

Research Article

# Effectiveness of Distraction Therapy on Pain Relief among Children Undergoing Vein-Puncture in a Selected Hospital, Bhubaneswar

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## I N F O

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## A B S T R A C T

**Aim:** The present study is aimed to assess the effect of distraction therapy during venipuncture in reducing pain among 6-12 years children in the selected hospital at Bhubaneswar.

**Methods:** The study was a double blind; Randomized control trial design was used and the formal consent was obtained from Pradyumna Bal Memorial Hospital and the investigator selected 182 samples using consecutive sampling technique and then randomized into experimental and control groups. The intervention group and the control were having 91 samples each. Measurement of pain experienced by the school going children was assessed with the help of Wong-Baker Faces Pain Scale. Descriptive and inferential statistics were used to analyze the data.

**Result:** The mean pain score of children in experimental group was 2.571 and the standard deviation was 2.006. The p value in comparing the pain level of children in control and experimental group was <0.01, which was statistically significant at p<0.05 (confidence interval 95%) level indicating that there was significant difference in the post test level of pain between the experimental and control group.

**Conclusion:** Hence the distraction therapy was responsive in reducing the vein-puncture pain among school going children.

**Keywords:** Distraction Therapy, Pain, Vein-Puncture, Bhubaneswar

## Introduction

Pain continues to be the most complex and challenging sensory emotions in the life of children. It is defined as a universal unpleasant, subjective, sensory and emotional

human experience. Because of its strong sensation; it activates the sympathetic nervous system to alter the quality of life in children such as sleep, mobility, nutrition, thought, emotional wellbeing, and creativity.<sup>1</sup>

Needle puncturing is painful to all children but how they response to that depends on their developmental ages and their previous experiences. During venipuncture the nurse can provide various diversionary activities before, during and after procedure.<sup>2</sup>

Children should not be exposed to painful procedures. Despite the prevalence of pain stemming from medical procedures and the distress associated with this, research indicates that pain management continues to be suboptimal. Therefore, reducing the emotional and physical short-and long-term negative effects of painful procedures in children through adequate management is an important part of nursing practice.<sup>3</sup>

### Need of the Study

Pediatric nursing is the specialized care of nursing practice concerning the care of children during wellness and illness. Pain is an unpleasant sensory and emotional experience associated with actual and potential damage.<sup>3</sup>

To the response of pain perception in children with acute and chronic disease is a major public health problem that has been increasing over the last 20 years. Elimination or relief of pain and suffering, whenever possible is as important responsibility of nurse caring for children, because unmanaged pain can result in a variety of negative long-term consequences. Vein-puncture is also a source of pain in hospitalized children. Vein-puncture was found to be the second most common cause of the worst pain experience during hospitalization. Before and during this procedure most children are fearful and suffer from pain and pain.<sup>4</sup>

### Problem Statement

Effectiveness of distraction therapy on pain relief among children undergoing vein-puncture, in a selected hospital, Bhubaneswar.

### Hypothesis

There is significant reduction of pain during vein puncture after using the distraction therapy.

### Objective of Study

The overall study objective is:

- To evaluate the effectiveness of distraction therapy on pain relief among children during vein puncture.
- To find out the risk factors affecting the pain level.

### Literature Review

A randomized control trial on distraction using the BUZZY for 4 to 12 years children during an IV insertion. They are divided into experimental and control group and each group was having 25 children. Then BUZZY was used in the experimental group. Wong-Baker FACES Pain Rating

Scale was used to rate the pain. BUZZY group was having less pain rating.<sup>5</sup>

A quasi-experimental study was done to compare between the effect of analgesic method among 7 years children. One group was held by family members and other group was held by family members as well as distraction therapy was used in second group. FLACC pain scale was used to assess the pain in both groups. Findings revealed that the mean pain score of group 1 was 3.86 and that of group 2 was 2.43, while comparing both group pain scores 7.199 with p-value 0.000 was highly effective in group with distraction therapy.<sup>6</sup>

