

Original Research Article

A prospective clinical study to evaluate the correlation of duration of kangaroo mother care and weight gain in low birth weight babies

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ABSTRACT

Background: Kangaroo Mother Care (KMC) is an alternative to conventional neonatal care for low birth weight (LBW) babies in low resource settings, this study is to evaluate the correlation between the duration of KMC given and average weight gain per day in low birth weight babies

Method: It is an observational study, 106 low birth weight babies who were less than 1.8 kg, hemodynamically stable, accepting either direct breast feed or gavage feed were included in the study, duration of KMC given per day and weight was recorded daily until discharge. Babies were monitored for complications, if any babies were withdrawn from the study, necessary intervention was done. Average weight gain per day in these babies was estimated and correlated with the average duration of KMC.

Results: Out of 120 eligible children 106 were selected for study of which 57 were male and 49 were female, 42 were less than 1.2 kg, 37 were between 1.21 kg to 1.5 kg and 27 were between 1.51 kg to 1.8 kg, there was statistically significant moderate correlation with Pearson $r=0.6281$ with p value <0.00001 and mean average weight gain was 5.27 in less than 6 hr to 8 hr, 9.08 in 8 hr to 10 hr, 11.87 in greater than 10 hrs of KMC

Conclusion: The weight gain was found to increase with duration of KMC practice. hence authors recommend to increase the duration of KMC per day for the good average weight gain per day.

Keywords: Breast feed, Kangaroo mother care, Low birth weight, Weight gain

INTRODUCTION

Newborn deaths currently account for approximately 40% of all deaths of children under five years of age in developing countries-the three major causes being birth asphyxia, infections, and complications due to prematurity and LBW.¹ Birth weight is a significant determinant of newborn survival. LBW is an underlying factor in 60–80% of all neonatal deaths. LBW infants are approximately 20 times more likely to die, compared with heavier babies Every year, around 15 million infants

weighing less than 2500 g are born, most of them in low and middle income countries.^{2,3}

KMC is a model of humanized perinatal care comprising a set of neonatal care actions that do not compromise newborns survival and growth.^{4,5} Kangaroo Mother Care (KMC) is derived from practices similar to marsupial care, started first in Colombia in the 1970s.^{6,7} It is an alternative to conventional neonatal care for LBW babies.⁸ In this method the diaper clad infant is placed upright between the mothers' breasts. Kangaroo Mother

Care does not need expensive and sophisticated equipment, and for its simplicity it can be applied almost everywhere, benefits include improvement in weight and length, cognitive development, mother-child bonding, maternal confidence in caring for their babies and reduced stress in mothers and babies.⁹⁻¹¹

METHODS

It is a prospective observational study done in Neonatal intensive care unit Bowring and Lady Curzon Hospital attached to Bangalore Medical College and Research Institute (BMCRI). 120 low birth weight babies were included from the time period of 6 months, August 2018 to January 2019.

All babies of less than birth weight of 1.8 kg in step down ward who were hemodynamically stable, accepting oral feeds either direct breast feed or gavage feed were included in the study. Before initiation of KMC, mother had been motivated regarding the importance of KMC and its advantages. The babies were cared in skin to skin contact vertically between mother’s breast under her clothes and breast feeding during KMC was also encouraged.

After initiation, duration of KMC given by mother per day is recorded daily. Baby’s weight is monitored using electronic weighing scale, daily in the morning at the same time every day till discharge. Babies were monitored for complications like hypothermia, hypoglycemia, NEC, sepsis, apnoea, and jaundice. If any complications arise babies were withdrawn from the study and necessary intervention was done. KMC was continued till discharge of baby. Average weight gain per day in these babies was estimated and correlated with the average duration of KMC per day.

Statistical analysis

Data were analyzed using SPSS windows statistical package version 23 (SPSS Inc., Chicago, IL). Pearson coefficient correlation was used to measure the relation between the average duration of KMC received per day and the average weight gain per day, mean and SD were used to express numerical data.

RESULTS

All of 120 babies were included in the study, 14 were withdrawn from study for various reasons, 10 went against medical advice, 3 developed jaundice and 1 developed sepsis, 106 were included for analysis.

Of the 106 babies analysed 53.77 % were male and 46.23% were female babies (Table 1, Figure 1).

