

A COMPARATIVE STUDY TO EVALUATE THE EFFECTIVENESS OF FACILITATED TUCKING POSITION VS KANGAROO MOTHER CARE POSITION ON THE LEVEL OF PAIN PERCEPTION AMONG THE NEWBORNS IN POSTNATAL WARD AT SELECTED HOSPITALS, TRICHY.

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Abstract: A Quasi Experimental study to Evaluate the Effectiveness of Facilitated Tucking Position Vs Kangaroo Mother Care Position on the Level of Pain Perception among the Newborns During Vaccination in Postnatal Ward at Selected Hospitals, Trichy. The study objectives were to assess the Level of Pain Perception among the Newborns in Group I [Facilitated Tucking Position], Group II [KMC Position] and Group III [Control Group] Newborns during Vaccination, to evaluate the effectiveness of Facilitated Tucking Position for Level of Pain Perception among the Newborns in Comparison with the Control Group, to evaluate the effectiveness of Kangaroo Mother Care Position for Level of Pain Perception among the Newborns in Comparison with the Control Group and to evaluate the effectiveness of Facilitated Tucking Position Vs KMC Position on the Level of Pain Perception among the Newborns. 30 Subjects were selected by using simple random sampling technique (Lottery method). Neonatal Infant Pain Scale (NIPS) and Premature Infant Pain Scale (PIPP) were used for assessing level of pain among newborns. Data were analysed by using descriptive and inferential statistics. The result proven that, the two Experimental groups [Group I and Group II] are effective to decrease the level of pain perception with the statistical Analysis, the study which showed there is Mean value is decreased in both Experimental Group I. So, the Facilitated tucking Position is very much effective than the KMC & control groups.

Key Words: Facilitated Tucking Position, Kangaroo Mother Care, Newborn.

1. INTRODUCTION:

"A new baby is like the start of everything...
awe, hope, and a vision of potential.

-Eda LaShan

For a baby's appropriate development and long-term health, newborn care is of utmost importance. But newborn care frequently doesn't get the best attention. India faces the difficult burden of raising the largest number of infants in the world with over 25 million births per year. Currently, 1.3 million people pass away before completing four weeks of existence. Sub-Saharan Africa and Asia have been reported to have the highest rates of newborn death worldwide [Black, 2020]. (1)

Two-thirds of infant deaths occur in the first week of life, according to the Multi-centric Home Intervention Project's baseline surveys (ICMR, 2020). (2)

The first few weeks of a child's existence are known as the neonatal period. Near-term or late-term infants are those who are born between 34 and 36 weeks of gestation. Early-life untreated pain may have negative consequences on the developing central nervous system and may also exacerbate affective and behavioral reactions to following painful events, according to WONG's (2020). (3)

A "3-P" strategy comprising pharmacological, physical, and psychological tactics was proposed as a possible foundation for pain management. As a result, investigations on pain treatment in newborns continue to be a hot issue in pediatrics, [Kyle T, Carman S.2020]. This strategy preserves energy for a healthy newborn life while stabilizing the

physiological parameters of infants and assisting them in feeling safe depending on their position in the future.2020 [Mehran A]. (4)

The current mortality rate in India is approximately 35/1000 live births for children ages 0 to 28 days, 30/1000 live births for children ages 1 to 12, and 26/1000 live births for children ages 1 to 5. Thus, within 48 hours of birth, about 45% of newborn deaths occur. (5)

2. NEED FOR THE STUDY :

According to research by the World Health Organisation, more than one in ten newborns worldwide were delivered prematurely (2020). Later studies revealed that the foetus contains organised fibres that transmit pain impulses. The myelination of the neural pathways starts in the second and third trimesters and is completed between 30 and 37 weeks of gestation. (6) Despite the fact that several research have been reported on procedural pain control and assessment in newborns, there have been none on the use of the assisted tucking position to reduce vaccination-related discomfort. (7)

Recent research has concentrated on pain pathophysiology, pain assessment, and pharmaceutical treatments. During routine procedures, a nurse's main duty is to make sure that pain-relieving techniques are carried out in addition to identifying and treating the pain.

3. Statement of the problem:

“A Comparative Study to Evaluate the Effectiveness of Facilitated Tucking Position Vs Kangaroo Mother Care Position on the Level of Pain Perception among the Newborns During Vaccination in Postnatal Ward at Selected Hospitals, Trichy.

