

## **A Systematic Review of Randomized Controlled Experimental Designs in Pediatric Surgery Master's Theses in Türkiye**

**Dilara Cengizli** 

Research Assistant, Istanbul Gelisim University, Health Science Faculty,  
Department of Nursing, Istanbul, Türkiye

**Aydın Nart** 

Assistant Professor, Istanbul Gelisim University, Health Science Faculty,  
Department of Nursing, Istanbul, Türkiye

**Meltem Aslan** 

Assistant Professor, Istanbul Gelisim University, Health Science Faculty,  
Department of Nursing, Istanbul, Türkiye

**Esra Özer** 

Research Assistant, Istanbul Gelisim University, Health Science Faculty,  
Department of Nursing, Istanbul, Türkiye

\* Corresponding author: [dcengizli@gelisim.edu.tr](mailto:dcengizli@gelisim.edu.tr)

*Geliş Tarihi / Received: 23.08.2024*  
*Kabul Tarihi / Accepted: 20.09.2024*

*Araştırma Makalesi/Research Article*  
*DOI: 10.5281/zenodo.13856036*

### **ABSTRACT**

The objective of this systematic review is to evaluate randomized controlled experimental theses conducted in the field of nursing related to pediatric surgery in Turkey. Research data were obtained by searching the YÖK National Thesis Center Database using the keywords “pediatric surgery” and “pediatric surgery” for the period from January 2014 to August 2024. A total of 8 theses meeting the criteria and authored by nurses were identified, and their bibliographic details and full texts were accessed. Of the reviewed studies, 6 are at the master’s level and 2 at the doctoral level. Measurement tools used in the theses include scales, questionnaires, and information forms. All studies were conducted within the last five years and examined the effectiveness of various intervention methods on pain, fear, and anxiety experienced by children before and after surgical procedures. Intervention methods used include technological support tools, educational materials, and distraction techniques. The results underscore the importance of nurses and healthcare professionals using various play techniques and technological tools to support children.

**Keywords:** paediatric, surgery, nursing

### **1.INTRODUCTION**

Pediatric surgery addresses the surgical issues that children may encounter during the prenatal, postnatal, and adolescent periods. The development of pediatric surgery has generally progressed in conjunction with the advancement of adult surgery, and it is largely based on observations of surgical knowledge related to prominent deformities such as cleft lip and palate, skeletal deformities, and anal atresias. The fate of infants with defects was often tied to the cultural and societal attitudes of the

time, and many did not survive for long. In the 9th century, Albucasis provided information on circumcision, the use of urethral probes, and cleft lip in Cordoba. In the 17th-18th centuries, Johannes Fatio, a surgeon in Basel, systematically studied surgical conditions in children. Significant advancements continued into the 19th century. In the 20th century, pediatric surgery made considerable progress, particularly with the adoption of anesthesia, antisepsis, and advanced imaging technologies such as X-rays and ultrasound, which enabled safer and more effective surgical interventions (Coran, 2021).

Worldwide, four out of five children experience hospitalization before reaching the age of five, and over two million children undergo surgical procedures annually (Büyük & Bolisik, 2015). Surgical interventions can induce psychological stress in children. As a result of surgical stress, negative outcomes may occur in the physical and psychological health of children (Mathias, Pai, & Bramhagen, 2022). Surgical interventions not only affect children but also impact parents and other family members (Tuncay, 2021; Mathias, Pai, & Bramhagen, 2022).

The preoperative period can lead to both short- and long-term negative outcomes in children. Despite the evidence-based literature highlighting the importance of reducing anxiety, coping strategies, and cooperation, many children perceive themselves as inadequately prepared for the preoperative experience. Preoperative preparation planning should not merely involve transmitting information but must also address the need for processing and understanding that information to address the patient's knowledge gaps (Löf & Lönnqvist, 2022). Preschool children often struggle to grasp the necessity and importance of surgery (Aytekin, Doru, & Küçükoğlu, 2016). The literature indicates that preoperative preparation programs tailored to children's age and developmental levels play a critical role in managing preoperative anxiety (Aranha, Sams, & Saldanha, 2018).

Technology can provide significant improvements in pain management for children. Technologies such as virtual reality, phone or web-based treatment systems, videos, and electronic health records can be used in the educational and therapeutic processes for pediatric patients. While it is possible to enhance access to and effectiveness of treatment, this potential has not yet been fully realized (Anderson & Harrison, 2022).

