

Nurse's perspective on barriers in the implementation of kangaroo mother care in a tertiary care hospital from North India

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ABSTRACT

Background: Despite the established benefits of kangaroo mother care (KMC), it is not being implemented in all eligible babies. There are several barriers in its implementation including those from the nurses, mothers, and institution. **Objective:** The objective of the study was to determine the nurse's perspective on various barriers in the implementation of KMC. **Materials and Methods:** This was a cross-sectional descriptive study in which data were collected from all the nurses of the Department of Neonatology and Obstetrics in a tertiary care hospital, from North India, over 1 week using a structured pre-tested questionnaire covering barriers in three main domains - mothers (6), nursing staff (7), and institutional (5). **Results:** There were a total of 40 nurses, who responded to questionnaire; among them, 70% were from neonatology and 30% were from obstetrics. Mean barrier-free score (BFS) (%) was 48.93 ± 14.77 with a range of 29.17–76.39, while median (interquartile range) was 47.22 (44.4–52.4). Mean BFS was found to be statistically significant when compared between maternal and nursing domains (54.5 ± 11.1 vs. 43.3 ± 11.9 vs. 49.0 ± 18.4 , $p=0.003$). **Conclusion:** The present study shows that the most important barriers in KMC implementation were lack of support to mother, duty schedule of staff, difficulty in convincing, and a private/separate environment for KMC. Therefore, actions need to be taken to overcome these barriers to use this simple intervention with enormous benefits.

Key words: Barrier, Institutional, Maternal, Nursing

Kangaroo mother care (KMC) is a time-tested, cost-effective, evidence-based practice in the care of preterm and low birth weight (LBW) babies. KMC is defined as “the early, prolonged, and continuous skin-to-skin contact between the mother (or substitute) and her LBW infant, both in hospital and after early discharge, until at least the 40th week of postnatal gestation age, with ideally exclusive breastfeeding and proper follow-up” [1]. An updated Cochrane review in 2016 which included twenty-one studies demonstrated multiple beneficial effects of KMC. Compared with conventional neonatal care, KMC was found to reduce: Mortality at discharge and at the latest follow-up, severe infection/sepsis, nosocomial infections, hypothermia, severe illness, lower respiratory tract disease and length of hospital stay. The same review also revealed that KMC resulted in improved weight and length, head circumference, breastfeeding, mother-infant bonding and maternal satisfaction as compared with conventional methods. Out of 21 trials, eight assessed mortality at discharge or 40–41 weeks and reported a statistically significant reduction in the risk of mortality [2].

Despite the proven benefits of KMC, it is not being practiced in all eligible babies. This could be due to several barriers in its implementation including those from the mothers, nurses, and institution. Different mother's barriers are unavailability of

mother due to the lack of support from other family members, pain, immobilization, fear of neonatal intensive care unit (NICU) equipments, fear of touching the baby, and having twins/triplets. Common nursing barriers are fear of dislodgment of lines, tubes, being busy with sick babies, and inability to convince for KMC. Some of the barriers from an institutional point of view are lack of private/separate rooms, lack of KMC chairs, KMC jackets, non-availability of KMC posters, and videos in newborn care units.

Survey of 46 mothers of preterm infants who were trained on KMC in a facility in Andhra Pradesh, India, found that only 6.5% of mothers felt that providing KMC for 12 h/day or greater was feasible, whereas 52% of mothers felt that only 1 h/day was practical [3]. Barriers to the other components of KMC, including breastfeeding [4,5] and adequate follow-up after discharge [6,7], have also been noted. Therefore, to be able to implement this simple yet extremely useful practice in newborn care, it is crucial to know the factors that hinder its smooth execution.

Nurses are in the immediate contact with the babies and their mothers so having knowledge of their viewpoint on various barriers is an important and effective way to identify these gaps in the implementation of KMC and find appropriate solution to it. The objective of the study was to determine nurse's perspective on various barriers in the implementation of KMC among the nurses

working in the Departments of Neonatology and Obstetrics in a tertiary care hospital from North India. The research question of the study was - "what are the overt barriers in implementation of KMC in a tertiary care hospital from North India?"

MATERIALS AND METHODS

This was a cross-sectional study conducted over 1 week in the Level III NICU in the Department of Neonatology and the Department of Obstetrics in a tertiary care center. To investigate nurses' perspective on the barriers for KMC, structured questionnaire comprising 18 questions was given to all nurses meeting the inclusion criteria and working in the Departments of Neonatology and Obstetrics of the hospital and was collected after completion. Demographic characteristics of the nurses were also collected including age, years of experience in dealing with newborns, education degree, any formal training in KMC, and familiarity with KMC. Nurses' inclusion criteria were having at least a diploma degree in nursing, minimum 6 months of work experience in NICU, being familiar with KMC, and involved in its implementation. In the present study, KMC refers to skin-to-skin touch between mothers' and infants' chests.

