

Effect of Play Activities Versus Passive Distraction Technique on Preoperative Anxiety and Fear Levels among Children Undergoing Surgeries

Magda Aly Hassan Essawy, Professor

Pediatric Nursing, Faculty of Nursing, Alexandria University

Wafaa Mohamed Elarousy ELsaid, Professor

Pediatric Nursing, Faculty of Nursing, Alexandria University

Mostafa Rashad Kotb, Lecturer

Pediatric surgery, Faculty of Medicine, Alexandria University.

Hadeer Abdel-hameed Ramadan Gaffar, Clinical instructor

Pediatric Nursing, Faculty of Nursing, Damanhour University

Rasha Mohamed Mahmoud Abu Hadida, Lecturer

Pediatric Nursing, Faculty of Nursing, Alexandria University

Abstract

Background: *Illness, hospitalization, and surgery are the first crises that children face especially during the early years. The play and passive distraction technique are non-pharmacological approach used to control emotions. They are considered an anxiety-reducing strategies that divert children's attention away from noxious or unpleasant stimuli and subsequently minimizes their anxiety and fear.*

Objective: *To determine the effect of play activities versus passive distraction techniques on preoperative anxiety and fear levels among children undergoing surgeries. Setting: The study was conducted in the general pediatric surgical units at Alexandria University Children at El-Shatby and Smouha Specialty Hospitals. Subjects: A convenience sampling of 90 hospitalized school-age children undergoing general surgeries were included from the previously mentioned settings. Tools: Three tools were used; Socio-demographic and medical data of Children's structured Interview Schedule, State trait anxiety inventory for children (STAIC), and the children's fear scale (CFS). Results: These results revealed that 66.7% of school-age children in the play activities group and 30% of children in the passive distraction group had low anxiety compared to none of them in the control group (0.0%). In addition, 66, 7% of school-age children in the control group had extreme fear compared to none of those children in both the play activities group and the passive distraction group. A highly statistically significant difference was detected for the preoperative anxiety and fear between school-age children in both groups (I and II) one hour before surgery. Where 50% of children in study group II mentioned that they had average anxiety compared to 33.3% of them in study group I. In addition, nearly half of the children in study group II reported that they had medium fear (46.7%) compared to 16.7% of them in study group I. Conclusion: Practicing the play activities and passive distraction technique for school-age children preoperatively minimized their level of anxiety and fear. In addition, the play activities were more effective in decreasing children's level of anxiety and fear than the passive distraction technique. Recommendations: It was recommended that play activities should be applied preoperatively to children undergoing surgeries in hospitals.*

Key words: - Play activities, Passive distraction technique, Anxiety, Fear, Surgeries, Nurse

Introduction

Hospitalization for medical illness or surgical procedures is experiencing various

emotions due to the unknown environment, unfamiliar people, and various frightening equipment. The effects of the disease, changes in the environment and habits as well as separation from family members and friends

can lead to stress particularly during painful procedures (Al-Yateem et al., 2015; Kapkin et al., 2020). Surgical operations are situations that provoke anxiety, fear and varying levels of distress not only for the child who is unwell but also for the parents. Varying degrees of anxiety and fear may be experienced by children depending on the seriousness of the health problem and the level of parental ;

anxiety and concern exhibited Chow et al., 2016). Anxiety is defined as a psychological, physiological, and behavioral state induced in human beings by a threat to well-being or survival, either actual or potential. Pre-operative anxiety (PA) is of utmost concern in pediatrics. It was documented that 40% to 60% of children undergoing surgical procedures experience high levels of pre-operative anxiety (Fortier & Kain, 2015).

Fear is a natural, powerful, and inherent human emotion. It involves a universal biochemical reactions as well as a high individual emotional response. Fear refers to the presence of danger or the threat of harm, whether that danger is physical or psychological (Fritscher, 2020). Anxiety and fear in children undergoing hospitalization can be reduced by several measures in the form of play activities and passive distraction technique. In accordance with the stage of development of play for children aged 6-12 years, the game that can be done is constructive play. In this playing activity, the child will create something, create a particular building with the available game tools (Supartini, 2014; Kaluas, 2015).

Play activities are playing technique used to reduce anxiety and fear among hospitalized children. They evaluate their feelings and misunderstandings toward

treatments and procedures and help them develop positive coping methods (Kapkin ,2020). Several studies have shown that play activities can help establish a bond and communication with the hospitalized children. The expression of feelings among children, relieve stress and anxiety and prepare them for invasive interventions (Caleffi et al ., 2016).

