

Effectiveness of Nesting on Posture and Movements among Preterm babies

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Abstract:-

Background and Aim: Preterm babies are the delicate lives to be taken care of very intelligently as well as delicately. Preterm babies are physically immature and physiologically unstable. They cannot tolerate environmental stimuli. Due to immaturity, they often lack adequate muscle tone and are at the risk of developing an abnormal posture. Nesting helps maintain position, promote comfort and provide physiological, behavioral and postural stability to premature babies. The purpose of the study is to see effectiveness of nesting on posture and movement of in healthy preterm infant. **Methods:** Quasi experimental pre and post -test control group design was used to measure the effectiveness of nesting on posture and movement. Non - probability Purposive sampling technique was used to select the sample comprised of 60 preterm babies at NICU in selected hospital, Coimbatore. The study used that the Infant Position Assessment Tool and Modified Ferrari Observational Checklist to assess the effectiveness of Nesting on Posture and Movement. **Results:** Post-test mean score of nesting on posture was found to be 11.07 and SD 1.285 in experimental group. Where as in control group it was found to be 7.20 and SD 1.669. The statistical paired, 't' test value is 13.357. Post-test mean score of nesting on movement was found to be 11.07 and SD 1.285 in experimental group. Where as in control group nesting was found to be 7.20 and SD 1.669. The statistical paired t' test value is 20.451. The study found that There is a significant correlation ($r = 0.296$) was found between position and movement. **Conclusion:** Nesting is convenient, cost effective, requires less time and skills, hence it is easy for the nurse to practice and in turn be beneficial for preterm babies, starts with simple intervention by making nest for the preterm.

I. INTRODUCTION

Preterm is defined as babies born alive before 37 weeks of pregnancy. Common causes of preterm birth include multiple pregnancies, infections and chronic conditions such as diabetes and high blood pressure; however, often no cause is identified. Globally 12.9 million preterm are born every year, representing 9.6% incidence of preterm births. In India Incidence of preterm births is estimated to be 11–14%. In this about 22 – 24% preterm death will occur.

Preterm babies are the delicate lives to be taken care of very intelligently as well as delicately; love, touch, care, support in NICU is required. Along with the emergency care, medical care, physical care, nursing care many small, simple interventions to bear in mind regarding care of the preterm; may be not much known or practiced regularly in

Indian nursing scenario, but a helpful step for the preterm to maintain his posture and smooth movement and that is "Nesting".

Nesting, as a component of developmental care, improves preterm's position quality through preservation of preterm's curved limb position and reduction of sudden movements as well as immobility of the arms and legs. Incorrect body positioning results in postural deformities, such as hip abduction and external rotation, ankle eversion, retracted and abducted shoulders, neck hyperextension. Developmental supportive Positioning includes midline orientation, hand-to-mouth activity and fetal flexor patterns. All these principles are achieved through 'nesting'.

Preterm babies lies in nest and cotton straps are pulled across newborn so that they feel safe and secure. If towel nesting is not available, nesting can be prepared by using clean baby sheets preferably soft ones. Roll sheets length way so that they are tubes. These are then placed around newborn so that they feel sometime secure around them on both sides and under feet. This will not only help to feel safe but it will also encourage good posture and muscle movement and provide comfort positioning

Nesting enables the newborn to maintain a flexed posture, mimicking the position to a certain extent, which was present in fetal state in uterus. This is comforting to newborn and helps in the growth and development and easy adaptation to new environment, from intrauterine aquatic to external atmospheric environment.

II. NEED FOR THE STUDY

Children are the future of any nation. About 80 percent of the preterm babies require special According to the World Health Organization (WHO) report, every year, over 4 million babies die during the neonatal period globally; 98% of the deaths occurring in the developing world care. Premature birth is a major cause of neonatal mortality in developed countries.

Nest posture is a completely safe and non-medicinal nursing procedure, which could accelerate brain maturity and development through enhancing the deep sleep state of neonates. Nurses are central in hospital efforts to improve quality care. Comforting interventions in the field of nursing care will contribute to high patient satisfaction and eventually will lead to institutional development. Nesting is effective in improving the posture, comfort and stable physiological parameters of low-birth-weight infants during their stay in NICU.

