Research Article

'Neonatal Nurses' Practice and Attitude toward Mothers Dealing with Kangaroo Care in Khartoum State Selected Governmental Hospitals

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Abstract
Background: Kangaroo care (KC) is a form of developmental care that has benefits for all newborns, especially those who are in the neonatal intensive care unit. It involves a direct contact when a newborn is placed skin-to-skin on mom or dad's bare chest. Kangaroo mother care (KMC) is initiated in hospital and continued at home. **Aim of the study:** this study aimed to assess neonatal nurses' practice and attitude toward mothers dealing with kangaroo care. **Methodology:** descriptive research design was used, a convenience sampling, during the period from ١٥-٣٠ of March ٢٠١٦, one hundred nurse who works in the neonatal intensive care units (NICU) of selected governmental hospitals in Khartoum state. **Results:** this study found that all neonatal nurses encouraged parents to provide KC and identify the benefits of kangaroo care (KC) for both infant and parents. There was a minority who has a positive attitude toward KC, and can be practiced with low birth weight infants requiring intubation and majority nurses (٨٤٪) found facilitating KC professionally satisfying. **Conclusion:** This study found that the neonatal nurses strongly support the use of KC in the NICU. Although the majority of nurses reported positive attitudes, they did identify a number of educational and practical concerns that need to be addressed to ensure KC with low birth weight infants is safe and effective.
Keywords: Kangaroo mother care, Practice, Attitude, NICU.

Introduction
The World Health Organization defines kangaroo mother care (KMC) with ٤ components: early, continuous, and prolonged skin-to-skin contact (SSC) between the newborn and mother, exclusive breastfeeding, early discharge from the health facility, and close follow-up at home[١]

KMC is defined as "early prolonged and continuous skin-to-skin contact between a mother and her newborn low-birth-weight infant (<٢٥٠٠ gram preterm and/or low birth weight infant) both in hospital and after early discharge, with (ideally) exclusive breastfeeding, and proper follow-up"[٢].

Kangaroo care is a form of developmental care that has benefits for all newborns, especially those who are in the neonatal intensive care unit. Also known as skin-to-skin contact or kangaroo mother care, kangaroo care involves direct contact when a newborn is placed skin-to-skin on mom or dad's bare chest. Mom or dad may gently hold their baby where they can be rocked, cuddled and hear comforting sounds of their parent's heartbeat and voice. Even in the stressful environment of the neonatal intensive care unit (NICU), parent and child can quietly bond and get to know one another. Kangaroo care is easy to do, inexpensive and highly rated by parents[٣].

Kangaroo mother care (KMC) special way of caring low birth weight LBW infants by skin to skin contact. it promotes their health and welling by effective thermal control, breastfeeding and bonding. KMC is initiated in hospital and continued at home[٤].

Many of the benefits of kangaroo care to a newborn revolve around their feelings of safety, warmth and comfort. Research

shows greater bonding with parents and as a result calmer and less stress[١] which positively impacts their brain and emotional development[٥]. Kangaroo care can help NICU babies, regulate their heart rate, breathing and temperature, improve head circumference growth and weight gain [٣, ٦] and stabilize their organ function and self-regulation abilities[٥,٧] experience less pain and less crying[٨]. Facilitate better sleep patterns[٥] avoid infections[٣,٦] take advantage of improved nutrition from mothers' increase in breast milk production [٥] be more willing to breastfeed [٣, ٦] enjoy a shorter hospital stay. In addition to benefits that are observable in the NICU, research points to long-term advantages are required. Newborns that experienced kangaroo care in the NICU were more attached and bonded to their mothers over time. Babies were more alert after six months and their mothers were more attuned to their infant's cues and experienced less depression these benefits are all signs of healthy brain development[٥].

Although there is some evidence that combining KC provided by the mother with sweet-tasting solutions may be synergistic, further study is warranted before this combination can be recommended as standard care. In the absence of a mother, a father,[٩] unrelated woman,[١٠] or a co-twin[١١,١٢], there is some evidence that it may be considered as an effective alternate.

The nurse or other neonatal professional should be able to give advice about when a baby is ready for KC and help prepare parents for this special time together. In KMC, the baby should be placed between the mother's breasts in an upright position, babies head should be turned to one side and in a slightly extended position which helps to keep the air way open and allow eye to eye contact between mother and baby. Baby hip should be flexed and abducted in a frog like position. The arms should also be flexed and placed on mother's chest. Baby's abdomen should be placed at the level of mother epigastrium. This position helps to reduce the occurrence of apnea as breathing and heartbeat stimulate the baby. Baby can be supported with a sling or binder or specially prepared KMC bag[٤].

