International Journal of Research In Paediatric Nursing

E-ISSN: 2664-1305
P-ISSN: 2664-1291
www.paediatricnursing.net
IJRPN 2024; 6(2): 01-05
Received: 02-05-2024
Accepted: 07-06-2024

Amali Arumaikani
Assistant Professor, Our Lady of Health School and College of Nursing, Thanjavur, Tamil Nadu, India

P Sagayamary
Principal, Our Lady of Health School and College of Nursing, Thanjavur, Tamil Nadu, India

Corresponding Author:
Amali Arumaikani
Assistant Professor, Our Lady of Health School and College of Nursing, Thanjavur, Tamil Nadu, India

Effectiveness of breastfeeding on reduction of pain-related behaviours among infants during immunization in selected primary health centres at Mangalore

Amali Arumaikani and P Sagayamary

DOI: https://doi.org/10.33545/26641291.2024.v6.i2a.165

Abstract
The main aim of the study was to assess the effectiveness of breast feeding on reduction of pain related behaviors among infants during immunization. A quasi experimental post-test only control group design was adapted for present study. A purposive sampling technique was used to select 40 infants (20 each in experimental and control group) at primary health centers at Mangalore. The data was collected by using modified behavioral observational scale. Descriptive and inferential statistics were used to analyse the data. According to modified behavioral observational scale the breastfed infants in experimental group 99% showed mild behavioral response to pain, whereas infants in the control group 55% and 45% showed moderate and severe behavioral response to pain. This study concluded that breastfeeding is effective in reducing pain related behaviors among infants during immunization.

Keywords: Breastfeeding, pain-related behavior, infant, immunization, pentavalent vaccine

Introduction
There is a general misconception that new-borns don't feel pain or are incapable of expressing pain compared to the older children. Several researches and scientific studies have proved that the above notion is not fully a fact. But the young children express their pain and inconvenience through behavioural patterns like crying, facial expressions and body movements. Vaccination is an integral part of childhood development, however it is a common cause of pain in children. This study evidences that breastfeeding is an effective tool for reducing pain in infants during vaccinations. Pain is "an unpleasant sensory and emotional experience associated with actual or potential tissue damage". (Sahare B. 2012) [3] Pain is a perception that is often overlooked in the infant population, especially with regard to immunizations. Evidence has shown that infants do perceive and remember pain, demonstrating heightened pain responses to other painful procedures later in life. So painful experience in infants should be anticipated and prevented as much as possible. (Furnem J. 2007) At present many pharmacological and non-pharmacological interventions have been proved effective in pain reduction during immunization. The pain associated with vaccine injection, becomes a source of great anxiety and distress for the infants as well as parents. The non-pharmacological method of pain management helps to reduce the pain perception, makes pain more tolerable, decrease anxiety and enhances well - being. (Thomas T. 2011) [4] Among the analgesics for infant's pain, breast feeding proved that the infants experience less pain. Breast milk is a natural, easily available, easy to use and potentially risk free intervention. It is an intervention that could be easily adopted from the perspective of health care providers and parents. No adverse effects of breast feeding apart from rare transmission of micro - organisms have been reported. (Razek AA. 2009) [5] Research has shown that breast feeding is a natural and effective intervention to decrease pain perception in infants during vaccination; as well as during vein puncture and heal pricks.

Objectives
- To assess the level of pain-related behaviours among infants of control group and experimental group during immunization, using a modified behavioural observation scale.

- To determine the effectiveness of breastfeeding in reducing pain during immunization among infants in terms of reduction in pain-related behaviours of experimental group.
- To find the association between the pain-related behaviours among infants of experimental and control group with selected demographic variables such as age, gender, and weight.

Hypotheses

All the hypotheses will be tested at 0.05 level of significance.

- **H_1:** There will be significant reduction in pain-related behaviors among infants in experimental group.
- **H_2:** There will be significant association between the pain-related behaviors among infants of control group and experimental group with the selected demographic variables like infant's age, gender, and weight.

