



Original Article

Health care providers' perception, knowledge, barriers and practice of kangaroo care for preterm baby in Indonesia

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ABSTRACT

This study explored the health care providers' perception, knowledge, barriers and practice of Kangaroo Mother Care (KMC) for premature infants. Total of 111 participants working in NICU and Perinatology wards from four hospitals in Central Java, Indonesia were recruited to this study. The participants were invited to complete the four sections of the Kangaroo Mother Care Questionnaire. Generally they have been practicing KMC with good perception even with deficient knowledge about KMC. Yet the health care providers perceived high barriers to practice KMC and perceived uncomfortable practicing KMC in certain situation. KMC practice in Indonesia need to be highly promoted to be practiced and campaigned thus the health care providers' negative perception could be reduced as well as educate them to be more confident practicing KMC with adequate knowledge.

1. Introduction

The infant mortality rate in Indonesia is still the highest among Southeast Asian countries, it is 35 per 1000 live births in 2011 which is actually significantly decreased compared to its on 1999 when the Indonesian mortality rate was 96 per 1000 live births (UNICEF global child mortality report, 2012) but it's still far away from the target of MDGs 4 to work off Infant mortality rate into 5 per 1000 live births in 2015 and Indonesia is on high risk position of failing to meet MDGs 4. Preterm birth is the first leading cause of death in neonate ages 0–27 days (Liu et al., 2012). The higher premature infant's deaths are widely spread in most of rural areas in Indonesia. Indonesia is the seventh greatest number of neonatal deaths (Lawn et al., 2010).

Kangaroo care (KC) is a treatment that involves holding a premature infant between the mother's breasts or on father's chest which involves skin to skin contact and impersonates the intrauterine environment by establishing warmth and soothing rhythmic sound of heartbeat as a tool of tactile stimulation to preterm infants in natural way (Breitbach, 1990). Kangaroo care as a simple intervention is based evidence practice that can save newborn's live. The effects of kangaroo care can improve physiological condition such as breathing, heart rate, temperature and sleeping pattern of the infant and also give positive contribution in psychological mother condition after delivery (McGrath and Brock, 2002). Through many researches, now it has been stated

that kangaroo care is a fundamental component of developmentally appropriate therapy for hospitalized preterm which sustains short- and long-term beneficial effect for the infants (Ludington-Hoe, 2013).

WHO has introduced kangaroo care in the 1990s to Indonesia. However, it took 23 years to move it into policy support. Recently, Indonesian Ministry of Health has recommended the implementation of Kangaroo care in the hospital setting through Hospital Accreditation Commission. This recommendation was aimed to reduce the infant mortality rate in Indonesia. But till now few hospitals have consequently implemented this method as routine care for premature infants. Thus, the implementation of kangaroo care was only done in big hospital and some private hospital in the big city in Indonesia. Some implement kangaroo care for the short period of time during the study and it stopped after the study. There are some barriers and values perceived by healthcare professional on the kangaroo care implementation, some of it mentioned that kangaroo care will cause arterial or venous line dislodgement thus put additional burden for the nurses (Engler, 2002). The barriers and misconception in knowledge about kangaroo care perceived by health care professional were identified in one research exploring the resistance to implementing kangaroo mother care in developing countries (Chapak and Ruiz-Pelaez, 2006). The other study found that positive perception and higher knowledge of evidence would encouraged nurses to integrate kangaroo care into NICU care and treatment (Engler et al., 2002).

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Knowledge about kangaroo care is vitally needed by the healthcare professionals in order to incorporate this evidence based treatment for prematurely born infants. To achieve the better outcomes in spreading the information about knowledge related kangaroo care, some researcher used plan to study model, education and also training (Bergh et al, 2012). When the nurse and health care professional are knowledgeable in kangaroo care, it would help them to professionally promote and utilize kangaroo care as one of the developmental care needed by the neonates. Practice of kangaroo care as the evidence based intervention to the neonates requires the complexity skill and knowledge (Sitzia, 2002).

A good knowledge and perception of the healthcare providers about caring the preterm baby become the important issue to address kangaroo care promotion (Waiswa et al., 2010). The positive perception about kangaroo care as the right thing to do for the dying prematurely born infant and its benefit providing mutual proximity between infant and the mother has affected the commitment of the nurses in the context of caring for critically ill infant (Kymre and Bondas, 2013).

