The Effects of Distraction on Preoperative Anxiety Level in Children

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Purpose: The purpose of this study was to investigate the effects of distraction on the preoperative anxiety levels of pediatric patients.

Design: A prospective, two-group experimental design was used.

Methods: This study was conducted in the clinic of pediatric surgery of a university hospital in Turkey between November 20, 2013 and January 25, 2014. The population of the study was composed of a total of 83 children (40 in the study group and 43 in the control group) who met the inclusion. The data were collected using the “Personal Information Form,” “Separation Scoring,” and “State-Trait Anxiety Inventory for Children–State Form.” Distraction was performed on the children in the study group during the preoperative period. No intervention was applied to the children in the control group.

Finding: The results of this study demonstrated that the separation scores and State-Trait Anxiety Inventory for Children–State scores of the children in the study group, on whom distraction was applied, were lower than those of the control group.

Conclusions: Distraction applied to children in the preoperative period significantly reduced anxiety and separation anxiety.

Keywords: children, distraction, preoperative period, anxiety, nursing.

Surgical operations are situations that develop for multiple reasons, causing stress for both children and their families. This stress is generally reflected as anxiety, fear, or anger. Parental separation, pain, loss of control, a strange environment, and unknown environmental conditions are among the important causes for anxiety in children during the preoperative period. Additionally, children may experience feelings of anxiety, fear, anger, or uncertainty because of limited cognitive capacities, experience deficiencies, the need for other people’s support, and failure in recognizing the meaning of the surgery.

Preoperative anxiety is a picture that progresses with tension, irritability, anxiety, and increased activity of the autonomic nervous system. It is difficult to predict the preoperative anxiety because of measurement methods; however, an anxiety picture arising from both psychological and physiological findings was reported in 40% to 60% of children. The identification and treatment of these clinical phenomena are very important in terms of preventing both psychological and physiological side effects. Preoperative anxiety may obstruct anesthesia induction, extend its duration, and significantly affect early postoperative recovery. Kain and Mayes reported that high preoperative anxiety experienced by patients increased the...
postoperative pain and caused a significant increase in the need for analgesics and sedative drugs. Children may develop sleep and eating disorders, and behavior disorders, such as enuresis, in the early postoperative period. Separation anxiety, a negative prejudice for future medical interventions, difficulties in school, and socialization are among the long-term psychological effects.4

Some interventions have been asserted to reduce preoperative anxiety, including techniques such as pharmacological premedication administration, distraction interventions, parent training, and acceptance of parents in the operating room (OR).4,5 Among these methods, the distraction interventions that express the preoperative psychological preparation of patients is highly efficient, easy, and economical methods, without any side effects for pediatric patients.6 Previous studies have indicated that distraction interventions, such as watching cartoons, playing therapeutic games or video games, or listening to music according to the age group of the child, will be useful in reducing the intensive anxiety experienced by pediatric patients in the preoperative period.5,7-9 A limited number of studies examined the effects of different distraction interventions, drawing the attention from stressful conditions, on some variables in pediatric patients.5,7-9 But, from these studies, it is clear that a complete understanding of the effects of distraction on the preoperative anxiety in pediatric patients has not yet emerged. Based on this information, this study was conducted to determine the effects of distraction on the preoperative anxiety levels of pediatric patients.

Methods

This experimental study was conducted in the clinic of pediatric surgery of a university hospital in Turkey between November 20, 2013 and January 25, 2014. To conduct the study, approval of the ethics committee and official permissions from the previously mentioned hospital were obtained. Additionally, informed written consent of the families and verbal consent of the children who were included in this study were obtained.

The population of this study consisted of children who were hospitalized for surgery in the pediatric surgery clinic on the dates of the study and met the inclusion criteria of the study. The study was conducted with the entire population, without selecting the sample group. Children and families who did not wish to participate in the study were not included. The population of the study consisted, in total, of 83 children who were included in the control and study groups, respectively (control group, n = 43; study group, n = 40). The Java Applets for Power and Sample Size program by Russ Lenth14 was used to calculate the sample size in this study. The power analysis was conducted and revealed a power of 0.82 for 40 children in each group, in the confidence interval of 95% and at the significance level of .05.

This study was first conducted with the control group to prevent the children in the control and study groups from being influenced by one another. The first 43 children who were included in the study constituted the control group, and the second 40 children constituted the study group. Distraction was performed on the children in the study group during the preoperative period. In total, parents of three children in the study and control groups withdrew from this study even though they had originally agreed to participate in the study.