Materials and Methods

A quasi experimental post-test only control group design was used in this study.

Setting of the study

The investigator conducted the study in selected primary health centres of Kudupu and Ullal at Mangalore district. These two PHCs are 12 kilo meter away from Mangalore city and come under the governance of Mangalore city-corporation.

In Kudupu PHC on every Thursday from 9am to 1pm immunization clinic is conducted and about 10 to 20 children are attending the immunization clinic. In Ullal PHC weekly twice Monday and Thursday immunization clinics are conducted from 9am to 1pm. Weekly about 20 to 40 children are coming for the immunization.

Sample and Sample size

In the present study, the sample consisted of infants, aged between 6-16 weeks who were undergoing pentavalent 1st, 2nd or 3rd dose of vaccination in primary health centres at Mangalore. The sample consisted of 40 infants, 20 each in experimental and control group aged between 6-16 weeks.

Criteria for sample selection

Inclusion criteria for sampling

1. Infants between the age group of 6 to 16 weeks.
2. Infants whose mothers are willing to participate and breastfeed prior to the immunization.
3. Infants who are receiving pentavalent vaccination

Exclusion criteria

1. Infants with cleft lip and cleft palate.
2. Infants who are below 6 weeks and above 16 weeks of age.
3. Infants whose mothers are not willing to participate in the study.

Description of the Tool

The data collection tool for the present study consisted of two parts.

Part I: Demographic proforma

The demographic proforma consisted of 7 items like age, gender, birth weight, weight during the study, birth order, dose of pentavalent vaccine, and infant on exclusive breastfeeding.

Part II: Modified behavioral observation scale

The modified behavioral observation scale was prepared by the investigator to observe the infant's behavioral responses to pain during immunization. It included 6 parameters, namely:

State of arousal, Facial expression, Hands movement, Legs movement, Cry and Consolability.

The score of state of arousal ranged from 0-1. The facial expression, hand movement and cry score ranged from 0-3. Leg movement and consolability scores ranged from 0-2. The parameters were categorized according to the responses. The minimum score was 0 and maximum score was 14.

The scores were arbitrarily categorized as follows

- **Mild behavioral response to pain:** 0 – 5.
- **Moderate behavioral response to pain:** 6 – 9.
- **Severe behavioral response to pain:** 10 – 14.

Method of data collection

As the first step of the data collection procedure, the investigator obtained permission from the District Health and Family Welfare Officer, Mangalore. After obtaining his permission the investigator met the concerned authorities of the primary health centre like the medical officer and the staff nurses and oriented them about the investigators topic, the procedure was explained to get their cooperation to conduct the study successfully. Prior to data collection the investigator familiarized herself with the infant's mothers and explained the purpose of the study and the benefits of breastfeeding were explained to the experimental group. A written consent was taken from each mother. Confidentiality was assured to all the mothers.

The data collection period for main study extended from 12th to 14th August 2014. The sample was selected by purposive sampling technique. The parents were interviewed to obtain information on demographic proforma. The infants accompanied by their mothers were taken separately. The investigator made each mother sit comfortably on the chair with the infant in her arms to breastfeed. Privacy was provided to the mother during breastfeeding. The mothers in the experimental group breastfed their infants for 10 to 15 minutes prior to immunization. The infants who were accompanied by care givers other than mother were in the control group, they received immunization without breastfeeding and only routine care was given.

The behaviors of the infants were observed by the investigator during and after the procedure up to 5 minutes. The investigator observed and scored the infant's behavioral responses to pain using modified behavioral observation scale in both experimental and control group. The data collection procedure was terminated by thanking the respondents and participants. The collected data was compiled for data analysis.

Data Analysis

Based on the objectives, data was analyzed using descriptive and inferential statistics.

