

KNOWLEDGE AND ATTITUDES OF NURSING STAFF AND MOTHERS TOWARDS KANGAROO MOTHER CARE IN THE SELECTED HOSPITAL OF MORADABAD, UP

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Abstract

Objectives: To determine the knowledge and attitude of nursing staff and mothers towards kangaroo mother care (KMC) in the selected hospital of Moradabad, UP

Design: A cross-sectional descriptive study.

Setting and subjects: A multi-stage sample of 30 kangaroo care mothers admitted to the Teerthankar Mahaveer Medical College Hospital (TMMCH); six nurses from the NICU; and nine nurses from the seven antenatal clinics that the mothers attended. The respondents were interviewed using a pretested questionnaire.

Outcome measures: Knowledge, attitudes and acceptability of KMC.

Results: Data were analysed using CDC Epi Info version 3.3.2, and Microsoft Excel software programmes. The majority of the mothers (83.3%) did not have prior knowledge of KMC. Sixty per cent of the nursing staff did not have any KMC training. The majority of the mothers were committed to KMC, were satisfied with the results (with regard to the weight gain of the infant), and indicated that they would continue to practise KMC at home. The majority of the hospital nursing staff was very positive toward KMC, and agreed that it was beneficial to both mother and infant.

Conclusion: Most of the mothers lacked prior knowledge of KMC, and were only informed about it when they were admitted to the KMC ward. All of the nursing staff who were engaged in KMC (n = 15) had a positive

Introduction

Approximately 13 million babies are born prematurely worldwide. Of these, 11 million are born in Asia and Africa, with 17.5% born in southern Africa.¹ Prematurity is considered to account for 27% of four million neonatal deaths annually. In low-income countries, the mortality rate of premature infants is six times higher than that of high-income countries. Kangaroo mother care (KMC) has been proven to be an acceptable and feasible method to decrease the mortality rate of premature infants in low- and high-income countries. A 2015 audit carried out in India found that the rate of death in the first week of life for infants weighing 1 000 g was 8.7 out of 1 000, and in rural areas, it was 10.42 out of 1 000.

A premature infant requires special care and positive interaction (mother-infant interaction) in order to minimize the risk of developmental delay. However, studies have shown that there is often less interaction between a premature infant and its mother. A number of factors contribute to this, including the fact that the infant is in the neonatal intensive care unit, and that the mother feels overwhelmed, and like an outsider. It has also been proven that mothers of premature infants are naturally less empathetic towards their infants, and tend to engage less with them visually, orally and tactilely.



Kangaroo mother care, also referred to as early skin-to-skin contact, is defined as carrying a stable, low birth weight (LBW) infant, dressed only in a nappy and a cap, and in some cases socks, between the mother's breasts, where he or she is kept warm, has ready access to feeding, is protected from infection, and is provided with stimulation and safety. In other words, the mother acts as an incubator, and the mother and infant are not separated for long periods of time. KMC was developed in Bogotá, Colombia, by Dr Edgar Rey and Dr Hector Martinez in 1978 in an attempt to increase the survival of stable LBW infants in resource-poor settings. KMC has been found to have physiological, behavioral, psychosocial and cognitive developmental benefits, and it enhances mother-infant bonding. In addition, it promotes breastfeeding, enables the mother to become more confident when caring for her infant, and results in early hospital discharge. Extensive KMC implementation has only been achieved in a small number of countries, including South Africa and Brazil.

