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# Barriers for Kangaroo Mother Care among Post-natal Mothers in Developing Countries: an Integrative Review

Nayomi Nisansala[1] , Muditha Muthucumarana[2] , Nirosha Edirisinghe[3]

[1] *De Soysa Maternity Hospital for Women, Colombo, 00800, Sri Lanka.*
[2] *Faculty of Humanities and Sciences, Sri Lanka Institute of Information Technology, Malabe, 10115, Sri Lanka.*
[3]*Faculty of Nursing, University of Colombo, Thalapathpitiya, Nugegoda, 10100, Sri Lanka.*

Corresponding author*: muditha.m@sliit.lk

**Abstract**

Kangaroo Mother Care (KMC) is a highly cost-effective intervention for improving health outcomes among preterm and low birth weight babies. Despite evidence of its effectiveness in reducing morbidity and mortality, implementation barriers persist in developing countries where approximately 15 million preterm babies are born annually, and 9 million low birth weight infants die due to preventable causes. This integrative review aimed to determine barriers to KMC adoption among postnatal mothers in developing countries to inform targeted interventions and policy development. An advanced search in PubMed, MEDLINE, CINHAL, and Cochrane using PRISMA guidelines resulted in seven studies conducted across India, Bangladesh, Ethiopia, Malawi, Vietnam, and Malaysia which were reviewed to explore barriers to KMC implementation from the perspectives of mothers and healthcare providers. Four major barrier themes emerged: (1) Healthcare system and infrastructure barriers, including inadequate staffing, equipment shortages, and lack of dedicated KMC spaces; (2) Socioeconomic and cultural barriers, encompassing financial constraints, transportation challenges, and traditional beliefs conflicting with KMC practices; (3) Knowledge and education gaps among both parents and healthcare providers; and (4) Physical and psychological comfort barriers, including maternal discomfort, fatigue, and emotional challenges. Successful KMC implementation in developing countries requires multi-level interventions addressing systemic healthcare challenges, economic barriers, cultural factors, and individual support needs. Healthcare systems must invest in infrastructure development, staff training, and culturally sensitive educational programs while providing economic support mechanisms for disadvantaged families. Coordinated efforts from policymakers, healthcare administrators, and international organizations are essential to realize KMC's full potential in reducing neonatal mortality and morbidity in resource-limited settings.

***Keywords*:** Kangaroo mother care, Developing countries, Barriers, Preterm birth, Low birth weight, Postnatal mothers

## Introduction

Kangaroo Mother Care (KMC) is a highly cost-effective intervention for preterm and low birth weight babies to improve their health-related outcomes under limited resource conditions (Vesel, Bergh, & Kerber, 2015). According to the World Health Organization (WHO), "KMC is defined as early, continuous, and prolonged skin-to-skin contact (SSC) between the mother and preterm babies; exclusive breastfeeding or breastmilk feeding; early discharge after hospital-initiated KMC with continuation at home and adequate support and follow-up for mothers at home" (WHO, 2023). Here, Skin–to–skin contact is the core

component, whereas other components; breastfeeding, early discharge, and follow–up care are context specific (Chan et al., 2016).

The WHO recommends all mothers and babies, irrespective of the delivery method, "to have uninterrupted skin-to-skin care starting immediately after birth for at least one hour" (Taha & Wikkeling-Scott, 2022). It helps stimulate certain behaviours that are required for the newborn's biological and psychological basic needs. Studies have shown that newborn babies who had experienced KMC had "more stable blood glucose levels, oxygen saturation levels, and cardiorespiratory stability" (Taha & Wikkeling-Scott, 2022). KMC also reduces "the risk of hypothermia, severe illness, nosocomial infection, and length of hospital stay", and improves growth, breastfeeding, and maternal–infant attachment (Conde-Arudelo, & Diaz-Rosello, 2016).