1. Demographic data was analyzed using descriptive statistics

2. Difference in pain related behavior was analyzed using independent't' test to find the effectiveness of intervention.
3. Association between pain related behavior response scores and selected demographic variables were calculated by using Chi-square test.

Results

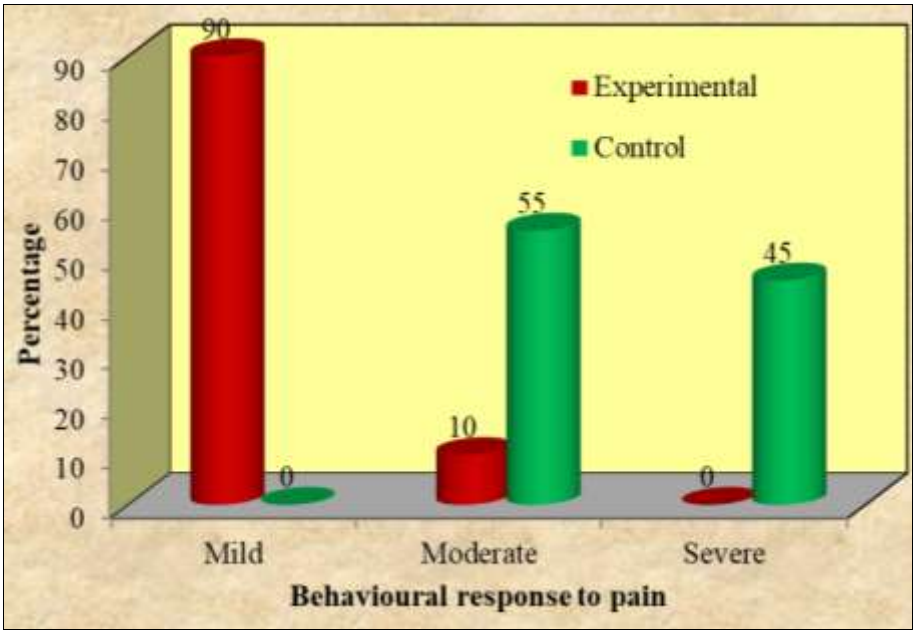

Fig 1: Cylindrical diagram showing distribution of subjects based on the behavioral response to pain

Data presented in Figure 1 shows that in the experimental group, vast majority (90%) of infants' pain response score ranged between 0-5, i.e., they showed mild behavioral response and in 10% it ranged between 6-9, i.e., moderate behavioral response. In the control group, majority (55%) of infants' pain response score ranged between 6-9, i.e. moderate behavioral response, whereas 45% of infants' pain response score ranged between 10-14, i.e., severe behavioral response. It reveals that breastfeeding helps reduce the pain related behavior of infants during administration of immunization.

Table 1: Frequency and percentage according to area-wise distribution of subjects in experimental and control group N=20+20

Sl. No.	Level of behavioral response	Exp. Group		Control group	
		f	%	F	%
1.	**State of arousal**				
1.1	Sleepy/awake	18	90	14	70
1.2	Restless	2	10	6	30
2.	**Facial expression**				
2.1	Relaxed – no tightening of the facial muscle	4	20	0	0
2.2	Brow lowered and drawn together	13	65	1	5
2.3	Eyes squeezed and forcefully shut	3	15	8	40
2.4	Frequent to constant frown quivering chin clenched jaw	0	0	11	55
3.	**Hands**				
3.1	Relaxed- no muscular rigidity, occasional random movement of arms	10	50	0	0
3.2	Intermittent clenched fist or finger splayed	8	40	5	25
3.3	Rigid or rapid flexion and extension	2	10	14	70
3.4	Continual clenched fist or finger splayed	0	0	1	5
4.	**Legs**				
4.1	Relaxed – any position at rest, no muscular rigidity	10	50	0	0
4.2	Drawn up and tensed- legs pulled up to the body tightly	7	35	5	25
4.3	Kicking – striking out with feet/foot	3	15	15	75
5.	**Cry**				
5.1	No cry – quiet and not crying	3	15	0	0
5.2	Whimper – mild moaning intermittently	14	70	2	10
5.3	Crying – loud cry, intermittently or continuously	3	15	16	80
5.4	Vigorous cry – loud scream, crying steadily and continuously	0	0	2	10
6.	**Consolability**				
6.1	Easy to console, relaxed	18	90	3	15
6.2	Reassured by hugging or being talked to, distractible	2	10	11	55
6.3	Inconsolable or discomfort	0	0	6	30