Passive distraction technique means that the children usually remain silent during the procedure through watching a stimulant rather than the active participation. It is hypothesized to be an effective strategy for decreasing procedural pain, fear, anxiety by reducing the sensory and affective components of pain, anxiety and fear and the diversional capacity left to process that pain. In addition, when an individual is distracted, regional cerebral blood flow associated with processing a painful event is reportedly reduced. Likewise, when an individual's attention is occupied by a distracting task, activation is reduced to the areas of the brain associated with pain such as the thalamus, insula and the anterior cingulate cortex producing correspondingly lower pain and anxiety scores (Guzzetta et al .,2007).

Pediatric nurse has a crucial role in reducing anxiety and fear among children in preoperative period. Some hospitals provide preoperative preparation programs to reduce anxiety in children and their parents. Preoperative preparation programs allow children and their parents the chance to familiarize themselves with the hospital environment and procedures, some days before the operation. By doing this, they can increase their knowledge, learn coping strategies and lower anxiety (Olson, 2018).

Pediatric nurse also can reduce the negative effects of hospitalization through prepare the child and family for this process such as; establish a trusting relationship, provide information about procedures, help children to express emotions, support

copied strategies and distraction techniques. Previous experiences of the child and family should also be considered to establish communication appropriate for the age of the child, answer questions carefully, and eliminate needless worries (Çelebi et al., 2015; Kapkin, 2020).

Aim of study

This study aimed to determine the effect of play activities versus passive distraction technique on preoperative anxiety and fear levels among children undergoing surgeries.

Research Hypotheses:

1. School age children who receive play activities exhibit lower preoperative anxiety and fear levels than those who do not.
2. School age children who receive passive distraction technique exhibit lower preoperative anxiety and fear levels than those who do not.
3. School age children who receive play activities exhibit lower preoperative anxiety and fear levels than those who receive passive distraction technique.

Materials and Method

Design: A quasi-experimental research design was used.

Settings: This study was conducted in the general pediatric surgical units at Alexandria University Children at El-Shatby and Smouha Specialty Hospitals.

Subjects:

A convenience sampling of 90 hospitalized school age children from 7-11 years and undergoing general surgeries were included from previously mentioned settings, stay in the hospital for more than 24 hours preoperatively and free from any other health problems e.g: epilepsy, mental retardation, congenital anomalies.

-The study subjects were distributed randomly into three equal groups (30 for each) as follows; first, school-age child for the study group I. Then, the second school-age child for the study group II and the

third school-age child for the control group and so on. The first group received the play activities. The second group received passive distraction technique and the third group received the routine care of the surgical unit only.

Tools: Three tools were used to collect the necessary data.

Tool I: Socio-demographic and Medical data of Children structured Interview Schedule:

This tool was developed by the researcher to assess socio-demographic characteristics for children and medical data. It included children's age, gender, birth order, school enrollment, diagnosis, date of admission, type of surgery and past and present history.

Tool II: State trait anxiety inventory for children (STAIC):

This scale was developed by Charles D. Spielberger, (1964) and adopted in the current study. Validity and reliability has been done for this scale again by Levent Kirisci and Duncan B. Clark, (1996). Cronbach's reliability coefficients for the STAIC ranging from 0.82 to 0.89. The STAIC is self-reported instrument used to evaluate children's anxiety between the ages of 7 to 11 years. The scale consists of 20 items that ask children how they feel at a particular time. Children were instructed to respond according to how they feel about their surgeries. They responded to the STAIC by selecting one of three scores (Hardly ever, often, always).

Scoring system:

The total scores 60 are summation of the item scores; For statistical purposes, scores ranged from 20 to less than 30 were considered low anxiety, 30 to less than 40, indicating average; 40 to less than 50, indicating above average; and 50 to 60 suggesting very high level of anxiety.

Tool III: The children's fear scale (CFS):

It is self-reported scale that was developed by McMurtry et al (2011) to measure fear

among children. The child's version consists of 5 faces. The first face (from the left) is not scared at all, represents no fear. The next 4 show incremental amounts of fear ranged from low fear to very fearful and the last face is representing the extreme fear. These faces are showing different amounts of being scared. This face [point to the left-most face] is not scared at all, this face is a little bit more scared [point to second face from left], a bit more scared [sweep finger along scale], right up to the most scared possible [point to the last face on the right]. For statistical purposes, each face is assigned a numerical value from 0 to 4 (**Zero** indicating no fear, while 4 indicating extreme fear).