Parents of premature, or LBW infants, often feel overwhelmed. They need the support of the nursing staff to dispel their concerns about how to handle their infants, and to encourage them to gain confidence in using KMC. In their study, Engler et al found that nurses who worked in facilities that practiced KMC had gaps in their knowledge on the subject. They also reported that nurses who perceived the practice of KMC to be beneficial to themselves (by decreasing their workload), and the infant, were more willing to implement KMC in their units. They concluded that KMC is an illustration of a nursing practice that is based on perception, rather than scientific evidence. According to delegates who attended an international nursing conference held in Durban in 2010, nurses are seen as a catalyst for KMC implementation and practice, and need to have a positive attitude towards it in order to motivate and encourage mothers. These delegates agreed that neonatal nurses should drive the implementation of KMC as standard newborn care, regardless of whether they work in a high-tech, state-of-the-art, or poorly-resourced, facility. They also stressed that neonatal nurses should receive ongoing education and have access to self-development opportunities, so that they can disseminate the most up-to-date knowledge to staff and parents. It has also been documented that the attitudes of neonatal nurses are considered to be the most important factor in determining whether or not parents perceive KMC to be a positive experience. According to Baker, the most helpful support provided by nurses was information on KMC and the infant's response to stimulation, spoken encouragement and reassurance, as well as the provision of a private and comfortable environment.¹⁶ Therefore, the successful implementation of KMC requires dedicated nursing staff who have been trained in all aspects of KMC, as well as a supportive environment, and a willing mother. Even though KMC was first introduced in South Africa in 1995, and its benefits are well documented, some resistance to it still exists, the cause of which is mostly lack of knowledge and the harbouring of misconceptions. A Ugandan study found that several of the participants did not appreciate skin-to-skin contact care. This finding was attributed to the mothers' lack of knowledge regarding the benefits of this.

Several reasons have been given for resistance to KMC implementation in developing countries. Sometimes, the KMC provider considers skin-to-skin contact between a naked infant and herself to be unusual and improper, or the mothers do not have enough privacy, or the nursing staff do not allow for continuous KMC. In hot weather, the mothers also believed that the infants did not need to wear socks and a cap. In some cultures, the use of a disposable nappy is unacceptable, and the mothers objected to continuous KMC. In others, the women needed permission from their husbands and extended families to be excused from their heavy workload at home in order to provide continuous KMC, and the fathers' involvement in infant care was restricted when the mothers provided KMC to the infant. The main reason for resistance to KMC is almost always due to local cultural factors.



According to Victora and Rubens, there are barriers to KMC implementation that still need to be addressed. These include the misconception that KMC is only for the poor, that it increases the hospital staff workload, cultural opposition to it, exposure of the mother's body to medical staff, resistance to exclusive breastfeeding, staff's objection to early discharge practices, and a lack of policies and resources for follow-up. Reasons for resistance to KMC implementation by nursing staff in developing countries included their perception that KMC is sub-standard, and that it represents extra work for staff.

The purpose of this study was to ascertain whether or not expectant mothers attending antenatal clinics in the eastern sub-district of the Western Cape receive any information on KMC. It was also to determine what the knowledge of, and attitudes towards KMC are, of antenatal clinic nurses and nurses involved with KMC mothers in the hospital setting.

Method

The study site was the Teerthankar Mahaveer Medical College Hospital (TMMCH), Moradabad. This 250-bed hospital caters for medical and surgical patients. It has a maternity ward with a bed capacity of 30, and a 10-bed KMC ward.

A cross-sectional descriptive study design was used to determine the knowledge of, and attitudes towards, KMC. The study population included all the women who gave birth to a LBW infant (infant weighing < 2 500 g) at the HDH, as well as a total of 15 nursing staff, which comprised the nursing staff employed in the KMC ward at HDH (n = 6), and the nurses employed at the antenatal clinics (n = 9) within the district, that these mothers attended prior to giving birth.

Multi-stage sampling was made use of in the following way:

- All of the nursing staff (n = 15) who were directly involved in the care of the mothers at the hospital;
- All of the KMC mothers admitted to the TMMCH between January and March 2015;
- All of the prenatal clinics (a total of seven) that mothers mentioned during the interviews.

A total of 713 mothers gave birth at the. During the data collection period, 24 January 2015 to 17 March 2015, 32 mothers (0.04%) gave birth at HDH to LBW (< 2 500 g) infants. Of these, only 30 mothers were interviewed, since the hospital could only accommodate 30 mothers and their infants.

