Efficacy of Cartoon Therapy in Reducing Pain Perception Among Children During Intravenous Injections: A Quasi-Experimental Study

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Abstract- Background: Intravenous (IV) injections are frequently distressing for pediatric patients. Play therapy, a non-pharmacological distraction method, has shown promise in mitigating procedural pain. Objective: To evaluate the efficacy of Play (Cartoon) therapy in reducing pain perception among children undergoing IV injections. Methods: A quasi-experimental time-series study with a withdrawal and reinstitution design was conducted among 30 children aged 4–7 years admitted to a pediatric ward. Participants were assessed using the Wong-Baker FACES Pain Rating Scale at three time points: initiation, five minutes after initiation, and termination of IV injection over two consecutive days. On Day 1, one group received play therapy while the other served as control; the groups were reversed on Day 2. Data were analysed using descriptive and inferential statistics. Results: Children exposed to play (Cartoon) therapy reported significantly lower pain scores than those in the control group. On Day 1, mean scores for the play therapy group were 4.20 ± 1.92 (initiation), 3.07 ± 1.46 (5 minutes), and 1.53 ± 1.46 (termination), compared to 9.20 ± 1.24, 9.07 ± 1.43, and 7.67 ± 1.49, respectively, in the control group. Similar reductions were observed on Day 2. Differences were statistically significant ($p < 0.05$). Conclusion: Play therapy is an effective, safe, and low-cost intervention that significantly reduces pain perception in children undergoing IV procedures. It should be integrated into routine pediatric care. **Keywords: Cartoon, play therapy, Children, Pediatric, hospital, Intravenous, Injections, Efficacy, Pain Perception, Distress Quasi Experimental Study.**

INTRODUCTION

Pediatric children frequently experience anxiety and discomfort due to pain from medical treatments, especially intravenous (IV) injections. Ineffective pain management can lead to long-term psychological consequences and a dread of seeking medical attention.[1] It is commonly known that non-pharmacological techniques, such as distraction, can reduce medical procedure associated discomfort in children. Play therapy has proven to be successful in diverting attention from pain stimuli, particularly when it involves audiovisual diversional activities like cartoons [2, 3].

This study aims to evaluate the efficacy of play therapy in reducing perceived pain during IV injections in children and to compare pain scores between those exposed and unexposed to the intervention.

OBJECTIVES

1. To assess and compare pain perception in children with and without Play therapy (Cartoon therapy).
2. to evaluate the efficacy of Play therapy in reducing pain perception in children undergoing IV injections.

MATERIALS AND METHODS

Research Approach: Quasi experimental approach.
Research Design: Time Series design.
Population: Children admitted in hospitals, undergoing Iv injection
Settings: The study was conducted in selected hospitals of Sikar district Rajasthan.
Sampling Technique: A Convenience sampling technique was used.
Sample size: 30 Children (4-7 yrs) Admitted in pediatric ward in a selected hospital and undergoing IV injections.
Tool A: Socio demographic and Clinical profile of children
Tool B: Wong Bakers FACES, pain rating scale, a standardized tool used to measure pain.

Inclusion Criteria

- Children Aged between 4 and 7 years
- Both male and female patients
- No known allergies to medications

- Those who are willing to participate (Informed parental consent)

Method of Data Collection: Intervention Protocol
On Day 1, participants were randomly assigned to: Experimental group: Received play therapy in the form of age-appropriate cartoons. Control group: Received standard care without distraction.
On Day 2, group roles were reversed to account for individual pain sensitivity.

Pain Measurement
Pain was assessed using the Wong-Baker FACES Pain Rating Scale at three-time intervals:
1. Initiation of IV injection
2. Five minutes after initiation
3. Termination of IV injection
Section II: Pain Score Comparison

RESULTS

Section I: Demographic and Clinical Characteristics

- Gender: 56.67% were male
- Age: 76.67% were 4–7 years
- Past illness: Majority, 66.67% had a history of past illness.
- Previous hospitalizations: 43.33% had history of previous hospitalizations
- IV cannulation ≤48 hrs: 76.67%
- Vein used: Metacarpal (46.67%)
- Cannula size: 24G in 76.67%
- Drug administered: Ceftriaxone in 46.7%
- Injection duration ≤10 min: 53.33%
- Parental presence (mother): 43.33%

Table 01. Mean and SD of Pain score in both Experimental and Control Group at Initiation, After 05 minutes and on Termination of IV therapy (Day 01 & 02).