The NICU and Perinatology wards in Indonesia have good commitment to facilitating mothers of the neonates to come at any time to the ward and to stay as long as the mother's needs. Some NICU and Perinatology wards in Indonesia provide shared room for the mothers to stay in the hospital after discharged from obstetric ward. This situation could be one of the opportunities for healthcare providers caring for the neonate in NICU and Perinatology ward to involve the mother to caring for their babies with kangaroo care. An Indonesia study about kangaroo care mentioned that Kangaroo Mother Care at the central government level was highly perceived the supporting factors of its practice. However in the district or city level, kangaroo care was only regarded as a challenge (Berg et al., 2012).

Seeing the gap between the high number of premature infants mortality rate in Indonesia, the feasibility of implementation of kangaroo care, the important role of the health care provider in the NICU and Perinatology wards to initiating kangaroo care with the fact of limited information regarding knowledge, perception, barriers and practice of kangaroo care for premature infants in Indonesia. Thus it is essential to comprehensively assess the perception, knowledge, barriers and practice of kangaroo care implementation for preterm babies from the health care providers' perspective. The aim of this study was to explore the knowledge, perception, barriers of kangaroo care of the healthcare providers at NICUs and perinatology wards in Indonesia.

2. Methods

2.1. Study design and sample

A cross-sectional descriptive and correlational study with convenience sampling was conducted in NICUs and Perinatology wards in 4 hospitals in Central Java, Indonesia. Convenience sampling technique was done to recruit the participants. A total of 111 health care providers were recruited from NICU or Perinatology wards of four general hospitals in Central Java, Indonesia. The sample size was calculated in G power 3.1.9.2 software using F test, $\alpha = 0.05$, effect size 0.22 and power level 0.80. From G power sample size calculation, the expected number of participant was 80.

2.2. Measure

The researcher used modified Kangaroo Care Questionnaire (KCQ) developed by Arthur J. Angler, & Eileen Brumbaugh et al., on 1999. The questionnaire consists of 5 basic characteristic of the participants and total 80 items distributed to assess the health care providers perception, knowledge, barriers and practice of kangaroo care. Forward and blindly backward translation was done to the questionnaire from English to Bahasa version. Both of the forward and backward translated questionnaire were reviewed against the original questionnaire to see if

there is any discrepancy identified that may need further assessment (Jones, 2001; Wild, 2005).

The modified KCQ is divided into four section; 1) the perception questionnaire that contained 26 items using 5 Likert scale (strongly disagree to strongly agree). 2) Knowledge, consist of 20 items with optional answer: True, false and do not know. 3) Barriers section the participants were asked to answer 23 items on summated rating scale showing the level of influence of the barriers to kangaroo care implementation. The barriers scale ranged from "very influential" to "not influential at all". 4) Practice section consists of 17 question with Likert scale ranged from very "comfortable" to "very uncomfortable" which assessed how comfortable health care providers practicing KC in some condition or situation.

Pilot study was done to test the reliability of the KCQ Bahasa version. The Cronbach's α for the perception section is 0.739, the knowledge section is 0.844, the practice section is 0.780 and the barriers section is 0.875. From the internal consistency test the researcher assumed that the translated KCQ is reliable. The Content Validity Index of the KCQ Bahasa version was 0.97 which considered acceptable.

2.3. Procedure

The data was collected from January to March 2015 in four general hospitals in Central Java. Ethical Review was proved by the IRB at Islamic University of Sultan Agung Semarang with registered no: 019/I/2015/Komisi Bioetik. The inform consent form was given to the health care providers prior to their receiving of the questionnaires. The questionnaire was collected 3 days to one week after distribution in the unnamed sealed envelope to ensure the confidentiality.

2.4. Data analysis

Data were analysis using a descriptive statistics. A frequency used for categorical data and mean (standard deviation) for continuous data. Statistical analysis was done using SPSS version 18.

3. Results

A total of 111 health care providers took a part in this study. 5 doctors, 90 nurses, and 16 midwives. 21 of them are assigned in the NICU and the rest 90 participant are assigned in the Perinatology ward. Most of the health care providers involved in the study have Diploma qualification (82.9%) while the rest are 14.4% with Bachelor degree and 2.7% with Master degree qualification. Length of working experience of the participants were ranged from less than 1 year $n = 25$, 1–5 years $n = 65$, 5–10 years $n = 13$, and more than 10 years $n = 8.79$ out of 111 healthcare providers answered have the experience of doing kangaroo care while the other 32 did not have experience of doing kangaroo care. From the data collected, 91 of the health care providers had no experience of having kangaroo care training, only the rest 20 of them had the KC training experience (Table 1).