The questionnaire used for data collection was piloted at another hospital, and all interviews were conducted by the researcher to ensure validity and reliability of information. The questionnaire was completed by the researcher during face-to-face interviews, conducted with the mothers and nursing staff, in the language of their choice. Information was collected from the mothers regarding socio-demographics, information received during antenatal care, infant feeding practices, and KMC. Information collected from nursing staff included experience with prenatal care, training received in KMC, and knowledge of, and attitudes towards, KMC. A 5-point Likert scale on KMC. Closed- ended questions were used to assess KMC practices, and open- ended questions were used to evaluate their knowledge of KMC.

Written informed consent was obtained from all participants. Permission to carry out this study was obtained from the department of health and the facilities. Ethical approval for this study was obtained.



Data were analyzed using the CDC Epi Info version 3.3.2, and Microsoft Excel software programmes. Data are represented as means and frequencies.

Results

Characteristics of the kangaroo mothers and their infants

The characteristics of the mothers and their infants are given in Table

I. The mean age of the mothers was 26.9 years [standard deviation (SD) \pm 6.25]. The mean number of live births was 2.34 (SD \pm 1.4). The mean gestational age of the infants born to the KMC mothers was 29.16 (SD \pm 3.89), and the mean birthweight was 1.37 kg (SD

\pm 0.35). The mean chronological age of the infants was 16.8 weeks (SD 16.58).

Table I: Characteristics of kangaroo mothers and infants (n = 30)

Variable	Mean (SD) ^a
Mother's age (years)	26.9 (\pm 6.25)
Live births (number)	2.34 (\pm 1.4)
Gestational age (weeks)	29.16 (\pm 3.89)
Birthweight (kg)	1.37 (\pm 0.35)
Infant's chronological age (weeks)	16.8 (\pm 16.58)

a = standard deviation

Educational level and source of income

The educational level of the KMC mothers is presented in Figure

1. Overall, all the KMC mothers had completed some schooling. Approximately 53% (n = 16) of the KMC mothers had not completed their secondary education (Grade 8-12), and only about 3% of the KMC mothers (n = 4) had completed their primary level schooling

(Grades 1-7). Almost 17% (n = 5) of the KMC mothers had completed their secondary level schooling (Grades 8-12); about 3% (n = 1) had obtained a tertiary education; and 3% (n = 4) of the mothers had not completed their primary education level schooling.

Source of household income

Figure 2 depicts the income sources of the KMC mothers. Twenty per cent of the KMC mothers (n = 6) were employed; 30% (n = 9) received a child support grant (CSG); almost 17% (n = 5) were unemployed, with no income; and about 27% received an income from either their spouse or boyfriend ("other"). None of the mothers

was supported by a family member’s old age grant. About 3% (n = 1) of the KMC mothers were employed, but also received a CSG, and another 3% (n = 1) received a CSG, and were also supported by the children’s fathers.

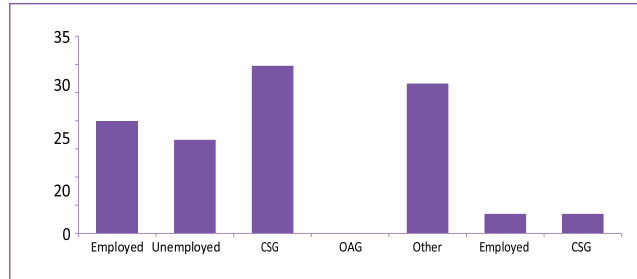


Figure 2: Source of household income

Knowledge and practices

The majority of the mothers interviewed (83.3%) had not received any information regarding KMC at the prenatal clinics that they attended. Information on KMC that the mothers received from nursing staff at the clinics included: a LBW infant has to stay in the hospital for a long period of time, and that KMC would improve the weight gain of the infant. Regardless of whether or not they had received information at antenatal clinics, most (80%) of the kangaroo mothers indicated that they knew that KMC was important for the growth of their infants.

