



ORIGINAL ARTICLE



Acceptability of the Kangaroo Mother Care at the University Hospital of Treichville in Côte d'Ivoire

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Abstract

Background. Kangaroo Mother Care (KMC) is a low-tech, high-impact intervention for preterm and low-birth-weight newborns. In 2019, Côte d'Ivoire opened its first KMC unit. We wanted to determine KMC's acceptability in Côte d'Ivoire after a year.

Methods. This qualitative study used semi-structured interviews in September 2020 at the Teaching Hospital of Treichville's first KMC unit. Mothers of preterm and low birth weight babies who received KMC were studied. Deductive (TFA-driven) framework analysis was performed. Coded using Nvivo 12.

Results. KMC was acceptable overall. Mothers knew KMC's goal and benefits, including self-confidence and breastfeeding benefits. Most women reported that the method was easy to implement and were confident in implementing KMC at the unit or in the household, even though some of them found KMC not aligned with their cultural values. Some mothers, especially housewives and self-employed, highlighted the benefits of KMC, but they must have given up.

Conclusions. Our study highlighted the need to increase KMC awareness, advocacy, education, and training for pregnant women and the community to reduce preterm and low birth weight infant mortality and morbidity.

Keywords: health system, perinatal care, low birth weight, kangaroo mother care, acceptability.

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INTRODUCTION

Pretermaturity (gestational age <37 weeks) and low birth weight (LBW, birth weight <2,500 g) are global public health issues that pose significant challenges to perinatal care systems. Preterm birth (before 37 weeks gestation) or restricted intrauterine growth are the primary causes of low birth weight [1]. Globally, it is estimated that 15% to 20% of all births, or more than 20 million births per year, involve LBW [2]. The vast majority of LBW births take place in low- and middle-income countries, particularly among the most vulnerable populations [3]. Moreover, more than 80% of neonatal deaths occur in LBW newborns, with two-thirds being preterm and one-third being term small-for-gestational-age [4].

In response, the World Health Organization (WHO) has set a goal to achieve a 30% reduction in the number of infants born with a birth weight of less than 2500 g by 2025 [5]. Based on available evidence, the World Health Organization (WHO) recommends the use of Kangaroo Mother Care (KMC) as a key impact intervention that is low-tech and cost-effective for the care of preterm and LBW newborns [6;7]. KMC is a set of care practices that includes early, continuous, and prolonged skin-to-skin contact between the infant and the caregiver, as well as exclusive breastfeeding [7]. WHO recommends continuing KMC until the newborn's gestational age reaches term (around 40 weeks) or the newborn's weight reaches 2500 g [8].

KMC have been adopted in several LMICs, including Rajasthan, Ghana, Nigeria, Ethiopia, and Cote d'Ivoire [9–13]. Following the adoption of the ENAP 2018-2020 [13], Côte d'Ivoire in west Africa entered the operationalization phase of the KMC in 2019. In the country, the mortality rate for newborns aged 0 to 28 days remains high at 33%, with preterm birth complications (30%) being the leading cause of death, followed by intrapartum-related events (28%), sepsis/tetanus (21%), congenital abnormalities (7%), pneumonia (7%), diarrhea (1%), and other conditions (7%) [13]. To combat this situation, the Ministry of Health, with the financial and technical support of UNICEF via the French Muskoka Fund, opened the first KMC unit at the Teaching Hospital

of Treichville (CHUT) in February 2019 with the intention of expanding this intervention. However, in order to effectively implement and scale up KMC nationwide, it is crucial to assess mothers' acceptance of KMC based on their perceptions of care. Using the Theoretical Framework for Acceptance, the present study aimed to investigate the acceptability of KMC.