The inclusion criteria for this study were as follows: age between 9 and 18 years, being literate, and willing to participate in the study. Furthermore, the children who were included in the study were evaluated according to the ASA (American Society of Anesthesiologists) Physical Status Classification System,15,16 and children in the ASA I to II (normal healthy patient or patient with mild systemic disease) group were included in this study. An ASA assessment of the children was performed by a pediatric surgeon. Exclusion criteria for this study were children and families having history of chronic illness, developmental delay, ASA physical status higher than II (severe systemic disease or moribund), being illiterate, and unwilling to participate in the study.

The data were collected by the researchers using the ”Personal Information Form,” “Separation Scoring,” and “State-Trait Anxiety Inventory for Children–State Form” using the face-to-face interview method. A “Personal Information Form” was prepared by the researchers in accordance with the literature.7-9 This form consisted of nine questions about the descriptive characteristics of the child, as well as the surgical procedure.
**Separation Scoring**

The separation scoring consisted of observational scoring that defined the states of the children in the control and study groups with regard to separation from their parents, before going into the OR. These scores were 1 (very good, calm, ready to cooperate); 2 (good, anxious but easily persuadable); and 3 (bad, anxious but peevish, weepy). Because it was an observational measurement tool, the evaluation was performed by a researcher and an observer. According to the analysis, no difference was determined between the independent observers.

**State-Trait Anxiety Inventory for Children–State Form**

Spielberger developed the State-Trait Anxiety Inventory for Children (STAIC), which was designed as a research tool for the study of anxiety in 9- to 12-year-old children as well as in younger or older children depending on their reading ability. The widely used STAIC includes two 20-item self-report scales that measure both enduring tendencies to experience anxiety (STAIC–Trait Form) and temporal and situational variations (STAIC–State Form). For this study, only the State Form was used. Özusta adapted the inventory into Turkish and conducted its validity and reliability study. In the STAIC–State Form, the children were asked to evaluate how they felt “that moment” and mark one of the relevant choices. The STAIC–State Form aims to evaluate the feelings related with the anxiety state, such as tension, nervousness, panic, and restlessness. When the presence of these feelings is stated as “much” by the child, the highest score is 3; and when it is not stated, the lowest score is 1. The highest score to be obtained from the STAIC–State Form is 60, whereas the lowest score is 20. This inventory is convenient for use in measuring the state anxiety levels of children older than 9 years. The Cronbach alpha coefficient of the STAIC–State Form was determined as 0.89 by Spielberger and 0.82 by Özusta. However, in this study, the Cronbach alpha coefficient of the inventory was found to be 0.88.

**Distraction**

In this study, the techniques of playing computer games, listening to music, watching cartoons, and reading books, which are among the distraction interventions, were performed on children in the study group in the preoperative period. Because the preferences of the children could differ according to their genders, ages, and personal traits, options were offered to the children. The distraction consisted of different computer games, cartoons, books, and audio tracks for the girls and boys. However, the children did not prefer reading. In the determination of the options of computer games, cartoons, books, and audio tracks to be used for the distraction, the researchers primarily determined the options that were intensively preferred by the children aged between 9 and 18 years in the Turkish society of the study. We received consultancy from a pediatric psychologist in selecting the nonviolent options among these. The determined options were loaded into a tablet computer environment by the researchers. As a consequence, the children had the options of 5 computer games, 24 cartoons, 43 audio tracks, and 5 books.

**Procedure**

Interviews were conducted with the children who met the inclusion criteria of the study and their parents, and written consents were obtained from those who wanted to participate in the study. During the interviews with the children and parents, the questions on the Personal Information Form were answered in approximately 5 to 10 minutes. The study was first conducted with the control group to prevent the children in the control and study groups from being influenced by one another. The first 43 children who arrived between the dates of the study constituted the control group, and the second 40 children constituted the study group.

**Control Group (n = 43)**

No application was performed on the children in the control group. The children answered the questions in the state anxiety inventory 20 minutes before going into the OR. While the children were being separated from their parents, the researcher and the observer scored the parental separation scoring through observation.

**Study Group (n = 40)**

The children were offered the distraction options 40 minutes before going into the OR and kept busy with the selected method for 20 minutes.
Then, the children answered the questions in the state anxiety inventory within approximately 10 minutes (20 minutes before going into the OR). While the children were in the process of separation from their parents, the researcher and the observer assessed the parental separation score through observation.

