THE EXPERIENCE OF MOTHERS PRACTISING KANGAROO MOTHER CARE IN THE EAST LONDON HOSPITAL COMPLEX

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This work is submitted in partial fulfilment of the requirements for the degree of MASTERS OF PHILOSOPHY (Maternal and Child Health) in the Department of Paediatrics and Child Health, University of Cape Town.

I, Dorcas K. Muteteke, hereby declare that the work on which this thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor part of it has been, is being, or is to be submitted for another degree in this or any other university. I permit the University of Cape Town to reproduce for the purpose of research only either the whole or any portion of the content, except that any pictures which might identify patients or their mothers shall not be reproduced to protect their privacy and confidentiality.

TABLE OF CONTENTS

Acknowledgements			1
Executive Summary			3
Glossary			5
Abbreviations			7
1	INTRODUCTION		8
	1.1	Reason for the study	8
	1.2	Definition of Kangaroo Mother Care	9
	1.3	Advantages of Kangaroo Mother Care	10
	1.4	Kangaroo Mother Care in South Africa	11
		East London Complex	12
		East London Hospital Environment	12
		Cecilia Makiwane Hospital	14
		Frere Hospital	16
	1.5	Aim of the Study	17
2	OBJECTIVES		17
3	Literature Review		18
	3.1	Advantages of KMC	18
	3.2	Mothers' Perceptions and Feelings about KMC	20
		Search Strategy	20
		Articles Specifically Related to this Study	20
		Summary	29
4	METHOD AND ANALYSIS		31
	4.1	Research Context	31
	4.2	Study Design	31

		Pilot Study	32
		Limitations	33
		Ethics	34
		Informed Consent	34
		Anonymity and Confidentiality	35
	4.3	Analysis	35
5	RESULTS AND DISCUSSION		37
	5.1	Socio-demographic status of mothers	37
	5.2	Identification of themes and sub-themes	39
		Acceptance of KMC	40
		Attitudes toward Hospital Conditions	43
		Support in Hospital	45
		Support at Home	46
6	DISCUSSION		48
7	CONCLUSIONS		50
8	RECOMMENDATIONS		51
	8.1	Health authorities at the Eastern Cape Province	51
	8.2	District Authorities	51
	8.3	Hospital Authorities	51
	8.4	Paediatric Department Staff	52
9	REFERENCES		54
10	APPENDICES		63

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EXECUTIVE SUMMARY

Mortality and morbidity due to low birth weight and pre-term birth are high, especially in developing countries where resources and qualified neonatal staff are scarce. There is a need to find measures that reduce the cost of care for low birth weight and pre-term babies without sacrificing quality. Conventional methods of care, where infants are exclusively cared for by the nursing staff using incubators, are very costly. In addition, morbidity and mortality are adversely affected by some conventional low birth weight care procedures and better means of care are needed to avoid these extra risks. It is therefore important to find a substitute for conventional care without putting infants' lives in danger.

The Kangaroo Mother Care (KMC) method could be a viable solution, since it addresses many of the problems encountered with the conventional method. KMC is the practice of caring for low birth weight neonates by keeping them in skin-to-skin contact with their mother's chest. The length of time that the infants are placed in this position can vary from a few hours a day, to 24 hours a day. KMC provides warmth and care; it promotes bonding, breastfeeding and early discharge. Published studies of this method also indicate that KMC decreases mortality and costs while improving health outcomes.

Much research has been done on the use of KMC with low birth weight children in different settings, but less has been done on its practice from the mother's point of view. This study explores the quality of the mothers' experiences with KMC in the East London Hospital Complex, consisting of the Cecilia Makiwane Hospital (CMH) and the Frere Hospital (FH), where it has been practised since July 1999. The aim of the study was to identify factors that influenced mothers' knowledge, attitudes and opinions regarding the practice of KMC. In order to make recommendations for improving the quality of KMC practice, the study also examines hypotheses that (1) Mothers' receptivity and responsiveness

are critical to the implementation and practice of KMC and (2) Mothers receptivity and responsiveness are affected by (a) education and information, (b) nature and levels of support, and (c) general hospital conditions.

In-depth interviews were conducted with thirty mothers in the East London Complex. Twenty participants were at CMH and ten at FH. One participant at each hospital was practising intermittent KMC. The findings of this qualitative study demonstrate clear consensus for the questions posed. The findings confirmed that KMC was positively received by mothers in a public hospital setting in South Africa but in order for the practice of KMC to be successful, attention should be paid to the following: (a) information received early and effectively, (b) KMC support in hospital and at home after discharge (c) improvement of hospital conditions. Recommendations based on these findings are included to improve the practice of KMC in hospital and at home after discharge.

GLOSSARY

Apnoeic. Neonatal apnoeas are episodes where an infant has cessation of breathing for 20 seconds or more or for less than 20 seconds with associated bradycardia, which is a reduction in heart rate of more than 30%.

Apartheid. Racial segregation or discrimination. This word is used to indicate the legislated racial segregation, formalised in legislature by the South African Government from 1948 to 1999.

Doek. Square, triangular or long narrow strip of material worn around the head. It is also called a scarf.

Dyad. Mother-infant pair.

Region C. A region in the Eastern Cape Province.

Kangaroo Mother Care (KMC). The practice of caring for low birth weight neonates by keeping them in skin-to-skin contact with their mother's chest for part or all of the day.

Continuous KMC. Provided for more than 20 hours per day.

Conventional care. Infants are routinely cared for by nurses in an incubator or a basinet in the nursery, separate from the mother. These infants are breastfed by the mother only if the infant's condition is stable and they are returned to the incubator or basinet immediately after the feed.

Intermittent KMC. Provided for 1-4 hours per day.

Episodic KMC. Provided for less than 1 hour per day.

KMC Support. Whatever is necessary for the medical, emotional, psychological and physical well being of mother and baby without separating them.

Low Birth Weight Infant (LBW). Infant delivered with a weight of less than 2500g (up to

and including 2499g), regardless of gestational age.

Necrotising enterocolitis. Occurs in premature or low birth weight infants and is characterised by mucosal necrosis of the gastro-intestinal tract, with progression to intestinal infarction and perforation.

Nosocomial. Infections that are acquired while a patient is in a hospital are referred to as nosocomial infections.

Premature Infant. Live infant delivered before 37 weeks from the first day of the last menstrual period. It denotes immaturity.

Very Low Birth Weight (VLBW). Infant delivered with a weight of less than 1500g (up to and including 1499g), regardless of gestational age.

ABBREVIATIONS

ANC	Antenatal Care
CMH	Cecilia Makiwane Hospital
FH	Frere Hospital
g	Grams
KMC	Kangaroo Mother Care
SD	Standard deviation

1. INTRODUCTION

Pre-term birth and low birth weight (LBW) are major contributors to infant mortality and morbidity and consume a considerable number of resources. KMC is an intervention, which improves the quality of care and mortality rates of such infants, and is cost-effective in all settings, whether public or private, primary or tertiary, and developing or developed countries. (M. Hann, 1999: 37). KMC would seem to be a life saving strategy for the many pre-term infants at risk of dying in the developing world where other care is not easily affordable. South Africa would probably, like other developing countries, benefit from such a method in order to reduce the rates of mortality and morbidity in the newborn group.

The first published data on KMC in South Africa was from Groote Schuur Hospital in Cape Town. As noted below, KMC has many advantages, but the mothers, the families, and the health workers must understand KMC for it to be properly implemented and they must be receptive to the program for it to be well supported.

1.1 Reason for the Study

KMC appears to be a critical and effective method of improving the care of newborn , especially premature / low birth weight infants in circumstances found in much of the South African health system. Although much has been published on KMC and its scientific underpinning, less is known about operational issues that affect its successful implementation and practice in public health system hospitals.

There are factors which significantly influence the implementation of KMC and which are affected by the perception and experience of mothers. This study was carried out to determine whether those factors exist, to identify their implications, and to propose appropriate recommendations.

1.2 Definition of Kangaroo Mother Care

Dr. Nils Bergman, Senior Medical Superintendent of Mowbray Maternity Hospital and five Midwife Obstetric Units in Cape Town introduced KMC to South Africa. He defines KMC as: "...a universally available and biologically sound method of care for all newborns, but in particular for premature babies, with three components:

1. Skin-to-skin contact
2. Exclusive breastfeeding
3. Support to the mother-infant dyad."

Skin-to-skin contact is between the baby's front and the mother's chest. A small nappy may be used for comfort and a cap may be used for warmth. Skin-to-skin contact should ideally start at birth, but it is helpful at any time. It should also be continuous day and night, but even shorter periods are beneficial.

Exclusive breastfeeding means that for an average mother, expressing from the breast or direct suckling by the baby is all that is needed. Fortification of breastmilk with some essential nutrients may be required in very low birth weight infants.

Support to the dyad means that whatever is needed for the medical, emotional, psychological, and physical well being of mother and baby is provided to them without separating them. This might mean adding ultramodern equipment if available, or purely intense psychological support in contexts where there are limited resources. Bergman also defines continuous KMC as KMC provided for more than 20 hours per day, intermittent KMC as KMC provided for 1-4 hours per day and episodic KMC as KMC provided for less than 1 hour per day. www.kangaroomothercare.com/Definition_page

1.3 Advantages of Kangaroo Mother Care

Several studies have shown the advantages of the KMC method. These benefits are related to (a) the mother-infant relationship, (b) the cost of care for families and hospitals, and (c) to the safety of the infant.

Mother-infant related advantages:

- Early bonding between mother and baby
- Longer breastfeeding periods
- Faster weight gain and early discharge
- Active parenting for mothers

Because of the amount of time that the mothers spend with their infants, KMC mothers are more involved in infant care. Feeding, changing and watching the premature infant is not left to the nursing staff alone. Mothers perform these tasks under the supervision of the nursing staff.