Framework conceptual

This study's conceptual framework was the Theoretical Framework for Acceptability [14]. Acceptability is a multidimensional construct that reflects the degree to which individuals delivering or receiving a healthcare intervention consider it to be appropriate, based on anticipated or experienced cognitive and emotional responses to the intervention. The acceptability theoretical framework (TFA) is comprised of seven component constructs: affective attitude, burden, perceived effectiveness, ethics, intervention coherence, opportunity costs, and self-efficacy (Table 1).

MATERIALS AND METHODS

Study setting

This study was carried out in September 2020 in the KMC unit of the CHUT created in February 2019 with the technical support of UNICEF through the French Muskoka fund. Before its opening, some healthcare providers of the neonatology intensive care unit (NICU) received training on KMC, perinatal death review at the Kalafong Hospital of Pretoria as well as a short module on breastfeeding. The unit is part of the (NICU) and is composed of the pediatrician and midwives' offices, one training room, one living room equipped with a television for educational sessions, a large room with a capacity of nine beds with armchairs for mothers, two bathrooms

Supplementary information The online version of this article ([Tables/Figures](#)) contains supplementary material, which is available to authorized users.

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for mothers and healthcare providers, and one dining room adjacent to a small kitchen for the mothers to cook. In the unit, only continuous KMC is provided, however in some case intermittent KMC is initiated in NICU before the dyad leaves for the KMC Unit. The medical staff is composed of 01 pediatrician, 02 midwives, 02 nurse aids, 01 childcare worker and 02 volunteers. To ensure safe and successful KMC at home after discharge, mothers are prepared to discharge and they receive infant feeding counseling and education on recognizing danger signs of newborn throughout their stay. Then, before discharge mothers are assessed on their ability to practice KMC at home. At this stage calling preparation for discharge, mothers are also emotionally prepared for KMC after discharge and they are advised with their families to make arrangements for their return to continue KMC at home.

In the unit, several measures have been taken to ensure Covid19 infection prevention such as: five beds were left open to maintain physical distancing between mothers, renewal of awareness and hand washing demonstration posters, free distribution of 40 face masks to each mother per month, physical distancing with the other parents and visitors, reception of visitors in the courtyard, restriction of visits to the strict minimum and when necessary.

Study design

We carried out a qualitative study using semi-structured interviews to answer the questions what the acceptability of the KMC method among mothers at the CHUT is.

Participants and sampling

The participants comprised the mothers admitted with their child who were receiving KMC and those discharged who received KMC. We did an iterative sampling, moving back and forth between selecting mothers for data collection and engaging in a preliminary analysis of the interviews performed. The idea was that what emerges from data analysis would shape subsequent sampling decisions. We used the principle of saturation to end the interviews with mothers. The process of iterative sampling and analysis continued until we reached saturation, and no new information and code were emerging any longer from data analysis.

Data collection

The interview guide was designed by the research team around the constructs of the TFA. Data were collected by two data collectors with a master's degree in sociology. They received one-day training on general survey procedures including health protocol for Covid19 prevention, the content of the interview guides [see Additional file 1] and a short module on KMC. This one-day training was carried out to ensure comprehension of questions by the data collectors and that they would conduct interviews and collect data in an identical manner. The interview guides were initially piloted on a small sample to ensure that questions were relevant and easily understood by the interviewees. Only small changes were made after the pilot-test, such as a minor rephrasing of questions. Mothers who came for visits were also called two days before data collection to confirm if they would come to the KMC unit. During data collection, mothers were invited to participate in the interviews in a room located in the pediatric ward outside the KMC unit so that they would be more comfortable answering questions. Regarding the room allocated for the interview, we ensured proper ventilation with outside air in order to prevent Covid19 infection. Prior to interviews, all mothers were asked to provide written consent after a further opportunity to have their questions answered. It was mandatory to use masks for both data collectors and participants. Data collectors and participants had to wash their hands or use hand sanitizer before and after interview. Data collectors were required to observe physical distancing (one meter) at all times. This included not shaking hands or having any physical contact with any participants. All participants agreed to have their interview recorded. Interviews lasted on average 35 minutes (range 30–40 minutes) and were conducted in French. However, we tried to adapt the level of French to the mother's education level.

