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# Challenges and strategies in implementing kangaroo mother care across Indonesia: a literature review

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## ABSTRACT

Kangaroo Mother Care (KMC) is a simple and low-cost intervention proven effective in reducing morbidity and mortality among low birth weight (LBW) infants through skin-to-skin contact, exclusive breastfeeding, and post-discharge monitoring. KMC plays an essential role in maintaining the infant's body temperature, enhancing physiological stability, improving the sucking reflex, accelerating weight gain, and strengthening the emotional bond between mother and baby. In Indonesia, KMC has been integrated into national health policy since 2009 through the "Mother and Baby Friendly Hospital Program," yet its implementation still faces several challenges, including limited facilities, inadequate health worker training, and insufficient family support. Studies conducted at the hospital and primary care levels have demonstrated positive outcomes in terms of growth, physiological stability, and breastfeeding success among LBW infants who received KMC. The main barriers of KMC implementation in Indonesia are found at the maternal and family level, the healthcare provider and facility level, and also the social-cultural and economic level. Multistage efforts, such as developing legal frameworks, training, teamwork, utilizing the available resources, communication, supervision, documentation, and evaluation, may overcome the barriers and increase the KMC implementation in Indonesia.

**Keywords:** implementation, Indonesia, kangaroo mother care, low birth weight infants, neonatal care.
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## INTRODUCTION

Low birth weight (LBW) and prematurity remain the leading causes of neonatal morbidity and mortality worldwide, particularly in low- and middle-income countries. Globally, complications related to prematurity account for approximately 35% of neonatal deaths, and infants with LBW (<2,500 grams) are at higher risk of developing hypothermia, infections, respiratory distress, and feeding difficulties compared to those with normal birth weight.[1] According to the World Health Organization (WHO), about 60–80% of infant mortality is associated with LBW. Globally, the prevalence of LBW is estimated at 21% of all births, with the highest rates observed in Asia at 42.7%. In Indonesia, the prevalence of LBW infants reached 12.7% in 2017 and 12.5% in 2018, according to the Ministry of Health of the Republic of Indonesia.[2] Neonatal deaths in 2020 were predominantly attributed to LBW cases, accounting for about 35.2% of all neonatal deaths.[3]

One of the proven effective interventions to reduce neonatal deaths is Kangaroo Mother Care (KMC), first introduced in Colombia in the late 1970s. According to WHO, KMC is a method of care involving early, continuous, and prolonged skin-to-skin contact between mother and infant, accompanied by exclusive breastfeeding, early discharge from the hospital, and regular follow-up at home.[1,4,5] The combination of these components has been shown to improve thermoregulation, cardiorespiratory stability, breastfeeding success, and emotional bonding between mother and baby.[1,5] Several randomized controlled trials and meta-analyses have demonstrated that KMC significantly reduces neonatal mortality, hypothermia, and severe infections, while enhancing weight gain, breastfeeding success, and maternal satisfaction with infant care.[1] Despite strong global evidence, the implementation of KMC in Indonesia remains uneven. The Indonesian Ministry of Health has designated KMC as a national priority intervention to reduce neonatal mortality and increase exclusive breastfeeding coverage. KMC is recommended for all stable preterm and LBW infants and has been integrated into the essential neonatal care guidelines and maternal-child health program.[3,5] The implementation of KMC was formally introduced nationwide in 2009 through the "Rumah Sakit Sayang Ibu dan Bayi" and has been applied in several referral hospitals, such as Budi Kemuliaan Hospital in Jakarta, since 2010.[6] However, its application still faces challenges, including limited healthcare worker training, inadequate KMC facilities, suboptimal family involvement, and socio-cultural factors influencing the acceptance of this method.[3,5,6]

