



**St. Paul Hospital Millennium Medical
College**

Graduate Study Program

Mothers' perceptions on the barriers and facilitators of practicing kangaroo mother care: an exploratory interview study with mothers admitted to NICU of SPHMMC, Addis Ababa, Ethiopia 2023 G.C

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1. Abstract

Background: Kangaroo Mother Care (KMC) is defined as early, continuous, and prolonged skin-to-skin contact between the mother (or other caregiver) and the baby, and exclusive breastfeeding. It is recommended for the routine care of preterm or low-birth-weight (LBW) newborns weighing 2000 g or less at birth. It can be initiated in the health-care facility or at home and should be given for 8–24 hours per day (as many hours as possible). It decreases mortality of premature and LBW infants by decreasing risk of hypothermia, and infection. While global experts now recognize KMC as an essential component of newborn care, its implementation and adherence to quality standards continue to pose challenges. Despite its significant impact and apparent feasibility, achieving the desired coverage of KMC for preterm and low-birth-weight newborns in low-income countries remains difficult.

Objective: To explore the perceived barriers and facilitators affecting the implementation of KMC among mothers admitted to the NICU of SPHMMC, Addis Ababa, Ethiopia.

Methods: Qualitative phenomenological research design was used in the study. A semi-structured in-depth interview was applied to explore the perceived barriers and facilitators of KMC. A total of 20 mothers were included in the study with in-depth interview from Sep 2023 - Jan 2024 and thematic analysis was conducted.

Result: The study explored various barriers and facilitators related to KMC adoption among mothers. These factors encompassed community support, family support, cultural and religious considerations, hospital setting challenges, and maternal and neonatal factors. Mothers reported that their lack of prior knowledge about KMC, coupled with poor understanding of KMC within their families and communities, acted as barriers to practicing KMC. Additionally, crowded KMC rooms with restricted access and limited family support within the KMC ward were also reported as barriers. Poor supervision and follow-up, along with limited resources (especially for rest after discharge from the maternity ward and during intermittent KMC periods), were major hospital-related barriers. Furthermore, maternal and neonatal factors, such as surgical site infection, fatigue during kangaroo care, managing twin and triplet babies, and dealing with ill newborns, posed additional challenges.

Conclusion and recommendation: This study examines the impact of various factors on KMC utilization among mothers with preterm and low birth weight infants in the NICU. The findings highlight a complex interplay of barriers and facilitators that influence a mother's ability to provide KMC. To enhance maternal performance and promote the well-being of preterm and LBW infants, comprehensive support from family, community, and healthcare professionals is crucial. Addressing these factors through policy adjustments and hospital interventions is essential for optimizing neonatal care services.

Key words: kangaroo mother care, facilitator, barriers, low birth weight, preterm, Neonatal intensive care unit

2. Background

Kangaroo Mother Care is defined by WHO as early, continuous, and prolonged skin-to-skin contact between the mother (or other caregiver) and the baby, and exclusive breastfeeding. In 2015, WHO recommended that KMC be given to hospitalized babies under 2.0 kg as soon as the babies were clinically stable. In 2022, updated WHO recommendations for care of the preterm or low-birth-weight infant guideline recommends KMC as routine care for all preterm or low-birth-weight infants that can be initiated in the health-care facility or at home and should be given for 8–24 hours per day (as many hours as possible).(WHO, 2022)

Today, premature birth remains a significant global health problem, with over 15 million babies born prematurely each year and over one million dying annually as a result of complications of prematurity(Perin et al., 2022). Furthermore, over 20 million babies are born with a low birth weight(World Health and United Nations Children's, 2004). KMC is a proven intervention that improves the survival and health of these high-risk newborns.

Among infants born with LBW, more than 90% of them are born in developing countries. This places a significant strain on the healthcare and social systems in these countries since providing medical care for these infants is complicated, demanding expensive infrastructure and highly trained personnel. To address these challenges, the KMC approach was developed as a simple method of care for LBW infants(Alebachew Bayih et al., 2019, Pi and Emc, 2017).

Despite the proven benefits, implementing KMC in NICUs remains a challenge. Standard practice involves separating mothers from their newborns at birth, despite evidence suggesting that this can have harmful effects. Clinical conditions of the newborn and unit protocols, such as restricted visiting hours, often result in the baby being separated from their mother, which can significantly disrupt early maternal-infant bonding and breastfeeding, and negatively impact adherence to KMC (Silva et al., 2018).

Several barriers were identified as major obstacles to the scaling up of KMC, including the necessity for time, lack of social support, the need for medical care, family refusal and fear, shortage and poor distribution of well-trained health workers, inadequate mentorship and supervision mechanisms, lack of knowledge and awareness of health workers, insufficient space in facilities for the performance and monitoring of KMC, inadequate referral and transport systems, poor quality of KMC delivery, and weak quality improvement measures(Vesel et al., 2015, Mathias et al., 2021).

Despite numerous studies published on the barriers and facilitators of implementing KMC, it is

assumed that St. Paul's Hospital Millennium Medical College may face unique challenges and opportunities related to KMC practice. This assumption arises from the abundance of available resources and the hospital's pioneering role in adopting new policies and providing care with high-quality standards. Consequently, this qualitative study was conducted to explore the specific barriers and facilitators of KMC implementation and proposed solutions to enhance and improve the quality of KMC practices.

3. Methods

3.1 Study Setting

The study was conducted at SPHMMC, a tertiary-level referral and teaching hospital that provides comprehensive care to sick neonates. All preterm neonates weighing <1400 grams, are admitted to the KMC unit, and a proportion of mothers with neonates weighing ≤ 2000 grams are trained to practice KMC without admission to the KMC unit. SPHMMC has a high average NICU admission rate of 242 neonates per month as compared to other hospitals. The neonatal unit at the hospital is experienced in KMC and it is one of the basic and routine types of care provided to low-birth-weight infants for thermal control. However, the hospital has only two kangaroo rooms.

3.2 Study Period

The study was conducted from Sep 2023 - Feb 2024 in SPHMMC

3.3 Study Design

This Study took a phenomenological Paradigm of research with qualitative design having an in-depth interview as a data collection technique.

3.4 Source Population

The source population included all mothers of neonates admitted to the NICU in SPHMMC.

3.5 Study Population

The study populations included mothers of premature and low birth weight neonates attending or attended KMC at NICU in SPHMMC

3.6 Sample Size and Sampling Procedures

A convenience sampling strategy based on the availability of study participants was applied. The number of participants chosen for this study was decided by redundancy/saturation. Interviews were

conducted until information saturation was reached. Saturation occurred when there was no data variation, no new answer or information, to the given questions. This data saturation was reached after interviewing 20 eligible mothers of babies receiving KMC during the study period at the KMC unit and the High-Risk infant clinic.

3.7 Study Participants

The in-depth interviews involved two groups of mothers: those who were practicing KMC at the KMC unit during the study period, and those who had infants with follow-up visits at the High-Risk infant clinic after being admitted to KMC within the past 2 years before the study period.

3.8 Data Collection and Procedures

Semi-structured in-depth interviews with kangaroo mothers of preterm and LBW infants were conducted using an open-ended interview guide. These open-ended interview guides were developed with potential probes to achieve the study objectives from different reviews that were done before and tested.

In-depth interviews were conducted with the help of an experienced nurse after He was trained on data collection and how to do in-depth interviews. An interviewer acquired verbal consent from the participating mothers before each interview. The one-to-one in-depth interviews were conducted in a private room in the hospital, and the mothers were assured of data confidentiality.

The data collection process involved recording all the responses using digital recorders and taking notes. It also involved a weekly debriefing and discussion with the principal researchers during the data collection period. Based on the discussion, the identified gaps and emerging ideas in the data were addressed and possible solutions were applied. The next interviews were refined accordingly. The semi-structured in-depth interview questionnaires were prepared in English and then translated into Amharic for the interview. The interview recordings were then retranslated back to English to check consistency. The interviews were conducted in Amharic, audio-recorded, and lasted between 11 and 36 minutes. The interviews were continued until information saturation was reached, which occurred when there was no data variation or new answer or information to the given question.