In a clinical trial, **Maguriet al.(2018)** placed premature infants (gestational age: <32 weeks) in the nesting position inside a covered incubator and observed a significant difference in terms of the duration of respiratory support and length of NICU admission. To date, several studies have been performed on the effectiveness of nesting in the growth and development of premature infants reporting positive results. Furthermore, there is limited information regarding nesting on the sleep-wake states and posture movement of premature neonates admitted in the NICU. (**Maguri et al. 2018**). Hence, the investigator has inspiration to find the effectiveness of Nesting on Posture and Movements among Preterm babies.

III. OBJECTIVES OF THE STUDY

- To assess the Posture and Movements among Preterm babies in experimental and control group.
- To evaluate the effectiveness of Nesting on Posture and Movements among Preterm babies in experimental group.
- To find out the relationship of Nesting between Posture and Movements among Preterm babies in experimental group.
- To determine the association between the post-test score of Nesting on Posture and Movements among Preterm babies with their selected demographic variables.

IV. MATERIALS AND METHODS

A. DESIGN ANDS AMPLING:

The research approach adopted for the study was quantitative evaluative approach. The research design selected for the study was Quasi experimental pre and post - test control group design which was used to measure the effectiveness of nesting on posture and movement. The selection on preterm babies was done by Non - probability Purposive sampling technique and the sample consists of 60 preterm babies in selected hospital, Coimbatore.

B. DATA COLLECTION INSTRUMENT

The data was collected by using demographic profile of the preterm, infant position assessment too land Modified Ferrari observational checklist to assess the effectiveness of posture and movements by using the data collection method of semi structured interview schedule. **Section A: Socio Demographic Variables.** It consists of demographic variables of preterm baby and mother such as Age of mothers, birth order, educational status, occupational status, religion, residence, type of family, and preterm babies age in days, gender, birth weight, gestational week, mode of delivery, Apgar score, and source of information regarding preterm baby. **SectionB: Infant position assessment tool** was used to assess the effectiveness of nesting on position among preterm baby. That scale consists of 6 indicators. Each indicator is rating from 0 – 2 and total score was 14 points.

Table 1: Infant assessment tool

INDICATOR	0	1	2
Shoulder status	Shoulders Hyper extended	Shoulders flat/ in neutral	Shoulders softly rounded
Hand and arm location	Hands away from the body Arms extended	Hands touching torso Arms extended	Hands touching face Arms flexed
Hips	Abducted/ externally rotated	Extended	Aligned and softly flexed
Pelvic position	Hips abducted/externally rotated, and/or in extension	Hips in alignment but extended	Hips softly flexed and in alignment with pelvic tilt
Knees/Ankles/ Feet orientation	Knees extended/ ankles everted and feet supinated	Knees, ankles, feet straight in extension	Knees, ankles and feet are in midline orientation with supported flexion
Head	Rotated laterally (L or R) >45degree from midline	Rotated laterally (L or R) 45degree from midline	Positioned midline to <45degree from midline (L or R)
Neck	Hyper extended	Neutral but poorly aligned with supine	Neutral position slightly flexed forward and aligned with spine cumulative score

➤ *Scoring procedure*

Table 2: Scoring Interpretation for Level of Posture

LEVEL OF POSTURE	SCORE
Perfect Posture	>12
Acceptable Posture	9 – 12
Repositioning	< 8

➤ *Section C:*

Modified Ferrari observational check list was used to assess the effectiveness of nesting on movement among

preterm baby. That scale consists of 15 observational items. Each observational item is rating as one for positive movements and zero for negative movements.

Table 3: Ferrari observational check list

S.NO	OBSERVATIONAL ITEMS	PRESENT (1)	ABSENT (0)
1.	Head Rotation from side to side		
2.	Abrupt opening of Hands and Fingers		
3.	Hand – Mouth contact		
4.	Abrupt Abduction and Extension of limbs		
5.	Head Rotation from side to midline		
6.	Abrupt rolling to the sides		
7.	Hand – Hand Contact		
8.	Arms in Frozen Extension		
9.	Hands touching contra lateral shoulder and trunk		
10.	Arms in frozen flexion and fisting		
11.	Hand-leg contact		
12.	Legs in Frozen Extension		
13.	Foot-Foot Contact		
14.	Wrist movements with superimposed Rotations		
15.	Hand-Head contact		

➤ *Scoring procedure*

Table 4: Scoring interpretation for level of movement

LEVEL OF MOVEMENT	SCORE
Satisfactory Movement	0-4
Average Movement	5-8
Good Movement	9-11
Excellence Movement	>11

C. NESTING PROCEDURE:

Nesting is a comfortable position provided to the preterm baby, which is shell – shaped secure boundary, an enclosure made by putting two rolled blankets in a form of an oval in which the baby lies.