Feeding practices

Figure 3 depicts the infant feeding practices of the KMC mothers. Sixty-three per cent (n = 19) of the mothers decided to breastfeed their infants. The reason given for their decision was their belief that breast milk is the best milk for their infants. Twenty per cent (n = 6) of the KMC mothers chose not to breastfeed due to their human immunodeficiency virus (HIV) status, and opted to use infant formula instead. The mothers who opted to mix feed (n = 5) included the two mothers who had given birth to twins. These two mothers’ decision was based on the fact they felt that their milk production was not sufficient for both infants

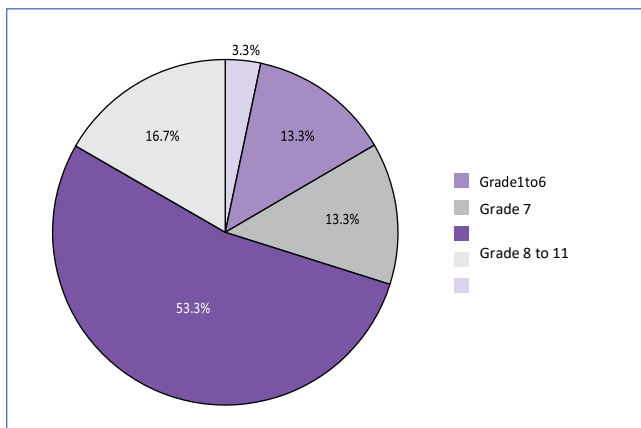


Figure 3: Educational level of kangaroo mother care mothers

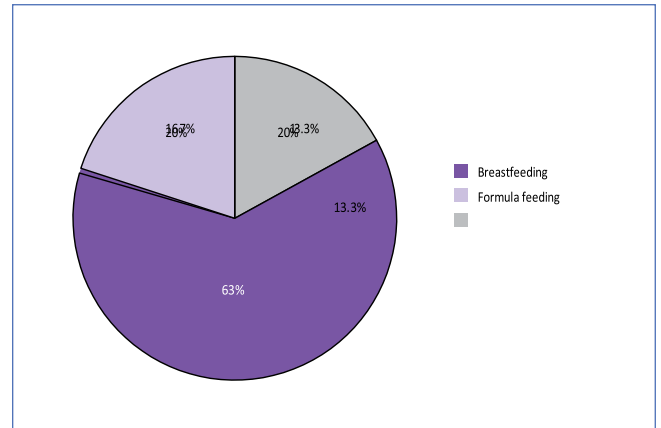


Figure 4: Feeding practices of kangaroo mother care mothers

Attitudes towards kangaroo mother care

The majority (96.6%) of the mothers felt positive towards KMC. Their main motivation for embracing it was the well-being of their infants. Reasons cited for a negative attitude or resistance towards KMC included being separated from their families for long periods of time, not receiving any visitors, and concern about the care of their other children.

Implementation of kangaroo mother care practices by mothers with low birth weight infants

Figure 4 depicts the time period prior to the initiation of KMC post- delivery. Sixty per cent (n = 18) of the mothers started to practice KMC within 24 hours post-delivery. Of these, 11 (36.7%) initiated KMC within one to six hours, four (13.3%) within seven to 12 hours, and three (10%) within 13-24 hours. Eight (26.7%) of the mothers only initiated KMC within 25-48 hours, due to their infants needing some form of medical intervention post-delivery. Four of the mothers (13.3%) could only initiate KMC within 72 hours after giving birth because their infants had been placed in an incubator.

Duration of kangaroo mother care

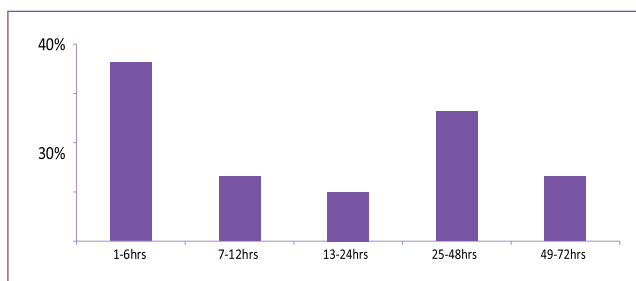




Figure 5: Time frame for kangaroo mother care initiation post-delivery at the TMMC Hospital

The majority of the mothers (n = 24) practised KMC for 24 hours per day. Four practised intermittent KMC (12 hours per day) because their infants were in an incubator at night. The mothers who gave birth to twins (n = 2) gave KMC to their infants alternately, so that each infant received 12 hours of KMC per day.

