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Effectiveness of Animated Cartoon Distraction on Pre-school Children's Anxiety during Infusion Insertion in the Emergency Room of RSUD Hajjah Andi Depu

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ABSTRACT

Background: Anxiety in preschool children during hospital procedures is a common issue, particularly during invasive actions such as intravenous (IV) insertion. One non-pharmacological intervention to address this problem is animated cartoon audiovisual distraction, which serves to divert the child's attention and reduce perceived stress. **Methods:** This study aimed to examine the effect of animated cartoon audiovisual distraction on the anxiety levels of preschool children undergoing IV insertion. A quasi-experimental design with a pre-test post-test control group approach was employed. The sample consisted of 20 preschool children selected using purposive sampling. Data on anxiety levels were collected before and after the intervention and analyzed using the Wilcoxon Signed Ranks Test. **Results:** The results showed a statistically significant reduction in anxiety levels, with a p-value of 0.006, indicating that animated cartoon audiovisual distraction significantly reduced anxiety during IV insertion. **Conclusion:** These findings suggest that such distractions can be effectively integrated into emergency room procedures as a supportive, non-pharmacological strategy to minimize procedural anxiety in young children.

Keywords: Infusion, Audiovisual, Anxiety, Preschool

Introduction

Childhood is a crucial developmental stage that significantly influences an individual's long-term health and well-being (Amaliya et al., 2021). This phase includes several growth

periods, from neonates and toddlers to preschool and school-age children, each with its own developmental characteristics (Purnama et al., 2020). Among these stages, preschool-aged children (3–6 years) are particularly vulnerable to various health conditions, often requiring frequent visits to healthcare facilities and hospitalization (Fatmawati et al., 2019). Data from global and national health organizations show a consistent increase in the number of children receiving inpatient care and experiencing psychological distress during medical procedures. According to the World Health Organization (WHO), 45% of hospitalized children experience stress related to their treatment (Jumasing et al., 2021), while the United Nations Children's Fund (UNICEF) reports that approximately 75% of preschool children globally face anxiety and trauma during healthcare interventions (Fatmawati et al., 2019). In Indonesia, data from the National Socio-Economic Survey (SUSENAS) indicate that preschool-aged children constitute 30.82% of the population, with around 35 out of every 100 children experiencing anxiety during hospital procedures (Saputro & Fazrin, 2017).

Illness, medical procedures, and hospitalization are often perceived by children as distressing and threatening experiences, leading to fear, anxiety, and uncooperative behavior (Kose & Arkan, 2020; Susanti et al., 2017). The anxiety experienced by children in clinical settings can result from various factors, including injections, IV insertion, separation from parents, and fear of bodily harm. If not properly managed, anxiety can lead to physiological complications such as increased heart rate and respiration, ultimately impacting the healing process and procedural outcomes (Faradisi, 2012). One of the hospital units where children are frequently exposed to high levels of stress is the Emergency Department (ED), which provides urgent care and lifesaving interventions under time-sensitive conditions (Mulyanto et al., 2022). Emotional distress in such settings may cause children to perceive hospital care as punishment, resulting in behavioral resistance and difficulties in delivering nursing procedures (Vianti, 2020).

Anxiety is defined as an emotional response to an uncertain and unidentifiable threat, often accompanied by feelings of helplessness and loss of control. It is experienced subjectively and expressed interpersonally (Susanti & Safitri, 2019; Hang & Tanjungpinang, 2021). In clinical practice, both pharmacological and non-pharmacological approaches are employed to manage anxiety. While medications such as anxiolytics may be prescribed, non-pharmacological interventions like distraction techniques are increasingly encouraged due to their safety, accessibility, and ease of integration into routine nursing care (Sugawara & Nikaido, 2014). Audiovisual distraction—such as watching animated cartoons—has been shown to stimulate the release of endorphins, which can reduce stress and pain perception (Novitasari et al., 2021; Fahlenbrach & Reinerth, 2018). The combination of engaging visuals, familiar characters, and music makes this technique especially effective for preschool-aged children, who are naturally drawn to sensory-rich stimuli (Retnani et al., 2019).