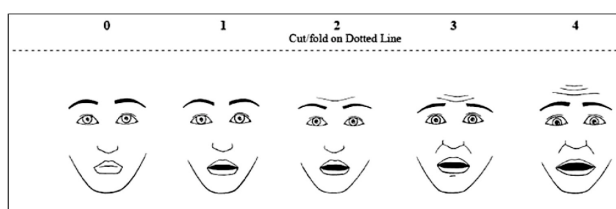


Figure 1: children's fear scale

(McMurtry, C.M., Noel, M., Chambers, C.T., McGrath, P.J. (2011). Children's fear during procedural pain: Preliminary investigation of the Children's Fear Scale. *Health Psychology*, Advanced Access Online.)

Method

1. Approval from Research Ethics Committee, Faculty of Nursing, Alexandria University was obtained.
2. An official letter was sent from the Faculty of Nursing to the directors of the previously mentioned settings to facilitate research implementation after explanation of the aim of the study.
3. Tool I was developed by the researcher.
4. Tool II & III were translated into Arabic.
5. Tool I & II & III were tested for content validity by five experts in the pediatric nursing field and necessary modifications were done and it was 94.8%.

6. Tool I & II & III were tested for their reliability by Cronbach's Alpha test. Reliability coefficient for tool II was 0.91, tool III was 0.89.
7. A pilot study was conducted on 9 of the study subjects to test the feasibility, clarity, and applicability of tools. Necessary modifications were done accordingly. Those children were excluded from the sample.
8. Every school age child was interviewed individually for the three groups.
9. The researcher assessed levels of anxiety and fear for children for two study groups (group I & II) before and after each intervention session.
10. **Study group I:** Children received the play activities; the researcher included five age- appropriate play activities. Children asked to choose one from five toys (puzzles, colored cards, art materials (painting), craft materials (clay) and playing games (snakes and ladders). Children managed this play activity 3 times for 2 consecutive days before surgery. First time, in the morning shift and second time, at the evening shift at the day before surgery. Third time one hour before the surgery. Each play time took about 20-30 minutes. The play sessions were implemented in the child's inpatient room (bedside area).
11. **Study group II:** Children received passive distraction technique such as passive game (cartoon film) in cell phone; the researcher prepared five games on cell phone. Children asked to choose one from five games every time of intervention. Children managed this intervention 3 times for 2 consecutive days before surgery. First time, in the morning shift and second time, at the evening shift at the day before surgery. Third time at the day of the surgery at least one hour before the surgery. Watching game for every child took about 20-30 minutes (American

Academy of Pediatrics (AAP) 2018, World Health Organization (WHO) 2019). The passive distraction technique sessions were implemented in the child's inpatient room (bedside area).

12. **Control group:** the researcher assessed anxiety and fear levels once before going to operation.
13. The collected data was analyzed using the appropriate statistical tests to evaluate the effect of play activities versus passive distraction technique on preoperative anxiety and fear levels among children undergoing surgeries.

Ethical Considerations:

- Informed written consent was obtained from children' caregivers for their participation in the study after explaining its aim.
- The right to refuse to participate and withdraw from the study at any time was assured.
- The privacy of children was ascertained.
- Confidentiality of data was maintained.

Statistical Analysis

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp) Qualitative data were described using number and percent. **The Shapiro-Wilk** test was used to verify the normality of distribution Quantitative data were described using range (minimum and maximum), mean, standard deviation, median. Significance of the obtained results was judged at the 5% level.

The used tests were:

1-Chi-square test: For categorical variables, to compare between different groups

2-Fisher's Exact or Monte Carlo correction: Correction for chi-square when more than 20% of the cells have expected count less than 5

3-Paired t-test: For normally distributed quantitative variables, to compare between two periods.

4-Kruskal Wallis test: For abnormally distributed quantitative variables, to compare between more than two studied groups.

5-Wilcoxon signed ranks test: For abnormally distributed quantitative variables, to compare between two periods.