Cost related advantages:

- No need for equipment because the mother provides the heat and safety instead of an incubator.
- Shorter stay in hospital
- A greater staff to patient ratio is possible
- Reduction in the use of formula milk

Safety related advantages:

- A decrease in poorly equipped units
- No increase in mortality rates
- No increase in morbidity rates
- Physiological stability

- Less severe nosocomial infections

In their experience, Kirsten, Bergman & Hann (2000) observed that the incidence of necrotizing enterocolitis decreased from 10 percent to 2.8 percent after the introduction of KMC with babies who were mainly breastfed, compared to formula fed babies cared for with the conventional method. Davanz & Cattano (1994) report from a study by the Maternidad Isidro Ayora study team that KMC infants have less severe infections such as pneumonia and septicemia. "KMC reduces the risk of serious infections by colonizing infants with their mothers' skin flora (bacteria and fungi) which are usually more sensitive to antibiotics than other hospital acquired infections; and the infant usually carries antibodies against maternally sourced infection." (Woods, 1998 p. 4)

1.4 Kangaroo Mother Care in South Africa

In South Africa, KMC was formally adopted as a routine practice for low birth weight infants in 1997 at the Groote Schuur Hospital in Cape Town. In December 1998, in the MCH Newsletter, Professor Dave Woods of the Department of Paediatrics at Groote Schuur Hospital wrote:

> "The only problem is persuading nurses and doctors that it is an essential part of good infant care. Mothers instinctively know that this is the best way to care for infants. Once tried, fathers soon become very enthusiastic." (Woods, 1998 p.4)

The practice of KMC in South African hospitals is a positive step in the care of low birth weight infants, considering the socio-economic status of the majority of the population and the scarcity of resources in state sponsored health facilities. South Africa has a sizable rural population that does not have easy access to health care. Both rural and urban poor residents would benefit from the simple and easily adapted practice of KMC for improving survival

and quality of life for low birth weight infants in addition to its other advantages.

KMC is currently practiced in several hospitals in South Africa. Apart from CMH and FH in East London, KMC is also practised in many government hospitals throughout South Africa and the Department of National Health has accepted it as policy. Some of the other hospitals where KMC is practised are: Groote Schuur Hospital, Mowbray Maternity, Tygerberg Hospital, Karl Bremer Hospital (Belleville), Eben Donges Hospital (Worcester), Paarl Hospital, Vredendurg Hospital, Conradie Hospital (Pinelands), and Kalafong Hospital (Pretoria).

East London Complex. KMC is practised in Cecilia Makiwane Hospital (CMH) and Frere Hospital (FH). Together, these two hospitals form the East London Hospital Complex. Now operated as one, the departments of paediatrics in the two hospitals are part of the Department of Paediatrics and Child Health. They are situated 25 kilometres apart. During the apartheid regime, they were operated separately under different regimes and health departments. Some of the objectives for implementing KMC in East London at CMH and at FH were to:

- Promote breastfeeding
- Promote mother-infant bonding
- Decrease severe infections by colonising the baby's skin with the maternal flora (Woods, 1998)

In East London KMC is mainly a hospital practice. Follow up after discharge is not always possible; many mothers are referred from areas that are far from East London. To attend follow up clinics in East London would be quite impractical for them.

East London Environment. CMH is situated in Mdantsane one of the biggest black townships developed under the previous apartheid regime of racial segregation. During that

time, laws favoured the minority white population and every facility, including hospitals, was separated by race. This segregation between black and white produced social and economic apartheid. Black citizens could not move freely in the country. With inadequate education and few job opportunities, unemployment was high and poverty very common especially in the rural areas.

Apartheid destroyed the family structure because men frequently had to work on the mines, far from their families, leaving women and children alone in the villages and townships. These political inequalities continue to affect the lives of many Black South Africans. Poor social and health infrastructure in large areas of South Africa contribute to poor health and other problems in black communities. Other factors that also contribute to the poor health conditions in the Eastern Cape are:

- Inadequate medical and health care facilities
- Shortage of trained and experienced health care workers (including primary health care workers)
- Insufficient numbers of medical doctors

Since 1994, when apartheid was dismantled, a number of problems have made the situation worse in the Eastern Cape.

- Poor management of health services in the province.
- Nurses and medical staff leaving the government services for the private sector or overseas.
- The AIDS epidemic has probably contributed very much to the increased rate of prematurity, low birth infants and mortality.
- Movements of people from rural areas to cities with creation of squatter camps and informal settlements. These settlements often have inadequate clean water, electricity

or proper sanitation.

Cultural aspects may result in women delaying attending ANC. Social taboos surrounding pregnancy dictate that it be hidden as long as possible and this may be one of the reasons for the delay in attending ANC. This often leads to late identification of problem pregnancies, increased risks, and increased infant mortality.

- Socio-economic factors could also explain the late booking for ANC. Women living far from the health centres and unable to afford transportation fares are likely to attend ANC late in pregnancy.

Infant mortality is high among black South Africans. According to Dr. G. Boon, Head of Paediatrics and Child Health at the East London Hospital Complex, infant mortality was 33/1000 live births in 1998 for Region C (South African Demographic Health Survey1998) and is estimated to be between 20-30/1000 live births in East London. In the White population it is believed to be below10/1000 live births.

FH has historically been part of the Republic of South Africa even though it was situated not far from the Ciskei, one of the previous independent homelands. During the apartheid regime, patients were segregated by race at FH and the quality of the buildings was better than CMH. FH was divided in white and non white sections. The white section had better facilities than the non white section. After 1994 this segregation no longer exists, and in recent years CMH and FH merged together and fall under the same administration.

Cecilia Makiwane Hospital. CMH has approximately 1000 beds, out of which 180 beds are allocated to paediatrics with 57 in the neonatal unit. It is a referral hospital for quite a number of hospitals in the region and a large proportion of the 5000 deliveries per annum are high risk deliveries. KMC was implemented in July 1999 at CMH. It is practised in

clinically stable pre-term infants not requiring particularly special/intensive care.

The staff in Ward 17 (Paediatric and Neonatal Intensive Care) and Ward 18 (Neonatal Ward), are familiar with the method since July 1999 when it was first implemented. Some of the staff attended a training workshop on KMC at Groote Schuur Hospital in Cape Town. There is no separate ward for KMC mothers but a space is provided for the mothers in ward 18 near the nurses' station (See Ward Layout, Appendix 6). Mothers practising continuous KMC are in ward 18 with their infants and at feeding times, those practising intermittent KMC leave their room in ward 18 to go to ward 17 where the incubator babies are cared for. There are about 780 admissions per year in Ward 18, 10-14 deaths recorded per year. One Consultant and one Medical Officer are in charge of the ward with 4 professional nurses assisted by an average of six other nurses. Lodger mothers of infants who are admitted in the neonatal intensive care ward, share the same room as the mothers practising KMC. They all receive food from the hospital and spend their days in the ward. Clothing is provided by the hospital for mothers doing intermittent and continuous KMC. KMC mothers use a doek tied around the blouse at their waist as a belt to secure the infant in the KMC position.

The routine practices of tube/gavage feedings and changing the babies' nappies in the ward is the same for incubator babies and the babies cared for by the KMC method. Each infant is allocated a crib or incubator in the ward whether on continuous KMC or not. While babies are still in the incubator, KMC is introduced in an intermittent fashion. There are no nursing staff allocated specially to provide care to KMC mothers and infants and any staff member when necessary assists them. KMC infants are discharged at a weight of approximately 1.750 kg. However, the decision to discharge a KMC mother and her infant also depends on acceptable weight gain of >15g per day (Kirsten 2001), successful establishment of breastfeeding, and very importantly, whether the mother is confident to manage her

premature infant by herself and maintains KMC practices. After discharge, the infants are followed-up in a clinic at the neonatal unit.

Frere Hospital. FH has about 700 hospital beds of which 77 are allocated to peadiatrics with 30 being neonatal beds. There are approximately 5000 deliveries per year. KMC also started in mid 1999 at FH. There is a separate 10 bedded ward for KMC mothers and babies, close to the neonatal unit. These infants have no cribs allocated to them like it is at CMH. Mothers practising intermittent KMC leave the maternity wards at feeding times to go to the neonatal ward. It is only when the infants are stabilised and do not need incubator care anymore that both mother and infant are transferred to the KMC ward for continuous KMC. The neonatal ward, M3n (Appendix 6), registers about 1008 admissions per year with about 55 deaths. A consultant, a medical officer, six professional nurses, and an average of 10 nurses run the ward. The KMC mothers are in a more homelike situation in FH because the ward is allocated only for KMC practice. There is also no specific nursing staff allocated to the KMC ward, but being close to the neonatal unit, mothers are able to ask for assistance from the nursing staff in the neonatal unit whenever it is needed. However during feeding times the mothers are supervised. As at CMH, low birth weight infants are started on intermittent KMC during feeding time while still in the incubator. As soon as the infants are stable, they receive continuous KMC and are transferred to the KMC ward. The discharge criteria is similar to CMH except for the discharge weight which is 1.8 Kg at FH.

1.5 Aim of the Study

The aim of this study was to determine mothers' experiences with KMC at two East London Hospitals: Cecilia Makiwane and Frere Hospital and to identify the factors which affected their receptivity and responsiveness toward the practice of KMC in order to make recommendations for improving KMC practice. Factors exist which could significantly impact on KMC practice and which are influenced by maternal perceptions and attitudes. This study was carried out to identify these factors and their implications, and to propose appropriate recommendations for improving care and outcomes.

2. OBJECTIVES

The objectives of the study were:

- To test the hypotheses that (1) Mothers' receptivity and responsiveness are critical to the implementation of KMC and (2) Mothers receptivity and responsiveness are affected by (a) education and information, (b) nature and levels of support, and (c) general hospital conditions.
- To identify and describe perceptions of KMC by mothers and their families.
- To describe mothers' opinions about general hospital conditions.
- To assess mothers' satisfaction with the KMC support received in hospital
- To determine mothers' expectations of the help they need when practising KMC at home.

The implementation objectives were:

- To make recommendations for improving of mothers' circumstances in the Kangaroo care ward at each hospital.
- To develop guidelines for improving KMC in the neonatal ward at CMH and Frere

Hospital.

- To make recommendations to include the mother's relatives in the KMC support system after discharge from hospital.

3. LITERATURE REVIEW

Even though there have been a large number of studies describing the advantages and practice of KMC, the literature search focused on studies relating to perceptions, feelings, support and the implementation process of KMC.