3.9 Data Analysis Plan and Procedures

All interviews were transcribed verbatim in Microsoft Word from audio-recordings and translated to English. Detailed interview memos and field notes were reviewed continuously throughout data collection.

Qualitative data analysis was performed by identifying the themes. The coding process used ATLAS.Ti coding software version 9.1.3.0 and Microsoft Word to organize and support the coding. One additional coder from different backgrounds, an American neonatologist from the USA, joined the principal researcher in the coding. The final codebook was devised in a collaborative effort, after comparing what each coder found and refining it until the codes were all representative of the participants' words and easily categorizable.

The final codebook and transcribed data were analyzed using an inductive approach, and themes were identified, discussed, and reviewed continuously through the analysis period. Following the thematic analysis approach, the themes were then categorized into broad categories and sub-categories.

Five thematic areas were identified that influenced the mothers' experiences and perceptions of KMC. These were: the perceived benefits of KMC for the mother and the baby along with its associated factors, the influence of community, family, religion, and culture on KMC, and the factors related to the hospital setting. These areas were selected to identify the barriers and facilitators of KMC implementation from the perspectives of the mothers who practiced it. Based on these, narratives were constructed around each major theme, and quotes were used to summarize perspectives.

3.10 Data Quality Control and Management

The credibility or internal validity of the study was ensured by prolonged engagement of the investigator, iterative questioning in data collection dialogues, examination of previous research to frame the findings, and peer examination. Audio recording and field notes were also used during data collection.

The applicability or transferability of the study was ensured by collecting data until saturation existed. The study provided background data to establish the context of the study and a detailed description of the phenomenon in question.

The dependability or consistency of the study was ensured by transparently describing the research steps from the start of the research project to the development and reporting of the findings. The study kept the records of the research path throughout the study and made an in-depth/detailed methodological description.

The confirmability of the study was ensured by making an audit trail or details of the process of data collection, data analysis, and interpretation of the data.

4. RESULT

4.1 Socio demographic characteristics of mothers

Twenty mothers were included in this study. The majority of the mothers were 26-30 years old and more than half of the mothers had secondary school education or above. The majority of them resided in urban areas. They also had diverse religious backgrounds, with Orthodox Christianity being the most common. The most frequent occupation status among the mothers was self-employed, followed by housewife, unemployed, and government employed. The neonates were almost equally distributed by sex, with slightly more males than females. Their weights varied from less than 1000 grams to 2000 grams, with most of them falling in the 1000-1500 grams range.

Table 1 Socio-demographic characteristics of the mothers.

Variable	Frequency (N=20)	Variable	Frequency (N=20)
Age		Residence	
15-20yr	2	Rural	9
21-25yr	7	Urban	11
26-30yr	9	Occupation status	
≥31yrs	1	House wife	6
Educational status		Government employed	1
Read and write	4	Self employed	11
Primary school	5	Unemployed	2
Secondary school	5	Weight of the neonate(N=23)	
College and above	6	Less than 1000gms	2
Religion		1000-1500gms	18
Muslim	6	1500- 2000gms	3
Orthodox	11	Sex of the neonate	
Protestant	3	Female	11
		Male	12

4.2 Mother's perception on Facilitators and Barriers of practicing

KMC:

The study identified the following themes that describe the perceived Facilitators and barriers of practicing KMC which determine the extent to which mothers can engage in KMC.

Table 2. Identified themes that describe the perceived Facilitators and barriers of practicing KMC among mothers,

Themes	Subcategories	Codes
Maternal and neonatal Factors	Barriers	limited KMC duration
		mother's health condition affecting KMC
		Uncomfortable Intermittent KMC
		Challenges to continue KMC- long hours, poor sleep, tiredness
		Twin and Triplets KMC
		Initial Fear and Uncertainty
		long stay at hospital
		Crowded Living Condition
		KMC uncomfortable for the baby
		Baby's health condition affecting KMC
		Challenges of prematurity
	Facilitator	High Compliance with Time Commitment
		Continuation of KMC at Home
		Intermittent KMC
		KMC preference over incubator
		When to Stop KMC
		Preference for Hospital KMC vs Home
		Benefit Of Early Knowledge
		Commitment despite challenges
		Adequate KMC space and duration
		Willingness to prolong KMC
Community Factors	Barriers	Prior Loss and family Need for good outcome
		Better Home KMC than Hospital KMC
		Community Knowledge Gap on KMC and preterm babies
		Feeling of Fear and Despair
		Insensitivity

		Challenges in Communication with the community
		Shock and disbelief
	Facilitators	Community Support (Moral and congratulation)
		KMC acceptance by the community
		Community generally helps each other
		Community Support with Strong Faith:
		Community Support with experience sharing
		General Child care
Family Factors	Barriers	Restrictions on Family and Attendant Support
		Exclusive KMC by the mother
		Lack Of Family Support
		Preference for single rooms and VIP rooms with one attendant
		Family and relatives' resistance for KMC
		Concerns about leaving baby alone
		Limited Family support
		Challenges with House Chores
	Facilitator	Supportive Family
		Husband presence and provision
		Kangaroo Father Care
		Family care for other children
		Family Moral and financial support
		Bringing formula milk
		Freedom and concern
		Benefits of attendant visit restriction
Cultural and Religious Factors	Barriers	Cultural Norms difficult for KMC
		Place of prayer
	Facilitator	Religious acceptance of KMC
		Religious coping and spirituality
		Cultural and Religious Morality
		Religious Obligation

		Religious acceptance of KMC
Hospital Setting Factors (including system and resources, health staff and KMC guidance factors)	Barriers	Hospital Infrastructure Challenges- beds and room
		Restrictions on Family and Attendant Support
		No additional guidance
		Lack of KMC knowledge prior to admission
		Challenges In Acquiring Resources
		Hospital Infrastructure Challenges- toilets and water
		Uncomfortable Intermittent KMC
		Incomplete Provision of Resources
		Health staff challenges
		Fear of infection
		Exclusive KMC by mother
		Concern for Safety, Hygiene and Cleanliness
		Feeling of Fear and Despair
		Twin and Triplet KMC
		Variability in Compassion and care from health staff
		Challenges in Communication with health staff
		Challenges in Health staff availability
	Facilitators	Practical demonstration by Health staff
		Health staff Guided Practice Positive Reflection
		Adequate Resources
		Positive Experience with Health Staff
		Healthcare Providers help
		Adequate Bed and Bedding
		Continuation of KMC at Home
		Intermittent KMC
		Helping each other at KMC unit
		Role model
		Bathing and Cleanliness
		KMC preference over incubator
		Positive perception Additional guidance
		Preference for Hospital KMC vs Home

Maternal and neonatal Facilitators

Perception of mothers about the benefits of KMC

Mothers' knowledge about the benefits and procedures of KMC was primarily facilitated by health education from professionals after their admission to the NICU. Most mothers reported learning about KMC for the first time following the delivery of their preterm infant and subsequent admission to the NICU. They were trained to perform KMC in the NICU alongside their preterm infants, practicing KMC intermittently for about 1-2 hours throughout the day.

One participant shared, "This is my first-time hearing about KMC... it was in the NICU. They told me to take a shower and wear loose clothing. Then, they placed the baby in the Kangaroo position on my chest for two days at the NICU with their support (Participant 10)." Despite most mothers learning about the benefits of KMC for the first time, they were committed to practicing KMC for extended periods, primarily during their hospital stay. The sacrifices they made and their perceived responsibility as mothers were the most significant facilitators, they all had in common.

"After all this sacrifice, my baby has now grown. She is almost two years of age, so seeing her now, growing well and playing well, the sacrifice I made was not for nothing. I said that it was a very immense sacrifice. I did that. The sacrifice I made at the hospital was the best thing that happened to me in my life, so I thought in such a way. So it gives a very good sense of accomplishment for the mother.(Participmant 16)"

However, some mothers had prior knowledge of KMC, which aided them in its practice. One mother commented, "Before I gave birth to my baby, I used to see posts about KMC on social media when I was pregnant. I saw some images and heard a bit about what KMC means, but I didn't know how to do it or what the specific benefits were. However, I had heard about KMC before I came to the hospital. This helped me to easily understand what they told me and hold my baby in the Kangaroo position well (Participant 14)."

