Role of Breastfeeding in Pain Response during Injectable Immunisation Among Infants

Tisvy Thomas¹, Prof. Asha P Shetty², Praveen V Bagali³

Newborns and infants often experience many painful procedures such as venepuncture, intramuscular injections, heel lancing, immunisation etc. The claim can no longer be made that newborn pain is momentary. Infants are capable of developing a physiological memory of pain and it may be manifested for months in exaggerated form or activity. Many pharmacological and non-pharmacological interventions have been proved effective in pain reduction during immunisation. Despite the proven benefits of the immunisation procedure, the pain associated with these injections is a source of great anxiety and distress for the infant as well as the parents. The non-pharmacological method of pain management helps reduce the pain perception, makes pain more tolerable, decreases anxiety and enhances well-being. In the present study an attempt was made to assess the effectiveness of breastfeeding in pain response during injectable immunisation among infants.

**Objectives**

This study attempted to:
1. Assess the pain response of infants (i) while breastfeeding, and (ii) during injectable immunisation at 1 minute and 5 minute as measured by the modified neonatal infant pain scale, and
2. Compare the pain response of infants with and without breastfeeding during injectable immunisations at 1 minute and 5 minute as measured by the modified neonatal infant pain scale.

**Research Methodology**

**Research design:** To accomplish the objectives and considering the feasibility, the research design selected for the present study is post-test only control group design, a quasi experimental design (Table 1).

**Variables:** The independent variable in the present study is the breastfeeding given during immunisation and the dependent variable is the pain response of the infants.

**Sample and size:** A sample of 40 infants receiving the 1st, 2nd and 3rd doses of DPT immunisation in the age group of 5 – 15 weeks who possess their immunisation card were selected, out of which 20 were assigned to the experimental group and 20 to the control group.

**Sampling technique:** Non-probability purposive sampling technique was found more appropriate to make the study more feasible.

**Data collection technique:** A demographic proforma was prepared to collect relevant demographic data and the modified neonatal infant pain scale was used to assess the pain response. Interview and record analysis was done to collect the demographic data and the technique of observation was used to assess the pain score by using the modified neonatal infant pain scale.

**Data collection procedure:** Data was collected from 1 to 30 September 2009. The study population consisted of 40 infants. The pro-

<table>
<thead>
<tr>
<th>Group</th>
<th>Sample size</th>
<th>Intervention/Treatment</th>
<th>Observation</th>
</tr>
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<tbody>
<tr>
<td>Experimental group</td>
<td>20</td>
<td>X</td>
<td>O₁, O₂</td>
</tr>
<tr>
<td>Control group</td>
<td>20</td>
<td>—</td>
<td>O₃, O₄</td>
</tr>
</tbody>
</table>

where
X = Breastfeeding during DPT immunisation
O₁ = Observation at 1 minute of the experimental group
O₂ = Observation at 5 minute of the experimental group
O₃ = Observation at 1 minute of the control group
O₄ = Observation at 5 minute of the control group
Procedure was explained to the mothers and the infants assigned to experimental group were given breastfeeding and control group with no breastfeeding during the administration of injectable immunisation. Breastfeeding was given by the mother in sitting position and the infant in lying position on mother’s lap while administering injectable immunisation. The immunisation was administered 2 minutes after the initiation of breastfeeding.

Results
Most of the subjects (45%) in the experimental group and 50 percent in the control group were in the age group of 5-8 weeks, majority i.e., 55 percent of infants in the experimental group were females and 75 percent of the samples in the control group were males. Majority of infants (55%) in the experimental group and 45 percent in the control group received the 1st dose of DPT immunisation. Considering feeding pattern, 95 percent in experimental group and 90 percent in control group reported exclusive breastfeeding. When the time of previous feed was assessed, in the experimental group, 50 percent were breastfed more than one hour before the immunisation and 55 percent in the control group were breastfed within half an hour prior to the immunisation. All the infants in the experimental group i.e. 100 percent and majority in the control group i.e. 95 percent did not report any complaints after previous dose of the immunisation.

Analysis of pain score in experimental group and control group reveals that highest percentage of infants in the experimental group i.e. 40 percent had pain score in the range of 4-5, whereas in the control group all of the infants i.e. 100 percent scored in the range of 6-7 during the 1st minute score. In the 5th minute, majority in the experimental group i.e. 95 percent and in the control group i.e. 75 percent had a pain score in the range of 0-3 (Fig 1 and 2).

The mean pain score 4.7 of the 1st minute in the experimental group was lower than the mean pain score 6.6 in the control group, whereas the standard deviation of pain scores are 1.525 and 0.502 in the experimental group and control group respectively. The mean pain score at 5th minute in the experimental group was 0.55 which is lower than that of the control group score of 1.95. The standard deviation of pain scores at 5th minute are 1.31 and 2.064 in the experimental and the control group respectively (Table 2).

The study examined the following hypothesis: H₁: The pain response of infants who are given breastfeeding during immunisation will be significantly lower than that of...
those who are not breastfed at 0.05 level of significance.

The mean difference between pain scores in the experimental group and control group are 1.9 and 1.4 at 1st and 5th minute respectively. In order to find out the significant difference between the means of pain scores in the experimental and control group, unpaired ‘t’ value was computed, \( t(38) = 2.03 \), \( p < 0.05 \). There was found to be a significant difference in the pain response of infants who were given breastfeeding than those who were not breastfed during injectable immunisation (Table 3).

**Discussion and Implications**

The findings of the present study are in congruence with the study on effectiveness of breastfeeding for pain relief in neonates during heel prick. The significance in the pain reduction was analysed using the unpaired ‘t’ test. The obtained ‘t’ value was 9.232 (\( p = 0.001 \)), which was more than the table value. Thus it was concluded that breastfeeding is effective in relieving pain during heel prick.

On the basis of the findings of the study it can be concluded that breastfeeding is effective in reducing the pain response during injectable immunisation among infants.

This study demonstrates that breastfeeding is an effective, convenient, safe to implement, and readily available method to reduce the pain in infants during immunisation injections, which can be implemented as a routine practice in the immunisation clinics. Present study helps nurses to improve the evidence-based practice on pain management during immunisations. The implications of the study are that, the practice of breastfeeding during immunisation can become a routine in the immunisation clinics as it is a cost effective intervention and immunisation.

**References**


**Table 2: Mean and standard deviation of pain scores in experimental and control groups**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Group</th>
<th>Mean 1st min</th>
<th>5th min</th>
<th>Standard deviation 1st min</th>
<th>5th min</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Experimental</td>
<td>4.7</td>
<td>0.55</td>
<td>1.525</td>
<td>1.31</td>
</tr>
<tr>
<td>2</td>
<td>Control</td>
<td>6.6</td>
<td>1.95</td>
<td>0.502</td>
<td>2.064</td>
</tr>
</tbody>
</table>

**Table 3: Mean, mean difference, standard deviation difference and ‘t’ value of pain scores in the experimental and control group.**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Group</th>
<th>Mean 1st min</th>
<th>5th min</th>
<th>Mean difference 1st min</th>
<th>5th min</th>
<th>SDp 1st min</th>
<th>5th min</th>
<th>t(38)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Experimental</td>
<td>4.7</td>
<td>0.55</td>
<td>1.9</td>
<td>1.4</td>
<td>1.023</td>
<td>0.754</td>
<td>5.307</td>
</tr>
<tr>
<td>2</td>
<td>Control</td>
<td>6.6</td>
<td>1.95</td>
<td></td>
<td></td>
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\( t(38) = 2.03, p < 0.05 \).