Data represented in Table 1 shows the following

- **State of arousal:** Vast majority of the infants (90%) in the experimental group and 70% of infants in the control group were sleepy/awake.
- **Facial expression:** Majority of infants (65%) in the experimental group had brow lowered and drawn together (Score 1) and in the control group 55% of the infants had frequent to constant frown, quivering chin, clenched jaw (Score 3).
- **Hand movements:** In the experimental group majority of infants (50%) had relaxed-no muscular rigidity and occasional random movement of arms
  (Score 0) whereas in the control group none showed similar movements and majority (70%) of infants were having rigid or rapid flexion or extension (Score 2).
- **Leg movements:** In the experimental group majority of infants (50%) had relaxed–any position at rest no muscular rigidity (Score 0) whereas in the control group the majority (75%) had kicking–striking at with feet/foot
  (Score 2)
- **Cry:** In the experimental group majority of infants (70%) had whimper–mild moaning intermittently (Score 1) and in the control group majority (80%) had crying–loud cry, intermittently or continuously (Score 2).
- **Consolability:** In the experimental group majority of infants (90%) were able to be consoled easily (Score-0) and the duration of cry was also less than 2 minutes and in the control group (55%) of infants were reassured by hugging or being talked to, and were distractable (Score 1) and the duration of cry was more than 3 minutes.

Table 2: Area-wise Mean, SD, mean percentage among Infants in both control and experimental group N = 20 + 20

Area	Max. possible score	Experimental group			Control group		
		Mean	SD	Mean %	Mean	SD	Mean %
State of arousal	1	0.10	0.308	10.00	0.30	0.458	30.00
Facial expression	3	0.95	0.605	31.66	2.50	0.591	83.33
Hands movements	3	0.60	0.681	20.00	1.80	0.509	60.00
Legs movements	2	0.65	0.745	32.5	1.75	0.433	87.50
Cry	3	1.00	0.562	33.33	2.00	0.447	66.66
Consolability	2	0.10	0.308	5.00	1.15	0.653	57.50
Overall	14	3.4	1.984	24.29	9.5	1.539	67.86

The above table shows the behavioral response scores of infant. The maximum possible score is 14 and overall mean value 3.4 with SD 1.984 and the mean percentage was 24.29 in experimental group and overall mean score 9.5 with standard deviation 1.539 and the mean percentage was 67.86 in control group.

Table 3: Overall mean, SD and mean difference in the behavioral response scores of infant in the experimental and control group N = 20 + 20

Group	Mean	SD	Mean diff.	df	t value
Experimental	3.40	1.984	6.100	38	10.86*
Control	9.50	1.539			

Table value t_{38} = 1.690, P < 0.05, * significant

Data in Table 3 shows the mean, standard deviation and mean difference of the experimental and control group. The calculated t value (10.86) is greater than the tabled value (t_{38}=1.690). It means that there is a significant difference in the pain related behaviors of infants during the immunization after the breastfeeding at p<0.05 level of significance. So it is inferred that breastfeeding was effective on reduction of pain related behaviors among infants during immunization.

The data in Table 4 shows that there was no association between pain related behavior scores and selected demographic variables such as age, gender, and weight.