4. Objectives:

- To assess the Level of Pain Perception among the Newborns in Group I [Facilitated Tucking Position], Group II [KMC Position] and Group III [Control Group] Newborns during Vaccination.
- To evaluate the effectiveness of Facilitated Tucking Position for Level of Pain Perception among the Newborns in Comparison with the Control Group.
- To evaluate the effectiveness of Kangaroo Mother Care Position for Level of Pain Perception among the Newborns in Comparison with the Control Group.
- 4) To evaluate the effectiveness of Facilitated Tucking Position Vs KMC Position on the Level of Pain Perception among the Newborns.

4.1 Hypotheses

- **H1** - There is a significant difference in level of pain among newborns with facilitated tucking position vs kangaroo mother care position.

5. REVIEW OF LITERATURE:

Section A: Prevalence of level of pain among newborns

Denise Harrison et al., [2020] conducted a cross-sectional study in a tertiary pediatric hospital in Canada to examine the prevalence of pain, pain assessment, and pain treatment practices. For information on pain evaluation, pain ratings, and pharmacological and nonpharmacological treatments, patient charts were reviewed. The majority of infants or their carers (n=51 [84%]) reported feeling pain while they were in the hospital. Almost half said a nurse practitioner had given them a shot before or during their most recent difficult operation. (8)

Section B: effectiveness of facilitated tucking position reduce on pain perception during vaccination among newborns.

Karen, E et al., [2020] a quasi-experimental investigation was done. The study showed that "facilitated tucking," a non-pharmacologic nursing intervention, was successful. Twelve minutes before, during, and fifteen minutes after two heel sticks—one with and one without aided tucking—heart rate, oxygen saturation, and sleep stage—were recorded. less time spent crying on average ($p < 0.001$). (9)

Section C: effectiveness of kangaroo mother care position reduces on pain perception during vaccination among newborns

SAJEDI F, et al., [2019] a quasi-experimental investigation was carried out. Risks of many kinds can be connected to pain in newborns. Therefore, it would appear crucial to discover a practical and acceptable pain-relieving technique. Neonatal pain management using pharmacologic medications is not advised for simple operations, although nonpharmacologic therapies like Kangaroo Care (KC) have been found to be successful. This study's goal was to

evaluate how well KC affected term newborns' physiologic reactions to the discomfort of receiving an intramuscular injection of vitamin K. (10)

6. MATERIALS AND METHODS:

The research approach and design were selected for this study was quantitative approach and Quasi Experimental posttest with control group design respectively. 30 Subjects were selected by using simple random sampling technique (Lottery method). Neonatal Infant Pain Scale (NIPS) and Premature Infant Pain Scale (PIPP) were used for assessing level of pain among newborns. In order to carry out the study, the investigator selected the postnatal ward at Selected Hospital-Trichy. The hospital authority gave formal approval for this method of data collection. The postnatal mothers were introduced to the researcher. Mothers were informed of the study objectives in detail and given assurances regarding the confidentiality of the information collected. Prior to the data collection, each mother's informed written consent was obtained. The mothers were able to leave the study whenever they wanted. Three steps of data collection were used. Only the post test was conducted during Phase I. Neonatal Infant Pain Scale and Premature Infant Pain Profile scales were used to gauge how much pain the infants were experiencing, and data from the mothers was gathered using these factors. One infant for experimental group I (Facilitated Tucking Position) and one newborn for experimental group II (KMC Position) were chosen samples on each day for each control group. Each infant took about 15-20 minutes. The post-test on the same day in Phase 2 After a full explanation of the process to the mother, her informed agreement was acquired. The degree of discomfort was evaluated following immunisation using manual recording of physiological parameters and observation of facial expressions for a period of 30 seconds. The Neonatal Infant Pain Scale (NIPS) and Premature Infant Pain Scale (PIPP) was used to measure the discomfort. In Phase 3, the same technique was used for the post test, which assessed the level of discomfort experienced by the neonates during the immunisation using the scales [NIPS] (Neonatal Infant discomfort Scale) and [PIPP] (Premature Infant Pain Scale). Throughout the time that data was being collected, all of the babies gave good cooperation. The data were analysed by the descriptive and inferential statistics. Descriptive statistics like frequency and percentage were be used for demographic variables. Mean and standard deviation were used for mean post test level of pain. Inferential statistics like Paired –'t' test were used to compare post level of pain.

7. DATA ANALYSIS:

SECTION A: DISTRIBUTION OF THE DEMOGRAPHIC VARIABLES AND AMONG MOTHERS AND NEWBORNS.

