“HUMANITY FIRST, TECHNOLOGY SECOND” REDUCING INFANT MORTALITY RATE WITH KANGAROO MOTHER CARE: PRACTICAL EVIDENCE FROM SOUTH AFRICA

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ABSTRACT

There are many similarities between Indonesia and South Africa (SA), including diversity of population, economic and health indicators. The Ministry of Health (MoH) supported by USAID sponsored a visit to SA for a team of 14 health workers (pediatricians doctor, midwives, and nurses) representing MoH, Indonesian Pediatric Society (IDAI), and 3 Teaching Hospitals to explore ways of improving our newborn care. In particular we investigated Kangaroo Mother Care (KMC), which is widely used there. Program consisted of orientation to understand country similarities and differences, theoretical teaching and implementation strategy. We had practical exposure, training, and visited 5 hospitals (tertiary and secondary), 2 primary midwife obstetric units and 1 private clinic. We did find SA and Indonesia to be similar, therefore useful to learn from them. The theory of KMC is based on neuroscience, and shows that mother and baby are a dyad that should not be separated. Infant brain development requires maternal sensory stimulation based on skin-to-skin contact. The incubator separates mother and baby, and results in poorer neurodevelopment. RCT trials in SA (Bergman et al. 2004) have shown that skin-to-skin contact from birth is superior to incubator care for LBW infants. KMC is a care strategy with 4 components: position, nutrition, discharge and support. Health services we visited practiced KMC in many ways with different techniques, and we gained experience in different methods of doing KMC. For health services, KMC can be implemented in understaffed and under equipped circumstances. These advantages (1) stay as warm as incubators (2) are more psychologically stable (3) bond better with mothers (4) fewer serious infections (5) go home sooner (6) breastfeeding better and for longer do lead to decreasing infant morbidity and mortality rate. Nationwide surveys show 30% reduction in hospital ENND rate where it is implemented. We invite colleagues to work with, to find ways to adapt the model to be appropriate for our country.

Keywords: KMC, IMR, skin-to-skin contact

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INTRODUCTION

There are many similarities between Indonesia and South Africa (SA) including diversity of population, economic and health indicators. Ministry of Health (MoH) supported by USAID sponsored a visit to SA for a team of 14 heath workers (pediatricians, doctor, midwives and nurses) representing MoH, Indonesian Pediatric Society (IDAI) and 3 Teaching Hospital to explore ways to improving our newborn care.

In practical we investigated Kangaroo Mother Care (KMC) which is widely used there. KMC is a basic right of the newborn, and should be an integral part of the management of low birth weight (LBW) and full term newborns in all settings and at all levels of care, in all countries (Bogota Declaration of KMC, International Network of KMC, 1998). In the world 130 million live births born every year, 20 million are LBW, 4 million die in the first 28 days (neonatal mortality). In 80% of these neonatal deaths, LBW is a contributing factor (Bregman 2008 (a), Mitzi 2008). Of these, developing countries have 98% of neonatal deaths, 96% of all LBW infants, 5% of the world’s nurses, 3% of the world’s doctors, 1% of world’s incubators. In SA 1 million live births born every year, 150,000 are LBW, 12,000 die in the first 28 days (Bregman 2008 (a,b), Mitzi 2008).

In Indonesia, Infant Mortality Rate (IMR) was 25% with 3 main cause of death: 29% LBW, 27% asphyxia and 5.4% septicemia (Depkes RI 2001) At the Division of Neonatology Department of Pediatric Dr. Soetomo Hospital Surabaya in 2006 the incidence of LBW was 18.6% with mortality rate in the same year was 22.1%
(Dr. Soetomo Teaching Hospital Surabaya 2006). The objective of this study was learn from SA that “humanity first, technology second” reducing IMR with KMC.

MATERIALS AND METHODS

Program consisted of orientation to understand country similarities and differences, theoretical teaching and implementation strategy. We had practical exposure, training and visited 5 hospitals (tertiary and secondary), 2 primary midwife obstetric units and 1 private clinic in Cape Town and Pretoria start from 9-26 May, 2008.

RESULTS

We did find SA and Indonesia to be similar, therefore useful to learn from them. The theory KMC is based on neuroscience, and shows that mother and baby are a dyad that should not be separated. Infant brain development requires maternal sensory stimulation based on skin – to – skin contact. The incubator separates mother and baby, and results in poorer neurodevelopment. Trial in SA has shown that skin-to-skin-contact from birth is superior to incubator care for LBW infants (Bergman 2004).

