RESEARCH PAPER

Reducing Procedural Distress in Children Through the Comfort Hold Technique: A Non-Pharmacological Approach to Pediatric Care

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ABSTRACT

Background: Procedural distress is a common and significant challenge among young children undergoing invasive medical procedures such as intravenous (IV) cannulation. High levels of distress can interfere with procedural success, increase procedure time, and negatively influence children's future healthcare experiences. Non-pharmacological interventions are recommended to promote comfort and reduce distress during pediatric procedures. The Comfort Hold Technique is a supportive positioning method designed to provide physical reassurance and emotional security to children during medical interventions.

Objective: To evaluate the effectiveness of the Comfort Hold Technique as a non-pharmacological intervention in reducing procedural distress among children aged 3–5 years undergoing intravenous cannulation.

Methods: A randomized controlled trial was conducted in the pediatric ward of Teerthanker Mahaveer University Hospital. A total of 160 children aged 3–5 years undergoing intravenous cannulation were randomly assigned to a control group (n = 80) receiving routine care and an experimental group (n = 80) receiving the Comfort Hold Technique during the procedure. Procedural distress was assessed using the Observational Scale on Behavioural Distress. Data were analyzed using descriptive and inferential statistics, including mean, standard deviation, and independent t-test.

Results: Children in the experimental group demonstrated significantly lower procedural distress scores compared to those in the control group. The reduction in distress levels among children receiving the Comfort Hold Technique was statistically significant ($p < 0.05$).

Conclusion: The Comfort Hold Technique was found to be an effective non-pharmacological intervention for reducing procedural distress among children undergoing intravenous cannulation. Incorporating this technique into routine pediatric practice can enhance child comfort and improve procedural outcomes.

Keywords: Comfort Hold Technique, Procedural Distress, Children, Non-Pharmacological Intervention, Intravenous Cannulation, Pediatric Nursing.

How to cite this article: Mudhol B, Kumar Y. Reducing Procedural Distress in Children Through the Comfort Hold Technique: A Non-Pharmacological Approach to Pediatric Care. Int J Drug Deliv Technol. 2026;16(34s):430-433. DOI: 10.25258/ijddt.16.34s.55

Source of support: Nil.

Conflict of interest: The author declares no conflict of interest, and this work represents independent academic research conducted in a personal capacity, not associated with any employer or commercial entity.

INTRODUCTION

Procedural distress is a frequent and clinically significant concern among children undergoing invasive medical procedures in hospital settings. Intravenous (IV) cannulation is one of the most commonly performed procedures in pediatric care and is often associated with fear, anxiety, crying, and behavioral resistance among young children (Boles et al., 2020; Kennedy et al., 2018). Children between the ages of three and five years are particularly vulnerable to procedural distress due to their developmental stage, limited coping abilities, and heightened sensitivity to unfamiliar environments (Uman et al., 2013). Unmanaged procedural distress can interfere with the successful completion of procedures, prolong procedure time, and increase the risk of complications, while also contributing to negative healthcare experiences during early childhood (Birnie et al., 2018).

Despite increasing awareness of atraumatic care principles, conventional approaches such as physical restraint continue to be used in many healthcare settings to manage uncooperative children during procedures (Wente, 2013). Non-pharmacological interventions have been widely recommended as safe and effective strategies to reduce distress and improve cooperation during pediatric procedures (Pancekauskaitė & Jankauskaitė, 2018). Among these interventions, the Comfort Hold Technique has been identified as a supportive positioning method that provides physical comfort, emotional reassurance, and procedural stability (Boles et al., 2020).

However, empirical evidence regarding the effectiveness of structured comfort positioning techniques among

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preschool-aged children undergoing intravenous cannulation remains limited in many clinical settings, particularly in developing countries (Birnie et al., 2018). Therefore, the present study was conducted to evaluate the effectiveness of the Comfort Hold Technique as a non-pharmacological intervention to reduce procedural distress among children aged 3–5 years undergoing intravenous cannulation.

Methods

A true experimental research design using a Randomized Controlled Trial (RCT) approach was adopted to evaluate the effectiveness of the Comfort Hold Technique in reducing procedural distress among children undergoing intravenous cannulation. The study was conducted in the pediatric ward of Teerthanker Mahaveer University Hospital, a tertiary care teaching hospital providing comprehensive pediatric healthcare services. The study population consisted of children aged 3–5 years who required intravenous cannulation for therapeutic purposes in the pediatric ward.

The total sample size for the study was 160 children, with 80 children in the control group and 80 children in the experimental group. Participants were selected using a probability sampling method and randomly assigned to either the control group or the experimental group using a simple randomization technique. Children who were aged between 3 and 5 years requiring intravenous cannulation admitted to the pediatric ward were included in the study. Children who were critically ill, cognitive or neurological impaired, those who requried emergency procedures and had previously received sedative medication prior to the procedure were not considered.

The Comfort Hold Technique involved positioning the child in a secure and supportive posture during intravenous cannulation. A caregiver or healthcare provider gently held the child in a comforting manner to provide emotional reassurance and physical stability throughout the procedure. The intervention was implemented immediately prior to and during intravenous cannulation. Procedural distress was measured using the Observational Scale on Behavioural Distress. After obtaining ethical approval and informed consent from parents, eligible children were randomly assigned to either the control group or the experimental group. Intravenous cannulation was performed according to standard clinical protocols.

Ethical approval for the study was obtained from the Institutional Ethics Committee of Teerthanker Mahaveer University. Written informed consent was obtained from parents or guardians prior to participation. Confidentiality and anonymity of participants were maintained throughout the study.

