ISSN: 2573 - 9611

Review Article

Journal of Pediatrics & Neonatal Biology

# The Proportion of Mothers Who Continued to Practice Kangaroo Mother Care at Home and Identify Potential Factors Influencing this Practice following Hospital Discharge, South Wollo, Ethiopia 2019

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**Submitted**: 03 Apr 2020; **Accepted**: 08 Apr 2020; **Published**: 27 Apr 2020

## Abstract

***Background:*** *Low birth weight continues to be a significant public health problem globally. Kangaroo mother care (KMC) is a promising intervention to improve the survival of low birth weight babies. KMC comprises of early and continuous skin-to-skin contact between mother and baby as well as exclusive breastfeeding. More interest has given to initiate KMC at the health facility for low birth weight babies born at home but, there has been trace evidence to support initiation of KMC at home. Thus, this study was aimed at to estimate the proportion of mothers who continued to practice kangaroo mother care at home and identify factors influencing this practice following hospital discharge.*

***Methods:*** *It was a cross-sectional study of 190 mothers with their low birth weight babies who were discharged from KMC unit at Dessie referral and Akesta hospitals and counseled about KMC to practice at home. In the first week following hospital discharge the data collectors visited the mothers to interviewe her about KMC practice and the factors influencing it; and analyzed by SPSS V.25.0. Crud odd ratio and adjusted odd ration were performed to test the association between dependent and independent variables.*

***Result:*** *The proportion of mothers who practice KMC at home was 89 (46.8%). Multivariate logistic regression showed that support from husband (AOR= 4.4, 95% CI = 1.8-10.4), support from HEW(AOR=3.4, 95% CI = 1.6-7.2), availability of helper (AOR= 4.5, 95% CI= 1.9-4.10) and mothers explained the important of KMC (AOR =2.3,95% CI =1.1- 4.9) were statistically associated with KMC practice at home.*

***Conclusion:*** *This study concludes that support comes from husband, health extension workers and family and the mothers understanding of importance of KMC were found to be the significant enhancing factors to implement KMC at home.*

**Keywords:** Kangaroo Mother Care, Home, Low Birth Weight,

## Introduction

Low birth weight continues to be a considerable public health problem globally and is associated with a range of both short- and long term consequences [1].Globally, around 20 million babies are born with low birth weight (LBW) as a result of preterm birth and being small for gestational age, and about 60% to 80% of all neonatal deaths occur in these baby [2]. Approximately, three-quarters low birth weight are born in Southern Asia and sub-Saharan Africa [3]. The 2011 demographic health survey of Ethiopia (EDHS) showed that 29% of Ethiopian babies weigh low as perceived by their mothers [4]. A community-based study conducted in southern nation, Ethiopia reported that the overall neonatal mortality rate among LBW infants was 110 per 1000 live [5]. The most common causes of death and morbidity in LBW neonates include hypothermia, hypoglycemia respiratory and brain immaturity and infection [1]. Evidences from a recent review suggested a promising intervention includes antenatal corticosteroids to prevent preterm birth complications, breastfeeding, hygiene, case management of suspected infections, and hospital care of small babies that includes Kangaroo Mother Care (KMC) are the most effective interventions for improving survival of LBW infants [6]. KMC is a promising means to reduce new born mortality. It helps to meet babies' survival needs of warmth, protection from infection, breast milk and safety [7]. The world health organization (WHO) has defined KMC as early, continuous, and prolonged skin–to–skin contact (SSC) between the mother and until the baby no longer wants to stay in that position and exclusively breastfeeds the baby [7]. A systematic review from the Cochrane data base reported that a 40% relative reduction in

mortality with KMC intervention compared with standard care in hospitalized infants with a birth weight <2000 g and about 58 % relative reduction of sepsis a discharge with a lower incidence of respiratory tract infections [8]. KMC improves growth in low birth weight and preterm infants, and has a significant role to play in protecting them from hypothermia and sepsis, as well as promoting exclusive breastfeeding [9]. In low income countries, including Ethiopia considerable number of LBW babies were failed to get care in hospital. In these setting, where significant proportions of deliveries still occur at home and even if born in facilities, newborns are discharged early. Study reported duration of KMC was found to be the most common determinant intensified growth for LBW [10]. Studies showed that identification of prognostic factors for the implementation of KMC at the community level within the context cultural norms of a given population were crucial [11]. Studies that address the potential factors of home based KMC practice are critical for developing methods for adoption in the home and to determine duration of practice. To our knowledge no study has documented on the continued practice of KMC among mothers and babies once they go back to their home without out active follow up in the country, Ethiopia. Thus, this study was conducted to address the potential enhancing factors of kangaroo mother care practice at home with low birth weight babies following Hospital discharge, South Wollo, Ethiopia 2019.