A control trial was conducted to assess the pain in 1 to 16year children during vein puncture procedure. A sweet tasting solution or substance was used as an interventional method. 330 samples were randomly divided in control and experimental group. In control group pacifiers and water substances were used. In Toddler group cry was very less so intervention was effective.<sup>7</sup>

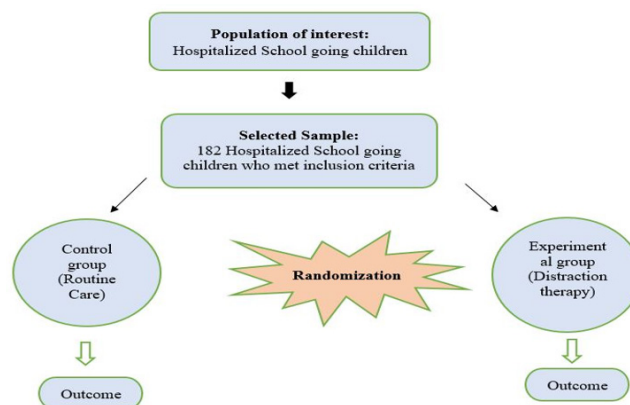


Figure 1. Schematic diagram of research design

### Methodology

Randomized controlled trial design was used in this study. The study was conducted on children pediatric ward at Pradyumna Bal Memorial Hospital, KIMS. The samples selected for the present study were school going children of Pradyumna Bal Memorial Hospital, KIMS. In this study sample consists of 182 school going children who met the inclusion criteria.

The sample was selected for this study by adopting Consecutive Sampling (taking every patient who meets the selection criteria over the specified time period) and then randomized into experimental and control groups.

By taking into consideration the SD of WBFPS in distraction group and control group as 2.68 & 4.12 respectively with mean difference of 1.44 at 5% level of significance and 80% of minimum study power the sample size is 91 in each of the distraction and control group, the total sample size is 182

**Inclusion Criteria**

- Children aged between 6-12 years.
- Children undergone vein puncture (IV cannulation, Blood collection).
- Children who are or whose parents are willing to participate.

**Exclusion Criteria**

- Children under gone any other procedure such as central line, arterial line etc.
- Syndromic babies, neurodevelopmental disorder.
- Visual and hearing impairment, verbal difficulty.
- Patient who used analgesics within 6 hours.

**Result****Description of Tool****Socio-Demographic Data**

Socio-Demographic data of the subjects consists of the following items: age, gender, birth order of the child, residence, type of family, religion, occupation of the father, educational qualification of the father, occupation of the mother, educational qualification of the mother, previous hospitalization within one year.

