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Original Article

Mothers' response on Kangaroo Mother Care intervention for preterm infants

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Abstract

Background The low birth weight still remains the main cause of neonatal deaths. Kangaroo Mother Care (KMC) program can provide a better care for low birth weight newborn infants through skin-to-skin contact.

Objective The aim of this study was to assess factors and responses from mothers that would influence the re-introduction and re-implementation of KMC at neonatology ward, Cipto Mangunkusumo Hospital, Jakarta.

Methods This was a prospective preliminary study using questionnaires, to mothers of low birth weight infants who would undergo KMC in neonatal ward.

Results Most mothers felt sad, guilty, worried, afraid and not confident when they first saw their babies, thus, they were initially doubtful and afraid in the beginning of KMC. But, after KMC was implemented, most of the mothers found positive effects on mother-infant bonding, maternal affection in love or touch, breastfeeding and mother's confidence in newborn care.

Conclusions KMC provides benefits for mothers. Most mothers yield positive response when implementing KMC program to their infants. **[Paediatr Indones. 2009;49:224-8]**.

Keywords: *kangaroo mother care, mother's response, low birth weight*

World Health Organization (WHO) stated that some 20 millions low birth weight (LBW) babies are born each year, related to either preterm birth or impaired prenatal growth, and these occur mostly in less developed countries. These LBW babies contribute a high rate of neonatal mortality. Of the estimated four million neonatal deaths, preterm and LBW babies represent more than a fifth.[1-3] Indonesia is listed as the 8th country, according to WHO data, of countries with largest number of neonatal deaths worldwide.[3] During the last years, infant mortality rate (IMR) in Indonesia has decreased to 35 per 1,000 live births in 2002 – 2003. The prevalence of LBW babies in Indonesia ranges from 2 to 17.2% and it contributes 29.2% of the cause of neonatal death.[4,5] Data in neonatal ward at Cipto Mangunkusumo Hospital showed that prevalence of LBW is 25-30%.[6] Prematurity as the cause of LBW is associated with various neonatal problems including hypothermia, hypo/hyperglycemia, infections, respiratory distress syndrome and others.[7]

Kangaroo Mother Care (KMC) provides an alternative to incubator care for LBW infants, without separation from the mother.[2,8-10] Previously, KMC had been defined as having three components:

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continuous skin-to-skin contact (SSC), breastfeeding; preferably exclusively, and support.[8] Recently, another components has been added to KMC which consist of four components: kangaroo position, kangaroo nutrition, kangaroo support and kangaroo discharge.[2,9] The aim of this study was to assess factors and responses from mothers that would influence the re-introduction and re-implementation of KMC in Cipto Mangunkusumo Hospital, Jakarta.

Methods

This was a descriptive study conducted on the first two months of re-implementation of KMC at Cipto Mangunkusumo Hospital from June until July 2008. Data were collected from mothers of low birth weight infants who would undergo KMC intervention in neonatal ward at Cipto Mangunkusumo Hospital, Jakarta. We recorded data of the LBW infants from the medical record and performed a guided interviewed to the mothers on mothers' responses using questionnaires. We used semi-structured, open-ended interview as well as close question questionnaires. Some questions were developed to encourage mothers to "tell their stories". For mothers who had gemelli, each was interviewed for all babies she had. Questions vary from the data of mothers' responses at first time seeing their premature infants, mothers' responses on KMC intervention and also their opinion on the program. Written informed consent was required for inclusion. The study was a prospective preliminary study regarding the re-implementation of KMC intervention initiated at NICU of Cipto Mangunkusumo Hospital.

Results

We collected data of the infants and the mothers as well. There were 15 mothers with one teenage mother (18 years old) and the oldest was 37 years old. Out of 15 mothers, one had twins and one had triplets, made the total infants included in this study 18 infants. The birth weight (BW) ranged from the lowest; 900 g until 1800 g. There were 2 infants with birth weight less than 1000 g, 7 infants with birth weight between 1000–1500 g, and the others were more than 1500 g. The lowest body weight of infants at initial KMC intervention was 1000 g, with mean 1444.8 (SD 230.50) g. (**Table 1**)

Table 1. Baseline characteristics of mothers and infants

	Minimum	Maximum	Mean (SD)
Mothers (n=15)			
Age (yrs)	18	37	27.2 (SD 5.47)
Gestational age(wks)	28	35	31.6 (SD 2.2)
Infants (n=18)			
Birth weight (g)	900	1800	1407.2 (SD 273.02)
Body weight at initial KMC (g)	1000	1800	1444.8 (SD 230.5)

