



RESEARCH ARTICLE

EFFECT OF SELECTED DISTRACTION TECHNIQUE ON PAIN DURING  
VENIPUNCTURE AMONG TODDLERS

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ABSTRACT

**Background and Purpose:** The purpose of the present study is to assess the effectiveness of selected distraction technique on pain during venipuncture among toddlers – a Randomized controlled trial in Paediatric ward and Paediatric Outpatient Department, JIPMER, Puducherry.

**Material and Methods:** A Randomized controlled trial was adapted for this study. The study setting was Paediatric ward and Paediatric Outpatient Department, Women and Children Hospital, JIPMER, Puducherry. 126 samples (63 in each group) who satisfied the inclusion criteria were selected using simple random sampling technique by means of computer generated random numbers sealed in opaque envelopes. After obtaining formal permission from the institution and written informed consent from the mothers, toddlers were allocated to control and interventional group by block randomization technique. Interventional group toddlers were made to lie on the bed and showed selected distracting technique (sound and colorful light producing toy) two minutes before the venipuncture, during venipuncture and continued two minutes after completion of venipuncture, and pain score was assessed using FLACC scale. The child in the control group underwent venipuncture procedure in a routine manner and the pain score was assessed using FLACC scale.

**Results:** The study results showed that there was a significant reduction in the mean pain score of toddlers who received selected distraction technique. There is no significant association between the pain score and socio-demographic variables of the toddlers like age, gender and weight.

**Conclusion:** Distraction is an effective method of managing pain in children during venipuncture. Colorful and sound producing toy is an effective distractor in reducing pain in children during venipuncture. This technique emphasizes the concepts and importance of providing atraumatic care to children. Providing the child with colorful and sound producing toy is low cost intervention that can be effectively used in children.

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INTRODUCTION

Children are precious not only to their family members but also to the community, nation and to the world. Children are the assets of our country. Many children with long term serious health problems require frequent or prolonged hospitalizations that separate them from their home environment. Illness and hospitalization are a major source of stress to both child and parents. Varied factors influence child's reaction to hospitalization which includes family's previous medical experience, the developmental level, child's interaction with the caregiver, the severity of the illness, the complexity of the medical procedure. Pain associated with venipuncture is a source of great anxiety and distress for many children. Pain of the child is often ignored.

The pain control strategies has not been fulfilled because of the following reasons like myths regarding pain and management of pain, anxiety by the parents and the health personnel and reduced tools in the assessment of pain. Nurses are in a unique position to improve the management of children pain because children and parents will often tell them things they do not tell physicians and they are often the professionals who have the most contact with an ill child in and out of the hospital. Nursing intervention can alleviate some of the fear and pain caused by painful procedures.

MATERIALS AND METHODS

A Randomized Controlled Trial (RCT) was undertaken to assess the effectiveness of selected distraction technique on pain during venipuncture among toddlers in Paediatric ward and OPD of a tertiary care center.

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### Inclusion criteria

- Included all children between 1-3years admitted in the pediatric ward or attending the pediatric outpatient department.
- Who were conscious and mentally alert

### Exclusion criteria

All children who were:

- Critically ill
- Punctured twice to get the access to vein
- On analgesics or opioids.

**Sample size:** The sample size for this study was 126 toddlers (63 in each group) which was estimated with 5% level of significance and 90% power.

**Sampling:** Simple random sampling technique was used.

**Instruments:** The data collection proforma includes socio-demographic data of the subjects, and Face Leg Activity Cry and Consol ability (FLACC) pain scale.

**Intervention:** Children are assigned to two group randomly. In the experimental group; Toddlers were made to lie on the bed and showed toy which produces sound and colorful light for two minutes before the venipuncture, during venipuncture and continued two minutes after the completion of the venipuncture, and the pain score was assessed during venipuncture using FLACC scale.

