

Improving initiation of kangaroo mother care in a tertiary care hospital – A quality improvement initiative

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ABSTRACT

Background: Kangaroo mother care (KMC) is shown to be effective for thermal control, breastfeeding and bonding in all newborn infants, irrespective of setting, weight, gestational age, and clinical conditions. **Objective:** The objective of this study was to increase the percentage of initiation of KMC in stable low birth weight babies (<2000 g) admitted in special newborn care unit through a quality improvement (QI) approach in a tertiary care neonatal unit. **Materials and Methods:** Preterm mother-infant dyads who were admitted in the inborn Level 2 neonatal intensive care unit were enrolled in this study. The potential barriers for prolonged KMC were evaluated using fishbone analysis. A variety of measures (improving knowledge, attitude, and practices on KMC among health-care staff and mothers and other family members, information, education, and communication material on KMC in KMC room, one-to-one structured counseling of mothers, modifying KMC registers, etc.) were introduced and subsequently tested by multiple Plan-Do-Study-Act cycles. Data on percentage of initiation of KMC were measured by bedside nurses on daily basis in each shift. **Results:** A total of 81 eligible mother-infant dyads were studied during implementation period (50 days). The mean weight and gestation of infants were 1364.9 g and 31.9 weeks, respectively. The percentage of initiation of KMC among eligible preterm infants has increased from a baseline of 16%–94.8% over a period of 8 weeks. **Conclusion:** Ongoing QI measures increased the percentage of initiation of KMC among eligible preterm infants from baseline of 16%–94.8% over a period of 8 weeks.

Key words: Breastfeeding, Kangaroo mother care, Low birth weight, Newborn

Kangaroo mother care (KMC) is an effective way to meet baby's needs for warmth, breastfeeding, protection from infection, stimulation, safety, and love. It has been shown to be effective for thermal control, breastfeeding and bonding in all newborn infants, irrespective of setting, weight, gestational age, and clinical conditions. KMC is an evidence-based cost-effective approach and can avert up to 450,000 preterm deaths each year if near-universal coverage is achieved [1,2]. Investment in KMC has benefits beyond survival including healthy growth and long-term development [3,4].

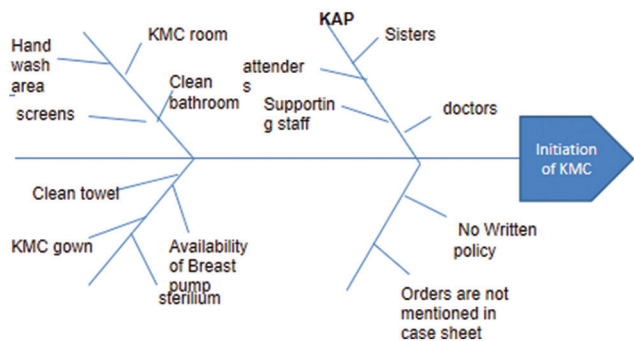
However, despite its known benefits, the implementation of KMC has been low. Average duration varies from 3 to 5 h/day in the previous Indian studies [5]. Various potential barriers include issues with facility resources and environment, negative impressions about staff attitude, and lack of awareness of its benefits [6]. This study was done to increase the percentage of initiation of KMC in stable low birth weight (LBW) babies (<2000 g) admitted in special newborn care unit through a quality improvement (QI) approach in a tertiary care neonatal unit.

MATERIALS AND METHODS

This study was done in a tertiary care neonatal unit. Our hospital has a 12-bedded Level 3 and a 20-bedded Level 2 neonatal intensive care unit (NICU) in addition to KMC and rooming-in beds. Each eligible mother-infant dyad was a single participant in the present study. All eligible preterm neonates admitted in Level 2 NICU were included in the study. Sick neonates (defined as those requiring invasive or non-invasive mechanical ventilation) or shock (defined as the presence of tachycardia (heart rate more than 180 beats/min, extremities cold to touch, and capillary fill time more than 3 s, with or without pallor, lethargy or unconsciousness [5]) or neonates receiving phototherapy were excluded from the study.

A QI team was formed comprising a team leader who was the nursing in charge of Level 2 NICU, one physician, nurse and supporting staff in each shift, and one lactation counselor. In baseline phase, data were collected in a predesigned pro forma for 10 days for 15 eligible preterm infant-mother dyads. The barriers for initiation of KMC were analyzed using a fishbone analysis.

FISHBONE ANALYSIS

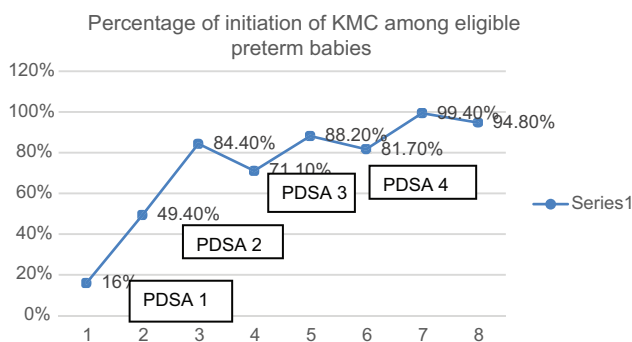


In our hospital, the predominant barriers were lack of adequate knowledge of KMC among health-care staff and parents, lack of adequate support to mother, absence of formal counseling on KMC by the health-care team, and other maternal factors including lack of privacy. On one-to-one discussion with the mothers, the authors found that the mothers were not aware of the importance and procedure of KMC, and no KMC was being practiced during the night hours.

