

One year follow up of a cohort of preterm infants (≤ 34 GA at birth) discharged home with ambulatory oxygen in Bogota, Colombia.

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Introduction: In recent years there has been an increase in the incidence of Chronic Lung Disease of Prematurity. Also the number of survivors who are discharge home receiving oxygen has increased. Clinical course and prognosis of these infants, in countries similar to Colombia has not been properly documented.

Objective: Clinical course and prognosis of a preterm infants' concurrent cohort discharged home while receiving oxygen

Materials and Methods: From the 01/04/03 to the 01/10/03, a concurrent cohort was assembled in 12 institutions in Bogotá consisting of 206 newborn infants ≤ 34 weeks of gestational age, borned and followed up to one year of corrected age, in a number of clinics as assigned by their health insurances. Subjects were included if besides being oxygen-dependent, they were eligible for home discharge while receiving oxygen: appropriate weight gain, mother- infant dyad prepared for discharge, sucking and swallowing coordination, stable SAO_2 while receiving up to $\frac{1}{2}$ L per nasal canulae, appropriate access to supplemental oxygen at home, and informed consent.

Results: Infants' follow up was carried out in 7 kangaroo mother care programs; or other health care providers,. There were 4 demises, 31 (25%) infants were lost to follow up at 40 weeks of postconceptional age and 99 (48%) at 12 months. Exclusive breast feeding proportion at term was successful in 54 (26.2%) infants. Growth indices at one year were appropriate. At 3 months 16% of the cohort was still with home oxygen and in average, oxygen was discontinued at the postnatal age of 106 days (46 weeks of postconceptional age;. 73% were readmitted at least once and in 67%, readmissions were due to respiratory conditions. Only one half had ophtalmological screening and ROP was detected in 35% of cases. Neuro-psychomotor screening tests were performed only in 19% of subjects. Outcomes in infants followed up at structured clinics were better.

Conclusion Follow up clinics for preterm infants in Bogotá are not systematically structured. The problem presented by oxygen-dependancy in infants is complex, and our data suggest that there is plenty of room for improvement in Bogotá in that respect. We hope that these observations will result in constructive criticism and improvement in the provision of health care to these fragile infants.

**MORTALITY AND MORBIDITY IN A COHORT OF LOW BIRTH INFANTS (LBWI)
UNDER KANGAROO MOTHER CARE (KMC): QUALITY OF CARE AND KMC
PRACTICAL GUIDELINES**

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Objective: To evaluate the performance of a Kangaroo Mother Care Program in terms of selected health outcomes achieved and compliance with evidence-based processes.

Design: Evidence-based quality assessment in a cohort.

Setting: an outpatient-based premature infants' comprehensive care program affiliated to a teaching hospital in Bogotá, Colombia.

Interventions: the KMC intervention consist on: 1) Early discharge with close monitoring and follow-up 2) continuous skin-to-skin contact and 3) Exclusive breastfeeding whenever possible

Main Outcomes: compliance with KMC components, monitoring and health maintenance visits, overall 1 year mortality, growth and development indices.

Results: Between 2002 and 2006 a total of 3000 eligible infants ≤ 37 GA at birth or ≤ 2001 g were admitted. Gestational age and weight at birth were 33 weeks (Min-Max: 24.5-40) and 1719g (Min-Max: 550-2950). respectively. Mean post-natal age at entry was 21days (Min-Max:1-104) and mean weight at entry was 1814g (Min-Max:850-3200). Thirty six percent were NICU graduates, and 28% of them received ventilatory support. Compliance with monitoring visits between admission and term was excellent in 96.5%. Cumulative lost to follow up was 9.3% at 1 year of corrected age. Cumulative mortality was 0.3% up to term and 1.5% up to one year of corrected age, and 20% of infants had to be readmitted to hospital during the follow up period. Exclusive breast feeding up to term was achieved in 61% of infants, and 25% of mothers were still breastfeeding their babies at one year. Average weight, length and head circumference were 2750g, 46cm, 34,5cm at term and 8460g, 71,5 and 45,5cm at one year of corrected age; 5% of the infants presented any degree of psychomotor delay and cerebral palsy was diagnosed in 2.5%.

Conclusions: Although demanding to both families and health care providers, compliance with KMC is high and observed results are rewarding. Close monitoring of compliance with evidence-based procedures, and frequent feed back may partially explain the success of the program.

**From Policies To Partnerships: Research Programme on the
Implementation of Kangaroo Mother Care in South Africa**

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Background: Kangaroo mother care (KMC) is one of the proposed solutions for caring for low birthweight neonates in South Africa. Three provinces did implementation outreaches in public hospitals in partnership with the Medical Research Council's Unit for Maternal and Infant Health Care Strategies from 2002 to 2006.

Aim: This poster will demonstrate the application of a progress-monitoring model built around six constructs to capture implementation progress at hospital and provincial level. It will also describe the two intervention approaches followed in the large-scale implementation of KMC.

Interventions: Two types of basic implementation interventions were followed. The "big bang approach" targeted all health care facilities in one province (A) in the same year for implementation (47 hospitals). A "staggered approach", targeting a smaller number of hospitals per year, was followed in two provinces (B & C) (25 and 12 hospitals respectively).

Results: A comparison of the implementation progress in the three provinces was done 6-8 months after training. Using the six constructs plotted on a scale of 0-30, hospitals in the three provinces together demonstrated the following progress:

CONSTRUCTS	Score range (out of 30)	Number of hospitals			
		Prov A	Prov B	Prov C	Total
Awareness	0.0 - 1.9	2	1	0	3
Adopting concept	2.0 - 5.9	5	0	0	5
Taking ownership	6.0 - 9.9	4	4	0	8
Evidence of practice	10.0 -16.9	26	11	7	44
Routine practice	17.0 - 23.9	10	9	5	24
Sustainable practice	24.0 - 30.0	0	0	0	0
Number of hospitals per province		47	25	12	84
Mean score per province		11.92	14.71	16.23	13.37

Conclusion: Although the current data seem to favour the "staggered approach" over the "big bang approach" and a smaller number of hospitals over a larger number for implementation outreaches, other systemic and contextual factors also need to be considered.

