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## Research Article

### EFFECT OF MATERNAL LOCK ON PAIN PERCEPTION DURING IMMUNIZATION

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#### ABSTRACT

**Background for the study:** With the impact of optional vaccines and advanced developmental care the parents are ready to walk an extra mile in the care of children. The aim of the study was to determine the effect of maternal lock on pain perception in children during immunization.

**Methodology:** The study was conducted in an immunization clinic of a selected hospital at Pathanamthitta district. Quasi experimental one group post-test only control group design was used and study subjects included a convenient sample of 140 children, aged in between 0-6 years were divided into control and experimental groups. The purpose of the study was well explained to the mother and consent was obtained. The children who were held by the mother for vaccination were randomly selected and intramuscular vaccine was administered. The pain perception was analysed using FLACC pain scale. **Results:** The experimental group who were held by mothers for receiving intramuscular immunization had significantly lower pain scores than the control group. The pain perception of the children who were held by own mothers demonstrated less pain than held by the father/ care giver.

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#### INTRODUCTION

Determinants of pain in children are important and crucial for the health care of children. Childhood is a period of exponential development and unrelieved pain and distress can have implications across the life span. As soon as a child is born, the lifesaving injection Vit K is administered intramuscularly. Later up to age of six, children receives number of injections as vaccines and as routine developmental care. These vaccines provide protection against infectious diseases such as polio, measles, diphtheria, whooping cough, rubella and mumps. The DPT Boosters are administered at 18 weeks and at 5 years of age and it is considered to be one of the painful injection in childhood. Several studies are done to understand the phenomena of pain as well as interventions to reduce it. The interventions like rubbing, massaging, swaddling and rocking are discussed by researchers<sup>1,2,3,4</sup>. In addition to this breastfeeding, sucrose giving, vibration, cold application, flick application, manual pressure, playing music, distraction technique and personalized developmental care are among these methods.<sup>4,5</sup>

Maternal touch or being in the arms of mother always comforts children. A child crying for any reason are consoled in the arms of its mother arm which is a magical power given to mothers only by God. Every child, big or small, displays a sense of

wellness when being with their mother. A comparative survey of holding positions for reducing vaccination pain in young infants was done in 6 weeks to 12 weeks old infants. The infant pain responses were evaluated by their crying, irritability and facial expression and they were positioned upright and in supine during vaccination. The study concluded that supine position reduces acute pain more effectively than the upright position.<sup>3</sup> Children are being carried by mothers, grand parents or by fathers to the immunization clinic. Many mothers are scared to hold the child during vaccination and where it is observed that children are more comfortable when carried by the mothers than other caregivers. Parental (especially mother) holding has a significant role in reducing the crying in young children.

#### Objectives

1. Assess the pain level among children receiving intramuscular immunization while held by mothers.
2. Assess the pain level among children receiving intramuscular immunization while held by care givers.
3. To find the effect of pain level among children receiving intramuscular immunization while held by mothers and care givers.

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**Hypothesis**

H<sub>1</sub>: There will be significant reduction in the pain level of children who are held by the mothers during intramuscular injection.

**MATERIAL AND METHODS**

A quantitative approach, with experimental-post-test only control group design was adapted for the study. Purposive sampling with random allocation of subjects to both control and experimental groups were done to select 70 subjects in each group. Mothers and caregivers who were not willing to participate and children receiving multiple shots in a visit were excluded. Mothers who attended for their Childs vaccination were explained the purpose of study and consent was taken. The children in the experimental group were held by the mother itself and in such a way the infant was well bonded with the mother. The vaccination was introduced to the child quickly using the standard techniques of intramuscular injection. Children are called by their name and comforted by the mother throughout the procedure of vaccination. FLACC pain scale was used to record the intensity of pain experienced by children during immunization and the analysis was done with descriptive and inferential statistics.

**DATA ANALYSIS AND RESULTS**

The analysis were carried out in accordance with the objectives of the study. The obtained data were sorted and descriptive analysis (frequency and percentage) was performed to condense the demographic variables and the intensity of level of pain in both groups were analyzed with inferential statistical tests (SD and 't' test).

