A Study to Assess the Effectiveness of Facilitated Tucking Position on Pain Perception among Neonates During Vaccination in Selected Hospital of Panipat, Haryana

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Abstract

Background and Objective: A study was done to assess the effectiveness of facilitated tucking position on pain perception among neonates during vaccination in selected hospital of Panipat. **Material & Methods:** The methodology of the present study was true experimental research design. Sample size of the study was 60 neonates during vaccination selected with random sampling technique. 30 neonates in each group was held in the facilitated tucking position & in routine care during Hepatitis B vaccination. NIPS was used for data collection. Data collection method was interview & observation method; data analysis was done with the help of descriptive and inferential statistics. **Result**: The mean pain scores of neonates vaccinated in the facilitated tucking position (2.53±1.042) were significantly statistically lower than the scores of neonates vaccinated in the routine position (5.80±0.925) ($p<0.05$). **Conclusion**: The pain perceptions of neonates held in the facilitated tucking position during Hepatitis B vaccination were lower. The facilitated tucking position is a non-pharmacological method & recommended as an effective and useful method for reducing pain during the procedure.

Keywords: *Facilitated tucking position, Neonates, Pain perception & Vaccination.*

Introduction

Neonate refers to an infant within the first 28 days after birth. They may look tiny and fragile but are never underestimated by their appearance. Neonates are subjected to various degrees of discomfort. They lose body heat more easily, faces troubles in feeding, underdeveloped organs suck which place them under various complications. Pain is an acute stress that leads to disequilibrium in the physical, physiological, emotional and behavioural parameters to various degree of severity. Neonates are highly sensitive to pain & more vulnerable to the effects of repeated painful stimuli, exposing them to possible short term as well as long-term developmental and psychological problems in later part of childhood.[1]

Neonates are unable to communicate pain verbally and hence are commonly unrecognized and left untreated.[1] Attention should be paid to non-verbal indications during communication established with neonates. Physiological parameters, behavioural methods, and stress hormones have been evaluated to define the pain felt by neonates.[2]

Vaccine are the most effective and safe way to protect neonates from life-threatening diseases.[3] Vaccinations, the most common source of iatrogenic pain in neonates, are administered repeatedly throughout infancy, childhood and adolescence.[4] Minimizing pain during neonatal vaccination can help to prevent distress, development of needle fears.[5]

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Neonates experience pain and exhibits various physiological and behavioural response during painful procedures. Such painful expressions are pampered by unsterilized pacifiers, blind administration of sucrose solutions. Non pharmacological technique distracts the neonates by grabbing their attention.[1] Reducing light, noise, changing positions & providing direct support like touching the infant are part of the developmental care program, aimed at increasing the infant's energy to cope with painful procedures & better adapt to the life stress out of the womb are recommended as one of the pain management strategies.[6]

Facilitated tucking is one of the simplest, safe non-pharmacological and cost-effective techniques to prevent the complications of unattended painful response simulating the condition of being in uterus. This makes the neonate comfortable, more secure with controlled response. It facilitates self-regulation by decreasing the physiologic response like prolonged heart rate elevation that contributes to the disequilibrium associated with pain and stress. Facilitated tucking improves the emotional security and reduces the pain perception.[1]

The researcher through her clinical experience understood the physiology of pain in neonates during vaccination. These painful responses remained neglected since neonates are unable to communicate their intensity of pain. The researcher adopted facilitated tucking as the comforting measure to reduce procedural pain that confines the neonate and prevent the long-term consequences of repeated painful stimuli.[1]

This study was conducted with the following objectives:

1. To assess the effectiveness of facilitated tucking position on pain perception among neonates during vaccination in experimental and control group.

2. To find out the association between pain perception among neonates during vaccination in experimental and control group with selected socio demographic variables.

Material & Method

A quantitative research approach having true experimental post test only research design adopted for the study. Total 60 neonates (30 in each group) undergoing Hepatitis B vaccination at Civil hospital, Panipat, Haryana were selected by Simple random probability sampling technique. Tool comprised of: Socio demographic profile, consisted of 6 items used to collect information about gender, gestational age, birth weight (g), length of neonate (cm), method of delivery, type of feed before painful vaccination. Neonate Infant Pain Scale (NIPS) is used to assess the pain perception among neonate during vaccination. The scale consists of one physiological section & five behavioural section, including facial expression, cry, breathing pattern, arm & leg movements & state of arousal. The cry section is scored between 0 & 2 points & other sections are scored between 0 & 1 point. The total score varies between 0 & 7 points & a higher score indicates severe pain. In order to measure the validity of tool, they were given to eight experts from the field of nursing as well as medical. The reliability of the tool was evaluated with the help of split-half (odd-even) correlation method & Cronbach's Alpha method. It was found to be 0.94 & 0.8 indicating that the tool is highly reliable. Permission letter was obtained from the ethical committee of the institute. Data was collected in the month of January 2020 for 4 weeks at immunization/vaccination room of Civil hospital, Panipat, Haryana. Written permission was obtained from the CMO of the Civil hospital, Panipat, Haryana.

