

**An Assessment of the Practice of Kangaroo Mother Care among Staff in the Specialised
Neonatal Intensive Care Unit at Orotta Paediatric Hospital,**

Asmara, Eritrea.

By

ELSA SEMERE ARAYA

(ARYELS001)

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Supervisor: Jawaya Shea

Co-Supervisor: Nils Bergman

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Declaration

I, *Elsa Semere Araya*, 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 any part of it has been, is being, or is to be submitted for another degree in this or any other university.

I empower the university to reproduce for the purpose of research either the whole or any portion of the contents in any manner whatsoever.

Signed by candidate

Elsa Araya

Signature:

Date: February 2018

Dedication

I would like to dedicate this thesis to my beloved:

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Brother, Dr. Debessay, for his extraordinary support, care, generosity and encouragement to do well at school and who pushed me to attend the University since I was a young girl in the family.

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List of abbreviations and acronyms

CINAHL	Cumulative Index of Nursing and Allied Health Literature
HICs	High-income countries
HRD	Human Resource Development
HREC	Human Research Ethics Committee
ICT	Internet Communication Technology
KMC	Kangaroo Mother Care
LBW	Low birth weight
LBW infant	Low birth weight infant
LICs	Low-income countries
NICU	Neonatal Intensive Care Unit
OPH	Orotta Paediatric Hospital
SNICU	Specialised Neonatal Intensive Care Unit (in Eritrea)
SDGs	Sustainable Development Goals
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development
WHO	World Health Organization

Defining concepts

Attitude: an established way of feeling or thinking about something (Bogonko, 2013).

Knowledge: the evidences and information that an individual has learnt through practices or experiences (Strand, 2011).

Low birth weight infants: newborn infants with birth weight under 2500 grams (World Health Organization [WHO], 2015).

Mother: in this study refers to any female carer of the offspring (Solomons & Rosant, 2012).

Newborn: in this study refers to an infant from birth to four weeks or 28 days of age (WHO, 2015).

Practice: the definite performance of something; act as compared with thoughts (El-Nagar, Lawend & Mohammed, 2013).

Preterm birth: occurs when premature/preterm newborn infants born before 37 weeks of gestation (WHO, 2012).

Staff: in this study staff refers to doctors and nurses who work in the Specialised Neonatal Intensive Care Unit (SNICU).

Abstract

Introduction:

Preterm delivery remains the major cause of newborn infants' morbidity and mortality globally and more so in low-income countries like Eritrea. Research has shown that the provision of Kangaroo mother care (KMC) can contribute to a reduction in morbidity and mortality among newborn infants. However, there is limited research on the practice of KMC in Eritrea.

Methods:

A mixed methods approach was adopted in a phenomenographic study to collect the data. Eleven participants with work experience of at least two years were recruited from the Specialised Neonatal Intensive Care Unit (SNICU) at Orotta Paediatric Hospital (OPH), Asmara, Eritrea. Data were collected via individual interviews and observations.

Results:

The results showed that participants had no prior KMC training and education. In addition, staff had limited knowledge and mixed attitudes about KMC practice. There were also no KMC guidelines and protocols. Furthermore, space was not adequate for full KMC practice except for implementation of the kangaroo position. The researcher's observation confirmed similar evidence of a lack of availability of a KMC ward and lack of protocols and guidelines. Limited interaction and communication about KMC between participants and parents was also observed.

Some of the most common hindrances to KMC practice were the perception that KMC increased staff work load and that it was time consuming. In addition, lack of regular KMC training for staff, lack of a convenient setup and too few staff members were among the hindrances. One staff members also perceived that KMC practice was not culturally accepted.

Conclusion:

The results of this study showed that there were no proper KMC guidelines and protocols in the ward. In addition, only the kangaroo position was practiced, not the full KMC protocol. Furthermore, staff had limited knowledge and mixed attitudes. The observation component of the research highlighted the lack of space and KMC protocols and guidelines as key limitations for delivering KMC. Therefore, it is recommended that a programme to improve staff knowledge be implemented, that evidence-based KMC guidelines and policies be made available, that the KMC ward be expanded, and that health education about KMC practice be brought to the population through mass media.

Chapter 1: Introduction

1.1. Introduction

Kangaroo mother care (KMC) is standardised, evidence based care for preterm infants and low birth weight infants (LBW) infants based on immediate skin-to-skin contact between the newborn infant and mother (World Health Organization [WHO], 2003; Nyqvist et al., 2010). More than three decades of research conducted in North America, Europe and African countries such as South Africa, Zimbabwe concluded that KMC is more effective than incubator care for stable newborn infants to maintain appropriate thermal care, decrease nosocomial infections, encourage and improve exclusive breastfeeding and weight gain, and nurture better maternal and family connections (Conde-Agudelo, Belizan & Diaz-Rossello, 2014, cited by Chan et al., 2016a; Cong et al., 2011; Lawn et al., 2010). All these benefits occur at reduced cost when compared to incubator care (Ludington-Hoe, 2011; Moore et al., 2012; Neu et al., 2014; Nyqvist et al., 2010). Global implementation of KMC could save the lives of an estimated 450,000 infants annually if the intervention covers 95 percent of preterm newborn infants (WHO, 2012).