➤ *Articles for nesting:*

- A tray containing
- Sterile towel (3 – 4) / boundary rolls
- Adhesive tape
- Diaper
- Sterillium for hand wash

➤ *Procedure:*

- Explain the procedure to the mother and get consent from the mother
- Roll the towel and kept ready for nesting
- Ask the mother to feed the baby
- If diaper is wet change the diaper
- Make the baby comfortable
- Place the baby in nesting for 30 minutes

➤ *After that check the following changes:*

- Neutral head position
- Rounded shoulders
- Hips and knees flexed
- Toes pointed straight
- Hands to mouth
- Boundaries provided appropriately
- Mimic the fetal position
- eyes, nipples, knees & toes all in same direction = proper alignment

The reliability of the tool of Nesting on posture was $r = 0.72$ and movement was $r = 0.54$. In pretest the preterm babies posture and movements was observed by using the tools. After the pretest investigator placed the preterm babies in nesting for 30 minutes twice a day for three days. At the end of 4th day post test was conducted by using the same tool to rule out the score of nesting procedure. The collected data were analyzed by using descriptive and inferential statistics in terms of frequencies, percentage, mean, standard deviation, t- test, Karl Pearson's co relation and chi - square test.

➤ *Data analysis:*

The collected data were analyzed by using descriptive and inferential statistics in terms of frequencies, percentage, mean, standard deviation, t- test, Karl Pearson's co relation and chi - square test.

Table 5: Represents the following findings:

S.No	Variables	Subjects			
		Experimental (n) = 30		Control (n) = 30	
		Numbers	Percentage	Numbers	Percentage
1.	Age in days				
	4 - 5 Days	11	36.7%	13	43.3%
	6 – 7 Days	9	30.0%	11	36.7%
	> 8 Days	10	33.3%	6	20.0%
2.	Gender				
	Male	20	66.7%	16	53.3%
	Female	10	33.3%	14	46.7%
3.	Birth Weight				
	1500 – 2000 gms	5	16.7%	10	33.3%
	2000 – 2500gms	14	46.7%	14	46.7%
	>2500gms	11	36.7%	6	20.0%
4.	Gestational Week				
	<32 weeks	5	16.7%	11	36.7%
	32 – 34 Weeks	14	46.7%	9	30.0%
	>34 Weeks	11	36.7%	10	33.3%
5.	Mode of Delivery	9	30%	14	46.7%
	Normal Delivery				
	Forceps Delivery	2	6.6%	12	40.0%
	Vacuum Delivery	-	-	-	-
	Lower Segment Caesarean Section	19	63.3%	4	13.3%
6.	Apgar Score				
	Good (7- 10)	20	66.7%	13	43.3%
	Fair (4 – 6)	10	33.3%	17	56.7%
	Poor(Below 4)	-	-	-	-
7.	Method of feeding Paladai Feeding	3	10.0%	7	23.3%
		-	-	-	-
	Spoon or Dropper	27	90.0%	23	76.7%
	Direct Breast Feeding				
8.	Choice of milk Expressed Breast Milk	-	-	22	73.3%
	Donor Human Milk	3	10.0%	7	23.3%
	Formula Feed	27	90.0%	1	3.3%
9.	Duration of Hospital				
	1 – 10 Days	25	83.3%	26	86.7%
	11 – 20 Days	5	16.7%	4	13.3%
	>20 Days	-	-	-	-

Regards the age of preterm babies 11(36.7%) between the age of 4 – 5 days, in experimental group, whereas in control group 13(43.3%) between the age of 4 – 5 days, Accordance with the gender, in experimental group the subjects 20 (66.7%) were male babies, and 10(33.3%) where female babies, whereas in control group male babies 16 (53.3%) and female babies14(46.7%),In distribution of preterm babies according to the birth weight majority of

preterm babies where belongs to between the birth weight 2000 – 2500gms 14(46.7%),in experimental group and where as in control group 14(46.7) belongs to between the birth weight 2000 – 2500gms,In view of delivery in experimental group about 9(30 %) of them were delivered normally and in control group about 14(46.7 %) of them were delivered normally.