**Data collection procedure:** The study was approved by the Nursing Research Monitoring Committee, JIPMER and Institute Ethics Committee (Human studies). The investigator introduced herself to the mothers of children. The purpose of the study was explained to them. It was assured to them that all data will be strictly confidential and will be used only for the study purpose and consent was taken from them. Information like age, gender and weight of the child were collected from the case sheet and mother. Toddlers were assigned to experimental group and control group randomly. The venipuncture was performed by a person not involved in the study. In the experimental group toddlers were made to lie on the bed and showed toy which produces sound and colorful light for two minutes before the venipuncture, during venipuncture and continued two minutes after the completion of the venipuncture. The pain score was assessed during the venipuncture using FLACC scale. In the control group toddlers underwent venipuncture with routine care and the pain score was assessed during the venipuncture using FLACC scale.

**Ethical considerations:** Permission was obtained from the institute (JIPMER) ethical committee, human studies. Consent was obtained from parents of toddlers. Assurance was given to the parents regarding the confidentiality and anonymity of study subjects.

**Data Analysis:** Descriptive statistics (frequency, mean and standard deviation) and inferential statistics (Independent 't' test, and Pearson Chi-square) were used in the study. The association of demographic variables and clinical variables between the groups was carried out with chi-square. The pain score was expressed as mean with standard deviation and the

comparison of pain score between the groups was carried out using Independent student 't' test. All the statistical analysis was carried out at 5% level of significance.

## RESULTS

- Among 63 toddlers in experimental group, during venipuncture, 7(11.1%) were relaxed and comfort, 26(41.3%) had mild pain, 22(34.9%) had moderate pain and only 8(12.7%) had severe pain.
- Among 63 toddlers in control group, during venipuncture, 4(6.3%) were relaxed and comfort, 7(11.1%) had mild pain, 12(19.0%) had moderate pain and only 40(63.5%) had severe pain.
- The study results showed that there was a significant reduction in the mean pain score of toddlers who received selected distraction technique.
- There is no significant association between the pain score and socio-demographic variables of the toddlers like age, gender and weight.

**Table 1. Distribution of study participants in relation to demographic and clinical characteristics in the experimental and control groups**

| Sample characteristics | Experimental group (n=63) |                | Control group (n=63) |                |
|------------------------|---------------------------|----------------|----------------------|----------------|
|                        | Frequency (no)            | Percentage (%) | Frequency (no)       | Percentage (%) |
| <b>Age</b>             |                           |                |                      |                |
| 1 to 2                 | 35                        | 55.56          | 29                   | 46.03          |
| 2 to 3                 | 28                        | 44.44          | 34                   | 53.97          |
| <b>Gender</b>          |                           |                |                      |                |
| Male                   | 44                        | 69.84          | 34                   | 53.97          |
| Female                 | 19                        | 30.16          | 29                   | 46.03          |
| <b>Weight</b>          |                           |                |                      |                |
| <9                     | 21                        | 33.34          | 18                   | 28.57          |
| >9                     | 42                        | 66.66          | 45                   | 71.43          |

**Table 2. The level of pain among toddlers during venipuncture in control group**

| Categories    | Control Group |            | Mean | Standard Deviation |
|---------------|---------------|------------|------|--------------------|
|               | Frequency     | Percentage |      |                    |
| No Pain       | 04            | 6.3%       | 6.98 | 3.1                |
| Mild Pain     | 07            | 11.1%      |      |                    |
| Moderate Pain | 12            | 19.0%      |      |                    |
| Severe Pain   | 40            | 63.5%      |      |                    |

**Table 3. The level of pain among toddlers during venipuncture in experimental group**

| Categories    | Experimental Group |            | Mean | Standard Deviation |
|---------------|--------------------|------------|------|--------------------|
|               | Frequency          | Percentage |      |                    |
| No Pain       | 07                 | 11.1%      | 3.67 | 2.5                |
| Mild Pain     | 26                 | 41.3%      |      |                    |
| Moderate Pain | 22                 | 34.9%      |      |                    |
| Severe Pain   | 08                 | 12.7%      |      |                    |

**Table 4. Comparison of mean and standard deviation of pain score during venipuncture in control group and experimental group among study participants**

| Experimental group (n=63) |     | Control group (n=63) |     | 't' Value | 'p' Value |
|---------------------------|-----|----------------------|-----|-----------|-----------|
| Mean                      | SD  | Mean                 | SD  |           |           |
| 3.67                      | 2.5 | 6.98                 | 3.1 | t= -5.675 | .001**    |