Prematurity is a major public health concern and preterm birth is the leading cause of childhood death in children under five years of age worldwide (WHO, 2016). It is estimated that 15 million newborn infants are born premature annually (WHO, 2012). Of the 15 million preterm births per year, one million (7%) infants die due to complications of prematurity during the neonatal period (Beck et al., 2010; WHO, 2016). The neonatal period is the period from birth to 28 days of life, and the first week of life is the most critical time for the survival of newborn infants (Beck et al., 2010; Bhutta et al., 2014; Liu et al., 2015). Approximately one fifth of deaths are due to LBW, which accounts for approximately 27 percent of premature deaths globally (Beck et al., 2010, cited by Solomons & Rosant, 2012). LBW is defined as a birth

weight under 2,500 grams (Chan et al., 2016b). Preterm and LBW infants who survive during the neonatal period are more likely to experience acute respiratory tract infections, gastrointestinal problems, immunologic problems, central nervous system problems, and hearing and vision difficulties compared to term and normal weight newborn infants (Allen, 2008; Beck et al., 2010; Chan et al., 2016b; WHO, 2015). Preterm complications constitute more than 35 percent of newborn infant mortality annually, and it increases the possibility that a newborn infant might die due to infection (Bhutta et al., 2014; Liu et al., 2015). The majority of preterm births (60 percent) occur in Africa and South Asia (WHO, 2012). It is estimated that 12 percent of infants in low-income countries (LICs) are born too early, compared to nine percent in high-income countries (HICs) (WHO, 2012). In Eritrea, the preterm birth rate is 12 per 100 (WHO, 2010), and preterm birth complications globally were related to almost one million deaths in children under the age of five years in 2015 (WHO, 2016). It is believed that approximately three quarters of these deaths could be prevented with current, cost-effective interventions such as KMC (WHO, 2012).

The KMC intervention has three key components, namely the kangaroo position, nutrition, and discharge and follow-up (WHO, 2003, cited by Chan et al., 2016a). The kangaroo position entails placing the newborn infant in an upright position against the mother's bare chest so that the skin of the mother is in contact with the skin of the newborn infant (Charpak et al., 2005, cited by Bergh et al., 2014). Breastfeeding is facilitated and encouraged by skin-to-skin contact between the mother and newborn infant, and the KMC nutrition component is breastfeeding support to the mother (Moore et al., 2016). Discharge and follow-up care are also components of KMC that start in the health care centre and is continued at home with regular appointments to monitor the infant's growth, observe for danger signs like the onset of jaundice and to counsel mothers on breastfeeding techniques (Nyquist et al., 2010; WHO, 2003).

KMC support is the fourth component of KMC and is described as the physical and emotional support and encouragement provided to the mother by the nursing staff and family members such as the husband, mother, father and grandmother during KMC practice (Bettercare, 2014; Tessier et al, 2003; WHO, 2003). Mothers require a supportive environment of staff and family to practice KMC (Blomqvist et al., 2013). They should be given sufficient time and opportunity to realize the outcome of KMC with their families (Bettercare, 2014; Tessier et al, 2003). This KMC support would help them to stay in the NICU longer, continue with the practice at home, and return for follow-up visits (Bettercare, 2014).

On the other hand, Bergman described KMC slightly differently from a newborn infant's point of view as: "Hold me, feed me and love me" (Olanders, 2004; 1). This includes the newborn infant utilizing all five senses, namely touch (skin-to-skin contact), taste (sucks on breast), vision (eye contact with the mother), olfactory (smells mother's odour) and hearing (listens to mother's voice and heartbeat) (Bergman, 2012; Olanders, 2004;1).

1.2. Kangaroo mother care implementation

Despite the strong evidence supporting KMC practices, the level of implementation and application has been inadequate, particularly in LICs like Eritrea (Chan et al., 2016a; Chan et al., 2016b; United States Agency for International Development [USAID], 2012). KMC is well established in a few Southern American countries such as Brazil and Colombia, the USA Scandinavian countries, and African countries such as Malawi, Mozambique, South Africa and Zimbabwe (Bergh et al., 2012a; USAID, 2012).

The potential limitations for implementing KMC include lack of staff acceptance of KMC practice, lack of a dedicated KMC ward, lack of KMC policy and guidelines, the absence of training for staff and mothers, lack of established facilities for KMC, lack of management for

ambulatory KMC, and lack of community participation, involvement and awareness of the benefits of KMC (Blomqvist et al., 2013; Blomqvist & Nyqvist, 2011; Calais et al., 2010; Chan et al., 2016a; Chia, Sellick & Gan, 2006; Olsson et al., 2012; Stikes & Barbier, 2013). The limited experience of staff as well as their lack of knowledge and unfavourable attitudes are also the main obstacles to KMC practice (Bang, 2011; Flynn & Leahy-Warren, 2010; Strand, 2011; Strand et al., 2014). Hence, without the full participation and support of healthcare providers, especially nurses, the implementation of continuous KMC is unlikely to be successful and effective (USAID, 2014).

Successful implementation of KMC requires a supportive environment, including that of policy makers in the form of a good framework and protocols for Neonatal Intensive Care Units (NICU) (Lee et al., 2012; USAID, 2014). Staff and parent education about KMC practice, the provision of facilities for KMC implementation, management of ambulatory KMC and community acceptance are known facilitators for KMC implementation (Bergh et al., 2012b; Blomqvist et al., 2013; USAID, 2014). Most importantly, the support of staff, especially nurses, was found to be an essential component of KMC practice as they tend to have the most contact with parents in the NICU (Lemmen, Fristedt & Lundqvist, 2013).

1.2. 1. Neonatal care in Eritrea

The Specialised Neonatal Intensive Care Unit (SNICU) is the only tertiary hospital for neonatal care in Eritrea. The SNICU provides case management such as intravenous fluid therapy, resuscitation nasogastric tube feeding, oxygen supplementation, controlled temperature (using radiant warmers, incubators and wall-hanging heaters), identification of the danger signs among newborns, and antimicrobial treatment and phototherapy for jaundiced newborn infants (Zemichael, Nyarang'o & Mufunda, 2008). There are 40 newborn infants admitted per week to the SNICU. The gestational age ranges between 28-40 weeks most of them are preterm infants.