IMPLEMENTATION OF KANGAROO MOTHER CARE AND SUSTAINABILITY OF PRACTICES IN MPUMALANGA PROVINCE, SOUTH AFRICA

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Introduction

The *Ukubamba Umtwana Kuwe* Outreach is a project of the Sub-directorate: Nutrition of the Mpumalanga Department of Health and Social Services, South Africa. It is not only aimed at implementing intermittent and continuous Kangaroo Mother Care (KMC) in 26 hospitals providing newborn care, but also at monitoring sustainability. The project was combined with a randomised trial testing the effectiveness of different implementation outreach strategies built around a multimedia KMC implementation package.

Methods

A staggered implementation approach was followed over a period of three years (2004-2006) to reach the 26 public hospitals in the province (8 hospitals in 2004, 11 in 2005 and 7 in 2006). All participating hospitals attended an introductory workshop and received the standard implementation package. They were paired and then randomly allocated to two different strategies. Hospitals in one group received additional training at a site of excellence (off-site, 'hands-on' facilitation). Hospitals in the other group were visited twice during a period of a few months (on-site facilitation).

The process of implementation is continuously monitored and evaluated. After 6-8 months all participating hospitals were scored on a progress-monitoring checklist during a walk-through visit. With a view to monitoring the sustainability of KMC practices and understanding the factors hampering and enhancing sustainability, all hospitals are again scored with the same checklist one and two years after implementation. This process will continue until 2008.

										Maximum score: 30	
2004-2005	Paired hospitals									Mean score	Median score
On-site facilitation	A: 21.6	B: 23.8	C: 16.0	I: 11.4	J: 11.9	K: 20.0	L: 11.9	M: 17.8	N: 0.0	15.05	15.98
Off-site facilitation	E: 18.7	F: 20.9	G: 14.9	H: 23.3	O: 13.8	P: 8.7	Q: 10.3	R: 14.6	S: 16.5	15.73	14.90
TOTAL										15.45	15.84

Results for 2006, as well as results from the follow-up scoring visits for some of the hospitals will also be available at the time of the Workshop.

Conclusion

There seems to be no significant difference in effectiveness between the two facilitation methods used for initiating KMC. Their effect on the sustainability of practices still needs to be determined.

Reference

Bergh A-M, Arsalo I, Malan AF, Patrick M, Pattinson RC, Phillips N. Measuring implementation progress in kangaroo mother care. *Acta Paediatr* 2005; 94: 1102-1108.

Key words: KMC implementation; sustainability; progress monitoring; South Africa

Temporal Organizations of Interruptions to Breastfeeding Dyads

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A descriptive exploratory study at three different level hospitals in different communities was conducted to describe the nature, frequency, and duration of interruptions to breastfeeding dyads on their first postpartum day. Between 0800 and 2000 interruptions occur with astounding frequency, an average of 53-71 interruptions per subject, range 27-97. With so many people going in and out of the room families had very little time alone. Describing the temporal organization of interruptions will help in understanding the nature of the institutional barrier: interruptions. Initial analyses show that interruptions are most frequent during the early and mid morning, 0800-1100. During the early afternoon, 1300-1500, the interruptions are significantly decreased, suggesting this might be a time for the family to be alone. But there is significant variation among the hospitals. Understanding the temporal organization will assist in altering the postpartum unit environment so it better supports, promotes, and protects breastfeeding and the breastfeeding dyad.

PROSPECTIVE EVALUATION OF EFFECT OF KMC ON HIGH RISK PRETERM BABIES

This prospective study included 450 babies admitted into NICU of an urban tertiary care teaching hospital in South India. All these babies were admitted into NICU for various risk factors and KMC was initiated once vitals stabilized.

On analysis it has been found that babies could be discharged by 3rd or 4th day after initiation of KMC. All babies were exclusively breast fed. Practice of KMC was done only by the mothers in 85%. And were helped by fathers only in 10%. Constraint in the involvement of others was due to traditional customs and conservative living standards. Duration of KMC was between 4 to 8 hours in 75% of babies. Mothers with babies between 1.5 to 2 kg felt more confident and comfortable in keeping the babies in KMC. Most of the babies were started on KMC with a weight less by 10 to 12% of their birth weight. It has been found that weight gain was significantly higher in the 2nd review than in the 1st review of babies on KMC practice.

The Effects of Massage on Premature Infants with Kangaroo Mother Care
Chi Loung, M.D.

This abstract includes the benefits of touch therapies for preterm infants. Among the touch therapies to be covered are massage therapy and skin-to-skin (Kangaroo Care) contact. The sample was divided into two groups of 50 infants each with gestational age less than 35 weeks at birth. Birth weight was less than 2001 grams and infants did not have congenital anomalies. Both groups received Kangaroo Mother Care and the experimental group also received massage intervention once each day. Data were collected at 40 weeks and six months corrected postmenstrual age. The presentation format includes figures, graphs, and pictures on physiological aspects, such as the effects of massage therapy for enhancing preterm infant growth and motor activity in contrast to the effects in the control group.

The results of this study, though preliminary, suggest that premature infant massage with Kangaroo Mother Care is an effective and highly acceptable treatment alternative for physical and motor activity problems in preterm infants.

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KANGAROO FATHER CARE (KFC): DOES IT MAKE A DIFFERENCE?

Introduction: There were 20 339 babies delivered at CHBH IN 2005. There is usually a further 10 000 deliveries from the neighboring clinics that are serviced by this hospital. Sixteen percent of all these are premature deliveries. These premature babies stay for months in the hospital. This leads to overcrowding which in turn leads to nosocomial infections. For every 10 to 20 babies there is only one nurse. We had to find ways of trying to deal with these problems. In August 2002 the 24 Hour Kangaroo Mother Care (KMC) was started, with great success. The result was an immediate reduction of the overcrowding in the neonatal sections, better infection control and shorter hospitalization periods. It also rectified, to a large extent, the staff/patients ratios. This success did not last for long. HIV posed a further challenge. The incidence of HIV increased and this led to more premature babies being born. Informal settlements also increased in the area leading to increasing number of deliveries. Initially KMC patients were being followed up at a general neonatal follow-up. A lot of them were lost to follow-up.

In August 2004 a follow-up clinic of a separate KMC clinic was started. The aim of this was to follow KMC graduates to a 1 year corrected age, looking at growth, feeding practices, survival rates, development and how HIV has affected those that are infected.

We also encouraged fathers to come and practice KMC during visiting period.

Purpose: 1. To document the outcome of infants that were admitted in our unit. 2. To find out what the impact of kangaroo father care (KFC) is on the family life. 3. To discuss and highlight the challenges we faced from the inception of the 24 hour KMC.