Table 1: Describes the sex distribution.

	No of Male babies	No of Female babies
N	57	49

Babies were grouped according to the initial weight at the time of admission as, less than 1.2 kg ,1.21 kg - 1.5 kg , between 1.51 kg -1.8 kg, majority 42 babies were less than 1.2 kgs, followed by 37 babies who were in the range of 1.21 to 1.5 kgs and 27 were in the range of 1.51 to 1.8 kg (Table 2).

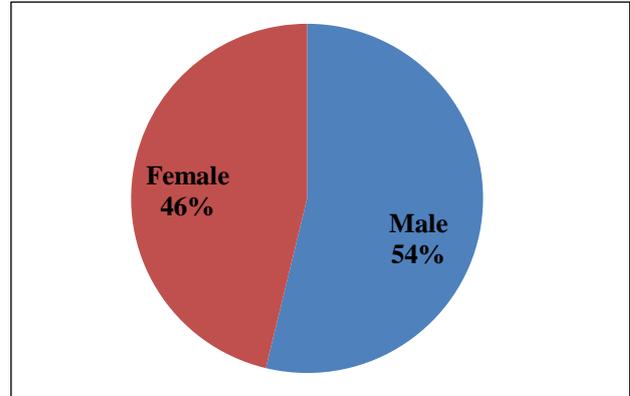


Figure 1: The sex distribution of the babies studied.

Table 2: The weight at enrolment.

Weight (kg)	N	Percentage
<1.2	42	39.62
1.21to 1.5	37	34.91
1.51to 1.8	27	25.47

The average duration of the KMC received by the individual baby were correlated with the average weight gain per day at the end of the discharge from NICU using the Pearson coefficient correlation which showed moderate positive correlation with Pearson r =0.6281, which was statistically significant correlation at p value<0.01 (Table 3 and Figure 2).

Table 3: Pearson coefficient correlation between average duration of KMC per day and the mean average weight gain per day.

AVG Weight gain\day		
Average duration of KMC	Pearson Coefficient (r)	0.6281
	p	<0.00001
	N	106

Correlation is significant at the 0.01 level.

Table 4: describes the average duration of KMC given and the mean of the average weight gain per day.

Average duration of KMC (hr)	N	Mean of average weight gain /day
<6	23	5.27
6to 8	67	7.15
8 to 10	13	9.08
>10	3	11.87

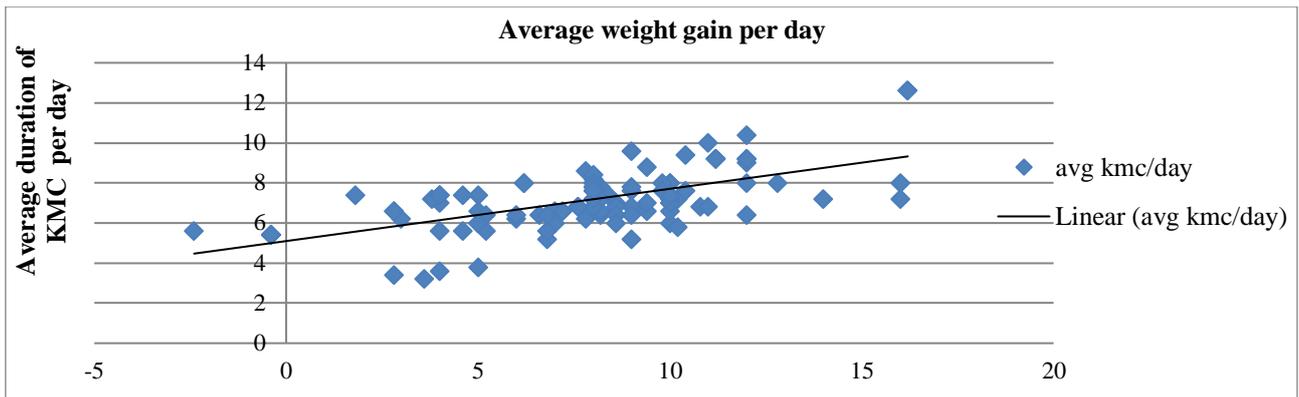


Figure 2: Scatter plot between the average duration of KMC per day and average weight gain per day.

