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Mothers' perceptions of the practice of kangaroo mother care for preterm neonates in sub-Saharan Africa: a systematic review of qualitative evidence

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ABSTRACT

Objective: The objective of this review was to explore the experiences of mothers with the practice of kangaroo mother care for preterm neonates at home in sub-Saharan Africa.

Introduction: Newborn deaths globally have remained high despite the significant reductions in deaths among under-fives over the past few decades. More than 7000 deaths occur daily around the globe, but mostly in sub-Saharan Africa. Of these deaths, 60% to 80% are due to preterm birth and low birth weight. Kangaroo mother care is known to offer a cheap and effective way to care for low birth weight, preterm neonates; however, its practice is still low. There is limited evidence on the factors that hinder or facilitate the practice of kangaroo mother care at the community level.

Inclusion criteria: The review considered studies conducted in sub-Saharan Africa on the perceptions and experiences of mothers who had given birth to preterm babies and had practiced kangaroo mother care wholly or in part at home. Qualitative studies in English and French conducted from January 1979 to March 2019 were considered for inclusion if they exclusively used qualitative research methods including, but not limited to, phenomenology, grounded theory, ethnography, action research, or feminist research.

Methods: PubMed, Embase, Web of Science, Scopus, African Index Medicus (AIM), Academic Search Complete, CINAHL Complete, Education Source, and Health Source: Nursing/Academic Edition were searched in March 2019. Eligible studies were critically appraised using the standardized JBI tool. Findings were pooled using the meta-aggregative approach, and confidence was assessed according to the ConQual approach.

Results: Following the systematic search and critical appraisal process, six studies were included in the review for data extraction and synthesis of findings. Three of the six studies were based on in-depth individual interviews, while two employed both individual interviews and focus group discussions, and one study used only focus group discussions. Twenty-six primary findings were generated from the review process that were aggregated into 10 categories, which generated four meta-synthesized findings:

i) Cultural and contextual factors: The traditional way of carrying babies on the back and providing them warmth through lighting lamps or charcoal make kangaroo mother care appear odd and shameful (level of confidence: low).
ii) The technical content of the intervention: The practice of kangaroo mother care is perceived to be technically cumbersome, especially because it has to be continuous; there is fear of making the baby's cord bleed; it creates difficulty in positioning for breastfeeding; and there is difficulty in maintaining the position while sleeping and doing other household chores (level of confidence: moderate).
iii) Health system factors: The health care systems have no clear strategies to promote kangaroo mother care at the community level. Most mothers learned about the practice for the first time from health care workers only after birthing; however, peer-to-peer information sharing was noted to be a powerful source of trusted information about kangaroo mother care. Community leaders and religious leaders could be used to promote use of kangaroo mother care (level of confidence: moderate).

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iv) Individual and family factors: Although mothers realize the importance of kangaroo mother care for their infants' recovery, their individual and family conditions affect their decision to practice the intervention (level of confidence: moderate).

Conclusions: There is a link between the perceptions and experiences of kangaroo mother care that influences its practice in sub-Saharan Africa. The health care systems have failed to create awareness among communities before the birth of a preterm neonate. The traditional practices make kangaroo mother care stigmatizing at the community level, and the practice is perceived to be difficult and cumbersome, requiring substantial social support. Strategies to make the practice less cumbersome need to be devised, focusing on the comfort of mothers. Further qualitative studies are needed to explore community-level experiences of kangaroo mother care in sub-Saharan Africa.

Keywords: kangaroo mother care; mothers; perceptions; skin to skin care; sub-Saharan Africa

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ConQual Summary of Findings

Mothers' perceptions of the practice of kangaroo mother care for preterm neonates (before 37 weeks' gestation) at home in sub-Saharan Africa

Bibliography: Bayo P, Alobo G, Sauvé C, Feyissa GT. Mothers' perceptions of the practice of kangaroo mother care for preterm neonates in sub-Saharan Africa: a systematic review of qualitative evidence. JBI Evid Synth. 2022; 20(2):297–347.

Meta-synthesized finding	Type of research	Dependability	Credibility	ConQual	Comments
Synthesized finding 1: Cultural and contextual factors: The traditional way of carrying babies on the back and providing them warmth through lighting lamps or charcoal make kangaroo mother care appear odd and shameful.	Qualitative	Moderate (scored 3/5 for the 5 criteria in all studies)	Low (Downgraded two levels)	Low	Credibility downgraded as the synthesized finding includes only four credible findings
Synthesized finding 2: The technical content of the intervention: The practice of kangaroo mother care is perceived to be technically cumbersome especially because it has to be continuous; there is fear of making the baby's cord bleed; it creates difficulty in positioning for breastfeeding; and there is difficulty in maintaining the position while sleeping and doing other household chores.	Qualitative	Moderate (scored 3/5 for the 5 criteria in all studies)	Moderate (Downgraded one level)	Moderate	Credibility downgraded as synthesized finding has a mix of two unequivocal and five credible findings
Synthesized finding 3: Health system factors: The health care systems have no clear strategies to promote kangaroo mother care at the community level. Most mothers learned about the practice for the first time from health care workers only after birthing; however, peer-to-peer information sharing was noted to be a powerful source of trusted information about kangaroo mother care. Community leaders and religious leaders could be used to promote use of kangaroo mother care.	Qualitative	Moderate (scored 3/5 for the 5 criteria in all studies)	Moderate (Downgraded one level)	Moderate	Credibility downgraded as synthesized finding has a mix of two unequivocal and four credible findings
Synthesized finding 4: Individual and family factors: Although mothers realize the importance of kangaroo mother care for their infant's recovery, their individual and family conditions affect their decision to practice the intervention (extreme anxiety and fear of harming the preterm neonate and hurting themselves negatively affect the decision, while the availability of social support from the family, prior knowledge, and experience of the advantages of kangaroo mother care positively influence the decision).	Qualitative	Moderate (scored 3/5 for the 5 criteria in all studies)	Moderate (Downgraded one level)	Moderate	Credibility downgraded as synthesized finding has a mix of five unequivocal and four credible findings

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Introduction

Although the morality rate of children younger than five years has declined significantly in the past few decades, the neonatal mortality rate has remained high, with about 7000 deaths occurring around the globe daily.[1] Approximately 46% of the global deaths among under-fives are in the neonatal period and mostly in sub-Saharan Africa and southern Asia.[2] The neonatal mortality rate in sub-Saharan Africa and southern Asia are 34 and 32 per 1000 live births, respectively, compared with 1 to 4 per 1000 live births in the world's wealthiest countries.[2,3] Preterm births with the accompanying low birth weight (LBW) account for 60% to 80% of these neonatal deaths.[4] Those preterm newborns who survive early neonatal death have a high risk of infections, developmental delays, and death at infancy or during childhood.[5] Low-income countries bear the highest burden of LBW infants, with 18 million LBW infants born annually in these countries.[6] Out of the 11 countries with preterm birth rates greater than 15%, nine are in sub-Saharan Africa.[7]

Kangaroo mother care (KMC) offers an alternative care method for LBW babies compared with conventional care that is highly technical, involving the use of an incubator, cardiopulmonary monitors, and continuous pressure ventilators.[8,9] The key components of KMC include skin-to-skin contact between the neonate and the mother's chest between the breasts, exclusive breastfeeding, emotional and physical maternal support, and early health-facility discharge for continued home practice of the intervention.[10] Kangaroo mother care has been shown to promote bonding between parent and child,[11] facilitate breastfeeding,[12] and stabilize the neonatal body temperature as well as the heart and respiratory rates.[13-15] Kangaroo mother care, therefore, does not only reduce the need for expensive equipment for neonatal care in low-resourced settings, but it also offers increased opportunities for health education and parental involvement in care provision even in high-income countries.[16]

However, despite the knowledge of the benefits of KMC, the level of practice has not achieved scale.[17,18] Many health systems disregard KMC and prefer to invest in incubator care,[19] or little time is spent by health care workers to promote its implementation,[20] while others lack the required skills to be able to support the mothers.[18] Only a limited number of health facilities in low-income countries have managed to provide a conducive environment for effective implementation of KMC.[17] There is, therefore, limited opportunity for interaction with mothers and communities to explain and understand the benefits of KMC.[21] There is also no effective follow-up of the practice in the communities, even if there is a successful initiation at the health facility.[10] For example, in Ghana, only 58% of mothers are able to practice KMC outdoors while at home after a successful initiation from the health facility.[22] Other parents are not able to offer continuous KMC, only practicing intermittently when it is convenient.[17]

There are also several barriers at the community level that have been identified by mothers and their families and associated with sociocultural backgrounds. In India, mothers feel uncomfortable while breastfeeding or while being taught KMC in groups and are unwilling to wear clothing with open fronts.[23] Some mothers have perceived medical fears, such as causing the neonate to vomit, transmitting infection to the neonate, and causing bleeding at the umbilical cord.[23] The breastfeeding component of KMC is considered a barrier by some mothers as it interferes with the skin-to-skin contact, especially if breast milk needs to be expressed.[24] The posture assumed during KMC is uncomfortable for some caregivers and results in inadequate sleep.[24] However, despite these barriers, studies have also demonstrated factors that facilitate the practice of KMC at the community level.[24,25] Access to ready family support, compassionate health care providers who guide parents through the process of KMC, and a conducive government policy environment that favors parents, such as allowing time off work, are factors that can promote KMC practice.

Unlike many other child health interventions, the success of KMC in reducing neonatal morbidity and mortality depends on adequate participation of the parents and other family members.[26] The existing systematic reviews on the practice of KMC focused on the perspectives of health care workers and the practice of KMC in health facilities.[27-30] These reviews have also combined studies from high- and low-income countries, making it challenging to explore the barriers to and facilitators of KMC practice at the community level in the context of sub-Saharan Africa.

This review aimd to close this gap and synthesize the evidence about the experiences of mothers regarding the practice of KMC at the community

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level in sub-Saharan Africa, providing an understanding of the facilitators and barriers. The findings presented in this review can act as a guide to inform development of KMC programs in sub-Saharan Africa.

Review question

What are the experiences of mothers with the practice of KMC for preterm neonates at home in sub-Saharan Africa? The secondary questions are:

i) How do women perceive the benefits of practicing KMC?
ii) What are the facilitators and barriers perceived by women?

Inclusion criteria

Participants

The review considered studies that included mothers who have given birth to preterm babies before 37 completed weeks of gestation and are practicing or have practiced KMC either fully or partially at home.

Phenomena of interest

This review considered studies that explored the perceptions, views, experiences, attitudes, and beliefs of mothers regarding the practice of KMC at home.

Context

This review only considered studies that were conducted in sub-Saharan Africa.

Types of studies

This review considered studies that exclusively used qualitative research methods including, but not limited to, designs such as phenomenology, grounded theory, ethnography, action research, and feminist research. Only studies written in English and French were included. We also considered studies in other languages if an English translation was available. Studies published from January 1979 to the search date of March 2019 were included, as KMC was first developed in 1978.[31]

Methods

This review was conducted in accordance with the JBI methodology for systematic reviews of qualitative evidence,[32] and follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.[33] The review also follows an *a priori* protocol.[34]

Search strategy

The search strategy aimed to locate both peer-reviewed publications and gray literature. An initial limited search of PubMed was undertaken, followed by analysis of the text words contained in the title and abstract, and of the index terms used to describe the articles. This informed the development of a search strategy, which was tailored for each information source. The full search strategies are presented in Appendix I. The reference lists of all studies selected for critical appraisal were screened for additional studies.

The databases searched included MEDLINE (Ovid), MEDLINE (PubMed), Embase (Ovid), Evidence-Based Medicine Reviews (Ovid), Web of Science (Clarivate Analytics), Scopus (Elsevier), African Index Medicus, Academic Search Complete (EBSCO), CINAHL Complete (EBSCO), Education Source (EBSCO), and Health Source: Nursing/Academic Edition (EBSCO). Sources of gray literature searched included JSTOR, OpenGrey, Google Scholar, and reference lists of identified articles.

Study selection

Following the search, all identified citations were collated and uploaded into EndNote v.X9.2 (Clarivate Analytics, PA, USA) and duplicates removed. Titles and abstracts were screened by two independent reviewers (PB, GA) for assessment against the inclusion criteria for the review. Studies that met or could potentially meet the inclusion criteria were retrieved in full and their details imported into the JBI System for the Unified Management, Assessment and Review of Information (JBI SUMARI; JBI, Adelaide, Australia). The full texts of selected studies were retrieved and assessed in detail against the inclusion criteria. Full-text studies that did not meet the inclusion criteria were excluded, and reasons for exclusion are provided in Appendix II. Included studies were critically appraised. The results of the search are presented in a PRISMA flow diagram[33] (see Figure 1). Any disagreements that arose between the reviewers were resolved through discussion, and there was no need for a third reviewer.