**Analysis**

Statistical analyses were performed using the statistical software program SPSS for Windows, version 18.0 (SPSS Inc., Chicago, IL). The percentage distribution, mean, chi-square test, independent samples t test, and Cronbach alpha coefficient calculations were used to assess the data, whereas the Kappa test was used in evaluating the coherence between the independent observers. Statistical results were evaluated in the confidence interval of 95% and at the significance level of $P$ less than .05.

**Results**

While the children in the control group had an average age of $13.23 \pm 2.86$ years and a body weight average of $46.56 \pm 14.59$ kg, the children in the study group had an average age of $13.35 \pm 2.77$ years and an average body weight of $47.95 \pm 14.86$ kg. Most children in the control group (53.5%) and in the study group (52.5%) were males; and 79.1% of the children in the control group and 85% in the study group were in class ASA I. Most procedures in the control (60.5%) and study groups (40%) were performed in the abdominal area. The control and study groups were similar in terms of the variables of average age, body weight, height, gender, educational level, ASA classification, surgical area, anesthesia type, and previous surgery experience of the child ($P > .05$, Table 1). The findings showed that the children in the control group had higher mean scores of separation and in the STAIC-State,
compared to the study group, with a statistically significant difference ($P < .05$, Table 2).

### Discussion

Parental separation, pain, loss of control, strange environment, and unknown environmental conditions are among the important anxiety reasons for children in the preoperative period. In the literature, it has been suggested that various methods could be used in reducing this intensive anxiety experienced by children. Among these methods, the distraction interventions that draw the attention to other activities are highly effective in pediatric patients. This study was conducted to examine the effects of distraction on the preoperative anxiety levels in pediatric patients. One of the factors affecting the reactions of children toward hospitalization or surgical experiences is the developmental age. Previous studies have reported that children of different developmental ages had different levels of anxiety and behavioral distress toward hospitalization experiences. Younger children were more likely to be anxious and fearful compared with older children. Thus, this study was conducted with older children.

In this study, it was determined that the children in the study group on which the distraction was applied had lower mean scores of separation and STAIC–State compared with the children in the control group. In their study, Kain et al stated that the application of music therapy, which is used to reduce the preoperative anxiety in children, draws the attention and reduces the anxiety, actually reducing the anxiety in children regarding parental separation and in the OR. Zahr indicated that the use of therapeutic games in children reduced the separation anxiety in the stressful conditions caused by the hospital and before the operation. In their study which used video games to reduce the anxiety of children in the preoperative period, Patel et al determined that the anxiety levels of children playing video games were lower compared with the group that had their parents with them and the group using midazolam.

McGraw determined that the application of music therapy reduced the preoperative anxiety in the preoperative period. Eskin et al evaluated the effects of three different premedication methods (playing with toys, watching cartoons, and playing video games) before anesthesia induction on preoperative anxiety and indicated that these methods reduced the preoperative anxiety and increased the coherence with the pharmacological premedication. In the study of Mahmoudi-Gharaei et al, the children were kept in a play room full of toys, books, and video games for half an hour before the operation, and this application was determined to have reduced the pre-postoperative anxiety levels of the children. In another study, it was reported that music-assisted relaxation application reduced the pretest–post-test anxiety levels of children in the age group of 8 to 20 years. Weber found that during the preoperative period, children who participate in playful activities in the recreation room have their anxiety reduced in comparison with those that only stay in the preoperative holding area for at least 15 minutes. Studies examining the effects of distraction interventions like cartoons, music therapies, video games, therapeutic games applied to children in the preoperative period have reported that these practices decreased the anxiety of children. The findings of our study are similar to those of the previous studies.

### Conclusions

This study concluded that the distraction interventions of playing computer games, listening to
music, watching cartoons, which were presented to children in the preoperative period, reduced anxiety of parental separation of the children and reduced their preoperative anxiety levels. Nurses caring for pediatric patients in the preoperative period are recommended to use distraction interventions to reduce their anxiety and enable their compliance. It is recommended for the future studies to conduct similar studies with a larger patient population and with children of different developmental ages. We also support further studies to be conducted with different distraction practices in to decrease the preoperative anxiety in children.

References

DISTRACTION EFFECTS IN CHILDREN’S ANXIETY LEVEL