The literature evidence shows that KMC is a highly effective strategy for preventing morbidity and mortality among preterm and low birth weight babies (LBW) all over the world (Conde-Argudelo et al., 2014; Vesel, Bergh, & Kerber, 2015). Annually, about 15 million of babies are born preterm worldwide, and the prematurity related complications are the leading cause for mortality of under five years (Liu, Oza, & Hogan, 2016). Annually, around "9 million LBW babies, born in low and middle-income countries die due to poor health behaviours and low socioeconomic states" (WHO, 2016; Kinney, Kerber, Black, & Cohen, 2010). Therefore, KMC is highly recommended for low and middle-income countries due to its cost effectiveness and medical benefits (WHO, 2015).

Although KMC has been field-tested and found to be effective for preterm and/or LBW newborns, implementation of it at health facilities and at the community level can be difficult. There are many barriers preventing postnatal mothers as well as health care providers from implementing KMC. The context-specific barriers for KMC in law resource settings, particularly seen in law and middle-income countries, need to be explored, hence it can help address challenges that prevent its widespread adoption and implementation. By understanding the barriers to KMC, healthcare providers in these settings can tailor their support and education to address specific challenges faced by postnatal mothers in practicing KMC. Ultimately, it will reduce infant mortality and enhance healthcare practices for maternal and infant health, inform interventions and policies in order to improve the quality of healthcare delivery in these settings.

## Materials and Methods

### *Research question, objectives, and the design*

The primary research question, "What are the barriers for KMC among postnatal mothers in developing countries?" was built using the framework 'PEO' (Population, Exposure, Outcome) (Table 1).

**Table 1:** *Research question diagram*

| Population | Exposure | Outcome |
|---|---|---|
| Postnatal mothers in developing countries | Kangaroo Mother Care | Barriers in KMC |

This study was conducted as an integrative review since the purpose was to provide evidence to inform practice with the research objective; to determine the barriers for KMC among postnatal mothers in developing countries.

### *Databases and key terms*

Health-related databases: PubMed, MEDLINE, CINHAL, and Cochrane were used with advanced search options in order to find the published literature related to the above research question. KMC, pre-term birth, low birth weight, barriers, developing countries and middle-income countries were used as keywords with the Boolean operators (AND, OR) to narrow the search. The final search criteria were

"barriers" AND "Kangaroo mother care" OR "KMC" OR "Skin-to-skin" AND "pre-term birth" OR "premature birth" OR "low birth weight" AND "developing countries" OR "middle-income countries".

***Inclusion and exclusion criteria***

The research articles written in the English language and published between 2018 and 2024, with findings of original studies on barriers for KMC among postnatal mothers in developing countries, were included, while systematic reviews, meta-analyses, duplicate articles, and abstracts without proof of complete articles were excluded in this integrative review.

***Searching strategy***

The 'Preferred Reporting Items for Systematic Reviews and Meta-Analyses' (PRISMA) guidelines (Moher et al., 2009) were used in selecting the publications to be included in this study (Figure 1). According to the PRISMA guidelines, four steps, including 'identification, screening, eligibility, and inclusion' were followed. Initially, 187 articles were identified in the published literature from above databases. Next, those articles were screened for inclusion / exclusion criteria and for duplicates and 142 records were excluded. Further 14 abstracts and 9 systematic reviews were also removed. Finally, after reviewing the eligible full text articles for the methodological quality, 7 articles were identified to be included.

