**IMPACT OF KANGAROO MOTHER CARE ON LOW BIRTH WEIGHT BABIES AND MOTHERS**

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**INTRODUCTION**

Low birth weight is one of the principal contributors to neonatal morbidity and mortality worldwide, In developing countries, financial and human resources for neonatal care are limited and hospital wards for LBW infants are often overcrowded, leading to high morbidity and mortality. Thus, there is a need for interventions that reduce neonatal morbidity, mortality and costs, which would be an important advance in care. One such change is the implementation of Kangaroo Mother Care (KMC). This is an alternative approach that was developed in view to the lack of adequate incubator for low birth weight babies and is proposed as an appropriate technology for the care of low birth weight babies in developing countries. Kangaroo mother care gives the alienated mother to her rightful place in the management of her neonate or infant and has been found to re-establish human milk as the nutrition of choice.Kangaroo Mother Care adapted from Kangaroos involves placing the new born infant in close skin – to – skin contact with the mother. It is an effective method to meet the baby’s needs for warmth following birth and in the immediate postnatal period .It has been studied in depth since 1978 when neonatologists Rey and Martinez first implemented it in Bogota, Colombia . Due to lack of reliable equipment and overcrowding in their neonatal units, Kangaroo care was found to be an inexpensive and very beneficial experience to babies in Bogota. The mortality rate fell from 70 % to 30 % . 8 Kangaroo care consists of placing a diaper clad premature baby in an upright position on a mother’s bare chest with the baby facing the mother .The baby's head is turned so that the ear is above the mother's heart. Kangaroo mothering is based on the premise that low birth weight premature infants grow best in an environment similar to the intrauterine environment . The physical closeness that occurs due to KMC has the potential to help mother to grow in their attachment and move through their grief following the birth of a sick or preterm baby. Kangaroo Mother Care is becoming very popular throughout the world. In developing countries where less health facilities and resources are available, KMC has become an alternative way of caring for LBW babies due to lack of incubators. In most of the developed countries KMC is widely practiced in neonatal intensive care unit (NICU). KMC offers an easy and practical replacement for incubator. KMC is now practiced in 25 developing countries in Asia, Africa, and Latin America. Its use is also supported in industrialized countries such as France, Sweden, the United Kingdom, and the United States of America .Most studies have shown that Kangaroo care has major, positive impact on babies and their parents; some studies have shown no change; but no study has shown Kangaroo care to be detrimental to either parent or baby. In India, this concept has been gaining popularity and was found to be culturally acceptable by the mothers and the health personnel in the unit. In Government 5 Hospitals, with lack of incubators and other facilities most of the LBW babies are shifted to referral Hospitals. In present setting most of the mothers from low socioeconomic status are unable to afford high quality care for their neonate in specialist hospital. So the researcher felt the need for conducting a study on KMC intervention. Hence the present study was planned to compare the effectiveness of Kangaroo Mother Care in terms of weight gain and preference towards breast feeding among low birth weight neonates. The present study also tried to understand the knowledge and attitude of mothers towards KMC before and towards end of the study.

**AIMS AND OBJECTIVE**

1) Compare the effect of KMC with conventional method of care on: a. Growth b. Exclusive breastfeeding 2) Determine bonding and confidence of mothers of LBW babies and their knowledge, attitude and practice related to KMC

**MATERIALS AND METHODS**

In the present study entitled, Impact of kangaroo mother care on low birth weight babies and mothers, we applied following methodology - This was a single centric, observational, prospective, comparative study conducted in the department of pediatrics in a tertiary care, teaching hospital in rural area. The study was conducted for a period of 1 year.Low birth weight neonate weighing less than 1800 grams and who fulfilled the inclusion and exclusion criteria. Sample size 150 low birth weight neonates and their mothers admitted in our tertiary care hospital were enrolled in the study. The sample size was calculated as follow: Parameter used: Mean weight gain in KMC group (group I) was 23± 9.8 grams/day and in CMC group (group II) it was 16±8.2 grams/day. Calculated sample size was 60 in each group (total 120) Considering 20% loss to follow up and 5% refusal to participate, final sample size of 150 (120+24+6=150) was taken Kangaroo mother care (KMC) group: 75 participants Conventional mother care (CMC) group: 75 participants Formula for Sample size calculation for comparing two means: σ + 2 (Z =n /2 )α Z+power 1 r where : difference2 size of smaller group=n1 ratio of larger group to smaller group=r standard deviation of the characteristic= ο clinically meaningful difference in means of the outcome=diffference 80% power)= corresponds to power (.84 =Z power .05)= α corresponds to two - tailed significance level (1.96 for = / 2 αZ Here n1= n2hence r=1, meaning both groups have equal sample size

Ethical considerations The study was initiated after obtaining approval from the institutional ethics committee and department of pediatrics. A written informed consent was taken from the mothers after the babies were stable and ready for enrolment into the study. Selection criteria Participants were selected based from the following selection criteria.