**Data Collection Procedure**

This was a prospective study that was conducted in the

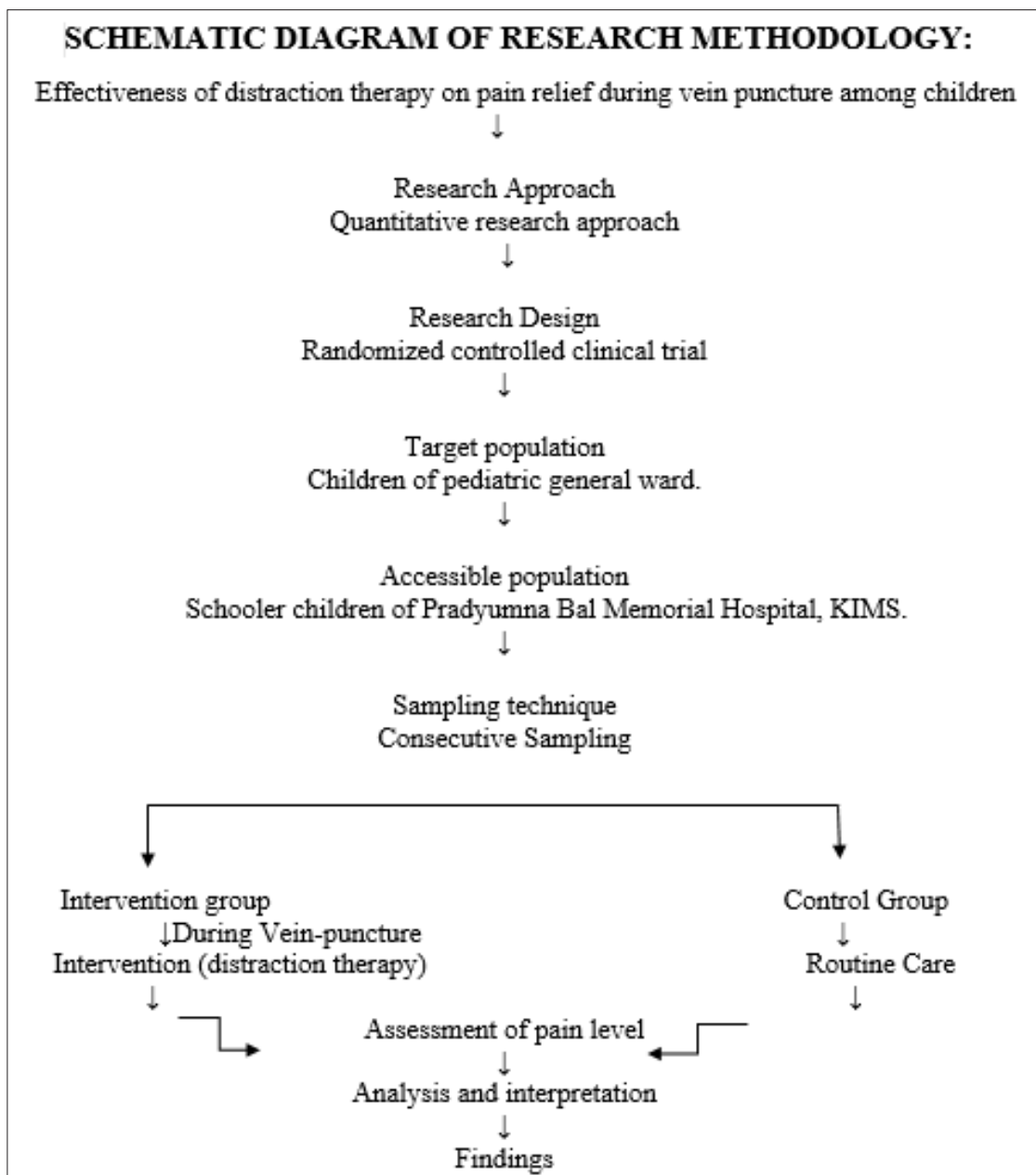


Figure 2. Schematic Diagram of Research Study

phlebotomy room of KIMS hospital, in which the effect of distraction therapy (music + distraction card) was seen on pain relief among school going children. The children were randomized into two groups: experimental group (91) and control group (91) using a random table. First the socio demographic history of the child was collected. During the phlebotomy process one music (Hindi cartoon audio songs, ex-chhotabheem, Doremon) and then distraction card was shown to the child and questions were asked regarding the cards. The phlebotomy was performed using a 5 ml syringe and 22 G, 24 G needle. Pain level of children in the experimental group were assessed by Wong Bekar Faces Pain Scale. In control group only, the routine hospital care was given during vein puncture.



Figure 3. Distraction Card used in the study

**Data Analysis**

Statistical analysis was performed using STATA 1.5 software. Two sample ‘t’ test and ANOVA were done to test the association of variables and to measure the effect of distraction therapy.

**Pattern of Socio-Demographic Characteristics between Experimental and Control Group**

Table 1. Mean score of age in control and experimental group [N= 182 (n1 =91, n2=91)]

Group	Mean±Standard deviation	p-value
Age in control group	8.802±0.557	0.995
Age in experimental group	9.16±0.556	

(p = 0.05)

Table 1, shows that mean score of age in control group was 8.802 and in experimental group was 9.16 which was not statistically significant.

