



EFFECTIVENESS OF KANGAROO MOTHER CARE ON PHYSICAL PARAMETERS AMONG LOW BIRTH WEIGHT BABIES AT SELECTED HOSPITALS IN VELLORE.

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ABSTRACT

Kangaroo mother care (KMC) is a humane, low cost method of care of Low Birth Weight (LBW) infants particularly for those weighing less than 2000 gms at birth. It consists of skin-to-skin contact, exclusive breastfeeding and early discharge with an adequate follow-up. Knowledge on the effectiveness and safety of KMC and its effects on the child growth is yet to be explored.

Despite the said advantages of KMC, it is still not a widely practiced method of care of LBW infants in India as enough data regarding the effect of KMC on growth parameters is not available. As such, this study was conducted to assess the effect of KMC on growth of infants weighing <2000 gms at birth.

The aim of the study was to assess the effectiveness of Kangaroo Mother Care on physical parameters among low birth weight babies at selected hospitals in Vellore. The research design selected for this study is the Experimental Design. Purposive Sample Technique was adopted to select Forty (40) Low Birth Weight babies. Twenty (20) samples were selected for the Experimental Group and Twenty (20) samples for the Control Group. The samples were selected based on inclusion and exclusion criteria. Structured questionnaire was used to assess the demographic variables and weighing scale and flexible measuring tape were used to assess the physical parameters of the infants.

The findings of the study show that, the post-test mean value is higher in the experimental group compared to the control group after KMC. Post-test mean value of physical parameter of weight is 1.8785. The mean difference is 0.45 and the computed 't' value for weight is 14.77 which is higher than the control group. Similarly, the values of all the post-test physical parameters in the Experimental Group are higher than the Control Group for all other parameters. This shows that Kangaroo Mother Care is effective in increasing the physical parameters of Low Birth Weight babies. The 'chi' square level of maternal age, occupation, maternal history, educational status, and neonate variables such as gestational age, birth weight and parity were associated at $P < 0.05$ level and other demographic variables are not associated.

The findings of the study show that, after KMC, there is a significant increase in the levels of physical parameters among low birth weight babies. As such, it is evident that Kangaroo Mother Care is an effective method to increase the physical parameters of LBW babies.

KEYWORDS :

INTRODUCTION:

Normal weight at term delivery is 2500–3500 gms (5 pounds 8 ounces – 9 pounds 4 ounces). Anything less than 2.5 kgs is termed as Low Birth Weight.

Low Birth Weight babies may either be due to prematurity or intrauterine retardation, which are the important causes of infant death within 28 days of birth. It is estimated that, around the world, out of the 139 million live births per year, more than 20 million are LBW babies—over 95% of them are born in developing countries, mainly of South Asia and Sub-Saharan Africa.

A major problem with such babies is their inability to control the body temperature—a preventable cause of their morbidity and mortality.

The mortality rate among the babies of birth weight of 1000 gms or less is 85–96%, birth weight of 1001 gms to 1500 gms is 30–50% and birth weight of 1501 gms–2000 gms is 8.1–31.3% respectively.

The major causes of death are asphyxia, pulmonary diseases, infection and hypothermia. The smaller the infant the lower is the survival rate. Therefore LBW babies need specialized care for their survival. In fact many deliveries are conducted in rural areas where sufficient equipment and facilities are not available to give adequate care. More over mothers of such babies have lack of knowledge about the care of such delicate babies which places a greater risk of neonatal death.

Researchers provide hospitalised preterm infants with various forms of supplemental stimulation in an effort to develop physical parameters and prevent infant death. One of the most widely acceptable methods is Kangaroo Mother Care.

Kangaroo Mother Care (KMC)

Unfortunately, there is no simple solution to this problem, as the health of an infant is closely linked to its mother's health and the care she receives during pregnancy and childbirth. As such, prolonged medical care is vital for all small preterm infants.

Kangaroo Mother Care (KMC) is a biologically sound method of care for all newborns, especially the premature and low birth weight babies. It implies placing the newborn baby in intimate skin-to-skin contact with the mother's chest and abdomen coupled with frequent and preferably exclusive breast-feeding.

It is an effective method that caters the baby's need for warmth, breast feeding, protection from infection, stimulation, safety and love without any cost. It is similar to marsupial care-giving, where the premature baby is kept warm in the maternal pouch and close to the breasts for unlimited feeding.