Their birth weight ranges from 1,800grams to 4,000grams depending on whether the newborn infant is a preterm or full term infant. The presence of the SNICU has helped to reduce neonatal morbidity from 10.8 percent to 7.8 percent and preterm infants' mortality by 10 percent from 2004 to 2006 (Shah, Zemichael & Meng, 2012). Although significant, this is a small improvement. In 2008, for example, the neonatal mortality in the SNICU was approximately 3,032 neonates (Shah, Zemichael & Meng, 2012), which is alarmingly high. Recent data by the World Bank (2015) reported the neonatal mortality in Eritrea to be 18.4 per 1,000 live births. The number of neonatal deaths, both nationally and in the SNICU, is high, bearing in mind that 70 percent of deliveries happen at home or are unrecorded (Shah, Zemichael & Meng, 2012; Zemichael, Nyarang'o & Mufunda, 2008). Eritrea aims to decrease the mortality rate for children under five years of age by 2030 in terms of the United Nations Sustainable Development Goal (SDG) Target 3.2 (WHO, 2015). The reduction of neonatal deaths is crucial in reaching this goal (Shah, Zemichael & Meng, 2012). To realise SDG Goal 3 Target 3.2, LICs such as Eritrea can implement evidence based interventions like KMC, which benefits both newborn infants and their mothers.

In Eritrea, only the kangaroo position (skin-to-skin contact) was introduced in 2003 in the form of intermittent care (Zemichael, Nyarang'o & Mufunda, 2008). Intermittent KMC is done for short periods once or few times per day, for an inconsistent number of days (Nyqvist et al., 2010).

1.3. Rationale

In Eritrea, this will be the first known study to explore the practice of KMC even though in its present form it is said to be inconsistent and unsatisfactory (Zemichael, personal communication 2014, July 10). The SNICU only provides for the intermittent kangaroo position as opposed to the practice of all components of KMC, with few staff facilitating

parents' orientation to KMC practice, and without the involvement of other family members in the infant's care. Therefore, this study focused on assessing the practices of KMC among staff in the SNICU at OPH to establish current knowledge and KMC implementation. Through this study, participants were provided an opportunity for reflecting on their practice, which could potentially lead to improved insight into, and the development of, comprehensive and consistent KMC practices.

1.4. Problem statement

A systematic review of KMC conducted by Conde-Agudelo, Belizan and Diaz-Rossello (2014) concluded that there was a significant reduction in newborn infant mortality and morbidity in LICs where KMC is practiced. In LBW infants weighing less than 2,000 grams yet who are clinically stable, KMC was found to contribute to improved survival and increased psychosocial and neurodevelopmental effects (Bera et al, 2014; El-Nagar, Lawend & Mohammed, 2013; WHO, 2015). KMC is highly recommended in LICs as it reduces infant mortality and morbidity (Chan et al., 2016a; Baker-Rush, 2016). In addition, when compared to conventional care, KMC significantly decreases the risk of mortality in newborn infants born in low resource settings (Bergh et al., 2014; Chan et al., 2016a).

An unpublished Eritrean survey showed that KMC has not been introduced in Eritrea (Zemichael, personal communication 2014, July 10) despite the many benefits of KMC (Cong et al., 2011; Fan et al., 2014; Jefferies, 2012). However, a component of KMC called skin-to-skin or the kangaroo position (an intermittent type of KMC), was introduced (Zemichael, Nyarang'o & Mufunda, 2008). There is no published or unpublished literature about even this intermittent form of KMC in Eritrea (Zemichael, personal communication 2014, July 10).

This study explored the perceptions, experiences and practices of KMC among staff in the SNICU at OPH. By creating a reflective space in which staff were able to share their

understanding, attitudes, and practices of KMC, current challenges and potential facilitating factors for KMC implementation were elicited. This research is based on the belief that by improving continuous KMC practices at the SNICU and in the central zone of the city of Asmara, it is possible to improve the health outcomes of newborn infants, thereby contributing to United Nations Sustainable Development Goals (SDGs) Target 3.2, which is aimed at reducing child mortality by focusing on a reduction in neonatal mortality.

1.5. Research questions

The main questions this study attempted to answer were:

- I. How do staff experience KMC practices in the SNICU at OPH, Asmara, Eritrea?
- II. What are the perceived and actual challenges of the practice of KMC experienced by staff working in the SNICU at OPH?

1.6. Aim

The purpose of this study was to explore the experiences and perceptions of staff towards the practice of KMC in the SNICU at OPH, in Asmara, Eritrea.

1.7. Objectives

To achieve the aims of the study, the following objectives were set:

- I. To explore and describe the experiences and perceptions of staff working in the SNICU at OPH about the practice of KMC.
- II. To observe how KMC is practiced and to identify the potential opportunities and challenges experienced with implementing KMC practice in a SNICU.
- III. To make recommendations regarding policy and practice guidelines for improving KMC practices in the SNICU at OPH.

1.8. Summary

Chapter one provided a brief introduction to the study. Chapter Two is a presentation of the literature review. Chapter Three presents the research methodology applied in this study. The results are presented in Chapter Four and discussed in Chapter Five along with a discussion of the limitations of the study. Chapter Six concludes with the important findings and provides the main recommendations that emerged from this study.

Chapter 2: Literature review

2.1. Introduction

The aim of this literature review is to discuss the magnitude of preterm delivery, the benefits of KMC practice, staff involvement in KMC practice, the requirements for continuous KMC practice. Moreover, the review set out to explore factors that impede KMC practice.

