

Comparison of Kangaroo Mother Care with Conventional Care in Newborns in Terms of Frequency of Successful First Breastfeeding and Time to Initiate Breast Feeding

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ABSTRACT

Objective: To compare kangaroo mother care with conventional care in newborns regarding the frequency of successful first breastfeeding and time to initiate breastfeeding.

Study Design: Quasi-experimental study.

Place and Duration of Study: Departments of Pediatrics and obstetrics CMH Bahawalpur from Feb 2019 to Jun 2020.

Methodology: 120 infant-mother couples were included in the study. Sixty infant-mother couples were randomly allocated to each group (120 infants). Group A was nursed with kangaroo mother care (KMC), and Group B was nursed with conventional care (CC). The frequency of the first successful feed was assessed, and the time taken to initiate breastfeeding was documented.

Results: There was no statistically significant difference in weight, gestational age and gender distribution between the two groups. 65 (54.25%) infants had successful first breastfeeding in the study population. 38 (63.3%) of the infants had first successful breastfeeding as per the Infant Breast feeding Assessment Tool (IBFAT) in group A (KMC) as compared to 27 (45%) in group B (Conventional Care). The difference between the two groups was statistically significant, with a p -value of 0.044. Mean time for first successful breastfeeding was significantly less for the KMC group as compared to the conventional group with a p -value of <0.001 . Kangaroo mother care resulted in a higher frequency of successful first feed, and meantime for initiation of feeding was also less than conventional care.

Keywords: Breast feeding, Early skin-to-skin contact, Kangaroo mother care.

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INTRODUCTION

Breastfeeding is the most natural and healthiest way of infant feeding, and early breastfeeding initiation plays a critical role in successful lactation. According to a published report in 2016, annually, almost 0.823 million deaths in children under the age of 5 years could be avoided through proper breastfeeding practices.¹ Unfortunately, breastfeeding rates in Pakistan are the lowest among South Asian countries and only 29% of mothers initiate breastfeeding during the first hour after delivery.² Furthermore, only 38 percent of infants less than six months are exclusively breastfed.³ One of the contributing factors to the delayed initiation of breastfeeding is the practice of separating the infant and mother immediately after birth.

The initial two hours post-birth termed as 'sensitive period', is the most critical and ideal time for a neonate to start breastfeeding. This 'sensitive period' can be optimally utilized to initiate breastfeeding

through Kangaroo Mother Care (KMC).^{2,4} KMC is the practice of skin-to-skin contact between infant and mother, which was started to increase the survival rate of low birth weight neonates in low-income countries but is useful in term babies as well.⁵ More broadly, the KMC for infants has proven to reduce mortality, infections, severe illness, and duration of hospital stay. In addition, it has a proven benefit in encouraging and sustaining breastfeeding.⁶⁻⁸

In a recent study, Mahmood *et al*,² reported that the success of first breastfeeding with KMC was 58.8 % in comparison to 32.5% with conventional care (CC) ($p < 0.001$). This study also showed that early mother-newborn contact significantly decreased the time to establish lactation and increased the usual breastfeeding rate at one month. Similarly, Gathwala *et al*, showed that more KMC infants were exclusively breastfed at the end of their study compared to the CC group (88% versus 72%).⁹ Furthermore, similar conclusions were drawn from a study conducted by Suman *et al*.¹⁰ The rationale of this study was to find out a better technique for early neonatal care (Kangaroo

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mother care versus conventional care) that results in successful initiation of breastfeeding. Since this study has never been done in our setup, it will not only give us a practical experience with Kangaroo mother care, but the results of this study will also help set protocols for neonatal feeding and early neonatal care.

