

A STUDY TO ASSESS THE EFFECTIVENESS OF KANGAROO MOTHER CARE ON BEHAVIOURAL PARAMETERS OF THE PRETERM BABIES AT SELECTED HOSPITALS, TAMILNADU.

Dr. S.Sivapriya ¹, Mrs. V.Revathy ²

1. Lecturer, Rani Meyammai College of Nursing, Chidambaram, India

2. Associate professor, Mother Theresa Post Graduate and Research Institute of Health Sciences, College of nursing, Puducherry.

ABSTRACT:

OBJECTIVES: The objectives of the study are to assess the behavioural parameters of the preterm babies in the experimental and the control group before the intervention , to evaluate the effectiveness of Kangaroo mother care on behavioural parameters of the preterm babies in the experimental group and to associate between the behavioural parameters and clinical variables of the pre-term babies in the experimental group.

METHOD: Quantitative research approach and quasi-experimental pre-test post-test control group design was adopted for the study. Purposive sampling technique was used in the study. Preterm babies admitted in the Neonatal Intensive Care Unit of Raja Muthiah Medical College and Hospital, Chidambaram and Raja Sir Savalai Ramasamy Mudaliar Hospital, Royapuram, Chennai, who met with the inclusion criteria were selected as sample.

RESULTS AND DISCUSSION: The study results inferred that the behavioural parameters of the preterm babies in the experimental group who received Kangaroo mother care had significantly improved physiological parameters than the preterm in the control group. The result showed that there was a significant association between the behavioural parameters gain score and the gestational weeks ($t=3.14, p<0.01$) and birth weight ($F=4.55, p<0.02$) of the preterm babies in the experimental group.

CONCLUSIONS: The study results concluded that kangaroo mother care was highly significant in improving the behavioural parameters of the preterm babies ($p<0.0001$).The KMC was an effective and economical care to LBW babies.

KEY WORDS: Behavioural parameters, Preterm babies. Kangaroo mother care

INTRODUCTION:

In the neonatal intensive care unit (NICU), preterm infants are exposed to stress factors such as invasive hospital procedures, bright light and noise from medical equipment . Useful and indispensable interventions in the NICU can lead to physiological and behavioural reactions in preterm infants. In addition, the separation of babies from their mothers and the neonatal intensive care unit environment itself limits visual, tactile and acoustic interactions between infants and mothers, affecting maternal bonding. According to United Nations agencies, 13.4 million babies were born pre-term worldwide in 2020, with nearly 1 million dying from preterm complications.

Kangaroo Mother Care, defined as continuous skin-to-skin contact of the baby with the mother's chest and exclusive breast milk feeding, is one of the most effective interventions for preventing mortality of LBW infants. World Health Organization (WHO) guidelines currently recommend initiation of short intermittent Kangaroo Mother Care sessions when the infant's condition begins to stabilize, and continuous Kangaroo Mother Care when fully stable.

Objectives

1. To assess the behavioral parameters of the preterm babies in the experimental and the control group before the intervention
2. To evaluate the Effectiveness of Kangaroo mother care on behavioral parameters of the preterm babies in the experimental group
3. To associate the behavioral parameters with clinical variables of the preterm babies

Methodology

Research approach

In this study, quantitative research approach was adopted

Research design

Quasi-experimental pre-test post-test control group design.

Research setting

Two settings were selected for the study

- Raja Sir Savalai Ramasamy Mudaliar Hospital, Rayapuram, Chennai (Experimental group).
- Raja Muthiah Medical College and Hospital, Chidambaram (Control group).

Sample

Preterm babies admitted in the Neonatal Intensive Care Unit of Raja Muthiah Medical College and Hospital, Chidambaram and Raja Sir Savalai Ramasamy Mudaliar Hospital, Rayapuram, Chennai, who met with the inclusion criteria.