Over 150 studies were searched from medical and non-medical databases and websites and screened for this study. This includes research books and articles, and declarations and reports. A computer-based search was conducted via CINAHL, PubMed, EBSCOhost, and Google Scholar in which a total of 110 screened articles of both quantitative and qualitative studies were included, and 14 additional records were identified through WHO and other websites using the main search terms of: ‘kangaroo mother care’, ‘kangaroo care’, ‘prematurity and skin-to-skin contact’, and ‘skin-to-skin care’. Peer reviewed articles published, and unpublished dissertations in English from 2010 to December 2016 were also reviewed.

2.2. Magnitude and consequences of prematurity

The magnitude and consequence of prematurity is high. Out of the 15 million newborn preterm births, more than 11 million (85%) occurred in LICs, mainly in Asia and Africa (Beck et al., 2010, cited by Solomons & Rosant, 2012). In Europe and North America only 0.5 million preterm births occurred (Beck et al., 2010). This is partly due to the presence of modern technology and highly skilled healthcare professionals able to regularly monitor the fetus, provide early detection of preterm problems, the use of corticosteroids before preterm deliveries, excellent management of hypothermia, administer antibiotics for infection, and the presence of good referral and transportation systems for sick newborn infants (WHO, 2015). Moreover, in high-income countries (HICs), reduction in death rates in infants born

prematurely has been accomplished mainly through improved care and, more importantly, by proper policy modifications (WHO, 2015). In contrast, in sub-Saharan Africa, 14 % of all newborn infants die due to LBW, which accounts for 60 % to 80 % of infant deaths worldwide (Lawn et al., 2010, cited by USAID, 2012). In addition, in LICs, the mortality rate for prematurity is six times higher than in HICs (Lawn et al., 2010, cited by Solomons & Rosant, 2012). In Eritrea, classified as a LIC, the preterm birth rate is 12 births per 100 (WHO, 2010). Neonatal deaths account for 30 % of under-five mortality, and 35 % of these deaths is preterm infant death (United Nations Children's Fund, 2012). The causes of preterm birth in LICs are mainly because of infections, pregnancy induced hypertension, and multiple pregnancies; however, often the cause is unknown (WHO, 2016). These causes of preterm births then lead to mortality from hypothermia, neonatal sepsis, asphyxia or hypoxia. Furthermore, there is limited opportunity for life saving interventions due to the absence of advanced technologies and the shortage of incubators, as well as the critical shortage of skilled staff (WHO, 2016). These issues compromise good care for preterm infants and LBW infants, which leads to poor health outcomes in LICs (WHO, 2003). Practical, affordable interventions that improve the health outcomes of preterm infants and LBW infants are required urgently (WHO, 2015). Consequently, KMC, a low-cost intervention, could assist in overcoming the problem of high mortality and morbidity in newborn infants (Chan et al., 2016b; Lawn et al., 2010; Rodgers, 2013).

2.3. The Kangaroo mother care definition

Kangaroo mother care (KMC) is a standardized, protocol-based care regimen for preterm infant or LBW infant based on skin-to-skin contact between the newborn infant and the mother (Nyqvist et al., 2010). It is also defined as an evidence-based nursing care strategy that decreases newborn infant mortality and morbidity (Seidman et al., 2015). The theoretical

framework of phenomenography proposed by Marton (1986) was used in the study. Marton (1986) emphasised that this approach could help “to answer questions about thinking and learning, particularly for educational research” (Ornek, 2008; 1). The theoretical framework was related to KMC and the factors that impact the practices of KMC. This included staff educational background and work experience, staff routine practices in the SNICU, staff knowledge about the practice of KMC, attitudes of staff towards KMC practice, availability of KMC guidelines and protocols, and wards in the unit dedicated to KMC (Bang, 2011; Bergh et al., 2014; Bergh et al., 2012b; Bogonko, 2013). In addition, it included the facilitators', and barriers perceived by staff and parents to the practice of KMC (Bergh et al., 2014; Blomqvist et al., 2013; Lee et al., 2011).

KMC was first introduced by Rey and Martinez in Bogota, Colombia in 1978 to address overcrowding, nosocomial infections and resource shortages in the hospital setting (Nyqvist et al., 2010). One of the main goals of KMC is to encourage the gradual development of skills by mothers or caregivers by emphasising the importance of doing KMC and to focus on care that fulfils the emotional and physical needs of preterm newborn infants (Nyqvist et al., 2010). There are two different forms of KMC practice: continuous KMC, delivered more than 20 hours a day, or intermittent KMC, provided for few hours a day (Charpak et al., 2006, cited by Bergh et al., 2012b; Nyqvist et al., 2010). According to the WHO (2015), KMC should be continuous if the setting is adequate and the staff are well-informed about KMC benefits for the mother and newborn infant. Nagai et al., (2011) also emphasise the long-term effects of early initiated continuous KMC for LBW infants. In addition, WHO (2015) strongly advises that newborn infants with a birth weight of 2,000grams or less should be provided continuous KMC as much as possible. Intermittent KMC, rather than incubator care, is strongly recommended for newborn infants with birth weight of 2,000 grams or more, if continuous KMC is impossible (Lawn et al., 2010; WHO, 2015). KMC practiced within three hours after

birth can provide substantial benefits for the mother and newborn infant (Mehler et al., 2011, cited by Kristoffersen et al., 2016). At the International Workshop on KMC in Uppsala Sweden in 2008, the implementation of continuous KMC was recommended as the gold standard as it supports all medical and nursing care, and is grounded in experimental studies and clinical procedures (Nyqvist et al., 2010). In fact, some research has shown that skin-to-skin contact performed at least one hour or within two hours of birth can produce measurable beneficial effects if there is a major barrier to the daily practice of KMC (USAID, 2012; WHO, 2015).