## Materials and Methods

### Study Area and Period

This study was conducted among low birth weight babies who were admitted at NICU unit Dessie referral Hospital and Akesta Hospital south Wollo, Ethiopia and discharge to their home from 1st January 2019 to 30th June 2019. Among all the hospital found in south Wollo zone the two hospitals were selected purposely. They are the only hospital having NICU room and they are used as referral for other hospitals. According to the 2016 Population census of the Central Statistic Authority the projected population of South Wollo zone for 2016 is estimated to be 2,518,862. The gender composition is 47.4% and 52.6% female and the number of under 5-children is estimated to be 357678. The two hospitals render service for about 5398 new born babies in one year

### Study Design

Cross-sectional study design was employed

**Source Population** all mothers having low birth weight babies who were learning KMC at Dessie Referral hospital and Akesta hospital in 2019.

**Study Participants** mothers with their low birth weight babies who were discharged from KMC unit at Dessie referral and Akesta hospitals and counseled about KMC to practice at home during the study period.

### Sample Size Determination

The sample size was estimated by using single population proportion formula. The formula for calculating the sample size is $n=(Z\alpha/2)2 P(1-P)/d2$. The proportion of household responsibility to practice KMC at home was 0.517 (8), for alpha error 5%, and d- tolerable margin of error = 7% (0.07) then the total sample size was 196.

### Sampling Technique and Procedure

Consecutive purposive sampling technique was used. All mothers with their low birth weight babies who were discharge from KMC unite at Dessie referral hospital and Akesta hospital from 1st January 2019 to 30th June 2019 and fulfill the inclusion criteria were included in the study. The two hospitals KMC rooms are overloaded with low birth weight babies and their mothers. Thus, routinely after the vital sign of the new born baby was stabilized and stared to breast fed, they were discharged to their home.

### Data Collection Tools and Procedure

Mothers were supported by a nurse during their first attempts to practicing KMC to ensure the technique was right before they continued to practice without supervision, then mothers were counseled to continue KMC at home until the baby no longer wants to stay in that position. Standard questionnaires were formulated from different related studies. Two data collectors, who were not involved in KMC training, from each hospital were participated. At the commencement of the study the data collectors took baby birth weight, maternal demographic data, medical record number, kebele and sub-kebele from patient chart during baby discharge. Then, in the first week following hospital discharge the data collectors visited the mothers and interviewed her about KMC practice at home and the factors influencing were collected. The inclusion criteria were all LBW (1000 to ≤ 2500 gram), physiologically stable, who were provided breast feeding or oral intake and did not have congenital defect or infection, mothers who practiced KMC at least once since the baby birth in the hospital and to have consented to participated in the study.

### Data analysis

Data checked for its completeness were done by principal investigator on daily basis during the data collection period and entered into SPSS V.25 for analysis. Odds ratio with 95% confidence interval (CI) was calculated using logistic regression analysis to assess statistically significant association between practice of KMC and independent variables. Significance was set at $p < 0.05$ (significance level 95%). For those variables that had a p-value <0.25 on binary logistic regression inter into multiple logistic regression analysis to compute the adjusted odds ratio. Ethical clearance was sought from Wollo university college of medicine and health sciences department of pediatric and child health Nursing ethical committee. A verbal consent was obtained from the mothers.

## Results

A total of 190 participants were involved in this study with a response rate of 100%. The mean birth weight of the new born babies were 1654 gram (Range: 1200gram to 2400gram).

Among the 190 mothers included in the study, the proportion of mothers who practiced KMC at home following hospital discharge were 89 (46.8%). More than half 108(56.8%) of the mothers were rural resident, approximately, two third 130 (68.4%) of mothers were found at the age between 29-34 years old (Table-1).