METHODOLOGY

This quasi-experimental study was conducted at the Departments of Pediatrics and Obstetrics Combined Military Hospital, Bahawalpur, from February 2019 to June 2020, after seeking proper approval from the Hospital Ethical Committee (EC-04-2020). Informed written consent was taken from all the parents. A sample size of 60 infants in each group (120 in total) was taken according to the standard WHO Sample Size calculator using a confidence level of 95% and a Power of test of 90%. Anticipated population proportion 1 (P1) = 0.588 (Frequency of Successful first breast-feed with KMC was 58.8%) whereas anticipated population proportion 2 (P2) = 0.325 (Frequency of Successful first breast-feed with CC was 32.5%).¹¹ 120 Babies were included in this study through non-probability consecutive sampling

Inclusion Criteria: Babies of both genders, delivered vaginally to primigravida mothers without any complication at >37 weeks of gestation with a birth weight of more than 2500 grams who required no resuscitation except oro-pharyngeal suctioning, were included in the study.

Exclusion Criteria: Infants with congenital abnormalities (cleft lip/palate), sepsis (lethargic baby with poor suck), birth asphyxia (delayed crying and Apgar

Group A was nursed with KMC, while Group B was nursed with CC, which was ongoing practice. In KMC group (A), the infant was placed on the mother's chest immediately after birth after drying, covering the head with a dry cap and wearing a diaper. Mother was asked to wear a loose shirt covering her and the baby. Both were covered with a blanket, and feed was given as soon as possible. The skin-to-skin contact was continued at least for 45 minutes and ended at any time after the first successful feed. Similarly, if the infant did not initiate the feeding within two hours, the KMC was terminated. In CC group (B), the newborns were placed under warmer (radiant) after cutting the cord. The babies were received in dried and pre-warm sheets and transferred to post-natal wards along with their mothers, and initial breastfeeding was started within 120 minutes. All the information was recorded by the researcher on a specially designed proforma. The outcome variable, i.e., frequency of successful first breastfeeding, was labelled as per operational definition, and time taken for successful first feed was documented. Kangaroo Mother Care (KMC) was defined as providing initial neonatal care when the baby is in skin-to-skin contact with the mother and the mother attempts to feed within two hours of delivery. Conventional Care (CC) was defined as providing routine neonatal care under radiant warmer and mother attempts to feed within 2 hours of delivery. Successful First Breastfeeding was defined as successfully feeding the infant from the mother's breast on the first attempt as assessed using the Infant Breastfeeding Assessment Tool (IBFAT). A score of ≥8 was considered successful feeding (Table-I).

Table-I: Infant breastfeeding ing assessment tool (ibfat).

Readiness to Feed	Rooting	Fixing (Latch on)	Sucking Pattern	Maximum Possible
Initiate Feed Early & Effortlessly	Roots Immediately	Feeds at once	Good Sucking, Feeds on both Breast	12
Mild Stimulation is Needed to Start Feeding	Coaxing and Encouragement is Needed	Feeds in 3-10 minutes	Needs Encouragement, Sucks on and off	8
Moderate Stimulation is Needed to Rouse and Initiate Feeding	Poor Rooting	Takes Feed in >10 minutes	Poor Sucking, Sucks off and on for Short Durations	4
	No Rooting	No Feeding at all	No Sucking	0

Successful feed = A score of equal or more than 8

score <7 at 5 min), respiratory distress (tachypnea), meconium aspiration, infants whose mothers are unable to breastfeeding because of any medical condition and infants delivered by caesarian section were excluded from the study.

Sixty infant-mother couples randomly were allocated to each group (a total of 120 infants).

Statistical Package for Social Sciences (SPSS) version 20.0 was used for the data analysis. The mean and standard deviation (SD) were calculated for the quantitative variables such as gestational age, birth weight and time taken for a successful first feed. In addition, frequency and percentages were calculated for qualitative variables such as gender and successful

first breastfeeding. Frequency of successful first Breast-feed and mean time taken for first feed in two groups (A and B) were compared by chi-square and t-test, respectively. The *p*-value of ≤ 0.05 was considered statistically significant.