(p<0.01)

Table 5. Association of pain level with demographic characteristics of control group

(N= 63)

| Variables | Level of pain  |                |                |                |                |                |                |                | Statistical significance (p) |
|-----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------------------|
|           | No pain        |                | Mild pain      |                | Moderate pain  |                | Severe pain    |                |                              |
|           | Frequency (no) | Percentage (%) | Frequency (no) | Percentage (%) | Frequency (no) | Percentage (%) | Frequency (no) | Percentage (%) |                              |
| Age       |                |                |                |                |                |                |                |                |                              |
| 1-2 years | 2              | 6.9            | 2              | 6.9            | 6              | 20.7           | 19             | 65.5           | 0.802                        |
| 2-3 years | 2              | 5.9            | 5              | 14.7           | 6              | 17.6           | 21             | 61.8           |                              |
| Gender    |                |                |                |                |                |                |                |                |                              |
| Male      | 3              | 8.8            | 4              | 11.8           | 9              | 26.5           | 18             | 52.9           | 0.243                        |
| Female    | 1              | 3.4            | 3              | 10.3           | 3              | 10.3           | 22             | 75.9           |                              |
| Weight    |                |                |                |                |                |                |                |                |                              |
| <9KG      | 1              | 5.6            | 0              | 0.0            | 5              | 27.8           | 12             | 66.7           | 0.275                        |
| >9KG      | 3              | 6.7            | 7              | 15.6           | 7              | 15.6           | 28             | 62.2           |                              |

Table 6. Association of pain level with demographic characteristics of experimental group

(N= 63)

| Variables | Level of pain  |                |                |                |                |                |                |                | Statistical significance (p) |
|-----------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------------------|
|           | No pain        |                | Mild pain      |                | Moderate pain  |                | Severe pain    |                |                              |
|           | Frequency (no) | Percentage (%) | Frequency (no) | Percentage (%) | Frequency (no) | Percentage (%) | Frequency (no) | Percentage (%) |                              |
| Age       |                |                |                |                |                |                |                |                |                              |
| 1-2 years | 4              | 11.4           | 16             | 45.7           | 11             | 31.4           | 4              | 11.4           | 0.859                        |
| 2-3 years | 3              | 10.7           | 10             | 35.7           | 11             | 39.3           | 4              | 14.3           |                              |
| Gender    |                |                |                |                |                |                |                |                |                              |
| Male      | 5              | 11.4           | 20             | 45.5           | 14             | 31.8           | 5              | 11.4           | 0.745                        |
| Female    | 2              | 10.5           | 6              | 31.6           | 8              | 42.1           | 3              | 15.8           |                              |
| Weight    |                |                |                |                |                |                |                |                |                              |
| <9KG      | 2              | 9.5            | 10             | 47.6           | 8              | 38.1           | 1              | 4.8            | 0.566                        |
| >9KG      | 5              | 11.9           | 16             | 38.1           | 14             | 33.3           | 7              | 16.7           |                              |