3.1 Advantages of KMC

A general review of KMC advantages revealed that low birth weight and premature infant care requires many resources. Unfortunately, with developing countries such as South Africa, poor economy and precarious conditions in hospitals hinder access to adequate care for the majority of the population. Operating a neonatal unit is expensive because of the need for incubators, formula milk, and qualified staff among others. KMC could be a suitable alternative to conventional neonatal care, given its advantages. A tabulated summary of advantages identified in the literature is presented below:

TABLE 1. SUMMARY OF KMC ADVANTAGES

Mother and Infant Related	
Quicker adaptation to extrauterine life for the infant and early bonding between mother and baby	Colonna (1997), De Leeuw (1991) Cattaneo (1998)
Humanization of neonatal care	Cattaneo (1998)
Empowerment of the mother improving her competence and confidence in her infant's caring process	Cattaneo (1998)
Longer breastfeeding periods	Sloan (1994), Hann (1999)
Faster weight gain and effective thermal control.	Kambarani (1998), Hann (1999), Cattaneo (1998)
Early discharge home	Charpack (1997), Hann (1999)
More active parenting, the mother becomes the central person in the infant's care	Whitelaw (2000), Cattaneo (1998)
Cost Related	
Shorter stay in hospital	Sloan (1994), Hann (1999)
More efficient use of staff time in the neonatal wards	Cattaneo (1998)
Safety Related	
No increase in mortality and morbidity rates	Bergman 1994, Bosque (1994), Bosque (1995)
Applicable at any level of care (primary, secondary or tertiary)	Kambarani (1999)
Less severe neonatal infections (pneumonia, septicemia, necrotising enterocolitis).	Kirsten (personal communication), Charpack. (1997)
Physiological stability	De Leeuw (1991), Bosque (1995), Cattaneo (1998)

3.2 Perceptions and Feelings about KMC

Search strategy. To extract published articles on the perception and feelings of mothers practising KMC, a number of strategies were used. Infotrieve[8] and Pubmed[8] were also used to access Medline[8] through the internet using the following key words:

Kangaroo Mother Care - 82 records were retrieved.

KMC <and> Neonate - 80 records.

KMC <and> Perception - 33 records.

KMC <and> Perinatal Care <and> feeling - 2 records.

KMC <and> Preterm - 26 records.

A further search on Medline (Ovid) using the following key words: infant care, infant <and> premature, infant <and> newborn, Kangaroo resulted in a total of 7 articles that were considered to be related to this research. References on KMC were found on the International Network for Kangaroo Mother Care (INK) website, http://kangaroo.javeriana.edu.co/. This site is regularly updated. Presently it has extensive references on various aspects of KMC through 2003.

The researcher examined the abstracts before requesting the articles relating to the current study. The studies relating to mothers' perceptions and feelings were fewer than those related to KMC advantages. This is an indication of the importance of this study and the need for more studies on how people respond to the practice, including health care professionals.

Articles specifically related to this study. The following five studies were pertinent to our study:

1. The parents' perception of skin-to-skin care with their infants in a tertiary neonatal care unit and at home (Neu, 1999).

Nine parents of different socio-economic status participated in the study. Their ages varied

from 21-37 years (mean=25.9 years). They all had singleton infants. Four were first time parents and eight were married. Only one father participated in the study. Four parents lived in the city in which the hospital was located. Two lived 30 miles away from the hospital, and three lived out of state. Eight parents were white and one parent was Black. The mean birth weight of infants was 1064g (SD=423) and the mean gestational age 27.2 weeks (SD=2.0). Six infants were girls and three were boys. At the initial interview the mean weight for the infants was 1094g (SD=343) and the mean gestational age, 30.2 weeks (SD=1.9) At the follow up interviews, one infant was four months old, six were 9-10 months, and two were 17 months old(chronological age.) All infants were at home during the time of this study. Eight out of the nine parents had participated in a previous study that compared two transfer methods of infants: from bed to parents' chest by nurse and from bed to parent's chest by parent him/herself.

Five parents continued skin to skin care during their hospitalisation. Three parents did not pursue skin-to-skin care while in hospital. One parent discontinued skin-to-skin care in a step down nursery. All but one parent reported that they held their infant skin-to-skin at home, some for several months.

The following are some of the themes that came up after two 60-minute skin to skin sessions: (a) ambivalence of parents towards skin-to-skin care, including sub-themes of yearning to hold the infant and apprehension to do so; (b) need for supportive environment; and (c) special quality of the parent-infant interaction, including sub-themes of intense connectedness and active parenting. This study is similar to our study that looks at parents' perceptions of KMC. The difference is in the duration. In South Africa, KMC is carried out for longer hours. The infant is expected to be in the kangaroo position for most of the 24 hours, even during sleep.

2. Types of support expected and received after their infants' discharge from the NIC. (Davis, 1996).

This is a descriptive study conducted at the School of Medicine at the University of Louisville, Kentucky. It examined specific types of social support that Kangaroo mothers expected before and received after being discharged home. A sample of 37 mothers were included. A Postpartum Support questionnaire was used as a measure of perceived support specific to the postpartum situation. The study reported that mothers practising KMC found that material, emotional, and companion support were more important than they expected before taking their baby home. The KMC mothers also found that they did not receive the support that they expected except for companion support.

The recommendations of this study are that KMC mothers receive assistance with identifying a support system in their environment before discharge home. Maternity and paediatric nurses should be involved in the follow up of the mothers and their infants. The need to identify a support system for the mother before she takes her infant home from hospital has also been identified in South Africa. In talks with the staff in both KMC units in East London, this was mentioned as a persistent concern. The questionnaire used for this study specifically asked mothers what support system they were expecting to have at home.

3. Caregiver's perceptions and experiences of KMC in a developing country. (Kambarami, 2002).

In this study, focus group discussions were used to collect information about caregivers' perceptions and experiences pertaining to KMC practices at Harare Hospital and at home in Zimbabwe. The attitudes and reactions of husbands, relatives and the community toward KMC was also investigated. Four focus group discussions of 10-12 people were conducted between September 13 and October 27, 2000. These discussions consisted of

Mothers who were no longer practising KMC, mothers admitted to the KMC ward and who were being taught the KMC method, and two groups of mothers who were still practising KMC at home. A moderator, a scribe, and a tape recorder operator conducted these focus group discussions. Data were transcribed verbatim, summarized, and translated into English from Shona, the local language. Results show that mothers understood the advantages of KMC. The mothers knew that KMC keeps infants warm, enhances bonding between mother and infants, allows close monitoring of infants condition, promotes active parenting by mothers, and saves on hospital costs. Mothers were apprehensive about incubator care because the equipment was old and difficult to regulate. They felt that that there was a shortage of nurses or that they were unconcerned with regard to the care of their infants. Some mothers acknowledged, however, that the nurses were not always at fault.

All participants preferred KMC to incubator care because they were able to monitor their infants' condition closely and feed them on demand, as the infants grew stronger. Most mothers reported that they continued KMC at home for fear of complications in their infants such as bringing up food through the nose, becoming cold, changing colour or having convulsions without being noticed. These mothers reported that their husbands were very supportive, except for one husband who did not see the need to come up with a new method of care for preterm infants and another one who felt that the infant was too fragile to be cared for by KMC. Grandmothers were reported to be sceptical about KMC, fearing that the infants could be injured in the process, or that mothers were making excuses for not doing domestic chores, or that it was a way to get mothers back to work early. Some grandmothers praised the KMC method after seeing how well the baby was growing. Relatives were said to be very supportive, but also very inquisitive. The community's reactions were mixed. Mothers were thought to have AIDS or deformed infants. They were accused of wanting to abandon or kill

their infants. Some were also suspected of cheating on their husbands or pretending that they were pregnant. Some mothers were thought to be hiding stolen property on the chest or trying to copy western culture. The mothers' recommendations were to: (a) promote KMC countrywide; (b) use the media and drama for promotion; (c) educate nurses about KMC; and (d) improve hospital conditions for mothers' care especially regarding feeding.

This study has valuable input and also has some similarities with our study because it examines caregivers' perceptions and the setting is a developing country. It supports the mothers' acceptance of KMC and the need to educate communities and nursing staff with regard to the practice of KMC. Mothers in the study also preferred KMC to conventional infant care in incubators.

4. KMC as the exclusive means of treatment for LBW infants as experienced in a mission hospital in Zimbabwe, with no incubators and no standard equipment for neonatal care. (Bergman, 1994).

In this hospital, low birth weight infants were cared for in cots warmed by hot water bottles. The survival was poor, there was no special room, no routine established for low birth weight infants care, and they were fed in a variety of ways. It was found that the survival rate for infants under 1500g improved from 10 percent to 50 percent and from 70 percent to 90 percent for those weighing between 1500 and 1999g. The KMC method was well accepted by all hospital staff and they recommend it for all units treating low birth weight infants in developing countries without modern equipment. It was deemed appropriate for 40 weeks gestational age infants as well and communities had no difficulty accepting the method.

KMC was started minutes after birth and the baby was kept in the KMC position for 24 hours except for short periods when the mother was bathing or expressing milk. To make the mother comfortable at night, a back rest was used for the mother to sleep at an angle of

30-40 degree to the horizontal. Mothers were encouraged to move around, and go outside the ward with their babies in the KMC position. From the first day, feeding was started with mother's expressed breast milk or sugar water to supplement the volume of milk at an early stage. The mother was taught how to feed the baby using a syringe without its plunger and a nasogastric tube, which was changed every week, the feeding was done under nurses' supervision. As soon as the infants were stronger, feeding was done using the smallest medicine cup available. Even with the nasogastric tube in place, sucking at the breast was encouraged even though the amount of milk taken this way was not counted. The feeding was done with the goal of reaching a weight of 2.5Kg at 40 weeks gestational age. A clock on the wall had two hour markings for infants under 2000g and 3 hour markings for infants over 2000g, to help mothers know the feeding time. The baby was breastfed when sucking was strong enough and weight gain was steady, initially supplemented with cup feeding, then gradually reduced and eventually stopped. The nursing staff recorded weight, general condition and feeding. A doctor routinely saw the infant three times a week but the mother was requested to report any changes in the infant's condition as soon as it was noted.