Informed consent was obtained from the parents of the neonate. Good IPR was maintained with the parents after self-introduction, nature & objectives of the study was explained to obtain maximum cooperation. 70% alcohol was used to clean the site of vaccination for each group. Both the group neonate is vaccinated by same health care provider. All the neonate during vaccination are in care giver lap. For assessing the pain perception, the neonate in experimental group was given facilitated tucking position 1 min before the administration of Hepatitis B vaccination. Routine care was performed on the neonates in the control group before the administration of Hepatitis B vaccination. Researcher observe & scored the NIPS by evaluating the

pain experienced by the neonate.

Results & Discussion

Table 1: Frequency distribution of Neonatal Infant Pain Scale (NIPS) among samples in experimental and control group. (N=60)

Characteristics	Experimental Frequency (f)	Control Frequency (f)
Facial expression		
a. Relaxed muscles	8	1
b. Grimace	22	29
Cry		
a. No cry	0	0
b. Whimper	23	.10
c. Vigorous cry	7	20
Breathing pattern		
a. Relaxed	17	5
b. Change in breathing	13	25
Arm movements		
a. Relaxed/ Restrained (with soft restrains)	30	0
b. Flexed/ Extended	0	30
Leg movements		
a. Relaxed/ Restrained (with soft restrains)	30	0
b. Flexed/ Extended	0	30
State of arousal		
c. Sleeping/Awake	26	20
d. Fussy	4	10

Table 2 Comparison on level of pain perception among experimental group and control group. (N=60)

CRITERIA MEASURE OF PAIN SCORE		
Pain score	**Experimental Frequency (f)**	**Control Frequency (f)**
Severe (5-7)	0	26
Moderate (3-4)	16	4
No pain (0-2)	14	0

Table 3 Level of association among neonates during vaccination with selected socio demographic variable in experimental & control group. (N=60)

S. No	Socio Demographic data	Association with experimental group pain score				Association with control group pain score			
		Chi Test	'p' Value	df	Table Value	Chi Test	'p' Value	df	Table Value
1.	**Gender** a. Male b. Female	6.467	0.001	1	3.841*	0.632	0.427	1	3.841^{NS}
2.	**Gestational age** a. Term b. Pre term c. Post term	0.241	0.886	2	5.991^{NS}	0.663	0.718	2	5.991^{NS}
3.	**Birth weight (g)** a. 1500-2000 b. 2000-2500 c. 2500-3000 c. >3000	0.599	0.897	3	7.815^{NS}	3.462	0.326	3	7.815^{NS}
4.	**Length of neonate (cm)** a. <45 b. 45.1-47 c. 47.1-49 d. >49	1.250	0.535	2	5.991^{NS}	0.007	0.935	1	3.841^{NS}
5.	**Method of delivery** a. Normal vaginal delivery b. Cesarean delivery c. Vacuum delivery d. Forceps delivery	2.917	0.233	2	5.991^{NS}	2.596	0.107	1	3.841^{NS}
6.	**Type of feed before painful vaccination** a. Breast feed b. Formula feed c. Mixed feed	2.237	0.327	2	5.991^{NS}	0.710	0.701	2	5.991^{NS}

The present study revealed that the mean ± SD score of pain was 2.53 ±1.042 in neonates who underwent painful vaccination with facilitated tucking position was significantly less than mean ± SD score of pain was 5.80 ± 0.925 in neonates who underwent painful vaccination in the hospital routine. In present study the calculated unpaired 't' test value was 12.845 which was found to be highly statistically significant at $p < 0.001$ level which indicates that facilitated tucking is effective in reducing pain during vaccination. Findings were contrary to the study by Kucukoglu S et al [2] the mean pain scores of infants vaccinated in the facilitated tucking position (2.83±1.18) were significantly statistically lower than the scores of infants vaccinated in the classical holding position (6.47±1.07) ($p<0.05$). Findings are also contrary to the study by Sankpal SV[7] that the mean pain score of experimental group was 2.47 & control group was 6.17. Findings of the study are also contrary to the study by Selvarani.G GR[1] that the post test mean pain score of pre term infants undergoing painful procedure in the study was 3.2± 2.7 & post test mean pain score of preterm infants in control group was 8.3 ± 4.8. It is concluded that the facilitated tucking is an effective non-pharmacological measure to reduce procedural pain in neonates demonstrated by significantly lower NIPS scores. Similar study can be conducted to compare the effectiveness of facilitated tucking position with other non-pharmacological pain relief measures. There were some limitations of the study i.e. sample size was small and only neonates during hepatitis B vaccination was taken as the sample.

Conclusion

The facilitated tucking position was more effective than the routine position in relieving pain that occurred due to vaccination. Therefore, this position can be used in conjunction with pharmacological methods during painful procedures due to its simple, inexpensive, and non-invasive application. A facilitated tucking position allowed the neonates in this study to better maintain stability in their autonomic & motor system demonstrated by significantly lower NIPS score.

Conflict of Interest: None

Source of Funding: Self

Ethical Clearance: Obtained

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