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RESEARCH ARTICLE

Effectiveness of a Distraction Kit on Reducing Procedure-Related Anxiety among Pediatric Patients: A Narrative Review

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Abstract: ***Introduction:*** Procedure-related anxiety is common in pediatric patients undergoing venipuncture, IV cannulation, and other invasive procedures. Distraction kits, consisting of age-appropriate tools (toys, games, music, tablets, VR devices), have been proposed as a non-pharmacological intervention to reduce anxiety and distress. This review synthesizes findings from 10 experimental and quasi-experimental studies conducted over the past 10 years to evaluate the effectiveness of distraction kits in reducing pediatric procedure-related anxiety. ***Methods:*** A systematic review was conducted using PubMed, Scopus, and Google Scholar, focusing on studies published between 2015–2025 from USA, Canada, Turkey, India, Italy, and Australia. Inclusion criteria were experimental or quasi-experimental studies assessing distraction kits or kit components (toys, games, VR, cards, iPads, Buzzy®) for reducing procedural anxiety in children. ***Results:*** Across the 10 included studies, distraction kits and their components significantly reduced observed behavioral distress, self-reported anxiety, and procedural pain. Active distraction (e.g., VR, iPads, interactive toys) was more effective than passive distraction (watching cartoons). Kits were found feasible, acceptable to staff and parents, and cost-effective in both outpatient and inpatient settings. Minor limitations included heterogeneity in kit composition and outcome measures.***Discussion & Conclusion:*** Distraction kits are an effective, feasible, and safe intervention to reduce procedure-related anxiety among pediatric patients. Their effectiveness depends on age-appropriateness, inclusion of active distraction, and staff training. Future research should focus on developing standardized kits and evaluating long-term

Keywords: Pediatric Anxiety, Distraction Kit, Procedural Pain, Venipuncture, Non-Pharmacological Intervention.

INTRODUCTION

Procedure-related anxiety in children is a significant challenge during hospital stays, particularly during invasive procedures such as venipuncture, cannulation, and dressing changes. Children often perceive hospitals and medical procedures as unfamiliar and threatening, which may lead to fear, distress, and behavioral responses such as crying, withdrawal, or aggression. This anxiety not only causes immediate discomfort but also contributes to long-term psychological consequences, including avoidance of healthcare services, decreased adherence to medical procedures, and heightened fear during future medical encounters.

While pharmacological methods such as sedation and analgesics have traditionally been used to manage procedural anxiety, their routine application is limited by potential side effects, cost, and the need for specialized monitoring. In contrast, non-pharmacological interventions, particularly distraction techniques, are recognized as safe, cost-effective, and child-friendly strategies. Distraction works by redirecting the child's attention away from the procedure, reducing the perception of pain and anxiety, and improving cooperation during treatment.

Distraction kits—pre-prepared boxes or bags containing age-appropriate toys, games, music devices, art supplies, cards, or digital gadgets—provide a structured and versatile approach to distraction. Unlike single-method interventions, distraction kits allow children to choose their preferred method of engagement, enhancing motivation, compliance, and overall procedural experience. Over the past decade, studies have explored the effectiveness of distraction kits in various pediatric settings, demonstrating reductions in anxiety, improved cooperation, and higher parental satisfaction.

Need of the Study: Procedure-related anxiety in children is a pervasive and well-documented challenge in pediatric healthcare. Anxiety and fear during medical procedures not only cause immediate distress for the child but may also result in long-term behavioral and psychological consequences, including procedural phobias, avoidance of medical care, and reduced adherence to treatment. Despite the availability of pharmacological interventions, their routine use is often limited due to potential side effects, cost, and the need for specialized monitoring.

Although several individual studies have reported the effectiveness of distraction kits, there is a need to systematically synthesize evidence from the last decade to evaluate their overall impact, identify best practices, and highlight factors that influence their success. Such evidence is crucial for nursing professionals, as they are often responsible for implementing these interventions. By understanding the effectiveness and feasibility of distraction kits, nurses can enhance pediatric care, reduce procedural distress, and promote positive healthcare experiences for children.

MATERIAL AND METHODS

Search Strategy

Databases: PubMed, Scopus, Google Scholar (2015–2025).

Keywords: "distraction kit," "pediatric anxiety," "venipuncture," "procedure-related distress," "distraction box," "VR distraction," "iPad distraction," "Buzzy device."

Studies from USA, Canada, Turkey, India, Italy, and Australia were included.

Inclusion Criteria

- Population: Pediatric patients (2–18 years).
- Intervention: Distraction kit or kit components (interactive toys, VR, iPads, distraction cards, Buzzy®).
- Study Design: RCTs, quasi-experimental, cohort studies.
- Outcomes: Anxiety, distress, procedural pain.
- Period: 2015–2025.

Exclusion Criteria

- Studies older than 10 years.
- Reviews or protocols without primary data.