The HCPs working in NICU and Perinatology wards most of them are knowledgeable in KC in terms of benefit of the KC for preterm babies (Table 2). They correctly answered some questions assessing the benefit of KC for the breathing function, improving milk supply, and maintaining baby's body temperature. But they mostly gave wrong answers to some questions related the eligibility criteria for baby to have KC. It is reflected on their answers that baby under phototherapy is not eligible to have KC, baby on oxygen therapy will decrease their oxygen saturation during KC, the baby with arterial IV should not engage KC and it is not appropriate for baby with less than 28 weeks gestational age.

Most of the HCPs strongly agree that KC can encourage the parenting role (mean = 4.65), enhance parents-baby attachment (mean = 4.79), KC will benefit the premature babies (mean = 4.50) and help the parents feel more confident caring the premature babies

Table 1
Characteristics of respondents (n = 111).

| Variables | n | % |
|------------------------------|----|------|
| Kangaroo care experience | | |
| No | 32 | 28.8 |
| Yes | 79 | 71.2 |
| Profession | | |
| Doctor | 5 | 4.5 |
| Nurse | 90 | 81.1 |
| Midwives | 16 | 14.4 |
| Education level | | |
| Diploma | 92 | 82.9 |
| Bachelor | 16 | 14.4 |
| Master | 3 | 2.7 |
| Working Ward | | |
| NICU | 21 | 18.9 |
| Perinatology | 90 | 81.1 |
| Length of working experience | | |
| 3–12 months | 25 | 22.5 |
| 1–5 years | 65 | 58.6 |
| 5–10 years | 13 | 11.7 |
| ≥ 10 years | 8 | 7.2 |
| KC training experience | | |
| Never | 91 | 82.0 |
| 1 time | 18 | 16.2 |
| ≥ 2 times | 2 | 1.8 |

Table 2
Health care providers' knowledge about kangaroo care (n = 111).

| Item | Correct answer | |
|---|----------------|------|
| | n | % |
| Babies on oxygen therapy experience decrease in oxygen saturation | 48 | 0.43 |
| Babies under phototherapy can participate KC | 42 | 0.38 |
| Babies typically experience more bradycardia episodes during KC | 60 | 0.54 |
| Babies with peripheral IV can participate in KC | 81 | 0.73 |
| KC showed improve breathing pattern in preterm babies by reducing apnea | 74 | 0.67 |
| KC is contraindicated in babies less than 28 weeks gestational age | 43 | 0.39 |
| Most babies experience decrease in temperature during KC | 91 | 0.82 |
| KC increases mother's milk supply | 97 | 0.87 |
| Baby with arterial IV should not engage with KC | 49 | 0.44 |
| Increase risk on infection for baby | 75 | 0.68 |
| Baby with CHD have physiology stability KC | 39 | 0.35 |

Note: KC; Kangaroo care.

Table 3
Health care providers' perception on kangaroo care (n = 111).

| Item | Mean (SD) |
|--|-------------|
| KC Enhance parents-baby attachment | 4.79 (0.43) |
| KC encourages parenting role | 4.65 (0.48) |
| KC will help parents feel more confident caring the preterm babies | 4.51 (0.62) |
| KC will benefit preterm baby | 4.50 (0.59) |
| KC will improve baby's outcome | 4.37 (0.62) |
| Nurses look forward to introducing KC to new parents | 4.37 (0.57) |
| Learning KC help me to be better nurse | 4.32 (0.60) |
| Kc increase quality of care | 4.30 (0.77) |
| Parent-nurse teamwork is required when doing KC | 4.29 (0.48) |
| KC does not interrupt patient's care giving | 4.02 (0.76) |

(mean = 4.51) and most of them disagree if intubated babies are allowed to have KC (mean = 4.24). They disagree that KC will interfere the nurse's task completion (Table 3).