Babies were classified based on the average duration of KMC they received per day as less than 6hrs, 6-8 hrs, 8-10 hrs and above 10 hrs and the mean of the average weight gain per day of the babies in that group were calculated (Table 4), which showed the mean average weight gained by babies increase with the average duration of the KMC given.

DISCUSSION

KMC is a simple cost effective treatment in low birth babies, it can be easily practiced without requirement of incubators or radiant warmers, KMC is as safe and effective as traditional care with incubators infant radiant warmers. the present study revealed that there was significant average daily weight gain observed in babies with the increase in the duration of the KMC received per day, there was a moderate positive correlation Pearson coefficient of 0.6281 which was statistically significant $p < 0.01$ between the average weight gain per day with the average duration of KMC received per day, Though we have not compared with the conventional care, there was the greater weight gain in babies who received the KMC, This is reinforced by the study done in this study where there was Significantly greater mean daily weight gain with Kangaroo Care method who have reported greater weight gain with KMC method of care.^{9,12}

There was a significant weight gain in KMC group when compared to conventional care, there was increased average daily weight gain and decrease in the hospital duration in babies who received KMC.^{13,14}

CONCLUSION

KMC is safe, cost effective way of caring for LBW babies. Weight gain is significant in babies with KMC care. The weight gain was found to increase with duration of KMC practice. hence, authors recommend increasing the duration of KMC for the good average weight gain/day.

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Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

1. Kangaroo mother care implementation guide. Washington dc USA: Maternal and Child Health Integrated Program. Available at: <http://www.mchip.net/sites/default/files/MCHIP%20KMC%2520Guide.pdf>. Accessed 6 august 2019.
2. Kramer MS. Intrauterine growth and gestational duration determinants. *Pediatr*. 1987 Oct 1;80(4):502-11.
3. Lee AC, Katz J, Blencowe H, Cousens S, Kozuki N, Vogel JP, et al. National and regional estimates of term and preterm babies born small for gestational age in 138 low-income and middle-income countries in 2010. *Lancet Glob Health*. 2013;1(1):e26-36.
4. Souza KMO, Ferreira SD. Humanized attention in neonatal intensive-care unit: senses and limitations identified by health professionals. *Ciênc. saúde coletiva*. 2010;15(2):471-80.
5. Tallandini MA, Scalembra C. Kangaroo Mother Care and mother premature infant dyadic interaction. *Infant Mental Health J*. 2006;27(3):251-75.
6. Whitelaw A, Sleath K. Myth of the marsupial mother: Home care of very low birth weight babies in Bogota, Columbia. *Lancet*. 1985;25:1206-8.
7. Charpak N, Figueroa Z. Kangaroo mother care programme practical rules. Bogota, Columbia: Kangaroo Foundation; 2001.
8. Charpak N, Ruiz-Pelaez JG, Charpak Y. Kangaroo mother programme: an alternative way for caring for low birth weight infants? One year mortality in a two cohort study. *Pediatr*. 1994;94(6):804-10.
9. Ramanathan K, Paul VK, Deorari AK, Taneja U, George G. Kangaroo mother care in very low birth weight infants. *Indian J Pediatr*. 2001;68:1019-23.

10. Conde-Agudelo A, Belizan JM, Diaz-Rossello J. Kangaroo mother care to reduce morbidity and mortality in low birthweight infants. *Cochrane Database Syst Rev.* 2011;(3):CD002771.
11. Charpak N, Tessier R, Ruiz JG, Hernandez JT, Uriza F, Villegas J, et al. Twenty-year follow-up of kangaroo mother care versus traditional care. *Pediatr.* 2017;139(1):e20162063.
12. Charpak N, Ruiz-Pelaez JG, Charpak Y. Kangaroo mother programme: an alternative way for caring for low birth weight infants? One year mortality in a two cohort study. *Pediatr.* 1994;94(6):804-10.
13. Suman Rao PN, Udani R, Nanavati R. Kangaroo mother care for low birth weight infants: a randomized controlled trial. *Indian Pediatr.* 2008;45(1):17.
14. Gupta M, Jora R, Bhatia R. Kangaroo mother care (KMC) in LBW infants- a western Rajasthan experience. *The Indian J Pediatr.* 2007 Aug 1;74(8):747-9.

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