

Awareness and impact of educational intervention regarding kangaroo mother care among pediatricians of Marathwada region of Maharashtra

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ABSTRACT

Objective: The objective of the study was to compare knowledge and attitudes toward kangaroo mother care (KMC) among pediatric practitioners in Marathwada region before and after a workshop on KMC. **Material and Methods:** A prospective comparative study was conducted among 40 pediatricians practising in the rural area of Marathwada region. Clinicians having at least Level 2 neonatal intensive care unit setup at their place were enrolled in the study. Every pediatrician satisfying the selection criteria and willing to participate was enrolled in the study. They were given a questionnaire, consisting 25 questions, which were supposed to be answered at the time of enrolment, i.e., pre-test. After that, the participant was given a short booklet on KMC to read, and then after a gap of 7 days, the participant attended a workshop on KMC for 4 h, in which details regarding KMC, advantages of KMC, and videos showing actual practice of KMC were shown to participants. After completion of workshop, participants were given the same questionnaire and pre- and post-test scores were calculated. **Results:** The mean score in basic knowledge was 20 ± 11.27 before the workshop and was 34.33 ± 8.14 after the workshop ($p=0.0164$). The mean pre-test score for operational knowledge was 12.70 ± 12.34 and mean post-test score was 36.90 ± 4.12 , ($p=0.00001$). As far as the knowledge about advantages of KMC was concerned, the mean pre-test score was 26 ± 11.28 and the mean post-test score was 39 ± 2 ($p=0.0701$). About attitude, mean pre-test and post-test scores were 22.97 ± 3.96 and 14.27 ± 3.43 , respectively, which signify that, after the workshop, the clinician was having a change in attitude toward the practice of KMC ($p<0.00001$). **Conclusion:** This study highlights the significant gap between the basic knowledge and operational knowledge. Interventions like workshop will help to remove the inertia and hesitation among practising pediatrician as far as the practice of KMC in their setup is concerned.

Key words: Hypothermia, Kangaroo mother care, Low birthweight, Neonate

In the developing world, the frequency of low birthweight (LBW) ranges from 10% to 30%. Every year, more than 20 million children are born as LBW babies, and India alone is bearing around 30% of the global burden which is one of the major causes of neonatal mortality [1]. The India Newborn Action Plan (INAP) was launched in June 2014 with the aim of ending preventable newborn deaths and stillbirths by 2030. INAP's main strategy is called kangaroo mother care (KMC). It creates a womb-like environment for the newborn which provides the baby's four basic needs - warmth, food, love, and protection. It benefits all newborns, especially, those who are preterm or suffer from LBW [2].

LBW and preterm infants, who no longer needed intensive care, were provided care for skin to skin with their parents [3]. It has been recommended that staff initiate continuous KMC, even in a high tech unit, as soon as possible after the infant is born and after initial resuscitation and stabilization [4]. Compared to traditional neonatal care, KMC yields instant physiological benefits for the preterm infant, such as thermal regulation [5], more stable oxygen saturation in intubated infants [6], and less

severe infections [3]. Furthermore, KMC has a positive effect on breastfeeding, especially for the smallest and most vulnerable infants [7], and more quiet sleep has been identified in skin-to-skin holding infants comparing to traditional care [8]. It has also been shown to work as pain treatment, reducing the preterm infants' pain and salivary cortisol during heel stick [9]. Moreover, KMC can help decrease the time during which the infant needs hospital care [3].

Successful implementation of KMC requires relevant education of staff, education of mothers on KMC by nursing staff, monitoring of the implementation of KMC by nurses, planning for a staff mix with varying levels of skill and experience with KMC, the identification of institution-specific barriers to the implementation of KMC, and the implementation of institution-specific strategies to overcome these barriers [10-12].

Knowledge and attitude of doctors and staff play an important role in the implementation of KMC. Few studies have been carried out to assess the awareness and attitude of doctors toward KMC in the rural area of Marathwada region. Hence, the present study

was conducted to assess the awareness and attitude of doctors and to assess the impact of educational intervention toward KMC in the rural area of Marathwada region.

MATERIALS AND METHODS

This study was a prospective study conducted in the rural area of Marathwada region from January to June 2017. A prospective comparative design was used for the comparison of data collected at two different time points. A total of 40 pediatricians practising in the rural area of Marathwada region having experience of more than 3 years were enrolled in the study. Selection criteria for enrolment was that the practising doctor must be a medical graduate with a postgraduate degree or diploma and must have at least a Level 2 neonatal intensive care unit (NICU) in his setup. Prior consent to participate in the study was taken and every pediatrician, satisfying the selection criteria and willing to participate, was enrolled in the study.