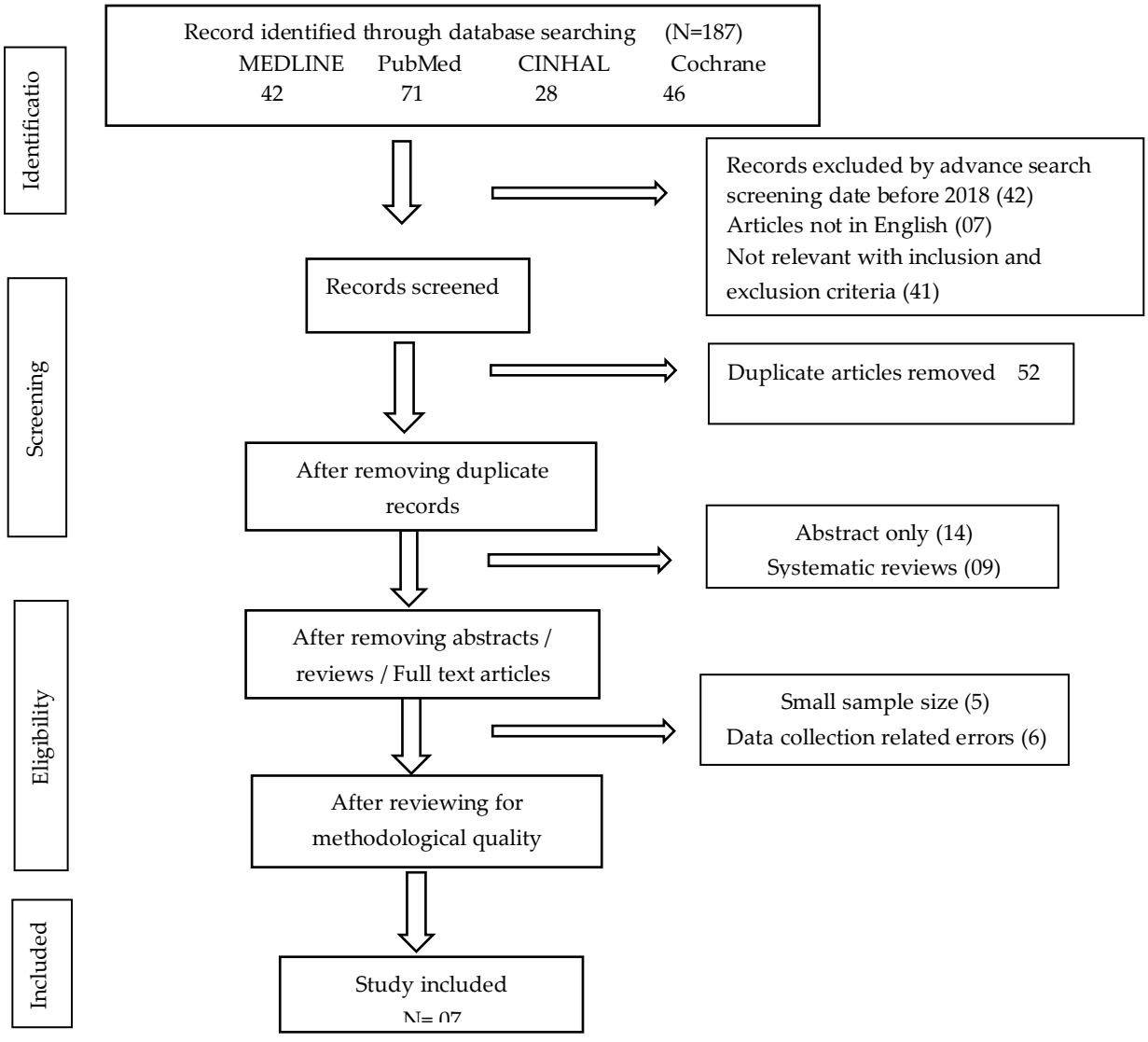


**Figure 1 :** *PRISMA Flow diagram of search strategy (Moher et al., 2009)*

*Critical Appraisal of Literature*

Critical appraisal of the selected articles to determine their validity, reliability, relevance, and applicability was done through the Critical Appraisal Skills Programme (CASP) tool (Long, French, & Brooks, 2020). It has structured checklists that target specific study designs, enabling a thorough and reliable synthesis of available data while evaluating the quality, dependability, value, and trustworthiness of the included studies. Accordingly, all 7 articles met the standards of the above CASP tool.

*Data Extraction*

In this study, relevant data including the specific methodological considerations and the results of the above 7 articles were extracted and tabulated (Table 2) with the columns; Authors and Year, Name of the Article, Sample size and country, Method and Results to make a thorough assessment about the barriers for KMC among postnatal mothers. To ensure fairness and reduce bias, the evaluation procedure was carried out by two investigators. Mismatches between reviewers were settled through conversation with a third reviewer.