KMC has emerged as a non-conventional low cost method for newborn care that provides warmth, touch, and security to the newborn which are the basic necessities for the survival, comfort and wellbeing of the infants. An updated Cochrane review has reported that KMC results in best breastfeeding outcomes, cardio-respiratory stability and weight gain in infants without negative effects.

OBJECTIVES:

To assess the pre-test levels of physical parameters among low birth weight babies of experimental and control group.

To assess the effectiveness of Kangaroo Mother Care on physical parameters among low birth weight babies among experimental group.

To find out the association between post-test levels of physical parameters among low birth weight babies with selected demographic variables of experimental and control group.

HYPOTHESES:

H1: There is a significant difference in the levels of Physical Parameters after implementing Kangaroo Mother Care among low birth weight babies in the experimental group.

H2: Mean post-test score of physical parameters on low birth weight babies in the experimental group is higher than the control group.

H3: There is a significant association between post-test levels of physical parameters in the experimental groups with selected demographic variables of low birth weight babies and their mothers.

METHODOLOGY:

“Quantitative Research with pre and post -test Experimental Design” was used for the study.

O ₁	X	O ₂
O ₃		O ₄

O₁ - Assess the pre - test level of physical parameters in the experimental group.

X - Kangaroo Mother Care.

O₂ - Assess the post - test level of physical parameters in the experimental group.

O₃ - Assess the pre - test level of physical parameters in the control group.

O₄ - Assess the post - test level of physical parameters in the control group.

DESCRIPTION OF VARIABLES:

DEPENDENT VARIABLE: Physical Parameters

INDEPENDENT VARIABLE: Kangaroo Mother Care

DEMOGRAPHIC VARIABLES:

Variables of Mothers: Age, Educational status, Occupation, Mode of delivery, Area of residence and Abnormal maternal history and parity

Variables of Newborns: Low birth weight babies which includes Weight at birth, Gestational age, Sex and Apgar score..

The study was conducted at selected hospitals in Vellore. The setting is chosen on the basis of feasibility and availability of adequate sample. The population selected for the study consisted of 40 Low birth weight babies weighing between 1200-1800gms. The purposive sampling technique was used. In this study 20 samples were selected for the experimental group and 20 samples for the control group.

CRITERIA FOR SAMPLE SELECTION:

INCLUSION CRITERIA:

1. Babies admitted to the NICU on their first day of life.
2. Preterm LBW babies (Babies born less than 37 weeks of gestational age).
3. Babies with the weight between 1200-1800 gms.
4. Babies' birth weights were appropriate for gestational age (AGA).
5. Babies with a birth weight loss of 10% to 13% during the first week.
6. Babies who are generally stable.

EXCLUSION CRITERIA:

1. Term babies (37 to 41 days 6/7 weeks' GA).
2. Post term babies (42 weeks or more GA).
3. Small for GA (whose birth weight is lower than the 10th percentile).
4. Babies who start gaining weight before Day 8.
5. Babies who lost less than 10% or more than 13% of birth weight in the first week.
6. Babies who are not stable (did not meet the previous criteria) before enrollment or during the observation period.
7. Babies with congenital anomalies, hypoxic ischemic encephalopathy, central nervous system

(CNS) impairment, neonatal sepsis, urinary tract infection, or one of twins or higher order multiples.

DESCRIPTION OF THE TOOL:

SECTION-A: It deals with the following:

a) Demographic Variables of Mothers: Age, Educational status, Occupation, Mode of delivery, Area of residence and Abnormal maternal history and parity.

b) Demographic Variables of Newborns: Low birth weight babies which includes Weight at birth, Gestational age, Sex, and Apgar score..

SECTION-B: Includes Weight (gms), Length (cms), Head and Chest circumference (cms) measured from each group.

Tool for Measurement of Physical Parameters

Weight – The weight of the baby is taken through beam balance.

Height – The height was measured by using Infantometer.

Head & Chest Circumference – The head and chest circumference is measured by using flexible measuring tape.

DATA COLLECTION PROCEDURE:

Ethical clearance was obtained from the members of the institutional research committee and written permission from head of institution to conduct the research at Selected hospitals in Vellore. Samples were selected based on inclusion criteria and the parents of infants were informed about the proposed study, well before the research and written consent was also obtained.

