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Breast Feeding in Perception of Procedural Pain among Term Neonates

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Research Article

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ABSTRACT

Breast-feeding is a normal way of promoting bonding and attachment between neonates and mothers. Breast-feeding is not just as food sources, but a source of comfort and security. A study was conducted to evaluate the effectiveness of breast-feeding on procedural pain among term neonates in KKCTH, Chennai, 2008-2009. The objective of the study was to evaluate the effectiveness of Breast-feeding in procedural pain perception among term neonates. The parameters evaluated were facial expression, breathing pattern, arms, legs and type of cry. 60 term neonates, fulfilling the inclusion criteria were selected by Non-Probability Purposive Sampling technique. The modified Neonatal Infant Pain Assessment Scale (NIPS) were developed to evaluate the effectiveness of Breast-feeding in level of pain perception. The comparison of post assessment level of pain perception between Experimental group and control group reveals that the mean difference of 2.1 and the unpaired 't' value of 10.5 which is highly significant at $p < 0.001$ level. There was an association of parameters and the demographic variables. The neonates weight pattern is associated with the facial expression ($P = 0.018$) and weight is associated with breathing pattern ($P = 0.016$) and gestational age is associated with the breathing pattern ($P = 0.007$). Weight is associated with the extension of arms ($P = 0.012$). Health promotion was achieved by administering Breast-feeding before procedural pain among term neonates and their level of pain perception was also reduced. The neonates nurse has a vital role to play in enabling breast feeding among mother's neonates who is undergoing painful procedures. Nurses can inculcate the breast-feeding practices before painful procedures among neonates as evidence based practice for evaluating the massive developmental outcome.

INTRODUCTION

Children are the asset of the nation. The birth of an infant is one of the most inspiring and emotional event that can occur in one's life time. Neonates signify the beginning of the life as an independent individual. It is the single most hazardous period of life confronted with dramatic challenges due to transition from dependent intra uterine existence to independent extra uterine life. Neonates undergo various painful procedures Such as collection of blood sample, IV cannulation and IM injection during their stay in hospital. New born communicate pain only through behavioral and physiological Changes.

Pain is "an unpleasant sensory and emotional experience associated with actual or potential tissue damage" [1]. Evaluation of pain in neonates is difficult due to the subjective nature of pain and the inability of neonates to verbally express pain. Surrogate measures used to describe pain in neonates include motor responses, facial expressions, cry and changes in physiologic parameters like heart rate, blood pressure, oxygen saturation and respiratory rate [2,3]. Various changes have been compiled to create various scores [4]. Validated scores for the assessment of pain include the Neonatal Facial Coding System (NFCS), Neonatal

Infant Pain Scale (NIPS) or Premature Infant Pain Profile (PIPP). These reactions to pain may contribute to the development of hypoxia, hypercarbia, acidosis, ventilator asynchrony, pneumothoraces, reperfusion injury and venous congestion and subsequent late intraventricular haemorrhage or late extension of early intraventricular haemorrhage and periventricular leukomalacia [5]. These behavioural changes may also disrupt postnatal adaptation, parent-infant bonding and feeding schedules.

Pain is of particular importance in the neonate because of the evidence of improved clinical outcomes, including decreased mortality, when adequate pain control is achieved. 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 [6].

Full-term infants exposed to short-term pain early in life have an increased response to later painful procedures. In addition, pain anticipation may occur in infants who are repeatedly exposed to noxious stimuli. The health care practitioners provide effective interventions to manage infant's pain to help convey comfort and aid in the prevention of long-lasting effects that are potentially harmful to the overall health of the infant [7]. Dunbar et al. says that it is important that nurses do their best to reduce pain for neonates experiencing heel lancing. Since the evidence for non-pharmacologic pain relief during heel lancing has been varied, nurses need to not only review the literature on the topic but also conduct scholarly studies at their institutions. Evaluating alternative methods of non-pharmacologic neonatal pain control supports the identification of practical and accessible techniques that nurses can incorporate into their practice [8].

SIGNIFICANCE AND NEED FOR THE STUDY

Broome says that inadequate pain management of painful procedures could lead to an increase in discomfort, stress, and decreased coping abilities. So the nursing action must aim to establish the child to the pre stress state, conserve the child energy, maximize existing coping behavior and mobilize resource for dealing with stressful experience. Brest milk contain wonderful hormone called cholecystokinin (CCK) which includes sleepiness both in the mother and baby. Breast milk contains a high concentration of a chemical, which could ultimately trigger the production of natural pain killer's called endorphins. The clinical management of children's pain is complex and challenging responsibility that rests primarily on pediatric nurse, because they are the first line care takers of infants and often make the assessment that ultimately lead to pain relieving interventions.

In a Cochrane review, Shah, Aliwalas, and Shah included 11 studies examining the effects of breastfeeding or breast milk on acute procedural pain; the lowest neonatal facial score (2.3 vs. 7.1), lowest cry duration (5 vs. 49), and lowest decrease in parasympathetic tone (–2 vs. 1.2) and also when compared with the alternative interventions studied [9]. Bottle feeding with infant formula also showed better effects than the other interventions, however was not as effective as breastfeeding. Feeding and in particularly breastfeeding during heel prick testing were found to be the most effective methods of pain relief [10]. Leite et al. carried out a randomized clinical trial study consisted of 60 full-term newborns: 31 in the experimental group and 29 in the control group. The experimental group was breastfed 5 minutes before, during, and for 5 minutes after the blood collection procedure [11]. Neonates in the control group were held in mothers' arms but not fed or given a soother. The duration of breastfeeding was prolonged in comparison to previous studies. The result shows that breastfeeding was effective in reducing pain caused by blood collection for newborn screening [12].