The authors noted the importance of providing psychological support for the mother, educating her continuously on all aspects of infant care and receiving help from other mothers in the ward especially during the first week after delivery. When a mother delivered by Caesarean Section or delivered twins, a relative was admitted in the same ward as a substitute or extra person to assist in KMC. Discontinuation of KMC was considered when infants reached a weight of 1800g. At discharge, BCG vaccine and iron supplementation were given and the infants were weighed weekly at the nearest health centre. The infant was treated like any other term infant when the weight reached at least 3000g. The problems encountered with the practice of KMC were apnoeic attacks for VLBW infants, lack of

motivation from mothers, mothers complaining of backache because they were not accustomed to sleeping in bed or with pillows, fungal skin infection because of the humidity inside the blouse and managing neonatal jaundice. The jaundiced infant receiving KMC was placed near the window to get the benefit of sunlight. In order to ensure that babies born at home arrived warm at the hospital, KMC was taught to staff at Rural Health Centers as well. This study included a total of 133 infants weighing less than 2000g from April 1988 to June 1993. Seven babies born at home whose weight was unknown were excluded. Fifty-two infants born in hospital survived and 28 died. Twenty-eight infants born at home survived and 18 died. These results included infants who died during the first week of life. In order to compare these results with a study in Colombia, it was necessary to exclude the infants who died within the first week of life. The survival rate was then found to be 98 percent.

According to the results of this study, survival of infants below 30 weeks of gestational age was not good. Between 31-32 weeks gestation, the survival rate was 57 percent; between 33-34 weeks, the survival rate was 76 percent, and after that survival rate was above 90 percent.

This study is unique because it describes KMC as the only way to care for low birth weight infants in a setting with scarce resources. It touched aspects that were described in our study: (a) acceptance of KMC by hospital staff, mothers and their families; (b) supervision of KMC mothers by nursing staff; (c) the importance of providing psychological support to the mother and educating her continuously on all aspects of infant care; and (d) support from other mothers in the ward and her relatives.

5. Recommendations for the implementation of Kangaroo Mother Care for low birth weight infants (Cattaneo, 1998)

This article is a summary of recommendations that were made by a group of health

professionals with experience in KMC after discussing the effectiveness, the safety, the applicability and the acceptability of KMC in different settings. The settings considered were first and second level maternity units with very limited resources; second and third level maternity units with limited resources; and second and third level maternity units with neonatal care with ample resources and infant mortality rates less than 15/1000. Low birth weight infants were divided according to the type of care needed, taking into consideration the birth weight. Infants were categorised in the following groups: large infants or birth weight of 1800-2499g; small infants or birth weight of 1200-1799g; and very small infants or birth weight less than 1200g.

KMC was recommended for the large group infants in first and second level maternity units with very limited resources. Most deaths in these units were due to asphyxia and infection, with hypothermia and hypoglycaemia being important complications. KMC could help decrease the mortality and morbidity in this group of infants and it could result in cost savings and reduce the use of staff time.

In the group of small low birth weight infants, the infant mortality and morbidity rate reduction from using KMC was optimal for infants of 32 weeks gestational age or more. In case of breathing or feeding problems, transfer to a higher level of care was recommended. For the category of very small infants where the mortality and morbidity rates were very high, the infants required referral to a higher level of care when possible. There was no evidence that KMC increased the survival rate, but its use was recommended if that was the only alternative available.

In second and third level maternity units with limited resources, the mortality and morbidity rates were relatively high due to overcrowding, inadequate thermal control, hospital infection, breakdown or improper use of equipment and insufficient surveillance and

follow up. KMC was found to decrease the infant mortality and morbidity rates. It was recommended for all low birth weight infants, however those with gestational ages of less than 32 weeks, first had to be stabilised.

In second and third level maternity and neonatal care units with ample resources, KMC could be applied to low birth weight infants at any post-conceptual age, any weight and at any phase of hospitalisation, but it needed to be shortened during the stabilisation phase.

This research team also gave the following requirements that were critical for KMC implementation in all settings:

- Information and support to mothers: the mother should be part of the decision to start KMC together with the nurses and doctors, she should be properly informed and instructed. If possible all mothers attending antenatal care should be informed about the hospital policy on KMC. Have an open door policy for relatives, adequate room space, full eating and bathroom facilities and recreation. The mothers needed psychological, social and educational support in hospital and after discharge. The program should set quick and direct contact with a trained provider for the mothers when needed.
- Training of health personnel: there should be a written hospital policy and guidelines on KMC, the hospital should administer a course to the staff. There should be a mutual agreement among all the personnel involved in KMC and also between the staff and the mothers.
- Skin-to-skin contact and thermal control: Continuous and prolonged skin to skin should be ensured as much as possible and the room should be heated if the environmental temperature is lower than 20 degrees Celsius.

- Breastfeeding: exclusive breastfeeding is the rule, but if the infant is failing to thrive and other causes of failure to thrive have been eliminated, formula supplementation should be provided.
- Discharge: should be considered when the infant is able to suck and swallow adequately, the infant weight gain is definite and the temperature stable. The mother should be able to care for the infant at home and return for follow up.

This article gives information that is important for implementing KMC in different health care settings; it also confirms our findings and recommendations. It is crucial to provide proper information and instructions to the KMC mothers in order to obtain good results, but also to mothers attending ANC. The need for an open door policy for relatives, adequate room space, full eating and bathroom facilities and recreation are some of the findings in our study.

Summary. KMC has many advantages and has been shown to be a good alternative for the care of the low birth weight infant. This study is important because there is little literature on the experience of KMC by parents and caregivers. More studies are needed in different settings in order to understand, promote and implement KMC properly in developing countries. We identified from the literature review the following themes that need to be taken into consideration when implementing KMC:

- Ambivalence of parents towards skin-to-skin care, including sub-themes of yearning to hold the infant and apprehension to do so; need for a supportive environment; and special quality of the parent-infant interaction, including sub-themes of intense connectedness and active parenting (Neu, 1999).
- Kangaroo mothers found material, emotional, and companion support were more important than they expected before taking the baby home. They also found that they

received less support than expected with the exception of companion support (Davis, 1996).

- The preference of KMC over conventional care in an incubator has been shown in the study by Kambarani (2002). However, the importance to educate families, friends and communities on the KMC practice is also stressed. In order for KMC mothers to receive good support when they are discharged home, the people around them need to understand what is being done and why.
- It is possible to use KMC alone in a setting where there are no incubators. KMC is well accepted by hospital staff, mothers and their families. Mothers need psychological and material support when practising KMC. Education on KMC and infant care is needed as well as supervision of nurses (Bergman, 1994).
- KMC is recommended for the large low birth weight infants and for low birth weight infants of more than 32 weeks gestational age in first and second level maternity units with very limited resources. Those with gestational age less than 32 weeks, need to be stabilised first in second and third level maternity units with limited resources. KMC in second and third level maternity and neonatal care units with ample resources: in these settings KMC can be applied to all low birth weight infants at any post-conceptual age. Requirements that are critical for KMC implementation in all settings are: training, skin-to-skin, information, breastfeeding and discharge (Cattaneo, 1998).

4. METHOD AND ANALYSIS

4.1 Research Context

Continuous KMC at CMH and FH is started as soon as the LBW infant is stabilized in the incubator. Until this period of stabilization, intermittent KMC is practiced at feeding times; the mother keeps her baby in skin-to skin contact while she is feeding with a nasogastric tube using a syringe. The baby is moved to the KMC ward for continuous KMC when stable. Theoretically, KMC is practiced for 24 hours with the exception of those times of bathing or changing the baby. It was practically very difficult to determine the exact number of hours that infants spent in KMC position especially at CMH where the baby was allocated a crib/ incubator where the mother could place the child using her own initiative. However, we estimated: 10 hours at CMH and about 12 hours at FH as the time spent in KMC daily. When a mother needs to go out of the hospital, she is allowed to bring in a relative. Discharge home is considered for infants who reach 1.8 Kg at CMH and 1.750 Kg at FH, and when the mother appears to be capable of coping with KMC at home on her own. (Wards layout: appendix 6)

4.2 Study Design

This was a descriptive qualitative study with some quantitative output using in-depth structured interviews to describe the mother's perception of KMC in East London. Interviews were conducted for 15-20 minutes with mothers who had been engaged in KMC for at least 5 days. The principal interviewer was a staff nurse selected from the staff of the Paediatric Department at CMH. At FH, an assistant nurse was chosen in the outpatient section of the Department of Paediatrics, she only conducted three interviews at FH when the interviewer from CMH was not available, and did so in the presence of the researcher. The two

interviewers were selected because of their maturity, their understanding of the aims of the study, and their accessible personalities. Both interviewers had over 15 years service in paediatrics and had participated in studies before. The researcher and her supervisor organized a training session before the data collection started for the interviewers. Eight interviews at FH and fifteen interviews at CMH were conducted in the presence of the researcher. The interviews were recorded and conducted in the mother's language of choice and later translated into English.

Pilot study. A pilot study at CMH preceded the actual study. Four mothers were interviewed during the month of June 2000. The pilot study revealed the need to change the questionnaire because the participants did not understand some questions as intended by the researcher. It also presented an opportunity for the interviewer and researcher to make adjustments and changes to the study protocol. The time to interview participants, for instance, was set for Friday afternoons, but it was noticed that many mothers would be missed if they were transferred back to their original hospital or discharged home before Friday. During the pilot, positive changes were also noted in the way KMC was conducted at CMH and FH. Nursing staff began holding formal educational sessions for KMC mothers and keeping a log with KMC start dates and other information on KMC mothers and infants. Thus, participants became more knowledgeable about KMC as the study progressed. The following points summarize the insights gathered from the pilot study and revisions made based on them.

- **Instrument**. An example of changes made in the questionnaire was that the first three questions in the current study replaced one question that was: *Tell us about KMC*. Most of the time the answer was: "it is nice." The three questions were: *How do you do KMC? What about sleeping time?* and *What is*

KMC for? Mid-way through the study, the researcher felt it necessary to add another question in order to find out who informed the mothers about KMC before implementing it. At CMH almost all mothers identified one staff member.

