department at new surgical hospital affiliated to the Zagazig University hospital. A quasi- experimental design was used in this study. The total number of children undergoing elective surgery (appendectomy and herniorrhapy) throughout the year of 2011 were 153. Only 120 child accompanied his/her mother who agree to participate in this study. The participants were randomly and equally assigned by the researchers into two group; study and control group. Data were collected using Spielberger state anxiety inventories to assess the level of children and mothers anxiety , Post Hospitalization Behavioral Questionnaire to assess post- operative behaviors change of children and induction compliance checklist to assess children compliance during induction of anesthesia. The finding of the study indicated that the mean of the state anxiety scores of children in study and control groups before intervention were 45.16±3.18 and 45.23±3.19, after intervention 36.63±2.18 and 44.8±3.18 respectively. The state anxiety score was lower significantly in the study group prior to surgery than in the control group ($P=0.001$). While, The mean and standard deviation of the state anxiety scores of mothers in study and control groups before intervention were 41.8±3.11 and 42.23±3.12, after intervention 36.8±2.19 and 43.8±3.17 respectively. The state anxiety score was lower significantly in the study group prior to surgery than in the control group ($P=0.01$). The compliance of the children were significantly higher during the induction of anesthesia in the study group as compared with the control groups (65% vs 33%, $p = 0.001$). Additionally, there was significant differences in the improvement of postoperative eating behaviors and decreased sleeping problems among the study group. It is recommended that The nursing personnel should take the preoperative therapeutic play intervention as a duty and regard it as a role in doing the nursing practices in order to give the children the psychological care beside the routine physical care. Moreover, they should enhance the development of communication skills and coping abilities of children that help in reducing their anxiety.

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1. Introduction:

Perioperative anxiety is a complex combination of fear, apprehension and worry often accompanied by physical sensations (Wollin *et al.*, 2004). Pre-or perioperative anxiety refers to anxiety regarding the events that take place prior to surgery (Ben-Amitay *et al.*, 2006)

Anxiety is delineated as either trait or state. Trait anxiety is the form of anxiety inherent to and ever-present within the individual, while state anxiety is the form of anxiety exhibited by the individual at a particular moment in time as a consequence of some provoking stimulus (Kain *et al.*, 2004). State anxiety is the type of anxiety manifesting in patients preoperatively. Family separation, fear of pain and the unknown, and loss of control are recognized stressors

contributing to preoperative pediatric anxiety (Brewer *et al.*, 2006; Li & Lopez, 2008).

It is estimated that 50% to 70% Of children under-going surgery will develop extreme anxiety during the perioperative period and this phenomenon is important not only because of the associated postoperative maladaptive behaviors, but also because of clinical outcomes and quality improvements efforts (Vagnoli *et al.*, 2005). Postoperative behavioral changes resulting from preoperative anxiety in children may manifest as feeding and sleeping problems, bedwetting, withdrawal and apathy, nightmares, disobedient behaviors, separation anxiety, loss of temper, and fear of healthcare workers, (McCann & Kain, 2001 and Kain *et al.*, 2006).

Surgery is a cause of psychological stress on the part of the child. The hospitalized child reactions are thought to be a reflection of the child's fears of separation from parents and home, loss of control, unfamiliar routines, surgical instruments and hospital procedures. This case causes the child to suffer from considerable stress during treatment. So it is of importance to provide physical healing and continuity of sentimental development to the hospitalized children (Ca- **vosoglu, 2004**). Furthermore, review of literature reveals that lack of understanding about the upcoming procedures, unfamiliarity with the hospital environment and uncertainty about the illness and its treatment are the major factors contributing to parental stress. Therefore, parental involvement is important in the pre-operative preparation program of their child for surgery (**Li and Lam, 2003**).