Privacy should be maintained to avoid unnecessary exposure on the part of the mother which makes her nervous and de-motivating. KMC should be initiated gradually with a smooth transition from conventional care continuous unit. Short KMC sessions can be initiated during recovery with ongoing medical treatment, e.g. IV fluid and O_2 therapy. KMC can be provided while the baby is with gavage feeding. Duration of KMC should not be less than one hour to avoid frequent handling which may be stressful to the baby. Gradually the length of KMC sessions should be increased during ٢٤ hours a day[٤].

Aim of the study: this study was aimed to assess neonatal nurses' practice and attitude toward mothers dealing with kangaroo care.

Research questions

Did neonatal nurses' have a positive attitude toward dealing with mothers during kangaroo mothers care?

Did neonatal nurses' have good practicing toward mothers dealing with kangaroo care?

Methodology

Research design: A descriptive research design was used

Setting: three governmental hospitals in Khartoum state (Omdurman Maternity Hospital, References Children's Hospital Jafar Ibnauf and Haj El-safi teaching Hospital**)**

Sample: All nurses who work in NICU (١٠٠ nurse), had a scientific degree in Nursing Sciences, and experience in Neonatal Nursing.

Tool of data collection:

One tool was used in this study**, it consisted from three parts**

Part I: personal data which include name, gender, age, and marital status.

Part II: Likert scale was used to identify neonatal nurses' attitude toward KMC. It consisted with ١٤ statements that reflected the benefits, current practice, and role of nurses. For each statement, nurses were

asked to state their opinion using ٣ point of Likert scale range from ٣" positive attitude ٢" uncertainly attitude and ١" negative attitude

Part III: checklist was used to observe neonatal nurses' practice during KMC, it consisted with eight items; presented with yes or no**.**

Data collection It includes:

- The study tools had been designed after extensive literature review.
- The content and validity was done by ٣ expertise opinion in the pediatrics department.
- A pilot study was conducted in ١٠ march - ٢٠١٦ on ١٠٪ of the sample. It was conducted to evaluate the applicability and clarity of the developed tools and includes in the study.
- Sampling was started from ١٥th of March to ٣٠th of March ٢٠١٦. The purpose of the study was simply explained to nurses who agreed to participate in the study.
- Respondents nurse was not asking to fill the questionnaire during official work hours.

Ethical consideration:

A permission and an approval for this study sought from Ministry of Health and the clinical site to ensure that Human subjects' rights are protected. Participants were fully informed about this research and what it includes and the benefits to hopefully be a gained. The nurses' identifying information and the data forms coded for data entry. The codes were only known to the researcher who kept information locked and security until the study complete.

Statistical analysis

The collected data were, coded, categorized, tabulated, and analyzed using the Statistical Package for the Social Science (SPSS ٢٠.٠). Qualitative data were expressed as frequency and percentage. Correlation among variables was done using Pearson correlation coefficient. Level of significance at p<٠.٠٥ was used as a cut of value for statistical significance.

Results

As regards the personal data of neonatal nurses', table (١) showed that ٦٥٪ of the neonatal nurses their ages ranged between ٢٠ to less than ٣٠ years, and ٨٦٪ were females. Also, ٥٤٪ of nurses' had baccalaureate degree B.Sc.

Table (١): Distribution of nurses as regarding personal data.

Personal Data	No.	%
Hospital's name		
Omdurman Maternity Hospital	٦٠	٦٠
References Children Hospital Jafar Ibnauf	٢٥	٢٥
Haj El-safi Teaching Hospital	١٥	١٥
Age / years		
٢٠ < ٣٠	٦٥	٦٥
٣٠_ ٤٠	٣٥	٣٥
Gender		
Male	١٤	١٤
Female	٨٦	٨٦
Level of education		
• Diploma Degree	٤٣	٤٣
• Baccalaureate degree B.Sc.	٥٤	٥٤
• Master degree	٣	٣
Total	١٠٠	١٠٠

Table (٢) shows that, ٨٦٪ of nurses provide information to parents, ٧٨٪ ensuring privacy during KMC, ٨٤٪ respect parent point of view, and ٩٠٪ of them encourage parents during KMC.

Table (٢): Distribution of nurses' as regarding their practice toward kangaroo care.