Results:

Table (1) presents socio-demographic characteristics and medical data of school-age children. It was shown that the age of 53.3% of the children in control group was ranging from 9 to less than 11 years old with the mean age 9.07 ± 1.36 compared to 40% in study group I and 36.7% in study group II with the mean age 9.30 ± 1.42 and 9.63 ± 1.40 respectively. While the age of 36.7% was 11 years old in study group II compared to 23.3% in study group I and only 10% of children in control group.

It was illustrated from the same table that 66.7% of children were male in study group I, 63.3% and 60% in study group II and control group respectively. Regarding birth order, it was found that equal percent of study subjects (33.3%) were ranking as second child in study group I and II compared to 46.7 % in control group.

Concerning the previous hospitalization of school-age children, it was noticed that equal percent of children (70% for each) had no previous hospitalization in study group I and control group compared to 40% in study group II. As regards, the number of previous admission to the hospital, it was noticed that 33.3%, 44.4%, 66.7% who had previous hospitalization in study group I , study group II and control group respectively were hospitalized two times. As regards the mean number of admission, it was found that mean \pm SD were 2.56 ± 2.88 , 2.44 ± 0.86 and 1.89 ± 0.60 times in

study group I, study group II and control group respectively.

The relationship of the preoperative level of anxiety between the school-age children in study group one and control group through one hour before surgery is shown in **(Table 2)**. It was found that the level of anxiety for 46.7% of children was very high in control group compared to none of children in the study group one (0.0%). In addition, the anxiety level for 66.7% of children in study group one was on low level compared to none of them on the control group (0.0%) and the difference statistically significant, where $p = <0.001$.

Table (3) presents the relationship of the preoperative level of fear between the school-age children in study group one and control group through one hour before surgery. Significant difference was found between the two groups ($p = <0.001$) where the majority of children in study group one reported that they had simple fear (83.3%) compared to none of those in control group (0.0%). Furthermore, 66.7% of children in control group mentioned that they had extreme fear compared to none of those in study group one (0.0%).

Table (4) portrays the relationship of the preoperative level of anxiety between school-age children in study group two and control group through one hour before surgery. The statistical significant difference was found between the two groups ($p = <0.001$) where half of the children in study group two mentioned that they had average anxiety level (50%) compared to 36.7% of those in control group. Furthermore, 46.7% of children in control group mentioned that they had very high anxiety level compared to none of those in study group two (0.0%).

Table (5) shows the relationship of the preoperative level of fear between the school-age children in study group two and control group through one hour before surgery. It was noticed that a statistical

significant difference was found between the two groups ($p = <0.001$), where half of children in study group two mentioned that they suffered from simple fear compared to none of those in control group (0.0%). Moreover, it was clear that 66.7% of children in control group suffered from extreme fear compared to none of children in study group two (0.0%).

Table (6) illustrates the relationship of the preoperative level of anxiety between the school-age children in study group one and two through one hour before surgery. The significant difference was found between the two groups ($p = 0.004$), where 66.7% of children in study group one reported that they had low anxiety compared to 30% of children in study group two. In addition, 50% of children in study group two mentioned that they had average anxiety compared to 33.3% of those in study group one.

Table (7) presents the relationship of the preoperative level of fear between school-age children in study group one and two through one hour before surgery. The significant difference was found between the two groups ($p = 0.004$), where it was clear that the majority of children in study group one mentioned that they had simple fear (83.3%) compared to half of children in study group two (50%). Moreover, nearly half of children in study group two reported that they had medium fear (46.7%) compared to 16.7% in study group one.

Discussion

Surgical operations are situations that develop for multiple reasons causing stress for both children and their families. This stress is reflected as anxiety, fear and anger that initiating mainly from Parental separation and a strange environment. The identification and treatment of these clinical phenomena are very important to prevent both psychological and physiological side effects (Aytekin et al., 2016). The most significant advantage of non-pharmacological methods is that they

reduce the use of analgesics and enhance children's adaptation to the stressful situations and fears. Play activities and passive distraction technique are types of these non-pharmacological methods (Inan & Inal, 2019).

The findings of the present study revealed that the school-age children who received play activities exhibit lower anxiety and fear than those who don't (table 2& 3). The positive effect of play activities in the present study could be explained in the light of certain issues; it was stated that play activities are an effective strategy for decreasing procedural pain, fear, anxiety and distress where it reduces the sensory and affective components of these feelings. Play activities will be also a vehicle to modify how noxious and fearful stimuli are processed (Guzzetta et al., 2007).

