



# **Effectiveness of Kangaroo Mother Care in Weight Gain among Newborn Babies in AVBRH Hospitals of Wardha**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## **ABSTRACT**

**Introduction:** Kangaroo Mother Care is a simple and feasible intervention; acceptable to most mothers admitted in hospitals. There may be benefits in terms of reducing the incidence of hypothermia with no adverse effects of Kangaroo Mother Care. Kangaroo Care infants showed improvement in regular breathing patterns and virtually no periodic breathing, weight gain in low birth babies, suggesting that Kangaroo Mother Care is safe for these infants.

**Materials and Methods:** Randomized control trial, I experimental and control group design was used in study this study was conducted in post natal wards of AVBR Hospital. In this study samples were newborns that were fulfilling the inclusion and exclusion criteria. 500 newborns were selected

and it was equally divided into two groups as control 250 and experimental 250. Random sampling technique was used in this study. A checklist regarding the frequency and duration of KMC was prepared for the experimental group.

**Results:** The mean weight gain in the control group at birth is 2.71, on discharge it is 2.53 and on follow up it is 3.07. The mean weight gain in the experimental group at birth is 2.74, on discharge it is 2.67 and on follow up it is 3.31.

**Conclusion:** Significant difference was found in the mean weight gain between experimental and control group. Thus it is concluded that KMC is effective in increasing the weight of the newborn babies.

*Keywords: Kangaroo mother care; weight gain; newborn babies.*

## 1. INTRODUCTION

Background Kangaroo mother care (KMC), originally defined as skintoskin contact between a mother and her newborn, frequent and exclusive or nearly exclusive breastfeeding, and early discharge from hospital, has been proposed as an alternative to conventional neonatal care for low birth weight (LBW) infants[1]. Lawn JE, Mwansa-Kambafwile J, Barros FC, Horta BL, Cousens S conducted study (2010) Kangaroo mother care to prevent neonatal deaths due to preterm birth complications[2]. The evidence that kangaroo mother care (KMC), when compared to conventional neonatal care in resource-limited settings, significantly reduces the risk of mortality in infants born in facilities who are clinically stable and weighing less than 2000 gms [3].

There is strong evidence of mortality and morbidity reduction in low-and middle-income settings and KMC has been endorsed by the World Health Organization (WHO). However, adoption and implementation of KMC has been limited at the national level. A systematic assessment of health system bottlenecks among countries with a high rate of neonatal deaths identified KMC as an intervention with significant barriers to scaling up, including leadership and governance, health financing, health workforce, health information systems, and community ownership and partnership[4]. Based on criteria such as mortality benefit and equity, health intervention priority-setting tools, such as the Lives Saved Tool and Child Health and Nutrition Research Initiative methodology, have identified KMC as a high priority intervention.

The lack of a clear definition of KMC has made it difficult to achieve effective coverage at scale of KMC in addition to implementation barriers. A multi-country study in Africa found that KMC

implementation varied across facilities in countries committed to KMC<sup>1</sup>. Developing and adopting a global definition of KMC is challenging due to regional, country, and facility differences in health worker capacity, financial resources, leadership, health information systems, and cultural and community structures.

Kangaroo Mother Care combines skin-to-skin contact between mother and infant, frequent breast feeding, and early discharge from the hospital. Skin-to-skin contact has been shown to significantly increase and stabilize infant temperature, breathing, increase blood glucose, and improve breastfeeding duration and aid to lasting maternal infant bonding. Babies in Kangaroo Mother Care are secured between their mother's breasts in an upright position, day and night.

Kangaroo Mother Care is a simple and feasible intervention; acceptable to most mothers admitted in hospitals. There may be benefits in terms of reducing the incidence of hypothermia with no adverse effects of Kangaroo Mother Care in the study. The present study has important implications in the care of low birth weight infants in the developing countries; where expensive facilities for conventional care may not be available at all place.

The physiologic parameters for Kangaroo Care infants remained within clinically acceptable ranges and the infants did not experience any adverse physiological events. Additionally, Kangaroo Care infants showed improvement in regular breathing patterns and virtually no periodic breathing, suggesting that Kangaroo Mother Care is safe for these infants. Using skin-to-skin contact, it is possible to create a neutral thermal environment, a radiant warmer..." and that "the use of this technique has several advantages, including stabilizing vital signs and

temperature, promoting bonding between infant and parent, and improving lactation. Kangaroo mother care improves growth and reduces morbidities in low birth weight infants. It is simple, acceptable to mothers and can be continued at home.