Nurses' practice toward kangaroo care	No.	%
Provide information		
Yes	٨٦	٨٦
No	١٤	١٤
Supervised the technique of KMC		
Yes	٤٥	٤٥
No	٥٥	٥٥
Ensuring privacy during KMC		
Yes	٧٨	٧٨
No	٢٢	٢٢
Respect parent point of view		
Yes	٨٤	٨٤
No	١٦	١٦
Done KMC with intubated neonates		
Yes	٤٠	٤٠
No	٦٠	٦٠
Extremely LBW or more		
Yes	٤٠	٤٠
No	٦٠	٦٠
Encourage parents during KMC		
Yes	٩٠	٩٠
No	١٠	١٠
Provide quiet environment in NICU		
Yes	٦٠	٦٠
No	٤٠	٤٠

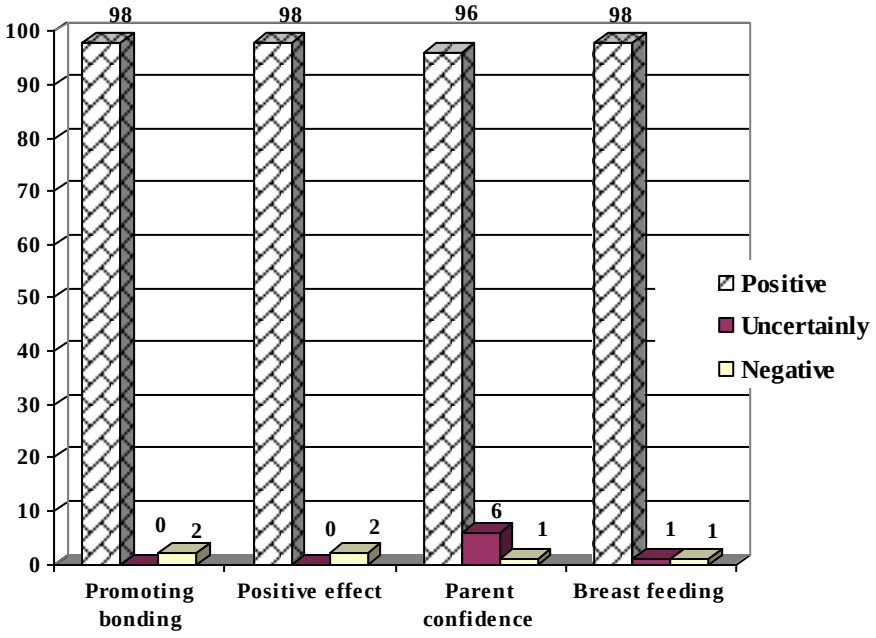

Figure (١): Distribution of nurses' as regarding promoting bonding, positive effect, parent, and breast feeding.

Figure (١) found that, the majority of nurses had positive attitude toward KC promoting bonding, have positive effect, parent confidence, and improve breast feeding.

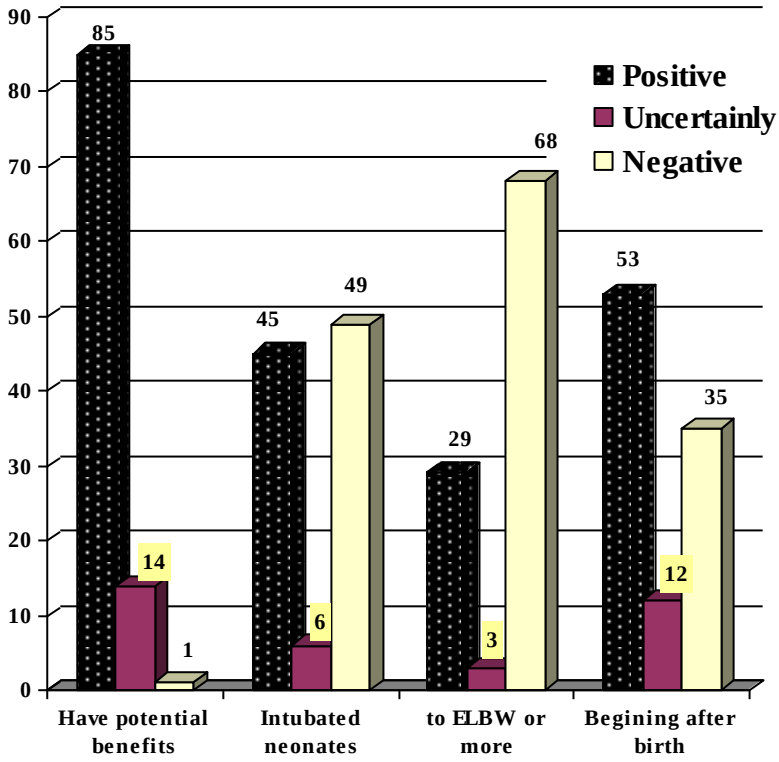

Figure (٢): Distribution of nurses' as regarding potential benefits, intubated neonates, ELBW, and beginning after birth.