**Results**

The collected evidence was arranged in a comprehensible way and assessed in depth to identify any issues with methodology and quality as well as to identify key areas related to barriers for KMC among postnatal mothers.

**Table 2:** *The Brief of the Selected Articles*

| Authors and Year | Name of the Article | Sample size and country | Method | Result |
|---|---|---|---|---|
| Dawar et al. (2019) | Factors impacting practice of home kangaroo mother care with low-birth-weight infants following hospital discharge | 53 of the mothers in India | An exploratory observational study using a mixed methods evaluation | 07 mothers (13.2%) who were breastfeeding and practicing KMC four weeks post-discharge, discontinued KMC at 04 weeks. The top two enablers reported were the amount of time KMC practiced, and the household responsibilities being the most significant (u=195, p=0.008). Lack of privacy (p=0.002) and lack of motivation (p=0.0034) |
| Sjomar et al. (2023) | Exploring care givers' experience of kangaroo mother care in Bangladesh | 15 care givers In Bangladesh | A descriptive qualitative study An interview with 15 caregivers | 1. Conductive conditions- displaying acceptance, supportive healthcare staff, facilitating structures, importance of social network.<br>2. An empowering process- becoming motivated, strengthening interaction of baby, instilling agency<br>3. Suboptimal implementation- struggling to succeed, disregard for mother's needs, delayed initiations |
| Kinshella et al. (2020) | "So sometimes, it looks like it is a neglected ward" Health worker perspectives on implementing Kangaroo mother care in Southern Malawi | 27 health workers and supervisors working in newborn health at the tertiary, secondary, and district levels in Southern Malawi | An exploratory qualitative study | Staff attitudes, inadequate resources, and reliance on families emerged as key themes. |

| | | | | |
|---|---|---|---|---|
| Foong et al. (2023) | Exploring factors influencing the uptake of kangaroo mother care: key informant interviews with parents | 09 parents Malaysia | Triandis model of social behavior as a framework | Positive feelings like warmth and contentment, the sense of parenthood with KMC, the benefits of KMC for the infant and parents were enablers for KMC.<br>Negative feelings such as fear, uncertainty and embarrassment, and the prioritization of time for milk expression, overcrowding in the ward, lack of space and privacy, limited visiting hours, lack of support and poor communication resulting in misapprehension about KMC were major barriers. |
| Nyondo-Mipando et al. (2021) | Mothers' quality of life delivering kangaroo mother care at Malawian hospitals | 27 healthcare workers and 24 caregivers engaged with KMC at 04 hospitals in Southern Malawi | The exploratory qualitative study | Mothers experienced multidimensional challenges to their quality of life while delivering facility based KMC. The continuous KMC was difficult to practice due to being in one position for prolong duration, limited movement, boredom, isolation during their hospitalization, cooperated sleep, and lack of support for their daily living needs. |
| Bilal et al. (2021) | Barriers for kangaroo mother care (KMC) acceptance, and practices in Southern Ethiopia | 144 participants included with health care providers, mothers, fathers, and grand mothers In Southern Ethiopia | A qualitative explorative study | Barriers to KMC practice included gaps in knowledge, attitudes, and practice among parents of preterm and low birth weight infants. Cultural and structural factors, socioeconomic factors, community beliefs and values, shortage of supplies in health settings |
| Cavallin et al. (2022) | Kangaroo Mother Care in Vietnam: A National Survey of a Middle-Income Country | 187 hospitals (6 central hospitals, 72 provincial hospitals, 109 district hospitals) In Vietnam | A structured, cross-sectional survey on KMC practice | The most difficult aspects in KMC implementation were the follow-up after discharge (76%) and achieving an adequate time spent in skin-to-skin contact (33%).<br>The most important facilitators were the education of parents and doctors, and the availability of a KMC-dedicated room |

**Discussion and Conclusion**

Based on the seven studies reviewed from India, Bangladesh, Ethiopia, Malawi, Vietnam, and Malaysia, several critical themes emerge regarding barriers to Kangaroo Mother Care (KMC) adoption among postnatal mothers in developing countries. This analysis synthesizes findings to identify key challenges across diverse healthcare settings.