Extensive agreement amongst researchers thoroughly supported the premise that parental anxiety greatly impacts children (**Li & Lam, 2003 and Wollin et al., 2003, Kain et al., 2004, Davidson et al., 2006 and Kain et al., 2006**). Therefore, preoperative interventions should be aimed at identifying and treating the phenomena of parental anxiety, thereby indirectly managing a child's anxiety via appropriate preparation of parents (**Kain et al., 2004**). A family-centered approach in the management of preoperative pediatric anxiety will yield beneficial results (**Kain et al., 2007**).

Earlier studies have shown that preoperative preparation programs allow reduce anxiety, it is effective and can prevent many behavioral and physiologic manifestations of anxiety as well [**Frank and Spencer, 2005, Kain and Caldwell-andrews, 2005, Justus et al., 2006 and Li et al., 2007**]. Preparation through therapeutic play is the best method of orientation and preparing a child for carrying out medical and surgical procedures. Review of literature also have shown that therapeutic play is effective for a child coping with stressful situation [**O'connor and Drenna, 2003, Algern and Arnow, 2005 and Brewer et al., 2006**]. In this line **Li et al. (2007)** showed that therapeutic play intervention with using doll demonstration is effective for declining children's anxiety.

Therapeutic play is a set of structured activities designed according to age, cognitive development and health- related issues to promote the psycho-physiological well- being of hospitalized children(**Li et al., 2007, jun- Tain, 2008 and Li and Lopez, 2008**). In addition, therapeutic play involves creating an environment that maximizes the natural therapeutic benefits of play. (**O conner - Von, 2000**)

Magnitude of the problem:

On the basis of personal experience of the researchers, as well as feedback from various

hospital, it appears that the majority of children who are scheduled for or have already gone elective surgery as well as their parents, are poorly informed and were not adequately prepared for the procedures. This is apparent in the nature of the questions raised and obvious misconceptions about the procedures. In addition, medical and nursing personal stated that, there are varying level of anxiety and fear from many children and their parents immediately before and after the surgery. Therefore, the researchers developing preparation program by using therapeutic play intervention aimed to reduce children and their parent anxiety, fear and improve the postoperative outcomes.

Aim of the study:

This study aimed to evaluate The effect of pre-operative preparation program and mothers presence during induction on anxiety level and behavior change in young children undergoing elective surgery.

Research questions:

- 1- Is the level of anxiety was better in the intervention group after preoperative preparation program by using therapeutic play intervention?
- 2- Is mother's presence during induction process has beneficial effects on anxiety level in children?
- 3- What are the changes of behaviour that occur in children after surgery?

2. Subjects and Methods:

Research design:

The study was used a quasi experimental design

Setting:

The study was carried out in the pediatric surgery department at new surgical hospital affiliated to the Zagazig University hospital. The hospital composed of four floor. It is bed capacity is 600 beds. The pediatric surgery department is found in the fourth floor and is consisted of two rooms with bed capacity was 12 beds and total number of staff nurses was 8 nurses.

Subjects:

The total number of children undergoing elective surgery (appendectomy and herniorrhaphy) throughout the year of 2011 were 153. Only 120 child accompanied his/her mother who agree to participate in this study. The participants were randomly and equally assigned into two group:

Group I: Study group consisted of 60 children accompanied their mothers participate in the pre-operative program by using therapeutic play intervention by the researchers beside routine care and mothers were present during anesthesia induction process.

Group II: Control group consisted of 60 children accompanied their mothers received traditional

routine care from the surgeons included usual information about the procedure and preparation for the surgery.

The criteria were considered in the selection of subjects to be included in the study were:

- * Children age ranged between 9 -12 years.
- * Children being accompanied by their mothers on the day of surgery.
- Children had no operative background.*
- * Children with the current neurological or other chronic medical problems such as epilepsy, asthma, diabetic, hematological problems were excluded from the study.
- * Children with psychiatric problems including mental retardation, depression and any kinds of psychotic disorders were excluded from the study.

Tools of data selection:

Four tools were used for data collection, namely; An interviewing questionnaire, State Anxiety Inventory, Post Hospitalization Behavioral Questionnaire and Induction compliance checklist.