Figure (٢): Nurses had positive attitude toward potential benefits of KMC, and ٥٣٪ of them had positive attitude toward beginning KMC after birth.

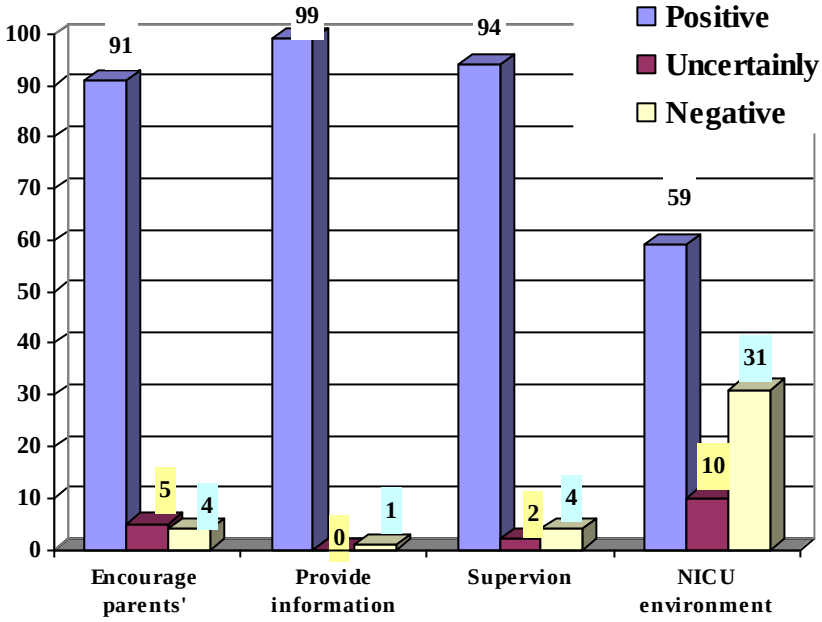

Figure (٣): Distribution of nurses' as regarding encourage parents', provide information, supervision, and NICU environment.

Figure (٣): found that, the majority of the nurses had positive attitude toward encourage & provide information to parents' about KMC and supervision them during care.

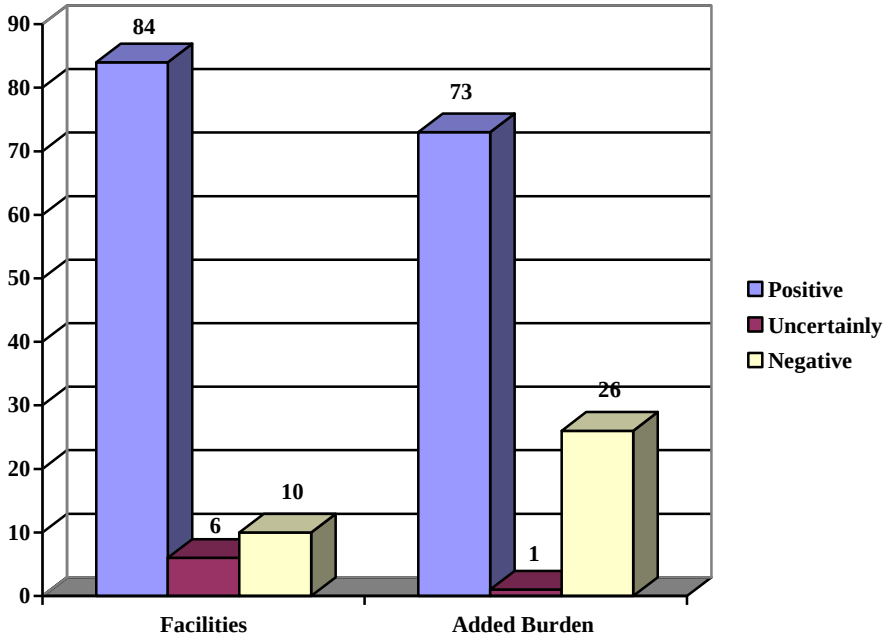

Figure ٤: Distribution of nurses as regarding available facilities and added burden.