A literature review did not reveal any studies examining nursing master's theses with randomized controlled experimental designs in the field of pediatric surgery. The aim of this systematic review is to analyze and evaluate the results of master's theses related to nursing in the field of pediatric surgery conducted in Turkey.

## **2.MATERIAL AND METHOD**

### **2.1.Objective**

The purpose of this systematic review is to evaluate master's theses with randomized controlled experimental designs in the field of pediatric surgery conducted in Turkey from 2014 to 2024, based on specific parameters. The study involves a retrospective examination and analysis of master's theses related to the nursing discipline. The research aims to answer the following questions:

- What interventional materials have been used in randomized controlled experimental design master's theses involving pediatric surgical patients in the field of nursing in Turkey?
- What outcomes have been identified in randomized controlled experimental design master's theses involving pediatric surgical patients in the field of nursing in Turkey?
- In which years has there been an increase in the number of master's theses involving pediatric surgical patients in the field of nursing in Turkey?

## **2.2. Inclusion Criteria**

- Accessibility to the full text of the thesis.
- The thesis must have been conducted in Turkey.
- The thesis must cover children aged 0-18 who have undergone or are planned to undergo surgical procedures.
- The thesis must have been completed between January 2014 and August 2024.
- The thesis must have been conducted by departments of nursing and/or nursing sciences.

## **2.3. Limitations**

The study has limitations including the use of different keywords leading to the same theses and the restriction of the search to theses conducted only within the field of nursing, resulting in a limited number of theses.

## **2.4. Ethical Considerations**

Ethical approval was not obtained as the accessibility of all the examined theses was confirmed by their authors.

## **2.5. Data Collection**

This research examined master's and doctoral (graduate) theses completed in Turkey from January 1, 2014, to August 15, 2024, using the advanced search option of the National Thesis Center database. Theses with the keywords "pediatric surgery" and "pediatric surgical" were searched using the search feature of the National Thesis Center database of the Higher Education Council. A total of 37 graduate theses were accessed as a result of the search. During the review process, one thesis was found to be duplicated, resulting in 36 theses being analyzed. The study included a total of 8 master's theses that met the inclusion criteria.

## **2.6. Data Evaluation**

The evaluated theses were examined in terms of variables such as type of thesis, year, thesis advisor, measurement tools, materials used in interventions, and results with positive effects. Data analysis was conducted using the SPSS (Statistical Package for the Social Sciences) version 25 software and Microsoft Office 2016, with frequency and percentage calculations.

## **3. RESULTS**

In this study, theses registered in the National Thesis Center from 2014 to 2024 were examined, and 8 graduate theses meeting the research criteria were analyzed. Of the reviewed theses, 75% (n=6) were master's theses, and 25% (n=2) were doctoral theses. The distribution of thesis advisors by title is as follows: 37.5% (n=3) Professors, 37.5% (n=3) Associate Professors, and 25% (n=2) Assistant Professors. According to the publication year of the theses, 37.5% (n=3) were published in 2019, 37.5% (n=3) in 2022, 12.5% (n=1) in 2020, and 12.5% (n=1) in 2021, indicating that these theses were published in the last 5 years (Table 1).

Regarding the measurement tools used for data collection, 62.5% (n=5) employed both information forms and scales, while 37.5% (n=3) used only information forms. The distribution of the locations where the studies were conducted is as follows: 75% (n=6) in pediatric surgery wards, 25% (n=2) in urology wards, and 12.5% (n=1) in outpatient clinics. Technological support tools were used in 50% (n=4) of the interventions, educational and informational materials in 25% (n=2), and distraction activities in 25% (n=2) (Table 1).

The review revealed that effective outcomes were in the following areas: 62.5% (n=5) pain, 50% (n=4) fear, 50% (n=4) anxiety, 12.5% (n=1) physiological parameters, and 12.5% (n=1) urination time (Table 1).