As soon as the baby is stable, KMC can begin. Baby's requiring special treatment or suffering from severe illnesses should be managed according to the unit protocol: short KMC sessions can be initiated during recovery with ongoing medical treatment (intravenous fluids, oxygen therapy). The KMC can be provided while the baby is being fed via orogastric tube or while on oxygen therapy[5]. The institution and then at home, KMC continues for as long as possible when the mother and baby are comfortable. This is often preferred until the baby's gestation reaches term, or until its weight reaches 2500 grams. This is the time to wean the baby from KMC. Mothers can provide skin to skin contact occasionally after giving the baby a bath and during cold nights[6].

### 1.1 Need of the Study

KMC improved breastfeeding rates and physical growth rates because it was well-received by both the mothers and nursing staff. This study is performed to see the effect of structured kangaroo care on the growth and morbidity pattern of newborns. Most of the studies have been done showing the effect of KMC on weight gain in low birth weight babies.

### 1.2 Aims and Objectives

#### 1.2.1 Aims

The effect of kangaroo mother care in weight gain among newborn babies.

#### 1.2.2 Objectives

Following are the objectives of the study:

- 1) To assess weight gain in newborn babies without receiving KMC in control group.
- 1) To assess weight gain in newborn babies receiving KMC in experimental group.
- 3) To compare weight gain in control group and experiment group.

## 2. MATERIALS AND METHODS

### 2.1 Research Design

Research design Randomized control trail was used in.

### 2.2 Study Groups

Interventional Group and control group was used in the study.

### 2.3 Setting

The study was post natal wards of AVBR Hospital.

### 2.4 Sample

Normal Newborn

### 2.5 Sampling Technique

Researcher was used computerized randomized sampling technique for the group formation of intervention group and control group.

### 2.6 Section of the Sample

Random sampling technique.

### 2.7 Sample size

500 normal newborn 250 newborn each group.

### 2.8 Inclusion and Exclusion Criteria

#### 2.8.1 Inclusion criteria

- Normal Healthy and stable newborn after birth within 7days
- Newborn weight 2500gms or more than
- Mother who are healthy during postnatal period
- Normal delivery and cesarean section

#### 2.8.2 Exclusion criteria

- Major congenital anomalies
- Mothers have fever, or any communicable disease

### 2.9 Data Collection

This study was conducted between the years 2016 and 2018. In the study, the researcher used a randomized control trail research design. A computerized random sampling technique was used to select 500 newborn from postnatal wards at AVBRH Sawangi Wardha, Maharashtra, India.

An Observation approach was used in this study. This study was conducted in the postnatal wards

of AVBR Hospital. In this study samples were normal newborns that were fulfilling the inclusion and exclusion criteria. Newborns were selected and it was equally divided into two groups as control and experimental. A random sampling technique was used in this study. A checklist regarding the frequency and duration of KMC was prepared for the experimental group up to discharge researcher trained the mother about KMC. Three observations were taken by researcher weight at birth, at discharge, and after one month at the time of follow up and for the control group with routine care three observation weights at birth at discharge and after one month at the time of follow up.

Before giving KMC, weight of the baby would be recorded. Then KMC would be given to newborn babies for two hour every four-hour interval. (8am, 12pm, 4pm, 8pm) Before discharge of baby again weight was recorded. Mother has been advised to continue KMC up to one month at home and weight had reassessed after 1month of age in paediatric OPD at AVBRH.

### 3. RESULTS

The mean weight gain in the experimental group at birth is 2.73, on discharge it is 2.68 and on follow up it is 3.31. The mean weight gain in the control group at birth is 2.71, on discharge it is 2.53 and on follow up it is 3.07.