Criteria for sample selection

Inclusion criteria (Babies)

Preterm babies

- with the gestational age between 32 and 37 weeks.
- with birth weight between 1250 gms and 2500 gms.
- with APGAR score more than 7 at one minute of birth.
- who were physiologically stable.
- both males and females

Exclusion criteria (Babies)

Preterm babies

- who were critically ill.
- with congenital anomalies.
- who were on sedations.
- on photo-therapy.

Inclusion criteria (Mothers)

Mothers of preterm babies

- who could understand and speak Tamil language.
- who were willing to participate in the study

Exclusion criteria (Mothers)

Mothers of preterm babies

- who were seriously ill.
- with severe infection.
- with high risk conditions.

Sampling technique

Purposive sampling technique

Independent Variables

In this research study, the independent variable was Kangaroo mother care.

Dependent Variables

In this research study, the dependent variable is Behavioral parameters.

- **Behavioral parameters** included auditory orientation, visual orientation, alertness, activity, self-quieting activity, defensive movement, irritability, consolability and cuddliness

Results

Table 1

Mean and Standard deviation of behavioural parameters of the preterm babies before and after the KMC intervention

Variables (Behavioral parameters)	Experimental group						One way ANOVA F Value	P Value
	Pretest (day 1)		Post test I (day 3)		Post test II (day 7)			
	Mean	SD	Mean	SD	Mean	SD		
Auditory orientation	1.86	0.35	2.88	0.44	3.58	0.49	344.19	0.001* (S)
Visual orientation	1.80	0.40	3.02	0.51	3.68	0.47	254.16	0.001* (S)

Alertness	1.82	0.38	3.08	0.48	3.82	0.38	314.22	0.001* (S)
Activity	1.82	0.38	3.10	0.61	3.94	0.24	364.11	0.001* (S)
Self-quieting activity	1.80	0.40	2.96	0.45	3.78	0.41	368.15	0.001* (S)
Defensive movement	1.80	0.42	3.02	0.47	3.59	0.42	354.14	0.001* (S)
Irritability	1.78	0.41	3.04	0.35	3.80	0.53	375.16	0.001* (S)
Consolability	1.74	0.53	2.96	0.57	3.78	0.46	242.48	0.001* (S)
Cuddliness	1.76	0.43	3.16	0.57	3.76	0.43	297.11	0.001* (S)

S – Significant

- **The table 1** illustrates that the mean score of behavioral parameters such as auditory orientation, visual orientation, alertness, activity, self-quieting activity, defensive movement, irritability, consolability and cuddliness improved significantly in post tests after Kangaroo mother care.
- The mean auditory orientation score was found increased from 1.86 to 3.58. The One way ANOVA F Value was 344.19
- The visual orientation mean score was found improved from 1.80 to 3.68. The One way ANOVA F Value was 254.16
- The alertness mean score was found increased from 1.82 to 3.82. The One way ANOVA F Value was 314.22
- The activity mean score was improved from 1.82 to 3.94. The One way ANOVA F Value was 364.11

- The self-quieting activity mean score was improved from 1.80 to 3.78. The One way ANOVA F Value was 368.15
- The defensive movement mean score was found improved from 1.80 to 3.5. The One way ANOVA F Value was 354.14
- The mean score of irritability was found improved from 1.78 to 3.80. The One way ANOVA F Value was 375.16
- The mean score of consolability was increased from 1.74 to 3.78. The One way ANOVA F Value was 242.48
- The mean score of cuddliness was improved from 1.76 to 3.76. The One way ANOVA F Value was 297.11

The significant ‘p’ value showed the fact that the improvement in all behavioral parameters observed among the preterm babies after the KMC intervention was statistically significant (P<0.001).

