

# Knowledge, Attitude and Practice of Kangaroo Mother Care by Postnatal Mothers who Gave Birth to Preterm and Low Birth Weight Babies in Public Hospitals, Eastern Ethiopia

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## Abstract

**Introduction:** Globally, babies born with low birth weight and preterm accounts for 25 million and 15 million respectively. The magnitude of preterm and low birth weight was 29.1% in Ethiopia by 2011. Around 70% neonatal deaths occur in low birth weight and preterm babies. Most studies demonstrated kangaroo mother care to be more effective than incubator care for these neonates but there are limited studies in Ethiopia. Therefore, the main aim of the study was to assess the acceptability, knowledge, attitude and practice of kangaroo mother care in public hospitals.

**Methods:** A descriptive cross-sectional study was conducted among postnatal mothers of preterm and low birth weight babies in Dilchora and Hiwot Fana Specialized hospital from October 1, 2015 to June 25, 2016. Data were collected by interviewing 349 mothers by a pretested questionnaire. It was entered in to Epi Data software version 3.1 and exported to SPSS version 20 for analysis.

**Results:** 69.91% of mothers mentioned the benefits of kangaroo mother care correctly. The majority of mothers 221 (63.33%) felt positive regarding implementation of Kangaroo Mother Care for it corrects the temperature, increase attachment and improve the growth of their small babies. On the other hand, 195 (55.87%) believed that Kangaroo Mother Care has positive effect on breast feeding. During the study period, 189 (54.15%) mothers practiced Kangaroo Mother Care in hospitals and also willing to continue at home. The mean duration of Kangaroo Mother Care was 2 h/day.

**Conclusion:** The majority of mothers felt positive regarding implementation of Kangaroo Mother Care. The study also revealed that more than half of the study participants practiced Kangaroo Mother Care in hospitals and also willing to continue at home. Therefore, it will be crucial if there are health education sessions during antenatal care follow-up for complete acceptance of Kangaroo Mother Care after delivery.

**Keywords:** Kangaroo mother care; Preterm and low birth weight; Small babies; Ethiopia

## Introduction

Globally, babies with low birth weight, and preterm accounts 25 and 15 million, respectively. Almost all of them (96%) are in developing countries. The rates are highest in Africa which has 12% of the world's population but over 25% of the world's new-born deaths [1,2]. Almost 1 million children die due to complications of preterm birth. Low birth weight refers to birth weight below 2500 g [3]. Preterm is defined as babies born alive before 37 completed weeks of gestation. There are three sub-categories of preterm based on gestational age: Extremely preterm (<28 weeks), Very preterm (28 to <32 weeks) and moderate to late preterm (32 to <37 weeks) [4]. Low birth weight and prematurity are strongly associated with neonatal morbidities and mortality [2]. Neonatal hypothermia is an important challenge associated with morbidity and mortality [5].

In, Ethiopia, the prevalence of low birth weight varies from place to place. It was reported 28.3% in Kersa district, Oromia region, eastern

Ethiopia [6], and 22.5% in Jimma zone, Southwest Ethiopia [7], 17.4% in Gonder, northern Ethiopia [8]. On the other hand, in-depth analysis of the Ethiopian Demographic and Health survey 2011 indicated that 29.1% of Ethiopian babies were reported small at birth [9]. Caring for LBW infants' impose heavy burden on developing countries. World Health Organization (WHO) has recommended scaling up low cost solutions that could reduce these deaths by three-quarters which includes Kangaroo Mother Care (KMC) as one of the measures [1].

Kangaroo Mother Care is defined as a method of holding a small nappy neonate in skin-to skin contact (STS), prone and upright on the maternal chest. The neonate is enclosed in maternal clothing in order to maintain temperature stability [10]. It was invented by Dr. Rey in 1978 and developed by Dr. Martinez and Dr. Navarrete until 1994, when the Kangaroo Foundation was created. Initially KMC was developed as response to overcrowding, and insufficient resources in neonatal intensive care units. But today KMC is formally endorsed by WHO [11].

KMC has a lot of benefits to the mother, for the preterm and low birth weight infants, for the institution, and for the community at large. For mothers, it increases milk volume, double rates of successful

breastfeeding, feelings of confidence, competence, and satisfaction regarding baby care. For preterm and LBW infant, it normalizes temperature, heart rate, respiratory rate, and strengthens the infant's immune system. It also reduces physiologic and behavioural pain responses, increases weight gain and enhances mother-infant bonding. Furthermore it has Positive effects on infant's cognitive development, less nosocomial infection, and earlier discharge [12]. For institutions it shorten hospital stay, more parental involvement with greater opportunities for teaching and assessing, and better use of healthcare budgets. For the community it decreases morbidity and mortality especially in developing countries, and opportunities for teaching during pregnancy and follow-up in preparation for postnatal implementation, decreased use of financial resource and Promotion of total family health [12].