Acceptability of kangaroo mother care by mothers

Twenty-nine (96.6%) of the mothers indicated that they found KMC to be acceptable, and that they would continue it at home, post-discharge. Only one mother (3.4%) indicated that she would not continue KMC at home, but was willing to do it in the hospital. The KMC mothers experienced difficulty sleeping with their infants on their chest, and the mothers with the twins found it difficult to practice KMC with two infants.

Support received while in the kangaroo mother care ward

The KMC mothers felt very positive about the support they received from each other while they were in the ward. Ways in which they supported each other included the following: they reminded each other about the importance of KMC for their babies; discussed how to comfort their babies, and how to kangaroo the infants properly, as demonstrated; and exchanged ideas on how to minimize discomfort.

Twenty-four of the KMC mothers (83.3%) felt that they had received adequate support from the nursing staff. However, three (10%) of the mothers indicated that they, as mothers, would have preferred to have been more involved during ward rounds. They said that they would have liked to have sat with their infants at the incubators, and wanted help with expressing breast milk. They also indicated that they needed regular information sessions, and that dedicated nurses should be available to give them continuous support. The mothers also indicated that they wanted to be included in the training given by the occupational therapist.

Qualifications, work experience and kangaroo mother care training of nursing staff

Table II depicts the qualifications, KMC training, and KMC experience status of nursing staff at TMMCH. The TMMCH staff had the following qualifications: one professional nurse (16.7%), two senior nurses (33.3%), and three enrolled nurses (50%). Of the clinic nursing staff, four were professional nurses (44.4%), one an enrolled nurse (11.1%), one a midwife (11.1%), one an advisor (11.1%), and two were nursing assistants (22.2%). Sixty per cent (n = 9) of all the nursing staff who participated in the study did not have any KMC training. Only three of the nurses working in the KMC ward had received formal training on KMC (50%). One of the hospital nursing staff had between one and five years’ work experience (16.7%), three had six to 10 years’ work experience (50%), and two had

Table II: Qualifications, work experience and kangaroo mother care training of nursing staff in the TMMCH,

Moradabad a = TMMC Hospital

(n = 15)

Variable	HDH:a	Clinic nurses	Total n = 5 n (%)
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	KMC nurses n (%)	n (%)	
Qualification			
Professional nurse	1 (16.7)	4 (44.4)	5 (33.3)
Senior professional nurse	2 (33.3)	0 (0.0)	2 (13.3)
Enrolled nurse	3 (50.0)	1 (11.1)	4 (26.7)
Midwife	0 (0.0)	1 (11.1)	1 (6.7)
Advisor	0 (0.0)	1 (11.1)	1 (6.7)
Nursing assistant	0 (0.0)	2 (22.2)	2 (13.3)
Work experience (years)			
1-5	1 (16.7)	7 (77.8)	8 (53.3)
6-10	3 (50.0)	0 (0.0)	3 (20.0)
11-15	2 (33.3)	0 (0.0)	2 (13.3)
16-20	0 (0.0)	2 (22.2)	2 (13.3)
KMC training status			
Trained	3 (50.0)	3 (33.3)	6 (40.0)
Untrained	3 (50.0)	6 (66.7)	9 (60.0)

Table III: The advantages and disadvantages of kangaroo mother care as reported by the clinic and hospital nursing staff