2.4. Kangaroo mother care practice

The Partnership for Maternal, Newborn & Child Health approved KMC as a significant intervention platform that improves newborn and child health outcomes (Engmann et al., 2013). At the Istanbul KMC Acceleration Meeting in 2013, all the stakeholders and researchers in neonatal health also recognized KMC as their highest priority in the newborn infant's prematurity intervention program (Engmann et al., 2013). Several international organizations such as WHO, USAID, and some African countries, for example South Africa and Malawi, have made KMC their primary newborn care intervention (Bergh et al., 2014; USAID, 2012).

2.5. The benefits of KMC

A systematic review showed that KMC significantly decreased preterm newborn infants' death by reducing infection and increasing the newborn infant and mother bond (Conde-Agudelo, Diaz-Rossello & Belizan, 2014). A meta-analysis revealed a comparable preterm infants' mortality reduction even though the investigation involved a smaller number of studies (Lawn et al., 2010). A study conducted by Park et al. (2014) also shows the safety and effectiveness of KMC for preterm infants. Other studies from different LICs and HICs proposed KMC as a cheap and effective nursing intervention for preterm newborn infants (Broughton et al., 2013; Nyqvist, 2010, cited by Davanzo et al., 2013). In addition, some studies show that KMC has

numerous physiological, psychosocial, neurodevelopmental and behavioural benefits for both the mother and newborn infant (Charpak et al., 2005; Cong et al., 2011, cited by Valizadeh et al., 2013; Ludington-Hoe, Morgan & Abouelfettoh, 2008; Neu et al., 2014; Ruiz & Charpak, 2007). The physiological benefits include reduction of hypothermia, bradycardia, tachycardia, and low saturation of oxygen level (SpO₂) (Bera et al., 2014). As well, a KMC neurobehavioral effect has resulted newborn infants sleeping silently, showing flexor activities and positions, and exhibiting less extensor activities (Jefferies, 2012). KMC practice also improved the mothers' emotional aspects and health status and the newborns' prognosis as KMC lowered health care charges and short hospital stays (Lizarazo-Medina, Ospina-Diaz & Ariza-Riaño, 2012).

Parents have reported a number of benefits including that KMC facilitates bonding between newborn infants and mothers, resulting in mothers caring for and nurturing their newborn infants intuitively (Athanasopoulou & Fox, 2014; Flacking, Ewald & Wallin, 2011). In terms of psychosocial development, there is support for bonding between the infant and parent which contributes to establishing relationships of trust in later life (El-Nagger, El-Azim & Hassan, 2013; Gabriels et al., 2015, cited by Baker-Rush, 2016). This is believed to be the basic asset for the newborn infant's social development, as well as development of greater emotional intelligence in adult life (Fan et al., 2014). Likewise, it encourages fathers to be confident in their parenting role as they, too, can participate in skin-to-skin care (Blomqvist et al., 2012a; Blomqvist et al., 2012c). Furthermore, KMC contributes to a reduction in overall costs of care as it requires fewer staff and less equipment (Broughton et al., 2013; Gregson & Blacke, 2011).

Although KMC has more benefits for newborn infants, there also some adverse effect for unstable infants weighing under 2,000 grams. Therefore, unstable newborn infants weighing 2000g or less at birth or stable newborn infants with a birth weight under 2,000 grams can be

cared for under radiant warmers or in incubators (WHO, 2015). This is due to preterm infants' instability and underweight measures. The staff were afraid of losing control of access to the newborn infant to deliver the required care and carrying out of the necessary interventions when mothers were holding their newborn infants too closely. They were concerned that the newborn infant security has been recognised as an obstacle to an intermittent KMC practice (Olsson et al., 2012; Strand, 2011). Another study also showed that nurses were hesitant regarding KMC with intubated infants, and infants necessitating blood pressure support, umbilical lines and phototherapy (Flynn & Leahy-Warren, 2010).

2.6. Requirements for continuous KMC practice

The requirements for continuous KMC include good knowledge and attitudes of staff, a separate KMC ward, proper KMC guidelines and protocols, community support for KMC practice, involvement of mothers who practice KMC at home and in the hospital setting and good staff-parent relationships (Bogonko, 2013; Blomqvist & Nyqvist, 2011; Hendricks-Munoz & Mayers, 2014). Staff, especially nurses, can play a significant role in strengthening the bond between newborn infants and their mothers during the postnatal period (Lemmen, Fristedt & Lundqvist, 2013).

2.6.1. Knowledge of staff towards the practice of KMC

Good KMC knowledge is mandatory for continuous KMC practice (Muddu, Boju & Chodavarapu, 2013). 'Knowledge' refers to the evidence, facts and understanding that the staff have learnt through practices or instruction through didactic teaching, seminars, workshops, in-service training and from social and traditional media about a specific topic (Strand, 2011). A number of studies have examined the outcomes and importance of improved staff knowledge about the practice of KMC. Findings suggest the necessity of providing appropriate education

and training about skin-to-skin contact to advance positive beliefs and attitudes for staff (Bang, 2011; Bergh et al., 2012b; Bogonko, 2013; El-Nagar, Lawend & Mohammed, 2013).

Staff who worked in services that plan to assist KMC practice, who received in-service training in KMC, and who regularly practiced KMC in the NICU had improved knowledge (Flynn & Leahy-Warren, 2010). Staff who have had intermittent exposure to KMC also had good knowledge of KMC practice (El-Nagar, Lawend & Mohammed, 2013). In addition, restructuring of NICU services and preparation of steady ongoing education was found to provide outstanding staff knowledge and easier KMC delivery (Bang, 2011; Strand, 2011).