Table 1: Frequency and percentage distribution of demographic variables among mothers and newborns.

(N=30)

DEMOGRAPHIC VARIABLES	FACILITATED TUCKING POSITION GROUP		KMC POSITION GROUP		CONTROL GROUP	
	FREQUENCY N	PERCENTAGE %	FREQUENCY N	PERCENTAGE %	FREQUENCY N	PERCENTAGE %
Age in years						
20-23 years	2	20	2	20	2	20
24-26 years	5	50	2	20	1	10
>26 years	3	30	6	60	7	70
Delivery method						
Normal vaginal delivery	8	80	6	60	7	70
LSCS	2	20	4	40	3	30
Gestational age in weeks						
37-38 weeks	4	40	5	50	2	20
39-40 weeks	6	60	5	50	6	60
41-42 weeks	0	0	0	0	2	20
Postnatal days of new born						
1 st day	8	80	8	80	7	70
2 nd day	2	20	2	20	3	30
3 rd day	0	0	0	0	0	0

Gender						
Male	5	50	5	50	7	70
Female	5	50	5	50	3	30
Weight in grams						
<1500g	0	0	0	0	0	0
1500-2000g	1	10	3	30	7	70
2000-2500g	9	90	7	70	3	30

Table 1: Frequency and percentage distribution of demographic variables among mothers and newborns.

- In Facilitated Tucking Position Group, Majority of mothers 5(50%) were in the age group of 24-26 years, Majority of mothers 8(80%) had normal vaginal delivery, Majority of mothers 6(60%) were in the gestational age in 39-40 weeks, Majority of newborns 8(80%) were in 1st day of postnatal period, Majority of newborns 5(50%) both in gender, Majority of newborns 9(90%) were comes under 2000-2500g in weight.
- In Kangaroo mother care position Group, Majority of mothers 6(60%) were in the age group of >26 years, Majority of mothers 6(60%) had normal vaginal delivery, majority of mothers 5(50%) were in gestational age in 37 -40 weeks, Majority of newborns 8(80%) were in 1st day of postnatal period, Majority of newborns 5(50%) both in gender, Majority of newborns 7(70%) were comes under 2000-2500g in weight.
- In Control group, Majority of mothers 7(70%) were in the age group of >26 years, Majority of mothers 7(70%) had normal vaginal delivery, Majority of mothers 6(60%) were in the gestational age in 39-40 weeks, Majority of newborns 7(70%) were in the 1st day of postnatal period, Majority of newborns 7(70%) were comes under male category, Majority of newborns 7(70%) were comes under 1500-2000 in weight.

SECTION B: DISTRIBUTION OF THE PHYSIOLOGICAL PARAMETERS AMONG NEWBORNS.

Table 2: Frequency and percentage distribution of Physiological parameters among newborns.

(N=30)

PHYSIOLOGICAL PARAMETERS	FACILITATED TUCKING POSITION GROUP		KMC POSITION GROUP		CONTROL GROUP	
	FREQUENCY N	PERCENTAGE %	FREQUENCY N	PERCENTAGE %	FREQUENCY N	PERCENTAGE %
APGAR score at 5th minutes						
5-7	0	0	3	30	9	90
>7	10	100	7	70	1	10
Heart rate						
Normal	10	100	10	100	10	100
Abnormal	0	0	0	0	0	0
Respiration						
Normal	0	0	3	30	4	40
Abnormal	10	100	7	70	6	60
Body temperature						
Normal	7	70	3	30	3	30
Abnormal	3	30	7	70	7	70
Oxygen saturation						
Normal	6	60	7	70	6	60
Abnormal	4	40	3	30	4	40

Table 2: Frequency and percentage distribution of Physiological parameters among newborns.

- In Facilitated tucking position, Majority of newborns 10(100%) were in the >7 in APGAR score at 5th minute, Majority of newborns 10(100%) had normal heart rate, Majority of newborns 10(100%) were comes under abnormal respiration, Majority of 7(70%) were in the normal body temperature, Majority of newborns 6(60%) were in the normal oxygen saturation.

- In Kangaroo mother care position, Majority of newborns 7(70%) were comes under >7 in APGAR score at 5th minute, Majority of newborns 10(100%) were in the normal heart rate, Majority of newborns 7(70%) were comes under abnormal respiration, Majority of newborns 7(70%) had abnormal body temperature, Majority of newborns 7(70%) were in the normal oxygen saturation.
- In Control group, Majority of newborns 9(90%) were comes under 5-7 in APGAR at 5th minute, Majority of newborns 10(100%) were comes under normal heart rate, Majority of newborns 6(60%) were in the abnormal respiration, Majority of newborns 7(70%) were comes under abnormal body temperature, Majority of newborn 6(60%) were comes under normal oxygen saturation.