Methods: Reviewed the records of all the admitted infants and those that were followed up from June 2005 to date. One hundred and thirty follow-up files were analyzed. Episodes of KFC were counted from the inception of KMC in our unit.

Results:

Six hundred and forty six infants have been through our unit. Two hundred and six of those infants were born to mothers who are HIV positive. Of the 130 files analyzed, 34% of the infants were born to HIV positive women. Only 3 (0.07%) insisted on exclusively breastfeeding. Most women were afraid to disclose their HIV status to their spouses. They found it easier to disclose their status if partners attended KMC follow-up with them. This was done with the help of KMC Unit staff. Of those that disclosed and partners tested, there were discordant couples (i.e one positive and the other negative). There were 1196 episodes of KFC during this period. Fathers were also seen frequently at follow-up accompanying their partners.

KANGAROO FATHER CARE (KFC)	
Year	Episode
2004	412
2005	507
2006	277
Total	1196

Conclusion: South Africa is faced with different challenges when practicing KMC especially because of the high HIV rates. Encouraging fathers to practice KFC creates a stronger bond and these infants are less likely abandoned when discordance in HIV status is encountered.

**Currently Head of the KMC unit at Kalafong hospital in the department of Paediatrics,
University of Pretoria An Ongoing Audit of the Kangaroo Mother Care Unit at Kalafong
Hospital**

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Background

A 20-bed kangaroo mother care (KMC) unit was established at Kalafong Hospital, Pretoria, Gauteng Province, South Africa, where continuous and intermittent KMC is practiced. It was opened on 6 July 1999. All infants discharged from the unit were followed up at a clinic, which is held in the unit weekly. A special audit capturing form was developed in order to keep accurate records of the patients cared for in the unit.

Objective

The objective was to present the data of the audit results collected over a 6-year period. The following data was captured on the datasheet: the number of babies admitted each month, admission and discharge weight categories, average length of stay in the unit, breast-feeding practices, infection and mortality rate, the follow-up clinic attendance rate and the gestational age of the infants for the past 2 years

Method

All patients admitted to the KMC unit from August 1999 to July 2004 were included. A data sheet was completed for each admission. The same form was used to record follow-up clinic attendances. Data was analysed statistically.

Finding

During period of the study 2294 infants were admitted to the KMC unit with an average of 31 infants being admitted each month. The infants' average length of stay in the unit was 13 days. The shortest stay was 2 days and the longest 165 days. The infants who stayed for a longer period were oxygen dependent due to chronic lung disease of prematurity. The infants admitted to the unit were allocated to different weight categories according to their admission weight.

KMC unit	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total/ Average
Number of infants admitted	319	361	369	428	408	409	2294
Average length of stay (days)	13.3	13.8	14.3	12.7	12.2	12.7	13.2
Bed occupancy rate in unit	58%	68%	72%	75%	68%	71%	69%
Admission weight < 1500	41%	47%	49%	49%	47%	50%	47%
Discharge weight < 1750g	34%	53%	53%	59%	56%	48%	51%
Infant deaths	0	3	5	4	4	1	17(0,7%)
Adverse events	25	24	17	22	29	34	151(6,5%)
Readmissions from home	5	18	12	19	5	14	73 (3%)
Attendance at follow-up clinic	68%	75%	81%	88%	83%	89%	81%
Breast fed	83%	83%	81%	74%	72%	69%	77%
Pasteurised breast milk	0%	0%	14%	16%	24%	21%	19%
Formula milk	17%	17%	5%	10.0%	4%	7%	10%
Gestational age of infants admitted	Average 35 weeks						Range: 28 -42 weeks

The KMC unit has resulted in an increased capacity of Kalafong Hospital to deal with its increasing number of high-risk low birth weight infants by creating a cost-effective and safe step-down facility for the infants from the neonatal intensive and high care units. With information gathered from the continuous audit, changes in clinical practice were made to improve the care in the KMC unit.

THE CONTRIBUTION OF TRAINING WORKSHOPS TO THE IMPLEMENTATION OF KANGAROO MOTHER CARE

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Introduction

Training seminars and workshops is a popular form of introducing health workers to new health care interventions that are put forward for implementation. The effectiveness of once-off workshops is however questioned in some circles. The aim of this study is to report on hospitals in Gauteng that implemented kangaroo mother care (KMC) after sending delegates to one-day training workshops at Kalafong Hospital.

Method

Detailed attendance registers were kept for all the workshops held between 2000 and 2002. The patterns of attendance of delegates from Gauteng hospitals were analysed with a view to establish:

- which hospitals had sent staff for training
- which of these hospitals had implemented KMC by October 2003
- the time span between training and implementation
- the categories of staff that attended these workshops

The responses to the open-ended questions of the workshop evaluation questionnaires were analysed for identifying participants' perceptions on the potential enablers of and barriers to successful implementation.

Results

Of the 15 Gauteng hospitals that had sent delegates to the KMC workshops between 2000 and 2002, 7 had implemented KMC by October 2003.

Of the 7 hospitals that had sent delegates for training in July 2002 as part of the Gauteng priority budget, only 1 had implemented (at the point when the training was done).

The main constraints in implementation of KMC perceived by workshop participants were: *management* 'buy-in'; *staff* (doctors & nurses): ignorance and fear, old mindsets and resistance to change, inexperience in managing change; *mothers*: reluctance to do KMC; *infrastructure*: space and physical structure (also for lodger mothers); *resources*: staff allocations, equipment, feeding of mothers.

Conclusions

Introductory training workshops and seminars have a role to play in the awareness-making process of desirable practice changes and the benefits of new health care interventions.

Other forms of facilitation to assist hospitals in the *management of implementation* of a new health care intervention need to be investigated.

For the implementation of a new health care intervention, two forms of staff development with regard to the *content of the intervention* are suggested:

- Short, general awareness-making sessions for staff, after a conscious decision from and commitment by hospital management to implement by a certain date

- More intensive training of a multi professional group of carefully selected staff members at the point when the change in practice is made

The interaction between training and other enablers of or barriers to successful implementation of a new health care intervention should be further investigated, in particular the role of leadership.

**Applying the Iowa Model of Evidence-Based Practice to Promote Quality Care:
Skin-to-Skin Mother-Baby Care in the Healthy Newborn**

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Purpose: The purpose of this project is to depict a collaborative effort among staff nurses and clinical leaders to explore the implementation of Skin-to-Skin Mother-Baby Care (also known as Kangaroo Care), with healthy mother-infant dyads.

