

**Research Article****“A STUDY TO ASSESS THE EFFECTIVENESS OF THE BLOWING METHOD IN REDUCING PAIN INTENSITY DURING INJECTIONS AMONG CHILDREN ADMITTED IN SELECTED HOSPITALS AT KANPUR”****Akanksha**M.sc Nursing 2<sup>nd</sup> year, Faculty of Nursing, Rama University, Kanpur, Uttar Pradesh, India.**Prof. Dr. Minu S R**

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**ABSTRACT**

Children are highly sensitive to environmental changes and often experience fear and anxiety during hospitalization due to unfamiliar surroundings, medical procedures, separation from parents, and limited understanding of illness. In pediatric care, pain is influenced by both physiological and emotional factors. Non-pharmacological interventions such as the blowing method may help reduce pain during procedures like injections. The present study aimed to assess and compare pain intensity among children receiving injections in experimental and control groups, evaluate the effectiveness of the blowing method, and determine the association between pain intensity and selected demographic variables. A quasi-experimental non-equivalent control group design was used among 120 children aged 5–13 years selected through purposive sampling. Pain intensity was assessed using the Modified FLACC Scale. Children in the experimental group performed the blowing method during the injection, while the control group received routine care, and pain was assessed immediately after the procedure. Data were analysed using descriptive and inferential statistics. The majority of children in the experimental group (80%)

experienced mild to moderate pain, whereas 83.3% of children in the control group experienced moderate pain. The mean pain score was significantly lower in the experimental group ( $36.28 \pm 14.131$ ) than in the control group ( $68.14 \pm 6.182$ ), indicating the effectiveness of the intervention. No significant association was found between pain intensity and selected demographic variables. The study concluded that the blowing method is a simple, effective, and non-pharmacological technique for reducing pain intensity during injections among children.

**Keywords:** Effectiveness, Pain, Hospitalization, Children, Blowing Method.

**INTRODUCTION**

Children are unique individuals with distinct physical, emotional, cognitive and social characteristics that influence their response to pain and medical procedures. Their ability to understand and cope with painful experiences is limited and varies according to their developmental stage. Younger children often lack the vocabulary to express pain clearly and may respond through crying, irritability or withdrawal, whereas older children may verbalize their discomfort but still experience significant fear and anxiety.

Children are highly sensitive to environmental changes and can easily become distressed in unfamiliar settings such as hospitals. Their dependence on adults for comfort and reassurance makes them particularly vulnerable during medical procedures. Therefore, it is essential for healthcare professionals to adopt age-appropriate, empathetic and supportive approaches to minimize fear, enhance coping, and ensure a positive healthcare experience for children.<sup>1</sup>

Pediatric pain was been recently recognized as a main unresolved problem. Medical knowledge provides enough data to treat most of pediatric pain. Good practices for pain control are not easily to apply because of reluctance form care givers sick children are subjected to many painful experiences. In hospital settings, children experience pain because of different causes. Medical procedures, particularly needle insertions, are among the most feared experiences reported by children. These medical procedures also induce anxiety, Children's and their families' fear and distress exacerbate their pain and interfere with the procedures.<sup>2</sup>

The blowing technique is one of the nonpharmacological methods that can be applied. to lessen the intensity of pain, since both pharmaceutical and non-pharmacological methods can be used to manage pain. The evidence for non-pharmacologic pain relief during injections has been varied. Evaluating alternative methods of non-pharmacologic children pain control supports the identification of practical and accessible techniques that doctors and nurses can incorporate into their practice.<sup>3</sup>

The blowing method (e.g., bubbles,) is a highly effective, low-cost non-pharmacological distraction intervention that significantly reduces injection-related pain and anxiety in children by shifting focus away from the procedure. Studies show it lowers pain scores during needle procedures (venipuncture/immunization)

by encouraging deep Bubble-blowing therapy reduces pain during vaccination, improving both the experience and parental compliance. Techniques like blowing bubbles are particularly engaging for toddlers, who are distracted from the impending pain, resulting in less crying and body movement.<sup>4</sup>

Various studies have shown that the blowing bubble is an effective in reducing procedural pain. Therefore, the research incorporated these techniques to provide evidence-based guidance for pediatric nurses in pain management during invasive procedures. Children can easily engage with simple, distraction-based techniques during medical procedures. The bubble blowing methods were chosen for their practicality and ease of use. Both encourage active participation, bubble blowing through controlled breathing, which may help reduce pain perception and improve coping. The utilization of non pharmacological strategies in pain management can enhance the quality of pediatric care. In this study, the effects of bubble blowing, applied during injections, on the pain intensity experienced by children were examined.