Table 2

Mean and Standard deviation of behavioural parameters of the preterm babies in the control group before and after the conventional neonatal care

(N=50)

Variables (Behavioural parameters)	Control group						One way ANOVA F Value	P Value
	Pre test (day 1)		Post test I (day 3)		Post test II (day 7)			
	Mean	SD	Mean	SD	Mean	SD		
Auditory orientation	1.88	0.33	2.54	0.67	2.92	1.01	50.38	0.001* (S)
Visual orientation	1.84	0.37	2.72	0.64	3.16	0.84	66.48	0.001* (S)
Alertness	1.84	0.37	2.80	0.67	3.24	0.88	96.34	0.001* (S)
Activity	1.88	0.32	2.72	0.57	3.32	0.86	97.48	0.001*

								(S)
Self-quieting activity	1.78	0.41	2.70	0.64	3.18	0.76	96.33	0.001* (S)
Defensive movement	1.83	0.43	2.65	0.60	3.14	0.71	90.34	0.001* (S)
Irritability	1.82	0.39	2.64	0.66	3.14	0.96	84.35	0.001* (S)
Consolability	1.78	0.41	2.50	0.90	3.20	0.96	78.20	0.001* (S)
Cuddliness	1.81	0.41	2.58	0.95	3.18	0.99	77.22	0.001* (S)

S – Significant

The table 2 illustrates that the mean score of behavioral parameters such as auditory orientation, visual orientation, alertness, activity, self-quieting activity, defensive movement, irritability, consolability and cuddliness improved significantly in post tests after Kangaroo mother care

Mean difference of auditory orientation in the experimental group was 1.72 whereas it was only 1.04 in the control group (0.68 higher in the experimental group). The One way ANOVA

F Value was 50.38

Mean difference of visual orientation in the experimental group was 1.88 whereas it was only 1.32 in the control group (0.56 higher in the experimental group). The One way ANOVA

F Value was 66.48

Mean difference of alertness in the experimental group was 2 whereas it was only 1.4 in the control group (0.60 higher in the experimental group). The One way ANOVA

F Value was 96.34

Mean difference of activity in the experimental group was 2.12 whereas it was only 1.44 in the control group (0.68 higher in the experimental group). The One way ANOVA F Value was 97.48

Mean difference of self-quieting activity in the experimental group was 1.98 whereas it was only 1.4 in the control group (0.58 higher in the experimental group). The One way ANOVA F Value was 96.33

Mean difference of defensive in the experimental group was 1.84 whereas it was only 1.1 in the control group (0.74 higher in the experimental group). The One way ANOVA F Value was 90.34

Mean difference of irritability in the experimental group was 2.02 whereas it was only 1.32 in the control group (0.7 higher in the experimental group). The One way ANOVA F Value was 84.35

Mean difference of consolability in the experimental group was 2.04 whereas it was only 1.42 in the control group (0.62 higher in the experimental group). The One way ANOVA F Value was 78.20

Mean difference of cuddliness in the experimental group was 2 whereas it was 1.37 in the control group (0.63 higher in the experimental group). The One way ANOVA F Value was 77.22

The behavioral parameters of the preterm babies in the experimental group who received Kangaroo mother care had significantly improved physiological parameters than the preterms in the control group.

Table 3

Association between behavioural parameters and clinical variables of the preterm babies in the experimental group

(N=50)

Clinical variables of the preterm babies		No.	Experimental group				Gain score		One way ANOVA	
			Pretest		Post test				F-test/t-test	
			Mean	SD	Mean	SD	Mean	SD	F / t value	P Value
Gestational weeks	• 33-34 weeks	14	14.20	2.98	29.53	2.64	15.33	2.39	3.14 (t)	0.01* (S)
	• 35-36 weeks	36	14.50	0.71	32.00	1.41	17.50	2.12		
Sex	• Male	27	15.30	2.32	32.85	2.28	17.56	2.03	0.44 (t)	0.65 (NS)
	• Female	23	14.87	3.18	32.65	2.93	17.78	1.44		
Birth weight	• <1500 gms	8	16.27	2.69	31.94	2.66	15.67	1.95	4.55 (F)	0.02* (S)
	• 1500-2000 gms	27	15.07	2.95	31.77	2.69	16.70	1.92		
	• 2000-2500 gms	15	16.75	0.89	34.55	1.16	17.80	0.76		
APGAR Score	• 7-10	50	15.10	2.73	32.76	2.58	17.66	1.77	0.00 (t)	1.00 (NS)
Birth Order	• First	31	15.23	2.49	33.18	2.50	17.95	1.67	0.41 (F)	0.66 (NS)
	• Second	17	14.65	3.24	32.24	2.82	17.59	2.03		