Background and Significance: The staff identified various problems or triggers for this project: benchmark conference information, the perceived malfunctioning of infant warmers, the obstructive nature of large infant warmers at the patient bedside, new research, national pediatrics guidelines, and a desire to learn about and incorporate an evidence-based nursing philosophy of care. The problem is important for Riverside nurses because radiant warmers can obstruct traffic flow and access to patients, thereby decreasing RN efficiency. The research evidence to support Kangaroo Care is abundant. This project advances nurses' knowledge regarding the use of an evidence-based practice model to change practice and incorporate the option of skin-to-skin mother-baby care for the healthy newborn-mother dyad.

Description: An evidence based practice (EBP) team was formed and followed the "Iowa Model of Evidence-Based Practice to Promote Quality Care" developed by Marita Titler et al. in 2001. The clinical leaders assembled relevant research and the EBP team determined that research findings support a change in practice.

Evaluation and Outcomes: Outcomes of the project were developed by combining the Iowa Model of EBP with the organization's balanced scorecard quadrants for Quality of Care, Customer Service, Quality of Work life, and Finance. Success will be measured by ensuring newborn physiologic balance and safety during KC, improving patient satisfaction and improving nurses' quality of work life with a minimal effect on the budget.

Conclusions: The "Iowa Model of Evidence-Based Practice to Promote Quality Care" (Titler et al., 2001) is an effective and practical tool for designing and implementing changes in nursing practice which reflect an evidence-based practice philosophy. The skin-to-skin mother-baby care project will be the benchmark for other Riverside EBP projects.

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NEURO BEHAVIORAL DEVELOPMENT OF PRETERM INFANTS BETWEEN 34 TO 40 WEEKS OF GESTATIONAL AGE CARE FOR IN AN AMBULATORY KANGAROO MOTHER PROGRAM.

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Objectives: To describe the general neurobehavioral development between 34 to 40 weeks of gestational age of preterm infants cared for in an ambulatory Kangaroo Mother Program (aKMP) and to illustrate the development process in each one of the six subscales (autonomous habituation, motor system, orientation, state organization, state regulation and complementary, nervous system) using the Neonatal Behavioral Assessment Scale (NBAS).

Design: descriptive - exploratory study

Setting: ambulatory Kangaroo Mother Program at the San Ignacio Hospital University, Bogota, Colombia.

Subjects: 60 "healthy" preterm infants eligible for an ambulatory KMC.

Measurement: to all children the Neonatal Behavioral Assessment Scale (NBAS) was applied weekly. In addition the Maternal Assessment Behavioral Scale (MABS) was applied twice: at entry and at 40 weeks of post conceptional age (tenn)

Results: Independently from birth weight and post natal age, when reaching each post conceptional week (34 to 40) their neurobehavioral patterns seemed homogeneous independently of their weight or gestational age at birth. Their neurobehavioral profiles at each age point were in general similar to those described for premature infants care for in incubators, except for accelerated maturation in some specific items including animate visual and auditive interaction (face and voice), general tonus and adequate movements, auto-quieting capacity, auto-organization capacity, quality of attention, control of the irritability and stress. Additionally, the parent's perceptions about their premature baby's capacities were better after the application of the NBAS.

Conclusion: It was shown that it is feasible to assess premature infant under KMC in our program with the NBAS. These pilot data are consistent with an extrauterine maturation of neurobehaviour of kangaroo infants that happens at least at the same pace as the intrauterine one. Some evaluated items seem to mature quicker. Further research will clarify which observed effects are due to extrauterine stimulation, to KMC specifics or to the use of the NBAS itself.

Title: Kangaroo Care at Birth with Term Infants: An Exploratory Study

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Background

Studies show that placing an infant skin-to-skin (Kangaroo Care, or KC) immediately after birth and for the first 90 minutes following delivery can enhance digestion (Christensson et al., 1995), maternal attachment (Klaus et al., 1972), maternal affectionate behavior (Tessier et al., 2000), and the exclusivity and duration of breastfeeding (Mikiel-Kostyra, Mazyur & Boltruszko, 2002; Salariya, Easton & Cater, 1978). While the effects of KC in preterm infants in Neonatal Intensive Care Units are well established (Ludington-Hoe & Swinth, 1996), KC's effects in full-term newborns in the delivery room are less well known (Ludington-Hoe, Morrison & Anderson, 2005). Because KC has been shown to increase breastfeeding initiation and duration, milk production, and exclusivity, especially when started immediately after birth, we wanted to implement KC in the delivery room to enhance our breastfeeding outcomes. Labor & Delivery room nurses expressed concern over possible temperature loss and unacceptable blood glucose levels with birth KC, so a study measuring these outcomes was planned.

Purpose

The purpose of this study was to describe the effects of KC on infant temperatures (at 1, 5, 15, 30, 45, 60, 75, and 90 minutes post-birth), blood glucose (at 60 minutes post-birth), breastfeeding behavior (at first feed) and maternal, nursing, and medical impressions of the experience.

Research Questions

- #1: What is the full-term infant's temperature response to Birth KC during the first 90 minutes postbirth as measured every fifteen minutes by skin thermometer?
- #2: What is the full-term infant's blood glucose response at 60 minutes postbirth while in Birth KC?
- #3: When do full-term infants move toward the mother's breast when in Birth KC?
- #4: What are the full-term infant's breastfeeding responses to the first breastfeeding when in Birth KC as measured by the MEALS instrument?

Method

- . A descriptive, evaluative study of 9 infants using convenience sampling was conducted.
- . Within one minute of spontaneous vaginal delivery, infants were placed skin-to-skin on mothers' abdomen, dried and diapered (head cap placed) and assessed for 1 and 5 minute APGARS.

- . Temperatures were recorded from a Fisher Thermistor placed at the mid-sternum line.
- . Blood glucose was assayed by Accucheck Advantage blood sampled by heel stick. . Movement of the infants towards the breast and latch were monitored. . Breastfeeding session was scored using MEALS (M=mouth open, E=ears wiggling, A=areola covered, L=lips flanged; and S=audible swallowing).
- . Maternal, nursing and medical impressions were assessed at the end of the KC seSSION.