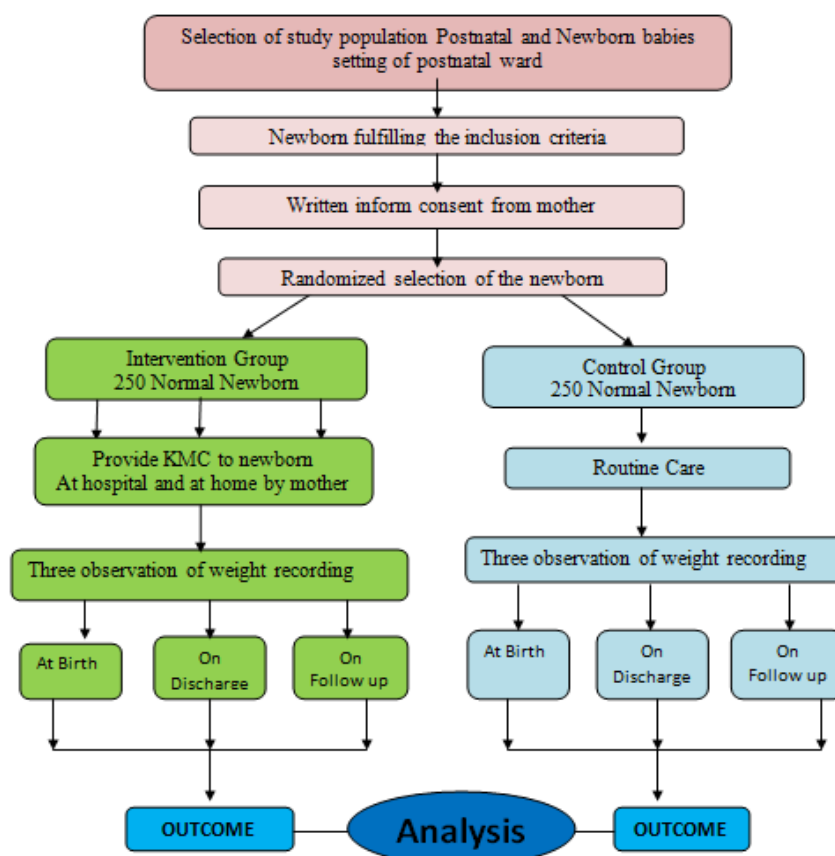


Fig. 1. Flow chart of Method of data collection for control and experimental group

Table 1. Assess the weight gain of new born babies receiving Kangaroo Mother Care In Control Group n=250

	Mean	N	Std. Deviation	Std. Error Mean	Mean Difference	t-value
Control Group	At Birth	2.71	250	0.22	0.01	-
	On Discharge	2.53	250	0.26	0.01	0.17±0.21(6.64%)
	On Follow Up	3.07	250	0.34	0.02	0.36±0.37 (13.28%)

Above table show the mean weight gain in the control group at birth is 2.71, on discharge it is 2.53 and on follow up it is 3.07.

**Table 2. Assess the growth rate of newborn babies receiving Kangaroo Mother Care In Experimental Group n= 250**

		Mean	N	Std. Deviation	Std. Error Mean	Mean Difference
Experimental Group	At Birth	2.74	250	0.24	0.01	-
	On Discharge	2.67	250	0.41	0.02	0.06±0.39 (2.55%)
	On Follow Up	3.31	250	0.38	0.02	0.57±0.43 (20.80%)

Above table show the mean weight gain in the experimental group at birth is 2.74, on discharge it is 2.67 and on follow up it is 3.31

**Table 3. Comparison of weight gain of newborn babies receiving Kangaroo Mother Care in Control and Experimental Group**

	Group	N	Mean	Std. Deviation	Std. Error Mean	t-value
AT Birth	Control	250	2.71	0.22	0.01	1.42
	Experimental	250	2.74	0.24	0.01	P=0.15,NS
On Discharge	Control	250	2.53	0.26	0.01	4.55
	Experimental	250	2.67	0.41	0.02	P=0.0001,S
On Follow up	Control	250	3.07	0.34	0.02	7.26
	Experimental	250	3.31	0.38	0.02	P=0.0001,S

The above table show in experimental group mean weight gain was 2.74, 2.68 and 3.31 respectively at birth, on discharge and on follow up whereas in control group, it was 2.71, 2.53 and 3.07 respectively. The tabulated 't' value for 98 degrees of freedom on discharge and on follow up was 1.98. The calculated 't' values were 5.21 and 7.26. The calculated 't' values were much higher than the tabulated value at 5% level of significance which is statistically acceptable level of significance. The calculated 'p' values for discharge and follow up was 0.0001 which was less than 0.05. Hence the research hypothesis H<sub>1</sub> is accepted

#### 4. DISCUSSION

The mean weight gain in the experimental group at birth is 2.73, on discharge it is 2.68 and on follow up it is 3.31. The mean weight gain in the control group at birth is 2.71, on discharge it is 2.53 and on follow up it is 3.07. In experimental group mean weight gain was 2.74, 2.68 and 3.31 respectively at birth, on discharge and on follow up whereas in control group, it was 2.71, 2.53 and 3.07 respectively. Following study are supporting to my study.