Beyond infrastructural challenges, the support of healthcare workers and families plays a crucial role in the successful implementation of KMC in Indonesia. A qualitative study by Rahmayanti et al at Budi Kemuliaan Hospital revealed that mothers' positive attitudes toward KMC emerged after receiving education from healthcare workers. However, long-term adherence was often hindered by limited family visiting hours, the absence of support groups for parents of LBW infants, and the lack of hospital policies promoting sustained KMC practice.[6] The Ministry of Health, through its "AyoSehat" platform, also emphasizes that the success of KMC depends not only on the mother but also on the active involvement of fathers and family members in providing warmth, affection, and emotional support, which directly improve infant survival and growth.[5]

A systematic review by Chan et al found global variations in the definition and implementation of KMC, with nearly one-third of studies failing to clearly describe operational definitions and many omitting essential components such as exclusive breastfeeding or post-discharge follow-up.[1] This inconsistency underscores the need for contextual evaluation and standardization of KMC implementation, especially in a country like Indonesia, where disparities exist in healthcare infrastructure, education levels, and cultural or socioeconomic conditions across regions.[3,6]

Therefore, this literature review aimed to describe the implementation of KMC in Indonesia, analyze reported clinical outcomes across various levels of healthcare facilities (primary, secondary, and tertiary), identify barriers to implementation, and propose strategies and future policy directions to strengthen the equitable and sustainable application of KMC nationwide.

## Overview of KMC in Indonesia

KMC is a method of caring for preterm and LBW infants through direct skin-to-skin contact between mother and baby, accompanied by exclusive breastfeeding and continued follow-up at home. Developed in Colombia in the late 1970s, this method serves as an effective alternative to incubator care, particularly in resource-limited settings.

KMC plays a crucial role in maintaining infant body temperature, stabilizing physiological functions, and strengthening the emotional bond between mother and baby through the release of oxytocin, which also enhances the milk ejection reflex.[7,8] A study by Sinha et al demonstrated that LBW infants who received KMC had higher breast milk intake (368 ± 135 g/day vs. 331 ± 144 g/day in the control group), attributed to sensory stimulation that strengthened the sucking reflex and oxytocin production.[7] The effectiveness of KMC on infant growth has also been supported by multiple meta-analyses and systematic reviews, showing that KMC significantly increases daily weight gain, up to an average of 30 g per day, primarily when performed for more than 90 minutes per day during the first two weeks of life. Furthermore, infants who continued KMC after hospital discharge showed greater weight gain and longer exclusive breastfeeding duration compared to those who received conventional care.[9,10]

In addition to promoting growth, KMC effectively improves thermoregulation in preterm infants through natural heat transfer from the mother's body, which mimics the incubator effect, while also stabilizing respiration, heart rate, and infant comfort. During the COVID-19 pandemic, KMC remained safe and feasible when performed at home with remote supervision from healthcare providers.[8] Other studies have found that KMC significantly enhances rooting and sucking reflexes ($p < 0.001$), which are essential for breastfeeding success and LBW infant survival. Combining KMC with infant massage before each session has also been shown to strengthen the sucking reflex by improving blood circulation and oral muscle tone.[11]

Overall, KMC provides multidimensional benefits for LBW infants, including improved breast milk intake, weight gain, thermoregulation, and feeding ability, while strengthening the role of the family in neonatal care.[7–11] With its proven effectiveness, simplicity, and cost-efficiency, KMC represents a high-impact intervention that should be widely and consistently implemented across all levels of healthcare facilities.

## Implementation of KMC in Indonesia

The implementation of KMC in Indonesia has been integrated into the national health policy as part of the country's effort to reduce neonatal mortality. Since 2009, the Indonesian Ministry of Health has issued national guidelines for KMC in hospitals and their networks as one of the main strategies under the "Rumah Sakit Sayang Ibu dan Bayi" Program.[5,6,12] This program emphasizes KMC implementation across all levels of healthcare services, from referral hospitals to primary care facilities, to ensure the continuity of care for LBW infants from inpatient care to home-based follow-up.