The benefits of KMC for the baby, as reported by the interviewed mothers, most frequently included increased weight gain, warmth, growth support, and assistance with regular breathing. For the mothers, the major benefits of KMC reported were increased mother-infant connections and bonding, eased breastfeeding, and reduced stress leading to peace of mind.

One mother commented, "KMC is restful and less stressful for the mother and also provides a warm condition for the baby... KMC helps babies grow, gain weight, and breathe regularly. For me, KMC decreased my suffering. It gave me a break to rest and provided mental calmness. Being with my child

in this way gave me peace of mind (Participant 12).”

Overall, mothers experienced a profound sense of joy, a sense of their nurturing ability, and a sense of their role in their child’s treatment when holding their newborns skin-to-skin during KMC.

“In addition to the medication and treatment provided by the hospital staff, I felt that I was the one who helped her. Seeing her grow and breathe gave me a sense of fulfillment, knowing that I was participating in her development and life. This gave me a sense of accomplishment,” said Participant 16.

Mothers also understood that KMC is useful for closely monitoring the baby’s condition and mentioned that it is superior to the warmer in the NICU. “KMC has crucial benefits. As you know, if this tiny baby stays in the neonatal ICU, we can’t monitor her progress. I was always worried about my baby while she was in the ICU. But when she came to me and I held her on my chest and saw her grow, I had a good feeling that she was going to survive. That gave me hope,” shared Participant 5.

Mothers occasionally mentioned some benefits of KMC, such as disease protection, complexion change, and calming of the newborn. One participant shared, “My baby was tiny and born prematurely after seven months of pregnancy. By practicing KMC, I can provide her with the warmth she would have received from my womb. It protects her from diseases. It promotes overall health (Participant 5).”

Another mother highlighted the benefits of KMC for her triplets, especially the smallest one, saying, “This is particularly beneficial for my triplets, especially the smallest one who seems very content in the kangaroo position. Her sleep pattern and even her complexion improve when I hold her this way (Participant 19).

Generally, all mothers had positive perceptions of the benefits of KMC for both infants and themselves. These perceptions helped them to start KMC early as intermittent KMC at the NICU, continue to Ward KMC, and finally to Home KMC. This practice was maintained until their babies were uncomfortable in the Kangaroo position. “Here at the hospital, the only time I leave him alone is when I need to eat food and go to the toilet. Other than that, I am always holding him in KMC, even at night. It is only when I’m afraid that he will become out of breath due to suffocation that I let him rest on the bed a bit. Otherwise, I don’t even sleep much due to the fear of that... At Home I continued to hold him up until he started to refuse. As he grows up and started to know himself, he started crying and refused.” Shared by Participant 10.

Maternal and neonatal Barrier

Many mothers have reported that the challenges of practicing KMC for extended hours during a prolonged hospital stay can sometimes be exhausting and uncomfortable. This, along with the anxiety of having premature babies and the initial fear and uncertainty, has resulted in a reduction in the time dedicated to KMC. Furthermore, maternal health issues, such as surgical site infections and pain, have impeded their ability to provide sufficient KMC. Different mothers shared their experience saying “In addition to her discomfort when I hold her in the kangaroo position, I was also sick. I gave birth via C-section and I also had hypertension. I had a headache, so that was very difficult for me. Since she's also uncomfortable while in the kangaroo position, I didn't hold her that much, (Participant 8)". Similarly, "I didn't get a chance to hold my baby in the kangaroo position when I was readmitted for a wound infection at the obstetric ward, (Participant 16)". Furthermore, “I didn't get enough sleep while I was admitted to KMC, and I also needed to chat with family members who came to visit me, (Participant 12)" while doing KMC at Home.

Mothers often express that they view Kangaroo care as a responsibility that falls solely on them. This belief, combined with their personal fears about potentially causing harm or a fall while attempting Kangaroo care by the father, adds to the mother's burden. This increased pressure serves as a hindrance to the more frequent practice of KMC.

“I didn't expect my family members, including my husband, to give KMC. Other than me, there is no one that can keep the infant in the kangaroo position. It's not allowed” (Participant 1)

“My family members asked me to hold him in the kangaroo position but I didn't believe that they can hold him properly and I feared that they might hurt him, so I didn't allow that.” (Participant 12)

Some mothers perceived that KMC might not be comfortable for their baby, and their babies' health conditions have shortened the duration of intermittent KMC. "Since she's also uncomfortable while in the kangaroo position, I didn't hold her that much," reiterated Participant 8. "I am currently holding her in the Kangaroo position once or twice within a day. They told me that she has a birth defect; for that reason, whenever I hold her in the Kangaroo position, she starts to have shortness of breath, which shortens the duration of KMC," explained Participant 3.

Mothers with multiple babies (such as twins and triplets) have also encountered difficulties in extending the duration of KMC due to limited family access to the KMC room, which prioritizes their smallest baby. "I was totally focused on the smallest baby because she needed to grow well and gain weight. After meeting her discharge weight, we might have adequate space and place to do KMC at home. So, my focus was on the smallest baby. I used to hold her a lot and usually, the other two babies

were held by my husband. Sometimes I used to hold the other two larger babies, but the main focus of mine was on the smallest one," said Participant 19."

Community Facilitators

Mothers typically receive routine congratulations and moral support from the community when they have a baby. However, these mothers felt that the community did not understand the specific benefits and procedures of practicing KMC. They tried to explain the benefits of KMC, particularly for preterm and LBW infants. Since the concepts of providing warmth and general care for newborns by the mother are well-known in the community, KMC is considered to fulfill these needs. Most community members showed good acceptance of the benefits of KMC and provided the necessary space for its practice.

"The community doesn't know about KMC specifically...but what they usually advise me is to give the most to for the newborn warmth, use some warm clothes and have multiple clothes to put on myself so that my baby can grow. So, they are usually supportive after telling them what I'm doing here." (Participant 5)

"The community usually gave me moral support and congratulated me...I also tried to separate a room when I went home, so I was dedicated to have my child in Kangaroo position without having much disturbance. They all accepted this and tried to support me to have KMC, so the community is supportive." **(Participant 12)**

Some mothers also encountered community members who had experience and knowledge about KMC. This is a significant facilitator for practicing KMC as it helped in boosting confidence and hope.

"However, one was in the KMC room and had an experience because she had a child delivered at seven months of pregnancy, they were confident that KMC is very crucial for the development of their child, so they gave me much hope." **(Participant 4)**

Community Barriers

Most mothers mentioned that the community's lack of awareness about the benefits and procedures of KMC for preterm and LBW infants posed a significant barrier to practicing KMC. In addition to this, some mothers, especially those from rural areas, faced hostility and indifference when attempting to introduce KMC to the community. They also had to endure insincere compliments and rumors about their baby's growth, which hurt their feelings

This was particularly evident in the experiences of Participant 9, who shared, "One response I got was, I don't know if it's because I live in a rural area, but they came to visit me after I went home and said, 'What is this? We have never seen such a thing. When we gave birth to our children, we just held them

and put them to sleep. But there was no such thing as kangaroo in our time. What is this new thing that you bring?””

Similarly, Participant 16 faced challenges when she returned home with her baby. She recounted, “When I went home, they were shocked to see my baby. Some of them tried to hide their feelings. Some even questioned whether she would grow or become a fully developed human. They had a doubtful attitude towards KMC and sometimes they weren’t cautious about not hurting my feelings. They said things without considering my situation, which was very disturbing to me. So, the community didn’t help me much.”

Family Facilitators:

Most mothers practicing KMC report that their families lack information and understanding about its benefits and procedures. However, unlike the broader community, family members of KMC mothers actively embrace and learn how to perform kangaroo care. They provide genuine support by encouraging and motivating the mothers to practice KMC. Mothers play a crucial role in communicating the benefits of KMC to their families, and their acceptance significantly influences its adoption.