They were provided a questionnaire consisting of 25 questions which were supposed to be answered at the time of enrolment, i.e., pre-test. The questionnaire was designed with reference to the literature [13]. To secure the validity of the questionnaire, it was given to two head of departments of neonatology, who were practising KMC at their centers. Their suggestions for improvement were taken into account in finalizing the questionnaire. After that, the participants were given a short booklet on KMC, which he/she was supposed to read, and then after a gap of 7 days, the participant was supposed to attend a workshop on KMC for 4 h. In this workshop, details regarding KMC, its advantages, and videos showing actual practice of KMC were shown to the participants. After completion of workshop, participants were given the same questionnaire, and the pre- and post-test scores were calculated.

The first two questions of the questionnaire were asked to know whether the participants were aware of KMC or not, and if they were aware, what was the source of their knowledge? The second question specifically was to enumerate what the participant thinks were leading cause of death in LBW babies. The expected answer was that hypothermia should be in the list irrespective of the rank. The next three questions were asked to assess participants' basic knowledge about KMC, while question numbers 6–15 were asked to assess the operational or practical knowledge about KMC. The question numbers 16–19 were asked to assess the knowledge about advantages of KMC. All these questions were in the form of multiple-choice questions, and options were provided.

Question numbers 20–25 were to assess the attitude of participants toward KMC in which the first four questions were supposed to be answered on Likert scale [14], i.e., 1–10 point scale. A score of 1 means that the participant is least agrees with the statement provided and score of 10 means that the participant strongly agrees with the statement provided. The 24th and 25th questions were to check whether the participants were practising KMC at his/her center, and if not, was he/she planning to start KMC in near future.

The small information booklet was given to each participant after filling the pre-test questionnaire. The booklet was designed by Professor of Neonatology and Head of KMC Centre, Seth GS Medical College and KEM Hospital, Mumbai. It contains details of knowledge about the importance of KMC, importance of breastfeeding, how to start and continue KMC both at home and institute, monitoring while KMC, and when to stop KMC.

Four workshops were conducted in total, in which 10 different pediatricians participated each time. Duration of workshop was 4 h, in which participants were initially given the information about KMC by expert practising KMC, followed by videos of centers where KMC is practised. After that, videos of interviews with mothers, who did practise KMC at hospital and home, and their experiences were shown to the participants. In the last session of workshop, participants were given the chance to ask queries to the expert.

The data collected for questions 2–19 were in the form of pre- and post-test scores for each participant. Since data were a paired one, student paired t-test was applied to calculate the “t” value first and then “p” value. For questions 20–23, the mean score was calculated for each question and again student paired t-test was applied. The data were analyzed using Epi Info software.

RESULTS

The first question asked was “whether the participant is aware of KMC.” 100% of the participants said that they are aware of KMC. The next question asked was “What was the source of information of KMC?” Of 40 participants, 28 knew about KMC through the textbook, 9 through conference, and 3 through reading journals. The second question was to enumerate “what they think are the four leading cause of death in newborns.” If they enumerated hypothermia as one of the responses, then the answer was considered correct. During pre-test of 40, only 14 gave correct response, while during post-test, 36 gave correct response.

The next three questions were asked to assess the basic knowledge about KMC as shown in Table 1. The mean score in basic knowledge was before the workshop and there was statistically significant improvement in the basic knowledge (34.33 ± 8.14 vs. 20 ± 11.27) after the workshop ($p=0.0164$).

The next 10 questions, i.e., question no. 6–15 were asked to assess the operational knowledge about KMC as shown in Table 2. We found that most of the clinicians had the basic operational knowledge such as position of baby (37 of 40) and whether person giving KMC should be motile or not (32 of 40), but when detailed operational knowledge such as indication to start, duration, monitoring, time of discharge, and termination of KMC was not good. The post-test score for these questions showed significant improvement. The most significant change was seen in question relating to giving KMC to unstable babies, to which, none of the clinicians answered correctly in pre-test while their response was correct later in the post-test. The mean pre-test and post-test scores for operational knowledge were 12.70 ± 12.34

and 36.90 ± 4.12 , respectively, which were statistically significant, ($p=0.00001$).