- **Communication.** After the researcher explained the aim of the study to the staff in wards 17 and 18 at CMH, the Head of the Department of Paediatrics, who is also the supervisor of this study, explained everything about the study again to reassure the staff that the study was not meant to incriminate any staff members.
- **Records**. After the fourth week, a system was initiated in the wards at CMH. For all participating mothers, they recorded demographic data, KMC commencement date, weight of the infant at the beginning of KMC, and date of hospital transfer. Having a separate logbook with this information made it easier for the researcher and interviewer to know which mothers to interview. It was also found to be useful for the ward staff for management purposes. Before this information was included in the infant's medical records with the general doctor's notes.
- **Intermittent KMC.** As the study progressed, more mothers were seen practicing intermittent KMC at feeding hours while their babies were still being cared for in the incubators. Intermittent KMC had not been practised consistently in the neonatal units before the study was initiated.

Limitations. Our reliance on a full-time employee at CMH as the main interviewer may explain why 10 mothers were missed. They were discharged or transferred back to their hospitals before they could be interviewed. Seven were at CMH. They were transferred on

the fourth day of KMC or seventh day falling on a weekend or a weekday that is a holiday. The two others were missed after a long holiday. These mothers were left out of the study because recruitment was done only for mothers who were available for interviews at least five days after they had started practising KMC.

With all the participants being in the same ward, they may have influenced each other's answers. The fact that the interviewer was a nurse could have also limited the participants in answering freely, fearing that their views could be known by the nurses working in the neonatal wards. Care was taken to avoid this impression and to encourage the mothers' open and honest responses to the questions. At the beginning of the interviews, mothers were reassured that the recorded information was going to be handed to the researcher only and was not going to be used to initiate any form of punitive action against them. Sometimes, the interviewer's duties as a full time employee at CMH made it difficult for her to be available for the interviews. Possible measurement error is to be considered as well due to the fact that some participants could have been answering questions in a manner to please the interviewer or the researcher. Having two different interviewers may have produced variations in the interpersonal interaction, in the way questions were asked, and in the responses. In an effort to minimize these errors , both interviewers were trained and the researcher or the supervisor was present during interviews whenever possible.

Ethics. There were no major ethical issues due to the nature of the study, but the Ethics Committee for the Region C in the Eastern Cape and the Ethics Committee for the University of Cape Town both approved the study protocol. Special permission to take photographs was obtained from the hospital board.

Informed consent. Participants received an explanation of the study and its objectives. They were requested to give written consent before participating in the study.

Individual consent was also obtained before taking the pictures to illustrate KMC practice. The consent forms are in Appendices 3-5

Anonymity and confidentiality. Participants' names were mentioned during the tape recording of interviews and written on the consent forms to avoid confusion and duplication. All the confidential information was kept by the researcher and did not appear in the study; staff in the KMC wards had no access to this information. Mothers were referred to as KMC mothers or participants. The principal interviewer was a nurse at CMH but was not working in the KMC ward and she assured participants of confidentiality at both CMH and FH. The same is true of the second interviewer who conducted only three interviews at FH.

4.3 Analysis

The analysis in this study was done following guidelines of several methodologists. Patton (2002 p.432) states that qualitative analysis transforms data into findings. No formula exists for that transformation. Taylor and Bogdan (1998 p.135) explain that all researchers develop their own ways of analysing data. Analysing qualitative data is described as a process of inductive reasoning, thinking and theorising. Patton (2002 p. 433) also states that each qualitative study is unique, therefore its analytical approach will be unique. The description of coding methods by Patton was used as a guideline for analysis in this study.

The tape-recorded interviews were transcribed and translated from Xhosa into English. Patton (2002) and Miles and Huberman (1984 p. 16) explain that there are no formulas for determining significance; no ways exist of perfectly replicating the researcher's analytical thought process; no straightforward tests can be applied for reliability and validity. Following suggestions from these authors, the analyses represent the researcher's efforts to present the data and communicate what the data reveals given the purpose of this study. To ensure the accuracy of the information, the researcher and the interviewer, who was also the

translator, listened to the tape recordings together. The supervisor of the study was also present at some of the interviews. Six interviews were translated back into Xhosa to verify how close the translations were to the original interviews.

The questionnaire used in the interviews constituted the descriptive analytical framework. Participants' answers were considered as basic units for analysis and were read line-by-line. After collecting data, the researcher had to go to a second more explanatory level which is the understanding of recurrent patterns in the data (Miles & Huberman, 1984 pp. 67-69). Because the questions were open ended, the researcher examined all the interviews to identify participants' answers that had similar meanings. A coding system was used to organize the large amounts of data into smaller more manageable units. This process involved bringing together all the data bearing major themes, ideas, concepts and interpretations (Taylor & Bogdan, 1998 p. 151). Coding was then done by grouping words with similar meaning; the codes were further subdivided into themes that identified associated meanings in the participants' answers. It was then much easier to analyse the sub-themes and group them into themes.

Participants' answers were examined to identify common themes to all the interviews. Table 3 provides details of answers given by participants during the interviews. For manageability, this table reduces the open-ended responses to minimal responses aggregated into themes and sub themes. It is thus not a direct analysis of the questions, but rather the narrative statements by the participants. Despite the primarily qualitative format of the research, the table extracted data that was included to reflect the weighing of the themes and sub-themes.

Triangulation involving the use of different types (qualitative and quantitative data) and sources (different hospitals) strengthened this study (Patton, 2002 p. 248). Preliminary

findings were presented to the medical staff at CMH and FH in a joint meeting. Verbatim transcriptions, tape recordings and field notes are all available from the researcher.

5. RESULTS AND DISCUSSION

5.1 Socio-demographic status of mothers

The study population was all mothers practicing KMC at CMH and FH during the period of the study. Thirty mothers were interviewed between 1 August and 31 October 2000; a further 10 were not interviewed but were not eligible because of timing relating to the commencement of and discharge from KMC. This is discussed under the limitations section. The two hospitals were chosen because together they form the East London Hospital Complex, and are the only public hospitals in East London dealing with maternity and neonatal care and practicing KMC. Twenty-eight of the participants practised continuous KMC and one participant at each hospital was practising intermittent KMC. All infants had a birth weight below 2500g. The gestational age was between 25 and 33 weeks. The data collection was limited by the time available to the researcher, but a wide range of opinions was obtained from the 30 participants who were interviewed for the study. In qualitative research, numbers tend to get ignored and the hallmark of qualitative research goes beyond the "how much" question to reporting the essential qualities that are found in the data collected (Miles & Huberman, 1984 P. 275).

The average age of mothers in the sample was 25 years. The educational level completed for the majority was between 7^{th} and 12^{th} grade at school. They came from both rural and urban areas. Housing types varied from shacks in informal settlement areas in town to personally owned houses in rural areas with more than four rooms. Table 2 summarizes these details.

A questionnaire in English and Xhosa was used to conduct the interview in the language of choice of the participant, which was Xhosa (Appendices 1 and 2). The interviews were recorded using a tape recorder and later transcribed and translated into English. The questions were open-ended, allowing KMC mothers to add any comments that they had.

Although this study was centred on the KMC mothers' experiences with KMC practice, it became apparent that the questionnaire could be used with minor changes as a tool for monitoring how KMC is implemented and practised in the East London hospitals. As discussed below, it has already brought about some changes in the practice of KMC.

TABLE 2. BACKGROUND DATA ON MOTHERS

	CMH	FH	Complex
Average Age (range 15-38) years	26	24	25
Education			
Never went to school	1	1	2
1-6 grades completed	3	2	5
7-12 grades completed	14	7	21
College	2	0	2
Housing			
Shacks	3	2	5
Two room brick house in townships	1	0	1
Four room brick house in townships	8	5	13
Mud house in the village	6	2	8
Flat in town	0	1	1
Owner of house > 4 rooms in the village	2	0	2

5.2 Identification of themes and sub-themes

The following sub-themes were identified from the interviews:

1. Generally good understanding and knowledge about KMC practice
2. Better acceptance of KMC compared to incubator care
3. Need for improvement of hospital conditions to allow practice of continuous KMC and mothers' activities in the ward
4. Need for formal training on KMC and infant care
5. Need for closer nursing supervision in the Kangaroo Ward
6. Support in hospital comes mainly from nursing and general staff
7. Lack of medical doctors involved in KMC activities
8. Expected support at home is from female relatives and family
9. Acceptance of KMC by family and relatives
10. Little support and involvement from father of the child probably due to cultural beliefs
11. Recommendation to continue KMC practice in hospital
12. Willingness to continue KMC at home and teach family and relatives
13. Mothers' confidence to monitor her newborn for any problems i.e., vomiting, breathing cessation, or changing colour
14. Need to include a relative in training on KMC practices for special circumstances, e.g., a student or working mother

The following themes emerged from regrouping these sub-themes:

1. Positive feelings and good response to KMC
2. Difficulty in practising KMC full time

3. Need for support in hospital and after discharge home

At the beginning of the study, one mother at each hospital gave an inaccurate description of how KMC was supposed to be carried out. Both said that they had put their infants fully dressed on the chest for protection against the cold temperatures. Mothers were generally able to describe the KMC practice except for the meaning of continuous KMC. It was noted as the study progressed, that even the mothers who were not provided with formal training at the start of KMC, had information about KMC. This was probably due to the fact that the mothers talked about KMC and also about the study as they shared the same ward.

KMC in East London Complex is supposed to be continuous. This did not happen at either of the hospitals for different reasons. At CMH, every infant in the ward, whether on KMC or not, was allocated a crib. This gave the mother the choice of putting the infant on her chest or in the crib. The insufficient number of beds prevented the mothers from practising KMC at bedtime because they shared beds. The rooms were not always comfortable. High temperatures discouraged mothers from practising KMC. Lack of supervision and incomplete information on KMC given to the mother at the start of the program also prevented her from practicing KMC continuously. During informal talks, the staff in the neonatal ward had indicated their positive feelings about the KMC practice. They said that KMC helped babies to gain weight faster and to be discharged earlier from the hospital. At FH, it was mainly the lack of supervision in the KMC ward that lead to mothers' not practising continuous KMC. The staff here said that KMC shortened the mother and her infant's stay in hospital.