The barriers of KC practice was assessed using 5 score Likert's scale ranged from very influential (score 5) to not influential at all (score 1). The HCPs perceived high barriers from the three components of KC:

Table 4
Barriers of implementation of kangaroo care (n = 111).

| Item | Mean (SD) |
|---|-------------|
| Family reluctant to do KC | 4.41 (0.74) |
| Family reluctant to initiate KC | 4.36 (0.75) |
| Family is unavailable for KC | 4.17 (0.79) |
| Fear of baby's safety below certain weight | 4.14 (0.84) |
| Medical staff reluctance to allow KC | 4.06 (0.88) |
| Charge nurse reluctance to allow KC | 3.99 (0.97) |
| Inconsistency KC practice | 3.91 (0.87) |
| Fear of accidental extubation | 3.90 (0.81) |
| Fear of UAC dislodgement | 3.75 (1.00) |
| Nurses' reluctant to participate in KC | 3.74 (0.57) |
| Parents discomfort exposing breast during KC session | 3.59 (0.56) |
| Inability to provide time to family during KC | 3.42 (0.51) |
| Difficulty assessing baby's readiness for KC | 3.47 (0.56) |
| Belief that technology (e.g incubators) is more beneficial to babies than parents' care | 3.41 (0.53) |

Note: KC; Kangaroo care.

parent, baby and themselves, health care providers (Table 4). According to them, that the most influential barriers to KC from the family factors are family reluctance, family unavailability, and parent's discomfort exposing their breast for KC session. From the baby's factor, they listed baby's safety below certain weight, fear of accidental extubation, fear of UAC dislodgement as the very influential to KC practice. Their self-evaluation about the barriers from the HCPs factor, mentioned that medical staff reluctance, inability to provide time, difficulty assessing the baby's readiness and their belief that technology is more beneficial for baby than parents' care were very influential to kangaroo care practice.

4. Discussion

The initial assessment of the perception, knowledge, barriers and practice of kangaroo care for some hospitals in Indonesia found that the health care providers have been practicing kangaroo care, they have good perception on kangaroo care especially on how it benefits the parents to encourage the parenting role, enhancing the parents-baby attachment and promote the parents to feel more confident in caring their premature infants. However the study thus extended that the health care providers were not knowledgeable about kangaroo care which is reflected on how they answered some questions related the eligibility criteria of the premature babies to allow for kangaroo care.

The study reported that the healthcare providers' practice of kangaroo care was significantly correlated with their perception to Kangaroo care but not correlated with their knowledge and barriers. This is similarly what has been reported in the previous study by Engler et al., on 2002 that found kangaroo care tends to be a kind of nursing practice based on perceptions compared with scientific evidence practice.

The other factor affecting the health care providers' practice of kangaroo care is their knowledge. The health care providers' knowledge about kangaroo care is quiet low especially on how kangaroo care will affect the baby's respiratory system and infection transmission. Some health care providers perceived that kangaroo care could possibly make the preterm baby experience bradycardia, apnea, and get infection due to kangaroo care.

The most influential barriers perceived by the health care providers are the charge nurse reluctant, parents' reluctant, health care providers reluctant, nurses' reluctant, inconsistency of kangaroo care practice, their concern on baby's safety and their un ability to provide time for the parents to have kangaroo care session.

Insufficient knowledge about the practice of kangaroo care makes the healthcare providers' percept that kangaroo care will benefit the parents more than the baby while their focus of intervention in the

NICUs and Perinatology wards is the baby. In addition, the barriers perceived by the health care providers about the health care providers reluctant and the parents' reluctant relatively due to their less practicing and inadequate knowledge about the kangaroo care benefit for the premature babies.

The kangaroo care is skin to skin holding for premature baby. The mother, father, or other family members can provide their body warmth to help the premature baby maintaining their body temperature and taking physiological, psychological and developmental benefit. Meanwhile, the parents also received the psychological benefit from it.

Kangaroo care as one of the simple treatment that is suitable in all kind of neonatal care setting need more conceptualized promotion to the health care providers as the key person providing care to the neonates so they can be more actively educate the parents what kangaroo care is and how it can benefit their preterm babies. The health care providers hold very precious role in the neonatal care setting when they have to focus on the neonates' health and at the same time they have to consider the parents psychological condition from the separation to their babies, thus kangaroo care is an offer to a problem solving for them.

5. Conclusion

The current situation of kangaroo care practice in the NICUs and Perinatology wards in Indonesia found by the researchers among the health care providers is strongly associated with their perception on kangaroo care. Generally kangaroo care has been practicing by the health care providers but the rate is still low. It is affected by the health care providers' perception who tend to see the benefit of kangaroo care for the parents is higher than how it can benefit the preterm babies. The health care providers have very good perception that kangaroo care will improve parenting role, enhance parent-baby attachment and improve parents' confident caring for their premature babies but they have lower perception on that kangaroo care will benefit the preterm babies.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jnn.2019.03.003>.

