



EFFECTIVENESS OF BREASTFEEDING IN PAIN RESPONSE DURING INTRA MUSCULAR INJECTION AMONG INFANT – LITERATURE REVIEW

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ABSTRACT The Researcher main objective of the study was to assess the effectiveness of breast feeding In Pain Response During Intra Muscular Injection Among Infant. Multiple databases were searched focusing on breast feeding is effective during injection,immunization in pain perception etc. It was concluded through this literature review that breast feeding is effective during intramuscular injection among the infants.

KEYWORDS : pain, intramuscular injection, infant, breastfeeding.

INTRODUCTION:

Breast feeding is the most effective way to provide infant with complete nutrition and caring environment. Breast feeding has many advantages to the baby, mother, family and nation. infants 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. 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.

Review of literature:

1. A study to assess the effectiveness of breastfeeding on intensity of pain prior to immunizing intramuscular injection among infants. The aim of the study was assess the effectiveness of breastfeeding on pain response among infants during immunizing intramuscular injections. A quasi-experimental study was conducted with infants who were brought to vaccination room of o.p.d of ims and sum hospital at Bhubaneswar between December 2013 to February 2014. a total of 120 sample infants receiving vaccine D.P.T were randomly distributed into experimental and control group. After vaccination behavior of infants was scored in nips. The Result of study was no significant association was found between the control group and control group in respect to the selected demographic variables . Unpair t-test was applied to test the null hypothesis. null hypothesis was rejected and it was proved that breast feeding during injecting vaccine reduces the perception of pain among the infants($p < 0.0001$) .The study was concluded that the perception of pain intensity is less among infants when intramuscular vaccine is administered during breast feeding.^[1]

2) 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 the term neonates. total A Study Was Conducted To Evaluate The Effectiveness Of Breast-Feeding On Procedural Pain Among 60 sample was selected by non probability purposive sampling technique for control group and experimental group. each group consists of 30 sample in which assessed the pain level. all neonates received breast feeding before 1hour of procedure the experimental group received breast feeding for 10 minutes, then after 2 minutes time interval heel prick was done .then the modified neonatal infant pain scale were developed to evaluate the effectiveness of breast-feeding in level of pain perception among the term neonates. the parameter evaluated

were breathing pattern ,facial expression, types of cry and legs.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⁽²⁾

3) A study to assess effect of breastfeeding on pain relief in full-term neonates during injection of hepatitis b vaccine .The objective of this study was to examine the effect of breastfeeding on pain relief in full-term neonates during injection of hepatitis B vaccine. It was a randomized clinical trial. A sample was randomly allocated into two groups the control group and experimental. Neonates in experimental group were breastfed two minutes before, during, and after the hepatitis b immunization and the control group were held in mothers arms but not breastfed. Pain was assessed using Dan scale measuring facial expression, vocal expression and limb movement. Total 130 samples were studied 65 sample of full term neonates in the experimental group and 65 sample of full term neonates in control group .after hepatitis b immunization the assessment were carried out. The mean total pain score was measured by the Dan scale was 3.52(SD=1.37) for experimental and it was 6.78 (SD=1.69) for the control group indicating a significant lower pain score for the experimental group($p > 0.001$).The Study Concluded That Breastfeeding Reduces Pain And It Is Effective Way For Reduce Pain During Hepatitis B Vaccine Injection^[3]

4) Compare Analgesic Effect Of Breastfeeding,25% Dextrose Solution And Placebo As Give 1st Intramuscular DPT Injection To 6 Week To 3 Months Old Infants. The study was conducted in the immunization clinic of department of pediatrics LLMR medical college at Meerut. in the study the sample were randomized into three group of 40 each though computers .the snose method was used in the study.in that the person generating random numbers and put them serially in sealed envelope was not involved in the study. Infants in breastfeed group were breastfed throughout the intervention, starting 2 minutes prior to the vaccination,2ml of 25% dextrose was given orally 2minutes before intramuscular vaccination to the 25% dextrose group, in placebo group the 2 ml distilled water was given 2 min before 1m vaccination. Median of duration of cry was significantly lower in

breast fed (33.5 (17-54)seconds) and 25% dextrose fed babies (47.5 (31-67.5) seconds) as compared to babies given distilled water(80.5 (33.5-119.5) seconds) ($p < 0.001$). MFCS at 1 min and 3 min was significantly lower in direct breastfed and dextrose fed babies.^[4]