Assessment of methodological quality

Selected studies were critically appraised by two independent reviewers (PB, GA) for methodological quality using the JBI qualitative assessment and

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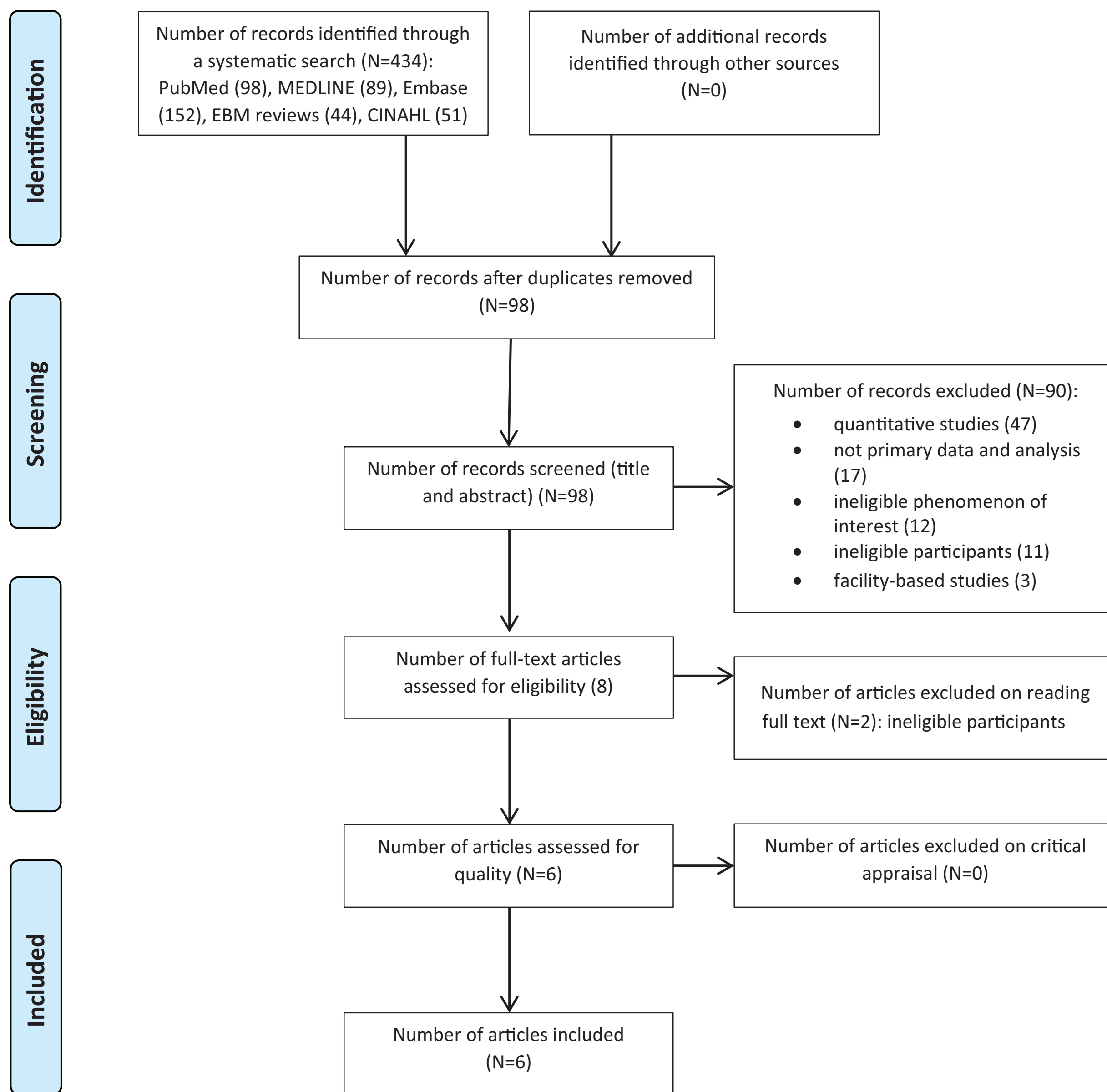

Figure 1: Search results and study selection and inclusion process[33]

review checklist.[32] Any disagreements that arose between the reviewers were resolved through discussion, and there was no need for a third reviewer. The results of critical appraisal are reported in narrative form.

All studies, regardless of the results of their methodological quality, underwent data extraction and synthesis where possible. This was to avoid missing any evidence.

Data extraction

Data was extracted from studies included in the review by two independent reviewers (PB, GA) using the standardized JBI data extraction tool.[32] The data extracted included specific details about the populations, context, culture, geographical location, study methods, and the phenomena of interest relevant to the review question. Findings and their illustrations were extracted and assigned a

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level of credibility: unequivocal, credible, or not supported.

Data synthesis

Qualitative research findings were pooled using JBI SUMARI with the meta-aggregation approach.[32] This involved the aggregation or synthesis of findings to generate a set of statements that represent that aggregation through assembling the findings and categorizing them on the basis of similarity in meaning. Findings were verbatim extracts from the author's analytic interpretations of their data accompanied by illustrations. Two or more similar findings were grouped together into a category, and an explanatory statement was constructed to convey an inclusive meaning to that group of findings. Similar categories were then synthesized into a single comprehensive synthesized finding and an overarching explanatory statement constructed to convey the whole, inclusive meaning that can be used as a basis for evidence-based practice.

Assessing confidence in the findings

The final synthesized findings were graded according to the ConQual approach for establishing confidence in the output of qualitative research synthesis and presented in a Summary of Findings.[35] The Summary of Findings includes the major elements of the review and details how the ConQual score is developed. Each synthesized finding from the review is presented along with the type of research informing it, a score for dependability, a score for credibility, and the overall ConQual score.

Results

Study inclusion

From our database search, 434 publications were identified. After removing duplicates, 98 articles were left for screening of titles and abstracts. Of these, 90 articles were excluded: 47 used quantitative methods, 17 did not use a primary data analysis, 12 had a different phenomenon of interest, 11 had different participants, and three were facility-based studies. Of the eight studies remaining, two were eliminated after full-text screening (Appendix II) because they both included ineligible participants (ie, health workers). Finally, there were six articles eligible for inclusion in the review. Figure 1 presents the study selection process for inclusion in the review.

Methodological quality

Overall, the methodological quality of all the included studies was rated as moderate using the JBI-QARI critical appraisal checklist for interpretive and critical research.[32] None of the included studies stated a clear alignment between the methodology and philosophical perspective; however, all the studies demonstrated congruity between methodology and research questions, data collection methods, representation and analysis of data, and interpretation of results. None of the studies adequately located the researcher either culturally or theoretically, nor did they state the influence of the researcher on the research and/or vice versa. All the studies presented the participants and their voices adequately, and the conclusions drawn in the research reports originated from the analysis and/or interpretation of the data.

As stated previously, all studies, regardless of the results of their methodological quality, underwent data extraction and synthesis. We could not take our ratings as concrete proxies for quality of research as they were based entirely on our interpretation of the included data or lacking information. Moreover, journal length and editorial requirements could have impacted the depth of methodological information provided.

Characteristics of included studies

The characteristics of included studies are summarized in Appendix III. All the included studies were published after 2000 with 50% published between 2010 and 2018. Three of the six studies were based on in-depth individual interviews,[36-38] while two used both individual interviews and focus group discussions,[25,39] and one study used only focus group discussions.[40] Two of the studies were from South Africa,[37,38] and one each from Uganda,[39] Malawi,[25] Zimbabwe,[40] and Ghana.[36] Three of the studies were conducted in rural settings[25,36,39] while others[37,38,40] were in an urban setting. The phenomena of interest in all the studies were experiences and/or views and/or perceptions of KMC.

In three studies,[37,38,40] participants were recruited from a health facility setting while in the others,[25,36,39] recruitment was done from the community. All studies included mothers who had either practiced KMC previously or were currently practicing it for their preterm neonates; however, in 50% of the studies,[25,38,39] other participants were also involved,

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including fathers to preterm neonates, health workers, and community health workers whose views/perceptions are not included in further analysis of this review.

Review findings

Synthesized finding 1: Cultural and contextual factors

The traditional way of carrying babies on the back and providing them warmth through lighting lamps or charcoal make KMC appear odd and shameful.

This finding was synthesized from two categories that were derived from four primary findings (all credible), which were supported by illustrations taken directly from the papers[36,37,39,40] that represented the voices of the participants on the practice of KMC (see Table 1).

Traditional practices of how to carry neonates and how to provide warmth for neonates act as barriers to KMC practice. Neonates are traditionally carried on the back and mothers consider it odd and shameful to carry them on the chest.

> "*We don't do it like that! The people outside would even laugh if I go out in that state [with the baby in STSC position]. I would be staying indoors for one month after the baby is born, so someone else should explain that [practice] to them.*"[36(p.45-6)]

The mothers also feared stigmatizing comments/reactions from neighbors and other community members. Some felt that the community just did not understand them, while some members of the community thought that these mothers were using their chest to hide stolen property. This stigma also limited the participation of male partners in the practice; for example, in one of the studies reviewed, men felt more comfortable doing KMC at home than in the hospital environment:

Table 1: Synthesized finding 1: Cultural and contextual factors

Findings	Categories	Synthesized finding
The mothers considered the position of the neonate in KMC as odd and shameful (C)	KMC technique creates a stigma among the mothers in the community	The traditional way of carrying babies on the back and providing them warmth through lighting lamps or charcoal make KMC appear odd and shameful
Friends', neighbours', and communities' reactions to kangaroo care: Mothers feared stigmatizing comments from these groups as some of them thought mothers were hiding stolen property in their chests (C)		
Care for preterm babies at community level: Although the need for warm care for a preterm baby was well known among the respondents, community members had little knowledge on STS care or KMC. The generation of warmth was improvised through covering and wrapping babies in many clothes, lighting lamps and charcoal stoves placed under the baby's bed, and hot water jerry cans or plastic bottles put in close proximity to the baby (C)	Existence of traditional methods to keep neonates warm	
Husbands' reactions to kangaroo care at home: Many mothers said their husbands were very supportive of the kangaroo care method; however, some said their husbands were not keen on the method (C)		

C, credible; KMC, kangaroo mother care; STS, skin-to-skin

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"*At home I didn't have spectators … I felt at peace and I could hold her and put her on me and it was beautiful.*"[37(p.23)]

Although relatives were generally supportive and helped the mothers with household chores, they were said to be very inquisitive and subjected the mothers to a lot of questions.[40]

Some communities already have traditional ways to provide warmth to their babies, and some of these practices are approved and sometimes taught to the women by health care workers. The need for providing the infant with warmth was, therefore, well known among the community members and health workers, but there was little knowledge on KMC and poor appreciation of the need for the practice among both groups.

"*The midwife told us to cover the baby in a clean place, not to bathe it, to get cooking oil and a clean cloth and smear it always. She also told us to put a lamp or a charcoal stove where it sleeps so that it gets some warmth and never to remove it from its cover or bed till after one month.*"[39(p.1144)]

Some of the negative comments were made by the male partners. Although most mothers reported good support from their partners, some women reported that their husbands were not keen on the method:

"*Preterm infants have always been there and so what's new, why change the method of care.*"[40(p.132)]

Synthesized finding 2: The technical content of the intervention

The practice of KMC is perceived to be technically cumbersome, especially because it has to be continuous; there is fear of making the baby's cord to bleed; it creates difficulty in positioning for breastfeeding; and there is difficulty in maintaining the position while sleeping and doing other household chores.

This finding was synthesized from three categories that were derived from seven primary findings (two unequivocal and five credible), which were supported by illustrations taken directly from the papers[36,37] that represented the voices of the participants on the practice of KMC (see Table 2).

The mothers perceived the practice to be cumbersome to implement, labor-intensive, technically difficult to get a resting position for the mother and a position to breastfeed adequately, and they feared for the safety of the neonate and self. The mothers are used to the cradle hold position for breastfeeding and are not willing to adopt new positions. They also thought that the practice restricted them to one position for a long time and this was unhealthy for them.

The living-in dominated the mothers' lives:

"*All the time you have your baby with you … sleep with you, eat with you, walk with you.*"[37(p.24)]

"*I would not want to sit for long because it will cause waist pains, but if I had to use something to sit against then I will try it.*"[36(p.46)]

Some mothers feared that their babies would fall when they stood up or moved during KMC or that they might hurt the umbilicus of the neonate. Some feared postpartum pain in themselves.

"*I could not do that until the cord has fallen off after the first week [of the baby's life], it could cause pain and bleeding to the cord.*"[36(p.45)]

"*I thought I would feel some pains but when I tried it I had no pains in the chest, breast or stomach. I was surprised after I tried it but it seemed the baby liked it because he kept quiet when placed there.*"[36(p.45)]

Kangaroo mother care was also perceived to be labor-intensive and time-consuming considering the other demands of the household. In most settings of the studies reviewed, the gender roles placed the mothers in positions where they received minimum assistance from their male partners with household chores.

"*Well obviously I've got a husband and another child at home, and obviously have to cook … you have to clean and do a lot of other things, besides looking after yourself and the baby.*"[37(p.22)]

"*It is tiresome because day, night, day, night, you can even become sick. You can even start bleeding again.*"[39(p.1144)]

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Table 2: Synthesized finding 2: The technical content of the intervention

Findings	Categories	Synthesized finding
Adjustments, roles, and responsibilities: Provision of 24-hour KMC created extra work, roles, and responsibilities (U)	KMC is labor-intensive and time-consuming	The practice of KMC is perceived to be technically cumbersome, especially because it has to be provided continuously; there is fear of making the baby's cord bleed; it creates difficulty in positioning for breastfeeding; and there is difficulty in maintaining the position while sleeping and while doing other household chores
The challenges for caring for preterm babies included: increased workload for women; labor-intensive, time-consuming, and tiring care; limited male involvement other than financial support; expenses because of the need to buy fuel (charcoal and paraffin) and oil to smear on the baby; accessing care at a facility when the infant is sick; and the nature of rural homes (small, congested, and dusty) (C)		
Some mothers feared that their babies would fall when they stood up or moved during KMC or that they might hurt the umbilicus of the neonate (U)	Fears about injury to the neonate and self	
Possible problems to the promotion of KMC practice at the community level that were mentioned in FGDs included fear of hurting the baby because ''the cord is still fresh''; women need to work yet ''the baby has to be in the chest all the time"; and the perception that KMC is tiring (C)		
Women observed in the study always used the cradle hold position for breastfeeding their baby and were not very receptive to trying out other breastfeeding positions (C)	Technical difficulty	
They thought that the practice hooked them in one position for a long time and this was unhealthy for them (C)		
Some mothers did say that it was difficult to sleep with an infant on their chest at first, but they had persevered for the sake of the infant. A few others said it took time to get used to cooking and doing other household chores with an infant on their chest (C)		

C, credible; FGDs, focus group discussions; KMC, kangaroo mother care; U, unequivocal

Synthesized finding 3: Health system factors

The health care systems have no clear strategies to promote KMC at the community level; most mothers learned about the practice for the first time from health care workers only after birthing; however, peer-to-peer information sharing was noted to be a powerful source of trusted information about KMC and the community leaders and religious leaders could be used to promote use of KMC.