A study by Rahmayanti et al at Budi Kemuliaan Hospital in Jakarta identified seven key factors determining successful KMC implementation: adequate maternal knowledge, positive maternal attitudes toward KMC, clear information sources, supportive hospital policies, healthcare provider engagement, husband and family support, and effective pre-discharge education. The study also highlighted the importance of forming peer support groups among families of LBW infants to strengthen social support and maintain KMC practice at home after discharge. Psychosocial support from family members was shown to boost maternal confidence and prolong KMC duration at home.[6,12]

Similar findings were reported by Martha et al in their study at Depok Regional Hospital and two PONED community health centers, where KMC implementation successfully improved healthcare workers' competence and encouraged sustainable KMC practices in primary healthcare settings, despite limitations in physical facilities and staffing. The study concluded that KMC is feasible when supported by strong leadership commitment, local government policies, and a well-functioning referral system between hospitals and primary care centers. Leadership and inter-level coordination were identified as key success factors for regional KMC implementation.[13]

At the healthcare provider level, nurses' knowledge, attitudes, and skills play a vital role in maintaining consistent KMC practice. A study at Dr. Margono

Soekarjo Hospital in Purwokerto found a significant correlation between nurses' knowledge and KMC implementation (p = 0.000). The study emphasized the need for routine training and continuous supervision to ensure that healthcare workers fully understand KMC principles, objectives, and benefits. PERINASIA has routinely conducted KMC training since 2004 to the present, with a total of 4,116 participants, consisting of midwives, nurses, general practitioners, pediatricians, obstetrician-gynecologists, and other healthcare workers.[14] Moreover, practical interpersonal communication skills among nurses were found to enhance mothers' confidence to continue KMC independently at home.[15]

Beyond clinical aspects, a scoping review by Noviana & Kartini (2023) highlighted the importance of social and family factors in strengthening KMC implementation in Indonesia. Healthcare providers act not only as caregivers but also as educators and facilitators, helping mothers understand the benefits of skin-to-skin contact, maintaining infant temperature stability, and improving exclusive breastfeeding rates. The study also emphasized that community health workers (kader) play an essential role in sustaining KMC practices after hospital discharge by providing education, monitoring infant growth, and offering emotional support to families of LBW infants.[3]

Family support, particularly from fathers and family members, has also been identified as a crucial determinant of successful home-based KMC implementation. Mothers who receive emotional, practical, and moral support from their husbands are more likely to maintain consistent KMC practices than those who do not. Emotional support can prepare the mothers to take care of the babies and face the problems that may occur while taking care of them. Mustikawati found that family support, such as doing household chores, replacing the mother to do KMC, and tying the KMC clothes, can improve the KMC implementations. Cultural and social norms further influence the acceptance of KMC in communities. In some cases, mothers perceive caring for LBW infants as a spiritual test that strengthens their motivation to nurture their babies' health.[3,16] Conversely, certain societal norms that view KMC as inappropriate in public spaces can hinder its practice, especially in areas with low educational levels.

To ensure the sustainability of KMC post-discharge, community-based approaches such as postnatal home visits and community empowerment are essential. Healthcare workers and community cadres should provide continuous education on KMC benefits to maintain maternal adherence to daily skin-to-skin contact for at least one to three hours. Moreover, establishing mother support groups and training community cadres have proven effective in expanding coverage, improving compliance, and strengthening the referral system between hospitals and primary care facilities.[3] Studies by Mustikawati and Kurniawati in Jakarta, Bogor, Tangerang, and Bekasi cities also found that community support from health workers, such as giving education about KMC, reminding the mothers to implement KMC, and evaluating the KMC practice, also improves mothers' confidence and KMC implementation.[16,17]