Tool I:

An interviewing questionnaire was designed by the researchers to collect data related to both children and mothers personal data such as gender, age, educations and disease diagnoses.

Tool II:

State Anxiety Inventory: It is a part of the State-Trait Anxiety Inventory. It was developed by (Spielberger *et al.*, 1983). It was designed to be self-administering for assessing the level of children's and their mothers state anxiety. This inventory consisted of twenty statements with four point likert scale ranging from "not at all"(1) to "very much so."(4).

Scoring system

The scores from 20 to 37 indicates low anxiety, scores from 38 to 44 indicates moderate anxiety and scores ranging from 45 to 80 indicates high anxiety (Ruffinengo *et al.*, 2009).

Tool III:

Post Hospitalization Behavioral Questionnaire

It was developed by Vernon *et al.* (1966). This questionnaire is self - report questionnaire for mothers to evaluate maladaptive behavioral responses and developmental regression in children. It consisted of 27 items in 6 domains of anxiety, including general anxiety, separation anxiety, sleep anxiety, eating disturbances, aggression against authority and apathy/withdrawal. Mothers completed the PHBQ 1,2,3 postoperative and 7days during follow-up visit. It is important to emphasize that parents were specifically instructed to indicate only new behavioral changes that occurred after surgery.

Tool IV:

Induction compliance checklist (ICC)

This observation scale was developed by researchers based on Kain *et al.* (1998) to describe the compliance of a child during induction of anesthesia. It consisted of four items was rated as (compliance = 0, non compliance = 1). For example, if the child did not exhibit any of these behaviors, it is a perfect induction and scored as a zero.

Methods of data collection

An official approval from the dean of faculty of nursing in Zagazig was directed to the responsible authority at the study setting to take the permission to conduct the study, explaining its purpose and methodology. The purpose of the study was explained by the researchers to the potential study participants for obtain their written consent. They were informed that they had the right to go out of the study at any time and were assured of the confidentiality of the study.

State Anxiety Inventory, Post Hospitalization Behavioral Questionnaire and Induction compliance checklist were translated into Arabic and English tools were submitted to three experts from English section, Faculty of literature, at Zagazig University, Egypt to be reviewed for its translation.

Before data collection, the four tools were developed and adopted, then we established content validity of the four tools for our proposed sample, by asking 5 faculty members at the Zagazig and Ain shams Universities schools of nursing to evaluate the tools using a structured form that asking about readability, clarity, and acceptability. Their comments, generally around selection of vocabulary and sentence construction were used to revise the forms. Next, we administered the tools as a pilot to twelve (10% of the total sample) children accompanied their mothers undergoing elective surgery to evaluate the content of tools and to estimate the time needed for data collection, no further modification was suggested. As these twelve children accompanied their mothers attended the therapeutic play intervention subsequently, we incorporated their data in our study.

The reliability of the three tools were tested using Crombach alpha coefficient, it was 0.92 for state anxiety scale for mothers, was ranged from 0.73 to 0.86 for state anxiety scale for children (Spielberger *et al.*, 1983), was 0.47 for Post Hospitalization Behavioral Questionnaire(Vernon *et al.*, 1966) and was 0.998 for Induction compliance checklist (Kain *et al.*, 1998).

Intervention:

On the day before the day of operation, according the hospital policy the child must be admitted for making investigation. During this time, the researchers asked children and their mothers to participate in the study and After obtaining their

agreement, the researcher start to dividing the numbers of participants into study and control groups according to the number of children in operation list that done one day per week. The method of simple complete randomization was carried out by drawing lots. the children with the odd numbers belongs to the study group, and the ones with the even numbers belonged to the control group. pretest before implementation the therapeutic play intervention to assess anxiety of children and mothers. Two tools namely An interviewing questionnaire and state anxiety inventory were distributed and collected from children and their mothers by the researchers in both groups (study and control group). These tools needed about 20 minutes to complete which took 15 minutes to complete in our pilot. In the control group, children and their mothers received routine information preparation (usual care). It consisted of a brief explanation on pre and postoperative care, which included information about preoperative fasting time, personal hygiene, control of vital signs, control of losing teeth, location of dressing, wound care, use of analgesic drugs to relieve pain after the surgery. The content was given by the surgeon. In the study group the therapeutic play intervention was implemented in special class at Pediatric Surgery Department by the researchers 1 day before the day of surgery which included a set of structured activities, designed to prepare children psychologically for surgery according to their developmental stage. The therapeutic play was implemented in small groups of three children accompanied their mothers by the researchers. The mothers as a close caregiver accompanied their children at all time watching these activities. The content of the activities in therapeutic play included a preoperative tour visit to the operation room, a manikin demonstration by the researchers, and a return demonstration by the children on preoperative procedures. Each child and his/her mother started tour individually according to the hospital policy, visiting orientation of environment of reception area, meeting the hospital staff, operation room, recovery room, observing equipments which are in this area such as operating table, monitoring machines, operating lamp. Then for presentation the procedures on the manikin, the researchers came back again to the surgery ward and performed the procedures on a pediatric manikin that was ready beforehand. The activities such as obtaining vital signs, attaching blood pressure cuff to the manikin's arm, attaching a stethoscope to the manikin's chest, use of oxygen catheter and placing mask on the manikin's face were done by the researchers. After that, the children were encouraged to touch the various equipments and were invited to demonstrate the activities on the manikin under supervision and

guidance. The therapeutic play was lasted for 2 hour. In addition, the researchers gives toys to the children to enhance interacting and adoption process. After that, the researchers answered all the children and their mothers questions related to operation. The researchers used simple attractive media to appreciate the participant to follow them during the intervention such as pediatric manikin, and toys. However, classroom presentations, role playing and group discussion were used as a teaching methods. After the completion of intervention and immediately before surgery, the pre-assessment tools (State Anxiety Inventories for children and mothers) were reassess again (post intervention). otherwise, during the operation, children compliance during induction process was measured by using induction compliance checklist by the researchers Then, after the operation and the complete recovery of anesthesia, children post-hospitalization behaviors was filled by mothers through using Post Hospitalization Behavioral Questionnaire. The data collection took a periods of 12 months started from January to December 2011.

Statistical Analysis:

Data were revised, coded, analyzed and tabulated using number and percentage distribution and carried out in the computer. Proper statistical tests were used to find out the effect of training program and mothers present during induction process on the children anxiety and behaviour recovery. The following statistical techniques were used: Mean and Standard deviation, T test, percentage and Chi-square. the level of significance was set at $p < 0.05$.

3. Results:

Table (1) revealed that the study and control groups were similar with respect to the age and gender of children, educational level of the parents and diagnosis of the children, suggestion a high level of homogeneity of variance between the two groups in this study. When tested the difference between the data of the study group and the control group appeared no difference.

Table (2) shows that, the prevalence of high anxiety among children were 58.3% among the study group and 41.7% among the control group before intervention. After intervention, only 11.7% reported high anxiety in the study groups compared with 16.7% among the control groups.

Table (3) shows that, the comparison of the anxiety level of children before Preoperative preparation by using therapeutic play between the study group and the control group was different without the statistic significance ($p = 0.911$) and when comparing the anxiety level of children post intervention between the study group and the control

group, It was found out to be different with highly statistic significance ($p = 0.001$).

Table (4) shows that, the comparison of the anxiety level of mothers before the intervention between the study group and the control group was not statistic significance different ($p = 0.88$) and when comparing the anxiety level of mothers after intervention between the study group and the control group, It was found out to be different with statistic significance ($p = <0.01$).

Table (4) shows that, The number and percentage during the induction of anesthesia in which compliance of the children were significantly higher in the study group as compared with the control groups (65% vs 33.3% $p = 0.001$).

