



# Knowledge and perceptions of kangaroo mother care among health providers: a qualitative study

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**Background:** Indonesia is one of the countries with the highest preterm birth rate. Preterm infants are more likely than term and normal weight infants to experience neonatal mortality and morbidity due to acute respiratory, gastrointestinal, immunologic, central nervous system, hearing, and vision problems. Kangaroo mother care (KMC) is a proven cost-effective intervention to help reduce mortality rates among preterm infants; however, it has not been fully implemented in hospitals.

**Purpose:** Assess KMC knowledge and perceptions among health providers.

**Methods:** This qualitative study was conducted from December 2015 to April 2016 and consisted of 21 in-depth interviews and 3 focus group discussions (FGDs). The 3 categories of health personnel in the study were clinical providers, hospital management representatives, and Indonesian Midwife Association members.

**Results:** Most health providers know about the benefits of KMC including stabilizing temperatures, weight gain, and maternal-infant bonding and reducing human resources and labor costs. They were also aware of which newborns were eligible for KMC treatment. Their knowledge was mostly gained from observation or obtained from pediatricians and personal experience. They believed that a low birth weight infant in an incubator could not be treated with KMC and that it could only be practiced if a special gown was used when holding the baby. This perception could be caused by a lack of formal KMC training, leading to misunderstanding of its aspects.

**Conclusion:** In conclusion, KMC knowledge of clinical providers in the 2 hospitals was sufficient, primarily due to their health-related educational background. Some perceptions could be potential barriers to or facilitate the implementation of KMC practice. These perceptions should be considered in future KMC training designs.

**Key words:** Knowledge, Perception, Kangaroo mother care, Health providers, Hospital

## Key message

**Question:** What are health providers' knowledge and perceptions of Kangaroo mother care (KMC)?

**Finding:** Health providers' knowledge of KMC was sufficient; however, some of their perceptions about it could create barriers to the successful implementation of hospital KMC programs.

**Meaning:** Health providers' perceptions about KMC should be considered to ensure successful KMC implementation. Locally designed on-site training programs could overcome the challenges.

## Introduction

Around the globe, about 15 million preterm births take place annually. Indonesia is one of the 10 highest preterm birth rate countries preceded by countries like India, China, and the Philippines.<sup>1)</sup> A low birth weight infant (LBWI) is defined as weighing <2,500 g and is used as a surrogate measure of preterm birth. Furthermore, preterm and LBWIs are more likely to experience neonatal morbidities due to acute respiratory, gastrointestinal, immunologic, central nervous system, hearing, and vision problems compared to both term and normal weight infants.<sup>2)</sup>

Kangaroo mother care (KMC) is one way to care for preterm infants who are clinically stable to help reduce the mortality rates of this group of infants. In 1978, Edgar Rey, a Colombian pediatrician, foresaw how incubator shortages would impact mothers being separated from their babies in neonatal units, and he developed KMC in response.<sup>3)</sup> KMC is care of preterm infant carried skin-to-skin with the mother. Engaging in KMC stabilizes the infant's temperature and enhances the production of maternal prolactin. Furthermore, KMC could become a standard preterm care internationally, including South Korea.

Reviews of KMC in the medical literature focus on medical benefits, psychological benefits, cost effectiveness, and quality improvement. One medical benefit of KMC found in the literature was that it has proven to be a safe intervention to reduce the risk