Table 4: Association between pain related behavior scores and selected demographic variables in the experimental group n=20

Demographic variables	Behavioral response score		Fischer's Exact test P
	<Median	> Median	
Age in weeks			
Above 12 weeks	2	5	0.526**
Below 12 weeks	5	8	
Gender			
Male	4	6	0.500**
Female	3	7	
Weight at the time of study in kgs			
Below 5 Kgs	2	6	0.392**
Above 5 Kgs	5	7	

** Not significant, P>0.05

Results and Discussion

Section I: Sample characteristics it includes both experimental and control group

1. Majority of the infants (42.5%) were in the age group of 13–16 weeks.
2. Most of the infants (52.5%) were male.
3. Majority of the infants (62.5%) had the birth weight between 2.5 to 3 kg.

4. At the time of the study 40% in the experimental group and 30% in the control group weighed less than 5 kilos. In the control group 45% weighed above 6 kg and in the experimental group 25% was above 6 kg.
5. Half of the infants (50%) belonged to the second order of birth.
6. Majority of the infants (37.5%) received the 3rd dose and another 35% received 2nd dose of pentavalent vaccine.
7. Majority of the infants (92.5%) were on exclusive breastfeeding.

Section II: Evaluation of pain related behaviors

The pain related behavioral response of infants during immunization was measured by using a modified behavioral observation scale. In the experimental group 90% of infants score ranged from 0-5 (mild behavioral response to pain) and in the control group 45% of infants ranged from 10-14 (severe behavioral response to pain). It indicates that breastfeeding helps to reduce the pain related behaviors of infants during administration of immunization.

Section III: Effectiveness of breastfeeding on the pain related behaviors

The findings of the present study showed that the mean score of experimental group (3.40±1.984) was lower than the mean score of pain related behavioral response score of control group (9.50±1.539). Unpaired't' test was computed and the findings showed that there is a significant difference in the pain related behaviors of infants. The calculated't' value (10.864) is greater than the table value ($t_{38=}$1.690, P<0.05). This shows that there is a significant reduction in pain related behavioral response at P<0.05 and represents that breastfeeding is effective in reducing pain related behaviors during administration of immunization.

Section IV: Association between the pain related behavioral response and demographic variables such as age, gender and weight

Association between pain related behavioral response and selected demographic variables such as age, gender and weight was done, Fisher's exact test was computed. The findings showed that there is no association between pain related behaviors and demographic variables such as age, gender and weight.

Conclusion

From the findings it was evident that breastfeeding brought about significant reduction in pain related behaviors of infants during administration of immunization. The breastfed infants in the experimental group showed mild behavioral responses to pain (90%), whereas infants in the control group showed moderate-severe behavioral responses to pain (55% and 45% respectively). This indicates that breastfeeding during painful procedures such as immunization significantly reduces pain in infants. Hence it could be used by nurses in the immunization centres as effective method of reducing pain.

Conflict of Interest

Not available

Financial Support

Not available

References

1. Potter PA, Perry AG. Fundamentals of nursing – concepts, process and practice. 3rd ed. London: Mosby Yearbook.
2. Polit DF, Hungler BP. Nursing research principles and methods. 6th ed. Philadelphia: Lippincott; c1999.
3. Sahare B. Using oral sucrose to provide pain relief for infants. Nightingale Nursing Times 2012 Jan;7(10):57.
4. Thomas T, Shetty AP, Bagali PV. Role of breastfeeding in pain response during injectable immunization among infants. Nursing Journal of India 2011 Aug;C11(8):184.
5. Razek AA, Elmorsy A, Elshafey M, Elhadedy T, Hamza O. Assessment of mediastinal tumors with diffusion-weighted single-shot echo-planar MRI. Journal of Magnetic Resonance Imaging: An Official Journal of the International Society for Magnetic Resonance in Medicine. 2009 Sep;30(3):535-540.

How to Cite This Article

Arumaikani A, Sagayamary P. Effectiveness of breastfeeding on reduction of pain-related behaviours among infants during immunization in selected primary health centres at Mangalore. International Journal of Research in Paediatric Nursing. 2024;6(2):01-05.