Figure (٤): found that, ٨٤٪ of the nurses provide facilities to improve KMC, and ٧٣٪ of them had positive attitude toward KMC not added burden to work.

Table (٣) shows that, there was a negative weak correlation between age and identify other benefits of kangaroo care where *P*- value ≤ ٠.٠٠١; r = -.٣٣٨)

Table (٣) Correlations between personal data with bonding, physical effect, parent confidence, other benefit, intubated infant and improving weight.

Variable	Test	Bonding	Physical effect	Parent confident	Breast feeding	other benefit	Incubated infant	Weight
Age	r	.٠٣٦	-.٠١٨	.٠٦٤	.٠٨٥	-.٣٣٨	-.٠٩٤	-.٠٧٢
	P	.٧١٨	.٨٥٩	.٥٢٦	.٤٠١	.٠٠١*	.٣٥٠	.٤٧٧
Gender	r	-.٠٦٧	-.٠٢٥	.٠٦٦-	-.٠٢٤	-.٠٧٤	.٠٤٢	-.٠٤٧
	P	.٥٠٨	.٨٠٧	.٥١١	.٨١٢	.٤٦٦	.٦٧٨	.٦٤٦
Level of education	r	.١٨٦	.٠٣٩	.٠٦٨	.٠٨٤	-.٠٥٩	-.٠٥٩	-.١٠٨
	P	.٠٦٤	.٦٩٧	.٤٩٩	.٤٠٧	.٥٦٣	.٥٥٩	.٢٨٧

* Significant at *p* – value ≤ ٠.٥

Table (٤) shows that, there were significant weak positive correlations between nurse encouragement with gender and level of nurse's education.

Table (٤) Correlations between personal data with starting kangaroo at birth, parent encourage, provide information, nurse encourage, NICU quiet, parent satisfy, and its add burden.

Variable	Test	At birth	Parent encourage	information	Nurse encourage	NICU quite	p. satisfy	Add burden
Age	r	.٠٩٢	-.١٢١	.١١١	.٠٨١	-.٠٣١	.٠٥٣	-.١٧١
	P	.٣٦٥	.٢٢٩	.٢٧٣	.٤٢٥	.٧٥٩	.٦٠١	.٠٨٨
Gender	r	-.١٢٧	.٠٩٨	.١٦٦	**.٤١٩**	.١٦٠	-.٠١١	.٠٤٤
	P	.٢٠٧	.٣٣٤	.٠٩٨	.٠١*	.١١١	.٩١٠	.٦٦١
Level of education	r	.٠٨٦	.٠٩٦	.٠٨٢	**.٢٤١**	-.٠٤٤	.٠٠٤	-.٠١٠
	P	.٣٩٢	.٣٤٠	.٤١٧	.٠١٦*	.٦٦٤	.٩٦٩	.٩٢١

* Significant at p – value ≤ ٠.٥

Discussion

The results of the present study revealed that most nurses (٨٦٪) provided information to parents about KMC. This may be due to their attitude and experience about the benefit of KMC to parents and infants. Similar results reported by Chia et al., [١٣] confirm our results. Another study conducted by Parul [٤] found that the nurse should provide the parents adequate information about the KMC.

As regard supervision of KMC, ٤٥٪ of the nurses supervised the parent. This may be attributed to their attitude and experience. These results were agreement with study done by Parul [٤]. On the other hand, this study found that most nurses (٧٨٪) were tending to ensure parent privacy during the application of KMC. This was agreement with the study done by chia et al., [١٣] and Parul [٤].

The findings of the present study indicated that, most neonatal nurses had a positive attitude toward KMC as it promotes bonding between neonates and their parents, Similar results were reported by Schneider et al, [١٤] Neu , Robinson [٥], who found that nurses had a positive attitude toward KC because it promotes bonding. That's due to all nurses in NICU have knowledge about importance of KMC

As regard to the positive effect of KMC on other benefit as physical wellbeing the study revealed that, of most neonatal nurses (٩٨٪) agreed that KMC has positive effect on physical wellbeing of neonates. This may be attributed to their knowledge about KMC. Previous study supports these results [١٥, ١٦, ١٧,١٨] and Feldman et al [١٩] provides compelling evidence in this domain as well as in the physiological domain. They found that infant who received an average of one hour of KC for ١٤ days showed a more organized sleep-wake cycle at ١٠ years of age.