Table 2. Frequency and percentage distribution of gender in control & experimental group [N= 182 (n1 =91, n2=91)]

Characteristics	Control group		Experimental group		p-value
	Frequency	%	Frequency	%	
Gender					
Female	43	48.86	45	51.14	0.882
Male	48	47.25	46	48.94	

(p=0.05)

Table 2, shows that in female 43 (48.86%) were in control group and 45 (51.14%) were in experimental group. In male 48 (47.25%) were in control group and 46 (48.94%) were in experimental group. The p value is not statistically significant.

Table 3. Frequency and percentage distribution of duration of hospital stay in control & experimental group [N = 182 (n1 = 91, n2 = 91)]

Characteristics	Control group		Experimental group		p-value
	Frequency	%	Frequency	%	
Duration of hospital stay					
<3 days	43	52.44	39	47.56	0.868
3-7 days	33	48.53	35	51.47	
>7 days	15	46.88	17	53.13	

(p=0.05)

Table 4. Frequency and percentage distribution of previous hospitalization in control & experimental group [N = 182 (n1 = 91, n2 = 91)]

Characteristics	Control group		Experimental group		p-value
	Frequency	%	Frequency	%	
Previous hospitalization					
None	38	45.24	46	54.76	0.758
1 time	35	54.69	29	45.31	
2 times	13	50.00	13	50.00	
3 times	4	66.67	2	33.33	
>3 times	1	50.00	1	50.00	

(p = 0.05)

Table 3, shows that in < 3 days of hospital stay 43 (52.44%) were in control group and 39 (47.56%) were in experimental

group. In 3 - 7 days of hospital stay 33 (48.53%) were in control and 35 (51.47%) were in experimental group. In >7 days of hospital stay 15 (46.88%) were in control group and 17 (53.13%) were in experimental group. The p value is not statistically significant.

Table 4, shows that in no previous hospitalization 38 (45.24%) were in control group and 46 (54.76%) were in experimental group. In 1 time, 2 times, 3 times, >3 times 35 (54.69%), 13 (50%), 4 (66.67%), 1 (50%) were in control group respectively. In 1 time, 2 times, 3 times, >3 times 29 (45.31%), 13 (50%), 2 (33.34%), 1 (50%) were in experimental group respectively. The p value is not statistically significant.

**Table 5. Frequency and percentage distribution of mother's education level in control & experimental group [N = 182 (n1 = 91, n2 = 91)]**

Charac- teristics	Control group		Experimental group		p- value
	Freq- uency	%	Freq- uency	%	
<b>Mother's education</b>					1.000
Primary	27	50.94	26	49.06	
Secondary	34	49.28	35	50.72	
Higher secondary	24	50.00	24	50.00	
Graduate & above	6	50.00	6	50.00	

(p = 0.05)

Table 5, shows that in primary education 27 (50.94%) mothers were in control group and 26 (49.06%) were in experimental group. In secondary education, higher secondary education, graduate and above 34 (49.28%), 24 (50%), 6 (50%) were in control group respectively. In secondary education, higher secondary education, graduate and above 35 (50.72%), 24 (50%), 6 (50%) were in experimental group respectively. The p value is not statistically significant.

**Table 6. Frequency and percentage distribution of place of residence in control & experimental group [N = 182 (n1 = 91, n2 = 91)]**

Charac- teristics	Control group		Experimental group		p-value
	Freq- uency	%	Freq- uency	%	
<b>Residence</b>					0.767
Rural	44	48.35	47	51.65	
Urban	47	51.65	44	48.35	

(p = 0.05)

**Table 7. Frequency and percentage distribution of health care professional in family in control & experimental group [N = 182 (n1 = 91, n2 = 91)]**

Charac- teristics	Control group		Experimental group		p- value
	Freq- uency	%	Freq- uency	%	
Healthcare professional in parents					1.000
Yes	1	33.33	2	66.67	
No	90	50.28	89	49.72	

(p = 0.05)

Table 6, shows that in rural resident 44 (48.35%) were in control group and 47 (51.65%) were in experimental group. In urban resident 47 (51.65%) were in control group and 44 (48.35%) were in experimental group. The p value is not statistically significant.

Table 7, shows that in control group and experimental group majority of the children 90 (50.28%) and 89 (49.72%) respectively were not having health care professionals in parents.