SECTION C: ASSESSMENT OF THE LEVEL OF PAIN PERCEPTION AMONG THE NEWBORNS IN GROUP I [FACILITATED TUCKING POSITION], GROUP II [KMC POSITION] AND GROUP III [CONTROL GROUP] NEWBORNS DURING VACCINATION.

Table 3: Frequency and percentage wise distribution of Level of Pain Perception among the Newborns in Group I [Facilitated Tucking Position], Group II [KMC Position] and Group III [Control Group] Newborns during Vaccination in PIPP Pain Scale.

(N = 30)

LEVEL OF PAIN PIPP Pain Scale	Facilitated Tucking Position		KMC Position		Control Group	
	n	%	N	%	N	%
No pain or mild pain (0-5)	8	80	3	30	0	0
Moderate (6-10)	2	20	6	60	9	90
Severe pain (>10)	0	0	1	10	1	10
Mean	3.50		7.10		9.10	
Standand deviation	1.958		3.381		1.595	

Tables 3: shows that frequency and percentage wise distribution of level of pain perception among the newborns in Group I [Facilitated Tucking position), Group II [KMC Position) and Group III (control group) Newborns during vaccination in PIPP pain scale. In facilitated tucking position, Majority of newborns 8(80%) had No pain or mild pain (0-5). The mean and standard deviation of the level of pain perception among newborns in 3.50±1.958). In Kangaroo mother care position, Majority of newborns 6(60%) had moderate pain (6-10). The mean and standard deviation of the level of pain perception among newborns in (7.10±3.381). In control Group, Majority of newborns 9(90%) had moderate pain (6-10). The mean and standard deviation of the level of pain perception among newborns in (9.10±1.595).

Table 4: Frequency and percentage wise distribution of Level of Pain Perception among the Newborns in Group I [Facilitated Tucking Position],Group II[KMC Position] and Group III[Control Group] Newborns during Vaccination in NIPS Pain Scale.

(N = 30)

LEVEL OF PAIN NIPS Pain Scale	Facilitated Tucking Position		KMC Position		Control Group	
	N	%	N	%	N	%
No pain (0-2)	7	70	1	10	0	0
Moderate (3-4)	3	30	6	60	7	70
Severe pain (>4)	0	0	3	30	3	30
Mean	2.10		3.90		4.30	
Standand deviation	1.370		1.197		1.059	

Table 4: shows that Frequency and percentage wise distribution of Level of Pain Perception among the Newborns in Group I [Facilitated Tucking Position], Group II [KMC Position] and Group III [Control Group] Newborns during Vaccination in NIPS Pain Scale. In Facilitated Tucking Position, Majority of newborns 7(70%) had no pain (0-2). The mean and standard deviation of the level of pain perception among newborns in 2.10±1.370. In KMC Position, Majority of newborns 6(60%) had moderate pain (3-4). The mean and standard deviation of the level of pain perception among newborns in 3.90±1.197. In control group, Majority of newborns 7(70%) had moderate pain (3-4). The mean and standard deviation of the level of pain perception among newborn in 4.30±1.059.

SECTION D: EVALUATE THE EFFECTIVENESS OF FACILITATED TUCKING POSITION FOR LEVEL OF PAIN PERCEPTION AMONG THE NEWBORNS IN COMPARISON WITH THE CONTROL GROUP.

Table –: 5 Evaluate the effectiveness of Facilitated Tucking Position for Level of Pain Perception among the Newborns in Comparison with the Control Group.

(N=20)

Scale	GROUP	MEAN	STANDARD DEVIATON	‘t’ VALUE student t test	df	‘p’ VALUE
PIPP Pain Scale	Facilitated Tucking Position	3.50	1.958	-7.012	18	0.001** HS
	Control group	9.10	1.595			
NIPS Pain Scale	Facilitated Tucking Position	2.10	1.370	-4.017	18	0.001** HS
	Control group	4.30	1.059			

**** $-p < 0.001$ highly significant**

Table 5 Evaluate the effectiveness of Facilitated Tucking Position for Level of Pain Perception among the Newborns in Comparison with the Control Group.