On the other hand, research has shown that when nurses do not have relevant KMC knowledge, they tend to doubt the benefits of KMC, especially with hemodynamically unstable newborn infants such as intubated newborn infants, those who need blood pressure delivery, newborns with umbilical lines, and infants under phototherapy (Azevedo, Xavier & Gontijo, 2012).

2.6.2. The attitude of staff towards KMC can influence the practice thereof.

Attitudes are entrenched beliefs about certain matters and can be positive or negative (Bogonko, 2013). For example, staff with a more positive attitude towards KMC had positive practice effects when implementing KMC (Bang, 2011; Kymre, 2014; Mörelius & Anderson, 2015). Thus, a positive staff attitude is essential for the successful implementation in a NICU setting (Strand, 2011). In addition, staff employed in the NICU who provided parents with unlimited access to their newborn infants were more confident about regular KMC practice than staff in the NICU that restricted opportunities for parents to remain with their newborn infants (Starnd et al., 2014). KMC practice surveys also demonstrated that there was an improved impact on KMC practice after staff encouraged parents to practice continuous KMC in the NICU (El-Nagar, Lawend & Mohammed, 2013).

2.6.3. Availability of KMC guidelines and protocols

If clear guidelines and protocols of WHO on how to implement KMC are lacking, a consequence may be limitations in KMC practice in many NICUs setting (Davanzo et al., 2013). The availability of policies and protocols specifies the care for preterm and LBW infants who require warm air, sufficient breast-feeding, close monitoring, and safety from sepsis (USAID, 2012). In addition, it has been shown that nurses who have KMC guidelines and protocols have improved knowledge in the practice of KMC (El-Nagar, Lawend & Mohammed, 2013). Protocols and guides also provide effective measures for staff to follow, which ultimately has an impact on the delivery of KMC in the NICU (Davanzo et al., 2013).

2.6.4. The importance of a separate KMC ward

The majority of KMC practices and experiences have emerged from health facilities that have a separate KMC ward (Strand, 2011; Strand et al., 2013; Valizadeh et al., 2013). In such units, the attention of KMC is for preterm newborn infants, and their mothers are trained to care for them in the kangaroo position (Lemmen, Fristedt & Lundqvist, 2013). A dedicated KMC ward facilitates the provision of intermittent KMC in the NICU and it can be a place for preparation and training so that continuous KMC can be done after discharge (Bettercare, 2014). It allows the mother to provide KMC to her newborn infant during the day and night while being monitored by staff (Bettercare, 2014). The mothers gain skills and confidence as well as encouragement before their discharge home with their infants (Rulo, 2013). When mothers feel that they are sufficiently equipped to practice KMC with their own and practiced it, the preterm newborn infant has gained weight of 10gms/kg/day for three consecutive days and the newborn infant is discharged for mothers to continue KMC practice at home (Save the Children, 2008).

2.6.5. Good staff and parent relationships

Communication among parents and NICU staff is about the environment of the NICU a vital part of the support provided to the parents and can decrease their emotional stress (Lemmen, Fristedt & Lundqvist, 2013). Good staff relationships especially nurses' support for the mothers, is desirable to assist in the beginning of implementation of KMC. Mothers should be allowed to visit their premature newborn infant all the time without restrictions. A study by Blomqvist (2012a) shows that parents chose KMC practice over conventional care as it keeps them closer to their newborn infants. Another study revealed that informing mothers about the importance of continuous KMC improved breastfeeding and continuous KMC practice at home (Finigan & Long, 2014). A Danish assessment of the NICUs policy for the kangaroo position showed that encouragement of continuous skin-to-skin contact could lead to continuous breastfeeding and parents' regular presence in the NICU (Maastrup et al., 2012). Furthermore, if the staff are well experienced, skilled, and supportive about KMC, their communication with mothers could stimulate and inspire the parents to use KMC regularly, as the practice is a normal way to get to know the newborn infant (Lemmen, Fristedt & Lundqvist, 2013).

A policy survey of KMC from eight European nations on parental participation found that the majority of the NICU stated that staff information about KMC practice to parents encouraged both the mother and father to participate in the KMC practice (Pallás-Allonso et al., 2012). Calais et al.'s (2010) study also showed that KMC was practiced more often if the staff taught parents about KMC during the antenatal period.

2.6.6. Community support for KMC practice

Community support is an essential requirement for hospital as well as for community-based KMC practice. Community or home-based KMC is most convenient in places where there are several newborn infants born prematurely (Save the Children, 2008). Furthermore, a positive community attitude and involvement assists for the regular practice of KMC. Although the

WHO definition of KMC practice stipulates that KMC should only start in the NICU setting, some studies and trials have proved that KMC can be operative in a community-based setting (Sloan et al., 2008). Similarly, other studies reported that KMC can be effective in community-based locations (Quasem et al., 2003; Wallin et al., 2011). Another study in communities in Bangladesh, India and Nepal reported that community-based KMC promoted weight gain, prevented and treated hypothermia, increased the uptake and duration of breastfeeding, and reduced infection (Save the Children, 2008). In addition, home-based KMC facilitated the involvement of the community who learnt about KMC practices, and facilitated the practice of exclusive breast feeding (Maulik & Darmstadt, 2009).