The structured questionnaire contained 18 questions in three domains: Mothers' barrier domain (questions 1–6), nurses' barriers (questions 7–13), and institutional barriers (questions 14–18). The items were answered with a five-point Likert scale (never, seldom, sometimes, often, and always). Option of "always" showed that, from the nurses' perspective, the item was always a barrier for KMC, and option of "never" showed that the item was never a barrier in KMC. The questionnaire was pre-tested in 5 staff working in NICU to check its appropriateness and was modified. The collected responses were analyzed in terms of barrier-free score (BFS). Response of the nursing staff was recorded, using a questionnaires comprising of 18 questions, in Likert scale with code 0–4 where 0 was showing complete barriers while 4 was complete barrier-free response. For each of the three domains, summation of the score was done.

Statistical analysis was as follows: For analysis, summation of the data was treated as continuous data. Normality of the continuous data was tested, and a variable was considered normally distributed when standard deviation was $< \frac{1}{2}$ mean. Continuous data were presented using mean \pm standard deviation, while categorical data presented in frequency (%). Independent samples t-test was used to compare the means between two groups, while between more than two groups, one-way ANOVA test was used. In case one-way ANOVA test was found significant, multiple comparisons were performed using the Bonferroni method. Statistical analysis was performed using the Statistical Package for the Social Sciences, version 23 (IBM, Chicago, USA).

RESULTS

The questionnaire was handed over to 40 staff nurses in the Department of Neonatology (28) and Obstetrics (12)]. All the

nurses responded to questionnaire; the demographic characteristics of staff nurses are mentioned in Table 1. Of 40 nursing staff, 80% were female and 20% male and mean age was 30 years (range 24–52 years). Duty shifts of the nurses were divided into three groups: Morning (8 am–2 pm), evening (2 pm–8 pm), and night (8 pm–8 am); all the staffs were posted in all three shifts by rotation. None of these staffs received a formal training in KMC; however, all of them had been given information on KMC implementation by the NICU doctors on day-to-day basis and were practicing in their units. Responses of the recruited nurses are given in Table 2. The mean BFS (%) was 48.93 ± 14.77 with a range of 29.17–76.39 and median (interquartile range) of 47.22 (44.4–52.4) (Fig. 1). When we compared the mean BFS among three domains (maternal, nursing, and institutional), mean score was found to be statistically significant when compared between maternal and nursing domains (54.5 ± 11.1 vs. 43.3 ± 11.9 vs. 49.0 ± 18.4 , $p=0.003$) (Fig. 2 and Table 3). A mother doing KMC to a baby is shown in Fig. 3.

DISCUSSION

This study was done to determine the barriers in accurate implementation of KMC from nurses' point of view. The present study reflected that barriers from all three domains: Mothers,

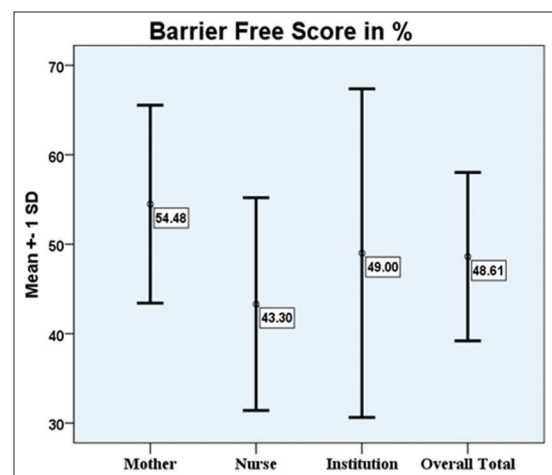


Figure 1: Error-bar for barrier-free score

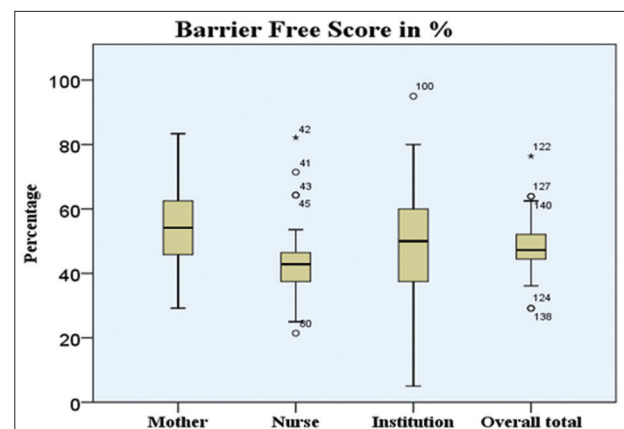


Figure 2: Box and whisker plot representing median (IQR) of barrier-free score in three domains



Figure 3: A mother doing kangaroo mother care

Table 1: Demographic characteristics of staff nurses

Characteristics	n=40
Department (%)	
Neonatology	70
Obstetrics	30
Age (mean±SD)	31.75±7.36
Experience in dealing with newborns (in years) (mean±SD)	3.62±1.40
Educational qualification (%)	
Diploma	57.5
Bachelors	42.5
Formal training in KMC (%)	
Yes	0
No	100