- Shows that facilitated tucking mean score of effectiveness of the level of pain perception in PIPP scale was 3.50 ± 1.958 and the mean score in the control group was 9.10 ± 1.595 respectively, the calculated t VALUE student ‘t’ test -7.012, shows statistically highly significant difference between comparison of the level of pain perception among newborns in group I and control group in PIPP Scale respectively.
- Shows that facilitated tucking mean score of effectiveness of the level of pain perception in NIPS scale was 2.10 ± 1.370 and the mean score in the control group 4.30 ± 1.059 , the calculated t VALUE student ‘t’ test = -4.017, these found to be statistically highly significant at $p < 0.001$ differences between comparison of the level of pain perception among newborns in group I and control group in NIPS Scales respectively.

SECTION E: EVALUATE THE EFFECTIVENESS OF KANGAROO MOTHER CARE POSITION FOR LEVEL OF PAIN PERCEPTION AMONG THE NEWBORNS IN COMPARISON WITH THE CONTROL GROUP.

Table –: 6 Evaluate the effectiveness of Kangaroo Mother Care Position for Level of Pain Perception among the Newborns in Comparison with the Control Group.

(N=20)

Scale	GROUP	MEAN	STANDARD DEVIATON	‘t’ VALUE student t test	df	‘p’ VALUE
PIPP Pain Scale	Kangaroo Mother Care Position	7.10	3.381	-1.692	18	0.108 NS
	Control group	9.10	1.595			
NIPS Pain Scale	Kangaroo Mother Care Position	3.90	1.197	-0.791	18	0.439 NS
	Control group	4.30	1.059			

NS- non significant

Tables 6 Evaluate the effectiveness of Kangaroo Mother Care Position for Level of Pain Perception among the Newborns in Comparison with the Control Group.

- Shows that Kangaroo mother care position, mean score of effectiveness of the level of pain perception in PIPP Scale was 7.10 ± 3.381 and the mean score in the control group 9.10 ± 1.595 , the calculated t VALUE student ‘t’ test = -1.692, these found to be statistically no significant.

- Shows that Kangaroo mother care position, mean score of effectiveness of the level of pain perception in NIPS Scale was 3.90 ± 1.197 and the mean score in the control group 4.30 ± 1.059 , the calculated t VALUE student 't' test = -0.791, these found to be statistically no significant.

SECTION F: EVALUATE THE EFFECTIVENESS OF FACILITATED TUCKING POSITION VS KMC POSITION ON THE LEVEL OF PAIN PERCEPTION AMONG THE NEWBORNS.

Table –: 7 Evaluate the effectiveness of Facilitated Tucking Position Vs KMC Position on the Level of Pain Perception among the Newborns.

(N=20)

Scale	GROUP	MEAN	STANDARD DEVIATON	't' VALUE student t test	df	'p' VALUE
PIPP Pain Scale	Facilitated Tucking Position	3.50	1.958	-2.914	18	0.009*
	KMC Position	7.10	3.381			
NIPS Pain Scale	Facilitated Tucking Position	2.10	1.370	-3.128	18	0.006*
	KMC Position	3.90	1.197			

*-p < 0.05 significant

Table –: 7 Evaluate the effectiveness of Facilitated Tucking Position Vs KMC Position on the Level of Pain Perception among the Newborns.

- Shows that Facilitated Tucking mean score of effectiveness of the level of pain perception in PIPP scale was 3.50 ± 1.958 and the mean score in the Kangaroo mother care position 7.10 ± 3.381 , the calculated t VALUE student 't' test = -2.914, these found to be statistically significant at $p < 0.05$ difference between comparison of the level of pain perception in Facilitated Tucking and KMC position in PIPP Scale respectively.
- Shows that Facilitated Tucking mean score of effectiveness of the level of pain perception in NIPS scale was 2.10 ± 1.370 and the mean score in the KMC position 3.90 ± 1.197 , the calculated t VALUE student 't' test = -3.128, these found to be statistically significant at $p < 0.005$ difference between comparison of the level of pain perception in Facilitated Tucking and KMC position in NIPS Scale respectively.

9. RECOMMENDATION:

- A Similar study can be conducted on a large number of samples to generalize the study findings.
- This study can be conducted by using non-probability sampling technique.
- This study can be conducted in community settings.

10. CONCLUSION:

The two Experimental groups [Group I and Group II] are effective to decrease the level of pain perception with the statistical Analysis, the pilot study which showed there is Mean value is decreased in both Experimental Group I. So, the Facilitated tucking Position is very much effective than the KMC & control groups.

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