“My family, who learned about KMC alongside me, has been very supportive. My husband has been particularly helpful. With their support, which contrasts with the community’s initial reaction, I found the strength to stay in the neonatal ICU and hold my babies in the kangaroo position.” (Participant 19)

Husbands are often mentioned as significant family members who actively contribute to KMC. Their proximity and provision of assistance both in the hospital and at home facilitate KMC. Their support ranges from encouragement and motivation to purchasing medications, preparing meals, and even participating in kangaroo father care. Their support came very handy when there is multiple delivery (twin and Triplets).

“My husband was around. My close relatives were around. They helped me buy different medications. I stayed in the neonatal unit at the hospital for almost three and a half months. During my whole stay, they were all supportive and were there with me. My husband, my sister, and my mother were very supportive. They even helped me by holding my baby in the kangaroo position both at the hospital and at home.” (Participant 16)

“The first time I went to the KMC ward, they provided two beds, one for me and one for my husband. I was fortunate that my husband was there to support me. He was trained just like I was, so we were both able to hold our babies in the KMC and Kangaroo Father Care positions. He was a great help.”

(participant 19)

Additionally, family members assist with household chores and caring for other children at home. Some also participate in holding the baby during KMC.

“My mother helped me a lot by holding my baby in the kangaroo position. My husband was also supportive beyond just holding the baby in the Kangaroo position. They also helped me to have a good belief in KMC. They supported me morally and also took care of the housework and managed my household activities.” (Participant 17)

Furthermore, families who have experienced previous pregnancy losses are particularly motivated to practice KMC, as they eagerly seek to ensure the health of their newborn.

“He provided significant moral support, which was important as we had lost three pregnancies before this. So, I have a very supportive family.” (Participant 12)

Family Barrier:

Mothers have expressed that the absence of a supportive husband or close relative is a significant challenge in practicing KMC. This challenge is further compounded when the baby is unsupported and unplanned.

“No, I received absolutely no support from my family. My husband and I are not together. When I gave birth to my baby, he told me to leave the baby in the hospital as he believed there was no hope. But I told him that I would not lose hope and that God is with me. He didn’t agree with this idea of mine, so he left me and never came back. But I stayed, without losing hope and believing in God.” (Participant 9)

“I don’t have a husband, this pregnancy and child is not supported” (Participant 14)

“I have stayed here for the past 45 days and My husband is here near me, and we left our home locked and we are fully settled here. My husband sometimes go there and check the house. I don’t have other family members in Addis. So we are here alone helping each other.” (Participant 3)

Some mothers have experienced difficulties in receiving support and encouragement from their families, even when they are present at the hospital. This is often due to a lack of understanding of the benefits of KMC and a perception that preterm and LBW babies might not survive. This perception led to the discontinuation of KMC and resulted in mothers leaving the hospital.

“No one believed that he would make it out alive. I was the only person who did not lose any hope. Every person in my family thought I would lose my baby” (Participant 10)

“I have seen some other families, close family members, not accepting KMC, which led to them

leaving against medical advice. I also noticed some reluctance and acceptance barriers among close family members.” (Participant 16)

Additionally, some mothers who lacked family support have mentioned that household chores and taking care of other children add to their burden and served as an obstacle to practicing KMC at home. “But after going home, house chores became a bit of a challenge for me to hold my baby in KMC...” (Participant 11)

Cultural and religious Facilitators

Most mothers have mentioned that their culture and religion do not specifically address KMC. However, they have highlighted that both their culture and religion generally advocate for the bonding of mother and child, the importance of caring for a baby, and the significance of breastfeeding.

“To be honest, I haven’t really heard neither about encouragement nor discouragement, but my religion definitely encourages a mother and her child to be together, to breastfeed her children, and how it is so much better for her child to grow under the care of her mother.” (Participant 6)

During the challenging times they face with their preterm and LBW baby at the hospital and home, mothers often turn to their deep-seated religious faith as a source of comfort and resilience. They have also expressed that their culture and religion are not only accepting but also supportive of KMC, a perspective they appreciate and find encouraging.

“I stayed in the hospital for more than three months. In our religion, if you have a son, he should be baptized at 40 days, and if it’s a girl, she should be baptized at the age of 80 days. But my baby had passed this age limit due to her condition. Even I didn’t take her directly to the church for baptism when I got home. Instead, I waited until she gained a good amount of weight.

I communicated with the local church and they told me to bring hot water for the baptism. They prayed over the water and performed the baptism. They didn’t adhere to their specific rule of using cold water for my child because she might get cold and have some problems. So, I used warm water from my home. They were all supportive and understanding of my situation. They accommodated and morally supported me. My firmness in my religion also gave me hope, and praying was very supportive.” (Participant 16)

Cultural and religious Barriers

Some mothers have noted that cultural norms, such as family and community members visiting a new mother, combined with the inability to provide a separate room for the mother, pose challenges to the continuous practice of KMC.

“ But I am a bit worried on my adequate provision of KMC separate from other persons because I have only one room, so the community, family members and other children might be around me, so that might be one possible difficulty that I am going to face” (Participant 2)

Furthermore, one mother expressed that during their extended stay in the Neonatal Intensive Care Unit and while providing KMC, often for durations as long as a month, the lack of a designated area for prayer was a significant difficulty. This was particularly challenging as prayer served as their primary coping mechanism during this stressful period of their lives.

“A place of prayer is crucial , if it was provided it was nice and actually I am not allowed to perform a prayer until 45 days after giving birth I might not stay long. But we have attendants and mothers who stayed long who needs to pray.” (Participant 13)

Hospital Settings Facilitators

Hospital System and Resources Facilitators

This study, conducted during the renovation of the KMC wards, revealed varying experiences among mothers due to the different distribution of hospital resources. Most mothers received adequate resources from the hospital, including a bed in the KMC ward, which they were fortunate to acquire quickly. In addition, they also received sufficient clothing, bedding, and food. Some mothers were assigned to a room accommodating only two mothers, while others were in rooms with four mothers. They considered this environment to have a homely feel, akin to a VIP experience.

“Yes, since I came, the previous room for KMC were under renovation. I was in the VIP room with only another person, so it was very suitable. ...The other mother had twins. I only had one baby, so it was good ...The bathroom was also very comfortable. So yes, we were sufficiently provided with clothes and bed.” PARTICIPANT6

Some mothers advocated for the benefits of having a shared room, where they could exchange experiences with another mother, look after each other's babies in the family-restricted KMC ward, and provide each other with financial assistance. This was seen as a facilitator for KMC. Conversely, one mother advocated for attendant restrictions, which gave them the necessary time for KMC.

“Since we are not allowed to have an attendant at our bedside, we are all there by ourselves. We should have to feed our babies every two hours. We should have to hold our babies when we are asleep. Some other mother, who is beside us, is awake. So if there is any problem, we might tend to tell each other so we're supporting each other. If we're all alone in a single room by ourselves, that would be much problematic because we might fall asleep and we might do some harm to our child.” PARTICIPANT8

“The relatives and the community not being allowed to visit and spent time with me in the hospital allowed me to focus on doing KMC” P 12

Almost all mothers began practicing KMC in the NICU and continued with intermittent KMC before they were admitted to the KMC ward. This early experience promoted early bonding with their baby, demonstrating that babies in the ICU can also receive the comfort of their mother, and facilitated discharge

“When my baby was in the NICU, she was on oxygen due to respiratory problems. They told me to hold her in KMC, and in the kangaroo position, even when she was on oxygen, I held her. In addition to the medication and treatment given by the hospital staff, I feel that I was the one who helped her. When I see her grow and breathe, it gives me a sense of fulfillment that I am taking part in her development and life. This gave me a sense of accomplishment.” P 16

Health Staff & KMC guidance Facilitator

Most mothers received guidance from the health staff in a step-by-step practical demonstration, emphasizing the importance of bathing and cleanliness before practicing KMC. Additionally, they received some form of visual aids. Almost all mothers preferred the practical demonstration as their preferred method of introduction to KMC, without denying the benefit of additional guidance through visual aids.