This finding was synthesized from two categories that were constructed from six primary findings (two unequivocal and four credible) supported by

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Table 3: Synthesized finding 3: Health system factors

Findings	Categories	Synthesized finding
Sources of information on preterm birth and KMC: Despite health facilities and health workers being the primary trusted sources of health information in general, peer-to-peer information sharing was the major source of information on KMC for pregnant women (C)	Sources and timing of information to mothers on KMC	The health care systems have no clear strategies to promote the practice at the community level. Most mothers learned about the practice for the first time from health care workers only after birthing; however, peer-to-peer information sharing is a powerful source of trusted information about KMC. Community leaders and religious leaders could also promote use of KMC
Timing of education on KMC: It was only following delivery that they learned the specifics of this practice and were trained on how to do it (U)		
Men's involvement in KMC: Men were often left out of the conversation about preterm babies and KMC (C)	Promotion of KMC	
Role of community leaders: Enforcing penalties against those engaging in child marriage, partnering with health workers to promote family planning and counseling on preterm birth, holding community meetings on preterm births and KMC, and creating a network of leaders to better address the issue (U)		
Role of religious leaders: Can encourage the family to take care of the preterm baby and assist them with their needs, both spiritual and monetary (C)		
Mothers' recommendations about care of preterm infants: Mothers suggested the method be promoted through drama, radio, and television (C)		

C, credible; KMC, kangaroo mother care; U, unequivocal

illustrations taken directly from the papers[25,40] that represented the voices of the participants on the practice of KMC (see Table 3).

The health care system's timing of KMC education for mothers was perceived to be too late. The mothers received no information during pregnancy about preterm labor or premature neonates and no information about KMC to help them survive. It was only following birth that they learned the specifics of this practice and were trained on how to do it. The mothers were, therefore, not mentally ready for what to expect and felt overwhelmed with anxiety.

> *"I didn't know anything until the time my baby was born."*[25(p.5)]

> *"We had never learnt about it [KMC], but when the babies were born, the doctors taught us about it."*[25(p.5)]

Peer-to-peer information sharing was a major facilitating factor for the practice of KMC among mothers, even if the health care system was still the major source of trusted health information in general.

> *"My friend's sister was the one who was helping me and advising me on how to take care of my*

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child since she also has the child who was born before the expected time of delivery."[25(p.4)]

The mothers thought mass campaigns on kangaroo care for communities and the public were urgently needed. They perceived that communities and their leaders could play a greater role in promoting KMC. They suggested that the method could be promoted through drama, radio, and television.

"Mothers who practiced kangaroo care before should be used in drama sessions, for example for a production on 'parents day' at schools."[40(p.132)]

"Mass campaigns on kangaroo care for communities and the public were urgently needed."[40(p.133)]

The mothers also thought that their community leaders had a huge role to play in mobilizing the community members to practice KMC. They urged their leaders to partner with health care workers to hold community meetings, counsel families on preterm birth, and create a network of leaders to better tackle the challenge.

"What is important for the leaders is to come together, to work together and sensitize each other and the people in the community about different programs."[25(p.5)]

"They must convene meetings to tell the people about this so that if it happens to anyone, they must attach the baby to their stomach."[25(p.6)]

"If the chief mobilizes the community, everyone will be present and able to listen and get the information through community drama, songs, poems and the like."[25(p.6)]

The women also believed that religious leaders could be a big source of encouragement to the families of preterm babies and assist them in their spiritual needs.

"They have the power to advise people even in churches because a lot of [...] women gather there, so the church can offer advice."[25(p.6)]

"They should also encourage their flocks to take care of the preterm babies, they should advise them the advantages of taking care of the children and the good thing about skin to skin care practice."[25(p.6)]

Synthesized finding 4: Individual and family factors

Although mothers realize the importance of KMC for their infant's recovery, their individual and family conditions affect their decision to practice the intervention (extreme anxiety and fear of harming the preterm neonate and hurting themselves negatively affect the decision, while the availability of social support from the family, prior knowledge, and experience of the advantages of KMC positively influence the decision).

This finding was synthesized from three categories that were derived from nine primary findings (five unequivocal and four credible) supported by illustrations taken directly from the articles[25,36-38] that represented the voices of the participants on the practice of KMC (see Table 4).

The anxiety brought on by sudden delivery of a preterm neonate who is so small takes hope away from the mothers and they lose confidence in themselves. The families are not able to deal with the unexpected early termination of pregnancy, and they are often not certain about the survival of the neonate. They had low motivation to learn a new intervention and doubted its promise to guarantee the survival of their neonates.

"I was so afraid of KMC as it was the first time, I was seeing it being done."[38(p.64)]

" – yes, I did have a doubt, I doubted whether KMC would work."[38(p.64)]

However, this feeling seems to change with time; through the process of learning about KMC and gaining the skills needed, many parents involved in the practice noted a shift in their perceptions. Kangaroo mother care seemed to facilitate an emotional connection with the neonate. The initial apprehension before KMC was soon replaced by excitement and elation, especially after observing their babies gain weight:

"My first experience with kangaroo caring [for] her... when I took her out and put her against

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Table 4: Synthesized finding 4: Individual and family factors

Findings	Categories	Synthesized finding
Unforeseen, unprepared, and uncertain – the experience of birth: Parents have to deal with loss and grief related to the early and abrupt termination of pregnancy, feelings of emptiness, uncertainty regarding the infant's prognosis, and fear related to touch (C)	Extreme fear and anxiety about the preterm baby and self	Although mothers realize the importance of KMC for their infants' recovery, their individual and family conditions affect their decision to practice the intervention (extreme anxiety and fear of harming the preterm neonate and hurting themselves negatively affect the decision while the availability of social support from the family, prior knowledge, and experience of the advantages of KMC positively influence the decision)
Feelings before KMC: Mothers described their feelings before starting KMC as being afraid, anxious, or confused (C)		
Living-in challenges: The KC ward confines the mother's world to a bed permanently raised at a 45-degree angle in a room shared with seven other mother-infant couples. The living-in dominated the mothers' lives (C)	Social support perceived by mothers	
A network of encouragement and support: Relatives were said to be very inquisitive, asking a lot of questions, but were usually supportive and helped with household chores so that the mother could attend to the infant (U)		
Shifting perceptions: Through the process of learning about KMC and gaining these skills, many parents involved in the practice noted a shift in their perceptions (U)		
Management of the mothers: Mothers felt that the nursing staff in the health facilities had been a pillar of strength to them. Mothers acknowledged and described the encouragement that they had received from other mothers (C)		
Prior knowledge of advantages of kangaroo care: Women understood that the method was useful for keeping the infant warm, enhancing mother–baby bonding, and for closely monitoring the condition of the baby and early detection of "colour" changes, breathing difficulties, vomiting, and choking (U)	Knowledge of the advantages of KMC, and especially the observation of weight gain by their preterm neonates, is a motivating factor to mothers	
An intimate connection: Despite the initial anxiety and environmental barriers, KMC facilitated a special connection between parent and infant. In addition, to the feelings of excitement generated by the weight gain, feelings of emotional calmness and tranquility were also expressed (U)		
During KMC: Despite some apprehension by mothers prior to commencing KMC, mothers acknowledged feelings of elation and excitement whilst practicing KMC. It was usually the baby's weight gain that triggered this response. In addition to the feelings of excitement generated by the weight gain, feelings of emotional calmness and tranquility were also expressed (U)		

C, credible; KC, kangaroo care; KMC, kangaroo mother care; U, unequivocal

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my skin, it was just . . . a great sense of relief for the first time really I felt bonded with her, that it was my daughter. So I think that kangaroo care helps to bridge that initial . . . gap that is between a mother and her preterm baby."[37(p.21)]

"Ah! The bond, the feeling. I can't explain how special it was."[38(p.65)]

"[My family] also saw that after being cared for and weighed, the baby was improving. This made everyone encourage me to keep the baby attached to the chest."[25(p.8)]

When constructively engaged, relatives, friends, and other support structures can encourage mothers to continue with KMC practice. Emotional support from both relatives and health care workers, as well as from other peers, was noted to be vital during the stressful times when they fear that their neonates might die.

"I wouldn't have gone through with it if it wasn't for the Sisters (registered midwives)."[38(p.65)]

Mothers also valued the encouragement they received from peers and they supported one another with words such as:

"*Don't be frightened, just be positive, it is very good. You will find that it works*."[38(p.65)]

The mothers felt that their husbands were very inquisitive, asking a lot of questions about the practice, but were usually supportive and helped with household chores so that the mother could attend to the infant.

"This is new! We have not seen this before, but if it is good for the baby we will do it."[36(p.47)]

However, the health care system does not usually involve men at the initiation of KMC at the health facility. This leaves a gap in the knowledge and lack of responsibility for the practice on the side of the male partner.

"The problem with men is that they don't go inside the room or ward when their wives or relatives are in the [KMC] ward but instead they stay outside and call their relatives to see them whilst there."[25(p.5)]

Despite the difficulties perceived by the mothers in practicing KMC, a positive experience of the advantages gave them a reason to persevere. They understood that the method was useful for keeping the infant warm, enhancing mother–baby bonding, and closely monitoring the condition of the baby regarding breathing difficulties, vomiting, and choking. Weight gain by the neonate was a major motivating factor to continue practicing KMC.

"Kangaroo care has become so much part of me now. I am now owning this thing. I was thinking what was kangaroo care? It was nothing up in the sky, it was nothing other than what I was doing, all the other ideas, the breathing and the posture were part of it, and I developed it for myself so that it became more meaningful."[37(p.22)]

Discussion

This review collates the available qualitative data from sub-Saharan Africa on mothers' perceptions of KMC practice for preterm neonates at home, and presents a set of related factors that enhance and/or hinder the practice. Figure 2 shows a summary of these factors to illustrate the links.

In this review, mothers reported being told about KMC for the first time only after birthing a preterm baby,[25] and that they perceived the practice to be cumbersome and time-consuming compared with other traditional and cultural alternatives of looking after neonates.[40] In a quantitative study in eastern Ethiopia, although 100% of the mothers had heard about KMC, up to 30% did not know the main benefit of KMC.[41] In this same study, 69% of mothers did not know how long KMC was meant to be practiced and most of the respondents (58%) mentioned a lack of knowledge regarding KMC as the main barrier to the practice of KMC.[41]

This lack of knowledge about KMC among mothers may reflect a general health system gap. The women acknowledged the health system as the trusted source of information, for example, but they gained much more encouragement and confidence from their peers, as also demonstrated in randomized controlled trials elsewhere.[42,43] The presence of clear policy guidelines that promote community

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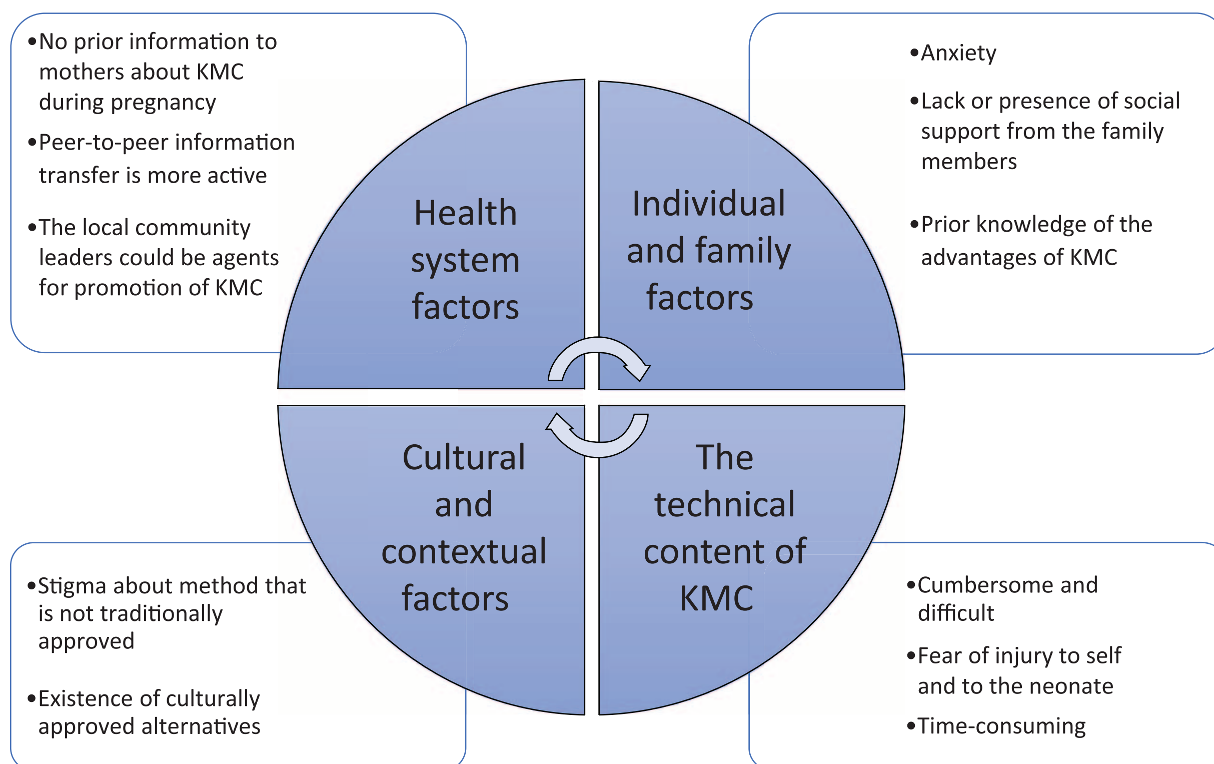

Figure 2: The linkages between the perceptions of women on the practice of kangaroo mother care (KMC) for preterm neonates at home in sub-Saharan Africa

involvement and engagement to understand the benefits of KMC are likely to increase awareness of the practice. It has already been determined, for example, that where health workers had adequate skills and believed in the benefits of KMC, mothers received more opportunities to learn and practice the intervention.[26] In a multi-country study, the absence of a national KMC policy and/or dissemination of KMC service guidelines – even in health facilities – was identified as a major bottleneck to the increased implementation of KMC practice.[17] This study states that, overall, KMC is not prioritized by authorities and institutionalization of the practice has failed in most countries.