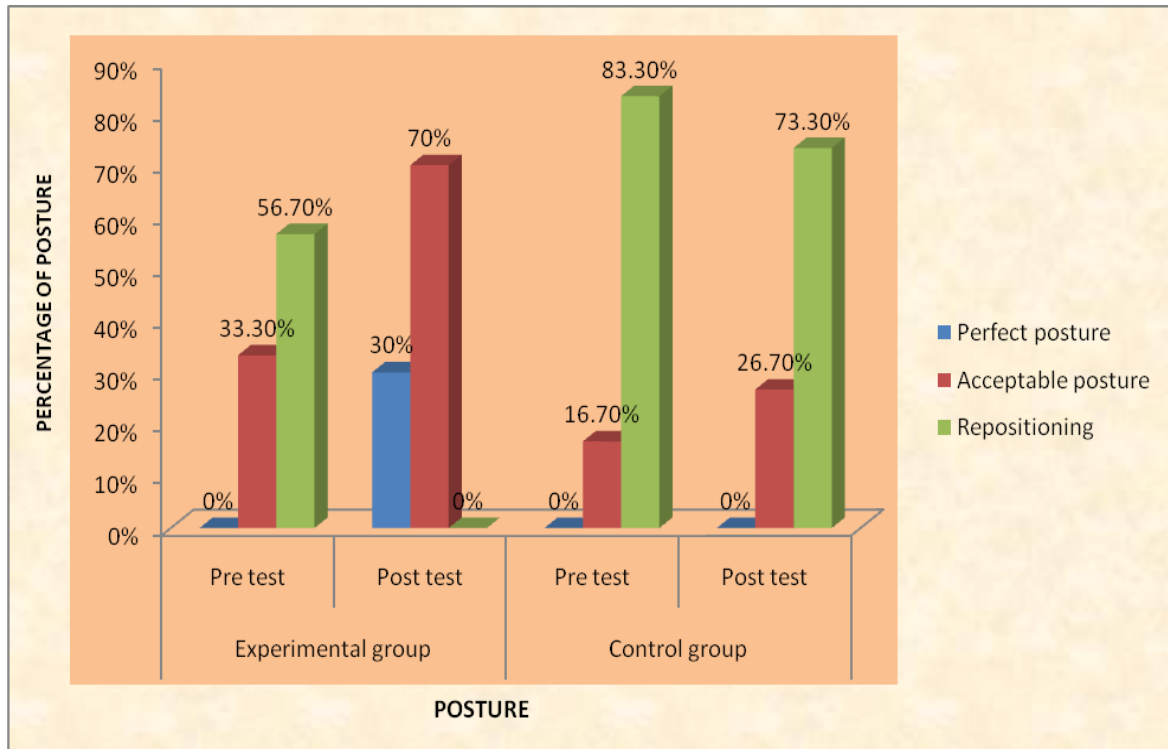


Fig 1: Analyzing the effectiveness of pre-test and post-test score of nesting on posture among preterm babies in experimental and control group

In pretest the score of nesting on posture in experimental group shows that majority of the subjects 20(66.7%) were needed to be repositioning, where as in control group the pretest score of nesting on posture shows that majority of subjects 25(26.7%) were needed to be

repositioning, While in posttest the score of nesting on posture in experimental group shows that majority of the subjects 9(30%) were perfect posture, where as In control group majority of subjects 22(73.3%) preterm babies need repositioning, 8(26.7%) were in acceptable posture.