The next four questions, i.e., question no. 16–19 were asked to assess the knowledge about advantages of KMC, and for these questions also, there was a significant improvement ($p=0.0701$) in the mean post-test score (Table 3). Table 4 shows that next four questions which were asked to assess the attitude towards KMC. The mean pre-test and post-test scores were 22.97 ± 3.96 and 14.27 ± 3.43 , respectively ($p < 0.00001$).

DISCUSSION

In this study, a prospective comparative design was used to compare the data collected at two different time points. In this study, all the 40 participants were not practising KMC, even after having a NICU setup at their hospitals. On asking about the awareness of KMC, 100% of them were aware of the term KMC. During pre-test, the awareness about basic knowledge of KMC was found to be around 50%, operational knowledge

Table 1: Participant's basic or theoretical knowledge about KMC

Q. No.	Question asked	Correct response (out of 40)		
		Pre-test	Post-test	p value
3	KMC is given at	27	40	0.0164
4	What are the three basic components of KMC	7	25	
5	Who can give KMC	26	38	
	Total correct response (%)	60 (50)	103 (85.83)	
	Mean±SD	20±11.27	34.33±8.14	

SD: Standard deviation, KMC: Kangaroo mother care

Table 2: Operational or practical knowledge, about KMC

Q. No.	Question asked	Correct response (out of 40)		
		Pre-test	Post-test	p value
6	When is the most appropriate time to start KMC	13	34	0.0001
7	How long should KMC be given to the child	14	40	
8	What should be the position of baby while giving KMC	37	40	
9	Minimum duration of KMC given during one setting should be	6	30	
10	What should be babywearing while receiving KMC?	11	40	
11	For monitoring temperature which temperature should be taken in baby?	4	33	
12	KMC can be given to which babies?	0	40	
13	Person giving KMC should always be in semi-reclining position and should not move around while giving KMC	32	40	
14	Baby can only be discharged from hospital when he/she completes 37 weeks postconceptional age	4	40	
15	When should KMC be stopped?	6	32	
	Total correct response (%)	127 (31.75)	369 (92.25)	
	Mean±SD	12.70±12.34	36.90±4.12	

KMC: Kangaroo mother care

Table 3: Knowledge about advantages of KMC

Q. No.	Question asked	Correct response (out of 40)		
		Pre-test	Post-test	p value
16	KMC reduces the risk of infection in neonates	31	40	0.0701
17	KMC reduces apnea rate and oxygen requirement in neonates	27	40	
18	There is no significant difference in IQ of babies given conventional care and KMC	10	36	
19	KMC is slightly costlier than conventional care provided in NICU	36	40	
	Total correct response (%)	104 (65)	156 (97.5)	
	Mean±SD	26±11.28	39±2	

NICU: Neonatal intensive care unit, SD: Standard deviation, KMC: Kangaroo mother care

Table 4: Attitude of participant toward KMC

Q. No.	Question asked	Mean score		p value
		Pre-test	Post-test	
20	Practising KMC in your setup will lead to increased workload on staff			
21	Advantages of KMC described in literature are overstated			
22	Practising KMC in India can interfere with religious sentiments of people	22.97 ±3.96	14.27 ±3.43	0.00001
23	Parents can feel forced to practice KMC if they repeatedly asked			

KMC: Kangaroo mother care

was 31.75%, and knowledge about advantages of KMC was 65%. This suggested that, even though practitioners were aware of advantages of KMC, they were still not comfortable to start KMC at their setup. Furthermore, due to the lack of practice, their operational knowledge was still poor as compared to basic knowledge. This was similar to what was reported by Malhotra *et al.* conducted in community health providers of Rajasthan and Madhya Pradesh. They found that the average knowledge domain scores were highly satisfactory (>75%) for the majority of providers in domains of KMC and breastfeeding. The skill scores for the same domains were predominantly not satisfactory (<50%) [15]. This highlights the huge contrast in knowledge and skill (operational knowledge) score. Moreover, this disparity was observed for all levels of providers assessed.

The implementation of KMC seems to be an example of practice based on attitudes rather than scientific evidence, as the positive or negative attitudes of staff affect the parental practice of KMC [16,17]. Staff at neonatal units, sometimes, have concerns that KMC may be a burden for mothers and may question whether KMC is useful or even consider the method needless or insecure [18]. In the present study, the mean pre-test score was found to be 22.975±3.9 which was suggestive of a negative attitude toward KMC.