It was revealed from the results of the present study that the use of passive technique for children preoperatively has a positive effect in reducing their anxiety and fear (table 4&5). This could be related to passive distraction technique (e.g. watching cartoon games) leads to endorphin secretion and thus, can lead to the modifications of emotions, increase children's comfort and reduce pain, fear and anxiety (Kazemi et al., 2012).

The results of current study were congruent with the findings that have been done by Amer et al. (2021) who recommended the use of storytelling technique (a type of passive distraction technique) beside routine hospital programs for children undergoing surgery. They found that children who were exposed to storytelling experienced low anxiety and fear scores compared to those children who received the routine hospital care only.

The findings of the current study revealed that play activities is more effective than passive distraction technique in minimizing level of anxiety and fear for school-age children preoperatively as illustrated in tables 6 & 7. The superiority

effect of play activities in this study could be related to, the school - age children in play activities group act as an active participant in which they were completely involved, immersed and occupied with the play games. So, they focused all their attention that help them to reduce their feelings of anxiety and fear. While, with passive distraction technique the children act as passive participant and they were only just viewers (Elsayed, 2020)

The findings that have been shown by Arıkan & Esenay 2020 regarding their study on "active and passive distraction interventions in an emergency pediatric department to alleviate the pain and anxiety during venous blood sampling" supported the findings of the present study as they cited that the active distraction group had lower levels of procedural pain, fear, and anxiety than those in other groups.

Inan & Inal, 2019 in their study findings about a clinical trial to evaluate the Impact of 3 different distraction techniques on the pain and anxiety levels of children during vein puncture were parallel with the findings of the current study that the anxiety levels of the group playing video games (as active distraction method) during the venipuncture procedure were significantly lower than those who don't.

On the contrary, Many authors (Millett and Gooding, 2017; Gul, U. 2021; Shekhar et al., 2022) stated that there was no significant difference between the groups of active and passive distraction techniques in reducing pain, anxiety and fear. In addition, the findings that have been shown by Durak & Uysal, 2022 and Ugucu et al., 2022 reported that cartoon watching (a type of passive distraction) was more effective in reducing pain, anxiety, and fear in children than distraction card (a type of active distraction).

Unfortunately, children's previous experience of hospitalization in the current study doesn't have any effect regarding their anxiety and fear levels. Where,

children who hadn't previous experience of hospitalization had lower anxiety and fear levels than those who don't.

Conclusion:

It is concluded from the present study that practicing the play activities and distraction technique for school-age children preoperatively minimized their level of anxiety and fear. In addition, the play activities were more effective in decreasing the children's level of anxiety and fear than passive distraction technique.

Recommendations:

1. An educational training program should be conducted to pediatric nurses about various methods of distraction to minimize children's anxiety and fear preoperatively.
2. Play activities as a non-pharmacological anxiety and fear management should be used as a routine in daily care in pediatric hospitals.
3. Play activities should be used to children before surgical procedures in hospitals.
4. Establishment of playing rooms with interacting toys in surgical units and demonstrate to children how to use it.

Table (1): Socio demographic characteristics and medical data of school –age children

Socio demographic characteristics & medical data	Study group I (n = 30)		Study group II (n = 30)		Control group (n = 30)	
	No.	%	No.	%	No.	%
Age in years						
7–	11	36.7	8	26.7	11	36.7
9–	12	40.0	11	36.7	16	53.3
11 years	7	23.3	11	36.7	3	10.0
Mean ± SD.	7.0 – 11.0		7.0 – 11.0		7.0 – 11.0	
Median	9.30 ± 1.42		9.63 ± 1.40		9.07 ± 1.36	
	10.0		10.0		10.0	
Sex						
Male	20	66.7	19	63.3	18	60.0
Female	10	33.3	11	36.7	12	40.0
Birth order						
1	10	33.3	7	23.3	9	30.0
2	10	33.3	10	33.3	14	46.7
3	7	23.3	5	16.7	3	10.0
4	3	10.0	8	26.7	4	13.3
Previous experience of hospitalization						
Yes	9	30.0	18	60.0	9	30.0
No	21	70.0	12	40.0	21	70.0
	(n = 9)		(n = 18)		(n = 9)	
Number of previous admission in the hospital						
1	4	44.4	2	11.1	2	22.2
2	3	33.3	8	44.4	6	66.7
3	1	11.1	6	33.3	1	11.1
4+	1	11.1	2	11.1	0	0.0
Min. – Max.	1.0 – 10.0		1.0 – 4.0		1.0 – 3.0	
Mean ± SD.	2.56 ± 2.88		2.44 ± 0.86		1.89 ± 0.60	
Median	2.0		2.0		2.0	

SD: Standard deviation

χ²: Chi square test

MC: Monte Carlo

Table (2): The relationship of the preoperative level of anxiety between the school-age children in study group one and control group through one hour before surgery.