#### Difference of Pain Level during Vein Puncture between Control & Experimental Group

**Table 8. Difference of pain level during vein puncture between control & experimental group (independent t test) [N = 182 (n1 = 91, n2 = 91)]**

SCORE (During vein puncture)	Control group (Mean±SD)	Experimental group (Mean±SD)	p-value
Pain Score	6.374±2.365	2.571±2.006	0.000

(p = 0.05)

Table 8, shows pain level in control group and experimental group are 6.374 and 2.571 respectively which is statistically significant. The p value in comparing the pain level of children in control and experimental group was 0.000, which was statistically significant at p<0.05 level indicating that there was significant difference in the post test level of pain between the experimental and control group

#### Association of Pain Score with Demographic Variables

The duration of hospital stay of the children in experimental group was associated with the level of pain. It was seen that longer the duration of hospital stays greater the adaptation to pain in vein-puncture procedure among children. The

calculated p-value was 0.012 which is less than the level of significance  $p < 0.05$ . This is statistically significant.

The number of previous hospitalizations was also associated with the level of pain among children in the experimental group. The calculated p value was 0.017 which is less than the level of significance  $p < 0.05$ . This is statistically significant which means children with previous hospitalization (>3 times) feeling more pain as compared to first admission.

The other variables were not associated with the pain level of children.

## Discussion

The first objective was to assess the effectiveness of distraction therapy in reducing pain during vein-puncture by comparing the pain scores among both groups.

Control group which consists of 91 children, undergone vein-puncture by routine hospital procedure. During vein-puncture procedure the pain level of the children was assessed by Wong Bekar Facial Pain Scale. The score range of children in control group was 2-10. The mean pain score of children undergoing vein-puncture in control group was 6.374 and the standard deviation was 2.365.

Experimental group which is consists of 91 children, received distraction therapy (music+ distraction card) during vein puncture. Then their pain level was assessed by using Wong Bekar Facial Pain Scale. The score range of children in control group was 0-8. The mean pain score of children in experimental group was 2.571 and the standard deviation was 2.006.

The p value in comparing the pain level of children in control and experimental group was  $< 0.01$ , which was statistically significant at  $p < 0.05$  level indicating that there was significant difference in the post test level of pain between the experimental and control group.

In a similar study the mean pain score of group 1 was 3.86 and that of group 2 was 2.43. The comparison of mean pain score of both groups was checked statistically by computing independent t-test and the value of t comes out to be 7.199 with p-value 0.000 which was found to be highly significant.<sup>8</sup>

Another similar study revealed that the calculated unpaired 't' value (3.81) is greater than tabulated value (2.04) during venipuncture and the calculated unpaired 't' value (5.06) is greater than tabulated value (2.04) after venipuncture. This indicates that there is statistically significant difference between the mean post assessment pain score value of experimental and the control groups ( $p < 0.05$ ).<sup>9</sup>

Results of another study was mean pain score in experimental group was lower (4.6) than that of the control group (7.7) with the mean difference of 3.1 which was significant as

evident from "t" value of (10) at 0.05 level of significance.<sup>10</sup>

In another similar study the mean pain score was significantly less with animated cartoon ( $2.26 \pm 2.18$ ) as compared to routine care ( $4.76 \pm 2.08$ ) at pre-venipuncture. Similarly, the mean pain score during venipuncture was significantly less with animated cartoon ( $6.24 \pm 2.09$ ) as compared to routine care ( $8.06 \pm 1.70$ ). During post-venipuncture also the mean pain score was significantly less with animated cartoon ( $2.94 \pm 1.71$ ) as compared to routine care ( $5.94 \pm 1.61$ ). The results revealed that there was significantly ( $p < 0.001$ ) less pain related behavioral responses with the use of animated cartoons as a distraction strategy at pre-, during and post-venipuncture.<sup>11</sup>

## Conclusion

The p value in comparing the pain level of children in control and experimental group was 0.000, which was statistically significant at  $p < 0.05$  level indicating that there was significant difference in the post test level of pain between the experimental and control group.

**Conflict of Interest:** None

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