5) A study to assess the effect of breast feeding on pain after DPT immunization among the infants in selected immunization clinics of Sangli, Miraj Kupwad corporation area. The research design was non randomized control group aushi experimental research design. The study was carried out total 140 sample (70 sample in experimental group and 70 sample in control group). non probability purposive sampling technique was used. Flacc pain scale was used for the assessment of pain level. 0-6 months of infants were included for the study. A study results finding .infants belong to mild discomfort grade of pain score in experimental groups were 68 and 15 as compared to infants of control group were 61 and 55 at observation 1 and observation 2. 'Z' Values Are Significant At Observation 1 And Observation 2. Mean Pain Score, S.D And Std Error Mean Of Experimental Group Is Significantly Less Than Control Group After DPT Immunization At Observation 1 And Observation 2. The Study Was Concluded That The Breast Feeding Is Effective To Reduce The Pain Level Of DPT Immunization.^[5]

6) Randomised controlled trials (RCTs) breastfeeding newborn infants during painful procedures reduces pain. To determine the effect of breastfeeding on procedural pain in infants beyond the neonatal period (first 28 days of life) up to one year of age compared to no intervention, placebo, parental holding, skin-to-skin contact, expressed breast milk, formula milk, bottle feeding, sweet-tasting solutions (e.g. sucrose or glucose), distraction, or other interventions. The study included and quasi-RCTS involving infants aged 28 days to 12 months and receiving breastfeeding during painful procedure. Comparators included, but were not limited to, oral administration of water, sweet-tasting solutions, expressed breast or formula milk, no intervention, use of pacifiers, positioning, cuddling, distraction, topical anesthetics, and skin-to-skin care. Procedures included, but were not limited to: subcutaneous or intramuscular injection, venipuncture, intravenous line insertion, heel lance, and finger lance. applied no language restrictions. Sample size, for each included study evaluated risk of bias based on number of participants included in the study as: low risk (≥ 200 participants per arm); high risk (< 50 participants per arm); and unclear risk (50 to 199 participants per arm). according to the cochrane papas review group guidance . search of the literature retrieved 756 records after duplicates were removed. A study concluded, according to 10 studies included in this review, that breastfeeding may help reduce pain during vaccination for infants beyond the neonatal period. breastfeeding consistently reduced behavioral responses of cry duration and composite pain scores during and following vaccinations^[6]

7) A study to assess effectiveness of breastfeeding and non-nutritive sucking on pain relief in infant immunization. this study aims to assess the effectiveness of breastfeeding and non-nutritive sucking on pain relief in infant immunization. The quasi experimental study was with post test only control group. It was conducted on 26 october till 30 november 2016 at here community centers (puskesmas). the sample selected by using consecutive sampling technique. The infant selected whose age is 2-4 months and got immunization of DPT-Hib 1. there were total 69 sample in this study .the sample were divided in three group in that group 1(23 respondents) given breast feeding, group -2 (23 respondents) given non nutritive sucking and the group-3(23 respondent) control group. The result was the pain response of the three groups was groups was 2.74 in breastfeeding group, 1.87 in nonnutritive sucking group, and 3.26 in control group. there was a significant difference between non-nutritive sucking and control group with p -value = 0,000, and also the significant difference between breastfeeding and non-nutritive sucking with p -value = 0.016. however, there was no difference between breastfeeding and control group with p value = 0.142. The study conclude that breastfeeding and non-nutritive sucking were effective in reducing pain during infant immunization. it is suggested that midwives could administer these interventions to reduce pain in infant immunization, and it could be applied as non-pharmacological strategy in pain management in the community health center in Indonesia^[7]

8) A study to assess the effects of breast milk on pain severity during muscular injection of hepatitis B vaccine in neonates in a teaching hospital in Iran. The aim of this study was to compare the effects of breast milk and powdered milk on pain severity after a muscular