Elena Uga et al. studied 200 healthy full term newborns (100 cases and 100 controls), proposing the puncture during breastfeeding, and explaining to them all the advantages of this practice. Pain assessment was evaluated by DAN scale (Douleur Aigue Nouveau ne scale) [12].The difference in score of pain according to the DAN scale was significant in the two groups of patients ($p = 0.000$); the medium score was 5.15 for controls and 2.65 for cases (newborns sampled during breastfeeding). results confirmed the evidence of analgesic effect of breastfeeding during heel puncture. This procedure could easily be adopted routinely in maternity wards. In breastfed newborns; breastfeeding itself is the preferred method to alleviate procedural pain. In addition to being safe, effective, natural, and without added cost, it provides an additional opportunity to promote and support breastfeeding [12].

Breast-feeding links evolutionary biology and medical practice. This is of clinical interest because pain is routinely experienced in hospital settings, even by healthy newborns, and natural interventions are effective at a time when many pharmacologic interventions are not. There are several studies showing that breast milk affects pain response [13]. Breast feeding and expressed breast milk is associated with pleasant memories of being with mother for babies.

Breast feeding is practical as it is easily achievable from the perspectives of health care providers and parents particularly in the situations where acute pain experience is there as for example during blood collections and immunization injections among the neonates as it effectively reduces response to pain.

OBJECTIVES

1. To assess the level of pain perceived by term neonates during heel prick procedure after giving breast feeding

2. To assess the level of pain perceived by term neonates during heel prick procedure without giving breast feeding

3. To determine the effectiveness of breast feeding on pain perception among term neonates during heel prick procedure

4. To associate the effectiveness of breast feeding and pain perception of term neonates during heel prick procedure with their demographic variables.

METHOD

Research approach was an evaluative research approach in which the investigator adopted post-test only control group design and the study was conducted for a period of one month. The term neonates in 37-40 weeks of gestation, and birth weight from 2.5-4.5 kg were included in the study. Neonates with congenital anomalies were excluded. The investigator used non probability purposive sampling technique to select the samples in the experimental and control group. Each consists of 30 samples in which the level of pain was assessed. All the neonates received breast feeding 1 hour before procedure, then the experimental group neonates received breast feeding for 10 minutes, then after 2 minutes time interval heel prick was done. Then the researcher assessed the pain response by using NIPS. In the control group without giving breast feeding heel prick was done, and pain assessment was done. Modified Neonatal Infant Pain assessment scale was used in this study. This is used to assess the behavioral parameter related to pain in neonates. The neonates were evaluated with each indicator. The higher the score, the more severe the pain **(Table 1).**

SCORE

5-8 = mild pain

9-12 = moderate pain

13-15 = severe pain

Table 1. Comparison of post assessment level of pain between experimental and control group (N=60).

Group	Post assessment		Mean difference	t- value
Experimental	**Mean**	**S.D**		**t=10.5**
	11.7	1.8	2.1	df=58
Control	9.6	1.7		p<0.001

RESULTS

The analysis reveals that the experimental group mean is 11.7 and standard deviation is 1.8 and control group mean is 19.6 and standard deviation is 1.7. The t value is 10.5 which is significant at $p < 0.001$ level. It indicates that the neonate's level of pain perception has reduced after breast feeding. There is a significant difference in the level of pain perception among neonates between experimental group and control group. There is a significant association between Weight and facial expression ($p = 0.018$) Breathing pattern with weight ($p = 0.016$) and Gestational age ($p = 0.007$) Arms and weight ($p = 0.012$) There is no significant association between Legs and demographic variables Type of cry and the demographic variables.

Many research findings and the present study has proved that breastfeeding was associated with reduction in changes in the heart rate change, duration of crying, percentage time crying and Improvement in validated and non-validated pain measures when compared to placebo / no intervention / positioning in neonates. The study was concluded that there is a significant difference in the level of pain perception between experimental and control group after breast feeding. Hence breast feeding is a non-invasive, harmless pain relieving measure may be encouraged in all hospitals delivering neonatal health services.

IMPLICATIONS FOR NURSING PRACTICE

1. Nurses Learn about the benefits of breast-feeding
2. Nurses Learn about the important non-pharmacological measures for procedural pain
3. Nurses can teach the parents about the benefits of breastfeeding in both physical and Psychological aspects.
4. The nurses can be taught about how to assess the pain level among neonates
5. Nurse can assume a novice to expert role by providing a teaching programme on breast feeding
6. Nurse can inculcate breast feeding practices as evidence based practice for evaluating the effectiveness in various painful procedures.

RECOMMENDATIONS

The following studies can strengthen pediatric nursing practice

1. Similar study on a larger sample can be conducted

2. Similar study can be conducted by using various non-pharmacological methods
3. It can be done to pre-term neonates
4. Comparative study can be done to assess the effectiveness of breast feeding individually and in combination with other complementary therapies
5. Comparative study can be done on the effects of breast feeding on neonates and children with various medical conditions.

CONCLUSION

The study was concluded that there is a significant difference in the level of pain perception between experimental and control group after breast feeding. Hence breast feeding is a non-invasive, harmless pain relieving measure may be encouraged in all hospitals delivering neonatal health services.

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