This innovative strategy (KMC) is being implemented in very few hospitals in Ethiopia. There is also limited data regarding KAP of KMC among postnatal mothers in Ethiopia in general and east Ethiopia in particular. So, this study was intended to investigate knowledge, attitude, practice and acceptance of kangaroo mother care of mothers in selected public hospitals in eastern Ethiopia.

## Materials and Methods

### Study design, area and period

The Institution based descriptive cross-sectional study was conducted in Hiwot Fana Specialized hospital (HFSH) in Harar and Dichora hospital in Dire Dawa, eastern Ethiopia. Harar is located 526 km away from the capital, Addis Ababa in the eastern direction. It is one of the most popular historical towns with a projected total population of 203,438 (M: F=102,369:101,069) in 2010. Dire Dawa is located 515 km from Addis Ababa on the Addis Ababa–Djibouti railroad in the eastern part of Ethiopia. Based on the 2007 Census conducted by the Central Statistical Agency of Ethiopia (CSA), it had 341,834 populations; of whom 171,461 are men and 170,461 women. Dil Chora Referral Hospital (DCRH), the only governmental hospital in the region which was established in 1952. Since then, it has been serving the ever increasing population of the Dire Dawa City and its adjacent regions of Oromiya and Somali.

The study was conducted from October 1, 2015 to June 25, 2016.

### Sample size determination

The sample size was calculated by using single population proportion at a precision of 5%, 95% confidence interval and prevalence of small babies 9LBW and preterm) 29.1% with P value of 0.291 [9], hence adding 10% non-response rate, the total sample size calculated was 349 postnatal mothers who gave birth to preterm and low birth weight.

### Sampling techniques

Dilchora and Hiwot Fana Specialized hospitals were selected purposively due to advanced service they are providing including Neonatal Intensive Care Unit (NICU) and KMC units. Study participants were proportionally selected from both hospitals according to patient flow. Postnatal mothers that gave preterm and/or LBW were selected consecutively until the allocated sample size was obtained. In cases of multiple births, one baby was selected by lottery method to the study.

## Populations

### Source populations

All postnatal mothers that gave birth to preterm and/or low birth weight babies and their new-borns in Dil Chora and Hiwot Fana Specialized hospitals during the study period.

### Study populations

All postnatal mothers in maternity, NICU and KMC wards who gave preterm and/or low birth weight with their new-borns and that fulfil inclusion criteria.

### Inclusion criteria

Normal post natal mothers having pre term, LBW, Stable infants breathing on their own, and infants without life-threatening disease or malformations that are willing to participate in this study.

### Data collection

Data were collected by face-to-face interview using standardized questionnaire. For practice part, direct observation was done when they position, breast feed and ambulate.

### Data quality control

The data collection tool was prepared in English and translated to local languages of the mothers (Oromiffa, Somali and Amharic). Pre-test was conducted in 5% of mothers in Haramaya hospital. Two days training was given to data collectors by investigators. Close supervision was undertaken during data collection by supervisors and investigators.

### Statistical Analysis

Data were coded, and entered in to Epi Data version 3.02 and exported to SPSS version 20 for analysis. Descriptive statistics was used to describe the frequency, mean and standard deviations. Tables and graphs were used to present the data.

### Ethical Clearance

Ethical clearance was obtained from Haramaya University College of Health and Medical Sciences Institutional Health Research and Ethics Review Committee (IHRERC) and submitted to Harari and Dire Dawa health bureaus. Mothers were informed about the objectives of the study, risks and benefits. Then, participant information was read, written and signed consent was obtained. After data collection health education was given to all postnatal mothers and their families about benefits of kangaroo mother care.

## Results

### Socio-demographic characteristics

A total of 349 postnatal mothers with preterm and low birth weight were participated in this study. Religion of Muslim, Orthodox Christian and protestant constitute 51.24%, 38.02% and 7.44% of study participants. The mean family's monthly income was 2127 Ethiopian Birr (97 USD). The mean family size was six (Table 1).