Acceptance of KMC. Twenty-nine participants gave a positive opinion about KMC and its advantages. They felt that it was a good method and should be continued in hospitals. One participant said, *Putting your baby on the chest is better than the glass* (incubator). *In the glass your child looks very sick.* She added: *And you know, you are not even free to touch*

your baby and you can't open the glass wide enough.

The active role that mothers played in their infant's care pleased them and gave them enough confidence to care for their small babies and at the same time decrease the level of apprehension that they generally experienced due to the very small size of the infant. One mother said, *I like KMC because you get used to your baby and you are not afraid to touch her.*

The only mother who had a negative opinion about KMC stated, w*hen I put my baby in KMC position, we both perspire at the same time. KMC makes me tired because I lie down the whole day in this position. The room smells of breast milk, the heater is on, the toilet is not clean, I have no hospital gown to tie my baby, the food is not tasty and I don't eat it.* She seemed to be very unhappy and had a negative opinion about almost every aspect of KMC. This mother was comparing the KMC method to her previous experience when her first premature infant was kept in an incubator. She said, *putting the baby on the chest is stressful; the incubator is better like at the time of Dr. Hart Davis when I delivered my other baby.*

Twelve participants reported that the father of the child had not yet seen the KMC method, and therefore did not know what their partners' opinion would be. Nine participants, or 50 percent of the remaining 18 mothers from the combined hospitals reported that the father of the child found the KMC method to be good. Only one father tried the KMC method at CMH, and another father wanted to try it at FH but was stopped by the mother. His comment was, *KMC has apartheid methods, it excludes fathers.* The lack of fathers' involvement in KMC could be explained by the fact that Xhosa is a Nguni ethnic group and in their cultural belief fathers are not involved in their newborn care, their role is to protect and provide for the family while the mother takes care of domestic tasks and the children.

Eight participants, five at CMH and three at FH had reasons to believe that the

infant's father liked the KMC method but were uncomfortable or scared to take care of a small baby.

One of the mothers at FH who felt that nurses did not have enough time to spend with each baby in the nursery stated, *It is better to have the baby with me rather than in the glass because I like having my baby close to me. When they put them in the glass, they cry, even the breast milk that we expressed is still lying there when we come back to change them and the babies are hungry.*

Early bonding between the mother and her infant was mentioned by seven of the participants. Five participants (three at CMH and two at FH) liked KMC because it kept their babies close to them. Three participants or 10 percent (one participant at CMH and two at FH) preferred KMC to the incubator because they felt happy to provide warmth and love to their babies. Even though the general perception on KMC was positive, the apprehension of handling a small infant came up in two interviews at CMH and four interviews at FH and KMC helped mothers to overcome this feeling. Two mothers at CMH said that KMC helped them get used to the baby. The father who compared his baby to spaghetti said that the baby was tiny and slippery.

The fact that the baby was kept on the chest instead of the back, gave mothers confidence as they could continuously watched the infant and immediately sought help if necessary. A mother, when comparing carrying the baby on the back and the chest said, *It is better to put the baby on the chest because the chest is warmer and softer. On the chest you will be able to see if the baby is breathing, changing colour or bringing up the food from the nose. All that you are not able to see when the baby is on your back.*

In summary, there was an overall perception that mothers understood the concept of KMC and felt more confident of their child's care and supervision during KMC.

Attitudes toward hospital conditions. Almost all participants showed enthusiasm about KMC practice and their willingness to continue it at home after discharge from hospital. Participants portrayed a general negative feeling when describing the conditions and organization of the hospital wards and the food served at both hospitals. Three participants at CMH and four participants at FH (23.3 percent) said that there was no need to change anything in the wards. Twenty-three of 30 (76.6 percent) participants complained about the lack of space, fans, heaters and beds during interviews at CMH in particular.

One participant at CMH stated, t*he room is cold but it doesn't affect my baby because she is on my chest. The bed is not 100 percent comfortable and there are too many of us in the room with the other borders.* Other participants at CMH made these statements:

It would be nice if they could get us some heaters, that room is very cold!

Because the room is so cold, we all go to the ward where it is warmer.

There is also a need for more beds to give mothers a chance to sleep with their babies.

The bed is small and not neat enough for a mother to put her baby in it.

It is cold on cold days and hot on hot days. If there could be heaters and fans, we would feel better to sit in the ward with the babies.

It is nice and warm in here but our bedding is not changed regularly.

Participants were unhappy about the food provided to them at both CMH and FH. They were frequently unhappy about the way the food was prepared, but also complained about the amount and the type of food provided. The following typify comments about the food provided to mothers:

Food is horrible. You just eat because you have to. It is tasteless, not well cooked.

It is not easy to produce enough milk for breastfeeding when you are eating like that.

Food is all right but you must have your own provision because supper is served very early.

Some sort of entertainment was needed according to 23 participants. All the mothers including those who said that there was no need to change anything in the ward, complained about the lack of activities between feeding hours. Suggestions for improvement in KMC wards included: a television, a radio, pictures and reading materials (books, magazines, educational material). A mother at CMH stated, *I spend my days looking after my baby, but there is nothing to do when the baby is sleeping.* Another participant at FH stated, *I look after my baby the whole day, there is nothing else to do here.*

Three mothers at CMH expressed the need to get more health education on how to care for their babies.

A participant at CMH said, *more space is needed to accommodate more beds and heaters when the babies are with us. It would be good to have a radio or TV so that we could get some lessons on how to be a mother, and many more lessons.* One mother even brought her own television and she stated, *a TV would be great, I brought my own, I could not share it, the cord is too short,* and looking toward the bathroom door, she added, t*he toilet should be cleaned and the food improved too.* One participant at FH felt that there should be a nurse to supervise the KMC ward. She said, *we should have a nurse to supervise the ward because sometimes we feel lazy to do KMC and we put the babies on our beds.* In summary, it is clear that the hospital environment and circumstances need improvement especially the accommodation at CMH, the quality of food provided and the educational and recreational activities and support provided to the mothers practising KMC.

activities and support provided to the mothers practising KMC.

Support in hospital. It was evident at the beginning of the study that KMC mothers knew little about KMC method, but later on during the study, mothers were able to give more details about the method. This was probably due to the fact that the medical and nursing staff at both hospitals were aware of the study and as the study progressed they improved the information provided to the mothers about KMC. A question was asked to find out how the mothers were first told about KMC.

A participant at FH stated, *I saw a picture on the wall and I asked about it. Sister told me that it was for the baby to grow.* Another participant at CMH said, *Sister told me about KMC when my baby was already out of the incubator, but I heard from the others that they are doing it for a short time while the baby is in the incubator.*

Only one participant at CMH reported that a doctor informed her about KMC. Contact between mothers and doctors, was limited primarily to answering questions on how the baby was doing; the rest seemed to be a dialogue between the doctors and the nurses during rounds.

All participants said that they were able to talk to a doctor when necessary or they could make use of a nurse as an interpreter if there was a language barrier between the doctor and the mothers. This was what a participant at CMH said, *I am always present when the doctor sees my child and I am given time to talk to him / her. The thing is, nurses don't allow us to look at our folder. I wonder why? But anyway, we steal them and look.* Another participant at FH said, *I do talk to the doctor because she asks if the baby is passing water and toilet all right?* All participants said that they would go to any nurses in the ward if they needed help. They also added that they received help from the other mothers and the general assistants working in their ward.

as well as the other mothers in the ward, these relationships were the essence of the support system provided to the mothers in hospital. It was apparent that nurses played an important role in the support structure of the mothers while other mothers in the ward acted as an informal support group. The doctors at both hospitals did not add much in the way of KMC support. At least none of the doctors opposed KMC practice. From the interviews it was clear that the interaction between the doctors and mothers in most cases was very superficial and the need was identified for doctors to play a more substantive role in KMC support.

Support at home. One participant at each hospital said that she had nobody to help her at home after being discharged. Three participants at CMH said that they would get help from their child's father. One participant at FH said that she had a maid to help her with domestic work and could easily carry on with KMC at home. The other participants expected help from a sister, an aunt, their mothers or grandmothers. Among these participants, one said, *I will not be able to carry on with KMC at home because I am a working mother. My mother will look after the baby but I am not sure she will be able to do KMC, she might be afraid that the baby falls.*

A KMC mother at CMH was sad that she would only be able to continue with KMC before the school year started because she was a scholar. Fourteen participants at CMH and six participants at FH (a total of 66.6 percent) said that they needed help with house work in order for them to find time to practise KMC. They did not think that they could perform house tasks and practise KMC at the same time. People who were expected to help did not know about KMC, but the mothers felt confident enough to teach them.

In spite of this relatively dismal response on how the mothers intended to continue with KMC at home, surprisingly 29 (96.7 percent) mothers indicated that they would continue KMC at home. This discrepancy needs to be better understood and the real practice

once at home clarified; this is a possible area for future research. Table 3 summarizes the foregoing results.

Because the questions were open ended, the results presented in Table 3 only show minimal unprompted responses as mothers were allowed to respond in their own words. The responses were grouped under themes and sub-themes and formulated as far as possible to broadly reflect the questionnaire. The actual responses do not correspond directly to the questions asked, but rather to the sub-themes produced by the mothers' responses. The results are thus not represented as in a traditional quantitative study, but rather they reflect minimum identification of sub-themes or issues.

TABLE 3. SUMMARY OF MOTHERS' RESPONSES

	CMH	FH	Total
Perceptions of KMC			
KMC is good and should continue.	20	9	29
Baby's grandmother or great grandmother likes KMC.	4	1	5
Child's father likes KMC.	6	3	9
Mother likes active parenting with KMC.	0	2	2
Mothers feel confident to teach relatives KMC practice.	10	9	19
Hospital Environment			
Improvement needed on conditions in the ward (room temperature, beds, space, food, entertainment, cleaning).	16	6	22
No need to change anything.	3	4	7
Lack of activities between feeding hours.	20	10	30

6. DISCUSSION

From this study, three themes emerged: positive feelings and good acceptance of the KMC method; difficulty in practising KMC full time and the need for a support system in the hospital and at home. As in the study by Kambarami (2002), the results obtained showed that the general perception of the mothers interviewed regarding KMC was positive. All mothers, with the exception of one, felt that KMC was a beneficial and should continue. They preferred KMC to the incubator because they could watch their infants closer, spend more time with them and take an active part in their care. Bergman (1996) similarly noted that mothers for different reasons were apprehensive about the use of incubators and preferred the KMC method.