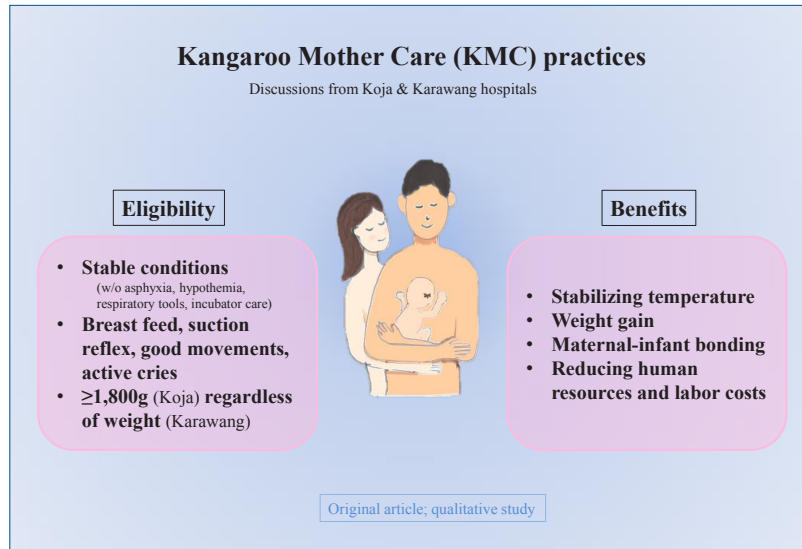
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**Graphical abstract.**

of hypothermia among LBWIs. A psychological benefit of KMC from the literature reviews reveals how a mother and baby having routine skin-to-skin contact after birth can relieve, and even reverse, the effects of stress.<sup>4)</sup>

KMC is an evidence-based intervention that has proven to be appropriate for not only improving the quality of LBWI life but also saving their lives.<sup>5)</sup> The intervention has proven to prevent up to half of all hospital deaths of infants weighing less than 2,000 g.<sup>6)</sup> In Indonesia, the importance of newborn thermal care was first raised in the early 1990s.<sup>7)</sup> KMC was introduced in the late 1990s and has been implemented in select hospitals and Puskesmas (public health centers) as an effective and low-cost method of care. Not only has KMC proven to benefit LBWI patients, but it is a cost-effective practice that saves money at hospitals, which is why it is unusual that only 21 of 2,083 hospitals have reported implementing KMC.<sup>8)</sup>

A case study with a 4-phase intervention in ten hospitals on Java showed that KMC appeared to be accepted in most hospitals.<sup>9)</sup> Building network and communication systems were key aspects to achieving maximum impact. The availability of national policies and guidelines in order to make KMC to be part of national coverage was a challenge.<sup>9)</sup> One of the biggest challenges identified was the lack of follow-up with LBWIs after hospital discharge. A study of KMC services in 10 Indonesian hospitals found that women with LBWIs do not always have access to continuous KMC services after discharge, either at home or in their primary healthcare facility.<sup>10)</sup> This finding indicates that neonatal referral systems from hospitals to primary health facilities have not functioned well.

This research was a baseline study as part of a main review of the development of referral health services of LBWI using KMC in 2 district hospitals, namely RSUD (Public General Hospital) Koja (Jakarta) and RSUD Karawang (West Java). The Koja and Karawang Hospitals implemented KMC over 5 years ago. From June through December 2015, both hospitals reported a high

number of LBWIs: 287 cases in Koja and 345 in Karawang. Although there is no specific policy for KMC implementation in the hospitals, the standard operating procedure for KMC is available.

To have an impact on the quality of LBWI care, the practice of KMC requires both competency and a strong commitment on the part of healthcare providers. It requires both training and on-the-job supervision for the hospitals' health personnel during KMC implementation. To ensure that training and on-the-job supervision are suitable for the providers, it is important to assess both their knowledge and perceptions of LBWIs and KMC. The aim of this study was to qualitatively assess the knowledge and perception of KMC among the 2 district hospitals, to serve as baseline data. The results will help to identify barriers that could impede the implementation of KMC in 2 district hospitals.

## Methods

This study used a qualitative design. All data were collected between December 2015 and April 2016 by conducting 18 in-depth interviews, 2 group discussions, and 1 focus group discussion (FGD). Data was collected in Koja Hospital from 9 in-depth interviews and 1 group discussion with 4 people. Data was collected in Karawang Hospital from 9 in-depth interviews, one FGD with 8 people, and 1 group discussion with 2 people.