The findings in this review showed that mothers were anxious about the survival of their preterm babies, no matter what the interventions were; had lost hope; and felt inadequate. As shown in other literature, many cultures ascribe to women the role of "giving life" and mothers feel guilty, sad, and anxious if this life comes in the form of a preterm baby who may not survive; some consider it a form of supernatural punishment.[44] Preterm birth is associated with significant mental health challenges, especially depression, anxiety, and maternal distress, that affect the concentration of the mothers to practice interventions such as KMC, including exclusive breastfeeding.[45,46] It has also been shown that some mothers who are highly anxious and distressed show little emotional warmth in their interaction with their neonates.[47]

Practicing KMC as recommended is perceived to be difficult, cumbersome, and could potentially cause injury to the neonate and pose breastfeeding challenges. Similar findings have been reported in another review that included studies from both high- and low-income countries.[28] Despite these expressed difficulties, KMC programs in low-income countries have failed to devise means to make it easier for mothers to practice the intervention. A study in Uganda showed that mothers maintained a skin-to-skin position for an average of only three hours per day compared with 20 hours per day recommended by the World Health Organization.[48] A

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recent study in Malawi has shown how women found a customized KMC wrap very comfortable, which increased the duration mothers kept their babies in skin-to-skin positions.[49]

Quantitative studies have already proved that peer support improves the confidence of mothers with preterm babies, and thus increases implementation of the intervention.[42] This is important especially in many lower-income countries where many births still take place outside health institutions and where LBW infants are common, and clinical assessments of weight and breathing cannot be done easily.[50,51] Even for those who give birth in a health institution and receive counseling from health workers, the motivation to continue practicing from home is sometimes low.[52] In Bangladesh, neonatal health was significantly improved only when skin-to-skin contact was for seven or more hours per day and this, in turn, was associated with having made contacts with community workers during pregnancy.[53] These community workers were specially trained on KMC and made contacts with the pregnant women in their communities to educate and encourage them to practice KMC.

The birth of a preterm neonate and the need to practice KMC brings unique challenges to the family. In this review, the women expressed the need for support from their spouses and other family members to participate in the skin-to-skin care, take care of other children in the household, and perform other household chores.[25] Another study in a similar setting showed that the availability of help with other household responsibilities and other family members offering skin-to-skin care were important in increasing the duration of KMC practice.[54] The husband's will and that of other close relatives to support the mothers in practicing KMC depended on the belief in or experience of the benefits of the intervention. After an initial sense of anxiety, fear, and self-blame,[37] the husbands were cooperative and willing to support their wives – even in providing the skin-to-skin care – when they noticed the neonates gaining weight.[25] So even if social norms exist that delineate roles and do not allow husbands to actively participate in skin-to-skin care or directly help with household chores,[27,30] they are likely to overcome these norms and offer social support and motivate the mothers to practice KMC for longer periods of time.

Although the main source of information for mothers about how to practice KMC is the professional health care system, they rely on members of the community close to them, especially their peers who have experienced the benefits of KMC. The studies in this current review also discussed the benefit of involving influential community leaders, such as the traditional chiefs and religious leaders to create awareness of KMC.[25] The women have argued that these leaders are capable of mobilizing the communities and are more likely to be listened to, so involving them in mass campaigns during public gatherings or on radio talk shows, for example, could lead to behavior change.

This argument recognizes that KMC practice can be influenced by the behavior of the mother, partner, or other family members. However, behavior change can result from the conscious, rational decision of an individual under internal constraints that pushes them towards behaviors that facilitate their participation in KMC. It can also be a result of external pressure and supervision to observe social norms for collective social capital.[55] The conscious, rational, individual decisions also depend on access to knowledge, which the community leaders can be trained to provide, and the establishment of social norms. In a clinical trial in Bangladesh, community workers were trained to create awareness of KMC among pregnant women and those who were in immediate puerperium.[43] About 94% of women who had made contact with community workers during pregnancy practiced continuous KMC for more than seven hours a day.

Limitations

This review had significant limitations. First, there was a dearth of qualitative evidence in sub-Saharan Africa about women practicing KMC solely at home. There is a substantial number of quantitative studies, especially in the health care systems, that did not necessarily provide evidence on mothers practicing KMC at home. Secondly, this review was limited to studies in English and French, which meant that studies published in other languages were ineligible. Additionally, the included studies underwent data extraction regardless of their methodological quality. This may have affected the accuracy or the completeness of the findings reported in those studies; however, this ensured that no experiences expressed by women were ignored in this review.

Conclusions

This review identified a link between mothers' perceptions and experiences of KMC and the influence

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on its practice in sub-Saharan Africa. The health care systems have failed to create awareness of KMC among communities before the birth of a preterm neonate; the traditional practices make KMC stigmatizing at a community level; and KMC is perceived to be difficult and cumbersome, requiring substantial social support. Strategies to make KMC less cumbersome need to be devised, and more qualitative studies are needed to explore community-level experiences of KMC in sub-Saharan Africa.

Recommendations for practice

This review has generated recommendations based on the illustrations, findings, categories, and the synthesized findings from the available qualitative evidence. The intention is to provide evidence to inform policy and practice to improve the uptake of KMC by the mothers of preterm neonates in sub-Saharan Africa.

Health care systems need to develop and implement deliberate KMC information, education, and communication strategies to be delivered to the communities much earlier during and/or before pregnancy. Mothers who have benefited previously from KMC intervention can be champions to communicate the information on KMC, such as on radio talk shows or dramas. The community leaders, including religious and traditional leaders, can be key in mobilizing communities to practice KMC, especially advocating for male and other family members' involvement, dispelling the associated stigma attached to the practice. The health care systems should seek to understand the components of the intervention that make it cumbersome and focus on developing strategies to improve the comfort of the mother, as well as increase the availability and accessibility of devices for safely holding preterm neonates while performing other household chores, and educating mothers on their use. The policy environment should outline processes and communication strategies to address the feelings of anxiety about KMC.

Recommendations for research

This review focused on the perceptions and experiences of mothers practicing KMC at home and highlights key issues that are interlinked: the practice of the KMC is stigmatizing in the communities, and is also considered to be technically cumbersome, so the mothers resort to traditional and cultural alternatives that have not been tested. However, there is a paucity of evidence on KMC practice at home. Further research is needed to have a deeper understanding of mothers' varying acceptance of KMC and the behaviors, assumptions, and cultures that may influence the practice. The research should focus on the cultural factors that may influence the practice of KMC. There should also be focus on strategies to make KMC less cumbersome and improve the mother's comfort while practicing KMC.

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Appendix I: Search strategy

CINAHL (EBSCO)

Search date: March 22, 2019

#	Question	Records retrieved
S1	(MH "Infant, Low Birth Weight") OR (MH "Infant, Very Low Birth Weight")	9788
S2	(MH "Childbirth, Premature") OR (MH "Infant, Premature")	27,116
S3	(MH "Labor, Premature")	2803
S4	low birth weight	12,808
S5	preterm	25,673
S6	premature	44,970
S7	(S1 OR S2 OR S3 OR S4 OR S5 OR S6)	58,970
S8	developing countr*	24,332
S9	developing nation*	753
S10	developing population*	88
S11	developing world*	1879
S12	less developed countr*	233
S13	less developed nation*	10
S14	less developed population*	0
S15	less developed world*	8
S16	lesser developed countr*	11
S17	lesser developed nation*	0
S18	lesser developed population*	0
S19	lesser developed world*	0
S20	under developed countr*	16
S21	under developed nation*	1
S22	under developed population*	0
S23	under developed world*	1
S24	underdeveloped countr*	116
S25	underdeveloped nation*	12
S26	underdeveloped population*	1
S27	underdeveloped world*	6
S28	low income countr*	2109
S29	low income nation*	20
S30	low income population*	617
S31	lower income countr*	159
S32	lower income nation*	3

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(*Continued*)

#	Question	Records retrieved
S33	lower income population*	25
S34	underserved countr*	16
S35	underserved nation*	9
S36	underserved population*	1464
S37	underserved world*	1
S38	under served countr*	1
S39	under served nation*	1
S40	under served population*	44
S41	under served world*	0
S42	deprived countr*	8
S43	deprived nation*	1
S44	deprived population*	113
S45	deprived world*	0
S46	poor countr*	614
S47	poor nation*	74
S48	poor population*	137
S49	poor world*	17
S50	poorer countr*	113
S51	poorer nation*	17
S52	poorer population*	17
S53	poorer world*	0
S54	developing econom*	83
S55	less developed econom*	2
S56	lesser developed econom*	0
S57	under developed econom*	0
S58	underdeveloped econom*	4
S59	middle income econom*	17
S60	low income econom*	8
S61	lower income econom*	0
S62	low gdp	20
S63	low gnp	0
S64	low gross domestic	8
S65	low gross national	2
S66	lower gdp	9

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(*Continued*)		
#	Question	Records retrieved
S67	lower gnp	0
S68	lower gross domestic	3
S69	lower gross national	1
S70	lmic	1288
S71	lmics	1288
S72	third world	490
S73	lami countr*	12
S74	transitional countr*	66
S75	cote d'ivoire	377
S76	cabo verde	12
S77	eastern africa	100
S78	western africa	87
S79	east africa	498
S80	west africa	1280
S81	central africa	257
S82	sub-saharan africa	4994
S83	subsaharan africa	11
S84	zimbabwe	1580
S85	zambia	1783
S86	uganda	4897
S87	togo	194
S88	gambia	525
S89	tanzania	3654
S90	swaziland	408
S91	sudan	1466
S92	south sudan	201
S93	south africa	19,208
S94	somalia	858
S95	sierra leone	880
S96	seychelles	99
S97	rwanda	1058
S98	"republic of the congo"	743
S99	nigeria	7375
S100	niger	651

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(*Continued*)		
#	Question	Records retrieved
S101	namibia	361
S102	"sao tome and principe"	3
S103	mozambique	886
S104	mauritius	172
S105	mali	633
S106	malawi	2509
S107	madagascar	371
S108	liberia	614
S109	lesotho	258
S110	kenya	5034
S111	ivory coast	62
S112	guinea-bissau	178
S113	guinea	3494
S114	ghana	3455
S115	gabon	190
S116	ethiopia	4002
S117	eritrea	155
S118	equatorial guinea	41
S119	djibouti	73
S120	"democratic republic of the congo"	730
S121	comoros	32
S122	chad	387
S123	central african republic	146
S124	cameroon	1235
S125	burundi	162
S126	botswana	850
S127	benin	558
S128	angola	341
S129	(MH "Africa") OR (MH "Africa, Western") OR (MH "South Africa") OR (MH "Namibia") OR (MH "Africa, Central") OR (MH "Cameroon") OR (MH "Chad") OR (MH "Democratic Republic of the Congo") OR (MH "Gabon") OR (MH "Africa, Eastern") OR (MH "Burundi") OR (MH "Eritrea") OR (MH "Rwanda") OR (MH "Sudan") OR (MH "Uganda") OR (MH "Africa, Southern") OR (MH "Angola") OR (MH "Lesotho") OR (MH "Swaziland") OR (MH "Zimbabwe") OR (MH "Burkina Faso") OR (MH "Gambia") OR (MH "Ghana") OR (MH "Guinea-Bissau") OR (MH "Mali") OR (MH "Nigeria") OR (MH "Togo") OR (MH "Malawi")	46,455

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(*Continued*)

#	Question	Records retrieved
S130	S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36 OR S37 OR S38 OR S39 OR S40 OR S41 OR S42 OR S43 OR S44 OR S45 OR S46 OR S47 OR S48 OR S49 OR S50 OR S51 OR S52 OR S53 OR S54 OR S55 OR S56 OR S57 OR S58 OR S59 OR S60 OR S61 OR S62 OR S63 OR S64 OR S65 OR S66 OR S67 OR S68 OR S69 OR S70 OR S71 OR S72 OR S73 OR S74 OR S75 OR S76 OR S77 OR S78 OR S79 OR S80 OR S81 OR S82 OR S83 OR S84 OR S85 OR S86 OR S87 OR S88 OR S89 OR S90 OR S91 OR S92 OR S93 OR S94 OR S95 OR S96 OR S97 OR S98 OR S99 OR S100 OR S101 OR S102 OR S103 OR S104 OR S105 OR S106 OR S107 OR S108 OR S109 OR S110 OR S111 OR S112 OR S113 OR S114 OR S115 OR S116 OR S117 OR S118 OR S119 OR S120 OR S121 OR S122 OR S123 OR S124 OR S125 OR S126 OR S127 OR S128 OR S129	100,834
S131	(MH "Kangaroo Care")	1054
S132	kangaroo care	1133
S133	"skin to skin"	1392
S134	kangaroo mother care	225
S135	kangaroo mother method	18
S136	kangaroo mother	254
S137	S131 OR S132 OR S133 OR S134 OR S135 OR S136	2158
S138	**S7 AND S130 AND S137**	**51**

Embase (Ovid)

Search date: March 22, 2019

1 low birth weight/ (33,140)

2 very low birth weight/ (11,430)

3 extremely low birth weight/ (2949)

