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Original Research Article

Effect of kangaroo mother care in terms of hospital stay among preterm infants in a tertiary health care center

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ABSTRACT

Background: Hypothermia, infections and ineffective breastfeeding are some of the commonest cause of deaths among premature and low birth weight infants. Kangaroo mother care is a well-known intervention to address the issues related to preterm births, such as hypothermia, infection and prolonged hospitalisation.
Methods: This study was carried out in a tertiary care centre in Bengaluru on all preterm neonates of birth weight less than 2500 grams with stable hemodynamic conditions over a period of 18 months. Gestational age assessed by the new Ballard's score, within 24 hours of life and anthropometry details of the neonate were recorded at 24 hours of life by the single observer. Kangaroo mother care was given for a minimum of one hour at a stretch per day and the effect on the preterm neonate in terms of hospital stay was assessed.
Results: Kangaroo mother care has positive effects on the infants growth, neurodevelopmental outcome, reduction in the morbidities associated with preterm infants, and breastfeeding practices in mothers of preterm neonates.
Conclusions: The study promotes awareness of KMC on preterm neonates considering all the benefits and positive effects of KMC on the infant as well as baby, and to the family and nation amongst the health care personnel as well as the society.

Keywords: Birth weight, Gestational age, Kangaroo mother care

INTRODUCTION

Globally, about 25 million births / year (17%) are of low weight, 2500 g, >95% in low-income countries.[1] Of the estimated 4 million neonatal deaths, preterm and LBW babies represent more than a fifth. Therefore, the care of such infants becomes a burden for health and social systems everywhere.

Preterm babies are susceptible to serious illness or death in the neonatal period. Without appropriate treatment, among those who survive are at higher risk of lifelong disability and poor quality of life. Complications of prematurity are single largest cause of death among neonates and the second leading cause of deaths among children under the age of 5 years.

To further reduce child mortality global efforts demand immediate action to address preterm birth. Infant death and morbidity following preterm birth can be reduced via interventions provided to the mother before or during pregnancy and to the preterm infant post birth.

Interventions are directed towards all women for primary prevention and towards reduction of the risk of preterm birth (e.g. smoking cessation programmes) or used to minimize the risk in pregnant women with known risk factors (e.g. progestational agents, cervical cerclage).

However, the most crucial set of maternal interventions are those that could improve survival rates and outcomes involving health of preterm infants when preterm birth is inevitable. These interventions are administered to the mother shortly before or during the birth process along with the aim of overcoming immediate and future health challenges of the preterm infant, such as lung immaturity, susceptibility to infection, and neurological complications. Essential and additional care of the preterm newborn to prevent or treat potential complications is also critical to newborn survival without disability.

Good quality care of low birth weight infants (LBWI) could reduce neonatal mortality in these countries, but the technologies used in rich countries are too expensive and need often-lacking skilled personnel, maintenance and logistic support. Expensive technologies may also prevent early mother–baby contact and breastfeeding, for survival in low-income countries, and may not allow mothers to become competent and confident in the care of their LBWI.[2]

Kangaroo mother care (KMC), defined as early, prolonged and continuous skin-to-skin contact between a mother and her newborn LBWI, both in hospital and after early discharge, until at least the 40th week of postnatal gestational age, could help to overcome most of the constraints of conventional methods of care (CMC).

The term "kangaroo" was derived from practices similar to marsupial care, where the infant is given warm care in the maternal pouch and very close to the breasts of the mother for unlimited feeding. Kangaroo care, a practice that originated in Bogota, Columbia to provide tactile, kinaesthetic, and vestibular stimulation and to transmit heat from the parent's to the infant's body. In 1978, Rey and Martinez created the concept of kangaroo mother care at the instituto materno infantil in Bogota, Columbia.[3] This has evolved into a practice that includes frequent breastfeeding.[4]

The three major components of Kangaroo mother care are:

- Kangaroo position: Skin to skin contact.
- Kangaroo feeding policy: Exclusive breast feeding.
- Early discharge and follow-up.

Every year, 20 million and more infants are born with birth weight less than 2.5kg and over 96% of them are in developing countries. These low-birth-weight (LBW) infants are at increased risk of early growth retardation, developmental delay, infectious disease, and death during infancy and childhood.[5]

Conventional neonatal care of LBW infants needs both highly skilled personnel and permanent logistic support and is expensive. Evidence suggests that kangaroo mother care is effective and safe alternative to conventional neonatal care, especially in under-resourced settings and may reduce morbidity and mortality in low birth weight infants as well as increase breastfeeding.

METHODS

It is a hospital based observational study. Conducted in the department of pediatrics, Rajarajeshwari medical college and hospital. Duration of study was of 18 months from December 2017 to May 2019.

Source of data are all live new born of gestational age of less than 37 weeks and birth weight below 2500 gms delivered at Rajarajeswari medical college and hospital.

Age eligible for study was newborns up to 4th week of life. Sex eligible for study was all.

Method of collection of data

Kangaroo mother care

- Other than routine care per hospital policy, infants will receive skin-to-skin contact for a minimum 8-10 hours daily during hospital stay.
- Baby's weight, length and head circumference was measured and recorded till 4th week life including follow up.

Study details

Primary outcome measures:

- Rate of infection (time frame 1-2 weeks (during hospital stay). Frequency of presume sepsis and need for antibiotics.
- Length of stay (time frame 1-2 weeks). Total days in hospital during recruitment period.

During the study period of December 2017 - May 2019, 100 preterm infants (<37 weeks) and with birth weight less than 2500 grams were chosen.

The data from 100 mother infant dyads were analysed using statistical analysis data was entered into Microsoft excel data sheet and was analyzed using SPSS 22 version software. Categorical data was represented in the form of Frequencies and proportions.