The findings of this study may guide pediatric nurses in implementing practices that reduce pain in children during invasive interventions.<sup>5</sup>

#### **NEED FOR THE STUDY**

Injection is an invasive procedure frequently performed in healthy and ill children. Failure to adequately inform the child and family about the injection procedure and insufficient measures to divert the child's attention may lead to fear and pain. Pain management constitutes a key component of atraumatic care in children. Accordingly, it is crucial to implement interventions that alleviate pain during invasive procedures for children. Various approaches are available to reduce pain during injections and these interventions may differ according to the

developmental characteristics associated with the child's age.<sup>6</sup>

Globally, an estimated over 90 % of hospitalized children experience moderate to severe pain during routine procedures such as venipuncture, injections, or catheter insertions. A survey across public hospitals in Asia revealed that more than 70% of pediatric patients received little to no non-pharmacological support during painful procedures, and only 35% of parents were informed about simple coping strategies like distraction or deep breathing techniques. This highlights a major gap in both healthcare practice and parental involvement in pain management.<sup>7</sup>

Bubble blowing has been identified as a highly effective, low-cost distraction method compared to stress balls, yielding lower pain and anxiety scores in children aged 6–12. Bubble blowing is effective and highly useful non-pharmacological interventions and easy to perform. The method is particularly effective in young children (e.g., 3-6 years) for reducing pain and fear during procedures like venipuncture. Bubble blowing and similar methods should be implemented in pediatric care protocols as part of evidence-based nursing care to boost comfort and improve immunization experiences. These techniques require no preparation, are easy to use and cost little to implement in hospitals.<sup>8</sup>

Based on the investigator's clinical experience and literature review, bubble blowing appears to reduce injection pain in children. However, few studies in India have examined its effectiveness. Since injections are common and painful procedures for hospitalized children, the investigator was motivated to study bubble blowing as a simple, non-pharmacological method for reducing pain during injections.

#### **STATEMENT OF THE PROBLEM**

A study to assess the effectiveness of the blowing method in reducing pain intensity

during injections among children admitted in selected Hospitals at Kanpur, Uttar Pradesh.

#### **OBJECTIVES OF THE STUDY**

1. To assess the intensity of pain among children receiving injections in experimental group and control groups.
2. To assess the intensity of pain among children receiving injections with the use of blowing method in experimental group.
3. To compare the intensity of pain in experimental and control groups
4. To determine the association between the intensity of pain among children (both experimental and control group) with their selected demographic variables.

#### **HYPOTHESIS**

The significance level of 0.05 will be used to test hypotheses.

##### **Null hypothesis**

**H<sub>01</sub>:** There is no significant reduction in pain intensity during injections among children who use the blowing method compared to those who do not.

**H<sub>02</sub>:** There is no significant difference in the effectiveness of the blowing method in reducing pain intensity during injections among children.

**H<sub>03</sub>:** There is no significant association between the intensity of pain among children (both experimental and control groups) and their selected demographic variable

##### **Research hypothesis**

**H<sub>1</sub>:** There is a significant reduction in pain intensity during injections among children who use the blowing method in contrast to those who don't.

**H<sub>2</sub>:** There is a significant difference in the effectiveness of the blowing method in reducing pain intensity during injections among children.

**H3:** There is a significant association between the intensity of pain among children (both experimental and control groups) with their selected demographic variable.

## **METHODS AND MATERIALS:**

**Research approach:** A quantitative research approach was adopted.

**Research design:** A quasi-experimental post-test only non-equivalent control group design was adopted.

## **VARIABLES OF THE STUDY**

**Independent Variable:** Blowing method is independent variable.

**Dependent Variables:** Intensity of pain during injection is the dependent variable

**Socio-Demographic Variables:** Demographic variables such as age, gender, educational status of the father, mother, child, previous history of hospital admission, knowledge about methods to reduce pain during injection, cultural factors may influence the pain perception and response among children (aged 5–13 years).

## **POPULATION**

The study population comprised **hospitalized children aged 5–13 years.**

**Target Population:** All hospitalized children aged 5–13 years admitted to pediatric wards in hospitals of Kanpur, Uttar Pradesh.

**Accessible Population: children aged 5–13 years admitted to** U.H.M. Ursula Horsman Memorial Hospital, Kanpur, and Shyam Children and Maternity Centre, Kalyanpur, Kanpur, who met the inclusion criteria during the data collection period.

**Setting:** The study was conducted in selected hospitals of Kanpur, Uttar Pradesh.

**Sample size:** The sample in this study consisted of 120 children in experimental groups (n=60), control groups (n=60) aged 5-13 years receiving injections.