***1. Healthcare System and Infrastructure Barriers***

The most prominent barrier across all studies was inadequate healthcare infrastructure and staffing challenges. In Malawi, healthcare workers identified insufficient staffing for KMC initiation and monitoring as a primary obstacle, with the need to prioritize sick babies contributing to delays in KMC implementation (Kinshella et al., 2020). Similarly, the Vietnam national survey revealed that only half of

the hospitals had written KMC protocols and educational courses, highlighting systemic gaps in implementation (Cavallin et al., 2022).

Equipment shortages emerged as a critical barrier, with Malawian hospitals lacking essential monitoring equipment such as weighing scales, thermometers, and glucometers necessary for effective KMC monitoring (Kinshella et al., 2020). The absence of dedicated KMC spaces was identified in Vietnam, where only half of the participating hospitals had KMC-dedicated rooms, despite their recognized importance for successful implementation (Cavallin et al., 2022). Lack of privacy consistently appeared as a limiting factor across studies. The Indian research identified insufficient privacy as a barrier to family KMC implementation (Dawar et al., 2019). Ethiopian mothers cited inadequate space as a significant obstacle (Bilal et al., 2021), while Malaysian parents reported overcrowding and lack of privacy in wards as major deterrents (Foong et al., 2022).

***2. Socioeconomic and Cultural Barriers***

Economic constraints consistently emerged as significant barriers across developing countries. In Ethiopia, mothers faced substantial financial burdens including transport costs, hospital bed payments, catering services, medication, and KMC clothing expenses, with some infants dying due to families' inability to afford transportation to healthcare facilities (Bilal et al., 2021). The Indian study reinforced this finding, noting that mothers living more than 20 km from hospitals were excluded from KMC programs due to accessibility challenges (Dawar et al., 2019). These socio-economic constraints could be the major reason found in Vietnam, which has made the follow-up after discharge more difficult Cavallin et al. (2022).

Cultural beliefs and traditional practices presented additional obstacles. Ethiopian communities held specific beliefs and values regarding preterm and low birth weight babies that conflicted with KMC practices, while traditional care methods competed with modern KMC approaches (Bilal et al., 2021). The Malaysian study highlighted cultural factors limiting male participation in KMC, suggesting gender-specific cultural barriers (Foong et al., 2022).

***3. Knowledge and Education Gaps***

Inadequate parental education emerged as a universal barrier. The Ethiopian study identified significant gaps in KMC knowledge, attitudes, and practices among parents of preterm and low birth weight babies (Bilal et al., 2021). Vietnamese hospitals showed limited use of written educational materials, relying primarily on oral information despite recognizing the importance of parental education for KMC success (Cavallin et al., 2022).

Healthcare provider education was equally problematic. The Malawian study emphasized that education of healthcare providers plays a key role in successful KMC implementation, yet many facilities lacked adequate training programs (Cavallin et al., 2022). Poor communication between healthcare staff and parents was identified as a barrier in Malaysia, affecting KMC uptake (Foong et al., 2022).

***4. Physical and Psychological Comfort Barriers***

Physical discomfort significantly impacted KMC continuation across multiple studies. The Indian research found that mother-neonate discomfort due to pain, fatigue, or heat served as primary barriers (Dawar et

al., 2019). Bangladesh mothers experienced difficulties maintaining skin-to-skin contact, with post-cesarean pain hampering practice implementation (Sjomar et al., 2023).

The Malawian quality of life study revealed that prolonged KMC positioning created exhausting experiences for mothers, compromising sleep, restricting movement, and causing boredom and isolation during hospitalization (Nyondo Mipando et al., 2021). Malaysian parents reported initial negative feelings including fear and uncertainty, that hindered KMC uptake (Foong et al., 2022).