RESULTS

In the study duration of KMC in terms of hours given by the mothers per day was 4 to 6 in 3%, 6 to 8 in 42%, 8 to 10 in 44%, 8 to 12 in 10% and 10 to 12 in 1% (Figure 1). In the study out of 100 babies, 35% had infection and 65% had no infection (Figure 2).

An average length of hospital stay was 15.22±13.121 days among neonates in our study group. Among those with infection duration of stay was 21.03±15.627 days

and among those without infection was 12.09±10.402 days. There was significant difference in length of hospital stay among those with infection and without infection (Table 1).

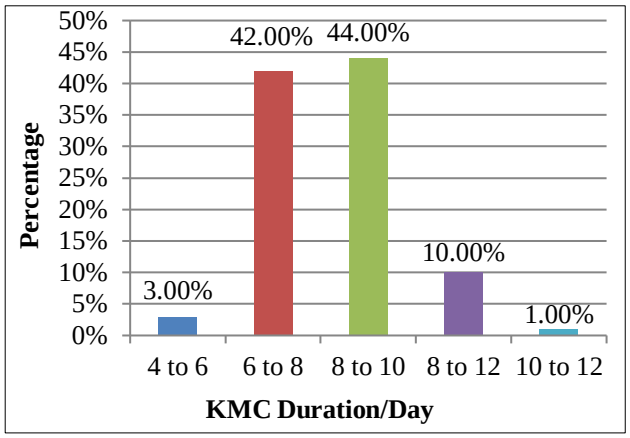

Figure 1: KMC duration distribution among subjects.

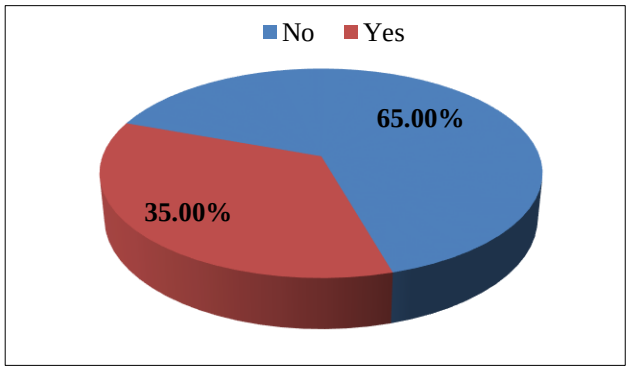

Figure 2: Rate of infection among neonates who received kangaroo mother care.

Table 1: Length of stay distribution and comparison with infection.

	Infection	N	Mean	SD	p value
Length of hospital stay	Absent	65	12.09	10.402	
	Present	35	21.03	15.627	0.001 *
	Total		15.22	13.121	

DISCUSSION

A hospital based observational study was performed in the Neonatal unit of our hospital which is one of a major teaching hospital in Bengaluru over a one and a half year period. Babies whose birth weight was less than 2500 grams who fulfilled our inclusion criteria and had stable cardiopulmonary status and mothers who were willing to participate in the study were taken into the study, 100 infant mother dyads were studied physical and physiological parameters namely vitals and weight gain, length and head circumference was recorded. The demographic characteristics like gestational age, birth weight, and anthropometry were noted. In a study conducted by Anderson GC et al, KMC, skin to skin contact which is one of the vital components, is also known to stimulate audio, visual, olfactory and taste sensations. Skin to skin contact, a necessary component of KMC which is known to contribute to the premature babies' cognitive development, as KMC integrates sensory, rhythmic and tactile stimulation by enhancing the mother infant bond and contact.[6] Therefore, KMC which is a multimodal sensory stimulant could encourage or function as an interventional modality for the better neurodevelopmental outcome of the low birth weight and preterm babies.

A randomized trial study was conducted to determine the evidence to support the use of KMC in low birth weight infants. The result showed that KMC was associated with reduced risk of following conditions; nosocomial infection, severe illness, lower respiratory diseases, not exclusively breast feeding and maternal dissatisfaction. It concludes that cost of neonatal care were greater in the control than in the KMC group.[7]

A study was conducted regarding the effectiveness of KMC in preventing neonatal death due to preterm birth complications. KMC includes thermal care via continuous skin-skin contact, establishing exclusive breast feeding and early response for illness. The study concludes that KMC reduces neonatal mortality effective in reducing severe mortality, particularly from infection.[8] Babies in the KMC group had significantly higher oxygen saturation as compared to the CMC group (94.51 vs 92.652) and these findings are in accordance with Acolet et al, Bier et al, and Fohe et al.[9-11]

In this study 35% had infection and 65% had no infection. Length of hospital stay was 15.22±13.121 days. Among those with infection duration of stay was 21.03±15.627 days and among those without infection was 12.09±10.402 days. There was significant difference in length of hospital stay among those with infection and without infection. The present knowledge of the health care personnel as well as the society about preterm and Kangaroo mother care is unsatisfactory and if shown to be acceptable in our society, it can be used to implement interventions like awareness programs and training in Kangaroo mother care. Hence our study promotes awareness of KMC on preterm neonates considering positive effects of KMC on the infant as well as baby, and to the family and nation amongst the health care personnel as well as the society.

CONCLUSION

KMC is a simple and feasible intervention; acceptable to most mothers admitted in hospitals. Kangaroo mother care helps in better maintenance of general condition of the baby with lesser incidence of infection and sepsis rates.

Kangaroo mother care has benefits in terms of reducing the incidence of hypothermia. The present study has important implications in the care of preterm and LBW infants in the developing countries, where expensive facilities for conventional care may not be available at all places.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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