Results

- . Temperatures increased in all infants and remained within clinically acceptable range.
- . Blood glucose varied between 43-85 for those who had not fed and 43-118 for those who had fed prior to blood glucose testing.
- . Eight out nine infants independently moved from the mother's abdomens to a breast and latched successfully at a mean 53.4 minutes postbirth.
- . Mean feeding appraisal score using MEALS was 4.55 out of 5.0.
- . Mothers unanimously reported that Birth KC was a positive experience.
- . Physicians were pleased that KC distracted mothers during episiotomy repairs. . Nurses reported surprise at how easy Birth KC was accomplished and that it did not increase nursing workload.

Implications

Conducting this clinical exploratory study has resulted in increased use of Birth KC as nursing staff have spontaneously adopted its use. Research has led to a change in attitude of the importance of using evidence based data to support practice. Birth KC appears to be a safe alternative to separation of mother and infant, but delineation and confirmation of these results through a randomized controlled trial is now needed.

The Relation between Kangaroo Care and Breastfeeding in an Italian sample

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Investigations of the effects of Kangaroo Care (KC) on breastfeeding have revealed its positive influence on the prevalence and duration of breastfeeding in premature babies (Hurst, Valentine, Renfro, Burns, Ferlic, 1997; Hamelin, Ramachandran, 1993; Furtman, Minich, Hack 2002; Ramanathan, Paul, Deorari, Taneja, George, 2001; Charpak, Ruiz-Palaez, Figueroa, Charpak 2001). At the same time, however, most of these studies have been conducted in non-Westernised cultures

Aim: The aim of the present study was 1) to examine the KC effect on breastfeeding in the Italian culture; 2) to verify if amount of KC can influence feeding type choices; and 3) to verify whether maternal stress levels are influenced by type of feeding.

Method: Our sample was recruited from two neonatal intensive care wards, and 104 mother-child dyads were examined: 49 dyads using KC and 55 using Traditional Care (the control group).

Enrolment criteria were as follows: a) birth-weight under 1800g, irrespective of gestational age; b) lack of major congenital malformations; c) the presence of both parents, and d) infant and mother physiological stability.

PSI/SF questionnaire was applied to measure the degree of anxiety in KC and TC groups.

Results. The Chi square and ANOVA analyses showed that the KC and TC groups differed by gender: KC=16male/33female;TC=32male/23female; $\chi^2=6,80$; $p=0,01$; birthweight: KC=1228g.; TC= 1373g.; $F=4,63$; $p=0,03$; and by birth-to-discharge weight difference: KC=1108g.; TC=800g.; $F=12,24$; $p=0,001$.

A linear regression among the variables of gender, birthweight, birth-to-discharge weight difference, and feeding type at discharge was computed to verify whether, and if so, which of these characteristics might have influenced type of feeding. The analysis, however, yielded no significant relations among these variables.

A Chi square analysis, with type of care (KC/TC) as the independent variable and type of feeding at discharge as the dependent variable, showed that the two groups differed by type of feeding ($\chi^2=9,55$ $p=0,01$) and that the KC procedure was associated with a greater prevalence of breastfeeding.

To test the influence of the amount of KC on type of feeding, we divided the KC group into subgroups based on the quantity of KC implemented: low = 630-1.599 minutes (15 participants), moderate = 1.600-2,499 minutes (18 participants) and high = 2,500-6.075 minutes (16 participants). We then compared these three groups in terms of feeding type. A Chi square analysis yielded no statistically significant differences for the three groups.

An ANOVA, with feeding type as the independent variable and maternal stress (PSI/SF questionnaire) as the dependent variable, was run to verify whether feeding type influenced degree of KC mother stress at hospital discharge. Only one difference was found for the three KC feeding groups-*Le.*, on the Parent Child Dysfunctional Interaction (PCDI) subscale ($F=4,01$; $p=0,025$). PCDI scores considering the mothers groups clustered based on the three types of feeding (breastfeeding = mean 19.26, sd

5.71; bottle = mean 21.43, sd 3.96; breastfeeding and bottle = mean 24.88 sd 3.98)

showed the lowest degree of stress in breastfeeding mothers. The same analysis conducted with three similarly divided TC feeding group subtypes yielded no significant differences in degree of maternal stress. These results suggest that breastfeeding occurring as an integral part of the KC procedure is accompanied by a more relaxed dyadic relationship.

Conclusion: The results indicate that, in a sample of Italian mothers: a. KC increased the prevalence of breast feeding; b. amount of KC did not influence feeding type choice; and c. maternal stress was not related to type of feeding only, but the type of feeding (breast feeding) needs to be accompanied by the KC procedure.

KMC DISSEMINATION IN NIGERIA: THE REWARDING INVOLVEMENT OF THE ORGANIZED PRIVATE SECTOR

Dr Ochiawunma Ibe, Dr Babatunde Fakunle and Dr Natalie Charpak

Introduction.

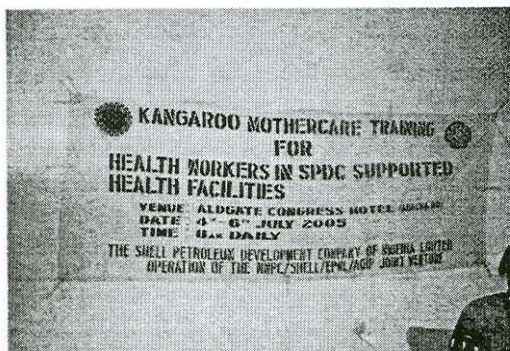
Nigeria, with an estimated population of about 130 million has a low birth weight (LBW) rate of 10 - 16% and a crude birth rate of 41 per 1000 thus the annual number of infants who are born in this category is over half a million. The Neonatal Mortality rate in Nigeria is 40/1000 live births and this has remained unchanged in over four decades despite the advent of modern advances in health care readily available in industrialized nations that could cause a positive change in these statistics. Most at risk for this high neonatal mortality are the LBW and preterm amongst which the one of the common problem is hypothermia requiring long periods of management in the incubator.

Faced with few functional incubators, lack of constant electricity supply to power these incubators, high workload and continued deaths of LBW requiring minimal care in most newborn care units across the country, Nigerian senior pediatricians and neonatal nurses from public tertiary and secondary hospitals were involved in a workshop the first of its kind for the dissemination of the practice of Kangaroo Mother Care (KMC) in Nigeria. At this workshop which was held under the auspices of Johnson and Johnson Pediatrics Institute USA and TOTAL PLC, the health care providers resolved that KMC should be institutionalized in all health care facilities across the country and that training centers for the furtherance of the practice of KMC in Nigeria be set up across the country

In this light, efforts to continue the dissemination of KMC to all cadres of health care practitioners at tertiary, secondary and primary health facilities have yielded positive results with the keen interest shown by the Director of Community Health services of a large private sector organization in Nigeria- Shell development Petroleum Corporation with headquarters in Port Harcourt Rivers State, Nigeria. With sponsorship from SPDC, two KMC dissemination workshops have been conducted for doctors and nurses practicing in secondary and primary health facilities supported by SPDC in the communities where they operate in the Niger delta region of Nigeria.