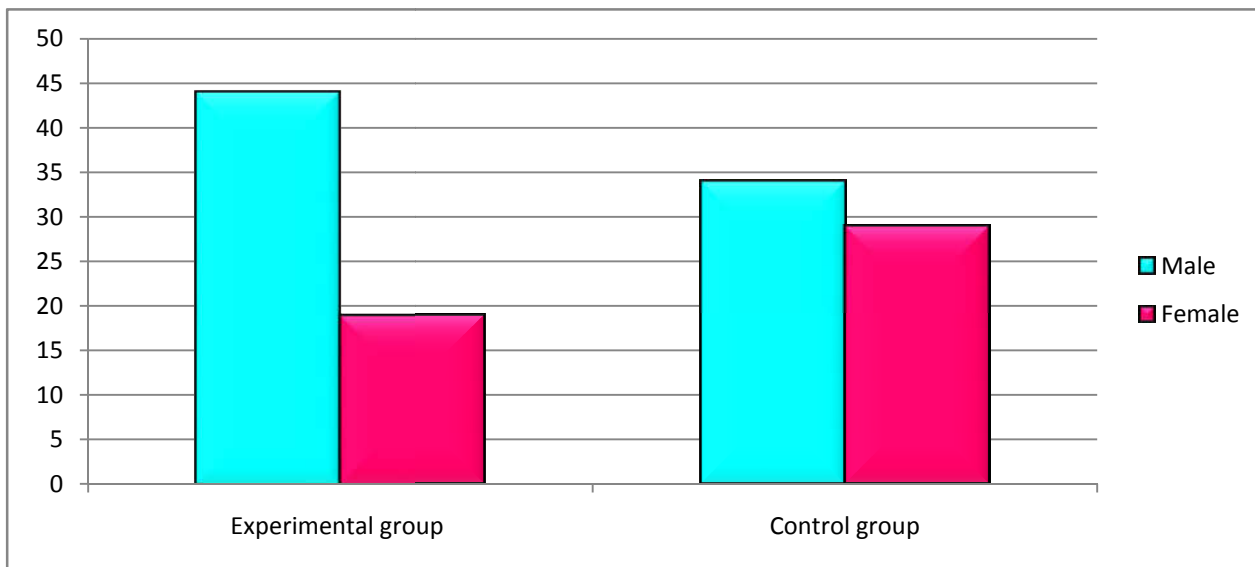


Figure 1: Gender distribution of study participants

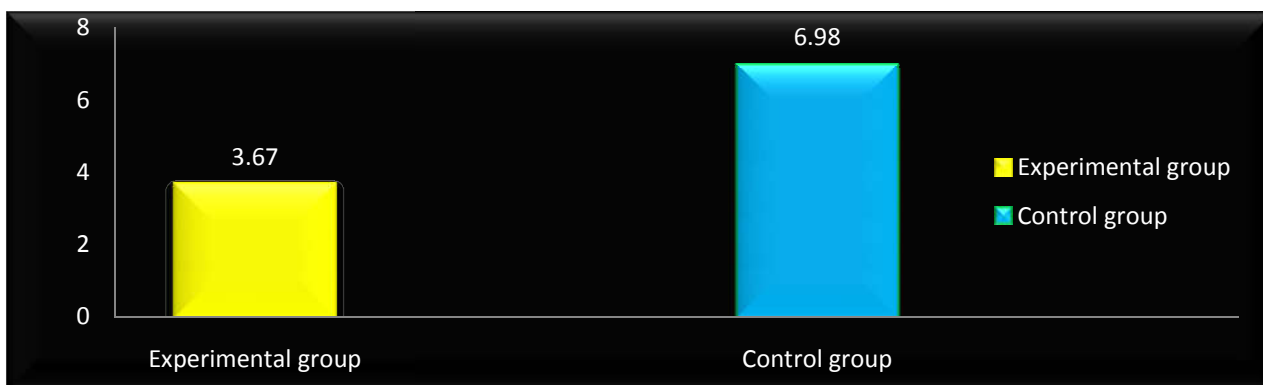


Figure 2. Mean pain score in experimental and control group

## DISCUSSION

The study results showed that there was a significant reduction in the mean pain score of toddlers who received selected distraction technique.

### The above findings were supported by the following studies

- Hembrecht *et al.* in 2013 conducted a qualitative study to assess pain related behaviors in children in a tertiary hospital in Europe. According to the study the most common pain related behaviors in children included increased muscle tension, verbal protest, and crying or screaming
- Kleiber *et al.* conducted a study to find out the effect of distraction and self-reported to pain during any kind of procedure in young children. The study concluded that there was a positive effect of distraction in distress behavior of children.

## Conclusion

Distraction is an effective method of managing pain in children during venipuncture. Colorful and sound producing toy is an effective distractor in reducing pain in children during venipuncture. This technique emphasizes the concept and importance of providing atraumatic care to children. Providing the child with colorful and sound producing toy is a low cost intervention that can be effectively used in paediatric ward and paediatric OPD.

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