“They told me that I need to start the KMC and after taking a shower I went there and they specifically told me and showed me step by step how to hold a baby in KMC position like how to place her in my chest, how to put her face on either side and how to tie a cloth around her. And there is nothing bad about the procedure and it was good” Participant 3

“Yes there was a TV teaching about KMC and breast feeding. But I prefer the guidance received through step by step demonstration by the health staff.” Participant 8

Similarly, Most mothers have mentioned that the health staff plays a crucial role during their stay in the NICU and KMC ward. They provide moral support, show sympathy, and address complaints and questions in a timely manner. Some mothers even mentioned that the health staff provided them with financial support when no one else was around.

“Even the health staff helped when I was unable to buy medications from outside...In terms of their job and assistance, they were truly kind. For instance, during KMC sessions, if I noticed my baby having difficulty breathing while I was sleeping, I would ask someone to call a health staff member. They would promptly come in, provide oxygen to the baby, and once his breathing rate improved, I would continue holding him in KMC. Apart from this, I haven’t observed much else.” (Participant 9)

The trust that mothers place in healthcare providers to address their needs is also cited as a significant facilitator.

“Holding her in the KMC position here in the hospital with the doctors, nurses, and healthcare staff around me was very calming.” (Participant 8)

“They were very supportive. If they were not the one taking care of my baby, I don’t think he might even survive.” (Participant 12)

Some mothers further received guidance from role models and peer mothers who had experience with KMC and now have grown children who benefited from Kangaroo care. This helped them gain confidence, encouragement, and motivation to see the benefits of KMC.

“In addition to the support they gave me, they showed me other modes of guidance in KMC . They gave me different videos on my phone. One encouraging thing they showed me was a child who had been held in KMC and was now growing and playing with her mother. When I saw that video, I was very eager and it gave me great support. At that time, my feelings and thoughts were that my baby is going to be like her, so that was very supportive.” Participant 16

They also mentioned the guidance included instructions on continuing KMC at home and when to stop KMC, which was a facilitator for the mothers.

“So I told people that I would be quarantining and would be staying alone in one room. But they didn’t understand. They thought it was for something else, so they kept coming into my room to greet and congratulate me. They have very little knowledge about KMC.” Participant 9

Hospital Settings Barriers

Hospital System and Resources Barriers

Mothers who stayed at the hospital frequently mentioned several significant obstacles to the adequate and comfortable provision of KMC. The crowdedness of the KMC ward and scarcity of available beds were principal barriers to practicing KMC in the hospital. This often leads to the possibility of early discharge of less critical babies, despite maternal fear and need of assistance. Mothers expressed a desire for less crowded, if not private, rooms with unrestricted family access.

“KMC ward is overcrowded with lack enough space to attend to all the mothers and babies who need KMC. And it is not very clean with smelly single toilet and feared for infections or diseases for me and my baby.” P 18

“There is also a scarcity of beds and due to that, whenever a child reaches a somewhat good weight, the mother is somewhat pushed to have confidence and discharged home. Sometimes that can be a

problem. But if there are adequate beds and a good distribution of beds, that would be important for providing adequate KMC without early discharges.” PARTICIPANT 17

After being discharged from the obstetrics ward, mothers often found securing a bed in the waiting area to be problematic, leading them to resort to lying on the floor or in chairs. The need to travel between the mothers’ waiting area building and NICU to provide intermittent KMC and give expressed breast milk every two hours, regardless of the time of day or weather conditions, was another significant barrier. Mothers also mentioned the discomfort of providing intermittent KMC while sitting in a chair and expressed a desire for a dedicated area and couch for this purpose.

“Getting a bed was very hard. They said there was a place for mothers who had delivered their child and left the maternity ward. But when I went there and asked for a bed or a place to rest, they said it was all full. I was very worried about where to rest.” PARTICIPANT 4

“After three days, I was discharged from the delivery room and admitted to the ward near the administrative building. I had to commute back and forth to the NICU to provide KMC intermittently and to feed the expressed breast milk. Despite the difficulty and fatigue from walking to that location outside of the building, I made this sacrifice for my children.” PARTICIPANT 19

The scarcity of water, along with the presence of only a single indoor toilet for each KMC ward, poses a barrier. This is especially true given the varying levels of understanding among mothers from different parts of Ethiopia regarding the use of hospital facilities and toilets, with cleanliness being a concern.

“There is also one toilet. Sometimes the toilet has a smell and the water is gone, which makes the toilet and bathroom smell worse.... if the bed situation improves and there are fewer people within a single room, that would be much better. It would be cleaner for our child and she would get an adequate amount of oxygen. Here, it’s somewhat suffocated.” PARTICIPANT 2

“Some mothers from rural Ethiopia require additional education and guidance. Many lack fundamental knowledge about caring for their babies and utilizing hospital facilities. Starting from the basics—such as holding a baby, using the toilet, and maintaining a clean room—is crucial. Since we all share the same room and facilities, the teaching approach should be inclusive of diverse backgrounds and learning styles.” PARTICIPANT 17

Mothers have expressed the need for a dedicated space for attendants to stay, pray, and do laundry. Additionally, some mothers have complained about the inadequacy of resources such as food, bedding, utensils, and clothes provided to them, particularly those who lack family support. Additionally, mothers complained about the accuracy and scarcity of weight scales, medications, glucometers, and

laboratory tests.

“Everyone gets food service. But as a mother who doesn’t have a husband or other family members, I feel the hospital should pay more attention and give extra treatment to mothers who don’t have people to support them,” PARTICIPANT 9

“The food delivery is adequate, but they only deliver the food for me. Since my husband is staying here, he is not getting food service for him.” Participant 2

“One area that the hospital is lacking is in providing space for attendants. We are staying here for more than a month, so it would be beneficial to have a designated area for our attendants. Currently, they are sleeping in a corner, which is not ideal. This situation should be corrected. Additionally, the hospital should provide a place for us to wash our clothes. Currently, most mothers are using the bathroom to wash their clothes. However, we only have one bathroom for toilet use, showering, and washing clothes, which is quite disturbing and creates a scarcity ... There is also a scarcity of medication in the hospital. Almost all the medication needed for the babies is being purchased from outside the hospital. It would be beneficial if the hospital could provide more medication.” PARTICIPANT 12

Most mothers have also mentioned that restrictions on family members’ access to the KMC ward pose a barrier to practicing KMC. This increases the burden on the mother to provide KMC alone for extended periods, causing distress when they need to leave the baby alone to visit the restroom or eat outside the KMC room. This family restrictions, coupled with a lack of beds, pose a barrier to receiving support for their twins and triplets. One mother even preferred home KMC to hospital KMC to provide Kangaroo care for her triplets.

“The other problem I faced was the restrictions on attendant entry. For instance, when I needed to rest, specifically late at night, and when I needed to eat some food. I am not allowed to eat in the KMC room, so I need to go out. If there were another family member, I could leave my baby with that person and go out to eat. But now, I have to let her sleep alone, which is worrisome for me and was a difficult thing to do.” (Participant 17)

“After two days of my husband and I having a bed, another mother arrived who needed a bed. My husband gave up his bed but didn’t go home. He would hold our baby in the Kangaroo Father Care position on the couch next to my bed.... After we were discharged and went home, we continued to hold our babies using KMC...At home, I had the opportunity to hold my babies for a longer time than in the hospital because I had a supportive crew and family members. After training them, we used to hold our babies in the KMC position.” PARTICIPANT 19

Health Staff & KMC guidance Barrier

Most mothers stated that their initial introduction to KMC came a day or two prior to starting KMC, and they learned about its benefits while practicing KMC in the NICU, not prior to admission to the NICU or during antenatal care follow-up.

“I didn’t know about KMC before I got admitted here. As you know, when my newborn was at NICU, they told me to bring expressed breast milk every two hours,. So I brought that milk and fed my newborn at neonatal ICU and **after a while** they told me that I need to start the KMC...” Participant 2

“If I had known about KMC earlier and if I had prepared for that during my ANC follow-up, that would have been beneficial.” PARTICIPANT 1

Some mothers mentioned that the absence of continuous follow-up and guidance, along with the lack of supporting visual aids, posed significant barriers to continuing KMC. They often felt left to navigate the process on their own, which could lead to complications in their baby.