## Outcomes of KMC in Indonesia

The implementation of KMC across various healthcare facilities in Indonesia has shown positive outcomes for LBW infants, covering multiple aspects such as weight gain, physiological stability, feeding success, and the psychological well-being of both mother and baby. At Budi Kemuliaan Hospital in Jakarta, KMC practice has been proven to improve body temperature stability, enhance the sucking reflex, and accelerate weight gain during hospitalization. Moreover, infants who continued KMC at home after discharge demonstrated faster growth and higher rates of exclusive breastfeeding compared to those receiving conventional care. KMC also contributes to stronger emotional bonding between mother and baby through consistent skin-to-skin contact, leading to reduced maternal stress and increased oxytocin levels that support breast milk production.[6]

At Dr. Margono Soekarjo Hospital in Purwokerto, KMC implementation significantly improved infants' feeding ability, respiratory and cardiac stability, and reduced the incidence of hypothermia among preterm infants. Babies receiving KMC demonstrated better physiological stability and shorter hospital stays than those who did not. The study emphasized the importance of healthcare workers' understanding of KMC principles and benefits as key factors for successful implementation.[15]

A study by Fatimah (2018) at Ulin General Hospital in Banjarmasin further supports these findings. In a pre-experimental one-group pretest–posttest study involving 20 LBW infants, KMC applied over six days resulted in an average weight gain of 9.12 grams per day (p = 0.002). KMC also helped maintain normal body temperature (36.5–37.5°C), improved the sucking reflex, and increased blood glucose levels through more frequent feeding. Beyond physiological benefits, the study showed that KMC had positive psychological effects on mothers, including reduced anxiety, enhanced confidence in infant care, and stronger emotional bonding with their babies. These findings confirm that KMC can be effectively implemented in secondary hospitals with limited resources, provided that adequate healthcare worker support and continuous maternal education are in place.[18]

At the primary care level, a study by Meta Sari & Sulistyowati conducted at Tanjungpinang Community Health Center demonstrated that KMC was also effective in improving weight gain and maintaining temperature stability among LBW infants. In an observation of a patient with an initial birth weight of 2200 grams, the infant's weight increased to 2620 grams within 14 days after birth, while maintaining body temperature within the range of 36.5–37.5°C. KMC also facilitated exclusive breastfeeding, reduced maternal stress, and strengthened the emotional bond between mother and baby. The study additionally highlighted the importance of midwife education and maternal adherence to daily KMC sessions lasting at least one to three hours. Emotional and social support from healthcare providers and family members played a significant role in maintaining KMC success both during hospitalization and after discharge.[19]

These results reinforce the findings of Rahmayanti et al and Noviana & Kartini, which emphasize that the support of frontline healthcare providers, such as midwives and community health workers, is crucial for sustaining KMC practices within communities. KMC implementation accompanied by family education has been proven to improve exclusive breastfeeding success and reduce the risk of infection and hypothermia complications.[3,6]

n a broader scale, the WHO reported that Indonesia is among 18 middle-income countries that have implemented KMC nationally or subnationally. Although KMC coverage in Indonesia remains limited, it continues to expand through government policy support, healthcare worker training, cross-sector advocacy, and increased public awareness of KMC's effectiveness as a strategy to reduce LBW infant mortality.[12]

## Barriers and Challenges to KMC Implementation

Despite strong evidence supporting KMC's effectiveness in reducing morbidity and mortality among LBW infants, its implementation in practice still faces multiple challenges at various levels of healthcare delivery.

1. Barriers at the Maternal and Family Level

   Postpartum fatigue, time constraints, and lack of confidence in handling and caring for fragile infants are among the main challenges to KMC practice.[1] Many mothers express fear of dropping or harming their babies during skin-to-skin contact. This is consistent with findings from Mhatre et al at Vashi General Hospital in India, which reported that before structured education, more than 89% of mothers were uncertain whether KMC could replace or complement conventional care. Only 47% were willing to perform KMC for more than six hours per day. After direct counseling and KMC demonstrations by healthcare staff, maternal knowledge increased to 91%, and 84% of mothers agreed to perform KMC for ≥6 hours per day.[20] These findings highlight that lack of initial understanding and fear are significant individual-level barriers, which can be addressed through educational approaches and bedside counseling.