Previous studies have demonstrated the effectiveness of audiovisual distraction in reducing anxiety among children undergoing various medical procedures, including injections and preoperative preparations (Fatmawati et al., 2019; Balqis & Rofiqoh, 2022; Retnani et al., 2019). However, most of these studies have focused primarily on standard injection procedures and have not specifically examined intravenous (IV) insertion, which may present distinct psychological stressors for preschool-aged children. Furthermore, there is a lack of research addressing the application of audiovisual distraction within the unique and high-pressure context of emergency departments (EDs), where the environment is more intense compared to general inpatient settings. Preliminary observations conducted at Hajjah Andi Depu General Hospital in February 2023 revealed that preschool children frequently exhibited

signs of anxiety—such as crying, restlessness, and a constant need for parental presence—while undergoing medical care. Given this background, the present study is urgently needed to fill the gap in the existing literature and provide an innovative, non-pharmacological intervention that can be effectively implemented during IV insertion procedures in pediatric emergency care. This research also aims to contribute new insights by exploring the integration of animated cartoon audiovisual distraction tailored to the developmental characteristics of preschool children, thereby enhancing both the quality and responsiveness of pediatric nursing practice in acute care settings.

Method

This study employed a quasi-experimental design with a pre-test post-test control group approach to assess the effect of audiovisual distraction using animated cartoons on anxiety levels in preschool children.

Study Setting and Period

The research was conducted in the Emergency Department (ED) of Hajjah Andi Depu Regional General Hospital, Polewali Mandar Regency, from September 8 to 24, 2023.

Population and Sample

The population consisted of all preschool-aged children (3–6 years old) treated in the ED during the study period, totaling 167 individuals. A sample of 20 children was selected using a non-probability sampling method, specifically purposive sampling, which involves selecting participants based on predefined inclusion and exclusion criteria (Pamungkas & Usman, 2017).

Data Collection

Data were collected using a standardized procedure and a validated questionnaire based on the Facial Image Scale (FIS). The FIS assesses anxiety levels through facial expressions, with scores ranging from 1 (no anxiety) to 5 (severe anxiety). Prior to data collection, the researcher obtained ethical clearance and permission letters from STIKES Bina Generasi Polewali Mandar and Hajjah Andi Depu Hospital. Eligible participants were identified according to the inclusion criteria, and informed consent was obtained from parents or guardians after explaining the study procedures. Observations were conducted to assess the children's anxiety levels during the intravenous (IV) insertion procedure.

Data Processing and Analysis

Data analysis was performed using univariate and bivariate methods. Univariate analysis utilized descriptive statistics to present the characteristics of each variable. Bivariate analysis was conducted using a paired t-test for normally distributed data or the Wilcoxon signed-rank test for non-normally distributed data, both with a significance level of $p < 0.05$. The analysis compared pre-test and post-test anxiety scores to determine the effectiveness of the intervention..

Results

The results of this study demonstrated a significant difference in anxiety levels between the intervention and control groups. In the intervention group Table 1, prior to receiving audiovisual distraction, 4 children (40%) were categorized as having moderate anxiety and 6 children (60%) as having severe anxiety. After the intervention, the anxiety levels decreased, with 3 children (30%) showing no anxiety, 4 children (40%) experiencing mild anxiety, 2 children (20%) with moderate anxiety, and only 1 child (10%) remaining in the severe anxiety category.

Table 1. Characteristics Distribution of Respondents

Category	Frequency (n)	Percentage (%)
Age		
Intervention Group n=10		
3 years	3	30
4 years	2	20
5 years	5	50
Control Group n=10		
3 years	4	40
4 years	4	40
5 years	2	20
Gender		
Intervention Group n=10		
Male	5	50
Female	5	50
Control Group n=10		
Male	7	70
Female	3	30
Anxiety level pre test		
Intervention Group n=10		
Moderate anxiety	4	40
Severe anxiety	6	60
Control Group		
Mild Anxiety	2	20
Moderate Anxiety	6	60
Severe Anxiety	2	20
Anxiety level post test		
Intervention Group n=10		
No Anxiety	3	30
Mild Anxiety	4	40
Moderate Anxiety	2	20
Severe Anxiety	1	10
Control Group n=10		
Moderate Anxiety	5	50
Severe Anxiety	5	50

Source: Primary Data 2023

In contrast, the control group, which did not receive any distraction intervention, showed an increase in anxiety after the procedure. Initially, 2 children (20%) had mild anxiety, 6 (60%) moderate anxiety, and 2 (20%) severe anxiety. Post-test results indicated that 5 children (50%) had moderate anxiety and the remaining 5 (50%) had severe anxiety.