(N=30)

Day	Group	At Initiation	After 5 Min	On Termination
01	Experimental Gp. With Cartoon (Play Therapy)	4.20 ± 1.92	3.07 ± 1.46	1.53 ± 1.46
	Control Gp. Without Cartoon Therapy	9.20 ± 1.24	9.07 ± 1.43	7.67 ± 1.49
02	Experimental Gp. With Cartoon Therapy	3.60 ± 1.61	2.13 ± 1.38	0.87 ± 1.25
	Control Gp. Without Cartoon Therapy	8.93 ± 1.36	8.53 ± 1.17	7.27 ± 1.44

Table 01, the descriptive statistics clearly reveals that the mean pain score among children without Cartoon therapy (Play therapy) [at initiation (Day 01: 9.20 ± 1.24 & Day 02, 8.93 ± 1.36), after 5 minutes (Day 01: 9.07 ± 1.43, Day 02: 8.53 ± 1.17) and on termination of intravenous injection (Day 01: 7.67 ± 1.49, Day 02: 7.27 ± 1.44)] are remarkably higher than the mean pain score among children receiving cartoon therapy.[at initiation (Day 01: 4.20 ± 1.92, Day 02: 3.60 ± 1.61), after 5 minutes (Day 01: 3.07 ± 1.46, 2.13 ± 1.38) and on termination of intravenous injection (Day 01: 1.53 ± 1.46, Day 02: 0.87 ± 1.25)] respectively. The descriptives also reveals the marked difference in mean pain scores among experimental and control groups.

Table 02: Inferential test statistics representing the independent t test table for both Experimental and Control groups

(N =30)

Days	IV Injection Administration	Experimental group Mean	Control Group Mean	Mean Difference	df	t value	P value
Day 01	At Initiation	4.20	9.20	5.00	29	11.45*	P<0.05
	After 05 Min	3.07	9.07	6.00		16.15*	
	On Termination	1.53	7.67	6.13		15.10*	
Day 02	At Initiation	3.60	8.93	5.33	29	13.76*	P<0.05
	After 05 Min	2.13	8.53	6.40		20.69*	
	On Termination	0.87	7.27	6.40		19.95*	

*Significant at p<0.05 level.

Table 02, represents that the Inferential Statistical analysis using independent sample t-tests, indicate significant differences at all intervals on both days (Day 01: t (29) = 11.45, 16.15 & 15.10; Day 2: t (29) = 13.76, 20.69 & 19.95; $p < 0.05$) respectively.

DISCUSSION

This study supports existing evidence that distraction techniques such as play therapy can significantly reduce procedural pain in children. These findings align with studies by Bellieni et al; who demonstrated the analgesic effect of passive distractions [4,5], and Vessey et al; who emphasized the role of cognitive-behavioural strategies in pediatric pain management.[2,6] The statistically significant reduction in pain scores suggests that play therapy diverts children's attention from painful stimuli, thereby modulating their perception of pain. Given its simplicity and cost-effectiveness, play therapy holds strong potential for integration into routine clinical practice.

CONCLUSION

Play therapy is a practical, non-pharmacological intervention that significantly alleviates procedural pain in children undergoing IV injections. Its incorporation into pediatric nursing protocols can enhance patient comfort, reduce anxiety, and improve procedural compliance.

REFERENCE

[1] Eland JM. Pain in children. Nurs Clin North Am. 1990;33(4):33.
[2] Vessey JA, Carlson KL, McGill J. Use of distraction with children during an acute pain experience. J Pediatr Nurs. 1994;9(6):369–373.
[3] Piira T, Hayes B, Goodenough B. Distraction methods in the management of children's pain. The Suffering Child. 2002;1(1).
[4] Bellieni CV, Cordelli DM, Raffaelli M, Ricci B, Morgese G, Buonocore G. Analgesic effect of watching TV during venepuncture. Arch Dis Child. 2006;91(12):1015–1017.
[5] Agency for Health Care Policy and Research (AHCPR). Acute pain management in infants, children, and adolescents: Operative and medical procedures. Rockville, MD: U.S. Department of Health and Human Services; 1992. AHCPR Pub No. 92-0032.
[6] Vessey JA, Carlson KL, McGill J. Psychological intervention and procedural pain in children. J Pediatr Nurs. 1994;9(6):369–373.