Levels of anxiety	Control group		Study group I									
	one hour before surgery (n=30)		one hour before surgery (after intervention)									
			Puzzles (n = 4)		Art materials (painting) (n = 7)		Clay (n = 14)		Games e.g snake and ladders (n = 5)		Total (n=30)	
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Low (20-<30)	0	0.0	4	100.0	3	42.9	10	71.4	3	60.0	20	66.7
Average (30-<40)	11	36.7	0	0.0	4	57.1	4	28.6	2	40.0	10	33.3
Above average (40-<50)	5	16.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Very high (50-60)	14	46.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
$\chi^2(MC_p)$	45.527* (<0.001*)											

χ^2 : Chi square test MC: Monte Carlo*: Statistically significant at $p \leq 0.05$

Table (3): The relationship of the preoperative level of fear between the school-age children in study group one and control group through one hour before surgery

Items of fear	Control group		Study group I									
	one hour before surgery (n=30)		one hour before surgery (after intervention)									
			Puzzles (n = 4)		Art Materials (painting) (n = 7)		Clay (n = 14)		Games e.g snake and ladders (n = 5)		Total (n=30)	
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
No fear	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Simple fear	0	0.0	4	100.0	5	71.4	12	85.7	4	80.0	25	83.3
Medium Fear	2	6.7	0	0.0	2	28.6	2	14.3	1	20.0	5	16.7
Intense fear	8	26.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Extreme fear	20	66.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
$\chi^2(MC_p)$	65.034* (<0.001*)											

χ^2 : Chi square test MC: Monte Carlo*: Statistically significant at $p \leq 0.05$

Table (4): The relationship of the preoperative level of anxiety between the school-age children in study group two and control group through one hour before surgery.

Levels of anxiety	Control group		Study group II											
	one hour before surgery (n=30)		one hour before surgery (after intervention)											
			Tom and jerry (n = 4)		Toy story (n = 6)		Sponge Bob (n = 8)		Masha's tales (n = 7)		Princess stories (n = 5)		Total (n=30)	
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Low (20-<30)	0	0.0	1	25.0	1	16.7	5	62.5	0	0.0	2	40.0	9	30.0
Average (30-<40)	11	36.7	2	50.0	3	50.0	3	37.5	5	71.4	2	40.0	15	50.0
Above average (40-<50)	5	16.7	1	25.0	2	33.3	0	0.0	2	28.6	1	20.0	6	20.0
Very high (50-60)	14	46.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0
$\chi^2(MC_p)$	26.879* (<0.001*)													

χ^2 : Chi square test MC: Monte Carlo*: Statistically significant at $p \leq 0.05$

Table (5): The relationship of the preoperative level of fear between the school-age children in study group two and control group through one hour before surgery.

Items of fear	Control group		Study group II													
	one hour before surgery (n=30)		one hour before surgery (after intervention)													
			Tom and jerry (n = 4)		Toy story (n = 6)		Sponge Bob (n = 8)		Masha's tales (n = 7)		Princess stories (n = 5)		Total (n=30)			
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
No fear	0	0.0	0	0.0	1	16.7	0	0.0	0	0.0	0	0.0	0	0.0	1	3.3
Simple fear	0	0.0	3	75.0	1	16.7	3	37.5	6	85.7	2	40.0	15	50.0		
Medium Fear	2	6.7	1	25.0	4	66.7	5	62.5	1	14.3	3	60.0	14	46.7		
Intense fear	8	26.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0		
Extreme fear	20	66.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0		
$\chi^2(MCp)$	60.781*(<0.001*)															

χ^2 : Chi square test MC: Monte Carlo*: Statistically significant at $p \leq 0$.

Table (6): The relationship of the preoperative level of anxiety between the school-age children in study group one and two through one hour before surgery.