After the workshop, there was a significant increase in the knowledge, both basic and operational, from 50%–37% to 86.875%–92.25%, respectively ($p=0.00001$). Previous reports also suggested that staff at neonatal units believed education as essential in providing them with the knowledge and skill to facilitate KMC [13,19,20]. Neonatal units that established teams, guidelines, and information meetings for implementing KMC have thereby increased knowledge and have changed attitudes among staff [10]. Nevertheless, nursing staff who had completed training still needed time to become comfortable with the method [21]. Thus, we can say that timely guidance will help pediatricians to update their knowledge.

In terms of attitude, the better mean post-test score was suggestive of positive attitude toward KMC. Attitudes strongly influence action [16]. Even if staffs are aware of research literature, their own personal knowledge and beliefs influence their encouragement or discouragement of KMC [17]. Thus with interventions like workshop, the participants will get a chance to meet people, see experiences of people practicing KMC, and to directly notice the benefits of KMC. It will help in change of attitude towards KMC.

CONCLUSION

This study highlights the huge gap between the basic knowledge and operational knowledge, suggesting that even though practitioners were aware of advantages of KMC, they were not comfortable to start KMC. Improvement in the attitude score in post-test suggests that interventions like workshop will help to remove inertia and hesitation among practising pediatrician as far as the practice of KMC in their setup is concerned.

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SUPPLEMENTARY FILE

KMC QUESTIONNAIRE

- Have you heard about kangaroo mother care? If yes what is the source
 a. Yes b. No Source -----
- Enumerate common cause of death in low birth babies
 a. b. c. d.
- KMC is given at
 a. NICU b. Labor ward
 c. Home d. All of the above
- What are the three basic components of KMC
 a. Skin-to-skin contact, exclusive breastfeeding, early discharge
 b. Skin-to-skin contact, hand hygiene, hospitalization
 c. Skin-to-skin contact, exclusive breastfeeding, immunization
 d. Skin-to-skin contact, early discharge, immunization
- Who can give KMC
 a. Only mother b. Only mother and father
 c. Only someone from the family
 d. Anyone who is in confidence of family
- When is the most appropriate time to start KMC
 a. After 6 h after birth b. After first 24 h after birth
 c. Immediately after birth
 d. After discharge from hospital
- How long should KMC be given to the child
 a. 4-6 h daily b. 8-10 h daily
 c. 10-12 h daily d. 24 h daily
- What should be the position of baby while giving KMC
 a. Any position what provider wants
 b. Transverse in right lateral
 c. Transverse in left lateral
 d. Upright
- Minimum duration of KMC given during one setting should be
 a. 1 h b. 2-3 h
 c. 3-4 h d. More than 6 h
- What should be babywearing while receiving KMC?
 a. Nothing
 b. Only cap and gloves
 c. Only cap, gloves, and socks
 d. Cap, gloves, socks, and shirt

- For monitoring temperature which temperature should be taken in baby?
 a. Oral b. Axillary
 c. Rectal d. Any of the above
- KMC can be given to which babies?
 a. Stable babies b. Ventilated babies
 c. Babies on IV fluid d. All of the above
- Person giving KMC should always be in semi-reclining position and should not move around while giving KMC
 a. True b. False c. Can't say
- Baby can only be discharged from hospital when he/she completes 37 weeks' postconceptional age
 a. True b. False c. Cannot say
- When should KMC be stopped
 a. Till baby has completed 40 weeks' postconceptional age
 b. After minimum of 1 month of KMC
 c. Appropriate temperature regulation has been achieved by the baby and baby does not tolerate KMC anymore
 d. When mother is ill and not in a position to give KMC
- KMC reduces the risk of infection in neonates
 a. True b. False c. Cannot say
- KMC reduces apnea rate and oxygen requirement in neonates.
 a. True b. False c. Can't say
- There is no significant difference in IQ of babies given conventional care and KMC.
 a. True b. False c. Can't say
- KMC is slightly costlier than conventional care provided in NICU.
 a. True b. False c. Can't say

Answer the following questions on a 10-point scale, in which 1 means you least agree and 10 means you strongly agree

- Practising KMC in your setup will lead to increased workload on staff. -----
- Advantages of KMC described in literature are overstated. -----
- Practising KMC in India can interfere with religious sentiments of people. -----
- Parents can feel forced to practice KMC if they repeatedly asked. -----
- Do you practice KMC in your setup?
 a. Yes b. No
- If no, are you planning to start KMC in near future?
 a. Yes b. No c. Not yet decided