**Table 1** Frequency and percentage distribution of samples based on demographic variables

N=140

S.No	Variable	Control group (n=70)		Experimental group(n=70)	
		f	%	f	%
1	<b>Age</b>				
	0 - 2 years	51	72.9	38	54.3
	2.1 - 4 years	9	12.9	9	12.9
	4.1 – 6 years	10	14.3	23	32.9
2	<b>Gender</b>				
	Male	34	48.6	34	48.6
	Female	36	51.4	36	51.4
3	<b>Weight</b>				
	2.5 – 10 kg	39	55.7	24	34.3
	10.1- 17.5 kg	8	27.0	28	40.0
	17.6 – 29 kg	4	5.7	18	25.7
4	<b>Educational status</b>				
	Early childhood	54	77.1	40	57.1
	Kinder garden	10	14.3	11	15.7
	Lower primary	6	8.6	19	27.1

From Table 1, it is evident that the number of male and female children were equal in both group (48.6 % & 51.4 %). Majority of children in control and experimental groups (72.9% and 54.3%) belonged to 0-2 years. The weight of children varied with their age appropriate weight and 55.7% & 34.3% had a weight of 2.5- 10 kg, 27% and 40% were in between 10.1 to 17.5 kg and 5.7% and 25.7% were in between 17.6-29 kg of weight respectively in the control and experimental group. Majority of subjects were less than 2 years and they had early

childhood educational status in control (77.1%) and experimental (57.1%) groups.

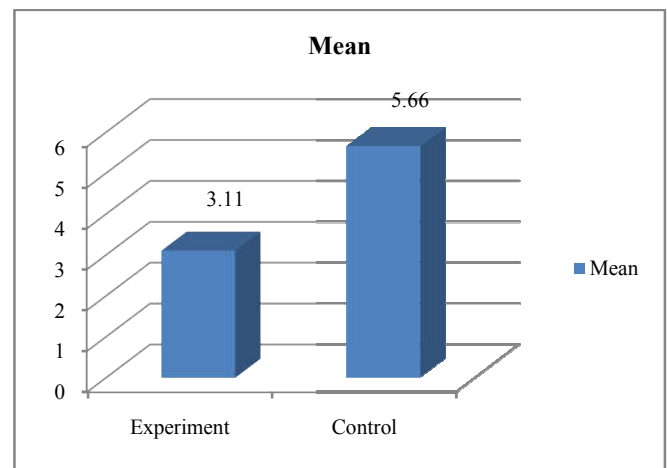
**Table 2** Frequency and percentage distribution of level of pain in children in control and experimental group during IM injection (N= 140)

Level of pain	Control group(n=70)		Experimental group (n=70)	
	F	%	F	%
No pain	1	1.4	6	8.6
Mild pain	12	17.1	41	58.6
Moderate pain	28	40.0	19	27.1
Severe pain	29	41.4	4	5.7

The above table 2 reveals that among the control group 41.4 % had severe, 40% had moderate and 17.1 % had mild pain whereas it has reduced to 5.7% severe 27.1 % moderate and 58.7% mild pain in the experimental group.

**Table 3** Comparison of pain score between control and experimental group using t test.

Group	Mean	SD	t value	p- value
Control	5.65	2.25		
Experimental	3.11	2.23	1.97	<0.05



**Fig 1** Distribution of the mean pain score of children in control and experimental group.

Table 3 and Fig 1 reveals that since the p value is lesser than 0.05, the mean pain score of experimental and control groups are significantly different. The experimental group has lower level of pain when compared to the control group.

**DISCUSSION**

The present study found that the children who were held by mothers exhibited better performance on the FLACC pain scale where the lower scores indicating less pain. Nowadays various methods are experimented to reduce procedural /injection pain in children. Maternal hold is a technique which increases the tactile stimulation thereby gives more comfort, pain relief and increases neurobehavioral activities. In concurrence with other studies, it is found that tactile stimulation has a great impact in reduction of pain <sup>6</sup>. The results of the present study indicated there was a significant difference in the mean pain score between children in the control and experimental group (p<0.05). From various databases, RCTs and clinical trials were done to check the effectiveness of touch therapies namely, healing touch, therapeutic touch and Reiki on relieving acute and chronic pain was looked and data was extracted and quality assessment done by two review authors. All recorded pain intensity from different pain measurement were standardized to

a single one. The results identified that the participants who were exposed to touch had on average 0.83 units (on a 0 to 10 scale) lower pain intensity than unexposed subjects. The authors suggested touch therapies may have an uncertain effect in pain relief and more studies are required to evaluate the influence of touch on children<sup>7</sup>. On the contrary in a randomized control trial of parent led tactile stimulation to reduce pain during infant immunization injections, it did not reduce pain in infants undergoing immunization injections<sup>8</sup>. The mothers who participated in the study were satisfied and stated a strong preference for future use of maternal touch in reduction of pain among children and nurses need to intervene the easiest techniques while providing care. The education to all health care professionals and mothers involved in childhood immunization is fundamental to any expansions in the distribution of vaccine injections in children.

## CONCLUSION

Results indicated that the pain perception was decreased for children who were held by mothers during the administration of intramuscular injection than held by care givers or fathers. Maternal touch is the easiest and most effective approach in reducing immunization pain in children. However, differences exist in different physical interventions used to reduce pain and all methods need supporting evidences for its use in clinical setting.

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