A bivariate analysis using the Wilcoxon Signed Ranks Test was conducted due to non-normal data distribution Table 2. The test revealed a statistically significant difference in anxiety reduction between the control and intervention groups, with a p-value of 0.006 ($p < 0.05$).

This indicates that the use of animated cartoon audiovisual distraction effectively reduced anxiety levels in preschool children undergoing intravenous insertion in the emergency room setting.

Table 2. Wilcoxon Signed Ranks Test Result

Comparison	N	Sig. (2-tailed)
Difference (Post–Pre) Intervention vs Control	10	*0.006

*p-value of 0.006 ($p < 0.05$)

Discussion

This study found that audiovisual distraction using animated cartoons was effective in significantly reducing anxiety levels in preschool-aged children undergoing intravenous (IV) insertion procedures in the emergency department. The marked decrease in anxiety in the intervention group compared to the control group emphasizes the value of this method as a non-pharmacological, practical intervention in pediatric nursing.

These findings are consistent with those reported by Fatmawati et al. (2019), who demonstrated that watching animated cartoons significantly reduced anxiety in preschoolers during injection procedures. Cartoons serve as engaging visual media for young children and are proven to effectively divert their attention from fear and pain. Similarly, Retnani et al. (2019) found that both cartoon and animated videos reduced preoperative anxiety levels among children, reinforcing the theory that emotionally and cognitively stimulating visuals help children feel safer during medical procedures.

From a physiological perspective, this intervention aligns with findings from Novitasari et al. (2021), who explained that audiovisual distraction stimulates the cerebral cortex, activates the limbic system, and triggers the release of endorphins while inhibiting norepinephrine. This mechanism helps decrease stress and alleviate the perception of pain and fear, thus lowering overall anxiety.Preschool children often lack the cognitive maturity to understand medical procedures rationally and tend to rely more on sensory perception and emotion. Thus, using fun, familiar, and visual media like animated cartoons becomes a developmentally appropriate and effective strategy for anxiety management. This is further supported by Wahyuningrum (2015) and Widhyantari (2022), whose studies demonstrated that audiovisual distraction outperformed other techniques like puzzle play in reducing procedural anxiety in preschool-aged children.

The present study contributes significantly to pediatric nursing practice by providing evidence for a child-centered, non-invasive, and cost-effective anxiety reduction strategy, particularly in high-stress environments like emergency departments. Animated cartoons, which are appealing and imaginative for young children, can enhance emotional regulation, cooperation, and overall procedural outcomes.

The findings of this study carry substantial implications for pediatric nursing practice, particularly in managing procedural anxiety in preschool children. Audiovisual distraction using animated cartoons is shown to be an effective, accessible, and non-pharmacological intervention that can be integrated into nursing procedures to reduce anxiety and enhance child cooperation. Nursing staff in emergency rooms and pediatric wards are encouraged to implement audiovisual distraction as a standard complementary intervention during invasive procedures. Furthermore, healthcare facilities should consider investing in age-appropriate digital media devices that can be used to deliver cartoon content during medical treatments.

From a policy standpoint, hospitals should develop guidelines and training modules that promote child-friendly interventions, ensuring that healthcare providers are equipped to implement these techniques effectively. Future studies are encouraged to expand sample sizes, employ randomized controlled designs, and explore the cultural adaptation of cartoon content to increase contextual relevance.

Conclusion

The results of this study confirm that audiovisual distraction using animated cartoons has a significant effect on reducing anxiety levels in preschool-aged children undergoing IV insertion procedures in the emergency department at RSUD Hajjah Andi Depu. With a significance level of $p = 0.006$ ($p < 0.05$), it can be concluded that this intervention is effective and may serve as a viable non-pharmacological strategy in pediatric nursing care.

Ethical Considerations

This study was conducted in accordance with ethical standards for research involving human subjects. Prior to data collection, ethical clearance and a formal research permit were obtained from STIKES Bina Generasi Polewali Mandar. Further approval was secured from RSUD Hajjah Andi Depu, where the study was implemented. Participants were selected based on inclusion and exclusion criteria, and informed consent was obtained from the children's parents or guardians after explaining the research objectives and procedures. Participation was voluntary, and all data were kept confidential and used solely for academic purposes.

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