As regard parent confidence' the study reflects that, the majority of nurses (٩٦٪) agreed that KMC enhance parents' confidence. This result in the same line with similar result conducted by Parul [٤] and Moore et al., [٢٠].

On the other hand, this study indicated that most nurses (٩٨٪) agreed that KMC increasing and enhancing effective breastfeeding. Studies conducted by other researchers [٢١,٢٢ ٢٣] supported our study. A review showed higher breastfeeding exclusiveness for KMC[٢٤].

The finding of our study revealed that majority of nurses' (٩٨٪) agreed that KMC had potential benefit to neonates and their parents. Many studies were reported by Blacke et al.,[٣] and Blomqvist et al.,[٦].

A cohort studies used electroencephalo-graphic complexity to measure difference

in neurological maturity between preterm infant who received KC and those who did not [٢٥]. Additionally, the results showed an increase in primary motor cortex synchronization in response to transcranial magnetic stimulation in the group of infants that received KC [١٨]. Scher et al., suggest that KC play a role in supporting neurodevelopment which is consistent with earlier findings[١٥].

Regarding the nurses' attitude with an intubated infant and infant weighing ١٠٠٠g or more we observed that minority of nurses (٤٥٪) agreed and apply it with these neonates that may be related to difference in their level of knowledge. In contrast to this result new literature KC is appropriate for intubated and very low birth weight (<١٠٠٠g)[١٣].

The findings show that half of nurses had positive attitude about starting of KMC this might be attributed to nurses' knowledge toward KMC with agreement study [٤, ١٣].

The findings of our study reflect that most nurses agreed to give all parents relevant information on KMC. This might be due to their knowledge for benefit of KMC. Similar studies was supported this result conducted by Engler et al.,[٢٦] and lee et al.,[٢٧].

On assess nurses remaining with parents for provide information, support and assistance during KMC most of nurses (٨٦٪) remain with parent during KMC this may be due to nurses knowledge about KMC. This result is supported by previous study conducted by Chia et al.,[١٣].

On other hand, our study's assessment of nurses regarding facilitating KMC when the NICU is quiet, showed that, most of nurses' (٨٤٪) were agreed and (١٠٪) disagreed, that KMC has been facilitated when NICU is quiet. This may be due to experience of nurses'. Similar results were also reported by Bergh et al.,[٢٨] and Blomqvist et al.,[٦], when assessing nurses' knowledge about facilitating KMC where it was professionally satisfying, the majority of nurses had positive attitude.

This result may be related to their knowledge about the benefit of KMC. This result supported previous study reported by Solomons, Rosant[٢٩]. The finding of the present study indicated that most nurses (٧٣٪) agreed and (٢٦٪) disagreed that facilitating KMC add burden to NICU nurses. This result may be due to experience and knowledge about the benefit.

As regarding correlation between nurses encouragement with gender and level of nurse's education there were significant weak positive correlations between its. This in the same context with KAmbika[٣٠] who mentioned that, the mean score of nurses knowledge about KC was ٣٥.٠٣ ± ٦.٥٦ and Practice scores was ٨.٤٣٣ ± ٢.٠٤ (ranged between ٤- ١١)

Finally, our finding indicated that majority of nurses were dealing respectively with parent during the KMC procedure. This could be due to their knowledge, experience, behavior, and attitude toward KMC.

Conclusion

Infants admitted to a NICU require complex medical treatment and care, because of the intensity of care these infants are deprived of personal contact at a time critical for the development of a close infant-parent relationship. This study highlights the attitudes and practices of neonatal nurses in promoting KC within the highly specialized NICU environment. The study also indicates the need to implement strategies to overcome practical constraints that have been identified by a group of neonatal nurses highly committed to promoting KC.

This study confirms neonatal nurses strongly support the use of KC in the NICU. Although the majority of nurses reported positive attitudes, they did identify a number of educational and practical concerns that need to be addressed to ensure KC with low birth weight infants being safe and effective.

Recommendation

Good quality care of neonates could reduce neonatal mortality, Kangaroo Mother Care does not need expensive and sophisticated equipment, and for its simplicity it can be applied almost everywhere. Kangaroo Mother Care can also contribute to the humanization of neonatal care and to better bonding between mother and baby. A group of health professionals with experience in KMC met in a workshop to discuss its effectiveness, safety, applicability and acceptability in different settings. Finally, we recommended that the KMC should be involved in the curriculum and studied to the student in university.

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