**Sampling technique:** the purposive sampling technique was used.

## **Inclusion criteria for sampling**

### **Hospitalized children who were**

- ❖ Aged 5 to 13 years.
- ❖ receiving injections as part of their treatment.
- ❖ conscious and cooperative.
- ❖ given a written consent via their parents

## **Exclusion criteria for sampling**

### **Hospitalized children who were**

- ❖ with developmental delays or communication impairments.
- ❖ receiving sedatives or analgesics prior to injection
- ❖ having fear of blowing method.

## **METHOD OF DATA COLLECTION**

### **DEVELOPMENT OF THE TOOL**

Development of the tool Based on the study's objectives, the Modified FLACC scale (Face, Legs, Activity, Cry, Consolability) and baseline proforma were used as data collection tools.

### **DESCRIPTION OF THE TOOL**

This tool conducts the two sections.

#### **Section A: demographic Proforma**

It carried out six items for obtaining information regarding age, gender, educational status of mother, educational status of father, educational status of child, previous experience of hospitalization and previous knowledge of any methods to reduce pain during injections.

#### **Section B: Modified FLACC scale** (Activity, Cry, Consolability, Face, Legs).

The six-item modified FLACC scale was created based on expert opinions and a review of the literature. The subjects' responses were divided into four categories: No to moderate pain (5-7),

sever pain (8-10), mild to moderate pain (3-4), and mild pain (0-2). zero was the lowest possible score and 10 was the highest. the following was the tool's score  
**RESULT AND FINDINGS:**

**Section A: Frequency and percentage distribution of children according to their demographic characteristics.**

The major findings of the study were as follows: -

1. **Age:** Most children were 11–13 years in the control group (51.6%) and 5–7 years in the experimental group (55%).
2. **Gender:** Males were the majority in both experimental (70%) and control (58.3%) groups.
3. **Mother's education:** Most mothers were graduates (51.7%) in both groups.
4. **Father's education:** Most fathers had secondary education (60% experimental; 66.7% control).

5. **Child's education:** Most children studied in 4th–6th standard (48.3%) in the experimental group and 1st–3rd standard (51.7%) in the control group.
6. **Previous hospitalization:** Most children had a previous hospitalization history (75% experimental; 61.7% control).
7. **Pain-relief knowledge:** Most parents lacked knowledge about methods to reduce injection pain (68.3% experimental; 65% control).

**Section B: Description of the intensity of pain during injections among children in experimental group and control groups.**

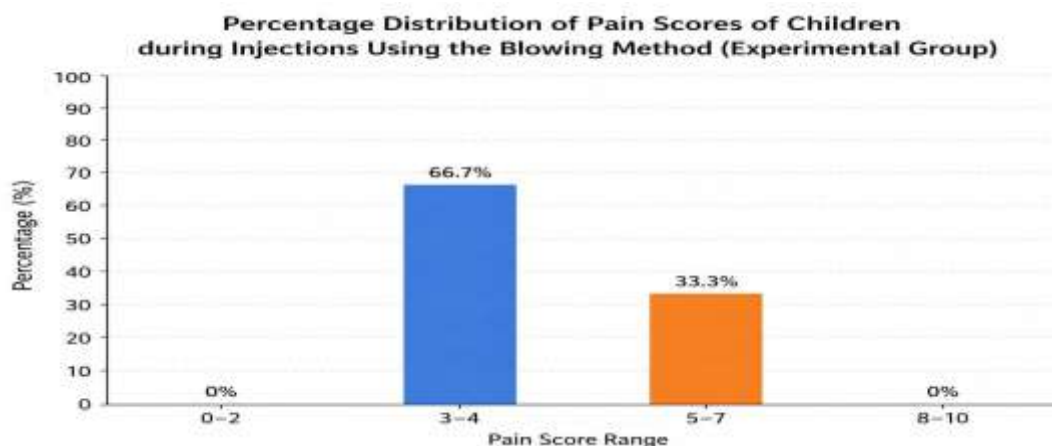
The Modified Behavioural Pain Assessment Tool (FLACC SCALE) is used to measure pain intensity, and the results are displayed as tables and figures

**Frequency and percentage distribution of the pain scores of children during injections with the use of blowing method in the experimental group**

**n = 60**

| <b>Range</b> | <b>f</b>  | <b>%</b>    | <b>cf</b> | <b>cf %</b> |
|--------------|-----------|-------------|-----------|-------------|
| <b>0-2</b>   | <b>0</b>  | <b>0</b>    | <b>0</b>  | <b>0</b>    |
| <b>3-4</b>   | <b>40</b> | <b>66.7</b> | <b>40</b> | <b>66.7</b> |
| <b>5-7</b>   | <b>20</b> | <b>33.3</b> | <b>60</b> | <b>100</b>  |
| <b>8-10</b>  | <b>0</b>  | <b>0</b>    | <b>60</b> | <b>100</b>  |