Dr Fakunle Director Community Health Services SPDC



The first of these KMC dissemination workshops under SPDC sponsorship was held in Port Harcourt between the 4-6th of July 2005 and there were about 43 participants and 5 facilitators. Workshop sessions included history of KMC and the International Network on Kangaroo Care, scientific papers on KMC,



Participants at the KMC dissemination workshop in Port Harcourt

Video presentations on KMC and hospital visit to the University of Port Harcourt Teaching Hospital to see LBW infants in Kangaroo position. The second workshop was held between the 12-15th of December in Benin City with a very much similar agenda.

In conclusion dissemination of KMC practice in Nigeria has received ample support from the organized private sector demonstrated by the fact that all the three workshops held in Nigeria from 2004 till date have been sponsored by private sector organizations

Report of Activities of the Kangaroo Mother Care Programme in Douala-Cameroon Odette Guifo, M.D.

After the history of the programme, the functioning of the Kangaroo Mother Care Programme at the Neonatal unit will be presented. The method we have used in training other provinces of Cameroon and Africa on the Kangaroo Mother Care technique will be presented. The other countries are Gabon, Tchad, Mali, and Ivory Coast. We will present the scientific perspectives and how the Kangaroo Mother Care Programme is practiced in Africa.

drguifoodette@yahoo.com

Did you know...

- KMC is modelled on marsupial (kangaroos), as they have an extra-uterine gestation. After premature birth of their breeding, they stay at a natural bag where they are kept warm and breastfed.
- KMC is the only opportunity to survive for millions of babies in developing countries.
- When baby is cold, maternal breast increases its temperature until it gets warm and decreases it after that it can increase 2°C in only 2 minutes!!
- Babies that do kangaroo are more organized and cry less!!
- A baby about 30 gestation weeks who is placed in kangaroo position can have its cerebral cells fusion increased, which promotes a faster development.
- For mothers that do kangaroo is more unlikely to get a maternal stress!!!



Petra and her parents

We thank parents for sharing with us part of their family time and allowing us to take pictures.

KANGAROO MOTHER CARE (KMC)



Made by:

Monica Gonçalves Rodrigues (RN) and
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'Since my daughter was born KMC was proposed to me to help with her recovery. In addition to its well tested therapeutic results, I want to emphasize that this care allowed me to rescue the bonding developed during pregnancy. (...) It was as if she were inside my uterus again, which made us feel more protected'

Sonia Regina Mazzi,
Mother of Barbara, baby of 29 gestation weeks.

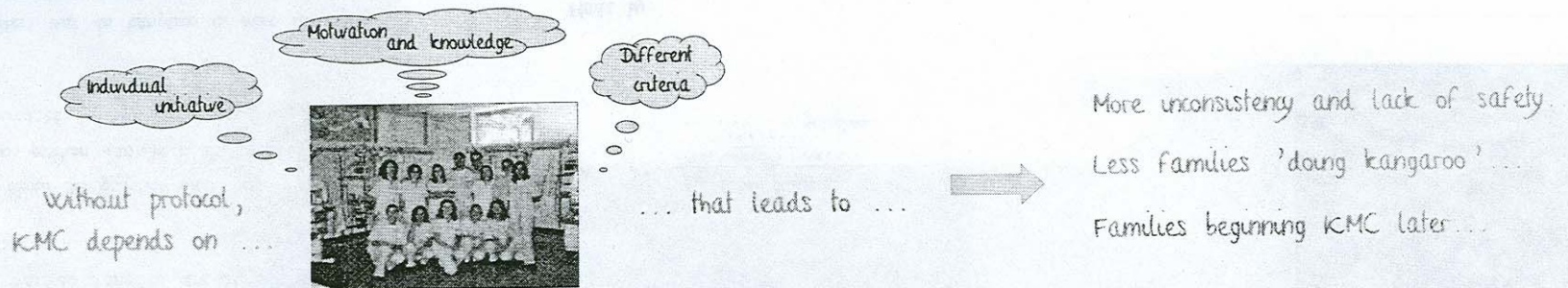
HUMANIZING OUR UNIT: Kangaroo Mother Care (KMC)

KMC as a way of fostering family bonding

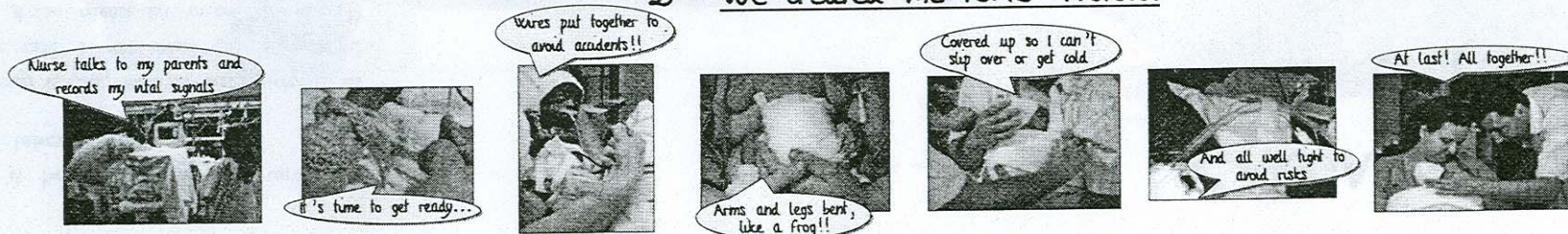
Our reality at Fernando Fonseca Hospital, Lisbon (Portugal).

25 Neonatal and 11 Paediatrics intensive/intermediate cots/beds
 989 Newborns, 22% with <1500g (2005)
 53 Nurses with average age: 28.4 years (2006)

1st Why to create a KMC protocol in our unit?