4 prematurity/ (92,592)

5 premature labor/ (41,902)

6 low birth weight.kw,tw. (33,000)

7 preterm.kw,tw. (92,829)

8 premature.kw,tw. (144,036)

9 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 (280,274)

10 developing countr*.kw,tw. (72,092)

11 developing nation*.kw,tw. (3447)

12 developing population*.kw,tw. (348)

13 developing world*.kw,tw. (10,331)

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14 less developed countr*.kw,tw. (1373)
15 less developed nation*.kw,tw. (69)
16 less developed population*.kw,tw. (3)
17 less developed world*.kw,tw. (67)
18 lesser developed countr*.kw,tw. (53)
19 lesser developed nation*.kw,tw. (9)
20 lesser developed population*.kw,tw. (0)
21 lesser developed world*.kw,tw. (1)
22 under developed countr*.kw,tw. (176)
23 under developed nation*.kw,tw. (7)
24 under developed population*.kw,tw. (3)
25 under developed world*.kw,tw. (6)
26 underdeveloped countr*.kw,tw. (1161)
27 underdeveloped nation*.kw,tw. (90)
28 underdeveloped population*.kw,tw. (11)
29 underdeveloped world*.kw,tw. (55)
30 low income countr*.kw,tw. (7114)
31 low income nation*.kw,tw. (95)
32 low income population*.kw,tw. (1626)
33 lower income countr*.kw,tw. (518)
34 lower income nation*.kw,tw. (8)
35 lower income population*.kw,tw. (85)
36 underserved countr*.kw,tw. (42)
37 underserved nation*.kw,tw. (23)
38 underserved population*.kw,tw. (3793)
39 underserved world*.kw,tw. (5)
40 under served countr*.kw,tw. (7)
41 under served nation*.kw,tw. (1)
42 under served population*.kw,tw. (126)
43 under served world*.kw,tw. (0)
44 deprived countr*.kw,tw. (31)
45 deprived nation*.kw,tw. (11)
46 deprived population*.kw,tw. (358)

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47 deprived world*.kw,tw. (0)
48 poor countr*.kw,tw. (2707)
49 poor nation*.kw,tw. (252)
50 poor population*.kw,tw. (559)
51 poor world*.kw,tw. (72)
52 poorer countr*.kw,tw. (342)
53 poorer nation*.kw,tw. (51)
54 poorer population*.kw,tw. (66)
55 poorer world*.kw,tw. (3)
56 developing econom*.kw,tw. (551)
57 less developed econom*.kw,tw. (18)
58 lesser developed econom*.kw,tw. (1)
59 under developed econom*.kw,tw. (2)
60 underdeveloped econom*.kw,tw. (18)
61 middle income econom*.kw,tw. (69)
62 low income econom*.kw,tw. (46)
63 lower income econom*.kw,tw. (2)
64 low gdp.kw,tw. (191)
65 low gnp.kw,tw. (7)
66 low gross domestic.kw,tw. (27)
67 low gross national.kw,tw. (10)
68 lower gdp.kw,tw. (62)
69 lower gnp.kw,tw. (1)
70 lower gross domestic.kw,tw. (12)
71 lower gross national.kw,tw. (5)
72 lmic.kw,tw. (1920)
73 lmics.kw,tw. (2843)
74 third world.kw,tw. (3510)
75 lami countr*.kw,tw. (48)
76 transitional countr*.kw,tw. (222)
77 cote d'ivoire.kw,tw. (2307)
78 cabo verde.kw,tw. (64)
79 eastern africa.kw,tw. (984)

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80 western africa.kw,tw. (751)
81 east africa.kw,tw. (4082)
82 west africa.kw,tw. (9185)
83 central africa.kw,tw. (3138)
84 sub-saharan africa.kw,tw. (22,730)
85 subsaharan africa.kw,tw. (242)
86 zimbabwe.kw,tw. (5419)
87 zambia.kw,tw. (5307)
88 uganda.kw,tw. (14,443)
89 togo.kw,tw. (1539)
90 gambia.kw,tw. (2319)
91 tanzania.kw,tw. (12,865)
92 swaziland.kw,tw. (958)
93 sudan.kw,tw. (8283)
94 south sudan.kw,tw. (521)
95 south africa.kw,tw. (35,703)
96 somalia.kw,tw. (1342)
97 sierra leone.kw,tw. (2135)
98 seychelles.kw,tw. (673)
99 senegal.kw,tw. (6076)
100 rwanda.kw,tw. (3019)
101 “republic of the congo”.kw,tw. (3290)
102 nigeria.kw,tw. (32114)
103 niger.kw,tw. (14,894)
104 namibia.kw,tw. (1485)
105 “sao tome and principe”.kw,tw. (143)
106 mozambique.kw,tw. (3511)
107 mauritius.kw,tw. (932)
108 mali.kw,tw. (3889)
109 malawi.kw,tw. (6884)
110 madagascar.kw,tw. (4691)
111 liberia.kw,tw. (1488)
112 lesotho.kw,tw. (688)

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113 kenya.kw,tw. (18,198)
114 ivory coast.kw,tw. (1836)
115 guinea-bissau.kw,tw. (1034)
116 guinea.kw,tw. (100,706)
117 ghana.kw,tw. (10,149)
118 gabon.kw,tw. (1816)
119 ethiopia.kw,tw. (13,263)
120 eritrea.kw,tw. (532)
121 equatorial guinea.kw,tw. (494)
122 djibouti.kw,tw. (389)
123 "democratic republic of the congo".kw,tw. (2826)
124 comoros.kw,tw. (316)
125 chad.kw,tw. (1154)
126 central african republic.kw,tw. (997)
127 cameroon.kw,tw. (7101)
128 burundi.kw,tw. (801)
129 burkina faso.kw,tw. (4326)
130 botswana.kw,tw. (2348)
131 benin.kw,tw. (4354)
132 angola.kw,tw. (1360)
133 "Africa south of the Sahara"/ (12,710)
134 Central Africa/ (1287)
135 Cameroon/ (6213)
136 Central African Republic/ (797)
137 Chad/ (739)
138 Congo/ (2984)
139 Democratic Republic Congo/ (3143)
140 Equatorial Guinea/ (407)
141 Gabon/ (1559)
142 Africa/ (52,806)
143 "Sao Tome and Principe"/ (67)
144 Burundi/ (746)
145 Djibouti/ (290)

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146 Eritrea/ (438)
147 Ethiopia/ (13,738)
148 Kenya/ (18,437)
149 Rwanda/ (3130)
150 Somalia/ (1795)
151 South Sudan/ (212)
152 Sudan/ (5528)
153 Tanzania/ (13,088)
154 Uganda/ (14,217)
155 Angola/ (1236)
156 Botswana/ (2302)
157 Lesotho/ (614)
158 Malawi/ (6463)
159 Namibia/ (1416)
160 Mozambique/ (3190)
161 South Africa/ (44,862)
162 Swaziland/ (845)
163 Zambia/ (5439)
164 Zimbabwe/ (5861)
165 Benin/ (2192)
166 Burkina Faso/ (3770)
167 Cabo Verde/ (307)
168 Cote d'Ivoire/ (2922)
169 Gambia/ (2530)
170 Ghana/ (9801)
171 Guinea/ (1651)
172 Guinea-Bissau/ (920)
173 Liberia/ (1428)
174 Mali/ (3061)
175 Mauritania/ (570)
176 Niger/ (1921)
177 Nigeria/ (33724)
178 Senegal/ (5719)

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179 Sierra Leone/ (1997)

180 Togo/ (1251)

181 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73 or 74 or 75 or 76 or 77 or 78 or 79 or 80 or 81 or 82 or 83 or 84 or 85 or 86 or 87 or 88 or 89 or 90 or 91 or 92 or 93 or 94 or 95 or 96 or 97 or 98 or 99 or 100 or 101 or 102 or 103 or 104 or 105 or 106 or 107 or 108 or 109 or 110 or 111 or 112 or 113 or 114 or 115 or 116 or 117 or 118 or 119 or 120 or 121 or 122 or 123 or 124 or 125 or 126 or 127 or 128 or 129 or 130 or 131 or 132 or 133 or 134 or 135 or 136 or 137 or 138 or 139 or 140 or 141 or 142 or 143 or 144 or 145 or 146 or 147 or 148 or 149 or 150 or 151 or 152 or 153 or 154 or 155 or 156 or 157 or 158 or 159 or 160 or 161 or 162 or 163 or 164 or 165 or 166 or 167 or 168 or 169 or 170 or 171 or 172 or 173 or 174 or 175 or 176 or 177 or 178 or 179 or 180 (497,640)

182 kangaroo care/ (928)

183 kangaroo care.kw,tw. (392)

184 skin to skin.kw,tw. (7637)

185 kangaroo mother care.kw,tw. (453)

186 kangaroo mother method.kw,tw. (21)

187 kangaroo mother.kw,tw. (478)

188 182 or 183 or 184 or 185 or 186 or 187 (8428)

189 9 and 181 and 188 (152)

MEDLINE (Ovid)

Search date: March 20, 2019

1 Infant, Low Birth Weight/ (17,646)

2 Infant, Very Low Birth Weight/ (7919)

3 Infant, Extremely Low Birth Weight/ (1683)

4 Premature Birth/ (11,873)

5 Obstetric Labor, Premature/ (13,030)

6 low birth weight.kw,tw. (22,957)

7 preterm.kw,tw. (57,796)

8 premature.kw,tw. (100,135)

9 Infant, Extremely Premature/ (1832)

10 Premature Birth/ (11,873)

11 Infant, Premature/ (50,622)

12 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 (187,921)

13 developing countr*.kw,tw. (74,593)

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14 developing nation*.kw,tw. (2184)

15 developing population*.kw,tw. (261)

16 developing world*.kw,tw. (7038)

17 less developed countr*.kw,tw. (1105)

18 less developed nation*.kw,tw. (53)

19 less developed population*.kw,tw. (1)

20 less developed world*.kw,tw. (60)

21 lesser developed countr*.kw,tw. (43)

22 lesser developed nation*.kw,tw. (6)

23 lesser developed population*.kw,tw. (0)

24 lesser developed world*.kw,tw. (0)

25 under developed countr*.kw,tw. (86)

26 under developed nation*.kw,tw. (4)

27 under developed population*.kw,tw. (1)

28 under developed world*.kw,tw. (3)

29 underdeveloped countr*.kw,tw. (776)

30 underdeveloped nation*.kw,tw. (67)

31 underdeveloped population*.kw,tw. (9)

32 underdeveloped world*.kw,tw. (39)

33 low income countr*.kw,tw. (4568)

34 low income nation*.kw,tw. (50)

35 low income population*.kw,tw. (1881)

36 lower income countr*.kw,tw. (322)

37 lower income nation*.kw,tw. (5)

38 lower income population*.kw,tw. (54)

39 underserved countr*.kw,tw. (24)

40 underserved nation*.kw,tw. (13)

41 underserved population*.kw,tw. (2083)

42 underserved world*.kw,tw. (3)

43 under served countr*.kw,tw. (2)

44 under served nation*.kw,tw. (1)

45 under served population*.kw,tw. (57)

46 under served world*.kw,tw. (0)

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47 deprived countr*.kw,tw. (18)
48 deprived nation*.kw,tw. (6)
49 deprived population*.kw,tw. (237)
50 deprived world*.kw,tw. (0)
51 poor countr*.kw,tw. (1913)
52 poor nation*.kw,tw. (160)
53 poor population*.kw,tw. (403)
54 poor world*.kw,tw. (49)
55 poorer countr*.kw,tw. (249)
56 poorer nation*.kw,tw. (49)
57 poorer population*.kw,tw. (52)
58 poorer world*.kw,tw. (1)
59 developing econom*.kw,tw. (326)
60 less developed econom*.kw,tw. (14)
61 lesser developed econom*.kw,tw. (1)
62 under developed econom*.kw,tw. (3)
63 underdeveloped econom*.kw,tw. (16)
64 middle income econom*.kw,tw. (37)
65 low income econom*.kw,tw. (30)
66 lower income econom*.kw,tw. (2)
67 low gdp.kw,tw. (117)
68 low gnp.kw,tw. (6)
69 low gross domestic.kw,tw. (19)
70 low gross national.kw,tw. (8)
71 lower gdp.kw,tw. (34)
72 lower gnp.kw,tw. (0)
73 lower gross domestic.kw,tw. (7)
74 lower gross national.kw,tw. (1)
75 lmic.kw,tw. (901)
76 lmics.kw,tw. (1597)
77 third world.kw,tw. (2730)
78 lami countr*.kw,tw. (34)
79 transitional countr*.kw,tw. (132)

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80 cote d'ivoire.kw,tw. (1749)
81 cabo verde.kw,tw. (54)
82 eastern africa.kw,tw. (3802)
83 western africa.kw,tw. (2943)
84 east africa.kw,tw. (3329)
85 west africa.kw,tw. (7328)
86 central africa.kw,tw. (2598)
87 sub-saharan africa.kw,tw. (15,239)
88 subsaharan africa.kw,tw. (135)
89 zimbabwe.kw,tw. (4467)
90 zambia.kw,tw. (4036)
91 uganda.kw,tw. (10635)
92 togo.kw,tw. (1200)
93 gambia.kw,tw. (2022)
94 tanzania.kw,tw. (9702)
95 swaziland.kw,tw. (668)
96 sudan.kw,tw. (6325)
97 south sudan.kw,tw. (345)
98 south africa.kw,tw. (25,155)
99 somalia.kw,tw. (1102)
100 sierra leone.kw,tw. (1612)
101 seychelles.kw,tw. (570)
102 senegal.kw,tw. (4810)
103 rwanda.kw,tw. (2134)
104 "republic of the congo".kw,tw. (2241)
105 nigeria.kw,tw. (20,945)
106 niger.kw,tw. (9827)
107 namibia.kw,tw. (1116)
108 "sao tome and principe".kw,tw. (120)
109 mozambique.kw,tw. (2646)
110 mauritius.kw,tw. (759)
111 mali.kw,tw. (2796)
112 malawi.kw,tw. (5003)