SD: Standard deviation, KMC: Kangaroo mother care

Table 2: Questionnaire about barriers and nurses' responses

Details of questions about barriers	Never	Seldom	Sometimes	Often	Always
Mother not available	1	11	22	6	0
Fear of touching baby	4	11	24	1	0
Fear of equipments	2	11	23	3	1
Lack of support	4	3	18	9	6
Twins/triplets	0	4	19	13	4
Technology better	13	8	15	3	1
Nurses were busy	1	2	18	16	3
Fear of dislodgment of line	0	2	16	14	8
Difficulty in convincing the mother	9	5	13	13	0
Baby on oxygen	1	8	24	6	1
Baby on non-invasive ventilation	0	1	19	12	8
Baby on invasive ventilation	1	0	10	7	22
Incubator is better	18	10	5	3	4
Order not given by doctor	4	5	13	9	9
Lack of privacy	2	4	18	12	4
Lack of space	8	8	14	7	3
Lack of KMC chairs	8	6	15	10	1
Lack of KMC jackets	6	6	12	11	5

KMC: Kangaroo mother care

nurses, and institutional were equally important. Among the mothers domain, lack of support to mother from other family members leading to their unavailability for KMC was an important barrier followed by fear of equipments and fear of touching babies; among nurses, duty schedule and inability to convince were major contributing factors along with the fear of dislodgment of lines and tubes. While in the institutional domain, lack of privacy was felt by most of the nurses as a major hindrance. Some nurses also felt that KMC was not started in some babies due to the lack of written order by doctors.

These findings were similar to those in a study from Iran where non-continuous attendance of mothers was observed to be the most important barrier [8]. In the same study, lack of physician's order was also assigned as a significant contributing factor. The nurses involved in that study had a NICU work experience of 6.59 (4.5) years as against 3 years of the nurses in the present study. All the nurses had attended KMC workshop once, while in our study, none of them had a formal training. About 94% of the nurses had a bachelor's degree, and the rest had a master's degree, while in our study none had master's degree. The results in the Iranian study were expressed as mean barrier score which was overall 32.3. In the present study the result is expressed as BFS which if calculated in terms of barrier score would be 51.07.

In a community-based study from India, barriers for continuation of KMC after discharge at home, in a low resource, were categorized into six groups (knowledge, mother-related, environmental, family-related, positional, and infant-related barriers), and the most important barrier in that study was lack of family cooperation, thus leaving an insufficient amount of time for mother to stay with her baby constantly [9]. In a study from Sweden, supportive factors and barriers in KMC, as perceived by

Table 3: Comparison of BFS among three domains

Barrier domain	n	Mean±SD	Minimum	Maximum	#p value
Maternal	40	54.48±11.06	29.17	83.33	0.003
Nursing	40	43.30±11.89	21.43	82.14	
Institutional	40	49.00±18.37	5.00	95.00	
Total	40	48.61±9.41	29.17	76.31	

*One-way ANOVA used, multiple comparisons ($p=0.05$): Between mother and nurse, BFS: Barrier-free score. SD: Standard deviation

parents, were published [10]. Some of the facilitators were sharing of job by parents, encouragement by staff, parents conviction that KMC was good for their baby, fewer “musts” in NICU than at home, access to private space, and quiet atmosphere. The most frequent barriers, in the same study, were having another child at home, interruption due to feeding process, and medical equipments attached to baby, noise, and beeps in NICU. Recent systemic reviews have highlighted barriers and enablers in KMC implementation with a focus on health-care workers and health facilities [11-13]. Inadequate training to nurses, hesitancy among nurses to use KMC for infants with catheters (intravenous, arterial, or umbilical and endotracheal tube) and nurses' perception that implementing KMC would increase their workload and reduce time with other critical patients; were important barriers. While the provision of privacy for KMC, nurses having 5 or more years of experience and the presence of KMC posters were considered as enablers contributing to successful KMC implementation.

Nurses'-related barriers can be overcome to huge extent by giving them proper knowledge and training about KMC, for example, using alternatives for KMC jackets and KMC chairs. They should also be trained for implementing KMC even on babies with central lines and endotracheal tubes and babies on non-invasive or invasive ventilation. This fact is supported by a descriptive study by Flynn and Leahy-Warren in which facilitation of KMC implementation through more education and knowledge of nurses to overcome the barriers such as inadequate equipments and facilities and infant-related problems was highlighted [14]. Limitation of the study was the small sample size.

CONCLUSION

The present study reflects that the most important barriers in KMC implementation were lack of support to mother, duty schedule of staff, difficulty in convincing, and lack of private environment for KMC. Timely actions need to be taken to overcome these barriers to use this simple intervention with enormous benefits.

There is also need to have an attitudinal change among health-care workers, caregivers, and facilitation from health centers for strengthening KMC practices.

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