“I noticed that...Some mothers who stayed there sometimes lose hope and became depressed. This was often because they didn’t fully understand the purpose of KMC, its benefits, or its outcomes. The teaching is usually done once, and after that, there is no continuous teaching method or follow-up in learning and practicing KMC. It would be better if more support was provided, especially for mothers who came from rural areas. They should be taught how to do these things and what the benefits are” PARTICIPANT 17

“Regarding the barriers with the healthcare providers, some of them lack compassion and they didn’t give elaborate answers to the questions we have. They allow you to follow everything, even telling you to follow the oxygen. Everything should be done by yourself, which is a bit challenging and tiresome.” (Participant 17)

“My baby had one of the complication and received an injection to the eye. So, if they balance their suction pressure, oxygen measurement and other little things, the baby wouldn’t suffer these types of tremendous scars. If they correct these types of small mistakes, the baby would not come out with a scar on their body. And another time they mistakenly put OR materials like a surgical glove in my baby’s bed and when I went in and saw the materials, I was really shocked thinking my baby was the one needed the surgery but he was not. And another thing is forgetfulness where the IV line on their hand got swollen and was left there, if it was checked frequently this might not happen too much” (Participant 6)

They also stated that poor communication and lack of teaching tailored to the mother’s background led to a loss of hope. Additionally, inconsistent messages from different staff members can lead to

confusion and hinder the effective practice of KMC. Inadequate responses to their questions by health staff sometimes resulted in confusion and uncertainty. The situation was further exacerbated by poor communication and inappropriate directives.

“And I think the education given to mothers should be based on their level of understanding. For example, I only finished high school and I don’t know anything about using syringes and how to fill a syringe with breast milk. That was a very difficult experience for me in the KMC” P 4

“There are different health staff members with different opinions. If one person says something today, the other might say something different. So, if all of them could say the same thing, it would be much better and easier to understand and follow.” (Participant 6)

Most mothers have noted the variability in the care and compassion they received from health staff, which ranged from excellent to poor. Mothers practicing KMC often reported a lack of compassion, which can make them feel misunderstood and overlooked during their challenging journey. They also reported that health staff often lack understanding of the doubt, fear, and pain they are experiencing.

“But at some point in my stay I have seen some health staff who speak very badly to a mother, which is unexpected and inappropriate. This can be very hard and touchy for the mother. Some mothers even cry because there is a lot of doubt, fear, and hopelessness, all without any bad communication from the healthcare provider. These things should be corrected. They need to have consistency in communication and be compassionate when addressing a mother.” (Participant 19)

Furthermore Procrastination of tasks by health staff is another issue, along with their unavailability, particularly during the night shift.

“They usually tell us to call them whenever there is a problem or a color change in our baby. But whenever we do that, they usually come very late. That’s a problem. Sometimes they don’t even come to us. That is a big problem. So that should be corrected” (Participant 7)

“But There was a shortage of KMC health staff members at night time. They were not as available at night time as much as they were in the daytime. So, I think that should be improved. The mothers had a problem because they were not available at night time.” (Participant 11)

5. DISCUSSION

This study delineates the perceived barriers and facilitators for mothers providing KMC. The engagement in KMC is hindered by various factors including community, cultural, religious, family, health staff guidance, health system and resource barriers, and the medical conditions of both the mothers and infants. These barriers affect a mother's ability to engage in KMC, thereby impacting its

quality. A better understanding of these barriers is crucial for developing a comprehensive model to improve the health of newborns and their families.

Identifying the factors that both hinder and facilitate the practice of KMC is vital for promoting the long-term health of both the child and the mother. The promotion of simple, natural, safe, affordable, and effective methods of preterm care, particularly for hypothermia, is important as the care of preterm infants remains a significant challenge in resource-poor countries. While the KMC method cannot completely replace incubator care in hospitals, it plays a major role as a cost-effective method of preterm care.

5.1. Maternal and neonatal Factors

In the practice of KMC, mothers experience both facilitators and barriers related to the time spent during KMC.

This study found that most mothers, despite learning about the benefits of KMC for the first time, were committed to practicing KMC for long hours, primarily during their hospital stay. Their sacrifices, and perceived sense of responsibility as a mother were common significant facilitators.

As Evidence from large-scale studies shows that KMC decreased mortality, risk of hypothermia, and infection. In addition, it showed increases in exclusive breastfeeding and Weight gain (WHO, 2022). It also reduces apnea, (Xie et al., 2021) stress and pain in the baby (Johnston et al., 2017), promotes mother-infant bonding and increases maternal confidence. Similarly, in this study, mothers recognized and highlighted all these benefits of KMC for their newborns, which encouraged them to implement KMC adequately. Furthermore, the provision of early initiation of KMC, from intermittent KMC at the NICU to Ward KMC and finally to Home KMC, was maintained until their baby was uncomfortable in the Kangaroo position.

On the contrary, many mothers reported challenges of practicing KMC for extended hours during a prolonged hospital stay, which can be exhausting and uncomfortable. This, along with the anxiety of having premature babies and the initial fear and uncertainty, resulted in a reduction in the time dedicated to KMC. The systematic review of caregiver perspectives towards barriers and enablers of healthsystem adoption of KMC found that the clinical condition of premature neonates and medical condition of mother themselves act as a barrier for KMC uptake(Medhanyie et al., 2019). This research also showed Maternal health issues, such as surgical site infections and pain, further impeded their ability to provide sufficient KMC. Despite their readiness to extend intermittent KMC, some mothers indicated that the lack of a dedicated space and their babies' health conditions shortened the duration of intermittent KMC. Mothers with multiple babies, including twins and triplets, face challenges in

extending the duration of KMC equally to all their babies. Limited family access to the KMC room often results in prioritizing KMC for their smallest baby.

5.2. Community Factors

The study revealed that the community was not fully aware of the benefits and procedures of KMC for preterm and LBW infants. Mothers typically receive routine congratulations and moral support from the community upon having a baby. These mothers attempted to explain the advantages of KMC and the realities of having a preterm and LBW infant. The majority responded positively to the benefits of KMC, as the community is familiar with the warming and general care provided by mothers to newborns, and KMC is seen as a means to achieve these. Additionally, some mothers discovered individuals in their community with experience in KMC. This finding aligns with a previous study conducted in our country (Medhanyie et al., 2019), but this study primarily highlights the easy acceptance of KMC, unlike the resistance noted in the previous study. However, resistance was not entirely absent, particularly among mothers from rural parts of Ethiopia.

Mothers had to endure insincere compliments and rumors about their preterm baby's growth and survival, which caused emotional distress. These findings are consistent with those presented at the international conference on KMC (Cattaneo et al., 2018)

5.3. Family Factors

The study showed that families lack information and understanding about the benefits and procedures of KMC. However, unlike the broader community, family members of KMC mothers actively embrace and learn how to perform kangaroo care. They provide genuine support by encouraging and motivating the mothers to practice KMC. Husbands are often mentioned as significant family members who actively contribute to KMC. Their proximity and provision of assistance both in the hospital and at home facilitate KMC. Their support ranges from encouragement and motivation to purchasing medications, preparing meals, and even participating in kangaroo father care. Their support is particularly beneficial in families with multiple births (twins and triplets) & previous pregnancy losses. Additionally, family members assist with household chores and caring for other children at home. Some also participate in holding the baby during KMC. These findings are similar to those of the international workshop on KMC (Cattaneo et al., 2018), but show more active involvement of husbands and nearby relatives in the provision of KMC.

Mothers have expressed that the absence of a supportive husband or close relative is a significant challenge in practicing KMC. This challenge is further compounded when the baby is unsupported and

unplanned. Mothers in disturbed marital status or separated from their husbands share barriers to implementing KMC, as identified in this study and a systematic review on barriers and facilitators of facility-based KMC in sub-Saharan Africa (Kinshella et al., 2021).