	• Third and above	2	17.00	0.00	34.02	1.41	17.02	1.41		
Type of feeding	• Breast feeding	46	15.28	2.60	32.80	2.58	17.52	1.68	1.93 (t)	0.06 (NS)
	• Gavage feeding	4	13.00	3.74	32.25	2.87	19.25	2.22		
Type of milk	• Breast milk	50	15.10	2.73	32.76	2.58	17.66	1.77	0.00 (t)	1.00 (NS)

*S-Significant, NS-Non significant

Table 27 depicts the association between behavioural parameters and clinical variables of the preterm babies in the experimental group.

The association between the behavioural parameters and the clinical variables of the preterm babies in the experimental group were calculated using One way ANOVA test. The result showed that there was a **significant association between the behavioural parameters gain score and the gestational weeks ($t=3.14$, $p<0.01$) and birth weight ($F=4.55$, $p<0.02$) of the preterm babies in the experimental group**. The table also revealed that there was no significant association between behavioral parameters gain score with the remaining clinical variables of the preterm babies in the experimental group such as sex, APGAR score, birth order, type of feeding and type of milk.

DISCUSSION

A total of 100 preterm babies and their mothers who fulfilled the inclusion criteria were selected to participate in the study. A pretest, post test - control group design was adopted in the study . After the pretest assessment, the kangaroo mother care was provided for 2 hours in the morning from 9 am to 11 am and from 2 pm to 4 pm in the evening for a period of seven days along with conventional neonatal care as per the babies need. The post-test assessments were carried out on 3rd and 7th day after the Kangaroo mother care intervention. The significant ‘p’ value (<0.001) inferred that the improvement in behavioural parameters was better in the experimental group than the control group. The result showed that there was a significant association between the behavioural parameters gain score and the gestational weeks ($t=3.14$, $p<0.01$) and birth weight ($F=4.55$, $p<0.02$) of the preterm babies in the experimental group.

CONCLUSION

The study concluded that kangaroo mother care was highly significant in improving the behavioural parameters of the preterm babies ($p < 0.0001$). The result showed that there was a significant association between the behavioural parameters gain score and the gestational weeks ($t = 3.14$, $p < 0.01$) and birth weight ($F = 4.55$, $p < 0.02$) of the preterm babies in the experimental group. The KMC strategy can offer improved care to LBW babies.

REFERENCE

- Lee J., Bang K.-S. The Effects of Kangaroo Care on Maternal Self-esteem and Premature Infants' Physiological Stability. *Korean J. Women Health Nurs.* 2011;17:454–462. doi: 10.4069/kjwhn.2011.17.5.454
- Maastrup R., Greisen G. Extremely preterm infants tolerate skin-to-skin contact during the first weeks of life. *Acta Paediatr.* 2010;99:1145–1149. doi: 10.1111/j.1651-2227.2010.01806.x
- Uman, Udani R , Nanavati R, Kangaroo mother care for low birth weight infants: a randomized controlled trial. *Indian Pediatr* 2008;45:17–23.
- Wang Y , Zhao T , Zhang Y , *et al* Positive effects of kangaroo mother care on long-term breastfeeding rates, growth, and neurodevelopment in preterm infants. *Breastfeed Med* 2021;16:282–91. doi:10.1089/bfm.2020.0358
- Sharma Madabhavi I ,*et al*, Effects of Kangaroo Mother Care on Common Vital Parameters of preterm infants.2015,(2277),373-375
- Chandralekha E, Nandhini P, Ruthrani Princely J, Kanchana S, Celina D. Effectiveness of Kangaroo mother care on level of physiological parameters among preterm infants at selected hospitals, Nagercoil. *ICCRJNR.* 2017;2(1):66-73.
- <http://www.cdc.gov/reproductivehealth/maternalinfanthealth/pretermbirth.htm>