RESULTS

In this study, the mean gestational age (MGA) of the study population was 38.21 ± 0.869 Weeks. In Group A, the Mean Gestational Age in the KMC group was 38.15 ± 0.917 weeks, whereas, in Group B (conventional care), it was 38.27 ± 0.821 weeks. In both groups, there was no significant difference (statistically) in gestational age ($p=0.464$). The mean birth weight of the study population was 3199 ± 307.4 grams. In Group A, the mean birth weight was 3198.3 ± 353.9 grams, whereas, in group B, it was 3200 ± 255.78 grams. There was no statistically significant difference between the two groups regarding birth weight ($p=0.976$). The male to female ratio was 1:1.14. No statistically significant difference was observed between the two groups regarding gender distribution ($p=0.715$) (Table-II).

Table-II: Demographic parameters for both groups.

Study Parameters	Group A	Group B	<i>p</i> -value
Mean Gestational Age in Weeks (Mean \pm SD)	38.15 ± 0.92	38.27 ± 0.82	0.464
Mean Birth Weight in Grams (Mean \pm SD)	3198.3 ± 353.9	3200 ± 255.8	0.976
Gender			
Males	28 (46.6%)	30 (50%)	0.715
Females	32 (53.3%)	30 (50%)	

65 (54.25%) infants had successful breastfeeding in the study population. 38 (63.3%) of the infants had first successful breastfeeding as per the IBFAT tool in group A (KMC) in comparison to 27 (45%) in group B (CC) ($p=0.044$). Meantime for first successful breastfeeding was also less for the KMC group as compared to the conventional group (30.24 ± 7.98 min vs 54.15 ± 10.52 min with a *p*-value of <0.001) (Table-III).

Table-III: Comparison of frequency and time taken for first successful feed between the two groups.

Study Parameters	Group A	Group B	<i>p</i> -value
Frequency of Successful Feed	Successful 38 (63.3%)	27 (45%)	0.044
	Not Successful 22 (36.7%)	33 (55%)	
Time Taken for First Successful Feed	30.24 ± 7.98	54.15 ± 10.52	<0.001

DISCUSSION

In our study, the results are encouraging for KMC. 65 (54.25%) infants had successful breastfeeding

in the study population. 38 (63.3%) of the infants had first successful breastfeeding as per the IBFAT tool in group A (KMC) in comparison to 27 (45%) in group B (Conservative care). The difference between the two groups was statistically significant, with a *p*-value of 0.044. This is in accordance with a recent study by Mahmood *et al.*² who reported that the success of first breastfeeding with KMC was 58.8% compared to 32.5% with CC ($p=0.001$). This study also showed that KMC decreased the time to initiate breastfeeding and increased the exclusive breastfeeding rate at one month of age. In our study, the meantime for first successful breastfeeding was also less for the KMC group than the conventional group (30.24 ± 7.98 min vs 54.15 ± 10.52 min) with a *p*-value of <0.001 . A study done in Iran by Aghdas *et al.*, reported that the successful breastfeeding initiation rate in the KMC group was around 57% compared to 35.6% in the conventional care group ($p=0.02$). Furthermore, the time taken to start the first feed was 21.98 ± 9.10 min in KMC/SSC group vs 66.55 ± 20.76 min in the routine/conventional care group ($p<0.001$).¹¹ These results are consistent with our results.

KMC also helps in the continuation of breastfeeding by better infant-mother bonding, as many studies have shown that breastfeeding rates at one month and six months are better in babies who are given skin-to-skin contact. Gateway *et al.*, concluded that more KMC infants were reported to be exclusively breastfed at the end of the study compared to the CC group (88% versus 72%, *p*-value < 0.05).⁹ Suman *et al.*, conducted a randomized control trial in a tertiary care NICU in India. They demonstrated that the exclusive breastfeeding rate was better in the KMC group than in the conventional care group (98% vs 76%).¹⁰ They also showed that the KMC babies had better average daily weight gain (KMC: 23.99 g vs CC: 15.58 g, $p<0.0001$). Sharma *et al.*, concluded that a significantly higher proportion of neonates were exclusively breast-feeding at six weeks of age in the skin-to-skin contact group vs control group (72% vs 57.6%, $p=0.04$).⁵ Furthermore, two randomized controlled trials and a cohort study carried out in low-income countries looked at the effect of KMC on breast feeding.¹²⁻¹⁴ All these studies established that the utilized method increased the prevalence and duration of breast-feeding. In our study, we have not included data for breastfeeding rates at 1 or 6 months of age, so comparisons could not be made. However, convincing evidence suggests that skin-to-skin contact helps continue breastfeeding.