There were a total of 32 informants from both districts that consisted of 13 people from Koja Hospital and 19 from Karawang Hospital. The 13 informants from Koja Hospital consisted of 10 health personnel and 3 hospital management. The 10 health personnel employed by Koja Hospital consisted of 2 pediatricians, the employee in charge of KMC in the perinatology ward, 4 nurses from the perinatology ward, 1 nurse from the outpatient pediatric clinic, 1 midwife from the midwifery outpatient clinic, and 1 obstetrician gynecology specialist. The 3 informants from hospital management were the vice director of

medical services, the head of the pediatric department, and the employee in charge of the neonatology ward.

The level of education of the informants in Koja Hospital varied: 6 people had academy level education, 1 person had a Bachelor's degree, and 6 people had Masters degrees. The employment durations at Koja Hospital ranged from 1 month to 35 years, with an average of 9.5 years and a median of 36 months.

In Karawang Hospital, there were 19 informants consisting of 14 health personnel and 5 hospital management. The 14 health personnel consisted of 3 pediatricians, 8 midwives/nurses from the rooming-in ward, 1 midwife from the midwifery outpatient clinic, and 2 nurses from the pediatric outpatient department. The 5 informants from hospital management consisted of the director and vice director of medical services, the head of the obstetrician gynecology specialist department, the head of the pediatric department, and the chief of the perinatology ward.

The education levels of the informants from Karawang Hospital were comprised of 10 people with academy level education, 2 people with Bachelor's degrees, and 7 people holding Masters degrees. The duration for being employed at Karawang Hospital ranged from 3 months to 10 years, with an average of 4.5 years and a median of 48 months.

All in-depth interviews and FGDs were conducted using pretested, semi-structured interview guidelines. To assure the validity of the data and minimize information bias, mixed triangulation was performed, namely regarding the sources of data and types of informants. The research teams and their associates trained the data collectors. All interviews were recorded using a digital tape recorder and then transcribed. All transcripts were managed, coded, and analyzed using NVivo version 2.0. Data were presented using thematic analysis.

The results were arranged based on the following thematic issues: eligibility of LBWI for KMC, benefits of KMC, sources of KMC information, and KMC actors. Prior to data collection, all informants were required to sign an informed consent document. The study received ethical approval from the research and community engagement ethical committee Faculty of Public Health Universitas Indonesia with number of reference 230/H2.F10/PPM.00.02/2015.

## Results

Generally, in both district general hospitals, the clinical providers had similar knowledge regarding the criteria for the eligibility of LBWIs for KMC, as well as the benefits, sources of information, and actors of KMC.

### 1. Eligibility of LBWI for KMC

The majority of the clinical providers in both hospitals perceived that the criteria for LBWIs to start KMC were when a baby was in stable condition, meaning the baby had no respiratory problems, was not suffering from asphyxia and hypothermia, was not using respiratory tools, and did not require care in incu-

bators. Moreover, these infants must be able to breastfeed and have a strong suckling reflex. On the other hand, there was a slight difference in determining the specified weight criteria for when a baby could start KMC. Koja Hospital identified that the infant must weigh at least 1,800 g; however, Karawang Hospital emphasized that the stability of the infant was the main criteria regardless of the baby's weight.

*A baby has ability to breastfeed, has suction reflex, has good movement and actively cries, even though their weight is less than 1,400 grams, but it is okay to treat with KMC. But [for] babies who still need treatment in an incubator, I prefer to treat them in an incubator (Pediatrician, Karawang General Hospital).*

### 2. Benefits of KMC

The majority of the clinical providers knew that KMC has a stabilizing effect on a newborn's temperature. This happens when practicing KMC with LBWIs by using skin-to-skin contact between the mothers and their infants, thus keeping the infants warm. In addition, the clinical providers knew that implementing KMC would increase the weights of the newborns. This was due to the fact that the KMC positioning makes it easy for LBWIs to breastfeed at any time, and increased breastfeeding frequency increases weight. In terms of the duration of hospitalization, the clinical providers were also aware that KMC could reduce hospitalization lengths. Therefore, the turnover of the patients who used the perinatology ward was higher.