   Moreover, insufficient support from husbands and other family members often hinders the continuity of KMC at home. Emotional and practical support from family members plays a key role in sustaining regular KMC practice, while its absence frequently leads to early discontinuation after discharge.[3] In the Indonesian context, field studies show that family readiness is greatly influenced by unequal access to information between public and private facilities. In several public hospitals, mothers often return home without receiving a KMC cloth or a proper wrapping alternative, which leads to feelings of "not performing KMC correctly." In contrast, mothers in private hospitals who are trained using readily available wraps tend to continue KMC more easily at home. This highlights the importance of providing practical guidance on safe KMC substitutes and bedside demonstrations before discharge as part of discharge counselling.[21]

2. Barriers at the Healthcare Provider and Facility Level

   From a health system perspective, key challenges include limited healthcare worker training, lack of continuous supervision, and the absence of operational policies at the local level.[1,15] Mhatre et al noted that before educational interventions, many healthcare providers had a limited understanding of KMC feasibility and rarely provided practical guidance to mothers.[20] Training that focuses solely on theory without hands-on experience hampers full adoption of KMC in neonatal care settings.

   Other barriers include limited dedicated space, lack of basic equipment such as KMC chairs or wraps, and minimal budget allocation for KMC programs.[1,15] Paradillah et al found that the availability of kangaroo clothes in the Public Health Centre is still lacking because it is often borrowed by other health centers. Amelia et al also found that many health care institutions do not have enough KMC gowns that can be used by the mother at home. However, KMC can be done using any available scarf or cloth, but its availability is crucial because it makes the mother feel safe. Besides the KMC gown, another barrier in Indonesia is regarding the facilities and infrastructure for KMC, such as the availability of special rooms for continuous KMC and neonatal intensive care unit (NICU), which are not equal between private hospitals and government hospitals. A study in Koja Hospital, Jakarta, also found that lack of knowledge of KMC among nurses and midwives was another barrier to KMC implementation in Indonesia.[21,22] Hospitals in resource-constrained regions often lack written policies mandating KMC implementation for stable LBW infants. In addition, inadequate monitoring and evaluation systems make it difficult to assess program outcomes objectively.[15] Experiences from Indonesian hospitals also reveal managerial barriers, such as the absence of regional or institutional regulations that specifically allocate space, equipment, or operational funds for KMC implementation. Even when training has been provided, frequent staff rotations and the lack of simplified documentation systems hinder continuity. Therefore, the establishment of standardized KMC Standard Operating Procedures (SOPs) and local decrees at the hospital or district level is essential to ensure sustained resource allocation and staffing continuity.[23] Beyond structural barriers, global studies have also identified the lack of buy-in from healthcare workers and facility management as a significant obstacle. Chan et al found that some providers still perceive KMC as a "poor man's alternative" and express concerns about infant safety, particularly for babies with intravenous lines or catheters. Limited time, high workload, and lack of refresher training further hinder consistent implementation. Frequent staff turnover and leadership changes disrupt program continuity, often leaving KMC dependent on individual "champions." Addressing these issues

requires strengthened mentorship, tiered supervision, and clear communication between healthcare staff and facility leadership.[24]