KMC is a care strategy with 4 components: position, nutrition, support and discharge (Figure 1) The 5th component of KMC is for the dying infant (when all is done medically, RIP, etc) Health services, we visited practiced KMC in many ways with different techniques, and we gained experience in different methods of doing KMC. For health services, KMC can be implemented in understaffed and underequipped circumstances. (Table 1)
Table 1. Characteristic of 5 hospitals (Tertiary & Secondary), 2 primary Midwife Obstetric Units and 1 Private Clinic

<table>
<thead>
<tr>
<th>Variable</th>
<th>Hospital I</th>
<th>Hospital II</th>
<th>Hospital III</th>
<th>Hospital IV</th>
<th>Hospital V</th>
<th>MOU I</th>
<th>MOU II</th>
<th>Private Clinic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation</td>
<td>Birth</td>
<td>Birth</td>
<td>Birth</td>
<td>Birth</td>
<td>Birth</td>
<td>Birth</td>
<td>Birth</td>
<td>Birth</td>
</tr>
<tr>
<td>Duration</td>
<td>&gt;4 hours</td>
<td>&gt;4 hours</td>
<td>&gt;4 hours</td>
<td>&gt;12 hours</td>
<td>&gt;20 hours</td>
<td>&gt;12 hours</td>
<td>&gt;20 hours</td>
<td>&gt;20 hours</td>
</tr>
<tr>
<td>Food</td>
<td>BM</td>
<td>EBM</td>
<td>EBM</td>
<td>EBM</td>
<td>EBM</td>
<td>BM</td>
<td>BM</td>
<td>BM</td>
</tr>
<tr>
<td>Method</td>
<td>Breast</td>
<td>Cup</td>
<td>Cup</td>
<td>Cup</td>
<td>Cup</td>
<td>Breast</td>
<td>Breast</td>
<td>Breast</td>
</tr>
<tr>
<td>Follow up</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
</tr>
<tr>
<td>Respiratory Support</td>
<td>CPAP</td>
<td>CPAP</td>
<td>CPAP</td>
<td>O2 nasal</td>
<td>O2 nasal</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

BM : Breastmilk
EBM : Express Breastmilk

KMC : Kangaroo Mother Care
CMC : Conventional Method of Care

Figure 2. The Advantages of KMC (Bergman 2004)
Reducing Infant Mortality Rate with Kangaroo Mother Care: Practical Evidence from South Africa (Risa Etika et al)

These advantages (a) stay as warm as incubators (b) are more psychologically stable (c) bond better with mothers (d) fewer serious infections (e) go home sooner (f) breastfeeding better and for longer do lead to decreasing infant morbidity and mortality rate. Nationwide surveys show 30% reduction in hospital ENND rate where it is implemented (Fig. 2).

Figure 3. Implementation Strategy (Kirsten et al. 2001)

Table 2. Scoring System of Implementation Strategy (Kirsten et al. 2001)

DISCUSSIONS

KMC started by Drs. Rey and Martinez (1779) Bogota, Columbia South America which is very poor country, many LBW infants, many abandoned, high infection rate with 12,000 deliveries per year. Development of KMC: UNICEF was report the method of treatment for LBW in 1983 and Dr. Nils Bergman was introduced KMC to SA in 1995. He has recently published the results of a strict scientific RCT trial (in Acta Paediatrica 2004, vol 93, p. 779-785) comparing skin to skin immediately after birth to incubator care. What he found was that skin to skin care was much better for the newborn than the incubator. Babies were warmer and calmer, breathed better and had a more stable heart rate with skin to skin care (Bergman et al. 2004).

The benefits for all babies on KMC are that they stabilize faster (they do not stabilize in the incubator in the first six hours of life), the babies can breastfeed more often in KMC because the babies smell the breast milk directly so the rooting instinct clicks in quickly and there are less subsequent problem with breastfeeding.

On the mothers chest the baby also gets gestation-specific breast milk, if the baby is a premature, the milk content is different. The breast milk contains all of the nucleotides necessary for brain growth. The mother’s colostrum carries the antibodies needed to protect the newborn with immunity. The babies on KMC can grow at 30 gram per day which is three times that of an incubator baby.