In this study the samples were divided in to two groups, 20 samples were in the Experimental Group, and 20 samples were in the Control Group. First the demographic variables of mothers and neonates were assessed by using check list in both the groups. Then Physical parameters were assessed for experimental group and control group before the intervention.

The babies assigned to the control group were managed either under servo controlled radiant warmers or in a cradle under hot lamps in NICU. The babies in post-natal wards were clothed adequately and bedded in with their mothers. After that, KMC was provided for the experimental group for a period of 28 days (3 times a day with an interval of 2 hours). Then post-test was done for both groups by recording anthropometry for physical parameters done on the 28th day.

PLAN FOR DATA ANALYSIS:

Distribution of demographic variables is analyzed by descriptive statistics (mean, standard deviation). To find out the effectiveness of Kangaroo Mother Care, Inferential Statistics (paired 't' test) is used. To find out the association between post-test levels of physical parameter and selected demographic variables, Inferential Statistics (chi square) is used.

RESULTS AND DISCUSSION

With regard to age of the mother, 8 mothers i.e. 40% are between 18-25 years of age, 6 mothers i.e. 30% are between 26-35 years of age, and 4 mothers i.e. 20% are between 36-45 years of age, in the experimental group. Whereas in the Control Group, 5 mothers i.e. 25% are between 18-25 years of age, 6 mothers i.e. 30% are between 26-35 years of age and 9 mothers i.e. 45% are between 36-45 years of age.

Considering the educational status, 4 mothers i.e. 20% are illiterate, 6 mothers i.e. 30% are primary school level, 10 mothers i.e. 50% are graduates in the experimental group. Whereas in the Control Group, 6 mothers i.e. 30% are illiterate, 48 mothers i.e. 40% are primary school level, 6 mothers i.e. 30% are high school level and none of them are graduates.

In relation to occupation, 7 mothers i.e. 35% are house wives, 8 mothers i.e. 40% are unskilled workers and 5 mothers i.e. 25% are professionals in the experimental group. Whereas in the Control Group, 5 mothers i.e. 25% are house wives, 5 mothers i.e. 25% are unskilled workers and 10 mothers i.e. 50% are professionals.

Regarding abnormal maternal history 9 mothers i.e. (45%) had nil abnormal maternal history and 11 mothers i.e. (55%) had other type of maternal illness in the experimental group. In the control group 8 mothers i.e. 40% had abnormal maternal history, 2 mothers i.e. (10%) had PIH and 10 mothers i.e. (50%) had other type of maternal illness.

Regarding mode of delivery 14 mothers i.e. 70% had normal delivery, 4 i.e. 20% had LSCS and 2 mothers i.e. 10% had instrumental delivery in the experimental group. Whereas, in the control group 13 mothers i.e. 70% had normal delivery, 7 mothers i.e. 35% had LSCS and none of them had instrumental delivery.

With reference to Parity, 12 mothers i.e. 60% belong to primi, 4 mothers i.e. 20% belong to second gravida and 4 mothers i.e. 20% belong to third gravida and more in the experimental group. Whereas in the control group 8 i.e. 40% mothers belong to primi, 6 mothers i.e. 30% belong to second gravida and 6 mothers i.e. 30% belong to third gravida and more.

In relation to the demographic variables of the neonates, 12 babies i.e. 60% are male and 8 babies i.e. 40% are female in the experimental group. Whereas in the control group 8 neonates i.e. 40% are male and 12 neonates i.e. 60% are female.

With reference to gestational age of neonates 14 babies i.e. 70% belong to 30 to 33 weeks and 6 babies i.e. 30% belong to 34 to 37 weeks in the experimental group. Whereas in the control group 7 babies i.e. 35% belong to 30 to 33 weeks and 13 babies i.e. 65% belong to 34 to 37 weeks.

Regarding birth weight 7 i.e. neonates 35% belong to 1200 to 1400 gms, 8 neonates i.e. 35% belong to 1401 to 1600 gms and 5 neonates i.e. 25% belong to 1601 to 1800 gms in the experimental group. Whereas in the control group 4 babies i.e. 20% belong to 1200 to 1400 gms, 6 neonates i.e. 30% belong to 1401 to 1600 and 10 neonates i.e. 50% belong to 1601 to 1800 gms.