In addition to KMC benefits to newborns, the majority of the clinical providers perceived that implementing KMC could reduce the cost of running incubators, in terms of the high cost of investing in the units, the electricity costs to operate them, and the space they require in the facility. The clinical health providers also noticed that KMC allows for more efficient use of human resources. Since they do not need to monitor temperatures of the incubators as often, they can complete other tasks.

*It relieves the work, reduces the burden ... no need to monitor the infant's condition too often, because [the mother] has been taught how to perform the kangaroo mother care (FGD participant-hospital staff, Karawang General Hospital).*

The clinical health providers also perceived that the implementation of KMC could strengthen emotional bonding between mothers and their infants. This resulted in a direct impact to both mothers and their infants in which the mother felt safer and the infants were calmer. KMC was also seen to benefit the infants' growth and development and the mother felt deeper feelings of connection.

*Basically, the kangaroo mother care method does not interfere with mother's activities, but it is, in fact, easier, cheaper, can be performed while doing daily activities, and the relationship between mother and child becomes stronger (FGD participant*

–hospital staff, Karawang General Hospital).

### 3. Sources of KMC information

Respondents mostly gathered their KMC knowledge from observation or experience in pediatric work. They perceived that the LBWIs who were in incubators could not be treated with KMC, and KMC could only be practiced if there was a special gown to hold the baby. This perception could likely be caused by the fact that most of them did not receive formal KMC training and may have misunderstandings about some parts of KMC practice.

### 4. KMC actors

Most of the clinical providers recognized that the main actors involved in KMC were the mothers of the LBWIs. In fact, some pediatricians assumed that the mother's role in KMC was superior to that of the father and other family members. This was due to the fact that the implementation of KMC was closely related to the breastfeeding bond between the mother and her infant. This was also partly influenced by the existing norms that place the main responsibility for caring for the baby with the mother, over the father. A majority of the clinical providers were women and thought that women were the main caregivers of the newborn. As a consequence, there were pediatricians who decided to postpone educating families about KMC if the infants' mothers were not present.

## Discussion

Based on our study, the main criteria for KMC eligibility was the LBWI's stability. Stability was measured in terms of having a normal temperature for 3 consecutive days and not having any health problems. In Karawang Hospital, there were no criteria for minimum weight of the infant as long as they were in stable condition. This complements a study by Flynn and Leahy-Warren<sup>10</sup> in which 7 of 10 neonatal nurses said that KMC can be performed regardless of the weight of the baby. On the other hand, in Koja Hospital, the weight of the infant must be at least 1,800 g, in addition to being stable. This is in accordance with a systematic review by Chan et al.<sup>11</sup> 1,035 articles and reports that indicated the most common early discharge criteria for an LBWI to start KMC was clinical stability or meeting a specified weight gain or weight minimum cutoff.

Knowledge about KMC for the majority of clinical providers in both hospitals is already quite good. Most of them stated how KMC is beneficial by enhancing the emotional relationship between a mother and her infant, promoting the LBWI to gain weight faster, and maintaining the baby's warmth to prevent hypothermia. These perceptions were based on previous observations of LBWI mothers practicing KMC during their stay in hospital. In addition, clinical providers perceived that the positioning of the mother and newborn in KMC is beneficial for faster weight gain due to the LBWI's easy access to breastfeeding, as well

as being conducive for frequent and comfortable sleep. Moreover, KMC could prevent hypothermia because the skin of the mother could serve as a blanket to warm the LBWI. These perceptions among clinical providers could become either enablers or barriers of KMC implementation. Based on the systematic results of Chan et al.,<sup>11</sup> the enabler of KMC implementation among health workers was the nurses would perform KMC if they believed it worked. Furthermore, Nirmala et al.<sup>12</sup> also found similar evidence in her study that the nurses believed that KMC was based on observation rather than training.