injection in 1-day-old neonates. In randomized control trial study there are one hundred newborn admitted to teaching hospital in Llam city at iran. one day . one-day-old newborn were divided into four equal groups : the control group (no feeding); the breastfed group; the bottle-fed mother's milk group and the powdered formula group. All infants received the hepatitis B vaccine by intra muscular injection in the same position of the thigh. The severity and duration of pain were compared among all groups during and after injection using the DAN scoring method. One Hundred Newborn (57% Boys) Participated In This Study. The Mean \pm SD age and weight for participants were 39.15 ± 0.05 weeks and 3016 ± 28 g, respectively. Crying duration either during or after the injection in breastfed infants was significantly shorter compared to the control and powdered formula groups (9.2 ± 3.9 And 16.4 ± 4.6 s Vs. 38.2 ± 8.9 And 30.0 ± 4.4 s, respectively, during injection, $p < 0.003$); (11.8 ± 3.4 and 20.6 ± 5.1 s vs. 56.2 ± 6.5 and 49.8 ± 9.6 s, respectively, after injection, $p < 0.006$). There was also a significant relationship between behavioral variations and pain during injection ($p < 0.0001$). The results of this study showed that breastfeeding decreases pain severity during painful experiences in newborn, which is in accordance with other reports. based on this finding, newborn are advised to be breastfed if a painful intervention such as vaccination is needed. The pain-relieving effect of breast milk could also be added to its other suitable effects.^[8]

9) A Study to assess the pain-relieving effect of breast-feeding during immunization injections in healthy neonates. The objective of this study was to examine the pain-relieving effect of breast-feeding during immunization injections in healthy neonates. The study included total sixty-six healthy infants returning to a clinic for their second-, third-, or fourth-month immunization with intramuscular diphtheria, tetanus, and pertussis through randomized breast-fed the infants before, during, and after the injection or to be given the injection according to routine clinic procedure (no breast-feeding). to assess the pain responses of the infants during and after immunization, we noted their heart rates, oxygen saturation levels, and length of crying. The Crying Time Was Shorter In The Experimental (Breast-Feeding) Group (M \pm SD Duration, 35.85 ± 40.11 Seconds) than in the control group (M \pm SD Duration, 76.24 ± 49.61 Seconds; $P = .001$). The heart rate and oxygen saturation levels were almost the same in both groups. the study concluded that breast-feeding, maternal holding, and skin-to-skin contact significantly reduced crying in infants receiving an immunization injection for diphtheria, tetanus, and pertussis.^[9]

10) A clinical trial evaluates analgesic effect of breast-feeding during injection of hepatitis b vaccine From Mirza Kochak Khan Hospital, Tehran, Iran. The aim of the study to assess the effect of breast feeding on pain control in new born. In This Study Total 130 Newborns Were Selected For Hepatitis B Vaccination. After describing the procedure was described the test imonial was took from parents. the samples were randomly divided in two groups. In cases group, feeding was started two minutes before injection and continued for 45 seconds. in the control group injection was made without breast feeding. In the case group 35.4% of newborns got 4 points and no one got more than 7 points according to DAN scale. In contrast the control group 32.4% got 8 points or more and no one got less than 3 points. The mean of pain severity in case group was 3.5 and in control group was 6.7 and it show significant difference according to mann-whitney u test ($p < 0.0001$). this study concluded that breast-feeding can significantly reduce pain in newborns.^[10]

11) A Randomized, Controlled Trial of Breast feeding or Oral Sucrose Solution in Term Neonates Receiving Heel Lance. The purpose of this work was to compare the efficacy of breastfeeding versus orally administered sucrose solution in reducing pain response during blood sampling through heel lance. The study conducted an open-label, randomized, controlled trial at a neonatal unit of a public hospital in northern Italy .the total sample 101 term neonates undergoing heel lance with an automated piercing device for routine neonatal screening for congenital disorders. Newborn infants were randomly assigned to breastfeeding during blood sampling or to the oral administration of 1 mL of 25% sucrose solution. We validated the multidimensional acute pain rating scale of the Premature Infant Pain Profile, heart rate increase, oxygen saturation decrease, crying behavior (duration of first cry, cry percentage in 2 minutes, and during blood. Median Premature Infant Pain Profile scores were lower in the breastfeeding group (3.0) than in the sucrose-solution group (8.5), and the median group difference was -5.0 . The median heart rate increase, oxygen saturation decrease, and duration of first cry for the breastfeeding group were, respectively, 13.0, -1 , and 3 and for sucrose group were 22, -3 , and 21.