**Table 1.** Characteristics of Master’s Theses with Randomized Controlled Experimental Designs in the Field of Pediatric Surgery (n=8)

<b>Characteristics</b>	<b>Number</b>	<b>Percentage</b>
Master Thesis	6	75.0
Doctoral Thesis	2	25.0
<b>Thesis Advisor Title</b>		
Professor	3	37.5
Associate Professor	3	37.5
Assistant Professor	2	25.0
<b>Location of Study*</b>		
Pediatric Surgery Ward	6	75.0
Urology Ward	2	25.0
Outpatient Clinic	1	12.5
<b>Interventions</b>		
Technological Support Tools	4	50.0
Educational and Informational Materials	2	25.0
Distraction Activities	2	25.0
<b>Measurement Tools</b>		
Information Form	3	37.5
Information Form and Scale	5	62.5
<b>Effective Outcomes*</b>		
Pain	5	62.5
Fear	4	50.0
Anxiety	4	50.0
Physiological Parameters	1	12.5
Urination Time	1	12.5
<b>Distribution by Year</b>		
2019	3	37.5
2020	1	12.5
2021	1	12.5
2022	3	37.5

\*Multiple responses were allowed. Percentages are based on n=8.

The reviewed master’s theses are categorized by author/year, thesis advisor title, type of thesis, thesis title, thesis aim, sample sizes, forms used in the thesis, and thesis results, as outlined in Table 2.

**Table 2.** Profiles of Nursing Master’s Theses with Experimental Designs in the Field of Pediatric Surgery in Turkey (n=8)

Author-Year	Advisor Title	Thesis Type	Thesis Title	Sample Size	Forms Used	Results
SEYDA BINAY (2019)	Professor	Doctoral	The investigation of effects of watching animation education film in the pre-operative period on fear and post-operative pain in children	Animation Film Group: 44 Documentary Film Group: 44 Control Group: 44	Child and Family Introductory Data Form I Child and Family Introductory Data Form II Child Fear Scale (CFS) Facial Expression Rating Scale (Wong-Baker Pain Scale)	The use of an educational animation film about surgical preparation was found to be an effective method in reducing preoperative fear and postoperative pain levels in children and is recommended as a non-pharmacological approach.
OZGE AVCIL (2022)	Assistant Professor	Master	The Effect of the Sound of Running Water on Urination Time in Children with Circumcision Operation in the Postoperative Period	Experimental Group: 42 Control Group: 42	Data Collection Form Vital Signs Assessment Form Wong-Baker Faces Pain Scale	The study found that the sound of running water played after circumcision surgery had positive effects on urination time and pain levels.
ZEYNE P ISLER (2022)	Associate Professor	Master	The Effect of Education on Anxiety with Therapeutic Play Before Attempting Peripheral Vascular Access in Pediatric Surgery Patients	Amigurumi (I) Group: 35 Coloring Group (II): 34 Control Group: 33	Family and Child Informational Introduction Form Children’s Emotional Expression Assessment Scale Emotional Appearance	The research concluded that therapeutic play education was effective in reducing anxiety during needle procedures in both genders, with no significant differences in KTA and SpO2. Amigurumi application was effective in emotional

Author-Year	Advisor Title	Thesis Type	Thesis Title	Sample Size	Forms Used	Results
					Scale for Children	expression outcomes.
DUYGU KARAA RSLAN (2022)	Professor	Doctoral	The Effect of the Operating Room Tour Watched with a 3D Virtual Headset on Children's Fear and Anxiety Before the Surgery	3D Virtual Headset with Documentary Film Group: 42  3D Virtual Headset with Operating Room Tour Group: 42  Control Group: 42	Child and Family Introductory Data Form  Children's Anxiety Scale-State (CAS-S)  Child Fear Scale (CFS)  State-Trait Anxiety Inventory (for mothers)	Presenting the real operating room tour through virtual reality headsets was identified as an effective method for reducing preoperative fear and anxiety.
SELIN AKARSU (2021)	Professor	Master	The Effect of the Educational Storybook Developed for Children on Preoperative Anxiety and Fear Levels	Experimental Group: 33  Control Group: 33	Child and Family Information Form  Yale Modified Preoperative Anxiety Scale Child Form  Child Fear Scale	The research determined that reading the educational storybook "Ada Goes to Surgery" before surgery was an effective practice in reducing children's preoperative anxiety and fear
FATMA OZSOY (2020)	Assistant Professor	Master	Comparison of Two Different Methods in Reducing Pain and Anxiety During Dressing Change in 7-10 Year-Old Children	Virtual Reality Glasses Group: 32  Cartoon Group: 32	Data Collection Form for Child and Parent Wong-Baker Faces Pain Scale  Child Fear Scale	The study found that both virtual reality glasses and cartoon watching were effective in reducing perceived pain and anxiety during dressing changes, with virtual reality