Mothers' interviews saturation was reached after the 32nd interview. To confirm that data saturation has been reached, we chose to carry out two additional interviews. Thus, a total of 42 mothers were approached, out of them 10 did not agree to participate mainly because of lack of time. Thirty-four participated in the study including the two additional

interviews to confirm data saturation (these two additional interviews were not included in the analysis).

Every day, after data collection, we immediately conducted a debriefing session with data collectors in order to have an overview of the content of the collected data, to improve the data collector skills, to adjust in case of challenges or unforeseen events and also to strengthen the quality and trustworthiness of data in real time. Once fieldwork was finalized, all data collectors and supervisors were PCR-tested and declared negative.

Data analysis

All interviews were transcribed verbatim in Microsoft Word from audio-recordings by the first (DD) and the second author (KRK). They checked for accuracy and quality the first three interviews in the presence of the data collectors as they were the most familiar with the content of the interviews and could identify quickly any problems with the transcripts. Then, they performed a spot-checking by taking a subset of the remaining transcripts (six transcripts selected randomly per transcribers) and listening to the entire taped interviews of those transcripts while checking the transcripts in the presence of the data collectors. A framework analysis was used to analyse the findings by deductively organizing data into each construct of the framework, using headings and subheadings. Initial data analysis was undertaken by the KKR and DD. Analysis was done in parallel with data collection, and when saturation was reached, no more participants were invited to take part in the interview. KRK and DD mapped each theme to relevant constructs within the TFA.

Data rigor and trustworthiness

To ensure data rigor and trustworthiness, we used several strategies. Transferability was established by providing a thick description of the study settings. To establish confirmability, the records and the field note were kept in order to be available for re-analysis. Dependability was ensured by describing the research process in detail, piloting the interview guide and ensuring comparable data collection procedure between data collectors, conducting debriefing sessions. Credibility was achieved by interviews followed by peer debriefing. In order to verify data credibility, we also consider using the participant

validation of the findings, but we were not able to go back to the mothers to validate the findings because of the Covid19 lockdown restrictions. To enhance validity, we also used to prompt questions and we carried out participants and data collectors' triangulation.

RESULTS

Characteristics of the participants

Concerning the mothers interviewed, their ages ranged between 18 and 47 years old. Twenty of them were married living with their husbands and twelve were single/engaged. The number of children varied between 1 and 8. The majority of the mothers had attended secondary school, and ten of them had university level. As for occupation, five of them were students, eleven were housewives, four were civil servants and twelve were self-employed. Mothers' characteristics are described in Table 1.

Qualitative findings

In general, KMC was found to be acceptable to all interviewed mothers. Our study findings are presented below for each TFA construct.

Affective attitude

This construct is related with the mother's feelings about practicing KMC. All mothers reported very positive feelings about practicing KMC at the unit and also in the household after discharge. The mothers interviewed mentioned numerous benefits for mothers and child:

Concerning the benefits for mothers, all the interviewed mothers highlighted the meaningful role they played in the child care. They felt that KMC moved them back into the position where they can play a meaningful role in the care of their infant as stated by this mother:

"What I like about kangaroo mother care is the fact that you really participate in the care of the child, you feel really useful, it's not like when he is in an incubator where you have this feeling of powerlessness. Here we play an important role like the doctors." (Mother 1, 39 years)

For all these mothers KMC also allowed them to gain experience and be self-confident regarding premature care as explained by one of them:

“For my part, I learned a lot of things, especially how to manage a premature baby. During my stay, I also learned to be self-confident and to believe in my abilities...” (Mother 13, 30 years)

Besides, the majority of mothers also felt that KMC is an immeasurable support to the family as it helps low-income families to care for their premature and low birth weight. One mother stated:

“The advantage is that we don’t pay anything, we didn’t pay anything everything was free. In any case for us who do not have the means, it is a good thing...” (Mother 26, 31 years)

According to several mothers KMC also helped them socializing and sharing experience with other mothers admitted in the unit. One mother explained this statement as follows:

“Our stay in the unit is going very well, it has allowed me to meet other mothers who have the same concerns as me, we help each other and the older ones also support us. The oldest of the babies is even called the chief of the village...Laugh...It’s true we form a real small village” (Mother 8, 18 years)

Some mothers who already had a premature child who stayed in an incubator; they felt having less stress when practicing KMC

“It is my second child that is born premature but compared to the first one who was in an incubator, I feel less stress. The close contact with my baby reassures me. I can better appreciate his evolution” (Mother 15, 34 years)

As for the benefits for the child, according to the mothers interviewed, KMC strengthens the bond between the mother and the child through the skin to skin contact compared to the standard care when the child is in an incubator. This statement is explained by this mother

“I feel much closer to my child, compared to my previous child who was in an incubator. When my child is against my chest, I feel that he is soothed. I am able to give him words of encouragement to get him to struggle for his survival.... I tell him go ahead be brave tomorrow you will gain a few more grams

and it’s strange that the next day at the weighing he has indeed gained grams...It is like there’s a strong link between us” (Mother 15, 34 years)

A few mothers declared that one advantage of KMC is for the baby to be exclusively breastfed, as stated by this mother:

“One of the advantages of KMC is that the child received all the benefits of exclusive breastfeeding” (Mother 30, 31 years)

Perceived effectiveness

This construct is understood as the extent to which the intervention is perceived as likely to achieve its purpose. For the majority of the mothers especially those who were discharged KMC is an effective method for child survival. For these mothers, the practice of kangaroo mother care had a positive change on the growth of the baby.

“The SMK method is very effective, I had twins that weighed barely 2000 grams each, but look at them today, they are really healthy, and they are really coming back from far” (Mother 11, 32 years)

Burden

This construct focuses on the perceived amount of effort that is required to participate in the intervention. Overall, kangaroo mother care was seen by mothers as a simple, easy method of caring for newborn infants where they use their own body temperature like an incubator to keep their infant warm. For mothers, this method does not require much effort from the mother.

“I feel comfortable when doing KMC, it is not complicated especially when you follow what the doctors said to the letter” (Mother 1, 39 years)

Self-efficacy

Self-efficacy is defined as participants’ confidence to participate in the KMC program. This construct was divided into practicing KMC at the unit and continuing KMC in the household. Overall, all participants especially those discharged, reported feeling very confident about practicing KMC at the unit and continuing it in the household after discharge. Admitted mothers reported several circumstances that could impede the continuation of KMC in the household such as the lack of family support, fatigue due to others tasks.

“I feel self-confident about KMC and I am also sure that I can continue it at home but if I have too many household chores without anyone to help me it will be complicated” (Mother 26, 31 years)

Discharged mothers declared that they were able to practice KMC in the household, however contrary to what they were told before their discharge, they did not receive home visits from the unit’s medical staff.

“When I was in the unit I had no difficulties with KMC. We have been discharged for a month but I still continue KMC at home without any problem. However, I deplore the fact that I did not receive a home visit from the unit’s staff as it was planned before my discharge. It would have been great if they did home visit to check how KMC is provided in the household and to continue the coaching for those who had some difficulties” (Mother 25, 37 years)

Intervention coherence

Intervention coherence is understood as the extent to which participants recognise the aim of the KMC program. The aim was echoed by the majority of the interviewed mothers, as illustrated by this quote:

“What I know about the KMC method is that it keeps the child warm like in an incubator thanks to the skin to skin contact. It allows the child to develop well and to be exclusively breastfed when possible” (Mother 22, 38 years)