POD1= postoperative day one

$P < 0.05$

Figure (1) shows that, there were significant differences in the improvement of postoperative

eating between the groups. That is, on POD 2, 3 and 7, significantly more children in the experimental group exhibited improved eating behavior compared with children from the control group (POD2, 50 % vs 33.3%, POD3, 66.7% vs 41.7 % ,POD7, 83.3% vs 66.7%, $p = <0.05$).

Figure (2) shows that, during the hospital stay, children in the control group had more problems falling a sleep, staying a sleep and waking up crying as compared with children in the experimental group (POD1 51.3% vs 44.6% POD2: 40.7% vs 33.2%). At home, children in the control group had increased trouble getting to sleep on POD3 (28.9% vs 17.7%). There were significant differences in the incidences of postoperative sleep problems between the groups ($P = 0.05$).

POD1= postoperative day one

$P < 0.05$

Table (1): The general characteristics of the study and control groups

Characteristics	study group (n = 60)		Control group (n = 60)		X2	P - value
	No	%	No	%		
1- Gender:					.00	1.0
- Male	26	43.3	25	41.7		
- Female	34	56.7	35	58.3		
- Total	60	100	60	100		
2- Children Age (year)	10.26 (1.14)		10.39 (1.24)		-	>0.424
3-Mothers Age (year)	36 ± 5		37± 6		.82	.99
4- Educational level (father)					4.40	.22
Primary school	11	18.3	7	11.7		
High school	12	20	19	31.6		
Diploma	17	28.3	22	36.7		
Bachelors degree or higher	20	33.3	12	20		
5- Educational level (Mother)					1.49	.82
Primary school	6	10	4	6.7		
High school	18	30	15	25		
Diploma	29	48.3	20	33.3		
Bachelors degree or higher	16	26.7	12	20		
6- Diagnosis:					.00	1.00
Appendicitis	48	80	50	83.3		
Umbilical and inguinal Hernia	12	20	10	16.7		

Table (2) : Number and percentage distribution of children anxiety level before and after intervention

	Pre- intervention				Post- intervention			
	Study group(n=60)		Control group(n=60)		study group(n=60)		Control group(n=60)	
	No.	%	No.	%	No.	%	No.	%
LOW (≤ 37)	12	20.0	21	35.0	45	75.0	35	58.3
Moderate (38 - 44)	13	21.7	14	23.3	8	13.3	15	25.0
High (≥ 45)	35	58.3	25	41.7	7	11.7	10	16.7

Table (3): Comparison of the mean state anxiety scores in children before and after the intervention between the study and control groups

Sample group	Pre- intervention					Post- intervention				
	N	Mean	±SD	T	p-value	N	Mean	±SD	T	p-value
study group	60	45.16	±3.18	2.03ns	0.911	60	36.63	±2.18	**6.93	0.001<
Controlled group	60	45.23	±3.19			60	44.8	±3.18		

* = significance at level . 05; ** = significance at level 01; ns = no significance