2.7. Barriers to KMC practice

There are three main barriers that prohibit KMC practice: institutional, familial and implementation factors (Bang, 2011; Chan et al., 2016a; Lee et al., 2011; Strand, 2011). Institutional barriers are related to human resources or materials required for KMC practice. This includes the absence of facilitating documents such as guidelines and protocols, and the absence of training and motivation of staff to comfort parents and assist them during their stay in the NICU (Lee et al., 2012). Secondly, familial issues are one of the obstacles to the practice of KMC (Lee et al., 2012). Mothers need a supportive environment of staff and family to practice KMC (Blomqvist et al., 2013). Mothers should have ample time and opportunities to explore the effect of KMC with their families. This would help them to remain in the NICU longer, continue with the practice at home, and return for follow-up visits. Otherwise, familial issues can create a hindrance and result in mothers not practicing KMC. Thirdly, implementation issues are related to an absence of reliable medical resources and a complicated health system (Lee et al., 2012; Gontijo et al., 2010). A study conducted in the United States showed that KMC implementation is challenging as it needs dedicated staff and it takes time

to be implemented (Bramson, et al., 2010). Two studies in Africa showed that KMC is only likely to be implemented fully if the required conditions prevail. Furthermore, support from the ministry of health and full integration of KMC into newborn infants' care is required (Bergh et al., 2013; Bergh et al., 2014).

Lack of implementation of facility-initiated KMC such as integration of KMC into continuous newborn care, and lack of skilled and well-informed staff could prevent the implementation of KMC (Bergh et al., 2014). The omission of neonatal nurses to encourage KMC inside the NICU setting will decrease continuous KMC practice (Bang, 2011; El-Nagar, Lawend & Mohammed, 2013). Therefore, there is a need for antenatal education and a need for assistance for effective postnatal implementation of KMC (Calais et al., 2010).

2.8. Factors that increase the provision of KMC practice

Despite the presence of barriers to practice KMC, there are also facilitating factors. Researchers have found that there are many mechanisms that can improve the provision of KMC (Bergh et al., 2014; Schoch et al., 2014; Stikes & Barbier, 2013). One of the mechanisms is teaching staff using a model such as the Plan Do Study Act Model (PDAM) as it improves knowledge and attitudes, which could lead to increased KMC practice (Stikes & Barbier, 2013). In addition, an implementation of facility-based KMC such as the integration of KMC into continuous newborn infants' care, with increased skilled and well-informed staff, improves KMC practice (Bergh et al., 2014; Hardy, 2011). Sustainability of KMC could be ensured through client-focused care and the provision and demonstration of KMC in NICUs (Bergh et al., 2014). Hendricks-Munoz and Mayers' (2014) study showed that a full KMC training program enhanced nurses' insight of KMC's worth, and their ability to effectively encourage parents to use KMC. Similarly, a study by Hendricks-Muñoz et al., 2013 emphasized that

recognising important provider educational prospects can improve maternal KMC access in the NICU setting.

2.9. Conclusion

Research has shown that the provision of KMC can decrease newborn infants' morbidity and mortality (Conde-Agudelo, Belizan & Diaz-Rossello, 2014; Fan et al., 2014). It is especially beneficial in improving health outcomes in LICs setting, when incorporated into the routine care of preterm infants. Preterm delivery is still the principal cause of newborn infants' morbidity and mortality internationally and more so in LICs (Rahn & Hotchkiss, 2012; WHO, 2016). Studies conducted in Europe, South and North America and Southern Africa have shown the effectiveness and benefits of KMC for newborn infants and mothers (Athanasopoulou & Fox, 2014; Chan et al., 2016a; Ludington-Hoe, 2011; USAID, 2014). According to Jefferies (2012, cited by Davanzo et al., 2013), more than three decades of research and implementation of KMC have revealed that KMC has substantial benefits for preterm newborn infants. Most studies concluded that KMC is more effective than incubator care for stable newborn infants to maintain appropriate thermal care, improve weight gain, decrease nosocomial infections, encourage mothers to breast feed exclusively, and to nurture better mother and family connections (Cong, Ludington-Hoe & Walsh, 2011; Jefferies, 2012; Conde-Agudelo, Diaz-Rossello & Belizan, 2014). All these benefits occur at reduced cost when compared to the cost of incubator care (Lawn et al., 2010).

Despite the strong evidence supporting KMC practices, the level of implementation and application of KMC has been inadequate (Bergh et al., 2013; Chan et al., 2016b). Except for Brazil, Colombia, Malawi and South Africa, most LICs have only a few services that deliver KMC facilities (USAID, 2012). Studies have shown that an expansion of KMC requires a supportive environment such as motivated staff, KMC protocols and guidelines, dedicated

KMC wards, and community support (Bang, 2011; Bergh et al., 2014; Bergh et al., 2012b; Bogonko, 2013). In particular, the perceptions and experiences of staff working in SNICU in OPH, Asmara, and Eritrea have received little attention. To practice KMC effectively, the mother needs a supportive environment. This may be made possible by the involvement of health care workers, mothers' family and people in the community where she lives (Save the Children, 2008). Hence, to efficiently implement and successfully expand KMC, it is crucial to identify the main aspects that contribute or limit staff capacity to practice KMC.

Over all, studies about the sociocultural, experiential and resource issues that impact staff to practice KMC are limited (Nguah et al., 2011). In Eritrea, more research is required that includes cultural hindrances that could limit the implementation of KMC in the local population.

Chapter 3: Research methodology

This section will outline the study site, Health system in Makeel region, research design, theoretical framework, study population, inclusion and exclusion criteria, research procedure, data collection and analysis.

3.1. Study site

Eritrea is a young nation of four million people in the Northeast of Africa, with an area of 122,000 square kilometres (Sharan et al., 2010). It is bordered to the south by Ethiopia, to the east and northeast coasts by the Red Sea, to the west and northwest by Sudan and to the south east by Djibouti (Sharan et al., 2010). Administratively, it has six provinces: Anseba, Gash Barka, Northern Red Sea, Southern Red Sea, Southern (Debab) and Central zone (Makeel). The capital city of Eritrea is Asmara in Makeel (Sharan et al., 2010). Figure 2. Depicts a map of Eritrea.