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113 madagascar.kw,tw. (3822)
114 liberia.kw,tw. (1213)
115 lesotho.kw,tw. (530)
116 kenya.kw,tw. (13,826)
117 ivory coast.kw,tw. (1601)
118 guinea-bissau.kw,tw. (832)
119 guinea.kw,tw. (101,126)
120 ghana.kw,tw. (7065)
121 gabon.kw,tw. (1460)
122 ethiopia.kw,tw. (9726)
123 eritrea.kw,tw. (405)
124 equatorial guinea.kw,tw. (349)
125 djibouti.kw,tw. (315)
126 “democratic republic of the congo”.kw,tw. (1886)
127 comoros.kw,tw. (263)
128 chad.kw,tw. (945)
129 central african republic.kw,tw. (853)
130 cameroon.kw,tw. (5261)
131 burundi.kw,tw. (669)
132 burkina faso.kw,tw. (3118)
133 botswana.kw,tw. (1733)
134 benin.kw,tw. (2626)
135 angola.kw,tw. (1121)
136 Africa South of the Sahara/ (10,160)
137 Africa, Central/ (1232)
138 Cameroon/ (4983)
139 Central African Republic/ (737)
140 Chad/ (678)
141 Congo/ (1714)
142 Democratic Republic of the Congo/ (3822)
143 Equatorial Guinea/ (243)
144 Gabon/ (1389)
145 Africa, Eastern/ (3930)

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146 “Sao Tome and Principe”/ (9)
147 Burundi/ (618)
148 Djibouti/ (211)
149 Eritrea/ (300)
150 Ethiopia/ (10,689)
151 Kenya/ (14,516)
152 Rwanda/ (2133)
153 Somalia/ (1467)
154 South Sudan/ (105)
155 Sudan/ (4473)
156 Tanzania/ (10,256)
157 Uganda/ (10812)
158 Africa, Southern/ (2265)
159 Angola/ (920)
160 Botswana/ (1583)
161 Lesotho/ (386)
162 Malawi/ (4650)
163 Namibia/ (967)
164 Mozambique/ (2128)
165 South Africa/ (38,717)
166 Swaziland/ (502)
167 Zambia/ (4113)
168 Zimbabwe/ (5462)
169 Africa, Western/ (5563)
170 Benin/ (1414)
171 Burkina Faso/ (2949)
172 Cabo Verde/ (170)
173 Cote d’Ivoire/ (2943)
174 Gambia/ (2318)
175 Ghana/ (7084)
176 Guinea/ (954)
177 Guinea-Bissau/ (874)
178 Liberia/ (1097)

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179 Mali/ (2190)

180 Mauritania/ (413)

181 Niger/ (1104)

182 Nigeria/ (26403)

183 Senegal/ (5427)

184 Sierra Leone/ (1363)

185 Togo/ (1053)

186 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73 or 74 or 75 or 76 or 77 or 78 or 79 or 80 or 81 or 82 or 83 or 84 or 85 or 86 or 87 or 88 or 89 or 90 or 91 or 92 or 93 or 94 or 95 or 96 or 97 or 98 or 99 or 100 or 101 or 102 or 103 or 104 or 105 or 106 or 107 or 108 or 109 or 110 or 111 or 112 or 113 or 114 or 115 or 116 or 117 or 118 or 119 or 120 or 121 or 122 or 123 or 124 or 125 or 126 or 127 or 128 or 129 or 130 or 131 or 132 or 133 or 134 or 135 or 136 or 137 or 138 or 139 or 140 or 141 or 142 or 143 or 144 or 145 or 146 or 147 or 148 or 149 or 150 or 151 or 152 or 153 or 154 or 155 or 156 or 157 or 158 or 159 or 160 or 161 or 162 or 163 or 164 or 165 or 166 or 167 or 168 or 169 or 170 or 171 or 172 or 173 or 174 or 175 or 176 or 177 or 178 or 179 or 180 or 181 or 182 or 183 or 184 or 185 (406,419)

187 Kangaroo-Mother Care Method/ (322)

188 kangaroo care.kw,tw. (275)

189 skin to skin.kw,tw. (4551)

190 kangaroo mother care.kw,tw. (276)

191 kangaroo mother method.kw,tw. (18)

192 kangaroo mother.kw,tw. (279)

193 187 or 188 or 189 or 190 or 191 or 192 (4983)

194 12 and 186 and 193 (89)

MEDLINE (PubMed)

Search date: March 20, 2019

"Infant, Low Birth Weight"[Mesh] OR "Infant, Very Low Birth Weight"[Mesh] OR "Infant, Extremely Low Birth Weight"[Mesh] OR "Premature Birth"[Mesh] OR "Obstetric Labor, Premature"[Mesh] OR low birth weight[tiab] OR low birth weight[ot] OR preterm[tiab] OR preterm[ot] OR premature[tiab] OR premature[ot] OR "Infant, Extremely Premature"[Mesh] OR "Premature Birth"[Mesh] OR "Infant, Premature"[Mesh]

AND

"developing country"[ot] OR "developing countries"[ot] OR "developing nation"[ot] OR "developing nations"[ot] OR "developing population"[ot] OR "developing populations"[ot] OR "developing world"[ot] OR "less developed country"[ot] OR "less developed countries"[ot] OR "less developed nation"[ot] OR "less developed nations"[ot] OR "less developed population"[ot] OR "less developed populations"[ot] OR "less developed world"[ot] OR "lesser developed country"[ot] OR "lesser developed countries"[ot] OR

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"lesser developed nation"[ot] OR "lesser developed nations"[ot] OR "lesser developed population"[ot] OR "lesser developed populations"[ot] OR "lesser developed world"[ot] OR "under developed country"[ot] OR "under developed countries"[ot] OR "under developed nation"[ot] OR "under developed nations"[ot] OR "under developed population"[ot] OR "under developed populations"[ot] OR "under developed world"[ot] OR "underdeveloped country"[ot] OR "underdeveloped countries"[ot] OR "underdeveloped nation"[ot] OR "underdeveloped nations"[ot] OR "underdeveloped population"[ot] OR "underdeveloped populations"[ot] OR "underdeveloped world"[ot] OR "low income country"[ot] OR "low income countries"[ot] OR "low income nation"[ot] OR "low income nations"[ot] OR "low income population"[ot] OR "low income populations"[ot] OR "lower income country"[ot] OR "lower income countries"[ot] OR "lower income nation"[ot] OR "lower income nations"[ot] OR "lower income population"[ot] OR "lower income populations"[ot] OR "underserved country"[ot] OR "underserved countries"[ot] OR "underserved nation"[ot] OR "underserved nations"[ot] OR "underserved population"[ot] OR "underserved populations"[ot] OR "underserved world"[ot] OR "under served country"[ot] OR "under served countries"[ot] OR "under served nation"[ot] OR "under served nations"[ot] OR "under served population"[ot] OR "under served populations"[ot] OR "under served world"[ot] OR "deprived country"[ot] OR "deprived countries"[ot] OR "deprived nation"[ot] OR "deprived nations"[ot] OR "deprived population"[ot] OR "deprived populations"[ot] OR "deprived world"[ot] OR "poor country"[ot] OR "poor countries"[ot] OR "poor nation"[ot] OR "poor nations"[ot] OR "poor population"[ot] OR "poor populations"[ot] OR "poor world"[ot] OR "poorer country"[ot] OR "poorer countries"[ot] OR "poorer nation"[ot] OR "poorer nations"[ot] OR "poorer population"[ot] OR "poorer populations"[ot] OR "poorer world"[ot] OR "developing economy"[ot] OR "developing economies"[ot] OR "less developed economy"[ot] OR "less developed economies"[ot] OR "lesser developed economy"[ot] OR "lesser developed economies"[ot] OR "under developed economy"[ot] OR "under developed economies"[ot] OR "underdeveloped economy"[ot] OR "underdeveloped economies"[ot] OR "middle income economy"[ot] OR "middle income economies"[ot] OR "low income economy"[ot] OR "low income economies"[ot] OR "lower income economy"[ot] OR "lower income economies"[ot] OR "low gdp"[ot] OR "low gnp"[ot] OR "low gross domestic"[ot] OR "low gross national"[ot] OR "lower gdp"[ot] OR "lower gnp"[ot] OR "lower gross domestic"[ot] OR "lower gross national"[ot] OR lmic[ot] OR lmics[ot] OR "third world"[ot] OR "lami country"[ot] OR "lami countries"[ot] OR "transitional country"[ot] OR "transitional countries"[ot] OR cote d'ivoire[tiab] OR cote d'ivoire[ot] OR cabo verde[tiab] OR cabo verde[ot] OR eastern africa[tiab] OR eastern africa[ot] OR western africa[tiab] OR western africa[ot] OR east africa[tiab] OR east africa[ot] OR west africa[tiab] OR west africa[ot] OR central africa[tiab] OR central africa[ot] OR sub-saharan africa[tiab] OR sub-saharan africa[ot] OR subsaharan africa[tiab] OR subsaharan africa[ot] OR zimbabwe[tiab] OR zimbabwe[ot] OR zambia[tiab] OR zambia[ot] OR uganda[tiab] OR uganda[ot] OR togo[tiab] OR togo[ot] OR gambia[tiab] OR gambia[ot] OR tanzania[tiab] OR tanzania[ot] OR swaziland[tiab] OR swaziland[ot] OR sudan[tiab] OR sudan[ot] OR south sudan[tiab] OR south sudan[ot] OR south africa[tiab] OR south africa[ot] OR somalia[tiab] OR somalia[ot] OR sierra leone[tiab] OR sierra leone[ot] OR seychelles[tiab] OR seychelles[ot] OR senegal[tiab] OR senegal[ot] OR sao tome and principe[tiab] OR sao tome and principe[ot] OR rwanda[tiab] OR rwanda[ot] OR republic of the congo[tiab] OR republic of the congo[ot] OR nigeria[tiab] OR nigeria[ot] OR niger[tiab] OR niger[ot] OR namibia[tiab] OR namibia[ot] OR mozambique[tiab] OR mozambique[ot] OR mauritius[tiab] OR mauritius[ot] OR mauritania[tiab] OR mauritania[ot] OR mali[tiab] OR mali[ot] OR malawi[tiab] OR malawi[ot] OR madagascar[tiab] OR madagascar[ot] OR liberia[tiab] OR liberia[ot] OR lesotho[tiab] OR lesotho[ot] OR kenya[tiab] OR kenya[ot] OR ivory coast[tiab] OR ivory coast[ot] OR guinea-bissau[tiab] OR guinea-bissau[ot] OR guinea[tiab] OR guinea[ot] OR ghana[tiab] OR ghana[ot] OR gabon[tiab] OR gabon[ot] OR ethiopia[tiab] OR ethiopia[ot] OR eritrea[tiab] OR eritrea[ot] OR equatorial guinea[tiab] OR equatorial guinea[ot] OR djibouti[tiab] OR djibouti[ot] OR democratic republic of the congo[tiab] OR democratic republic of the congo[ot] OR comoros[tiab] OR comoros[ot] OR chad[tiab] OR chad[ot] OR central african republic[tiab] OR central african republic[ot] OR cameroon[tiab] OR cameroon[ot] OR burundi[tiab] OR burundi[ot] OR burkina faso[tiab] OR burkina faso[ot] OR botswana[tiab] OR botswana[ot] OR benin[tiab] OR benin[ot]

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OR angola[tiab] OR angola[ot] OR "Africa South of the Sahara"[Mesh] OR "Africa, Central"[Mesh] OR "Cameroon"[Mesh] OR "Central African Republic"[Mesh] OR "Chad"[Mesh] OR "Congo"[Mesh] OR "Democratic Republic of the Congo"[Mesh] OR "Equatorial Guinea"[Mesh] OR "Gabon"[Mesh] OR "Sao Tome and Principe"[Mesh] OR "Africa, Eastern"[Mesh] OR "Burundi"[Mesh] OR "Djibouti"[Mesh] OR "Eritrea"[Mesh] OR "Ethiopia"[Mesh] OR "Kenya"[Mesh] OR "Rwanda"[Mesh] OR "Somalia"[-Mesh] OR "South Sudan"[Mesh] OR "Sudan"[Mesh] OR "Tanzania"[Mesh] OR "Uganda"[Mesh] OR "Africa, Southern"[Mesh] OR "Angola"[Mesh] OR "Botswana"[Mesh] OR "Lesotho"[Mesh] OR "Malawi"[Mesh] OR "Namibia"[Mesh] OR "Mozambique"[Mesh] OR "South Africa"[Mesh] OR "Swaziland"[Mesh] OR "Zambia"[Mesh] OR "Zimbabwe"[Mesh] OR "Africa, Western"[Mesh] OR "Benin"[Mesh] OR "Burkina Faso"[Mesh] OR "Cabo Verde"[Mesh] OR "Cote d'Ivoire"[Mesh] OR "Gambia"[Mesh] OR "Ghana"[Mesh] OR "Guinea"[Mesh] OR "Guinea-Bissau"[Mesh] OR "Liberia"[-Mesh] OR "Mali"[Mesh] OR "Mauritania"[Mesh] OR "Niger"[Mesh] OR "Nigeria"[Mesh] OR "Senegal"[Mesh] OR "Sierra Leone"[Mesh] OR "Togo"[Mesh]

AND

"Kangaroo-Mother Care Method"[Mesh] OR kangaroo care[tiab] OR kangaroo care[ot] OR skin to skin[tiab] OR kangaroo mother care[tiab] OR kangaroo mother care[ot] OR kangaroo mother method[tiab] OR kangaroo mother method[ot] OR kangaroo mother[tiab] OR kangaroo mother[ot]