**Table 1: Scio-demographic characteristics of study participants**

| Variables | Category | KMC practice at home | | Total, N= 190 (%) |
|---|---|---|---|---|
| | | Yes n= 89 (%) | No, n=101 (%) | |
| Resident | Urban | 42(47.2) | 40(39.6) | 82(43.2) |
| | Rural | 47(52.8) | 61(60) | 108(56.8) |
| Age of mothers | 20-28 years | 15(16.9) | 34(33.7) | 49 (25.8) |
| | 29-34 years | 71(79.8) | 59(58.4) | 130 (68.4) |
| | ≥ 35years | 3(3.4) | 8(7.9) | 11(5.8) |
| Educational status mothers | Unable to read and write | 22(24.7) | 27(26.7) | 49(25.8) |
| | Primary education (1-8) | 34(38.2) | 35(34.7) | 69(36.3) |
| | Secondary education (9-12) | 21(23.6) | 23(22.8) | 44(23.2) |
| | College and above | 12(13.5) | 16 (15.8) | 28(14.7) |
| Educational status fathers | Unable to read and write | 19(21.3) | 24(23.8) | 43(22.6) |
| | Primary education (1-8) | 27(30.3) | 30(29.7) | 57(30.0) |
| | Secondary education (9-12) | 27(30.3) | 28(27.7) | 55(28.9) |
| | College and above | 16(18.0) | 19(18.8) | 35(18.4) |
| Birth weight of babies | 1000gram -1499gram | 31(34.8) | 38(37.6) | 69(36.3) |
| | 1500gram-1999gram | 36(40.4) | 40(39.6) | 76(40.0) |
| | 2000gram-2499gram | 22(24.7) | 23(22.8) | 45(23.7) |
| Sex of babies | Male | 44(49.4) | 45(50.6) | 89(46.8) |
| | Female | 45(44.6) | 56(55.6) | 101(53.2) |

One hundred and sixty-three mothers (85.8%) initiated KMC within 24 hours of birth, 18 (9.5%) initiated KMC after 24 hours but before 48 hours of birth, the rest 9 (4.8%) initiating after 48 hours but within a week of delivery (figure 1).

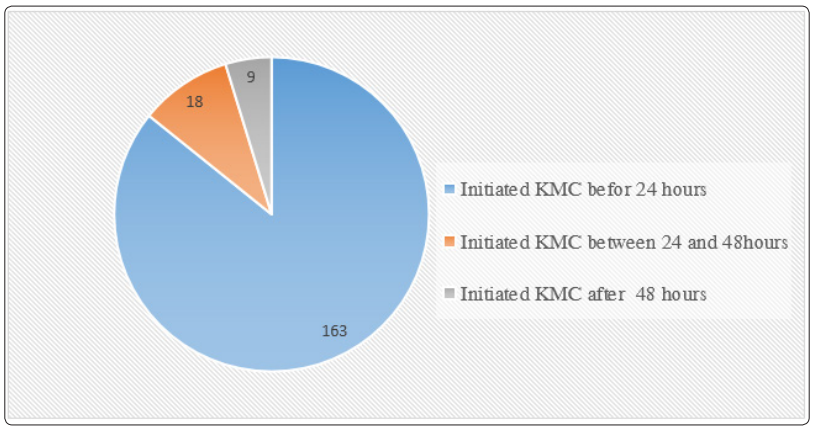


**Figure 1:** Time of mothers initiated KMC after labor

### Bivariate and Multivariate Logistic Regression of Associated Factors for Kangaroo Mother Care Practice at Home

The bivariate logistic regression analysis showed that support from husband, support from health extension worker, young age of mothers, husband practice KMC at night, availability of helper who care the mother in the family, neighbor support KMC, mothers KMC experiences and mother ability to explain the important of KMC were found to be potentials enhancing factors to practice KMC at home. After adjustments for possible effects of confounding variables, support from husband, support from health extension worker and availability of helper who care the mother in the family were significantly and positively associated with practice of KMC at home. The likely hood of enhancing practice of KMC at home among mothers having low birth weight babies was 4.4 times (AOR= 4.4, 95% CI = 1.8-10.4) more likely compared with those who did not. Mothers supported by health extension workers were 3.4 times (AOR=3.4, 95% CI = 1.6-7.2) more likely to practice KMC at home than who did not get support from health extension workers. The availability of helper other than husband in the family was enhanced 4.5 times (AOR= 4.5, 95% CI= 1.9-4.10) the practice of KMC at home as compared with those who did not have. Mothers who explained the important of KMC were 2.3 times (AOR =2.3,95% CI =1.1- 4.9) more likely to practice KMC at home as compared to who did not (Table 2).