Author-Year	Advisor Title	Thesis Type	Thesis Title	Sample Size	Forms Used	Results
				Control Group: 32		glasses being more effective in distracting attention.
MELIKE YILMAZ AKDAG (2019)	Associate Professor	Master	The Effect of Mobilization of Environmental Play on Fear and Pain Levels in the Postoperative Period Between 6-12 Years Old Children with Acute Appendicitis	Play Group: 50 Control Group: 50	Monitoring Form Visual Analog Scale Child Fear Scale	The study found that children in the environmental play group had lower pain levels and fear scores after mobilization compared to the control group, indicating that environmental play is an effective method for reducing fear and pain levels post-appendectomy
HILAL KESKIN (2019)	Associate Professor	Master	The Effect of Mobilization of Environmental Play on Fear and Pain Levels in the Postoperative Period Between 6-12 Years Old Children with Acute Appendicitis	Musical Mobile Group: 33 Control: 33	Data Collection Form FLACC Pain Assessment Form	The study found that using a musical mobile at the bedside during intestinal stomatherapy reduced the infants' pain and improved their physiological parameters.

#### 4.DISCUSSION

This study examined nursing theses with experimental designs in pediatric surgery through the YÖK system, yielding various findings. The analysis of the 8 theses provides valuable insights into the effectiveness of different interventions used in pediatric surgery. The theses, published from 2019 to 2022, reflect an increase in recent studies on pediatric surgery and the impact of technological advancements and modern approaches (Coran, 2021).

Hospital environments are often frightening and anxiety-inducing for pediatric patients. The primary causes of this include the feeling of uncertainty and the pain associated with medical procedures. During their hospital stay, children experience changes in pain, fear, anxiety, and physiological parameters, affecting them both psychologically and physically (Bülbül & Arıkan, 2018). The review of the theses revealed that effective outcomes of interventions in pediatric surgery were observed in

the areas of pain (62.5%, n=5), fear (50%, n=4), anxiety (50%, n=4), physiological parameters (12.5%, n=1), and urination time (12.5%, n=1).

Children are more aware of the symptoms and feelings they experience during their hospital stay than of their medical diagnoses. They often have negative perceptions of hospital-related invasive procedures, physical restrictions, and separation from their parents (Taşdemir Akkavak & Sarıkaya Karabudak, 2019). In our study, 50% (n=4) of the interventions used technological tools, 25% (n=2) used educational and informative materials, and 25% (n=2) used distraction techniques to help children avoid negative experiences from invasive procedures and physical restrictions.

Technological tools, such as virtual reality (VR), have become increasingly common in pediatric pain management and anxiety reduction (Paloma, Tuomikoski, Huhtala, & Pölkki, 2021). VR is seen as an innovative, user-friendly, and accessible tool for reducing anxiety and pain in children before, during, and after medical procedures (Tas, van Eijk, Staals, Legerstee, & Dierckx, 2022).

Educational and informative materials offer opportunities for self-control through hospital play interventions, contributing to better outcomes post-surgery (Halemani et al., 2022). Literature reviews, such as the study by Baghele et al. (2019), which involved 94 children and utilized educational videos to reduce preoperative anxiety, found significant reductions in physiological parameters and pain assessment in the experimental group (Baghele, Dave, Dias, & Shah, 2019).

Distraction methods are noted as effective non-pharmacological alternatives in pain management for children (Cho & Choi, 2021; Uzen, Oğul, & Yılmaz Kurt, 2018; Ibitoye & Dawson, 2017). Non-pharmacological interventions such as warm baths, natural sounds, and bladder massage can affect urination time following circumcision (Dişli & Kaydırak, 2021). Distraction through music has been used to manage physiological parameters during hospital stays (Akay, 2018; Alipour, Eskandari, Tehran, Eshagh-Hossain, & Sangi, 2013). A systematic review of randomized controlled trials on distraction activities for preoperative anxiety management by Mustafa et al. (2024) indicated that distraction interventions significantly reduced anxiety compared to control groups, aligning with the findings of our study (Mustafa et al., 2024).

## **5.CONCLUSION**

In conclusion, these theses demonstrate that modern interventions are effective in pediatric surgical processes and play a crucial role in managing pain, fear, and anxiety before and after surgery. Nurses and other healthcare professionals should support children using various play techniques, technological tools, educational and informational materials. Additionally, more randomized controlled experimental designs are needed, and future research will contribute to further development of these approaches.