3. Socio-Cultural and Economic Barriers Low cultural acceptance of skin-to-skin care remains an obstacle in several communities. Certain social norms regard KMC, especially when practiced in public spaces, as inappropriate behavior. Low literacy rates and limited health information in rural populations compound this challenge.[1] Economic factors also play a role. A study by Lawal et al in PLOS Global Public Health found that KMC practice in resource-limited countries is strongly influenced by maternal education level, poverty, access to healthcare facilities, and support from antenatal care and mass media.[25] typically the mother. It has many benefits for both baby and caregiver and is often used to regulate body temperature, promote breastfeeding, enhance growth, and bonding. This study aims to explore factors associated with Kangaroo Mother Care uptake in low-resource countries for babies born with low-birth-weight. Demographic and Health Survey data from 34 low- and middle- income countries were analyzed. Cross-sectional data of 57,223 children were pooled and analyzed. Hierarchical multivariable analysis was performed to determine the factors associated with skin-to-skin contact. Statistical significance was set to 5%. The prevalence of Kangaroo Mother Care ranged from 11.04% to 84.36%; highest in Benin (84.36% Similar conditions exist in Indonesia, where disparities between primary and tertiary care facilities create gaps in KMC access and continuity. In addition, transportation costs and hospital user fees remain significant barriers for many Indonesian mothers, especially in rural or low-income settings. Some families cannot afford the extended hospital stays required for continuous KMC practice. Furthermore, maternal workload, including caring for other children and the need to resume work early, often leads to early discontinuation of KMC at home. These findings emphasize the need for policies that address local economic barriers and provide logistical or financial support for mothers at risk of discontinuing KMC prematurely.[23] From a multi-country perspective, Vesel et al. (2015) emphasized that community ownership and partnership constitute one of the most significant bottlenecks alongside financing. Social perceptions that KMC is culturally inappropriate, particularly when practiced in public or mixed wards, often limit acceptance. These barriers can be addressed through engagement of community leaders, local media campaigns, and involvement of fathers and grandparents as family advocates. Normalizing skin-to-skin care from birth has been shown to improve acceptance and sustain KMC practice within households.[26]

## Context of Indonesia: Specific Implementation Challenges

Implementation of KMC in Indonesia faces several unique challenges identified in local studies:[21,23]

- Lack of binding regional policies and inconsistent funding across districts.
- Unequal availability of KMC rooms, wraps, and maternal beds between tertiary hospitals and community health centers.
- Frequent staff rotations without replacement of trained personnel, leading to discontinuity of KMC practices.
- Transportation costs and distance limit hospital-based KMC continuation.
- Cultural perceptions that public skin-to-skin contact is inappropriate or "embarrassing," especially in mixed wards.

## Strategies and Solutions for Strengthening KMC Implementation

The success of KMC requires a multidimensional approach that integrates policy, health system, and sociocultural aspects. Structured, practice-based maternal education programs have been proven to improve mothers' knowledge, attitudes, and skills in performing KMC. In addition, tiered training and direct supervision of healthcare providers in neonatal care units can enhance compliance and expand KMC coverage.[20]

According to the World Health Organization (2023), KMC strengthening strategies should be integrated into the overall maternal and newborn care system rather than treated as a standalone program. KMC should serve as the foundation for the management of small and/or sick newborns, ensuring that mothers and infants remain together from birth, even when one of them requires intensive care. This approach calls for service redesign, such as providing beds for mothers in neonatal intensive care units and adopting 24-hour visitation policies, which have been shown to increase the duration of skin-to-skin contact to up to 17 hours per day. Furthermore, national policy reinforcement should include incorporating KMC into maternal–infant health guidelines and regulations, establishing national coverage targets, and allocating dedicated funding. WHO also emphasizes the importance of cross-sectoral collaboration through professional networks, community organizations, and local leaders serving as KMC "champions" to promote advocacy and program sustainability.[12,27] The multi-country analysis revealed that health financing remains a universal bottleneck for KMC adoption, especially in low- and middle-income countries. Vesel et al recommend integrating KMC into national health financing plans and developing a costed master plan to ensure sustained funding at subnational levels. Community-based insurance or government subsidy schemes can mitigate family out-of-pocket costs. Moreover, cost-effectiveness analyses in several countries have shown that KMC is less expensive than incubator-based care and yields long-term developmental benefits.[26]

In the context of Indonesia, national and regional policy support needs to be strengthened through dedicated funding, the provision of essential KMC facilities, and integrated monitoring within both community health centers (Pusat Kesehatan Masyarakat, Puskesmas) and hospitals.[12] The establishment of KMC mother support groups at the community level, along with capacity building for nurses and midwives in regional hospitals,

is also recommended as a key strategy to expand adoption and ensure program sustainability.[6]