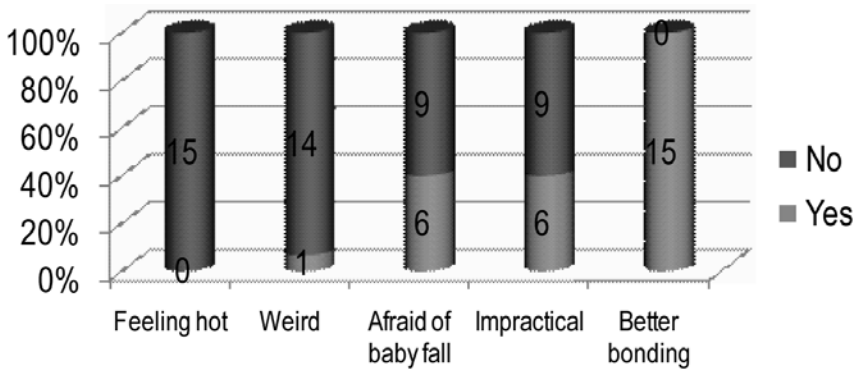

Figure 1. Mothers' responses at initiation of KMC

Table 2. Mothers responses after implementing KMC

Responses	Yes
Mothers's response after doing KMC (n=15)	
More confident	14/15
Would continue KMC at home	14/15
Follow up: (mothers; n = 15)	
Continue home KMC	6/15
Do not continue KMC	1/15
No data/can't be reached at follow up	8/15
Duration home KMC (mothers: n=7)	
<1 week	1/7
1-2 weeks	1/7
> 4 weeks	4/7
Do not continue KMC	1/7

Most of the mothers (10/15) were primiparas, and the rest were having their second (3/15) and third (2/15) deliveries. Half of the infants (9/18) had APGAR score less than 7. There were 7 out of 15 mothers who underwent caesarean procedures.

There were 9 out of 15 mothers who started 'talking to their babies' since their pregnancies almost every day, while the others 'talked' 2-3 times/week (4/15), once a week (1/15), and only one that never 'talked' to her baby during pregnancy. Most of the mothers (10/15) felt guilty and stated that they were the causes of the prematurity of their babies. Only one mother, who had triplets, which thought that the condition was nobody's fault.

More than half (10/18) of the infants received combined oral feeding, both formula and breast milk. There were 5 out of 18 infants received only mother's breast milk, and the other 3 infants received only formula milk. Eight infants were first seen by their mother at 1–7 days old, and only 5 out of 18 were seen at < 1 hour old, with mean age of first seen by their mother at 7.3 days old. More than half (11/18 infants) experienced their mothers' first touch at age 1 – 7 days old and 3 out of 18 infants were first touched at age > 2 weeks, with mean of first touch at 11.7 days old. There were 8 out of 18 infants started KMC intervention at 1-2 weeks of age, while the rest were receiving at 1-7 days and > 2 weeks of age, with mean of initial time of mothers performing KMC and giving breastfeeding at 15 days old.

Regarding KMC intervention during hospital care, at initiation of the program, only 1 out of 15 mother who felt weird, some felt afraid of causing the baby to fall (6/15), some (6/15) thought that the KMC intervention was impractical and most felt doubtful about KMC. Once started KMC, no one said the skin-to-skin contact caused sweating and all of them agreed that after implemented KMC, they experienced and felt better mother-infant bonding, and maternal affection or love to their babies. (**Figure 1**)

Most mother felt that they were more confident in facing and dealing with their babies condition after they succeeded doing their first KMC. At the end of the interview, most of mothers (14/15) stated that they would continue performing KMC to their babies, only one mother who could not decide whether she would continue KMC at home or not. In the follow up, only seven out of 15 mothers that could be reached after discharged. Of those seven mothers, only one mother who did not continue home KMC while the rest stopped performing KMC after more than 4 weeks (four mothers), 1–2 weeks (one mother) and less than a week (one mother).