Advantages of KMC	Number of nursing staff n = 15 n (%)	Disadvantages of KMC	Number of nursing staff (n = 15) n (%)
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Promotion of bonding	10 (66.7)	None	10 (66.7)
Increased growth and weight gain of infant	8 (53.3)	Overcrowded ward is not hygienically safe for mother and infant	3 (20.0)
Improved temperature regulation	4 (26.7)	Too long a stay away from other children	2 (13.3)
Decreased infection rate	4 (26.7)	Accidents, e.g. lying on the infant	1 (6.7)
Improved breastfeeding	3 (20.0)		
Simpler carrying and handling	3 (20.0)		
Decreased use of incubators	2 (13.3)		
Prevention of accidental falls	1 (6.7)		
Decreased work load of nurses	1 (6.7)		
Power-saving method	1 (6.7)		
Increased alertness of the mother to her infant	1 (6.7)		



11-15 years' work experience (33.3%). Regarding clinic nurses, seven had between one and five years' work experience (77.8%), and two had 16-20 years' work experience (22.2%).

Nursing staff at two of the antenatal clinics were very dedicated towards facilitating the implementation of KMC, but had not received any training. Six of all the nursing staff interviewed were formally trained in KMC (40%), while at the seven clinics, only three nurses out of a total of nine who were interviewed had received formal training in KMC (33.3%)

The majority of the nursing staff (11, 73.3%) was aware of the existence of the KMC policy. However, 60% (n = 9) did not know whether their facilities' procedures complied with the KMC policy.

All of the nurses interviewed at TMMCH's KMC ward (n = 6) believed that KMC was being implemented successfully at the hospital. This was based on their perception that the mother-infant pairs were hospitalized for a shorter period of time, and that the KMC mothers practiced the procedures demonstrated by nursing staff during consultation sessions.

Knowledge of nursing staff regarding the advantages and disadvantages of kangaroo mother care

As depicted in Table III, the nursing staff who worked on the KMC ward (n = 6) were able to list all 11 KMC advantages, while nursing staff at the clinics (n = 9) could only list four advantages. According to 66% (n = 10) of the nursing staff, KMC has no disadvantages, but 13% (n = 2) indicated that KMC is disadvantageous to the children and family members at home, due to their long separation from the mother, who is required to stay at the hospital with the LBW infant. Seven per cent (n = 1) indicated that KMC might also be harmful to the infant, should the mother forget about the infant on her chest, and accidentally smother him or her when she turns over in her sleep.

Nursing staff's knowledge and attitudes

Table IV depicts the nurses' responses to questions regarding their knowledge of KMC as assessed using a 5-point Likert scale. Overall, all the nurses (n = 15) agreed that KMC promoted mother-infant bonding, enhanced the mother's confidence with regard to how to handle her LBW infant, and resulted in effective breastfeeding. More than 50% (n = 9) of the nursing staff disagreed with the statement that KMC should be practiced on infants weighing 1-1.8 kg. Twenty per cent (n = 3) of the nurses were unsure of how soon after birth KMC should be initiated. Approximately 33% (n = 5) of the nurses agreed that both parents should be involved in KMC practice, and 66.7% (n = 10) of the nurses agreed that nurses should always facilitate KMC



Table IV: Clinic and hospital nursing staff’s knowledge of kangaroo mother care (n = 15)

Statement	Strongly disagree (%)	Disagree (%)	Unsure (%)	Agree (%)	Strongly agree (%)
Kangaroo mother care promotes bonding with the infant	0 (0.0)	0 (0.0)	0 (0.0)	8 (53.3)	7 (46.6)
Kangaroo mother care enhances the mother’s confidence in how to handle her infant	0 (0.0)	0 (0.0)	0 (0.0)	6 (40)	9 (60.0)
Kangaroo mother care results in effective breastfeeding	0 (0.0)	0 (0.0)	0 (0.0)	7 (46.6)	8 (53.3)
Kangaroo mother care should be practised on infants weighing 1-1.8 kg	1 (6.7)	8 (53.3)	3 (20.0)	2 (13.3)	1 (6.7)
Kangaroo mother care should begin within a few hours after birth	0 (0.0)	3 (20.0)	3 (20.0)	5 (33.3)	4 (26.7)
Both parents should be involved in kangaroo care	1 (6.7)	1 (6.7)	8 (53.3)	5 (33.3)	0 (0.0)
Nursing staff should always facilitate kangaroo mother care for mothers	4 (41.7)	4 (33.3)	3 (25.0)	0 (0.0)	0 (0.0)

All nursing staff (n = 15) supported the implementation and facilitation of KMC because they believed that it was very beneficial to the LBW infant. The nurses also indicated that they did not believe that KMC was burdensome. They indicated that they believed that KMC decreased, rather than increased, their workload.