From a health system perspective, Chan et al emphasize the need for specific funding to provide KMC spaces, chairs, and equipment, as well as compensation for healthcare workers to ensure protected time for assisting mothers. Pre-service and in-service education on KMC should be included in national medical and nursing curricula to ensure standardized understanding among healthcare personnel. Implementation should also be reinforced by developing monitoring systems and dedicated indicators within health management information systems (HMIS) to track progress and service quality.[27] Another frequently overlooked barrier is the limitation of health information and reporting systems. Vesel et al noted that most countries lack standardized indicators to monitor KMC coverage and quality. Developing simple, integrated data tools within existing Health Management Information Systems (HMIS) and conducting regular clinical audits in neonatal units are crucial for evaluating program performance and sustainability.[26]

At the community level, WHO (2023) recommends engaging community health workers and local groups in KMC promotion, referral, and post-discharge follow-up of LBW infants. Behavior change communication strategies can improve cultural acceptance and family participation, while involving fathers, partners, and other family members in KMC practice has been shown to strengthen continuity at home.[12]

### Strengthening Efforts for KMC Implementation in Indonesia

To strengthen KMC nationwide, several strategies are recommended:[21,23]

- Establish regional legal frameworks mandating KMC facilities and budget allocation at the district/city level.
- Standardize discharge counselling modules, including demonstrations of safe wrap substitutes.
- Integrate KMC duties into staff job descriptions and monitor performance indicators to minimize loss of trained personnel.
- Utilize local funding sources (village funds, PKK, CSR, or BPJS health contact funds) to support operational needs such as wraps and follow-up visits.
- Strengthen referral and community follow-up through trained midwives and health cadres using simple communication tools.
- Develop behavior change communication strategies engaging fathers, grandparents, and local leaders to normalize KMC.
- Simplify documentation and include KMC indicators in national or district health information systems (HMIS).

## CONCLUSION

KMC is a practical, low-cost, and contextually relevant intervention for Indonesia, proven to improve physiological stability, growth, and breastfeeding success in LBW infants, with both local and international evidence supporting its clinical benefits. However, successful field implementation depends heavily on the combined support of policy, facility readiness, healthcare worker capacity (particularly hands-on training and supervision), and family/community engagement. Without strengthening these dimensions, KMC coverage and sustainability will remain limited. Therefore, priority strategies include integrating KMC into the national small and/or sick newborn care package, allocating dedicated resources and basic KMC facilities, providing tiered hands-on training with continued supervision, establishing monitoring mechanisms and KMC indicators within health information systems, and empowering communities through cadres and mother support groups to ensure continuity of care at home. Scaling up KMC implementation should be accompanied by operational research and cost-effectiveness evaluations across different Indonesian settings to address contextual barriers and provide long-term impact on reducing neonatal morbidity and mortality.

## DISCLOSURES

## ETHICAL CONSIDERATIONS

As this is a literature review based exclusively on publicly available data, documents, and previously published studies, formal ethical approval from an Institutional Review Board (IRB) or Ethics Committee was not required. Patient/family informed consent was not applicable.

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## CONFLICT OF INTEREST

The authors declare that they have no competing financial or non-financial interests that could be perceived as influencing the content or outcome of this manuscript.

## AUTHOR'S CONTRIBUTION

All authors confirm their roles and contributions toward the development and finalization of this manuscript, as required by the ICJME guidelines. RPG contributes to conceptualization, methodology design, literature search, initial draft writing, and corresponding author. ATRKE contributes to methodology review, data interpretation, and critical review of the manuscript. EST contributes to data interpretation and manuscript review. AANKPW contributes to data interpretation and manuscript review. YR contributes to critical intellectual contribution and final approval. HKPT contributes to data interpretation and manuscript review.

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