98 results

Evidence-Based Medicine Reviews (Ovid)

Search date: March 22, 2019

1 low birth weight.kw,tw. (3972)

2 preterm.kw,tw. (10,843)

3 premature.kw,tw. (10,979)

4 premature labo?r.kw,tw. (978)

5 1 or 2 or 3 or 4 (20,935)

6 developing countr*.kw,tw. (3813)

7 developing nation*.kw,tw. (112)

8 developing population*.kw,tw. (11)

9 developing world*.kw,tw. (463)

10 less developed countr*.kw,tw. (111)

11 less developed nation*.kw,tw. (5)

12 less developed population*.kw,tw. (0)

13 less developed world*.kw,tw. (3)

14 lesser developed countr*.kw,tw. (2)

15 lesser developed nation*.kw,tw. (0)

16 lesser developed population*.kw,tw. (0)

17 lesser developed world*.kw,tw. (0)

18 under developed countr*.kw,tw. (870)

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19 under developed nation*.kw,tw. (107)
20 under developed population*.kw,tw. (61)
21 under developed world*.kw,tw. (169)
22 underdeveloped countr*.kw,tw. (34)
23 underdeveloped nation*.kw,tw. (3)
24 underdeveloped population*.kw,tw. (0)
25 underdeveloped world*.kw,tw. (1)
26 low income countr*.kw,tw. (1000)
27 low income nation*.kw,tw. (11)
28 low income population*.kw,tw. (207)
29 lower income countr*.kw,tw. (78)
30 lower income nation*.kw,tw. (0)
31 lower income population*.kw,tw. (7)
32 underserved countr*.kw,tw. (2)
33 underserved nation*.kw,tw. (4)
34 underserved population*.kw,tw. (315)
35 underserved world*.kw,tw. (0)
36 under served countr*.kw,tw. (3)
37 under served nation*.kw,tw. (3)
38 under served population*.kw,tw. (25)
39 under served world*.kw,tw. (0)
40 deprived countr*.kw,tw. (3)
41 deprived nation*.kw,tw. (3)
42 deprived population*.kw,tw. (46)
43 deprived world*.kw,tw. (0)
44 poor countr*.kw,tw. (135)
45 poor nation*.kw,tw. (11)
46 poor population*.kw,tw. (45)
47 poor world*.kw,tw. (4)
48 poorer countr*.kw,tw. (30)
49 poorer nation*.kw,tw. (0)
50 poorer population*.kw,tw. (4)
51 poorer world*.kw,tw. (0)

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52 developing econom*.kw,tw. (25)

53 less developed econom*.kw,tw. (1)

54 lesser developed econom*.kw,tw. (0)

55 under developed econom*.kw,tw. (11)

56 underdeveloped econom*.kw,tw. (1)

57 middle income econom*.kw,tw. (22)

58 low income econom*.kw,tw. (9)

59 lower income econom*.kw,tw. (0)

60 low gdp.kw,tw. (41)

61 low gnp.kw,tw. (1)

62 low gross domestic.kw,tw. (1)

63 low gross national.kw,tw. (2)

64 lower gdp.kw,tw. (2)

65 lower gnp.kw,tw. (0)

66 lower gross domestic.kw,tw. (0)

67 lower gross national.kw,tw. (0)

68 lmic.kw,tw. (153)

69 lmics.kw,tw. (214)

70 third world.kw,tw. (90)

71 lami countr*.kw,tw. (11)

72 transitional countr*.kw,tw. (21)

73 cote d'ivoire.kw,tw. (213)

74 cabo verde.kw,tw. (1)

75 eastern africa.kw,tw. (28)

76 western africa.kw,tw. (9)

77 east africa.kw,tw. (136)

78 west africa.kw,tw. (299)

79 central africa.kw,tw. (48)

80 sub-saharan africa.kw,tw. (1459)

81 subsaharan africa.kw,tw. (2)

82 zimbabwe.kw,tw. (524)

83 zambia.kw,tw. (622)

84 uganda.kw,tw. (1560)

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85 togo.kw,tw. (60)

86 gambia.kw,tw. (375)

87 tanzania.kw,tw. (1219)

88 swaziland.kw,tw. (69)

89 sudan.kw,tw. (229)

90 south sudan.kw,tw. (17)

91 south africa.kw,tw. (2735)

92 somalia.kw,tw. (45)

93 sierra leone.kw,tw. (143)

94 seychelles.kw,tw. (29)

95 senegal.kw,tw. (294)

96 rwanda.kw,tw. (221)

97 “republic of the congo”.kw,tw. (210)

98 nigeria.kw,tw. (1170)

99 niger.kw,tw. (190)

100 namibia.kw,tw. (57)

101 “sao tome and principe”.kw,tw. (5)

102 mozambique.kw,tw. (240)

103 mauritius.kw,tw. (36)

104 mali.kw,tw. (329)

105 malawi.kw,tw. (822)

106 madagascar.kw,tw. (121)

107 liberia.kw,tw. (78)

108 lesotho.kw,tw. (64)

109 kenya.kw,tw. (1634)

110 ivory coast.kw,tw. (57)

111 guinea-bissau.kw,tw. (199)

112 guinea.kw,tw. (720)

113 ghana.kw,tw. (711)

114 gabon.kw,tw. (117)

115 ethiopia.kw,tw. (633)

116 eritrea.kw,tw. (38)

117 equatorial guinea.kw,tw. (25)

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118 djibouti.kw,tw. (23)

119 “democratic republic of the congo”.kw,tw. (202)

120 comoros.kw,tw. (23)

121 chad.kw,tw. (64)

122 central african republic.kw,tw. (50)

123 cameroon.kw,tw. (317)

124 burundi.kw,tw. (61)

125 burkina faso.kw,tw. (437)

126 botswana.kw,tw. (205)

127 benin.kw,tw. (206)

128 angola.kw,tw. (50)

129 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73 or 74 or 75 or 76 or 77 or 78 or 79 or 80 or 81 or 82 or 83 or 84 or 85 or 86 or 87 or 88 or 89 or 90 or 91 or 92 or 93 or 94 or 95 or 96 or 97 or 98 or 99 or 100 or 101 or 102 or 103 or 104 or 105 or 106 or 107 or 108 or 109 or 110 or 111 or 112 or 113 or 114 or 115 or 116 or 117 or 118 or 119 or 120 or 121 or 122 or 123 or 124 or 125 or 126 or 127 or 128 (19,495)

130 kangaroo care.kw,tw. (194)

131 skin to skin.kw,tw. (870)

132 kangaroo mother care.kw,tw. (166)

133 kangaroo mother method.kw,tw. (5)

134 kangaroo mother.kw,tw. (175)

135 130 or 131 or 132 or 133 or 134 (1083)

136 5 and 129 and 135 (44)

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Appendix II: Studies ineligible following full-text review

Mazumder S, Upadhyay RP, Hill Z, Taneja S, Dube B, Kaur J, *et al*. Kangaroo mother care: using formative research to design an acceptable community intervention. BMC Public Health. 2018;18(1):307.

Reason for exclusion: Ineligible participants

Rasaily R, Ganguly KK, Roy M, Vani SN, Kharood N, Kulkarni R, *et al*. Community based kangaroo mother care for low birth weight babies: a pilot study. Indian J Med Res. 2017;145(1):51-7.

Reason for exclusion: Ineligible participants

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Appendix III: Characteristics of included studies

Study, Year	Methods for data collection and analysis	Country	Phenomena of interest	Setting/context/ culture	Participant characteristics and sample size	Description of main results
Bazzano, *et al.*,[36] 2012	IDIs using a pre-tested, semi-structured guide and observations. A thematic approach was used to code and analyze data.	Ghana	STSC for LBW newborns	Two rural districts in Brong Ahafo Region, Ghana. The districts are in a forest-savanna transition zone with an impoverished agrarian population.	Nine women within 48 hours of delivery were invited to try STSC and to attend interviews.	Barriers 1. Postpartum pain and fear of harming the umbilicus. 2. Fear of inner pains in the chest of the mother. 3. Tradition of carrying babies on the back. 4. Need for back support while sitting or sleeping. 5. Perceptions or fears of the baby falling when they stood up or moved during STSC. 6. Fears of ''rolling on baby,'' or overlaying, while doing STSC at night. 7. Time could be taken away from a mother's day for chores/ bathing while carrying out STSC. 8. Unusual breastfeeding positioning. Participants prioritized involving senior women (traditional birth attendants and grandmothers) in the teaching of STSC and for acceptance, especially for assistance putting the baby in position in the first hours and days after birth. Photographs were preferred for counseling.
Kambarami, *et al.*,[40] 2002	FGDs Thematic analysis	Zimbabwe	KC for pre-term infants	Harare Central Hospital	Different groups: The first group was mothers who were no longer using the KC method (infants over 3kg) but were still coming to the hospital for follow-up. The second group comprised mothers who were admitted to the KC department and were being taught the method. The third and fourth groups comprised mothers who were still using the KC method at home.	1. Knowledge of advantages of KC. 2. KC compared to incubator care was deemed difficult. The hospital policy of not feeding others caused problems. 3. Husbands' reactions to KC at home. 4. Grandmothers' and other relatives' reactions to KC were skeptical. 5. Friends', neighbors', and communities' mixed reactions, some element of mistrust. 6. Mothers' recommendations about care of preterm infants: should be promoted all over the country; mothers suggested the method be promoted through drama, radio, and television.

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(*Continued*)

Study, Year	Methods for data collection and analysis	Country	Phenomena of interest	Setting/context/culture	Participant characteristics and sample size	Description of main results
Leonard and Mayers,[37] 2008	Individual IDIs audio recorded. Interviews were transcribed verbatim. Categories or ''units of meaning that naturally clustered together''(p.19) were then identified, and redundant ones were eliminated.	South Africa	Lived experiences of parents providing KMC	The neonatal nursery and KC ward at a tertiary maternity center in Cape Town.	Six parents (four mothers and two fathers) of preterm infants who had experience of providing KC and had the capacity to provide full and sensitive descriptions of their experience were purposefully sampled.	Theme 1: Unforeseen, unprepared and uncertain – the experience of birth. Parents have to deal with loss and grief related to the early and abrupt termination of pregnancy, feelings of emptiness, uncertainty regarding the infant's prognosis, and fear related to touch. Theme 2: Anxiety and barriers: Their anxieties surface and they need to create a protective emotional barrier. Participants felt incompetent when initially entering the NICU, an unfamiliar and intimidating environment with complex medical equipment and constant activity, which focused on the infants' survival. High-tech equipment became a barrier. Theme 3: An intimate connection. Despite the initial anxiety and environmental barriers, KC facilitated a special connection with the infant. Theme 4: Adjustments, roles, and responsibilities: Provision of 24-hour KC created extra work, roles, and responsibilities. Theme 5: Measuring success: Parents perceive weight gain as a measure of success, progress, and development. Theme 6: A network of encouragement and support: Supportive partners/fathers are vital, particularly in the stressful post-birth period when mothers fear losing their infants. Theme 7: Living-in challenges: Mothers return to the hospital environment to ''live in''(p.24) with their infant, but miss the support of family, who are restricted to visiting hours. The KC ward confines the mother's world to a bed permanently raised at a 45° angle in a room shared with seven other mother–infant couples. Theme 8: Living with the infant outside of hospital: One father had felt uncomfortable in the hospital setting and had not provided KC, but started it after his infant's discharge home.

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Study, Year	**Methods for data collection and analysis**	**Country**	**Phenomena of interest**	**Setting/context/ culture**	**Participant characteristics and sample size**	**Description of main results**
Lydon, *et al.*,[25] 2018	FGDs and IDIs were used. Transcripts were uploaded into Atlas.ti and an inductive thematic analysis was employed.	Malawi	Understanding of social norms and community perceptions of preterm babies and KMC	Machinga and Thyolo districts, Southern Malawi. Machinga is dominated by the Yao tribe and is predominantly Muslim, whereas Thyolo is dominated by the Lomwe tribe, and is predominantly Christian.	Parents already engaged in KMC, pregnant women, community members, health workers, and community and religious leaders. A total of 11 FGDs and 20 IDIs. Total number of participants = 152	1. Sources of information on preterm birth and KMC: Despite health facilities and health workers being the primary trusted sources of health information in general, peer-to-peer information sharing was the major source of information on KMC for pregnant women. In fact, women expressed a preference to learn from other women who had experienced KMC. In addition, women who had prior experience with KMC were excited by the idea of acting as KMC ambassadors and sharing their experiences more widely. 2. Timing of education on KMC: While pregnant women made reference to becoming aware of KMC through other women during their pregnancy, parents currently practicing KMC explained that it was only following delivery that they learned the specifics of this practice and were trained on how to do it. 3. Men's involvement in KMC: Both men and women hold beliefs that newborn care rests with the mother. 4. Role of community leaders: ''What is important for the leaders is to come together, to work together and sensitize each other and the people in the community about different programs.''[(p.5)] 5. Shifting perceptions: Through the process of learning about KMC and gaining these skills, many parents involved in the practice noted a shift in their perceptions, which occurred through personal experience. As parents practiced KMC, they saw the improvements in their own child, which built confidence in the method and provided positive reinforcement for continuation.

