



**ORIGINAL RESEARCH PAPER**

**Paediatrics**

**COMPARISON OF CONVENTIONAL METHOD OF CARE WITH KANGAROO MOTHER CARE IN THE CARE OF LOW BIRTH WEIGHT INFANTS**

**KEY WORDS:** Kangaroo mother care, low birth weight babies, weight gain, hypothermia, nosocomial infection.

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**ABSTRACT**

Kangaroo mother care results in better weight gain, decreases the risk of serious infections and hypothermia, stabilizes physiological parameters, decreases the hospital stay, promotes breast feeding and has no adverse effect on growth and mortality in LBW babies. KMC and conventional groups were similar with regard to maternal and birth characteristics. Better weight gain per day ( $19.3 \pm 3.8$  g vs.  $10.4 \pm 4.8$  g,  $p < 0.001$ ), significant reduction in respiratory rate ( $p < 0.001$ ), rise in rectal temperature and oxygen saturation ( $p < 0.001$ ), shorter duration of hospital stay ( $13.7 \pm 8.9$  days vs.  $15.0 \pm 10.3$  days), lower incidence of nosocomial sepsis (6.9% vs. 23.2%  $p = 0.014$ ) and severe infection ( $p = 0.003$ ) and higher exclusive breastfeeding rates ( $p < 0.01$ ) were seen in infants receiving KMC. No statistically significant difference was seen between the two groups in terms of mortality.

**INTRODUCTION**

Low birth weight (LBW) is a major problem worldwide with an average incidence of 18% globally and 33% in developing countries.<sup>1</sup> It is a major contributor to neonatal and infant mortality and morbidity with about 30% of neonatal mortality related to it in developing countries.<sup>2</sup> Thus the care of such infants becomes a burden for health and social systems everywhere. Traditionally, these infants born in hospital are kept in incubators/ radiant warmers/ warm room with open cots. Hospital neonatal intensive care of LBW babies is difficult in developing countries due to high cost, difficulty in maintenance and repairs of equipments, intermittent power supply, inadequate cleaning of instruments and shortage of skilled staff. Frequently and often unnecessarily incubators and radiant warmers separate babies from their mothers, depriving them of the necessary contact.<sup>3</sup> Kangaroo Mother Care (KMC), first proposed in response to the shortages of staff and equipment in their hospital by Dr Martinez & Rey in Bogotá Columbia in 1978, was developed as a simple method of care for LBW infants. The term kangaroo is derived from practices similar to marsupial care, in which the infant is kept warm in the maternal pouch and close to the breasts for unlimited feeding.<sup>4</sup> It provides an appropriate, affordable yet high quality care and can be implemented almost anywhere. The present study compared the efficacy of Kangaroo mother care with the conventional care for LBW babies.

**MATERIAL AND METHODS**

A randomized controlled trial was done on 114 neonates, delivered at Jawaharlal Nehru Medical College (JNMCH) Aligarh India (March' 2006 to September' 2007) by vaginal route and weighing  $\leq 1800$  grams at birth -58 neonates received KMC for 6-8 hours/ day in 4-6 sessions while 56 neonates in control group received conventional care (radiant warmers, cots in warm room). Efficacy was measured in terms of effect on growth, physiological parameters, length of hospital stay, morbidity, mortality and exclusive breastfeeding rates.

**RESULTS**

KMC and conventional groups were similar with regard to maternal and birth characteristics. Better weight gain per day ( $19.3 \pm 3.8$  g vs.  $10.4 \pm 4.8$  g,  $p < 0.001$ ), significant reduction in respiratory rate ( $p < 0.001$ ), rise in rectal temperature and oxygen saturation ( $p < 0.001$ ), shorter duration of hospital stay ( $13.7 \pm 8.9$  days vs.  $15.0 \pm 10.3$  days), lower incidence of nosocomial sepsis (6.9% vs. 23.2%  $p = 0.014$ ) and severe infection ( $p = 0.003$ ) and higher exclusive breastfeeding rates

( $p < 0.01$ ) were seen in infants receiving KMC. No statistically significant difference was seen between the two groups in terms of mortality.

**DISCUSSION**

A randomized controlled trial was done in the Level III Newborn Infant Care Unit of a tertiary hospital in Aligarh for a period of one and half year. The demographic variables of the KMC and control group were comparable. The two groups received similar care except the KMC intervention. The study showed significantly higher mean weight gain per day of KMC group infants during the hospital stay compared to the control infants. This is in accordance with observations made by Cattaneo et al, Charpak et al and Ramanathan et al.<sup>5-9</sup> Better weight gain as seen in the infants receiving kangaroo care may be due to reduced energy expenditure, thus directing calories toward growth. In the present study, no significant difference was seen between the groups regarding weight, head circumference and length at 6 months of postconceptional age. This finding is in accordance with Sloan et al.<sup>10</sup> However, Charpak et al.<sup>11</sup> found KMC infants had a larger head circumference than the control infants at 12 months of age. A significant reduction in respiratory rate and increase in oxygen saturation was seen in infants receiving KMC. Aholet et al, Bauer et al, Fohe et al.<sup>12-14</sup> and Kadam et al.<sup>4</sup> also found higher oxygen saturation and reduction in respiratory rates after KMC. A possible explanation for the decreased respiratory rate, as well as the increased  $pO_2$ , is based on the upright position of the infant. Ventilation and perfusion are gravity dependent, so an upright position optimizes respiratory function. Episodes of hypothermia were significantly reduced in the KMC infants and a higher rectal temperature was recorded. Bauer et al.<sup>13</sup> Ludington et al and Ibe et al.<sup>15, 16</sup> also found the same in their studies. Placement of the infant underneath a blouse or shirt improved insulation and prevents heat loss during the maternal kangaroo care. Infants in the KMC group had a shorter duration of stay as compared to control group though this difference was not found to be statistically significant. This is in agreement with the observation of Charpak et al and Ramanathan et al.<sup>8, 9</sup> though they found a statistically significant decrease. Early discharge decreases the overcrowding in the neonatal units thereby reducing the chances of contracting hospital-acquired infection. During hospital stay, nosocomial sepsis; episodes of apnea were significantly lower in KMC group as compared to control. The incidence of severe infection was significantly higher in the control group. This is in accordance with Whitelaw et al.<sup>17</sup>, Sloan et al.<sup>10</sup> and Kadam et al.<sup>4</sup> Our

study recorded a higher proportion of exclusive breastfeeding among KMC infants. Charpak et al reported that the proportions of KMC mothers who breastfed up to 3 months (exclusively or partially) were significantly higher on statistical analysis.<sup>11</sup> Higher breastfeeding rates were also observed by Ramnathan et al.<sup>9</sup> No statistically significant difference was observed in the mortality rates between the two groups. Similar results were obtained by Cattaneo et al and Charpak et al.<sup>5,8</sup> In conclusion, Kangaroo mother care is a feasible method of care for low birth infants once they have overcome major adaptation to extra-uterine life and it is at least as safe and effective as the conventional care.

### CONCLUSION

Kangaroo mother care results in better weight gain, decreases the risk of serious infections and hypothermia, stabilizes physiological parameters, decreases the hospital stay, promotes breast feeding and has no adverse effect on growth and mortality in LBW babies.

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