**Akanksha et al / A STUDY TO ASSESS THE EFFECTIVENESS OF THE BLOWING METHOD IN REDUCING PAIN INTENSITY DURING INJECTIONS AMONG CHILDREN ADMITTED IN SELECTED HOSPITALS AT KANPUR**



*bar diagram representing Children's pain scores during injections using the blowing method in the experimental group: frequency and percentage distribution*

The above bar diagram reveals that 40 children, or 66.7% of the total, reported having mild to moderate pain in the range of 3–4. No children (0%) reported very low pain (0–2) or severe pain (8–10), while the remaining 20 (33.3%) reported pain scores in the range of 5–7, indicating moderate pain.

**Section C: Analysis of the effectiveness of Blowing method in reducing pain during injections among children**

Comparing the levels of discomfort in the experimental and control groups

**Mean, mean difference, standard deviation, and “t” values of the experimental and control groups pain levels. n= 60 + 60**

| Group              | Mean  | Standard deviation | Mean difference | t value |
|--------------------|-------|--------------------|-----------------|---------|
| Experimental group | 36.28 | 14.131             | 31.86           | 23.221  |
| Control group      | 68.14 | 6.182              |                 |         |

The mean pain level of experimental group ( $36.28 \pm 14.131$ ) was significantly lower than the mean pain level of the control group ( $68.14 \pm 6.182$ ). the research hypothesis H2 is accepted.

#### **Section D: Association between the experimental and control groups pain levels and the chosen demographic variables**

There is no statistically significant association between the level of pain and the selected demographic variables in both the experimental and control groups, as all calculated chi-square ( $\chi^2$ ) values are less than the respective table values at the 0.05 level of significance. This finding suggests that variables such as age, educational status of parents and child, previous hospital admission, and prior knowledge did not have a significant influence on the pain levels of children in either group.

Hence, the investigator came to the conclusion that the null hypothesis ( $H_{02}$ ) stating that there is no significant association between the level of pain and selected demographic variables is accepted.

**DISCUSSION:** During injections, the greatest proportion of participants Moderate pain was reported by 51.7% of the experimental. The experimental and control groups' mean pain ratings were virtually identical (64.40 and 66.53). The highest percentage of Eighty percent of the experimental group's participants reported mild to moderate pain, compared to eighty-three percent of the control group. Had moderate pain during injections with the use of blowing method. The experimental group's mean pain score (36.28) was lower than the control group's (68.14). The experimental group's mean pain level ( $36.28 \pm 14.131$ ) was considerably lower than the control group's mean pain level ( $68.14 \pm 6.182$ ). The current study demonstrates that the chosen demographic factors, such as the child's age and level of education, do not significantly correlate. of the mother, education of the father, education of the child, previous history of hospitalization, previous knowledge etc.

#### **NURSING IMPLICATIONS**

Any research will become fruitful only when it is applicable to the public. The findings of the current study allowed the researcher to ascertain how well the blowing method reduced the intensity of pain during injections among children aged 5 to 13 years. The study's conclusions have a number of ramifications for nursing practice, research, administration, and teaching.

##### **Nursing Education**

- The curriculum should be updated in relation to the changing society since it would help out the nursing students to upgrade their knowledge and skill.
- Along with other complementary therapies, non-pharmacological measures such as the blowing method can be easily integrated into nursing education.

##### **Nursing Practice**

- Blowing method can be effectively incorporated in the care of children who are receiving injections to reduce the intensity of pain.

##### **Nursing Administration**

- In her capacity as a nurse administrator, she could take all the required actions to deliver high-quality care by fostering a positive atmosphere in different hospital wards.

##### **Nursing Research**

- Nursing research represents a critically important tool for the nursing profession to acquire knowledge.
- The present study has highlighted the effectiveness of blowing method in reducing pain during injections as well as a non-pharmacological and cost-effective intervention for children.

#### **LIMITATIONS**

In this study current limitation are:

1. what research was confined to specific (selected) hospitals and was limited only to children between 5 to 13 years of age and admitted in medical or surgical ward. Hence generalization of the data is limited.

### RECOMMENDATION

- larger sample size could be used to replicate a similar study.
- A study comparing children from rural and urban areas could be carried out.
- The quality of life of children in hospitals could be the subject of a case study.
- A comparable study could be carried out without the control group

### CONCLUSION:

- The purpose of the study was to determine how well the blowing technique worked to lessen the level of pain encountered by kids ranging in age from five to thirteen while receiving shots. Children aged five to thirteen reported less pain, according to the study's findings. during injections when using the blowing method. By using the blowing method, children's pain can be effectively reduced.

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