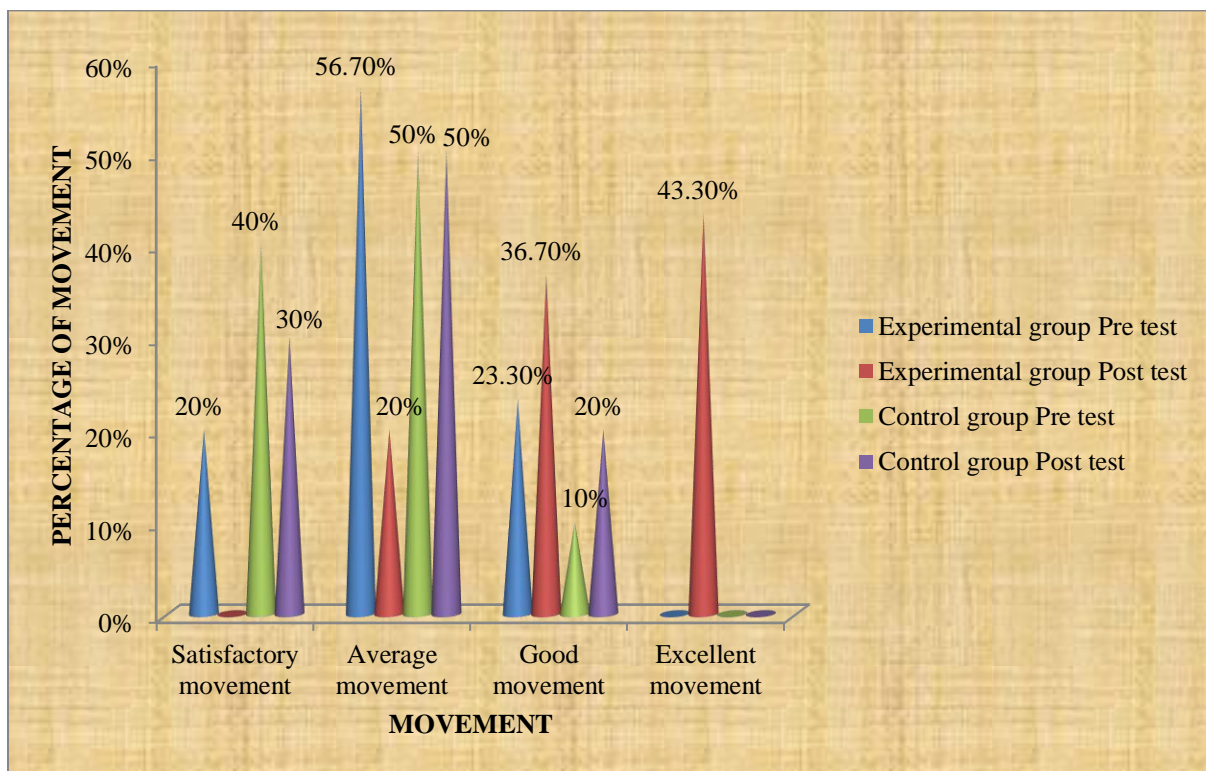


Fig 2: Analyzing the effectiveness of pre-test and post-test score of nesting on movement among preterm babies in experimental and control group

In pretest score of nesting on movement in experimental group shows that the subjects 6(20%) were satisfactory movement, where as In control group the pretest score of nesting on movement shows that majority of subjects 15(50%) were average movement, In Post test score

of nesting on movement in experimental group majority of the subjects 13(43.3%) were excellent movement, where as In control group the post test score of nesting on movement shows that majority of subjects 15(50%) has average movement.

Table 6: Comparison of mean, standard deviation and paired t – value score of nesting on posture among preterm babies in experimental and control group.

Posture	Mean	SD	Maxi mum score	Mean percentage	Mean difference	paired ‘t’ Value	P value
Control group	7.20	1.669	7	29.8	3.867	13.357	P 0.05
Experimental group	11.07	1.285	14	28.9			

Post-test mean score of nesting was found to be 11.07 and SD1.285 in experimental group. Post-test mean score of nesting was found to be 7.20 andSD1.669 in control group.The statistical paired, t test value is 13.357. Therefore,

there exists a statistical significance in the enhancement score indicating the effectiveness of nesting on posture among preterm babies.

Table 7: Comparison of mean, standard deviation and paired t – value score of nesting on movement among preterm babies in experimental and control group

Movement	Mean	SD	Maxi mum score	Mean percentage	Mean difference	paired ‘t’ Value	P value
Control group	6.40	2.094	5	29.8	4.800	20.451	P 0.05
Experimental Group	11.20	1.846	11	28.9			

The mean score of nesting on movement among preterm babies in post-test. Post-test mean score of nesting was found to be 11.20 and SD 1.846 in experimental group. Post-test mean score of nesting was found to be 6.40 and SD

2.094 in control group. The statistical paired t test value is 20.451. Therefore there exist statistical significance in the enhancement score indicating the effectiveness of nesting on movement among preterm babies.