2nd We created the KMC Protocol



3rd Activities to implement the protocol

- * Organize inter-disciplinary training and discussion sessions about KMC
- * Prepare posters about KMC for parents
- * Elaborate an informative brochure for parents
- * Include KMC data on baby's records

Informative brochures

1. EAGLER, Arthur et al - Kangaroo Care: National Survey of Practice, Knowledge, Barriers and Perspectives. *MCN*, Vol. 87, n° 11 (Nov/Dec 2008), p. 1674-1678

2. World Health Organization - Kangaroo Mother Care: a practical guide. Geneva, Switzerland: Department of Reproductive Health and Research, 2005

3. LUDINGTON-HOE, Susan; HOSSEIN, R.; TOROYAN, Z. U. - Skin-to-Skin Contact (Kangaroo Mother Care) analgesia for preterm infant head stick. *AACN Clin Issues*, Vol. 4, n° 3 (Jul/Sep 2004), p. 242-244

4. TESSER, Néizan et al - Kangaroo Mother Care and the Bonding Hypothesis. *Pediatrics*, Vol. 102, n° 8 (August, 1998), p. 4-8

Authors: Monira Rodrigues
 Beatriz Santamarina

'To do Kangaroo'??

What is it?



Tito and his dad Baby is placed vertically between the mother/father's breasts. There it gets warm with her/his body, feels loved with the hug and calms down with a familiar voice and with the heart beat. This way family's well-being and health is promoted.

Is it a new care?

No, it was invented in Colombia in 1978. After some studies, which corroborated its advantages, it was spread around the world, where it was adapted according to local characteristics and different realities.

Which are these advantages?

It is advantageous for the baby, parents and professionals.

It helps the baby to become thermal and haemodynamic stable; to get better psychomotor and psycho-affective develop-

ment; to grow up and get fat faster; to promote gastroesophageal reflux; to have more regular sleep cycles and fewer agitation periods; and, among other advantages, the baby receives positive stimulation and interaction with its parents through touching, smelling, looking, voice....

Parents understand baby's reactions and emotions better; parents-child bonding is re-established earlier; resilient effect increases; parents' competence and confidence in their caring is promoted, and family members are more together. Mother produces more breast milk, the best food for the baby; and she is emotionally more balance.

When can we do it?

Certain criteria about baby's general clinical state must be satisfied. Ask your nurse if your son/daughter is ready for 'doing kangaroo'.



Frederico

Mum and dad must be motivated and have enough time to do kangaroo, at least an hour of KMC is advised to avoid the baby being over manipulated. If you have any disease or skin injury, you have to inform your nurse and wait until being fully recovered.

For baby's safety, you are encouraged to take a shower before coming to the Unit.



Petra and her mum

You can arrange with your nurse what the best time for 'doing kangaroo' is.

Do we need anything?

It is not necessary any fancy material. Infant wears only a diaper, socks and a cap. Parents need a shirt with front opened. We recommend the mother to take her bra off, to permit baby's body to be in contact with its mother's skin.

Parents really need time to devote to their baby; your love will make the baby feel it is not alone and your self-assurance will transmit the baby that time to go home together is close.

'...KMC opens a communication channel between the baby and its parents, a channel of special importance nowadays when no communication among people is very often.'

Dra. Nathalie Charpak

KANGAROO CARE IN NEONATES: EFFECTS ON PAIN FROM HEPATITIS B VACCINE INJECTION

Presenter: Raouth Kostandy, Nursing/CWRU, rrkostandy@yahoo.com

Other Authors: Gene C. Anderson, PhD, RN, FAAN

Introduction: Painful procedures are common in neonatal care, even for healthy fullterm neonates (Johnston et al., 1999). Strong evidence exists that neonates experience and respond to pain. However, they are often undertreated pharmacologically, leading to testing of nonpharmacologic methods (e.g., relaxation) for pain reduction. During kangaroo care (KC), when mothers hold their diaper-clad infants prone, skin-to-skin, and chest-to-chest, the infants stop crying, appear relaxed, and go to sleep. Thus KC may promote the kind of relaxation that, according to Senson's concept of the relaxation response (1985), would lessen infant reactivity to painful stimuli.

Purpose: To test the hypothesis that KC will reduce responses to pain from hepatitis B vaccine injection in fullterm neonates 24 hours to 7 days postbirth.

Methods: This study was a two-group randomized controlled trial. Thirty minutes before the injection, 36 healthy fullterm neonates were randomized by minimization to KC or control (standard care) groups. KC mothers held their neonates prone in KC until the mothers felt relaxed (10-15 minutes) which is when KC is most effective (Gray, Watt, Slass, 2000). Then the nurse came, uncovered the anterior lateral thigh (the injection site), and gave the injection while the neon ate still in KC. Standard care group neonates were lying supine in their bassinette in the hospital nursery undisturbed for 10-15 minutes before the injection. Heart rate, behavioral state, and cry time were measured pre-injection, during injection, and post-injection.

Results: Measured using audio tape, cry time (mean and SD) during injection was 23.4 (:t 11.3) seconds for KC neonates and 31.6 (:t 10.4) seconds for controls ($p = .029$); cry time during recovery was 15.8 (:t 19.0) seconds for KC neonates and 71.8 (:t 78.3) seconds for controls ($p = .007$). No significant differences were found for heart rate during injection time ($p = .249$) or recovery time ($p = .070$). Behavioral states were measured with a 12-category behavioral state scale (The ABSS) every 30 seconds during injection for 1 minute (2 times) and recovery for 5 minutes (10 times). During injection and recovery times combined, KC neonates were in crying states at fewer time points (2.8 :t 2.2) than controls (6.5 :t 4.7), $P = .005$.

Conclusion: Kangaroo care helps in decreasing crying time, which is one of the pain responses in neonates, during and after the hepatitis B vaccine injection in healthy fullterm neonates.

Breastfeeding Status by Ethnicity in Mothers and Their Full-term Infants with Breastfeeding Difficulty During Early Postpartum

Sheau-Huey Chiu, PhD, RN, CPNP; Gene C. Anderson, PhD, RN Introduction: Health benefits of breastfeeding (BF) have been documented in numerous studies.