**Table 2: Bivariate and multivariate logistic regression of associated factors for kangaroo mother care practice at home with low birth weight babies following Hospital discharge, South Wollo, Ethiopia 2019**

| Variables | Category | KMC practice at home | | COR (95% CI) | AOR (95% CI) |
|---|---|---|---|---|---|
| | | Yes n= 89 (%) | No, n=101(%) | | |
| Resident | Urban | 42(47.2) | 40(39.6) | | |
| | Rural | 47(52.8) | 61(60) | | |
| Age of mothers | 20-28 | 15(16.9) | 34(33.7) | 2 (1.8-1.7) | |
| | 29-34 | 71(79.8) | 59(58.4) | 1.2(0.3-5.0) | |
| | ≥ 35 | 3(3.4) | 8(7.9) | 1 | |
| Support from husband | Yes | 65(73.0) | 57 (56.4) | 2.1 (1.1-3.8) | 4.4 (1.8-10.4) |
| | No | 24(27.0) | 44(43.6) | 1 | 1 |
| Support from community health Leader | yes | 31(34.8) | 54 (65.2) | 0.4 (0.3-0.8) | |
| | No | 58(53.5) | 47 (64.5) | 1 | |
| Support from HEW | yes | 51(57.3) | 34(33.7) | 2.6(1.5-4.8) | 3.4 (1.6-7.2) |
| | No | 38(42.7) | 67(66.3) | 1 | 1 |
| Husband practice KMC at night | Yes | 47 (52.8) | 35(34.7) | 2.1 (1.2-3.8) | |
| | No | 42 (47.2) | 66 (65.3) | 1 | |
| Availability helper who care the mother in the family | Yes | 63 (70.8) | 42 (41.6) | 3.2 (1.8-5.8) | 4.5 (1.9-10.4) |
| | No | 26 (29.2) | 59(58.4) | 1 | 1 |
| Neighbor support KMC | Yes | 48 (53.9) | 34(33.7) | 2.3 (1.3-4.2) | |
| | No | 41(46.1) | 67(66.3) | 1 | |
| Mothers KMC experiences | Yes | 53(59.6) | 41(40.6) | 2.2 (1.2-3.8) | |
| | No | 36 (40.4) | 60 (59.4) | 1 | |
| Mother can explain the important of KMC | Yes | 46(51.7) | 45(44.6) | 1.8 (1.1-3.2) | 2.3 (1.1-4.9) |
| | No | 43(48.3) | 56(55.4) | 1 | 1 |

## Discussion

KMC is an effective way to reduce mortality among LBW babies through meeting babies' needs for warmth, breast milk, protection from infection, safety, and love. In this study it was attempted to estimate and identify potential factors enhancing KMC at home among mothers having low birth weight babies and discharged from Dessie referral hospital and Akesta Hospital. The proportion of mothers who peracted KMC at home one week following post-hospital discharge was 89 (46.8%). This is less than the reported from others studies [19]. This could be explained that the difference in the study design and sociodemographic characteristic. This study revealed that mothers who had been supported by their husbands were 4.4 times more likely to practice KMC at home. Paternal involvement played a considerable role for the practice of KMC at home either by division of labour or by helping the mother feel comfortable, this evidence also supported by other studies [12]. This study found that mothers having supported from health extension workers were 3.4 times more likely to practice KMC at home as compared to those mothers having not being supported by health extension workers, this is consistent with the others studies [11, 13]. This is explained that Ethiopia has provided basic health service to a large proportion of the population through the plat- form of government flagship health extension program at the community level by Health Extension worker (HEW) [14]. Ethiopia has provided basic health service to a large proportion of the population through the plat- form of government flagship health extension program at the community level by Health Extension workers. So, it is no surprising that mothers who supported by HEW were more likely to practice KMC at home. This study also revealed that availability of helper who care the mothers and new born babies in the family was 4.5 more likely to continue KMC practice at home as compared to those mothers who had not. In Ethiopia culture, the mother rests in the house for 40 days after the birth and the husband, sister family, friends and neighbors are in charge of making sure that there is sufficient food and comfort for the mother and new born baby during this time [15]. The finding of this study is consistent with result from previous research, cultural practice of postpartum rest and family support in extended families contributed to the continuum of KMC practice at home [16, 18, 19]. This study also demonstrated that the maternal knowledge KMC was found to be one of the prognostic factors to practice KMC at home. This result is also supported by the reported of others studies [16, 17]. This may be explained that if the mothers are well understood about the significant of KMC, they would have more ability to convince the husband and others family member to share the kangaroo mother position.

## Conclusion

This study concludes that support comes from husband, health extension workers and family and the mothers understanding of importance of KMC were found to be the significant enhancing factors to implement KMC at home. Thus, according to this finding, a supportive family and dedicated health workers, who work in the clinical setup and in the community, were pre- requisite to implement KMC ta home.

## Acknowledgement

We acknowledge the data collectors for their efforts to collect data and study participants for their involvement in the study.

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