Levels of anxiety	Study group I										Study group II															
	one hour before surgery (after intervention)																									
	Puzzles (n = 4)		Art materials (painting) (n = 7)			Clay (n = 14)			Games e.g snake and ladders (n = 5)		Total (n=30)		Tom and jerry (n = 4)		Toy story (n = 6)		Sponge Bob (n = 8)		Masha's tales (n = 7)		Princess stories (n = 5)		Total (n=30)			
No.	%	No.	No.	%	No.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Low (20-<30)	4	100	3	42.9	10	71.4	3	60.0	20	66.7	1	25.0	1	16.7	5	62.5	0	0.0	2	40.0	9	30.0				
Average (30-<40)	0	0.0	4	57.1	4	28.6	2	40.0	10	33.3	2	50.0	3	50.0	3	37.5	5	71.4	2	40.0	15	50.0				
Above average (40-<50)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	25.0	2	33.3	0	0.0	2	28.6	1	20.0	6	20.0				
Very high (50-60)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0				
$\chi^2(MCp)$	11.198* (0.004*)																									

χ^2 : Chi square test MC: Monte Carlo*: Statistically significant at $p \leq 0.05$

Table (7): The relationship of the preoperative level of fear between the school-age children in study group one and two through one hour before surgery.

Items of fear	Study group I										Study group II															
	one hour before surgery (after intervention)																									
	Puzzles (n = 4)		Art materials (painting) (n = 7)			Clay (n = 14)			Games e.g snake and ladders (n = 5)		Total (n=30)		Tom and jerry (n = 4)		Toy story (n = 6)		Sponge Bob (n = 8)		Masha's tales (n = 7)		Princess stories (n = 5)		Total (n=30)			
No.	%	No.	No.	%	No.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
No fear	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	16.7	0	0.0	0	0.0	0	0.0	1	3.3				
Simple fear	4	100	5	71.4	12	85.7	4	80.0	25	83.3	3	75.0	1	16.7	3	37.5	6	85.7	2	40.0	15	50.0				
Medium Fear	0	0.0	2	28.6	2	14.3	1	20.0	5	16.7	1	25.0	4	66.7	5	62.5	1	14.3	3	60.0	14	46.7				
Intense fear	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0				
Extreme fear	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0				
$\chi^2(MCp)$	7.623* (0.014*)																									

χ^2 : Chi square test MC: Monte Carlo*: Statistically significant at $p \leq 0.05$

References:

- Al-Yateem, N., Banni Issa, W., & Rossiter, R., (2015). Childhood stress in healthcare settings: Awareness and suggested interventions. *Issues in Comprehensive Pediatric Nursing*, 38(2), 136-153.
- Al-Yateem, N., Rossiter, R., (2017). Unstructured play for anxiety in pediatric inpatient *care*. *Spec Pediatr Nurs Journal* , 22: 1-2.
- Amer, H., Fakhreldin, H., Ali, S., Souilm, N., Zaghmir, D., (2021). Effect of Storytelling on Preoperative Anxiety and Fear among Children Undergoing Surgery. *Egyptian Journal of Health Care*, 12(1):938-47.
- American Academy of Pediatrics [AAP]. (2018). *Screen Time Guidelines by Age As recommended by the American Academy of Pediatrics (AAP) and World Health Organization (WHO)*. United States: AAP.
- Arıkan, A., Esenay, F., (2020). Active and passive distraction interventions in a pediatric emergency department to reduce the pain and anxiety during venous blood sampling: A randomized clinical trial. *Emergency nursing journal*; 46(6):779-90.
- Aytekin, A., Doru, O., Kucukoglu, S., (2016). The effects of distraction on preoperative anxiety level in children. *American Society of PeriAnesthesia Nurses journal*;31(1): 56-62.
- Caleffi, C., Rocha, P., Anders ,J., Souza, J., Burciaga, V., Serapion,L.,(2016). Contribution of structured therapeutic play in a nursing care model for hospitalized children,37(2),1–8.
- Çelebi, A., Aytekin, A., Küçükoğlu, S., Çelebioğlu, A.,(2015) Hospitalized children and play. *İzmir Dr. Behcet Uz Children's Hospital J* , 5(3): 156-60.
- Chow, C., Van Lieshout, R., Schmidt, L., Dobson, K., Buckley, N.,(2016). Systematic review: audiovisual interventions for reducing preoperative anxiety in children undergoing elective surgery. *Pediatr Psychol Journal*,41(2):182–85.
- Charles, S., Richard, G., Robert, L.,& Sumner, S., J. (1964). *State-Trait Anxiety Inventory*. Consulting Psychologists Press, Inc.
- Durak, H., & Uysal, G. (2021). The effect of Cartoon Watching and Distraction Card on Physiologic Parameters and Fear Levels During Inhalation Therapy in Children: A Randomized Controlled Study. *Journal of Tropical Pediatrics*; 67(1).
- El-sayed, Z., (2020). Effect of Active Versus Passive Distraction Technique on Controlling Pain Associated with Invasive Nursing Procedures among School Aged Children. Published doctoral Thesis, Tanta university.
- Fortier, M. , Kain, Z., (2015). Treating perioperative anxiety and pain in children: A tailored and innovative approach. *Pediatric Anesthesia*, 25(1), 27–35.
- Fritsche, L., Gans, S. ,(2020). *What Is Fear*, Inc. (Dotdash).
- GÜL, U., (2021). Effectiveness of the Active and Passive Distraction Techniques in reducing anxiety and fear due to inhalation therapy in children: An open label, randomized controlled study, Antalya, Turkey.