This is in line with the report by Nirmala et al.<sup>12</sup> which showed 100% of respondents had been doing KMC; the clinical providers who treated these newborns believed that the psychological relationship between mother and baby became stronger and the mother felt better because she could provide the best treatment for her baby. A study by Dalal et al.<sup>13</sup> found that 24.7% of 145 health workers in the District of Ahmedabad, India reported that they thought KMC could improve the relationship between a mother and her baby. As many as 30.3% (44 of 145 respondents) believed KMC could promote the infant's growth and development.<sup>13</sup> A further report by Nirmala et al.<sup>12</sup> elaborated on how mothers who have used KMC felt that the baby could stay warmer, feel secure, and accelerate its weight gain.

This was supported by a study in the District of Ahmedabad, India in which 29% of the health personnel surveyed were of the opinion that KMC could shorten the duration of treatment of LBWI in the hospital and reduce the related costs. In addition, health personnel was also of the opinion that KMC could shorten the duration of a hospital stay because KMC could transition into being practiced at home.<sup>13</sup> The turnover of patients in the perinatology ward was also higher, so more patients could use the limited facilities in the ward. The shorter duration of hospital stays could also reduce overall operational costs.

The source of KMC knowledge of most clinical providers was their own observation or experience with KMC practice. Most did not receive formal training on KMC. As a consequence, they lacked confidence in treating LBWIs with KMC and it also related with infant safety. This corresponds to research reported by Lim<sup>14</sup> in a tertiary facility in London, United Kingdom, in which barriers to KMC implementation were based on nurses' perceptions about infant safety, insufficient training, increased workload, lack of clear guidelines, and management support

The main implementer of KMC was the mother, as the sole actor responsible for breastfeeding. Although other family members can practice KMC, the clinical providers in the 2 district hospitals emphasized the mother's role. A study in India by Dalal et al.<sup>13</sup> noted that 48.8% of health workers said KMC can only be done by the mother, and only a small percentage of health workers knew that KMC can be done by other family members. This is because of the influence of the norms of the mother in the family, which hold that the main responsible family member in caring for a baby is the mother, not her husband or other family members.

A study by Nirmala et al.<sup>12</sup> showed that 88% of mothers prac-



ting KMC reported that they will continue practicing KMC at home.<sup>13)</sup> This differs from the findings by Dalal et al.<sup>13)</sup> in which only 19.7% of health personnel believed that KMC could be done at home. This is in line with the results of previous studies on KMC in the hospital in which most personnel said that few families continue KMC at home for various reasons, such as the mother being busy with housework and having no one to take care of her child.<sup>15)</sup>

This study could not be generalized to other hospitals in Indonesia due to including only 2 districts with the qualitative approach. However, this study will lead to the generation of appropriate material for KMC training among clinical providers in 2 particular district hospitals. The results also give the impression that KMC intervention should be considered from a cultural perspective.

In conclusion, knowledge about KMC for most clinical providers in both district hospitals is still mostly based on their own experiences and observations. Even without formal KMC training, this general knowledge itself was sufficient for working in a KMC environment due to their health-related educational background. Furthermore, some of perceptions of the clinical providers could be potential barriers to or facilitators of putting KMC into practice. The potential barriers are the perceptions about how KMC addresses infant safety. In addition, one enabler of KMC is the existing perception about the stable condition of the LBWI being a requirement for KMC. Other facilitators for implementing KMC are the beliefs that KMC has an impact on emotional bonding between mother and LBWI, it can prevent LBWI from hypothermia, and it can increase the weight of the LBWI faster. All of these perceptions should be taken into consideration when designing KMC training in the future for these 2 district hospitals.

#### Conflicts of interest

No potential conflict of interest relevant to this article was reported.

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See the commentary "Barriers to and enablers of kangaroo mother care" via <https://doi.org/10.3345/kjp.2019.01039>.

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