In recent studies, these benefits have been documented even more definitively by controlling for BF exclusivity (only human milk). Women may be at greater risk of breast feeding failure if they experience breastfeeding difficulty during early postpartum. In a Cochrane Review (Anderson, Moore, Hepworth, & Bergman, 2003), SSC contact during early postpartum as the intervention for mothers and their healthy full-term infants resulted in significantly better BF outcomes. **Purpose:** The purpose of this report is to describe BF status by ethnicity for mother-infant dyads having BF difficulties postbirth and experiencing SSC with subsequent BFs in hospital. **Design/Method/Setting:** A one-group, descriptive exploratory design was used. This study was conducted in the postpartum unit of a large teaching hospital in the Midwest region of the United States. Fifty healthy, fullterm, mother-newborn dyads experiencing BF difficulties between 11 and 24 hours postbirth were recruited. Nurse researchers then helped these dyads experience SSC with BF for three consecutive BFs (SB1-SB3) and one (SB4) 24 hours after SB1. BF status of these dyads were obtained at hospital, 1 week follow-up, and 1 month follow-up

Measures: The Index of Breastfeeding Status (IBS) was used to determine BF status. The IBS was referred to as a "schema" for definitions of BF (Labbok & Krasovec, 1990). The schema is now called "The IBS" to facilitate its clinical usefulness. The IBS has eight categories: exclusive, almost exclusive, high partial, medium high partial, medium low partial, low partial, token and none. BF exclusivity was coded on a scale of 1 through 8, where 1 = exclusive and 8 = none. For the purpose of data analysis, these 8 categories were collapsed into three categories: exclusive (exclusive and almost exclusive) 100%, partial (high, medium high, medium low, and low) « 100% to > 5%), and token and none (5% to 0%).

Results: The data were analyzed with descriptive statistics and Chi-Square tests. Forty-eight mothers were included in the analysis. There were 24 white and 24 non-white mothers. Sixteen of the 24 non-white mothers were African Americans; 6 were Asians or Pacific Islanders. At one week follow-up, two non-white mother-infant dyads were lost to follow-up; one of the dyads was re-contacted at 1 month follow-up. Ninety-six percent white mothers had private insurance compared to 54% non-white mothers. Mean age and years of education were 31 and 16 for white mothers compared to 27 and 14 for non-white mothers. Ninety-two percent white mothers were married compared to 42% non-white mothers. Chi-Square analysis was used to examine the relationship between ethnicity and BF status at three time points and no significant relationship was found at hospital ($p = .37$), one week ($p = .11$) and one month ($p = .61$).

Conclusion: No statistically significant relationships were found between BF status and ethnicity of the mothers at hospital discharge, one week and one month follow-up. Although all these mothers were at risk for BF failure because of the BF difficulties they were experiencing, the BF outcomes for non-white mothers were almost as positive as those of their white counterparts. This finding is encouraging; large studies are needed to examine each category in the IBS separately which may be important for some outcome variables (e.g. infectious disease).

KANGAROO MOTHER IN TROTRO AN-KODITRA UNIT

Yvonne Ranaivoson, G. Ramahandridona, A. Tsarafihavy, A. Sambany CHU
Befelatanana Maternity, Antananarivo, Madagascar

In Madagascar, prematurity is a major health issue and is the result of poor social and economic conditions. Health Centers lack the adequate facilities to care for premature and low- weight birth infants. The implementation of Trotro An-koditra Unit (T AKU) has allowed to improve their assistance. .

Objective

Elicit information of the social, cultural and educational background of mothers in the TAKU.

Methodology

- Individual session of Information - Education - Communication with each mother and observational card

Results

Concerning 924 mothers of the program from januar 2003 to December 2006 :

- 40.3% of mothers were single
- between 14 to 42 years old, 68.7% were of child-bearing age
- related familiar income in 66.5% of the cases: less than the effective minimum wage
- 2.7% had no school educatipn, 58.3% received a primary education, 31.8% a secondary education, 7.2% a higher education
- 47% did not have access to water
- only 20% had a homephone and toilet pit
- 62% admitted to drinking "tambavy" (traditional medecine)
- averagegestity is 2 to 3 children
- 41.5% were unwanted pregnancy, however all mothers were motivated and cooperative

Conclusion

Because of the lack of resources and the efficiency of the T AK, the program was developed with the aim to expand it overall nationwide, in terms of:

- development of adapted training and information materials
- . introduction of T AK in training institutions, ie school of nurses, university
- training of trainers and development of curriculum
- . training of health workers of all three levels of health care, nurses and midwives from Central and District Hospitals and from Health Center Staff and mainly Traditional Birth Attendants (TBA)

"BREAST MILK COMPOSITION IN A COHORT OF PRE-TERM AGA INFANTS' MOTHERS CARED FOR AT A KANGAROO MOTHER CARE PROGRAM IN BOGOTA, COLOMBIA"

Z. Figueroa 1,2 MD, N. Charpak 2,3MD, J. G. Ruiz 2,4 MD M Med Sci on behalf of the KMC research
team

*1KMCP Program Clinica del Nino, Colombia 2Kangaroo Foundation 3World Laboratory Research Center
4Clinical Epidemiology Unit, Javeriana University*

Objectives: To describe the characteristics of pre-term breast milk according to gestational age at delivery, post-natal age of the infant and nutritional status of the mother in an ambulatory Kangaroo Mother Care Program (KMCP).

Methods: A descriptive cohort involving 113 mothers who had delivered "healthy" pre-term AGA infants was assembled. All mothers received intensive breast feeding support before discharge, and close follow-up during the whole observation period. Samples of both fore and hindmilk were obtained from all participants at entry into KMCP and weekly thereafter, until infants reached 40 weeks of post-conceptual age (WPCA). Breast milk composition was tested and results were described according to both post natal (chronological) age (PNA) and PCA. Blood samples from mothers were drawn at entry into KMCP and at 40 WPCA for hematocrit, hemoglobin, total serum protein and albumin/globulin ratio.

Results: Breast milk protein concentration varied inversely with both PCA and PNA. Fat concentration varied greatly, and was consistently higher in hindmilk than in foremilk samples of the same feed. Lactose content increased steadily with PCA. The calcium/phosphorus ratio was very stable, close to 2: 1 and the absolute quantities of these two elements were similar in samples of different post-natal and post-conceptual ages. There were no overly malnourished mothers in the sample, and there was no discernible relationship between any of the measured milk components and anthropometrical indices of the mothers.

Conclusion: Premature milk might be inadequate to provide enough calcium and phosphorus to pre-term infants. Protein concentration decreases steadily to mature milk levels by the third week of PNA, regardless of gestational age at birth. Therefore, from the third week of PNA onwards, the protein content in breast milk could be insufficient to satisfy the needs of premature infants younger than 35 weeks of PCA (born at 32 weeks of gestational age or less). Feeding hindmilk to pre-term babies increases caloric density and fat intake which might help to better meet their nutritional needs.