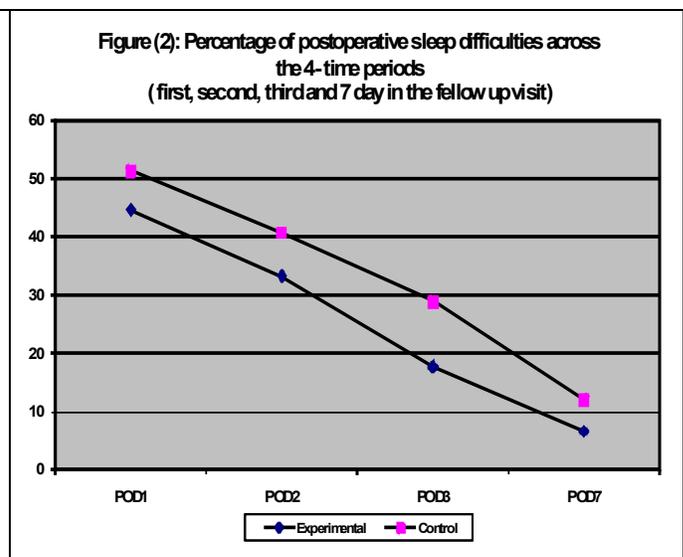
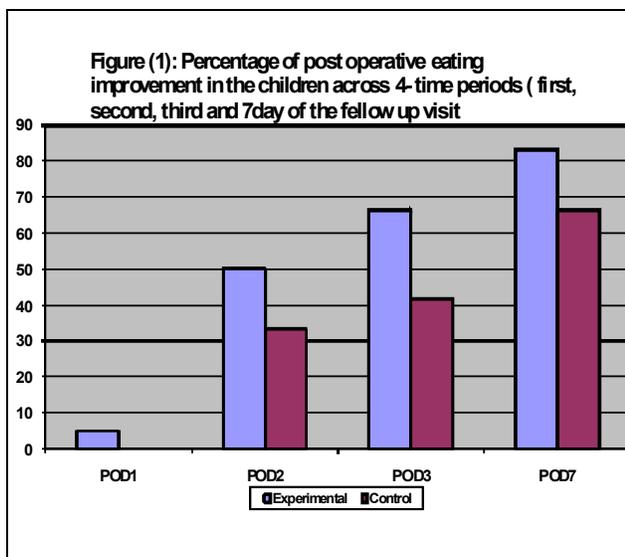
Table (4): Comparison of the mean state anxiety scores in mothers before and after the intervention between the study and control groups

Sample group	Pre- intervention					Post- intervention				
	N	mean	±SD	T	p-value	n	Mean	±SD	T	p-value
Study group	60	41.8	±3.11	2.08ns	0.88	60	36.8	±2.19	**5.06	0.01<
Controlled group	60	42.23	±3.12			60	43.8	±3.17		

* = significance at level . 05 ** = significance at level . 01 ns = no significance

Table (5) : The number and percentage of levels of child compliance during the induction of anesthesia

During the induction	Study group		Control group		P - value
	No	%	No	%	
Compliance	39	65.0	20	33.3	0.001
Non compliance	21	35.0	40	66.7	



4. Discussion:

Preoperative anxiety in children is a common phenomenon that has been associated with a number of negative behaviors during the surgery experience (Wright *et al.*, 2007). Studies suggest that during the preoperative period anxiety is characterized by feelings of tension, restlessness, anxiety, and psychological stress. (Kain *et al.*, 1997 and Golden *et al.*, 2006) that it seems to be present in most patients undergoing pediatric surgical procedures, and it may be expressed by a behavior showing fear, trembling, panic, cry and restlessness (Kain *et al.*, 1997, Bersch, 2005 and Justus *et al.*, 2006).

Based on behavioral and physiological measures of anxiety, the induction of anesthesia in children has been identified as the most stressful point during the preoperative period (Kain *et al.*, 2007). Further, the post operative recovery is more complicated in children with higher preoperative level of anxiety (Kain *et al.*, 2006). so that, health professionals developed preoperative preparation programs that are directed at relieving children's anxiety and to facilitate coping. These preparation methods took the form of film modeling, picture books, rehearsals, visit to the operating room, the presence of 1 of the 2 parents during the induction of anesthesia, use of music as a

distraction and therapeutic play activities [Vagnoli *et al.*, 2005 and Brewer, 2006].

This study aimed to evaluate the effect of preoperative preparation by using therapeutic play and mothers presence during induction process on anxiety level and post operative behavior change in young children undergoing surgery.