In relation to Apgar score, 5 babies i.e. 25% belong to 7/10, 5 babies i.e. 25% belong to 8/10 and 10 babies i.e. 50% belong to 9/10 in the experimental group. Whereas in the Control Group 7 (35%) Neonates belong to 7/10, 8(40%) belong to 8/10, and 5 (25%) Neonates belong to 9/10.

Table -1 Mean; Mean difference, SD, t-Value of Experimental Group.

Paired Samples Statistics (Experimental Group)						
Pair	Para Meters	Mean	Mean Difference	N	Std. Deviation	t Value
Pair 1	Wt Pre	1.4255	0.45	20	.14727	14.77
	Wt Post	1.8785		20	.08506	
Pair 2	Lgth Pre	39.5150	3.02	20	2.78969	8.48
	Lgth Post	42.5400		20	2.62366	
Pair 3	Hd Cir Pre	28.1300	1.23	20	1.15717	4.32
	Hd Cir Post	29.3650		20	1.96342	
Pair 4	Chst Cir Pre	26.7300	1.39	20	1.07952	11.84
	Chst Cir Post	28.1250		20	.97865	

The above table shows the mean pre-test and post-test score, mean difference, standard deviation, t- value of experimental group.

Table -2 Mean; Mean difference, SD, t-Value of Control Group.

Paired Samples Statistics Control Group						
Pair	Para Meters	Mean	Mean Difference	N	Std. Deviation	T value
Pair 1	Wt Pre	1.4605	0.25	20	.13105	9.218
	Wt Post	1.7190		20	.09569	
Pair 2	Lgth Pre	39.3150	1.58	20	2.38620	5.936
	Lgth Post	40.8950		20	2.08263	
Pair 3	Hd Cir Pre	28.0750	1.20	20	1.19511	2.645
	Hd Cir Post	29.2750		20	2.65645	
Pair 4	Chst Cir Pre	25.4350	1.05	20	1.29707	13.585
	Chst Cir Post	26.4850		20	1.13614	

The above table shows the mean pre-test and post-test score, mean difference, standard deviation, t- value of control group.

Table -3 Comparison of Mean, Mean Difference SD, t-Value between experimental group and control group.

Post-Test					
Groups	Para Meters	Mean	Mean Difference	Sd	T Value
Experimental Group	Weight	1.8785	0.45	0.09	14.77
	Length	42.54	3.03	2.08	8.48
	Head circumference	29.36	1.23	1.96	4.32
	Chest circumference	28.12	1.39	1.13	11.84
Control Group	Weight	1.7109	0.25	0.08	9.21
	Length	40.89	1.58	2.62	5.92
	Head circumference	29.27	1.20	2.65	2.64
	Chest circumference	26.48	1.05	0.97	10.58

The above table shows the mean pre-test and post-test score, mean difference, standard deviation and the t- value of experimental group and control group.

Regarding the weight of the neonate in the experimental group the

mean post-test value is 1.8785(md-0.45) which is higher than that of the post-test mean value 1.7190(md-0.25) in the control group. The calculated t value of experimental group is t- 14.77 which is greater than the control group t-9.21.

Regarding the Length of the neonate in the Experimental group the mean post-test value is 42.52(md- 3.02) which is higher than that of the post-test mean value 40.89(md- 1.58) in the control group. The calculated t value of Experimental group is t- 8.48 which is greater than the control group t- 5.92.

Regarding the Head Circumference of the neonate in the Experimental group the mean post-test value is 29.36(md- 1.23) which is higher than that of the post-test mean value 29.27(md- 1.20) in the control group. The calculated t value of Experimental group is t- 4.32 which is greater than the control group t- 2.64.

Regarding the Chest Circumference of the neonate in the Experimental group the mean post-test value is 28.12(md- 1.39) which is higher than that of the post-test mean value 26.48 (md- 1.05) in the control group. The calculated t value of Experimental group is t- 11.84 which is greater than the control group t- 10.58.

The 'chi' square level of maternal age, occupation, maternal history, educational status and neonates' variables such as gestational age, birth weight and parity were associated at P<0.05 level and other demographic variables are not associated.

CONCLUSION:

The present study assessed the effectiveness of KMC among Low Birth Weight babies. The mean post-test score of physical parameters was high in the experimental group than in the control group. It was found that there was increase in the levels of physical parameters in the group which was administered Kangaroo Mother Care. It shows that the Kangaroo Mother Care improves physical growth and reduces morbidities among low birth weight infants. It is simple, acceptable to mothers and can be continued at home.

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