Even in the presence of their families at the hospital, some mothers struggle to receive the necessary support and encouragement. This is often attributed to a lack of understanding about the benefits of KMC and a misconception that preterm and LBW babies may not survive. Such perceptions have led to the discontinuation of KMC and subsequent departure of mothers from the hospital. These challenges echo the persistent barriers identified in a study conducted in Ethiopia and India (Medhanyie et al., 2019), which underscored the resistance from family members towards participating in hospital care for the baby. Similarly, a study in Uganda (Morgan et al., 2018) revealed that decision-making against KMC was heavily swayed by uninformed grandmothers and fathers.

As demonstrated in a previous study in Ethiopia (Hadush et al., 2022), this study also revealed that mothers often perceive Kangaroo care as a responsibility that rests solely on them. This belief, coupled with their personal fears of potentially causing harm or a fall while attempting Kangaroo care by the father, adds to the mother's burden. This heightened pressure acts as a deterrent to the more frequent practice of KMC.

Unlike recent guidelines suggesting the family's involvement in practicing and supporting mothers doing KMC, this study identified a significant barrier to doing so. Most mothers have also mentioned that restrictions on family members' access to the KMC ward pose a barrier to practicing KMC. This increases the burden on the mother to provide KMC alone for extended periods, causing distress when they need to leave the baby alone to visit the restroom or eat outside the KMC room.

5.4. Cultural and religious Factors

Contrary to previous studies that highlighted cultural barriers and norms, such as carrying a baby on the back, as factors leading to poor provision of KMC (Hadush et al., 2022, Kinshella et al., 2021), this study found that culture and religion do not specifically address KMC. However, mothers have discovered that both generally advocate for mother-child bonding, baby care, and breastfeeding. During challenging times with their preterm and LBW babies, mothers often turn to their religious faith for comfort and resilience, finding their culture and religion supportive of KMC.

Additionally, the study illustrated that cultural norm, such as family visits and the lack of a separate room for the mother, can pose challenges to the continuous practice of KMC. The absence of a designated prayer area during extended stays in the Neonatal Intensive Care Unit, a primary coping mechanism for many, presents a significant difficulty. Therefore, hospitals should consider

incorporating such facilities as a major way of adapting KMC to the needs of a widely religious community.

5.5. Hospital Settings factor

Hospital System and Resources Factors

This study, conducted during the renovation of the KMC wards, revealed varying experiences among mothers due to the different distribution of hospital resources. Mothers assigned to rooms accommodating only two individuals enjoyed a homely environment, akin to a VIP experience, with sufficient clothing, bedding, food, and family support. This is similar to a facilitator mentioned in the global systematic review of studies on KMC(Smith et al., 2017).

In contrast, mothers assigned to crowded rooms faced significant obstacles in providing adequate and comfortable KMC. These challenges were mainly due to the crowdedness of the KMC ward, scarcity of available beds, early discharge of less critical babies despite maternal fear and need for assistance, and poor cleanliness due to the scarcity of water and the presence of only a single indoor toilet for each KMC ward. These findings correlate with the report on the international workshop on KMC(Cattaneo et al., 2018). Interestingly, these mothers found the shared room beneficial, as it allowed them to exchange experiences, look after each other's babies in the family-restricted KMC ward, and provide financial assistance to each other, facilitating KMC.

After being discharged from the obstetrics ward, almost all mothers experienced difficulty securing a bed in the waiting area, followed by a significant delay in acquiring a bed in the KMC room. Despite these challenges, almost all mothers began practicing KMC in the NICU and continued with intermittent KMC before they were admitted to the KMC ward. This early experience promoted early bonding with their baby, demonstrating that babies in the ICU can also receive the comfort of their mother, and facilitated discharge.

However, the need to travel between the mothers' waiting area building and NICU to provide intermittent KMC and give expressed breast milk every two hours, regardless of the time of day or weather conditions, was another significant barrier. Mothers also mentioned the discomfort of providing intermittent KMC while sitting in a chair and expressed a desire for a dedicated area and couch for this purpose.

Even though most of the services for KMC are provided for free, which is an important facilitator mentioned in previous studies(Smith et al., 2017) as well as this one, some mothers have complained about the accuracy and scarcity of weight scales, medications, glucometers, and laboratory tests. Similarly, some mothers complained about the inadequacy of resources such as food, bedding, utensils,

and clothes provided to them, particularly those who lack family support.

Consistent with a systematic review of studies in Sub-Saharan Africa (Kinshella et al., 2021), mothers have also expressed the need for a dedicated space for attendants to stay, pray, and do laundry during their extended stay at the hospital.

Factors associated with Health Staff & KMC guidance

As mentioned in the systematic review in Sub-Saharan Africa (Kinshella et al., 2021), this study found that most mothers appreciated the step-by-step practical demonstrations, visual aids, and guidance on continuing KMC at home. They preferred practical demonstrations as their introduction to KMC and requested additional guidance through visual aids. The guidance from experienced role models and peer mothers who had practiced KMC and now have grown children was particularly helpful in boosting their confidence, encouragement, and motivation.

In contrast to the study in the Tigray region, Ethiopia (Hadush et al., 2022), which highlighted the lack of trained health staff as a barrier for implementation, this study demonstrates that the availability of trained health staff and the trust placed by mothers in healthcare providers significantly facilitate the KMC journey. In addition to practical demonstrations, health staff play a crucial role as facilitators for KMC provision by providing moral support, sympathy, timely responses to complaints and questions, and even financial assistance to mothers.

On the other hand, some mothers faced significant barriers in their KMC journey. Their initial introduction to KMC often came just a day or two before starting KMC, and they learned about its benefits while practicing KMC in the NICU, not prior to admission to the NICU or during antenatal care follow-up. The lack of continuous follow-up, guidance, and supporting visual aids were major obstacles to continuing KMC. Furthermore, procrastination of tasks by health staff, poor communication and lack of teaching tailored to the mother's background led to a loss of hope. In this respect, the experiences of mothers receiving poor guidance for KMC in this study are consistent with the literature review (Kampeketete et al., 2018, Morgan et al., 2018, Smith et al., 2017).

6. LIMITATION OF THE STUDY

The study employed in-depth interviews as the exclusive method of data collection. We made every effort to conduct focused group discussions with mothers to gain a deeper understanding of the facilitators and barriers of practicing KMC. However, mothers often hesitated to discuss the challenges they faced during their admission, fearing a bias in care. This was the ideal time for focused group discussions. Additionally, coordinating follow-up sessions with more than three mothers at the same

time proved to be a logistical challenge at the High-Risk Infant Clinic.

The interviews were conducted exclusively at SPHMMC, a tertiary care center. While the results may reflect the views of mothers primarily from Addis Ababa and Sheger City, who have relatively better access to health settings due to their proximity to this hospital, they may not truly represent the challenges faced by mothers in distant rural parts of Ethiopia.

Despite efforts by a qualified IELTS high scorer with a Pharmacy background and the principal researcher to accurately translate the mothers' ideas from their native languages (primarily Amharic and some Afaan Oromo) into English, capturing the mothers' true sentiments might have been challenging. The process of conducting most interviews in Amharic, some in Afaan Oromo, and then translating these to English for transcription could have resulted in some nuances being lost.

Despite these limitations, this study had numerous strengths. Our objective was to identify the current barriers and facilitators of KMC practice at SPHMMC from the mothers' perspectives and perceptions. With contributions from 20 mothers, we delineated common barriers and facilitators of KMC practice, uncovering facilitators that are seldom discussed in the literature, emphasizing mothers' hope and dedication. Despite the demands of KMC, mothers view it as a sacrifice worth making. Additionally, the study provides clear guidance on enhancing KMC quality at SPHMMC and similar tertiary care settings. Linking the identified themes with established literature significantly elevates the study's contribution

7. CONCLUSION AND RECOMMENDATION

7.1. CONCLUSION

This study is among the thematic analyses of how different factors influence KMC utilization and implementation among mothers with preterm and low birth weight infants. The findings indicated that mothers perceived a complex array of barriers and facilitators that determine a mother's ability to provide KMC. To improve mothers' performance and promote the health of preterm and LBW infants through practicing KMC, it is necessary to advocate for the support of the community, family, religion, culture, and health staff on KMC. It is also important to increase the availability and clarity of KMC guidance, and the adequacy and accessibility of hospital systems and resources for KMC. Addressing these factors through policy changes and hospital interventions is essential to enable optimal child health care.