Extensive research studies using improved epidemiologic methods and the latest technologies have documented the diverse and convincing benefits of breastfeeding in infants, mothers, families, and societies.¹⁵⁻¹⁷ The American Academy of Pediatrics (AAP) issued a policy statement in 1997 on breastfeeding and the use of human milk. It emphasized the importance of exclusive breastfeeding till six months of age. The world health organization (WHO) and UNICEF jointly recommend the early initiation of starting breastfeeding early within the first hour after birth, exclusive breastfeeding in the first six months of life and the introduction of nutritionally appropriate and safe supplementary (solid) food after six months, together with breastfeeding for up to 2 years or older.^{19,20}

Pakistan stands between 18 to 29% for "Early initiation of breastfeeding", and only around 38% of mothers practice "exclusive breastfeeding for six months". Published data suggest that approx. 44 % of children in Pakistan are stunted (lower centiles for height for age and poor cognitive & physical developments). Compliance with early instigation of breastfeeding, exclusive breastfeeding and complementary breastfeeding for two years could significantly reduce stunting in Pakistan and reduce neonatal mortality rate.^{2,20} The first 2 hours post-birth, called the 'sensitive period' or golden window, is the optimal time for an infant to initiate breastfeeding. Many studies have shown that better rates of breastfeeding initiation and continuation can be achieved by applying Kangaroo mother care (KMC), also called skin-to-skin contact (SSC) between infant and mother.^{18,19} KMC was initially studied and practised in low-income countries for low birth weight and premature neonates, but later on, it was found useful in term babies as well.^{19,20}

Globally, neonatal mortality contains 40% of total under-5 mortality. Kangaroo mother care (KMC) is one of the most cost-efficient interventions to reduce neonatal death rates. KMC does not require technical knowledge, high-end equipment, or intensive care facilities. A recent meta-analysis reported that kangaroo mother care (KMC) might reduce neonatal mortality in low birth weight and preterm neonates up to 36%.¹⁵ Only healthy-term infants were included, so there was no mortality in our study groups. Conde-Agudelo *et al*,²¹ also showed that KMC was associated with a decreased mortality risk. Moreover, KMC increased infant growth, breastfeeding, and mother-infant attachment measures. Keeping in view the benefits of KMC and the lack of incubators, Ibe *et al*,²² recommended

that in resource-limited countries, KMC should be adopted by health care.

Implementing any new Practice has many challenges. However, different barriers to implementing KMC in hospitals can be overcome by training and motivating doctors,²³ and paramedical staff and providing mothers with emotional and physical support.^{24,25} As per our experience, Kangaroo mother care is superior to conventional care for successfully initiating breastfeeding.

LIMITATION OF STUDY

The study was conducted on healthy term infants only. As our staff was unfamiliar with kangaroo mother care, the preterm neonates and sick neonates were excluded from the study.

CONCLUSION

Kangaroo mother care (KMC) is a fruitful practise for initiating breastfeeding since it has a higher score of successful first breastfeeding with much less time to initiate breastfeeding. Moreover, if applied to the community, it can improve the healthy practice of breastfeeding and help preserve the precious resources of the healthcare setup used in providing conventional care through incubators and thermoregulators.

Conflict of Interest: None.

Authors' Contribution

AI: Introduction, discussion, TI: Data collection, analysis, FB: Maternal methods, B: Data collection, SA: Results, SA: Review.

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Kangaroo Mother Care

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