A comprehensive KMC improvement package was planned. The changes in ideas were proposed after discussions by the QI team and the ideas were tested by Plan-Do-Study-Act (PDSA) cycles. Four PDSA cycles were conducted for each change idea: The first PDSA – improving the knowledge of KMC practices among staff nurses, supporting staff; the second PDSA – modifying KMC register; the third PDSA – posters on KMC in KMC room; and the fourth PDSA – one-to-one counseling of the mothers by doctors and lactation counselor.

The primary outcome measure was the duration of KMC. This was evaluated by staff nurse on duty by recording the exact hours of KMC in each 8-h shift and then adding total duration of 3 shifts/day in eligible preterm infant-mother dyads. The duration was then plotted on a run chart. The outcome was evaluated daily in implementation phase.

RESULTS



As a part of PDSA cycle 1, the doctors increased the knowledge, attitude, and practice (KAP) among the staff nurses and supporting staff by showing videos on KMC practices and by demonstrating the procedure. Pre- and post-intervention questionnaire were

given to all the staff and their knowledge was assessed. After the PDSA cycle 1, the KAP among health-care staff was improved and the staff in each shift gave a structured counseling to mothers and family members. Over a period of 2 weeks, the rate of initiation of KMC increased from 16% to 49.4%.

In PDSA cycle 2 (3rd and 4th weeks), the existing KMC register was modified to include more columns to give information on the total number of eligible babies for KMC in each shift and the actual number of babies receiving it, the birth weight and gestational age of the baby, and any adverse effects noted during the procedure. At the end of cycle 2, the percentage increased to 84.4%.

In PDSA cycle 3, posters on the benefits of KMC and pictorials of procedure of KMC in all the three local languages were pasted in the KMC room and they were shown to mothers by the nurses in each shift. The percentage of KMC increased to 88.2% at the end of this cycle. In cycle 4, KMC among mothers and other family members was reinforced by one-to-one structured counseling which was given thrice a week by the doctors and lactation counselors. The percentage of KMC increased to 94.8% by the end of 8 weeks.

The challenges that were faced during this period were providing nighttime KMC, involving other family members to give KMC. However, repeated counseling by the nurses and supporting staff has helped the mothers to give nighttime KMC and also, grandmothers have started giving KMC to help the mother to take some rest.

DISCUSSION

KMC is associated with 36% reduced risk of neonatal mortality among LBW newborns compared to conventional care, as well as a significantly reduced risk of sepsis, hypoglycemia, and hypothermia [5]. Despite the strong evidence regarding the improved health outcomes among preterm or LBW infants receiving KMC, including a recent recommendation by the World Health Organization that KMC should be routine care for newborns weighing <2000 g [6], this intervention has never been fully integrated into health systems around the world. A previous systematic review identified barriers to health system adoption of KMC and noted that families play an important role in KMC adoption [7].

Some of the potential barriers in implementation of KMC were mothers less likely to accept it, if healthcare workers could not clearly explain its benefits. Parents reported that they were simply told to perform KMC without explanation and they had the feeling that KMC was forced on them [8]. Another barrier

Table 1: Demographic profile of the babies

Parameter	Implementation phase (n=81)
Birth weight	1364.9 g
Gestational age	31.9 weeks
Male	41
Female	40

was caregivers perceived that their newborn did not enjoy KMC. In some areas due to the hot climate, parents observed their infant became irritable or “stinky” during skin-to-skin contact (SSC) [9]. Less frequently, caregivers mentioned discomfort at not being able to see their newborn during KMC [10]. Another barrier was lack of bonding by mothers with their preterm infants [11]. It might be due to fear, stigma, shame, guilt, or anxiety about having a preterm infant [12]. Lack of awareness of the importance of KMC among the health-care staff and mother and other family members was the main barrier for practice of optimum KMC [13] which was observed in our unit too. Hence, training the health-care staff and by providing structured counseling to mothers and other family members addressed these issues. Active involvement of family member scales up facility-based KMC and sustains home-based KMC after discharge [14].

Although increasing staff support and implementing temporary project staff are known to scale up KMC practices, the effect seems transient and fades with withdrawal of support [15,16]. A unique effort in our study was the utilization of existing resources and infrastructure for strengthening KMC. Audit and feedback are considered as one of the backbones of QI initiative for changing health worker behavior as well as an ongoing policy which formed an important milestone in our study. We conducted weekly audit in our study to evaluate the potential reasons for decreased KMC duration.

The limitation of the study was that the morbidity data were not evaluated and duration of KMC was not documented effectively. The data on weight gain during KMC, details on continuation after discharge for each baby were not prospectively collected.

CONCLUSION

QI initiative is a simple cost-effective approach which has improved the initiation of KMC in our study without addition of extra workforce.

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