## **REFERENCES**

- Anderson, L., & Harrison, L. (2022). The role of technology in pediatric pain management: A systematic review. *Journal of Pediatric Surgery*, 57(2), 159-160.
- Aranha, P. R., Sams, L. M., & Saldanha, P. (2018). Impact of multimodal preoperative preparation program on parental anxiety. *International Archives of Health Sciences*, 5(1), 6-10.
- Aytekin, A., Doru, O., & Küçükoglu, S. (2016). The effects of distraction on preoperative anxiety levels in children. *Journal of PeriAnesthesia Nursing*, 31(1), 56–62.
- Baghele, A., Dave, N., Dias, R., & Shah, H. (2019). Effect of preoperative education on anxiety in children undergoing day-care surgery. *Indian Journal of Anaesthesia*, 63(7), 565–570.



- Bülbül, F., & Arıkan, B. (2018). Psychological preparation for preoperative care in children: Current approaches. *Balıkesir Health Sciences Journal*, 7(3), 101–107.
- Büyük, E. T., & Bolisik, B. (2015). The effect of preoperative training and therapeutic play on children's anxiety, fear, and pain. *Journal of Pediatric Surgical Nursing*, 4(1), 78-85.
- Cho, M.-K., & Choi, M.-Y. (2021). Effect of distraction intervention for needle-related pain and distress in children: A systematic review and meta-analysis. *International Journal of Environmental Research and Public Health*, 18(17), 9159.
- Coran, A. G., et al. (Eds.). (2021). *Pediatric surgery: A comprehensive textbook* (4th ed., pp. 3-4). Elsevier.
- Halemani, K., Issac, A., Mishra, P., Dhiraaj, S., Mandelia, A., & Mathias, E. (2022). Effectiveness of preoperative therapeutic play on anxiety among children undergoing invasive procedures: A systematic review and meta-analysis. *Indian Journal of Surgical Oncology*, 13(4), 858–867.
- Ibitoye, M. B., & Dawson, P. (2017). The effectiveness of distraction as a procedural pain management technique in pediatric oncology patients: A meta-analysis and systematic review. *Journal of Pain and Symptom Management*, 54(4), 589-600.e1.
- Löf, G., & Lönnqvist, P.-A. (2022). Role of information and preparation for improvement of pediatric perioperative care. *Pediatric Anesthesia*, 32(5), 600–608.
- Mathias, E. G., Pai, M. S., & Bramhagen, A.-C. (2022). Non-pharmacological interventions to reduce anxiety among children undergoing surgery: A systematic review. *Journal of Child Health Care*, 27(3), 136-150.
- Mustafa, M. S., Shafique, M. A., Zaidi, S. D. E. Z., Qamber, A., Rangwala, B. S., Ahmed, A., Zaidi, S. M. F., Rangwala, H. S., Nafees Uddin, M. M., Ali, M., Siddiq, M. A., & Haseeb, A. (2024). Preoperative anxiety management in pediatric patients: A systematic review and meta-analysis of randomized controlled trials on distraction techniques. *Frontiers in Pediatrics*, 12, 1353508.
- Paloma, A.-K., Tuomikoski, A.-M., Huhtala, S., & Pölkki, T. (2021). Comparison of technology-based interventions and other non-pharmacological interventions for procedural pain relief in hospitalized newborns: A systematic review protocol. *JBIC Evidence Synthesis*, 19(10), 2770–2776.
- Tas, F. Q., van Eijk, C. A. M., Staals, L. M., Legerstee, J. S., & Dierckx, B. (2022). Virtual reality in pediatrics, effects on pain and anxiety: A systematic review and meta-analysis update. *Paediatric Anaesthesia*, 32(12), 1292–1304.
- Taşdemir Akkavak, D., & Sarıkaya Karabudak, S. (2019). Examination of hospitalized school-age children's perceptions of nurses and the hospital. *Journal of Pediatric Nursing*, 12(1), 46–56.
- Tuncay, S. (2021). The effect of therapeutic play and animation intervention on the fear, anxiety, and pain of children undergoing circumcision and the anxiety of their parents (Doctoral dissertation, Atatürk University, Institute of Health Sciences, Erzurum).
- Uzen, Ş., Oğul, T., & Yılmaz Kurt, F. (2018). Complementary and alternative medicine practices used for relieving pain in pediatric age groups. *Zeynep Kamil Medical Bulletin*, 49(1), 126–129.