Medians were significantly different between the groups. There were no significant differences in the sampling duration and numbers of heel lances. This study suggests that breastfeeding provides superior analgesia for heel lance compared with oral sucrose in term neonates.^[11]

12) A randomized clinical trial study to compare the massage therapy and breastfeeding during vaccine injection of infants who referring to navabsafavi health care centre. The aim of the study is to compare the massage therapy and breastfeeding during vaccine injection of infants. This study is a randomized clinical trial. Ninety-six infants were allocated randomly and systematically to three groups (breast feeding, massage, and control groups). The study population comprised all infants, accompanied by their mothers, referring to one of the health centers in Isfahan for vaccination of hepatitis B and DPT at 6 months of age and for MMR at 12 months of age. Data gathering was done using questionnaire and checklist [neonatal infant pain scale (NIPS)]. Data analysis was done using descriptive and inferential statistical methods with SPSS software. Findings of the study showed that the three groups had no statistically significant difference in terms of demographic characteristics ($P > 0/05$). The mean pain scores in the breast feeding group, massage therapy, and control group were 3.4, 3.9, and 4.8, respectively ($P < 0.05$). Then the least significant difference (LSD) post hoc test was performed. Differences between the groups, i.e. massage therapy and breast feeding ($P = 0.041$), breast feeding group and control ($P < 0.001$), and massage therapy and control groups ($P = 0.002$) were statistically significant. Considering the results of the study, it seems that breast feeding during vaccination has more analgesic effect than massage therapy. Therefore, it is suggested as a noninvasive, safe, and accessible method without any side effects for reducing vaccination-related pain.^[12]

13) A study was to assess the effects of massage and breastfeeding on response to venipuncture pain among hospitalized neonates. The aims of study was to assess the effects of massage and breastfeeding on response to venipuncture pain among hospitalized neonates. This was a clinical trial conducted among 75 full-term and near-term infants who underwent Venipuncture. The newborns were randomly allocated to the following groups ($n = 25$ for each): group 1, breastfeeding; group 2, massage; and group 3, control. In the first group, venipuncture was done 2 minutes after breastfeeding. In the second group, massage was done with effleurage technique for 3 minutes and venipuncture was done 2 minutes after massage. The Neonatal Infant Pain Scale (NIPS) was used for pain measurement in the first 30 seconds of venipuncture. Data were analyzed by t-test and one-way analysis of variance (ANOVA). The lowest mean pain score recorded in the massage group (0.92) whereas it was 4.84 in the breastfeeding group and 6.16 in the control group. ANOVA test and post-hoc statistics revealed that both interventions resulted in a significant reduction of the pain scores. According to the findings of this study, the lowest pain score was in massage group, then in breastfeeding group and control group accordingly. Considering the fact that massage and breastfeeding are natural, useful, and cost free interventions and do not need any special facility, these methods are suggested in pain management and pain control during painful procedures administered for infants.^[13]

14) A study to compare analgesic activity of 24% sucrose solution with breast milk during 1st DPT vaccination using sterile water as placebo. The aim of the study was comparison of analgesic effect of 24% sucrose and breast milk in healthy infants less than 2 months of age. This double blind, randomized placebo controlled trial was conducted in 150 healthy infants undergoing for their 1st DPT vaccination. Infants were randomized in to three groups of 50 each and received sterile water, 24% sucrose and breast milk 2 minutes prior to vaccination. The outcome variables were total duration of cry, first cry, change in heart rate and modified facial coding score (MFCS). Mean total cry was significantly lower in 24% sucrose babies 36.3 (25.34) seconds and breast milk babies 42.1 (26.13) seconds as compared to sterile water 137.2 (20.31) seconds. Mean first cry was significantly lower in 24% sucrose 18.2 (14.12) seconds and breast milk babies 25.1 (13.67) seconds as compared to sterile water 94.3 (23.26) seconds. Mean rise in heart rate (beats/min) at 3 minutes was significantly lower with 24% sucrose 3 (2.3) and breast milk 7.4 (4.6) as compared to sterile water 18.2 (4.61). Change in MFCS at 1min and 3 min was significantly lower in 24% sucrose and breast milk babies. Maximum reduction in total cry, first cry, lower rise in heart rate and low MFCS was with 24% sucrose as compared to breast milk group. The study concluded 24% sucrose and breast milk had analgesic activity in infants less than two months of age undergoing DPT vaccination. The analgesic effect was better for 24% sucrose as compared to breast milk.^[14]

DISCUSSION:

In this review of literatures 14 reviews has taken by various studies on breast feeding in pain response. the breastfeeding is essential for growth and development of infants .numerous studies and research suggest that breastfeeding is cost-effective method to reduce the pain of infants.

CONCLUSION:

Researcher assess that breast feeding is cost effective, easily available and effective intervention which reduced pain of selected samples.

Conflict of Interest: None

Source of Funding: No separate funding was received for this study.

Ethical Clearance: The ethical clearance obtained from our institute.

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