Opportunity costs

This concept is understood as the extent to which benefits, advantages, or values must be given up implement the method. Women who worked in the private sector or as civil servant indicated that few activities had to be given up to participate in kangaroo mother care because they were on maternity leave. As this mother explained:

“I am on maternity leave for three months and my leaves are paid. Besides, apart from my salary as a civil servant, I don’t have any other activity that allows me to earn extra money, so the fact that I’m in the unit doesn’t have a big impact on my daily life” (Mother 1, 39 years)

In contrast, housewife and self-employed mothers indicated that they had to give up many of their mostly income-generating activities to remain in the unit. As explained by this mother

“I sell at the market to help my husband to provide for the family, really I can say that this situation does not suit me too much but how to do the health of the child before all” (Mother 24, 26 years)

Ethicality

This construct centres on the extent to which KMC were perceived to be a good fit with the mothers’ value system. Most of the mothers reported that KMC was viewed as valuable. However, some mothers reported difficulties to accept KMC due to cultural belief.

“Upon my admission, I could not accept to carry my child on the chest because in our community that it is not well perceived.... we think that if the baby at v his mother’s back if there is a danger he can be spared.... Finally, with the explanations and the support of the doctors I have accepted KMC” (Mother 18, 29 years)

DISCUSSION

The present study explored the acceptability of KMC among mothers of premature and LBW babies in order to adequately implement and effectively scale-up KMC intervention in Côte d’Ivoire. Thus, we tried to understand whether KMC is accepted by the mothers using the Theoretical Framework for Acceptability.

Acceptability of KMC

In general, mothers, whether admitted or discharged from the KMC unit showed a good acceptance of the KMC method like in many other studies (1–8). Mothers understood the aim and knew the benefits of KMC.

Indeed, as regards affective attitude, numerous benefits for mothers as well as preterm and LBW babies were cited: the meaningful role played in child care, the gain of experience and self-confidence, the socialization and experience sharing with other mothers, the strengthening of the bond between mother and baby; the positive effect on breastfeeding, the less stress felt and the immeasurable support to low income families. These benefits aforementioned have been reported in many studies. Indeed, when mothers recognize that they are contributing to the

survival of their preterm infants by providing warmth and preventing cold injuries to their infants, they get motivated (9), their experience in caring preterm and LBW babies as well as their self-confidence is enhanced (4, 5). In a study carried out in South Africa among adolescents mothers, KMC enhanced their confidence, thereby allowing them to accept motherhood (4). Positive effect of KMC on breastfeeding was also reported in a study conducted in Nigeria (9). Besides, becoming a mother in the neonatal unit is not only an issue of bonding with one's infant, it is a process of social interaction with others mothers as well as medical staff at the neonatal unit (10).

Several studies have also reported that mothers were less stressed during kangaroo care than when the baby received conventional care (11–13).

Evidence showed the importance of adequate counselling and education on KMC educate on the benefits of KMC to the baby and the mother (1, 4, 9, 14). In a study conducted in Nigeria, good knowledge of KMC by the mothers had a positive influence on the attitude and practice of KMC. If mothers understand the benefit of KMC and have a positive perceptions of these potential benefits, they are more likely to be predisposed to offer that care to the baby. (9, 15)

As for the burden, like in other studies, our findings KMC was seen as a simple and easy method to perform. Our result are similar to those of a study conducted in western Rajasthan mothers did not have any feeling of discomfort in holding the baby in KMC position (2). However in a study conducted in India mothers having delivered by caesarean section complained of pain and difficulty in providing KMC for twin infants, while others found it difficult to handle very small infants in KMC position (15). Besides, ethically, as in many other studies, some mothers found it unacceptable to carry the baby on the front and not on the back because of cultural belief (16).

Concerning self-efficacy our findings showed perceived self-efficacy to practice KMC at hospital and also in the household after discharge. The confidence to continue KMC in the household was highlighted as in many other studies (1, 3, 5, 7, 8). However in low and middle income countries, the lack of follow up within the community is a hindrance to

KMC as a result of lack of material and human resources (15, 17).