Discussion

KMC is a way for caring the preterm infants which provides skin-to-skin contact between infants and their mothers. This care was first created by Ray and Martinez in Bogota, Columbia as an alternative way of care for stable LBW infants who have overcome major adaptation problems to extra-uterine life. This is an easy method of caring for newborn infants where the mother uses her own body temperature to keep her infant warm. Basically, it is an alternative to minimal care neonatal units.[2,8-10]

Many studies have shown benefits of the implementation of KMC especially to low birth weight infants. KMC stabilizes infant temperature, heart and respiratory rates faster than conventional care using incubator. It also reduces nosocomial infection, promotes breastfeeding, and increases infant growth as well as development. Newborn care provided by skin-to-skin contact on the mother's chest can also result in better survival and physiological outcomes. KMC also provides benefits for parents. It facilitates active mother participation, confidence and independence in the infant's care giving as well as better mother-infant bonding.[2,8,10-16]

This study was conducted during the re-initiation of KMC program in our neonatal ward. All subjects in our study underwent intermittent KMC

started at level II and level III care, while neonates were still in incubators. At the time of study, we were still establishing our continuous KMC room, for infants who were discharged from level II and III care and still not be able to be discharged home. In this continuous KMC room, infants were in their mothers' chest almost the whole days, preparing the dyad ready for home KMC. Therefore, only some of our subjects who experienced continuous KMC at our ward, while others were discharged from level II care.

In our study, half of the infants experienced asphyxia. We started the intermittent KMC while the neonates were still in oxygen therapy. We tried to provide supportive NICU environments for infants as well as parents. This efforts can facilitate active participation in the infant's care giving, thus providing significant benefits to the developing infant.[8,11,13,16]

The lowest body weight to start KMC in this preliminary study was 1000 g. This example showed the benefit and strength of KMC in replacing conventional therapy using incubator. This condition also assures that KMC can be implemented in very low birth weight infants. In most of references, KMC can be initiated at <1500 g infants, showing that there is no limit of lowest body weight to start KMC. In some low income countries with limited, under equipped, and understaffed health facilities, KMC shows its important role in providing better LBW care in spite of lack of incubators.[2,8,9,12,16,17]

Most of mothers started to build their bonding by 'talking to their babies' since their pregnancies, vary from almost every day to once a week. Only one who never 'talked' to her baby during pregnancy. Most of mothers felt guilty and thought that they were the causes of the prematurity of their babies. Only 1 out of 15 mother who felt weird, some felt afraid and some felt KMC was impractical. After seeing their babies and tried to touch them, those feelings disappeared in some mothers. After implementing KMC, most of mothers agreed to continue KMC at home. This is related to the steps of mothers dealing with their premature babies.The initial step is the anticipatory grief, second is facing up, when mothers are strong and brave enough to face their babies, third step is bonding and fourth step is learning stage, when mothers learn about infants' needs and care. The mothers' feeling on their infants' condition is influenced by; the bonding that were created between mothers and fetuses during pregnancy, first contact when the infant is born and mother's previous infant death experience in family.[18-20]

About half of the infants were first seen and touched by their mother at 1–7 days old and some started KMC intervention and breastfeeding at 1-2 weeks of age. These late starts were due to some reasons, the most common reasons were the infants were still in NICU and some infants who were in neonatal ward could not undergo KMC, because the mothers were already discharged and did not come to visit their babies. These conditions were mostly due to the distance from home to the hospital was considered far and transportation fee was quite expensive.

Most mothers agreed that skin-to-skin contact had made the mother-infant bonding and maternal affections or love to their babies become better. They also were more confident in facing and dealing with their babies condition after they succeeded doing their first KMC. This condition was similar to other studies which revealed that mothers felt that they were seen and considered, which made them feel reassured and gave them a sense of control. Thus, they became more confident in caring their premature babies.[11,13,15,16,18-20] Most of neonates in our study received breast milk, only three out of 18 infants who received only formula milk. Many studies reported the benefits of KMC in initiating and increasing breastfeeding.[2,12,17]

Almost all of mothers agreed to do home KMC, and of seven mothers who could be reached after discharged, four mothers had performed it in more than four weeks. Only one mother who did not continue KMC because there was lack of family support. For some mothers, higher home temperature and humidity were considered to be a reason to stop home KMC. They did not have air condition at home, therefore the babies were sweating when KMC were performed. This should be anticipated by health care in educating mothers since Jakarta has pretty high temperature and humidity. However most mothers stopped KMC when the babies themselves gave signs of uncomfortable feeling, due to the facts that babies were getting bigger and heavier. In conclusions, our preliminary study showed that most mothers gave positive response on implementation of KMC program to their premature infants.

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