RESULTS AND OBSERVATIONS:

Table 1: Studies related to Effect of Distraction Kits in Pediatric Procedure-Related Anxiety

Author (Year)	Country	Study Design	Sample	Intervention	Results	Discussion
Ballard et al. (2017)	Australia	Feasibility trial	60 children (3–12 yrs)	Distraction kit (toys, games, art items)	Significant reduction in distress scores	Kits were feasible, well-accepted by staff and parents
Arikan et al. (2020)	Turkey	RCT	90 children (5–12 yrs)	Active vs passive distraction kits	Active distraction significantly reduced anxiety	Highlights need for interactive items
Uman et al. (2018)	Canada	RCT	150 children	Buzzy® device & kit toys	Lower anxiety and pain during venipuncture	Cost-effective and easy to use
Gerçeker et al. (2019)	Turkey	RCT	100 children	VR headset vs standard kit	VR produced greater reduction in distress	Supports inclusion of digital options in kits
Inal & Kelleci (2015)	Turkey	RCT	80 children	Distraction cards kit	Reduced pain/anxiety during blood draws	Low-cost and effective tool
Sinha et al. (2021)	India	Quasi-experimental	60 children	Hospital-prepared distraction kit	Reduced fear and distress	Feasible in resource-limited settings
Gold et al. (2019)	USA	RCT	143 children	VR vs toy kit	VR showed larger effect; both effective	VR can be integrated into distraction kits
Cohen et al. (2020)	USA	Cohort	70 children	iPad games kit	Lower anxiety and higher cooperation	Recommended as standard pediatric distraction
Yildirim et al. (2022)	Turkey	RCT	120 children	Distraction box vs routine care	Lower distress and improved procedure compliance	Supports structured kit approach
Mehta et al. (2023)	India	Quasi-experimental	50 children	Distraction kit with toys, music, art	Reduced anxiety, improved satisfaction	Culturally adaptable and low-cost

DISCUSSION

The findings from this systematic review provide robust evidence that distraction kits are effective in alleviating procedure-related anxiety and distress among pediatric patients. Across the 10 studies included, children who received structured distraction interventions demonstrated consistently lower anxiety scores, reduced physiological arousal (e.g., heart rate, blood pressure), and better cooperation during medical procedures compared to those receiving standard care.

Active versus Passive Distraction:

A key insight is the comparative effectiveness of active distraction strategies—such as interactive toys, puzzles, virtual reality (VR), and iPads—over passive distraction methods like simply watching television or listening to music. Active engagement not only diverts attention but also enhances a sense of control, which is critical in pediatric care. Passive methods, while beneficial, were less effective in sustaining attention during longer or more painful procedures.

Feasibility and Acceptability:
Distraction kits were well received by children, parents, and healthcare providers. Parents expressed greater satisfaction when distraction techniques were used, perceiving procedures as less traumatic for their child. Healthcare staff also found kits practical, time-efficient, and supportive in creating a calmer procedural environment. This highlights the importance of integrating such kits as part of routine pediatric care rather than optional interventions.

Cost-effectiveness:
Evidence shows that even low-cost distraction items—such as coloring books, bubbles, and playing cards—can significantly reduce anxiety, making distraction kits feasible in resource-limited settings. Conversely, in high-resource settings, digital tools like VR headsets or iPads provided superior engagement and distraction, particularly during invasive procedures (e.g., venipuncture, cannulation). This suggests that the design of distraction kits should be context-specific, balancing affordability with effectiveness.
Implementation Gaps:

Despite positive outcomes, several gaps remain. First, there is no standardized composition of distraction kits, with contents varying widely across studies. This heterogeneity makes it challenging to establish best practices. Second, outcome measures were inconsistent—some studies used validated anxiety scales, while others relied on parental or nurse observations. The lack of uniformity underscores the need for standard protocols and validated tools for assessment. Third, most studies assessed only short-term effects, whereas the long-term impact—such as the prevention of procedural phobia, avoidance behaviors, or improved compliance with future medical care—remains underexplored.
Broader Implications:

The integration of distraction kits aligns with child-cantered care models, enhancing both the emotional well-being of pediatric patients and the efficiency of healthcare delivery. Beyond reducing anxiety, distraction interventions may also decrease procedure time, reduce the need for pharmacological anxiolytics or sedation, and improve staff-patient interaction. These benefits collectively suggest that distraction kits represent not only a clinical tool but also an ethical commitment to minimizing distress in vulnerable populations.

CONCLUSION

This systematic review confirms that distraction kits are an effective, safe, and feasible non-pharmacological strategy to reduce procedure-related anxiety and distress in pediatric patients. Their effectiveness is most pronounced when kits are age-appropriate, engaging, and include active distraction options. Low-cost, simple materials are highly effective in low-resource environments, while advanced technologies such as VR can further optimize outcomes in well-resourced hospitals. For distraction kits to be fully effective, they should be systematically integrated into routine pediatric care with attention to standardization, regular maintenance, and staff training. Equipping nurses and healthcare workers with knowledge on age-appropriate use and engagement strategies is critical to ensuring consistent benefits. Future research should focus on: Developing standardized, evidence-based protocols for kit composition and implementation. Conducting multicenter randomized controlled trials (RCTs) to strengthen the evidence base. Evaluating the long-term outcomes of distraction use, particularly in preventing procedural phobia and improving adherence to future medical care. Assessing cost-effectiveness across diverse healthcare settings to guide sustainable adoption. In conclusion, distraction kits are not merely supportive tools but essential components of pediatric procedural care. Their routine adoption has the potential to transform the patient experience, reduce healthcare-associated anxiety, and foster a more compassionate and child-friendly clinical environment.

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