A participant stated that the infant in an incubator looked very sick as opposed to the one in KMC position. The only participant, who was not happy about KMC practice, still felt that KMC should continue but better accommodation should be provided. The mothers' family members (mother and grandmother) were said to have a positive feeling about KMC and the participants were confident about teaching them how to practice KMC.

Mixed feelings were noted, with mothers being positive about the KMC practice but negative about the hospital conditions. Only two participants in the current study stated that they practiced KMC with their infants fully dressed as they felt this would keep their infants warm. Mothers in the study also had a similar understanding of the advantages of KMC.

Reasons for not practising KMC at bedtime included cold temperatures in the KMC ward and the limited number of beds leading to mothers having to share beds.

Even though some fathers were positive about KMC, they were not involved in their babies' care which probably relates to their culture as Xhosa men.

All mothers stressed the fact that they had nothing to do in the hospital between baby care hours. The need for improvement regarding the hospital environment was mentioned often. Suggestions about bringing in some sort of entertainment (TV, radio, books, pictures), more blankets, heaters and/or fans were mentioned. Similarly, improvements in hospital conditions for KMC mothers especially regarding feeding were recommendations made by the participants in the study by Kambarami (2000).

The quality and quantity of food served in hospital constituted an important part of the complaints from mothers. A support system exists in hospital for the Kangaroo mothers and it comprises nursing and general staff working in the nursery as well as Kangaroo mothers themselves. Doctors did not seem to play an active role in interaction with KMC mothers; their interaction was limited to answering questions on the infant's clinical condition, such as, *How many times did the baby pass water*? or *Is the baby feeding well.* The nurses were the most important part of the support structure of mothers and one participant suggested that nursing supervision could help increase the duration of KMC practice per day.

The results show that female relatives were the primary resource for mothers following discharge. A recent study by Davis (1996) recommends that KMC mothers receive help identifying a support system before discharge. Only three mothers expected help from the father of the child and none expected help from their partner's family. Most participants identified the person who was going to assist them with housework at home so that they

could continue to practise KMC. They felt that the mother should practise KMC only. Schooling and working mothers said that they could not continue KMC but the possibility of a relative continuing with KMC was not considered.

7. CONCLUSIONS

This study has shown that KMC is feasible in our settings in East London and well accepted by mothers and their families. The study also confirms the hypotheses that (1) Mothers' receptivity and responsiveness are critical to the implementation of KMC and (2) Mothers receptivity and responsiveness are affected by (a) education and information, (b) nature and level of support, and (c) general hospital conditions. These were some of the factors, which significantly influenced the implementation of KMC. The following aspects of care were identified as needing to be addressed in improving the implementation and practice of KMC in East London:

1. Greater involvement of medical doctors to support the work of nurses in implementing KMC.
2. Identification of a support system for the mother once she is discharged from the hospital. This may mean involving a relative or the father of the child in KMC training and practice. Greater consideration should be given to working and schooling mothers.
3. Improvement in the hospital conditions so that KMC wards provide a more home like environment, especially with respect to food, entertainment, clothes and less overcrowding.
4. Improvement in supervision and training of KMC mothers by nursing staff.

The researcher noted during this study that the hospital support system comprised the nursing and the general staff as well as the KMC mothers in the ward. Nurses were an important part of the KMC support system in hospital while doctors were not as much involved. At home the support system consisted of female relatives or helpers however mothers said that they did not need such support. Fathers were not part of the support system identified by the mother. The researcher also noted the need to keep clear documentation on KMC patients for good supervision of the process.

8. RECOMMENDATIONS

8.1 To Health Authorities in the Eastern Cape Province

- Facilitate staff training in KMC and introduce it in the nursing curriculum in order to make it known to nursing staff since they are the primary support system in the hospital.
- Support and implement KMC in hospitals in the province in order to improve perinatal care at a lower cost as stated in literature.

8.2 To District Authorities (Directorate of Maternal, Child and Women's Health)

- Include information on KMC in the antenatal clinic health education program in order to inform pregnant women about KMC in the event of a premature delivery and the need to practise it or to gain support in the hospital or the community.
- Train Primary Health Care nurses to educate patients about KMC at the antenatal clinics. Train outreach workers as well, who do home visiting and may need to be part of the KMC mothers support system.

8.3 To CMH and FH Hospital Authorities

- A firm commitment from authorities, medical and nursing staff is needed to support

KMC implementation in hospitals.

- Make resources available for improving KMC in the hospitals by making the KMC ward as friendly and home like as possible.
- Purchase comfortable chairs, back rest pillows, heaters, fans, a television, a radio, books, pictures, a VCR and videos.
- Improve the quality and quantity of food for mothers who practice KMC in hospitals.
- Provide training opportunities for the staff in the neonatal ward and neonatal intensive care wards.
- Design a curriculum and provide health education written guidelines for KMC mothers while in hospital.

8.4 To Paediatric Department Staff (Nursery)

- Find activities for mothers between routine baby care hours. A survey administered to KMC mothers and the involvement of an occupational therapist could help in this regard.
- Allocate nursing staff for KMC ward supervision and medical staff to oversee the entire KMC process.
- Implement routine talks on KMC by the nurse in charge of the KMC ward, the doctor supervising KMC and the new KMC mothers.
- Include a relative or the father of the child in health education. This should preferably be the person who is expected to help the mother at home after discharge from hospital.
- Allow a relative in hospital for twin infants or caesarean section mothers during the first week.
- Encourage fathers or other visiting relatives to try KMC while the baby is still in

hospital.

- Develop a tracking system that includes information on KMC infants and mothers for future reference.
- Develop a tool to monitor KMC implementation and practice in the ward, the questionnaire used in this study could be reviewed and adapted if necessary.

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APPENDICES

1. QUESTIONNAIRE IN ENGLISH

2. QUESTIONNAIRE TRANSLATION FROM ENGLISH TO XHOSA

3. STANDARD PATIENT INFORMATION AND CONSENT FORM

4. INFORMATION AND CONSENT FORM TRANSLATION FROM ENGLISH TO XHOSA

5. CONSENT FOR TAKING A PICTURE FOR ILLUSTRATING THE STUDY ON KANGARO MOTHER CARE

6. WARD LAYOUT

APPENDIX 1. QUESTIONNAIRE IN ENGLISH

A. MOTHER

Name:

Age:

Highest Standard Passed:

Date of Delivery:

Gestation Age:

Chronological Age at Initiation of KC:

Type of Accommodation:

B. METHOD

7. How do you do KC?

8. What about sleeping time?

9. What is KC for?

C. ICU

10. Is it better for you to carry your child on you chest or keep it in the glass (incubator)?

11. Did you have a chance to take care of your baby yourself when he/she was in the incubator?

D. WARD

12. How is the mother=s ward (temperature, beds, food)?

13. How do you spend your days in the ward?

14. Do you think that any thing needs to be added or changed?

E. FACILITATION

15. What do you do when you need help in the ward?

16. Are you present when your baby is seen by the doctor? Do you talk with him/her?

F. HOME

17. How do you thing that you=re going to manage to carry on with KC at home with your normal daily activities?

18. Who is going to help you?

Has this person seen how KMC is done?

G. FEELINGS & BELIEFS

19. What is your opinion on KC?

20. What does your child=s father say about it (if around)?

Has he tried it?

21. What's your mother (granny) saying about KC?

22. Is it OK to carry your baby on the chest rather than on the back?

Explain.

APPENDIX 2. QUESTIONNAIRE TRANSLATION FROM ENGLISH TO XHOSA

A. MAMA

I Gama:

I Minyaka:

I Banga Eliphezulu Eliphunyelelweyo:

Umhla Wokubeleka

Inyanga Zomtana Ekubelekweni Kwakho

Ubudala Bomntana Ukuqala Kc

Wawuhlala Kwindawo Enjani?

B. INDLELA YOKWENZI

5. Uyenza njani I Kangaroo Care?

6. Wenza njani xa ulala?

7. I Kangaroo care yenzelwe ntoni?

C. IGUMBI LABAGULA KAKHULU

8. Kungcono umbeke esifubeni sakho umntwana okhanye alale e glasini?

9. Wavunyelwa na ukuba umjonge ngokwakho umntwana wakho ngexesha ese glasini (umzekelo ukumtyisa nokumtshintsha)?

D. EGUMBINI LOKULALA IZIGULANA

10. Linjani igumbi lokulala abadlezana?

11. Ubuyichita njani imini yakho igumbini lokulala izigulana?

12. Ucinga ukuba ikhona na into efuna ukongezwa okanye itshintshwe kweligumbi (Into yokuzonwabisa)?

E. UNCEDO

13. Wenza njani xa ufuna uncedo kwigumbi lokulala izigulana?

14. Uba khona xa umntwana wakho ebonwa ngugqirha? Uyathetha nogqira?

F. EKHAYENI

15. Ucinga ukuba uzakukwazi ukuqhubeka ne KMC xa use khaya usenza imisebenzi yasekhaya?

16. Ngubani uza uncedisana nawe?

Lomtu wayeyibonile I KMC?

G. IZIMVO NEENKOLO

17. Yintoni uluvo lwakho nge KMC?

18. Uthini utata wemtwana nge KMC?

Uyizamile?

19. Uthini umama wakho (okanye umakhulu) wakho nge KMC?

20. Kungcono ukuba umbeke esiofubeni sakho umntwana okanye umbeke emqolo?

Cacisa.

APPENDIX 3. STANDARD PATIENT INFORMATION AND CONSENT FORM

Hello mom,

I am _____ and I work in _____here at Cecilia Makiwane Hospital.

I would like to ask you few questions related to the kangaroo mother care (KMC) that you are practising. The study is conducted in order to help improving the implementation process of KMC and to improve the mother's stay in hospital.

The questionnaire that I am going to use will have your name on it, but it is only to avoid duplication of the work by interviewing the same person twice.

Your identity will not be part of the published results and I would like you to feel free when answering the questions. There will be no punitive measures or any changes to your child=s management because of your answers.