To implement KMC, some mothers have to give up some benefits such as income-generating activities. In a systematic review, many mothers found KMC performance at home to be a burden due to other responsibilities at home or work (16). Family support is here important to help mother to implement KMC.

Strengths and limitations

The strength of the present study is the use of the Theoretical Framework Acceptability to guide data collection and analysis. Indeed, despite the numerous benefits, there is a paucity of perinatal research that explicitly uses theory (18). Yet, the use of theories facilitates systematic inquiry and gains in knowledge (18). On the other hand, with regard to the research method some limitations need to be acknowledged. Firstly, we could not realize method triangulation by conducting focus group or observations that could have enhanced trustworthiness. Secondly, there was a potential for desirability bias as the interviews took place at hospital.

Implications on practice and future research

Concerning implications on practice, there is a need to enhance information and education of mothers on KMC. Thus, KMC should be included as an important component of the education of pregnant women from the start of antenatal care. The best way of teaching women about KMC during the antenatal period is for them to see other mothers providing KMC for their infants. This means that there is a need to set KMC support group with mothers who have themselves given their infants KMC. They are very effective in promoting KMC and helping mother with KMC (19). They can give KMC education at antenatal clinics or encourage and assist mothers to give KMC in the KMC ward or the household.

As for implications on research, the present study highlights the acceptance of KMC among mothers admitted and discharged. Future research could be conducted with the other members of the household of the family to investigate their acceptability of KMC.

CONCLUSIONS

This study has helped capture the perceptions of KMC among mothers. KMC was shown to be acceptable as an alternative to conventional incubator care. However, there is a need to increase awareness, advocacy, education and training on KMC for pregnant women and communities at all levels of health facilities in order to intensify the use of this method for the benefit of the small babies and to reduce neonatal mortalities and morbidities.

INFORMATION

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Contributions. K.R.K, D.D, M.L.A.Y, L.C and C.S.M designed the study. M.N.M and A.L collected the data. D.D and K.R.K analyzed the data. D.D and K.R.K were co-first authors, they contributed equally to propose the first draft of the paper. The other authors O.A, J.S.K, V.K.K were involved with the previous authors in revising and contributing to the successive drafts. The final version of the paper was revised and approved by all the authors.

Competing interests. The authors declare no competing of interest.

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Ethical approval and consent to participate. The research protocol was submitted and obtained ethics approval from the national ethic review committee Cote d'Ivoire (reference number 125-20/MSHP/CNESVS-kp). A written informed consent was obtained from all participants in the study. Participation was voluntary and participants were informed of their right to withdraw from the study when they wished to do so. Data were collected, managed and analyzed in a way to ensure the confidentiality of study participants. All procedures performed in this study involving human participants were in accordance with the ethical standards of the

national ethic review committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Availability of data and materials. The data presented in this study are from the Project « Documentation of Kangaroo Mother Care Implementation in the Neonatal Intensive Care Unit of the Pediatric Services of the Teaching Hospital of Treichville » conducted in Cote d'Ivoire. Access will be granted from the corresponding author on reasonable request, only after careful and due consideration of the compliance with the ethics requirements, the data policy of the Cellule de Recherche en Santé de la Reproduction».

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TABLE 1: The Theoretical Framework Acceptability constructs and their related definitions.

Constructs	Definitions
Affective attitude	How an individual feels about the intervention
Burden	The perceived amount of effort that is required to participate in the intervention
Ethicality	The extent to which the intervention has a good fit with an individual's value system
Intervention coherence	The extent to which the participant understands the intervention and how it works
Perceived effectiveness	The extent to which the intervention is perceived as likely to achieve its purpose
Self-efficacy	The participant's confidence that they can perform the behaviour(s) required to participate in the intervention
Opportunity costs	The extent to which benefits, profits or values must be given up to engage in the intervention