References

- Bergh, A.M., Manu, R., Davy, K., Rooyen, E.V., Asare, G.Q., Williams, J.K.A., et al., 2012a. Translating research finding into practice: the implementation of kangaroo mother care in Ghana. *Implement. Sci.* :IS 7 75-75.
- Bergh, a. M., Charpak, N., Ezeonodo, A., Udani, R.H., Rooyen, E.V., 2012b. Education and training in the implementation of kangaroo mother care. *South Afr. J. Child Health* 6 (2), 38–45.
- Bergh, A.M., Bloch, Q.R., Pratomo, H., Uhuadiyah, U., Sidi, I.P., Rustina, Y., Gipson, R., 2012c. Progress in the implementation of kangaroo mother care in 10 hospitals in Indonesia. *J. Trop. Pediatr.* 58 (5), 402–405. <https://doi.org/10.1093/tropej/fmr114>.
- Breitbach, K.M., 1990. *Nursing Intervention for Infants & Children: Kangaroo Care*. Sage Publication, Inc., UK.
- Charpak, N., Peláez, J.G.R., 2006. Resistance to implementing kangaroo mother care in developing countries, and proposed solutions. *Acta Paediatr.* 95 (5), 529–534.
- Engler, A.J., Ludington-Hoe, S.M., Cusson, R.M., Adams, R., Bahnsen, M., Brumbaugh, E., ... Ryan, D.L., 2002. Kangaroo care: national survey of practice, knowledge, barriers, and perceptions. *MCN Am. J. Matern./Child Nurs.* 27 (3), 146–153.
- Jones, P.S., Lee, J.W., Phillips, L.R., Zhang, X.E., Jaceldo, K.B., 2001. An adaptation of Brislin's translation model for cross-cultural research. *Nurs. Res.* 50 (5).
- Kymre, I.G., Bondas, T., 2013a. Balancing preterm infants' developmental needs with parents' readiness for skin-to-skin care: a phenomenological study. *Int. J. Qual. Stud. Health Well-Being* 8 <https://doi.org/10.3402/qhw.v8i0.21370>. 21370-21370.
- Lawn, J.E., Kerber, K., Enweronu-Laryea, C., Cousens, S., 2010a. 3.6 million neonatal deaths—what is progressing and what is not? *J.Seminar Perinatol.* 34 (6), 371–386. <https://doi.org/10.1053/j.semperi.2010.09.011>.
- Liu, L., Johnson, H.L., Cousens, S., Perin, J., Scott, S., Lawn, J.E., et al., 2012. Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. *Lancet* 379 (9832), 2151–2161. [https://doi.org/10.1016/s0140-6736\(12\)60560-1](https://doi.org/10.1016/s0140-6736(12)60560-1).
- Ludington-Hoe, S.M., 2013. Kangaroo care as a neonatal therapy. *N.born Infant Nurs. Rev.* 13 (2), 73–75. <https://doi.org/10.1053/j.nainr.2013.03.004>.
- McGrath, J.M., Brock, N., 2002. Efficacy and utilization of skin-to-skin care in the NICU. *N.born Infant Nurs. Rev.* 2 (1), 17–26. <https://doi.org/10.1053/nbin.2002.31486>.
- Sitzia, J., 2002. Barriers to research utilization: the clinical setting and nurses themselves. *Intensive Crit. Care Nurs.* 18 (4), 230–243. <https://doi.org/10.1016/S0964339702000125>.
- Waiswa, P., Nyanzi, S., Namusoko-Kalungi, S., Peterson, S., Tomson, G., Pariyo, G.W., 2010. 'I never thought that this baby would survive; I thought that it would die any time': perceptions and care for preterm babies in eastern Uganda. *Trop. Med. Int. Health: TM & IH* 15 (10), 1140–1147. <https://doi.org/10.1111/j.1365-3156.2010.02603.x>.
- Wild, D., Grove, A., Lorenz, A.V., Evanston, I.L., Martin, M., Erikson, P., 2005. Principles of good practice for the translation and cultural adaptation process for patient-reported outcomes (PRO) measures: report of the ISPOR task force for translation and cultural adaptation. *Value Health* 8 (2).