Table 8: Correlation between post-test score of nesting on posture and movement among preterm babies in experimental and control group

Variables	Mean	S.D	“r” value
Position	2.70	0.466	r = 0.296
Movement	3.23	0.774	

The mean score of position 2.70 with S.D 0.466, the mean score of movement 2.70 with S.D 0.466. The calculated Karl person’s correlation value of (r= 0.296) between posture and movement shows a positive correlation and it was found to be a statistically significant.

preterm babies. The present study was supported by *Hanokh.Jeevan.et al (2017)* conducted a quasi-experimental study to assess the effectiveness of nesting on posture and movement among preterm neonates. Ther result of the study shows that, nesting was effective in preventing the postural defect and require movement. A computed t-value was found to be 9.9 and p value is 0.000. The study concludes the nesting was more effective in improving the position and movement preterm neonates.

V. DISCUSSION

A. Findings in relation to demo graphic data

Distribution of samples according to their preterm babies age in days shows that, 11(36.7%) between the age of 4 – 5 days in experimental group whereas in control group 13(43.3%) between the age of 4 – 5 days. According to the gender represents that, in experimental group were male babies 20 (66.7%) whereas in control group male babies 16 (53.3%) and female babies 14(46.7%). Distribution of preterm babies, according to the duration of stay in hospital about 25(83.3) were stay for 1 – 10 days in experimental group where in control group about 26(86.7) were stay for 1 – 10 days.

C. To find out the relationship of Nesting between Posture and Movements among Preterm babies

There was a significant correlation between post-test, the mean score of position 2.70 with S.D 0.466, and the mean score of movement 2.70 with S.D 0.466. The calculated karl Pearson’s correlation value of (r= 0.296) between posture and movement shows a positive correlation and it was found to be a statistically significant **experimental group.Merín et al 2017** finding’s highlight the there was positive relationship between posture and movement on nesting with karl Pearson’s correlation value of (r= 0.596).

B. To assess the Posture and Movements among Preterm babies in experimental and control group

The statistical paired t test value is 20.451 in movement and paired, t test value is 13.357 on posture. Therefore, there exists statistical significance in the enhancement score indicating the effectiveness of nesting on movement among

D. To determine the association between the post-test score of Nesting on Posture and Movements among Preterm babies with their selected demographic variables

In Posture that there was no statistical significance found with demographic variables of preterm babies like age in days, gender, birth weight, gestational week, mode of delivery, apgar score, method of feeding, choice of milk, duration of hospital. In movement that there was a statistical significance found with demographic variables of preterm babies like age in days, gender, birth weight, gestational week, mode of delivery, apgar score, duration of hospital except method of feeding, choice of milk. **Mikki Khan et al., (2014)** the finding shows that educational status of the mothers had significant association with the knowledge of the mother regarding essential newborn care. Other demographic variables did not show any statistically significant association with knowledge score of the mothers.

VI. CONCLUSION

“Nesting” is a comfort measure that simulates in-utero feeling of lack of space and makes the baby less jittery or prone to startle. Nesting facilitates transformation of sleep pattern from erratic disturbed spells, to deep peaceful nights and contented days, thus conserving energy (may be lost in crying) and minimizing weight loss. Again, the flexed posture reduces the surface area exposed to the environment, minimizing heat loss which prevents huge weight loss. Numerous studies and also present research scholar suggest that nesting is safe and beneficial practice in promoting the comfort of newborn babies. The findings of the study conclude that there was a significant effect of nesting on posture and movement among preterm babies.

VII. RECOMMENDATION ON THE STUDY

- A similar study can be conducted for a large sample to draw more conclusive generalization.
- An experimental study can be undertaken with one group pretest and post test for effective comparison.
- A similar study can be conducted with selected nursing interventions for maintaining good posture and motor performance among preterm babies.
- A similar study can be conducted as comparative study in and out of nesting in posture and motor performance among preterm babies.
- A study can be undertaken to find out the role of nurses practice of Nesting in NICU.

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