The current study showed that the preoperative preparation by using therapeutic play are effective in improving post- operative outcomes of children. The result revealed that the study group had lower state anxiety than control group, significantly at the time prior to surgery. This may be attributed to the fact that the therapeutic play intervention success in enhancing the children's personal control and their adaption abilities towards potential stressful situations through familiarizing the child with personnel, the setting such as recovery and operating room. Also, explaining and demonstrating procedures before surgery on manikin through therapeutic play is fun for the child that causes the child to show less anxiety to probable stressful situations he faces. This result was in contrast with a study performed by Li and Lopez, (2008) who evaluated the use of therapeutic play in the preoperative preparation of children and indicated this intervention reduced children's anxiety greater than children who were not prepared in this manner. Also, this result is supporting by another research performed by Brewer *et al.*(2006) who identified that, children were less anxious postoperatively when they had participated in preoperative preparation program encompassing tours, or interactive play and recommended all children would benefit from preoperative preparation, not just children presenting with a perceived need.

The current study revealed that, 58.3% of children in the study group showed high level of anxiety pre intervention. This may be due to the fact that these children may be felt distress resulting from being in a strange environment, wearing unusual clothes (aprons without underwear); and by the lack of confidence caused by the risk of undergoing procedures that require anesthesia. As emphasized by Bar-Mor, (1997) and Vagnoli *et al.*(2005) a child's responses to the surgical process depends on his/her (emotional and cognitive) developmental stage, coping mechanisms, perception and interpretation of himself/herself and feelings and sensations triggered by the hospital environment.

The present study has shown that 75% of children in the study group had lower levels of anxiety post intervention. This might be due to the children provide with toys during therapeutic play intervention shown to stimulate the adaptation process that provide children with stimulating and fun activities, make them calm down and feel safer. In this respect Golden

et al.(2006) who determined whether giving a small toy to a child would decrease anxiety. Additionally, interaction between the children, professionals and materials during play intervention give them the opportunity to decide about what she/he wants to do, able to create their own world, where the activities are relevant to deal with the situation they are going through and to ensure that these experiences provide them with satisfaction and pleasure. However, when there is personal involvement of adults in the playful activities of children, these experiences may be very significant for children, being a solid basis upon which they will build several other relationships that, leads to balance of power and affective feeling, as well as a sensation of safety and reliability (Bersch *et al.*, 2005).

The current study indicated that, The anxiety score change was significantly better for mothers in the study group than for those in the control group after therapeutic play intervention ($t = 5.06, p = 0.01$). These improvements indicate that therapeutic play intervention succeeded in lowering the level of anxiety among the mothers. This result was in agreement with the study performed by Himes *et al.*(2003) and Kain *et al.*(2004) who have stated that the therapeutic play interventions were demonstrated to positively impact parents anxiety.

In our study, we found that, there was significant decrease in the child negative behaviour regarding eating disturbance in the study group than for those in the control group after therapeutic play intervention. These differences demonstrate the effectiveness of our intervention in improvement of child appetite and decrease their refusal toward eating. This result was in line with Kain *et al.*(2007) who indicated that a preoperative preparation program decreased the postoperative negative behaviors regarding eating problems as compared to those who did not participate.

Extensive agreement amongst researchers thoroughly supported the premise that parental anxiety greatly impacts children (Li & Lam, 2003 and Wollin *et al.*, 2003, Kain *et al.*, 2004, Davidson *et al.*, 2006 and Kain *et al.*, 2006). This was in line with the result of the present study which hypothesized that The increase in mothers anxiety scores in the control group prior to surgery will result in increased their children anxiety and negative behaviors. Supporting this result the researchers found that children in the control group had higher mean state anxiety scores prior to surgery (44.8 ± 3.18) and more sleeping problems as falling asleep, staying asleep and waking up crying during hospital stay and at home as compared with children in the study group. This result comes in accordance with Kain *et al.* (2006) who found that, children in the high anxiety group had more problems

falling asleep, staying asleep and waking up crying as compared with children in the control group during the hospital stay and at home. This finding may be related to the mothers and their children not receiving any preoperative preparation program related to reduce their anxiety and enhancing coping abilities prior to surgery that lead to increasing the level of anxiety and postoperative negative behaviors changes.