This will mean less time in hospital. A major difference in skin to skin care is that babies cry less so they have less stress hormones like somatostatin circulating, so there are less brain bleeds which are very common in premature infants. In KMC the development of the baby is the best. The baby is in the right place and therefore as the right behavior.

The baby is secure in skin to skin, so the mother and infant bond established early. This will mean that the baby will base on which all subsequent relationship are built. Developmental pathways of the brain grow in appropriate ways not in ways determined by stress. KMC also has many benefits for the mother.

The skin to skin contact help the mum and baby to settle into a rhythm of sleeping and waking together called “sleep synchrony” so the mother gets more sleep-carrying babies in Kangaroo Carriers means that the mother is able to be mobile sooner and can leave the hospital earlier and return to normal daily life sooner (Kirsten et al. 2001; WHO 2002; Research Unit for Maternal and Infant Health Care Strategies 2007; Lissauer & Fanaroff 2005, Chatson K 2008, WHO, Gomella 2004, Periniasia 2002). Studies in SA and Indonesia (Sardjito Hospital Jogyakarta and Bandung) showed the advantages of KMC in LBW infants (Cattaneo et al. 1998, Ekawati 2002, Alisjahbana et al. 1998).

Several studies all over the world, from high tech Neonatal Intensive Care Units (NICU) in the United States of America (USA) to the most simple baby ward at mission hospital in SA have demonstrated the benefits of KMC over traditional care alone (Bregman...
2004, WHO 2002). Also studies in Indonesia reported the same conditions (Suradi 1998, Pratomo 1998). Four components of KMC are: KMC Position (skin to skin contact), KMC Nutrition (breastfeeding), KMC support (mother and baby days) and KMC Discharge (home follow up : increase in weight in weight gain, fully breastfeeding and healthy baby). The 5th component of KMC is KMC for the dying infant (when all is done medically, RIP, etc).

This is showed that Humanity first Technology second in KMC method. It takes a long time to implement KMC in SA, 2002-2006 putting theory into practice to implementation. From individual hospital to health systems. Their research programmed about measuring progress in implementing KMC showed that (a) implementation mean change and change is a process (b) involvement and support of the leaders at all levels (resources for training and implementation) (c)

Someone has to drive the process (official KMC coordinators: province, district, hospital, multi professional task teams at different levels, structured plan of action for each level-with targets and dates of completion) (d) Structured support and encouragement until KMC becomes and integrated part of the philosophy of neonatal care (e) Structured multidisciplinary team (regular meetings) (f) Active support from senior management (g) Leadership and role definitions for nursing and medical staff (h) Good quality record keeping (Bergh 2008).

CONCLUSION

In conclusion, there is the advantages of KMC (Bregman 2008 (a)) stay as warm as in incubators (Bregman 2008 (b)) are more psychologically stable (Mitzi 2008) bond better with mothers (Depkes RI 2001) fewer serious infections (Dr. Soetomo Teaching Hospital Surabay 2006) go home sooner (Bergman et al. 2006) breastfeeding better and for longer. Take home messages is (Bregman 2008 (a)) implementing KMC is not one person’s project-team works is the key (Bregman 2008 (b)) if we cannot show records for evidence, it is not there (Mitzi 2008) if the intervention does not stay on the agenda of meetings and other structured activities, it is not there. We invite colleagues to work with, to find ways to adapt the model to be appropriate for our country.

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REFERENCES

Bregman NJ, 2008. Perinatal Neurosciences and Skin to skin contact, KMC Foundation CapeTown South Africa for Indonesian Visitors Training Programme, May 9-21, 2008 (hand out). (b)
Bregman NJ, 2008. Restoring the Original Paradigm for Infant Care. KMCFoundation CapeTown South Africa for Indonesian Training Visitors Programme, May 9-21, 2008 (hand out)
Depkes RI. Profil Kesehatan Indonesia 2001. Dr. Soetomo Teaching Hospital Surabaya. Annual Resport of Neonatology Division Dep. of Child Health Dr. Soetomo Teaching Hospital Surabaya 2006.
MRC Research Unit for Maternal and Infant Health Care Strategies, 2002 – 2004 – 2007. KMC Policy and
Reducing Infant Mortality Rate with Kangaroo Mother Care: Practical Evidence from South Africa (Risa Etika et al)


WHO. Thermal control of the newborn : a practical guide. WHO/FHC/MSM. 93.2