Needs identified by nursing staff for the successful implementation

Two (35.7%) of the nurses at the TMMCH indicated that they were concerned about the insufficient space available for the number of KMC mothers admitted to the KMC ward. Six (66.7%) of the hospital nurses reported that more facilities such as lockers and cupboards, a laundry area and dining area, as well as proper beds, were required to make the KMC mothers’ stay more comfortable. The hospital nursing staff also suggested that the mothers needed to be more dedicated to their infants’ well-being, and that they should not leave them unattended.

The nursing staff at the clinics (n = 9) felt that as KMC is not implemented at clinic level, they did not require further training, equipment and support in order to make KMC more effective.

Discussion

Prior to giving birth to their premature infants, the majority of the mothers in the KMC ward did not receive any information on KMC. However, on admission to the KMC ward, they were educated about the importance of KMC in



promoting their infants' weight gain, as well as the importance of breastfeeding for their infants' development. A recommendation has been made that all pregnant women attending antenatal clinics should be educated about KMC.

In most cases, mothers of premature infants are completely unprepared to cope with their newborn infants. They express feeling helpless and afraid, and lack confidence in their ability to care for them. It has been recommended that nursing staff need to be aware of mothers' fears, and to provide them with support and encouragement.²¹ In this study, the majority of the mothers felt positively about KMC, and indicated that they would continue to practice it after being discharged from hospital. This is consistent with the findings of a Lahore study, in which participating KMC mothers reported having had more positive, than negative, perceptions about it. Most of the mothers said that they would continue with KMC at home. In a study carried out to investigate resistance to the implementation of KMC, Liyanage found that the mothers did not consider direct skin-to-skin contact between a naked infant and the kangaroo care provider to be unusual or improper, nor was there evidence of any cultural resistance to KMC.¹¹ This is in contrast to the findings of a study carried out in Uganda, where study participants reported finding skin-to-skin contact with a near-naked infant to be culturally unacceptable.¹⁸

In the present study, 40% of the KMC mothers initiated KMC within one to six hours after birth; in line with recommendations made by the KMC committee, which state that KMC should be initiated as soon as possible, and from birth, if possible. In the present study, resistance to KMC was mainly due to the length of time that the mothers were required to stay in the hospital, concern about the well-being and care of their other children who were at home, and the mothers feeling lonely, and isolated from their families, especially in cases where family members were unable to visit them on a regular basis.

According to Victora and Rubens, even though KMC was introduced more than 30 years ago, barriers still exist to its implementation. Barriers that need to be addressed include the misconception that KMC is only for the poor, increases the nursing staff workload, cultural protestations, exposure of the mother's body to medical staff, opposition to exclusive breastfeeding, hospital staff's objections to early discharge of the infants, and lack of written policies.

To reduce the burden on the mother, the father and other family members could also actively engage with the infant, and in addition to the mother, offer kangaroo care to the infant. Studies carried out to assess the experiences of fathers of premature infants reported that they felt useless and uninvolved, since, in most cultures, the mother is considered to be the sole care provider for infants and children. The fathers often viewed their role as providing support to the mother. Those fathers who were encouraged to become involved in KMC, reported feeling less afraid and more confident in handling their infants. They became more involved in the care of their infants, both at the hospital, and at home. -

Regarding their KMC experience, some mothers expressed a need for dedicated nursing staff to be available to provide them with continuous assistance, as well as the need for regular information sessions. This is consistent with the findings of a study carried out by Nirmala et al, where mothers reported that the constant support of nurses boosted their confidence in handling their premature infants.²² A KwaZulu-Natal study carried out at a regional hospital on mothers who were implementing KMC found that psychological support of the mother is very important, and that mothers need ongoing education covering all aspects of infant care.