Inclusion criteria 1. All neonates admitted with birth weight 1800 grams 2. Critically ill neonate on ventilator support or inotropic support. 3. Critically ill mothers who are unable to remain with their babies because of their medicalproblems. 4. Neonate with congenital anomalies like cleft palate, which interferes with breast feeding 5. Neonate with congenital heart disease 6. Mother with multiplepregnancies 7. Mothers unwilling to participate in the study. Statistical analysis Data was recorded in a predesigned proforma and compiled in Microsoft excel version 2015 and analysed. Descriptive statistics for quantitative variables was represented as mean +/- SD. Qualitative variables was represented as frequency & percentages. Fisher test or Chi-square test was used to test the association of columns and rows in tabular data, in case of qualitative, categorical data. Unpaired t test or Mann Whitney test was used to compare differences between two independent groups depending on the normality of distribution. Graphical representations were done wherever applicable. Level of significance was considered as P≤0.05. Software used for analysis was Graph pad prism.

Baby was secured• Babies were continuously kept in skin to skin contact as long as possible for a minimum of 4 to 6 hours per day. They were removed only for changing diaper and for clinical assessment when needed.Mothers were counseled regarding the importance and benefit of breast feeding. Conventional mother care In CMC babies were kept in warmers after dressing with a nappy and warm in NICU. Mothers were allowed to touch the baby and breast feed. Stable baby were wrapped in blanket, kept warm next to mother. Mothers were educated regarding the need to keep the baby warm, importance of breast feeding, expression of milk, danger sign, and maintenance of basic standard of hygiene and discouraged regarding harmful traditional practices .In both the group weight gain, change in head circumference, gain in length and mode of feeding in neonate and behavioral effect on mother (bonding and confidence) were studied. Monitoring 1) Measurement a) Weight: Babies were weighed naked on an electronic weighing scale immediately after birth and subsequently daily in the morning one hour before feeds till discharge. Weight gain was recorded in proforma every 4 th day of study. Recording data on every 4th day was selected as per convinence . . b) Length: The length was measured at birth, during the study period and on discharge by using an infantometer.

**Results-**

The study was an observation conducted in pediatric department of a tertiary care hospital, among 150 low birth weight neonate who weigh <1800 grams and were divided in 1:1 ratio in two group, KMC and CMC  Majorities of the enrolled neonates were in the age group of 5 to 10 days in both the group i.e. 52% and 57.33 % in KMC and CMC group respectively.

The average gestation age of neonates were around 34 weeks in both the group.

 No significant difference was seen in the gestational age of neonates in both the group ( p=0.54).

Weight gain was significantly high among neonates in KMC group at 4th (p=0.003), 8th (p=<0.0001) and 12th (p=<0.0001) day

 The average weight gain was 60 gram and 40 grams in KMC and CMC group respectively in first 4 days after enrollment in study.

 The average weight gain per day in first four days of study period was 15gm in KMC group and 10 grams in CMC group

 The average weight gain was 100 gram and 50 grams in KMC and CMC group respectively in 4th to 8th day of study.

The average weight gain per day from day 4 to 8 of study was 25gm in KMC group and 12 grams in CMC group.

 The average weight gain was 90 gram and 50 grams in KMC and CMC group respectively in 8th to 12 th day of study.

 The average weight gain per day from day 8th to 12th of study was 20 gm. in KMC group and 12 grams in CMC group.

significant growth in length was seen in neonates in KMC group on 8th (p=0.001) and 12th (p=0.001) day respectively, significant change in head circumference was seen in neonates in two group from 4th to 8th day (p<0.0001) and 8th to 12th day (p=0.001)

Brest milk feeding was significantly (p=0.001) high among neonates in KMC group at the end of study.

 At the end of study breast milk feed was seen in 86.66% in KMC group and 62.66% in CMC group.

 Direct breast feeding as feeding mode was significantly high among neonates in KMC at the end of study, it increased from 6.66% at the start of the study to 58.66% towards the end.

Significant change in the feeding mode was seen among neonates in CMC group, it increased from zero percent to 16% towards the end of study.

Significant change in breast feeding mode was seen among neonates in KMC group as compared to CMC group.

 Direct Breast feeding was seen in 58.66% in KMC group and 16% in CMC group towards the end of the study.

Weight and head circumference was significantly high among neonates in KMC group.

 Weight was 1.84kg in KMC group and 1.82 kg in CMC group ( p<0.0001).

 No significant difference in length was seen among neonates in two group.

Neonates on exclusive breast feed were significantly high (p=0.0003) in the KMC group

 58.66% neonate were exclusively breast feed in KMC group as compared to 28% in CMC group.

**CONCLUSION**

Our study concluded Kangaroo mother care (KMC) is an effective method for the early weight gain in• preterm neonate. KMC method helped in early and exclusive breast feeding among neonates in the• group. At the beginning of study,• o Majority of the mothers lacked knowledge about KMC in all aspect. o Mothers have reluctant attitude towards this important aspect of mother care and rarely practiced this. But this study has created awareness among all the enrolled mother in KMC group• , about the role and importance of KMC, this will definitely change knowledge, attitude and practice of them so that a fruitful outcome can be seen in near future when these mother will encourage other mother to practice KMC.