- Guzzetta, C., Eshelman-Kent, D., (2007). Effects of Distraction on Pain, Fear, and Distress During Venous Port Access and Venipuncture in Children and Adolescents With Cancer. *Journal of Pediatric Oncology Nursing* ,24(1),8-9.
- Inan, G., Inal, S., (2019). The impact of 3 different distraction techniques on the pain and anxiety levels of children during venipuncture: A clinical Trial . *The Clinical Journal of Pain*; 35(2):140-47.
- Kaluas, I., Ramdaniati, S., Hermaningsih., Murya.(2015). Differences in Puzzle and Storytelling Play Therapy Against Anxiety in Preschool Children (3-5 Years) During Hospitalization of Children.
- Kapkın, G. , Manav,G., Muslu, G., (2020). Effect of Therapeutic Play Methods on Hospitalized Children in Turkey: A Systematic Review. *Erciyes Med Journal*, 42(2),127–28.
- Kazemi, S., Kazemi, S., Ghazimoghaddam, K., Besharat, S., Kashani, L., (2012). Music and Anxiety in Hospitalized Children. *Journal of Clinical and Diagnostic Research*, 6(1): 94-96.
- Kirisci, L., Clark, D. B., & Moss, H. B. (1997). Reliability and validity of the State-Trait Anxiety Inventory for Children in adolescent substance abusers: Confirmatory factor analysis and item response theory. *Journal of Child & Adolescent Substance Abuse*, 5(3), 57-70.
- McMurtry, C. M., Noel, M., Chambers, C. T., & McGrath, P. J. (2011). Children's fear during procedural pain: preliminary investigation of the Children's Fear Scale. *Health Psychology*, 30(6), 780-788.
- Millett, C., Gooding, L., (2017). Comparing Active and Passive Distraction-Based Music Therapy Interventions on Preoperative Anxiety in Pediatric Patients and Their Caregivers. *Journal of Music Therapy*, Volume 54(4): 460–78.
- Olson, N.,(2018). The parents' perspective of the anxiety experienced by a child prior to surgery, the emotional effect on the parent and the care a nurse can provide; a qualitative study,University of Applied Science,66-67.
- Shekhar, S., Suprabha, B., Shenoy, R., Rao, A., Rao, A.,(2022). Effect of active and passive distraction techniques while administering local anaesthesia on the dental anxiety, behaviour and pain levels of children: a randomised controlled trial. *European Archives of Paediatric Dentistry*; 23:417–27.
- Supartini, Y., (2014) The basic concept of child nursing. Jakarta: Publisher of EGC medical books.
- Ugucu, G.,Uysal, D., Polat, O., Artuvan, Z., Kulcu, D., Aksu, D., Altintas, M., Cetin, H., Temel, G.,(2022). Effects of cartoon watching and bubble-blowing during venipuncture on pain, fear, and anxiety in children aged 6–8 years: A randomized experimental study. *Journal of Pediatric Nursing*.
- World Health Organization [WHO]. (2019). *Screen Time Guidelines by Age As recommended by the American Academy of Pediatrics (AAP) and World Health Organization (WHO)*. Geneva: Switzerland: WHO.