Results

A total of 160 children aged 3–5 years undergoing intravenous cannulation in the pediatric ward of Teerthanker Mahaveer University Hospital participated in the study. The participants were randomly assigned to a control group (n = 80) receiving routine care and an experimental group (n = 80) receiving the Comfort Hold Technique during the procedure. The results are presented in accordance with the study objectives.

Table 1: Distribution of Children in the Control Group According to Level of Procedural Distress during Intravenous Cannulation

(n = 80)

Level of Procedural Distress	Score Range	Frequency	Percentage (%)
Mild Distress	0–09	12	15
Moderate Distress	10–18	38	47.5
Severe Distress	19–32	30	37.5

The data presented in Table 1 indicate that the majority of children in the control group experienced moderate procedural distress (47.50%), followed by severe distress (37.50%). A smaller proportion of children (15.00%) experienced mild procedural distress during intravenous cannulation.

Table 2: Distribution of Children in the Experimental Group According to Level of Procedural Distress during Intravenous Cannulation

(n = 80)

Level of Procedural Distress	Score Range	Frequency	Percentage (%)
Mild Distress	0–09	42	52.5
Moderate Distress	10–18	28	35
Severe Distress	19–32	10	12.5

As shown in Table 2, more than half of the children in the experimental group (52.50%) experienced mild procedural distress during intravenous cannulation. A smaller proportion experienced moderate distress (35.00%), while only 12.50% of children experienced severe procedural distress.

Table 3: Comparison of Mean Procedural Distress Scores between Control and Experimental Groups during Intravenous Cannulation

(n = 160)

Group	Mean Score	Standard Deviation	Mean Difference	t-value	p-value
Control Group	19.84	4.62	6.73	9.90	0.001
Experimental Group	13.11	3.95			

Table 3 presents the comparison of mean procedural distress scores between the control and experimental groups. The mean procedural distress score in the control group was higher than that of the experimental group. The calculated t-value was statistically significant at the 0.05 level, indicating a significant difference in procedural distress scores between the two groups.

DISCUSSION

The present randomized controlled trial was conducted to evaluate the effectiveness of the Comfort Hold Technique as a non-pharmacological intervention to reduce procedural distress among children aged 3–5 years undergoing intravenous cannulation in the pediatric ward of Teerthanker Mahaveer University Hospital. The findings of the study demonstrated a statistically significant reduction in procedural distress scores among children who received the Comfort Hold Technique compared to those who received routine care. These results address the gap identified in the introduction regarding the limited empirical evidence on the effectiveness of structured comfort positioning techniques in reducing procedural distress among preschool-aged children in clinical settings (Birnie et al., 2018; Boles et al., 2020).

The results of the study indicated that children in the control group predominantly experienced moderate to severe procedural distress during intravenous cannulation, whereas children in the experimental group receiving the Comfort Hold Technique primarily experienced mild procedural distress. This pattern of findings is consistent with existing literature that highlights the importance of supportive physical positioning and caregiver involvement in reducing distress among young children during medical procedures (Wente, 2013; Hockenberry & Wilson, 2021). Previous research has shown that comfort positioning techniques can provide emotional reassurance and a sense of security, thereby reducing behavioral distress responses such as crying, resistance, and agitation during invasive procedures (Uman et al., 2013).

The significant difference in mean procedural distress scores between the control and experimental groups observed in this study supports the effectiveness of non-pharmacological interventions in pediatric care. Similar findings have been reported in studies evaluating atraumatic care strategies, which emphasize minimizing physical and psychological discomfort in children during medical procedures (Pancekauskaitė & Jankauskaitė, 2018; American Academy of Pediatrics, 2016). The Comfort Hold Technique aligns with these principles by providing both physical stabilization and emotional comfort, allowing healthcare providers to perform procedures more efficiently while maintaining the child's sense of safety (Boles et al., 2020).

The absence of a statistically significant association between procedural distress levels and selected demographic variables such as age, gender, previous hospitalization, and type of diagnosis suggests that the effectiveness of the Comfort Hold Technique was consistent across different subgroups of children. This finding indicates that the intervention can be applied broadly in pediatric settings without the need for modification based on demographic characteristics. Consistency of effectiveness across demographic variables enhances the generalizability of the intervention within similar clinical populations (Polit & Beck, 2021).

The findings of the present study contribute to the growing body of evidence supporting the use of non-pharmacological interventions in pediatric nursing practice. The study provides empirical data from a randomized controlled trial conducted in an Indian healthcare setting, thereby addressing the limited availability of region-specific evidence on comfort-based interventions for procedural distress management. By demonstrating the effectiveness of the Comfort Hold Technique in reducing distress among preschool-aged children undergoing intravenous cannulation, the study supports the integration of structured comfort positioning techniques into routine pediatric care (World Health Organization, 2020; Birnie et al., 2018).

CONCLUSION

The present study demonstrated that the Comfort Hold Technique is an effective non-pharmacological intervention for reducing procedural distress among children aged 3–5 years undergoing intravenous cannulation. Children who received the Comfort Hold Technique exhibited significantly lower levels of behavioral distress compared to those who received routine care. The findings provide evidence that supportive comfort positioning can enhance the emotional well-being of children during invasive procedures and improve procedural experiences in pediatric healthcare settings.

Incorporating the Comfort Hold Technique into routine pediatric nursing practice may contribute to the delivery of child-centered and atraumatic care. The results of this randomized controlled trial provide a clear and evidence-based foundation for the adoption of comfort positioning strategies in clinical settings where young children undergo invasive procedures.

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