Variables	Frequency	Percentage
<b>Maternal age</b>		
Less than 18	29	8.31
18 and above	320	91.69
<b>Maternal education</b>		
No education	174	49.86
Primary education (grade 1-8)	87	24.93
Secondary education and above	88	25.21
<b>Maternal occupation</b>		
House Wife	241	69.05
Civil servant	17	4.87
Merchant/Non-governmental Organization	75	21.49
Daily Labourers	16	4.59
<b>Residence</b>		
Urban	195	55.87
Rural	154	44.13
<b>ANC follow-up</b>		
Yes	256	73.35
No	93	26.65

**Table 1:** Socio-demographic characteristics of postnatal mothers in Dilchora and HFSH, 2016.

### Socio-demographic characteristics of the neonate

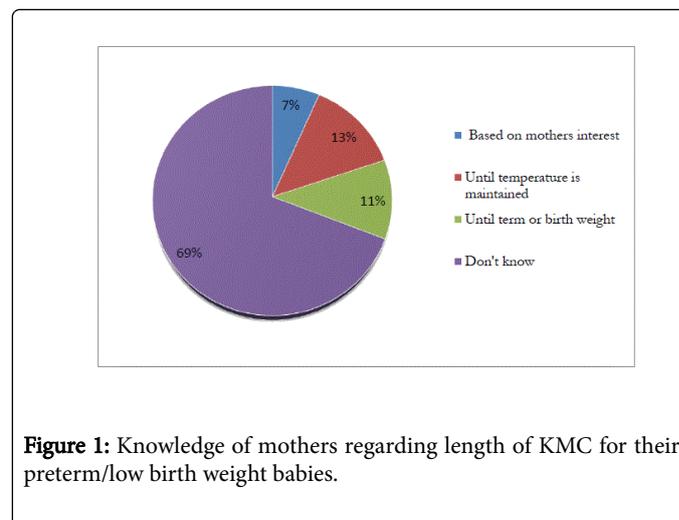
Characteristics	Frequency	Percentage	
Sex	Male	186	53.3
	Female	163	46.7
Health status	Healthy	198	56.73
	Sick	151	43.27
Type of delivery	SVD	244	69.91
	Instrumental	38	10.88
	C/S	67	19.21
Type of Birth	Singleton	177	50.71
	Twins	93	26.65
	Multiple	79	22.64
Gestational age	Term	69	19.77
	Moderate to late preterm	240	68.77
	Very preterm	32	9.17
	Extremely preterm	8	2.29
Birth weight	LBW	250	71.63
	Very LBW	81	23.21
	Extremely LBW	18	5.16

**Table 2:** Characteristics of the neonate among postnatal mothers in Dilchora and HFSH Ethiopia 2016.

Majority of the neonates included in this study were healthy (56.73%) and LBW (71.67%). The mean birth weight was 1820 g, and the mean gestational age was 35.4 weeks (Table 2).

### Knowledge of mothers regarding KMC

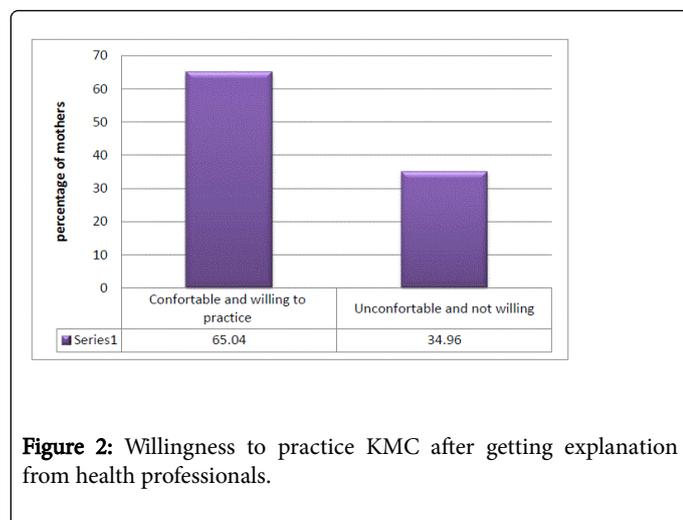
All of the study participants heard about kangaroo mother care. Regarding the benefits of kangaroo mother care to the baby, 186 (53.29%) were responded that KMC mainly helps to maintain the body temperature warm, 58 (16.62%) for frequent feeding and 105 (30.09%) didn't know the main use of KMC. Most of the mothers 189 (54.15%) didn't know the frequency of feeding the baby in KMC position. KMC positioning was correctly described by 116 (33.24%) mothers while the rest 233 (66.76%) were unaware of proper KMC positioning. Concerning length of KMC procedure, 23 (6.59%) mothers responded it was based on mothers interest, 46 (13.18%) until the baby achieves regular body temperature, 38 (10.88%) until the child matures and the remaining 241 (69.05%) didn't know for how long KMC intended to be given. Regarding clothing during KMC, 233 (66.76%) mothers had no information how to cloth the baby, 29 (8.3%) to dress light clothes only and only 87 (24.93%) correctly stated baby should dress cap, socks and nappy (only with diaper). Most of the respondents 204 (58.45%) mentioned the main barriers of KMC utilization were due to lack of knowledge regarding KMC practice, 116 (33.24%) perceived it is not comfortable to the mothers while the remaining 29 (8.31%) mentioned culturally unacceptable (Figure 1).