***Facilitating Factors***

Despite numerous barriers, several facilitating factors emerged. Family support, particularly help with household responsibilities and family member participation in KMC, significantly improved outcomes in India (Dawar et al., 2019). Healthcare worker support during hospitalization proved crucial for successful KMC initiation across multiple settings. The duration of KMC practice emerged as the most important factor for neonatal growth, with infants receiving more than 12 hours daily showing superior weight, head circumference, and length gains (Dawar et al., 2019) Unavailability of these facilitating factors can also indirectly be barriers for KMC.

***Implications for Practice***

The findings suggest that successful KMC implementation in developing countries requires multi-level interventions addressing systemic healthcare challenges, economic barriers, cultural factors, and individual support needs.

Recruiting and training adequate health care staff for KMC and providing essential equipment as well as dedicated KMC spaces in health care facilities will be therefore a priority. Creating private spaces to accommodate families comfortably, starting with low-cost privacy solutions like screening curtains will be even useful. Establishment of national KMC standards, and partnerships with NGOs for resource mobilization in resource-limited settings, will be vital for facilitating KMC in developing countries.

Establishing community-based KMC support centres in order to reduce travel distance and cost and providing free essential KMC supplies will be a great relief for these parents. Conducting culture-sensitive and father-specific KMC education sessions addressing cultural barriers may increase the male participation and family support. Establishment of teleconsultation services for post-discharge follow-up, will be useful in ensuring continuity of care in areas where transportation difficulties exist.
In order to fill knowledge gaps, mandatory pre-service and in-service KMC training for all neonatal staff will be highly important. Moreover in order to educate postnatal parents/ families, development of standardized written KMC education materials in local languages with visual aids for low-literacy populations and distribution of take-home educational booklets and video demonstrations accessible via smartphones will be immensely helpful. Further pairing new parents with experienced KMC parents and referring them to peer-support programs will facilitate their learning experience.

Further comforting postnatal mothers physically and psychologically will ensure the effectiveness and consistency of KMC. Providing ergonomic seating with back support, footrests, and reclining chairs will maximize comfort and the duration of KMC. Encouraging father and family member participation to share KMC responsibilities will allow mothers to have rest breaks. Offering adequate postpartum pain management, especially for post-cesarean mothers will be necessary to make them engaged in KMC.

Arranging entertainment options (books, television, WiFi) will significantly reduce their boredom during KMC sessions. Emotional support through counselling and peer support groups particularly during initial KMC attempts will be further beneficial.

***Limitations***

This integrative review aimed to determine barriers to KMC adoption among postnatal mothers in developing countries. One of the main limitations was the poor availability of literature addressing the exact issue under the investigation. The search was limited to PubMed, MEDLINE, CINHAL, and Cochrane data bases, thus limiting the results only to those. Since only the literature published in English medium was included, valuable study findings published in other languages may have been excluded in this review. Further, key terms used in search may not have captured all relevant studies i.e. "challenges" instead of barriers, which was not observed at the beginning of the search.

Another limitation was the reviewer bias, where at the initial steps, only one reviewer was involved. Though the review targeted only studies with postnatal mothers as participants, there were few studies in which care givers and other family members also participated. Other than the above, effects of limitations in individual studies i.e. limited sample sizes may have affected the overall image of this integrative review.

**Conclusion**

This review of barriers in Kangaroo Mother Care (KMC) in developing countries identified multifaceted challenges for this life-saving intervention. Analysis of seven studies across India, Bangladesh, Ethiopia, Malawi, Vietnam, and Malaysia revealed that despite its cost-effectiveness for improving neonatal outcomes, significant barriers persist in achieving sustainable practice of KMC. These include '*Healthcare System and Infrastructure Barriers*', '*Socioeconomic and Cultural Barriers*', '*Knowledge and Education Gaps*' and '*Physical and Psychological Comfort Barriers*' identified as main themes of this review. Successful KMC implementation requires comprehensive strategies combining healthcare infrastructure strengthening with targeted interventions addressing these multilevel challenges. Coordinated efforts are essential for developing countries to reduce neonatal mortality and morbidity while ensuring vulnerable populations access this critical intervention. The findings call upon policymakers, healthcare administrators, and international organizations to prioritize KMC as a fundamental component of neonatal care in resource-limited settings.

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