

A Study to Evaluate the Effectiveness of Helfer Skin Tap Technique on Pain during Intramuscular Injection among Infants at Narayan Medical College and Hospital, Jamuhar, Bihar

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Abstract: Background: Intramuscular (IM) injections in infants are frequently associated with moderate to severe pain, which can cause physiological stress and anxiety. The Helfer Skin Tap (HST) technique is a simple non-pharmacological method used to reduce pain by stimulating sensory nerves prior to needle insertion. Objectives: To assess and compare the post-test pain level among infants receiving IM injections between the study and control groups. To determine the effectiveness of Helfer Skin Tap technique in reducing IM injection pain among infants. To find the association between post-test pain levels and selected demographic variables in both groups. Methods: A quasi-experimental post-test-only control group design was used. Sixty infants (30 study, 30 control) receiving IM injections were selected using non-probability purposive sampling. Pain was assessed using the FLACC scale immediately after injection. Descriptive and inferential statistics (frequency, percentage, and independent t-test) were applied. Results: Most infants in both groups were aged 2.1–4 months (study 70%, control 73.33%). The mean post-test FLACC pain score was significantly lower in the study group compared to the control group. All infants received injections at the vastus lateralis site. A statistically significant reduction in pain was observed in the study group ($p < 0.05$). No significant association was found between demographic variables and pain scores in either group. Conclusion: Helfer Skin Tap technique is an effective non-pharmacological method to reduce pain during intramuscular injection among infants. It is simple, cost-effective, and can be easily practiced by nurses in pediatric units.

Keywords: Helfer Skin Tap, Intramuscular injection, Infant pain, FLACC scale, Non-pharmacological methods

I. INTRODUCTION

Intramuscular (IM) injections are one of the most common invasive procedures performed on infants. Despite being essential for immunization and therapeutic administration, IM injections are often painful and distressing. Repeated exposure to painful procedures during infancy can lead to long-term behavioral and physiological changes.

Non-pharmacological interventions such as tactile stimulation, distraction, breastfeeding, and the Helfer Skin Tap technique have been widely used to reduce procedural pain. The Helfer Skin Tap technique involves rhythmic tapping on the injection site to stimulate sensory nerves, thereby reducing the perception of pain during needle insertion.

This study evaluates the effectiveness of the Helfer Skin Tap technique in reducing pain during IM injections among infants in a clinical setting.

II. BACKGROUND OF THE STUDY

Pain assessment in infants is challenging because they cannot verbally express discomfort. The FLACC scale (Face, Legs, Activity, Cry, Consolability) is widely used as a reliable tool for assessing procedural pain in infants.

Studies have demonstrated that pre-stimulation of the skin can reduce pain perception by activating large nerve fibers, thereby inhibiting pain transmission via the Gate Control Theory. Despite its effectiveness and simplicity, the HST technique is underutilized in routine pediatric injection practice.

Given the limited research in Bihar and the high frequency of IM injections among infants, evaluating HST is crucial for improving pediatric nursing care.

III. NEED FOR THE STUDY

- Infants undergo multiple painful procedures during early life, especially vaccinations.
- Non-pharmacological, low-cost pain-reduction methods are needed in low-resource settings.
- Minimal studies exist in Bihar evaluating the effectiveness of the Helfer Skin Tap technique.
- Enhancing infant comfort is an essential component of quality pediatric nursing care.

Thus, this study was undertaken to generate evidence and encourage adoption of HST in routine practice.

IV. METHODOLOGY

Research Design: Post-test–only control group design

Setting: Narayan Medical College and Hospital, Jamuhar, Bihar

Sample Size: 60 infants (30 study, 30 control)

Sampling Technique: Non-probability purposive sampling

Inclusion Criteria:

- Infants aged 0–6 months
- Receiving IM injection at vastus lateralis site
- Mothers willing to allow participation

Tools Used:

- Demographic variable proforma
- FLACC Pain Assessment Scale (0–10 score)

Procedure:

- Study group: Helfer Skin Tap technique applied for 10–15 seconds before injection.

- Control group: Routine IM injection without skin tap.
- Pain assessed immediately after injection using FLACC.

Data Analysis:

- Descriptive statistics: frequency & percentage
- Inferential statistics: t-test for comparing pain scores
- Chi-square test for association with demographics

V. RESULT AND ANALYSIS

Section A: Demographic Characteristics

- Majority aged 2.1–4 months (study 70%; control 73.33%).
- Most infants were male in the study group (73.33%) and control group (60%).
- All injections were given at vastus lateralis site.
- Most mothers had high school education (study 60%; control 36.67%).
- Majority belonged to joint families in both groups.

Section B: Post-test FLACC Pain Score

- Pain levels were significantly lower in the study group.
- Study group showed more infants in mild/less pain category, while the control group had more in moderate to severe pain.

Section C: Comparison of Pain Scores

Independent t-test showed:

- Mean pain score (study group) < mean pain score (control group)
- $p < 0.05$, indicating statistically significant effectiveness of HST.

Section D: Association with Demographics

- No significant association found between post-test pain levels and variables such as age, gender, weight, maternal education, occupation, or residence.

VI. DISCUSSION

The study shows that the Helfer Skin Tap technique effectively reduces pain during IM injections among

infants. The findings align with gate control theory, supporting that cutaneous stimulation before needle insertion reduces pain perception.

Various studies have similarly reported reductions in pain with tactile stimulation strategies. The simplicity, safety, and cost-effectiveness of HST make it suitable for routine use in pediatric injection practices. The absence of association between demographic variables and pain levels suggests the technique is universally effective across infant groups.

VII. SUMMARY

- IM injections cause significant pain in infants.
- Helper Skin Tap technique significantly reduces post-injection pain.
- It is effective, non-invasive, and easy for nurses to apply.

VIII. CONCLUSION

The Helper Skin Tap technique is an effective non-pharmacological intervention to minimize pain in infants during intramuscular injections. It should be integrated into routine clinical practice in pediatric units to enhance infant comfort and quality of care.

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