**Figure 1:** Knowledge of mothers regarding length of KMC for their preterm/low birth weight babies.

### Attitude of mothers towards KMC

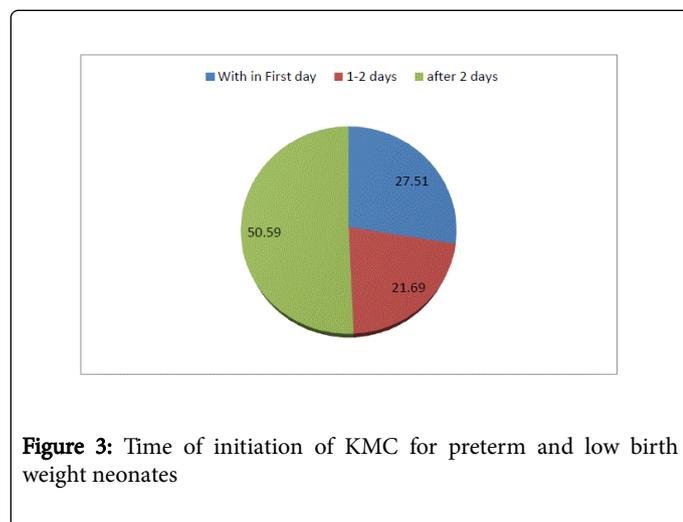
The majority of mothers 221 (63.33%) felt positive regarding implementation of KMC for it corrects the temperature, increase attachment and improve the growth of their small babies. On the other hand, 195 (55.87%) believed that KMC has positive effect on breast feeding (Figure 2).



**Figure 2:** Willingness to practice KMC after getting explanation from health professionals.

### Practice of KMC

During the study period, 189 (54.15%) mothers practiced KMC in hospitals and also willing to continue at home. Among them, 151 (79.89%) exclusively breast feed their baby as frequent as possible while 20 (10.58%) feed only when the child cried but the remaining 18 (9.53%) used formula milk. The mean duration on KMC was 9 days and 174 (76%) mothers continued KMC for average of two weeks in the hospitals. The mean duration of KMC was 2 h/day (Figure 3).



**Figure 3:** Time of initiation of KMC for preterm and low birth weight neonates

### Discussion

Knowledge of mothers regarding benefits of KMC to their small babies in this was (64%). This is comparable with a study in Malawi in which mothers had high level of knowledge about the significant benefits of Kangaroo Mother Care even if 84% were not aware of the services prior to their hospitalisation [13]. Our finding was lower than that of a Ghanaian study in which 90% of mothers mentioned KMC as beneficial strategy for them and their low birth weight babies [14].

The time of initiation of KMC in this study was comparable with other similar studies. In India, 55.4 percent of the women initiated KMC within 72 h of birth [15], in Bangladesh the mean time for initiation of KMC was 1.1 h [16] but in Ghana 84.6% started within 24

h [14]. On the other hand, the mean duration of KMC per day in this study was 2 h. This finding was better than that of 32 min in a day in Iran [17] and comparable with the findings of India in which the duration of KMC was 1, 2 and 12 h as felt by 52%, 19.6% and 6.5% of mothers respectively [18]. When compared to USA finding of 4.47 contact hours per day, our finding was lower by more than a half [19]. These differences may be due to differences in knowledge, attitude and interest of mothers to practice KMC as well as openness of the KMC guidelines for duration of implementation.

This study showed that 227 (65.04%) mothers have accepted KMC as a good strategy. This was similar with Odisha, Gujarat and Maharashtra findings [15]. However, the finding was lower than 96% acceptance of KMC by Indian mothers [20], 87.1% mothers who had favourable opinion towards the practice of KMC in Ghana; and 96.6% of mothers feel positive in Cape Town [21].

### Conclusion and Recommendations

The majority of mothers felt positive regarding implementation of KMC. The study also revealed that more than half of the study participants practiced KMC in hospitals and also willing to continue at home. Therefore, it will be crucial if there are health education sessions during ANC follow-up for complete acceptance of KMC after delivery.

### Declarations

### Authors contribution

All authors contributed their part since proposal writing, training of data collectors, data collection supervision, quality assurance, data analysis and manuscript preparations.

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