7.2. RECOMMENDATION

For Hospital Administration:

Hospital top managers and administrators should arrange a well-organized and well-equipped kangaroo room, along with a nearby waiting area for mothers after their discharge from the maternity ward.

A proper, dedicated separate area with a comfortable couch should be provided for intermittent KMC. There should be a proper guideline on when to start educating mothers about KMC, and how and for how long intermittent KMC should be practiced.

Advocate for continuous learning for the mothers with additional health staff follow-up and visual methods of learning. This could include more videos showing a mother's experience with KMC, from her child walking and playing, to going to his/her first class.

It's also important to allocate sufficient compassionate, respectful, and caring health professionals for the kangaroo room.

For minister of health: the community should be made more aware of the KMC method and its benefits. There is a need for improved community awareness of this method of care and its advantages through media coverage and health extension workers.

For researchers: Further research is needed to identify scalable solutions that address the different complex barriers these mothers face during kangaroo care practice, and to ensure the health of both mother and child. Conduct research to gain insights into the facilitators of KMC as perceived by health staff, to improve practice and policy.

8. DECLARATION

I hereby declare that; this thesis report is my original work and has not presented for a degree by another person in this or any other university and all source material used for this thesis have been acknowledged.

Name: _____

Signature _____

Date _____

Name of Advisor: _____

Signature _____

Date _____

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10. Annexes

Questionnaires to explore the perceived barriers and facilitators to practicing KMC among mothers in the NICU of SPHMMC

(i) Socio-demographic characteristics of mothers in the NICU of SPHMMC

Socio-demographic characteristics of mother	Possible answers
Age (in years)	_____ years
Religion of mother	1. Orthodox 2. Muslim 3. Catholic 4. Protestant 5. Others specify _____
Residence	1. urban 2. Rural
Region of mothers	1. Tigray 2. Amhara 3. Oromiya 4. SNNP 5. Other
Marital status of mothers	1. Single 2. Married 3. Divorced 4. Widowed 5. Separated
Educational status of mothers	1. Illiterate 2. Read and write 3. Primary 4. Secondary 5. College and above
Occupation of mothers	1. Housewife 2. Governmental employee 3. Self-employed 4. Others _____
Monthly income (in ETH Birr)	_____ (ETH) Birr
Sex of neonate	1. Male 2. Female
Weight of neonate	_____ Kg

(ii) In-depth Interview Question Guide

Questions	Response
Main questions: 1. What do you think about the benefits of KMC for premature and LBW babies?	Probe: ➤ Helps bond with baby ➤ Keeps baby warm ➤ Helps with feeding ➤ Other
2. Which factors facilitate your provision of KMC to the extent you desired? Facilitating factors of KMC utilization by parents with premature and LBW infants? a) How do you describe community support of KMC? b) How do you describe family member support of KMC? c) How do you describe health staff and setting support of KMC? d) What do you say about cultural and religious views and support of KMC?	Probe: ➤ Acceptability ➤ Culture ➤ Religion ➤ Belief
3. What are the barriers and challenges to KMC utilization by parents with premature and LBW infants? a. How do you describe family and community challenges to the practice of KMC? b. How do you describe the cultural and religious views and barriers to the practice of KMC? c. How do you describe health staff and setting barriers of KMC? d. How do you describe time and medical-related barriers to KMC?	Probe: ➤ Acceptability ➤ Culture ➤ Religion ➤ Belief
➤ N.B. Is there anything else you add that have not discussed yet that you think is important for our discussion and finding?	

አሁን ስለ ካንጋሮ እናት እንክብካቤ ማውራት እፈልጋለሁ

የእናት ማህበራዊ መገለጫዎች	መልሶች
ዕድሜ (በዓመት)	_____ ዓመት
የእናት ሃይማኖት	1. ኦርቶዶክስ 2. ሙስሊም 3. ካቶሊክ

	4. ፕሮቴስታንት 5. ሌሎች ይጥቀሱ -----
የመኖሪያ ቦታ	1. ከተማ 2. ገጠር
የእናት ክልል	1. ትግራይ 2. አማራ 3. ኦሮሚያ 4. ደቡብ 5. ሌላ -----
የእናት የጋብቻ ሁኔታ	1. ያላገባች 2. ያገባች 3. የፈታች 4. ባሏ የሞተ 5. ተለያይተዋል የሚኖሩ
የእናት የትምህርት ሁኔታ	1. ያልተማረች 2. የሚያነቡ እና የሚጽፉ 3. አንደኛ ደረጃ 4. ሁለተኛ ደረጃ 5. ኮሌጅ እና ከዚያ በላይ
የእናት ስራ	1. የቤት አመቤት 2. የመንግስት ስራተኛ 3. በግል ተቀጥራ የምትሠራ 4. ሌሎች -----
ወርሃዊ ገቢ (በ ኢትዮጵያ ብር)	(ኢትዮጵያ) ብር
የህጻኑ ጾታ	1. ወንድ 2. ሴት
የህጻኑ ክብደት	----- ኪ.ግ.

ጥያቄዎች	መልሶች
ዋና ጥያቄ	ምርመራ
1. ለጨቅላ እና ዝቅተኛ ክብደት ላላቸው ህፃናት የካንጋሮ እናት እንክብካቤ ስለሚሰጠው ጥቅሞች ምን ያስባሉ?	• ከእናት ጋር ትስስር እንዲኖር ይረዳል • የሕፃናትን ሙቀት ይጠብቃል • ምግብ/ጡት እመመገቡ ይረዳል • ሌላ
2. የካንጋሮ እናት እንክብካቤን እስከፈለጉት መጠን ድረስ ለመተግበር የሚያመቻቹ ሁኔታዎች ምን ምን ናቸው? a. ስለካንጋሮ እናት እንክብካቤ የማህበረሰቡን ድጋፍ እንዴት ይገልፁታል? b. ስለካንጋሮ እናት እንክብካቤ የቤተሰብ አባልን ድጋፍ እንዴት ይገልፁታል? c. ስለካንጋሮ እናት እንክብካቤ የጤና ሠራተኛን ድጋፍ እንዴት ይገልፁታል? d. ስለ የካንጋሮ እናት እንክብካቤ ባህላዊ እና ሃይማኖታዊ ድጋፍ ምን ይላሉ?	• ተቀባይነት • ባህል • ሃይማኖት • እምነት
3. ለጨቅላ እና ዝቅተኛ ክብደት ላላቸው ሕፃናት የካንጋሮ እናት እንክብካቤን ለመጠቀም እንቅፋቶች እና ፈታኝ ሁኔታዎች ምንድን ናቸው? a. ስለካንጋሮ እናት እንክብካቤ ልምምድ የማህበረሰብ አቀፍ መሰናክሎችን እንዴት ይገልፁታል? b. ስለካንጋሮ እናት እንክብካቤ ልምምድ ባህላዊ እና ሃይማኖታዊ መሰናክሎችን እንዴት ይገልፁታል? c. ስለካንጋሮ እናት እንክብካቤ ልምምድ በጤና ሠራተኛው በኩል ያሉ መሰናክሎችን እንዴት ይገልፃሉ? d. ስለካንጋሮ እናት እንክብካቤ ልምምድ ከጊዜ አጠቃቀም ሁኔታ ጋር የተዛመዱ መሰናክሎችን እንዴት ይገልፁታል? e. ስለካንጋሮ እናት እንክብካቤ ልምምድ ከጤና ሁኔታ ጋር የተዛመዱ መሰናክሎችን እንዴት ይገልፁታል?	ምርመራ: • ተቀባይነት • ባህል • ሃይማኖት • እምነት
N.B. ለውይይታች እና ለግኝታችን አስፈላጊ ነው ብለው ያሰቡት ገና ያልጨመሩት ሌላ ነገር አለ?	