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(*Continued*)						
Study, Year	**Methods for data collection and analysis**	**Country**	**Phenomena of interest**	**Setting/context/ culture**	**Participant characteristics and sample size**	**Description of main results**
Reddy and McInerney,[38] 2007	IDIs. The transcripts were coded; codes with a common meaning were grouped into subthemes, which were then combined to form themes.	South Africa	KMC for LBW babies	A regional referral hospital in kwaZulu-Natal province.	The population consisted of all mothers who had babies below 2000g and who had delivered at a regional hospital in kwaZulu-Natal province during the period February to June 2003	1. Feelings before KMC: Mothers described their feelings before starting KMC as being afraid, anxious, or confused. Some doubted that KMC would work. Other fears expressed by the mothers included whether the baby would slide down the mother's chest and whether their baby would suffocate. During KMC: Despite some apprehension being felt by the mothers prior to commencing KMC, mothers acknowledged feelings of elation and excitement whilst practicing KMC. It was usually the baby's weight gain that triggered this response. In addition to the feelings of excitement generated by the weight gain, feelings of emotional calmness and tranquility were also expressed. 2. Management of the mothers: Mothers felt that the nursing staff had been a pillar of strength to them. All the participants acknowledged receiving emotional and practical support on KMC before practicing it. Mothers acknowledged and described the encouragement that they had received from other mothers. 3. Support: Support was found to come from three main sources: health professionals, other mothers, and family members.

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(*Continued*)

Study, Year	Methods for data collection and analysis	Country	Phenomena of interest	Setting/context/culture	Participant characteristics and sample size	Description of main results
Waiswa, *et al.*,[39] 2010	IDIs: 30, plus three FGDs. Data were systematically coded and analyzed manually by content analysis. Recurrent and emerging themes were identified and organized into meaningful categories and subcategories.	Uganda	Perceptions on care for preterm babies with a focus on KMC	The study was in two rural districts (Iganga and Mayuge) in eastern Uganda, with a total population of about 1 million people; 80% of the population are peasants, with 49% of women and 68% of men literate.	CHWs (n = 9), traditional birth attendants (n = 2), mothers of preterm babies (n = 10), fathers of preterm babies (n = 3), health workers (n = 6 midwives and nurses), community members (n = 8 men, n = 10 women)	1. Role played by CHWs in the care of preterm babies: The CHWs available were program-specific; most CHWs were inactive because the vertical programs that had introduced them had ceased. 2. Care for preterm babies at community level: Although the need for warm care for a preterm baby was well known among the respondents, community members had little knowledge on STS care or KMC. The generation of warmth was improvised through covering and wrapping babies in many clothes, lighting lamps and charcoal stoves placed under the baby's bed, and hot water jerry cans or plastic bottles put in close proximity to the baby. Community members reported that they received most of this information from health workers and traditional birth attendants. 3. Problems in the promotion of KMC practice at community level that were mentioned in FGDs included: fear of hurting the baby because "the cord is still fresh"[(p.1144)]; women needing to work yet "the baby has to be in the chest all the time"[(p.1144)]; and the perception that KMC is tiring.

CHW, community health worker; FGD, focus group discussion; IDI, in-depth interview; KC, kangaroo care; KMC, kangaroo mother care; LBW, low birth weight; NICU, neonatal intensive care unit; STS, skin-to-skin; STSC, skin-to-skin contact

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Appendix IV: Study findings with illustrations

Study: Bazzano *et al.* Introducing home-based skin-to-skin care for low birth weight newborns: a pilot approach to education and counseling in Ghana[36]	
Finding	They thought that the practice hooked them in one position for a long time and this was unhealthy for them. (C)
Illustration	"I would not want to sit for long because it will cause waist pains, but if I had to use something to sit against then I will try it."(p.46)
Finding	Women observed in the study always used the cradle hold position for breastfeeding their baby and were not very receptive to trying out other breastfeeding positions. (C)
Illustration	"All the time you have your baby with you . . . sleep with you, eat with you, walk with you."(p.45)
Finding	Time could be taken away from a mother's day for chores/bathing while carrying out STSC. (NS)
Illustration	no illustration
Finding	Some mothers feared that their babies would fall when they stood up or moved during KMC or that they might hurt the umbilicus of the neonate. (U)
Illustration	"I could not do that until the cord has fallen off after the first week [of the baby's life], it could cause pain and bleeding to the cord. I thought I would feel some pains but when I tried it I had no pains in the chest, breast or stomach. I was surprised after I tried it but it seemed the baby liked it because he kept quiet when placed there."(p.45)
Finding	The mothers considered the position of the neonate in KMC as odd and shameful. (C)
Illustration	"We don't do it like that! The people outside would even laugh if I go out in that state [with the baby in STSC position]. I would be staying indoors for one month after the baby is born, so someone else should explain that [practice] to them."(p.45-6)
Study: Kambarami *et al.* Caregivers' perceptions and experiences of 'kangaroo care' in a developing country[40]	
Finding	Some mothers did say that it was difficult to sleep with an infant on their chest at first, but they had persevered for the sake of the infant. A few others said it took time to get used to cooking and doing other household chores with an infant on their chest. (C)
Illustration	"This is new! We have not seen this before, but if it is good for the baby we will do it."(p.132)
Finding	Husbands' reactions to kangaroo care at home: Many mothers said their husbands were very supportive of the kangaroo care method; however, some said their husbands were not keen on the method. (C)
Illustration	"Preterm infants have always been there and so what's new, why change the method of care?"(p.132)
Finding	A network of encouragement and support: Relatives were said to be very inquisitive, asking a lot of questions, but were usually supportive and helped with household chores so that the mother could attend to the infant. (U)
Illustration	"[My family] also saw that after being cared for and weighed, the baby was improving. This made everyone encourage me to keep the baby attached to the chest."(pg.132)
Finding	Friends', neighbours', and communities' reactions to kangaroo care: Mothers feared stigmatizing comments from these groups as some of them thought mothers were hiding stolen property in their chests. (C)
Illustration	One woman said "while travelling back home on a bus she was accused by other passengers of copying some western culture."(p.132)
Finding	Mothers' recommendations about care of preterm infants: Mothers suggested the method be promoted through drama, radio, and television. (C)
Illustration	"Mothers who practised kangaroo care before should be used in drama sessions, for example for a production on 'parents day' at schools."(p.132) "Mass campaigns on kangaroo care for communities and the public were urgently needed."(p.133)

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Study: Leonard and Mayers. Parents' lived experience of providing kangaroo care to their preterm infants[37]	
Finding	Unforeseen, unprepared and uncertain – the experience of birth: Parents have to deal with loss and grief related to the early and abrupt termination of pregnancy, feelings of emptiness, uncertainty regarding the infant's prognosis, and fear related to touch. (C)
Illustration	Said one mother: "I was 4 cm dilated already . . . and I was seven months. . ."(p.19)
Finding	An intimate connection: Despite the initial anxiety and environmental barriers, KMC facilitated a special connection with the infant. In addition to the feelings of excitement generated by the weight gain, feelings of emotional calmness and tranquility were also expressed. (U)
Illustration	"My first experience with kangaroo caring [for] her . . . when I took her out and put her against my skin, it was just . . . a great sense of relief for the first time really I felt bonded with her, that it was my daughter. So I think that kangaroo care helps to bridge that initial . . . gap that is between a mother and her preterm baby"(p.21)
Finding	Adjustments, roles, and responsibilities: Provision of 24-hour KMC created extra work, roles, and responsibilities. (U)
Illustration	"Well obviously I've got a husband and another child at home, and obviously have to cook . . . you have to clean and do a lot of other things, besides looking after yourself and the baby."(p.22)
Finding	Living-in challenges: The KC ward confines the mother's world to a bed permanently raised at a 45° angle in a room shared with seven other mother–infant couples. The living-in dominated the mothers' lives. (C)
Illustration	"All the time you have your baby with you . . . sleep with you, eat with you, walk with you."(p.24)
Finding	Prior knowledge of advantages of kangaroo care: Women understood that the method was useful for keeping the infant warm, enhancing mother-baby bonding, and for closely monitoring the condition of the baby and early detection of "colour" changes, breathing difficulties, vomiting, and choking. (U)
Illustration	"Kangaroo care has become so much part of me now. I am now owning this thing. I was thinking what was kangaroo care? It was nothing up in the sky, it was nothing other than what I was doing, all the other ideas, the breathing and the posture were part of it, and I developed it for myself so that it became more meaningful."(p.22)
Study: Lydon *et al.* Starting the conversation: community perspectives on preterm birth and kangaroo mother care in southern Malawi[25]	
Finding	Sources of information on preterm birth and KMC: Despite health facilities and health workers being the primary trusted sources of health information in general, peer-to-peer information sharing was the major source of information on KMC for pregnant women. (C)
Illustration	"My friend's sister was the one who was helping me and advising me on how to take care of my child since she also has the child who was born before the expected time of delivery."(p.4)
Finding	Timing of education on KMC: It was only following delivery that they learned the specifics of this practice and were trained on how to do it. (U)
Illustration	"I didn't know anything until the time my baby was born."(p.5) "We had never learnt about it [KMC], but when the babies were born, the doctors taught us about it."(p.5)
Finding	Men's involvement in KMC: Men were often left out of the conversation about preterm babies and KMC. (C)
Illustration	"The problem with men is that they don't go inside the room or ward when their wives or relatives are in the [KMC] ward but instead they stay outside and call their relatives to see them whilst there."(p.5) But some women do not talk or explain about KMC to their husbands. "Yes, I heard about it [preterm birth], but then we regard these as matters concerning women, that they are the ones who busy themselves with that. But after this happened I realized that it involves us all, that both men and women can play a part."(p.5)
Finding	Role of community leaders: Enforcing penalties against those engaging in child marriage, partnering with health workers to promote family planning and counseling on preterm birth, holding community meetings on preterm births and KMC, and creating a network of leaders to better address the issue. (U)

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Illustration	''What is important for the leaders is to come together, to work together and sensitize each other and the people in the community about different programs.''(p.5) ''They must convene meetings to tell the people about this so that if it happens to anyone, they must attach the baby to their stomach.''(p.6) ''If the chief mobilizes the community, everyone will be present and able to listen and get the information through community drama, songs, poems and the like.''(p.6)
Finding	Role of religious leaders: Can encourage the family to take care of the preterm baby and assist them with their needs, both spiritual and monetary. (C)
Illustration	''They have the power to advise people even in churches because a lot of [. . .] women gather there, so the church can offer advice.''(p.6) ''They should also encourage their flocks to take care of the preterm babies, they should advise them the advantages of taking care of the children and the good thing about skin to skin care practice.''(p.6)
Finding	Shifting perceptions: Through the process of learning about KMC and gaining these skills, many parents involved in the practice noted a shift in their perceptions. (U)
Illustration	''I felt that I was inadequate because the baby was born prematurely [. . .] I was inadequate in that perhaps I was not able to take care of my wife in feeding her, or sometimes disappointing her.''(p.7) ''[My family] also saw that after being cared for and weighed, the baby was improving. This made everyone encourage me to keep the baby attached to the chest.''(p.8)
Study: Reddy and McInerney. The experiences of mothers who were implementing kangaroo mother care (KMC) at a regional hospital in KwaZulu-Natal[38]	
Finding	Feelings before KMC: Mothers described their feelings before starting KMC as being afraid, anxious, or confused. (C)
Illustration	''I was so afraid of KMC as it was the first time I was seeing it being done.''(p.64) ''- yes, I did have a doubt, I doubted whether KMC would work.''(p.64)
Finding	During KMC: Despite some apprehension by mothers prior to commencing KMC, mothers acknowledged feelings of elation and excitement whilst practicing KMC. It was usually the baby's weight gain that triggered this response. In addition to the feelings of excitement generated by the weight gain, feelings of emotional calmness and tranquility were also expressed. (U)
Illustration	''The other patient's baby didn't gain weight, but when she practiced KMC the baby's weight just started going up and up.''(p.65) One mother said: ''Ah! The bond, the feeling. I can 't explain how special it was.'' (p.65) Another mother said: ''she can sleep for hours on me.''(p.65)
Finding	Management of the Mothers: Mothers felt that the nursing staff had been a pillar of strength to them. Mothers acknowledged and described the encouragement that they had received from other mothers. (C)
Illustration	One mother stated: ''I wouldn't have gone through with it if it wasn't for the Sisters''(p.65) Mothers encouraged one another with words such as: ''Don't be frightened, just be positive, it is very good. You will find that it works.''(p.65)
Study: Waiswa *et al.* ''I never thought that this baby would survive; I thought that it would die any time'': perceptions and care for preterm babies in eastern Uganda[39]	
Finding	Care for preterm babies at community level: Although the need for warm care for a preterm baby was well known among the respondents, community members had little knowledge of STS care or KMC. The generation of warmth was improvised through covering and wrapping babies in many clothes, lighting lamps and charcoal stoves placed under the baby's bed, and hot water jerry cans or plastic bottles put in close proximity to the baby. (C)
Illustration	''The midwife told us to cover the baby in a clean place, not to bathe it, to get cooking oil and a clean cloth and smear it always. She also told us to put a lamp or a charcoal stove where it sleeps so that it gets some warmth and never to remove it from its cover or bed till after one month.''(p.1144)
Finding	Possible problems to the promotion of KMC practice at community level that were mentioned in FGDs included: fear of hurting the baby because ''the cord is still fresh''; women needing to work yet ''the baby has to be in the chest all the time''; and the perception that KMC is tiring. (C)

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Illustration	''It is tiresome because day, night, day, night, you can even become sick. You can even start bleeding again.''(p.1144)
Finding	The challenges of caring for preterm babies included: increased workload for women; labor-intensive, time-consuming, and tiring care; limited male involvement other than financial support; expenses because of the need to buy fuel (charcoal and paraffin) and oil to smear on the baby; accessing care at a facility when the infant is sick; and the nature of rural homes (small, congested, and dusty). (C)
Illustration	'Time came and I said that paraffin was expensive and my neighbours advised me to always put hot water in a plastic jerry can and always put it under the bed of the baby in order to provide most warmth'.''(p.1144)

C, credible; FGDs, focus group discussions; KC, kangaroo care; KMC, kangaroo mother care; NICU, neonatal intensive care unit; NS, not supported; STS, skin-to-skin; STSC, skin-to-skin contact; U, unequivocal

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