Please feel free to let us know if there is a question that you wouldn't like to answer.

If you are willing to participate in our study we will really appreciate it.

Thank you for your time.

Sign for consent

APPENDIX 4. INFORMATION AND CONSENT FORM TRANSLATION FROM ENGLISH TO XHOSA

ULWAZI OLWENZELWE ISIGULANA NEMVUMELWANO

Molo Mama,

Ndingu _____ndisebenza e _____apha e Cecilia Makiwane Hospital.

Ndingathanda ukukubuza imibuzwana malunga ne KMC lena uyenzayo.

Oku kwenzelwa ukuphuculwa indlela eyenziwa ngayo I KMC nokuba I xesha umama alihlale esibedlele ibe lelimnandi.

Le mibuzwana iza kuba negama lakho , kodwa okukwenzelwe ukuba umntu omnye angabuzwa kaninzi. Igama lakho aliyi kuvela kwi phepha eliyokube lipapashiwe kwaye ndingathanda ukuba ukhululeke xa uphendula le mibuzo. Akuzi kohlwaya kwaye kungekho nanguku iya kwenziwa kwindlela umntwana wakho anyangwa ngayo ngenxa yempendulo zakho. Nceda ukhululeke usixelele ukuba ibeko imibuzo ongathandi kuyipendula. Siyakuvuyiswa luncedo lwakho ngokuphendula lemibuzwana.Enkosi ngokuzidina sawakho nexesha lakho.

Sayina kule ndawo.

APPENDIX 5. CONSENT FOR TAKING A PICTURE FOR ILLUSTRATING THE STUDY ON KANGARO MOTHER CARE

Dear mother,

We are conducting a study on the mothers= understanding on Kangaroo Mother Care at Frere Hospital and Cecilia Makiwane Hospital.

We request your permission to take a picture of you carrying your baby.

The picture will be taken with your knowledge and you may decline to be in any picture, but we would love for you to help us show how Kangaroo Mother Care is done in our hospital.

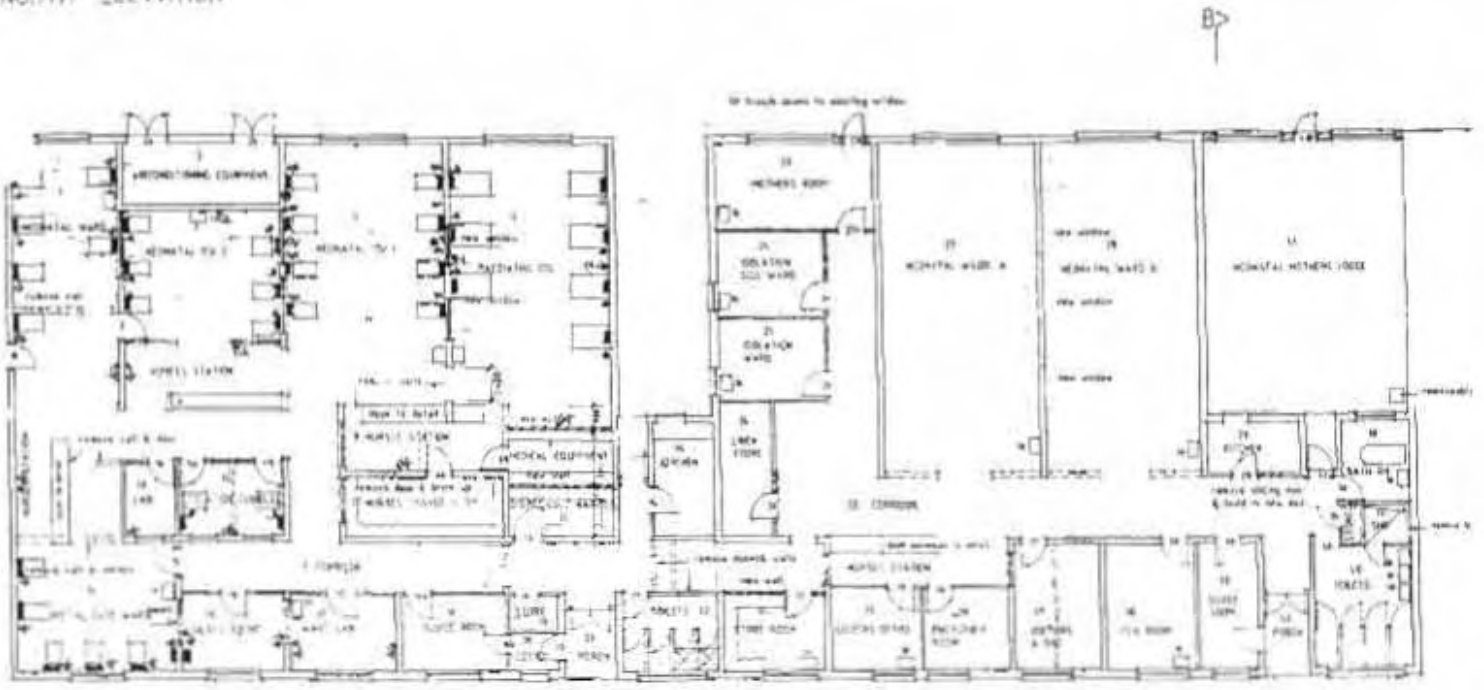
I, _____ have been told about the pictures that are to be taken to illustrate this study on Kangaroo Mother Care and agree to the pictures being taken and included in the study.

Signature

APPENDIX 6: WARD LAYOUT

Neonatal Wards of CMH

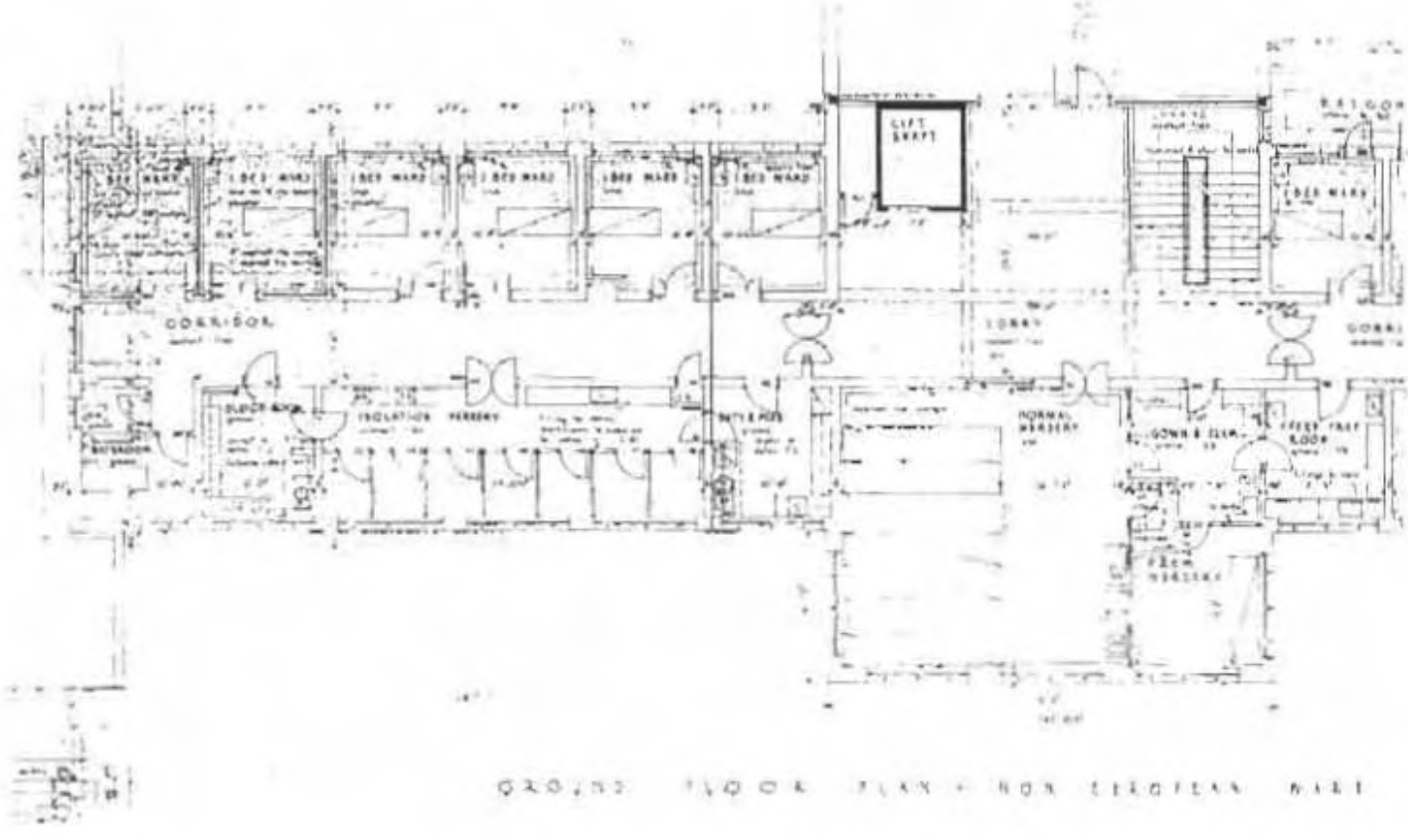
NORTH ELEVATION



WARD 17

WARD 18

Neonatal Wards of FH.



GROUND FLOOR PLAN - NON TEACHING WARD

APPENDIX 7: PHOTOGRAPHS

KANGAROO MOTHER CARE UNIT

KANGAROO MOTHER CARE PROMOTES MORE ACTIVE PARENTING.

PARTIAL KANGAROO MOTHER CARE WHILE THE BABY IS STILL IN THE INCUBATOR

IT IS PRACTICED AT FEEDING TIMES.

"Babies in incubator look very sick and are lonely."
Mother interviewed.

KANGAROO MOTHER CARE CAN BE PRACTICED ANYTIME. IT PROMOTES EARLY BONDING BETWEEN MOTHER AND INFANT.

Mother of twin gets help from staff in the ward.

A FATHER IS PRACTICING KANGAROO MOTHER CARE DURING VISITING HOUR.