Hospital-based nursing staff did not communicate any resistance to KMC. They did not think that KMC would increase their workload, and felt that it was beneficial to the premature infant and the mother. However, they believed that the facilities in the ward were inadequate for the successful implementation of KMC. The antenatal clinic nurses suggested that since KMC is affected in hospitals, and not clinics, they didn't see the need for further KMC training, equipment, and support at antenatal clinic level for its implementation, since they were not directly involved in carrying it out. In a study that considered reasons for resistance to the implementation of KMC in developing countries, the researchers found that professional staff considered KMC to be sub-standard care, and that it increased the staff workload.

In the present study, with regard to the nursing staff's knowledge of KMC, it was quite clear that training opportunities should be created to address misconceptions about, as well as gaps in knowledge, on this subject. Engler et al recommend that training opportunities should emphasize the facts related to, and abilities required for, safe and effective KMC practice, and should also incorporate a supervised, hands-on practical experience component.

Successful KMC implementation requires commitment from site managers and their personnel, as well as from dedicated trained nursing staff. It also requires the provision of adequate space and other resources, including written protocols.^{12,27} In South Africa, various implementation approaches have been compared. In their study, Pattinson et al, found that the most effective training tool for KMC implementation was a combination of face-to-face facilitation and an audio-visual package.²⁷ In their study, Bergh et al concluded that the training place did not have any impact on a facility's ability to implement KMC, and that the method used should be dictated by individual facilities, cost and availability of trained educators. They added that ongoing, on-site training resulted in the most successful implementation of KMC.²⁸

KMC is often limited to tertiary-level hospitals. However, in their report, Victora and Rubens recommend that KMC should be implemented at grass-roots level by introducing it at district hospitals and maternity units, a strategy that is currently being tested in Malawi and Tanzania.¹² Dippenaar et al carried out a study in Bloemfontein's national district hospital. They found that it was possible to implement safe KMC at primary healthcare level, provided guidelines for safe kangaroo care are followed.²⁹ Implications of this study's results are that special attention should be given to the KMC training of all healthcare staff involved in antenatal and neonatal care. A component of the KMC training should focus on the importance of early interaction between mother and infant, and how it affects the premature infant's development, as well as mother- infant bonding, and development of the premature infant. Adequate resources such as beds, cupboards, and dining and leisure areas, should be available wherever KMC is implemented in order to accommodate the mothers and their infants, and to make their stay as pleasant as possible.

Limitations of this study were the small sample size (nurses working in the health services rotate every three to six months). Therefore, this study was only able to assess one set of staff: three nursing staff on night shift, and three on day shift. Since the data were collected over three calendar months, no shift rotation took place during the period of data collection.



Conclusion

In this study, the main identified obstacles to the successful implementation of KMC were the following: the mothers' lack of KMC knowledge, and a lack of KMC training of all nursing staff (antenatal clinic and hospital), and the mothers' feelings of being isolated from their spouses and families.

The mothers' lack of KMC knowledge could be rectified by educating all expectant mothers about KMC during their antenatal visits. This could be carried out through talks, pamphlet distribution, and the use of audio-visual media, demonstrating how to offer KMC, and how to express breast milk, for example. This might also alleviate the anxiety and feelings of inadequacy that mothers experience after giving birth to a premature, or LBW infant.

All nursing staff should receive training on KMC, even if they are not directly involved in its implementation. In this way, all nursing staff will be equipped to assist and advise expectant mothers on KMC.

Providing the spouses of KMC mothers and immediate family members, e.g. grandmothers and sisters, with accommodation in the KMC ward, might address the mothers' feelings of being isolated. It might also make the length of time, needed to remain in hospital with their infants, more bearable. Spouses and members of the immediate family could also provide the infant with KMC, especially the fathers, who could use the opportunity to bond with their infants.

In conclusion, further research on the father's role and involvement in KMC in South Africa is indicated, since KMC plays an integral role in decreasing the mortality and morbidity of premature and LBW infants, and the mother might not always be available to be the sole kangaroo care provider.

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