A study revealed that 62 low birth weight babies were given KMC. 19 (31%) of these were <1000gm, 32 (52%) 1001-1500gm, and the rest were between 1500gm and 2500gm. (Smallest 548 grams). KMC was initiated within the first week in 50.4% and by the second week in 27.4%. KMC lasted an average of 7 days (range 1-48). No significant variation in heart rate, respiratory rate was noticed. Babies who received KMC had fewer complications and a higher survival rate. The number of mothers expressing breast milk increased. Mothers accepted KMC well, and were more confident in handling their LBW babies. Their milk yield increased and they felt as if they were

contributing positively to the care of their precious babies [7].

The KMC babies had better average weight growth per day (KMC: 23.99g vs. CMC: 15.58g, P<.0001). There was no effect on time to discharge. More KMC babies were exclusively breastfed at the end of the study (98% vs. 76%). KMC was acceptable to most mother and families at home [8].

Government, Medical, College Miraj, Maharashtra, India year 2017. Total 80 newborns were enrolled in this study. The increase in the weight after KMC was seen in 40 babies out of 57 after 4 days and all babies after 8-12 days of KMC with an average weight gain of 14.53 gms [9].

#### 5. CONCLUSION

The present there are significant difference was found in the mean weight gain between experimental and control group. Thus it is concluded that KMC is effective in increasing the weight of the normal newborn babies. KMC with increased breastfeeding opportunities was shown to improve weight gain in normal

neonates with delayed weight gain regardless of birth weight. Based on our findings as well as those of others, KMC can be considered an effective strategy for increasing weight gain in neonates with delayed weight gain. The effect of KMC needs to be explored on other neonatal problems and has to be examined in different clinical settings.

## CONSENT

Researcher obtained permission from the CMS of the hospital and the head of the department and then obtained written informed consent from the parents before the study.

## ETHICAL APPROVAL

Institutional Ethical Committee Board, Datta Meghe Institute of Medical Sciences (Deemed to be University), and India provided ethical approval.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. Conde–Agudelo A, Diaz–Rossello JL. Kangaroo mother care to reduce morbidity and mortality in low birthweight infants. *Cochrane Database Syst Rev*. 2014;4:CD002771. [PubMed] [Google Scholar]
2. Lawn JE, Mwansa-Kambafwile J, Barros FC, Horta BL, Cousens S. Kangaroo mother care to prevent neonatal deaths due to preterm birth complications. *Int J Epidemiol*. 2010; 39:i144–54. DOI: 10.1093/ije/dyq031.
3. Bahl R, Martines J, Bhandari N, Biloglav Z, Edmond K, Iyengar S, et al. Setting research priorities to reduce global mortality from preterm birth and low birth weight by 2015. *J Glob Health*. 2012; 2:010403. DOI: 10.7189/jogh.01.010403.
4. World Health Organization DoRHaR. Kangaroo mother care: a practical guide. WHO Library. Geneva: World Health Organization;2003.
5. Sloan NL, Camacho LW, and Rojas EP, Stern C. Kangaroo mother method: randomized controlled trail of an alternative method of care for stabilized low-birth weight infants. Maternidad Isidro Ayora study team. *Lancet*. 1994; 344(8925):782-5.
6. Ramanathan K, Paul VK, Deorari AK, Taneja U, George G. Kangaroo mother care in very low birth weight infants. *Indian J Pediatrics*. 2001; 68(11):1019-23.
7. Kaur R, Narula S, Parmar V, Kumar A, Basu S, et al., “Intermittent Kangaroo Mother Care In Neonatal Intensive Care Unit, Chandigarh”,GMCH, Sector 32B, Chandigarh;2004.
8. Suman RP, Udani R, Nanavathi R, “Kangaroo mother care for low birth infants: a randomized controlled trial”, Department of Neonatology, Seth GS Medical college and KEM Hospital, Mumbai, India; 2008; 45[1]: 17-23.
9. Dr Deepa.S.Phirke, Dr Sudhakar Bantewad *Journal of medical science and clinical research* Evaluation of Kangaroo Mother Care in Low Birth Weight Babies. 2017;05(09).

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