Parental presence at induction is one of the methods of reducing the separation anxiety and is performed in many centers according to hospital policy (Mc Cann and Kain, 2001). Previous research believe that parental presence decrease child anxiety, increase cooperation and enhancing parental satisfaction (Golden *et al.*, 2006, Patel *et al.*, 2006, and Li *et al.*, 2007). Furthermore, Kain *et al.* (2004) who indicated that most parents prefer to be present during anesthetic induction and that they feel that their presence is benefit to their child. Similarly, in our study, all mothers regardless of their group and anxiety level indicated that if their children needed surgery again, they would like to be present during the induction. This result was in contrast with that of the study conducted by Kain *et al.* (2003) who reported that, more than 80% of all parents of children undergoing a current surgery chose to be present during anesthetic induction again. On the other hand, a study that was conducted by Piira and Colleagues, (2005) has pointed out that parents were not routinely informed about what they could do to help their child if they were going to be present during the procedure. For this reason, Piira and Colleagues, (2005) assert that the combination of preparation program and parental presence could further improve parent and child outcomes when parents are present during medical procedures such as anesthetic induction.

The result of this study indicated that, children in the study group had statistically significant higher compliance scores during induction as compared with children in the control group. This result could be due to children adaptation process with materials, personnel's and environment that result from their participation to the therapeutic play intervention prior to surgery that help them to become calm and less anxious. Additionally, preoperative preparation help in reducing mothers' anxiety prior to surgery and this considered a contributor factor in reducing children anxiety and increase their compliance during induction. This comes in accordance with Li and Lopez (2008) who commented that, the use of therapeutic play was essential for reestablishing the child's overall sense of self-control and enhance the adaptation process. Furthermore, Kain *et al.* (2004) suggested the importance of preoperative preparatory programs in light of identifying parental anxiety as contributory to the child's level of anxiety and related

to postoperative negative behaviors. Therefore, appropriate education and preparation of not only the child patient, but the parent as well, can significantly impact patient care (Himes *et al.*, 2003). We strongly advocate the use of intervention such as these for all children and their parent prior to surgery.

Conclusion:

The study showed that therapeutic play intervention and mothers presence during induction of anesthesia are an appropriate method for preparing children and their mothers before surgery and effective in minimizing their level of anxiety post intervention. Also, combination of these intervention are effective in increase children compliance prior to surgery and improve postoperative recovery in the intervention group.

Recommendation:

Based on the main study finding, the following recommendation can be detected:

- 1- Incorporating therapeutic play intervention in the preoperative periods, thereby charting a path towards promoting holistic and quality care.
- 2- There should be a comparative study of the results of the knowledge providing by these preparation program with every kind of operative children. So that, the results of the study will be more comprehensively used in the future.
- 3- The health education work in the hospital should be organized to have a distinct role. There should be a cooperation among the doctors, the nurses, parents and health educators to disseminate the advice and information to the children undergoing surgery.
- 4- Incorporate mothers in preoperative preparation and during induction could have an additive effects in terms of reducing the mothers and children anxiety and postoperative behavioral change.
- 5- The nursing personnel should take the preoperative therapeutic play intervention as a duty and regard it as a role in doing the nursing practices in order to give the children the psychological care beside the routine physical care. Moreover, they should enhance the development of communication skills and coping abilities of children that help in reducing their anxiety.

Limitation of the study:

The limitation of this study was that all of data were collected in one setting that might limit the ability to generalize the result. Another limitation is that a homogenous sample of children aged 9-12 years was recruited in this study. Therefore, it is not clear whether children below this age range can also benefit from the intervention as younger children are particularly vulnerable to the stress of surgery. Also,

this study was aimed to discover the anxiety of children undergoing elective surgery who did not have any physical limitations. It is suggested to perform this study also on children with physical limitations who undergo elective surgery.

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