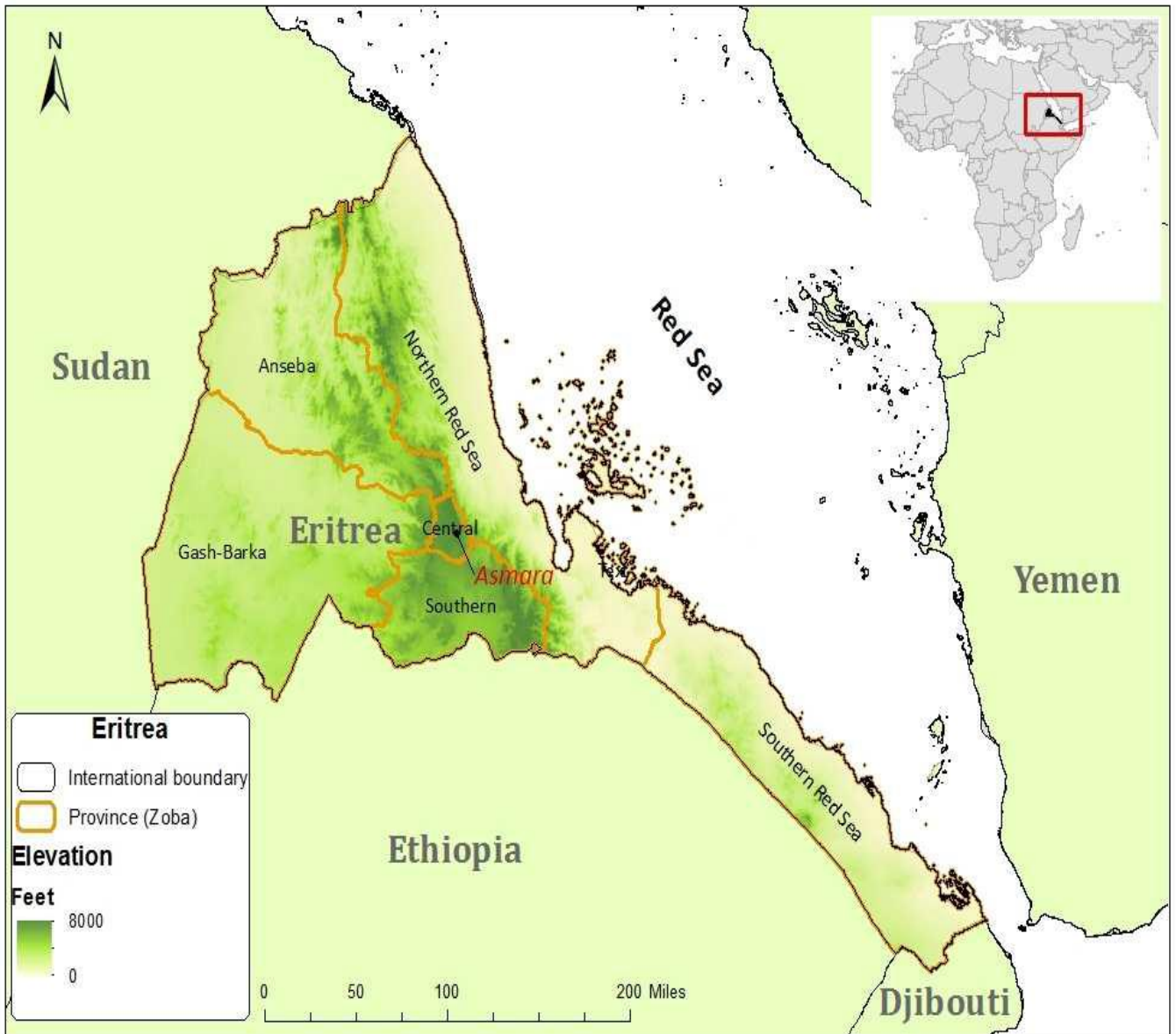


Figure.1. Map of Eritrea and location of the study area (Central zone (Makeel), SNICU) in Asmara (GDAM, 2011).

The study was conducted in the SNICU at OPH. It is located in Asmara with in Orotta National Maternity Referral Hospital in which it is far away from the other paediatric units in Orotta hospital (Shah, Zemichael & Meng, 2012). The closer distance between the maternity hospital and SNICU helps neonates to get faster care who are born preterm or with other birth

complications in the maternity hospital. The SNICU was established in 2003 with 20 beds, one doctor, one registered nurse, and 11 assistant nurses (Zemichael, Nyarang'o & Mufunda, 2008). It was started in a very small space where the staff could provide health education opportunities to mothers, specifically about infection control such as hand-washing, prevention of hypothermia through an intermittent KMC for preterm and LBW newborn infants, and proper breast-feeding methods (Zemichael, Nyarang'o & Mufunda, 2008). The SNICU had also KMC protocols as part of the guidelines in the Integrated Management of Newborn and Childhood Illness. In 2008, SNICU increased its staff from 13 to 17, consisting of two doctors, one registered nurse and 14 assistant nurses (Zemichael, Nyarang'o & Mufunda, 2008). Every year the SNICU admits 1,100 neonates (Zemichael, Nyarang'o & Mufunda, 2008). Most of the neonates who come to this hospital originate from Asmara and may be also referred by other regional hospitals and health centres that do not have the capacity to treat them.

3.1.1. Health system in Makeel region

The health system in the Makeel region includes infants who come from the primary, secondary, and tertiary hospitals and private hospitals (Shah, Zemichael & Meng, 2012). In the case of complications, especially for preterm newborn infants who need urgent care, special treatment and neonatal intensive care is only accessible at the Makeel region hospital SNICU in Asmara, an hour's drive from the six districts in Eritrea (see Figure. 3, below).

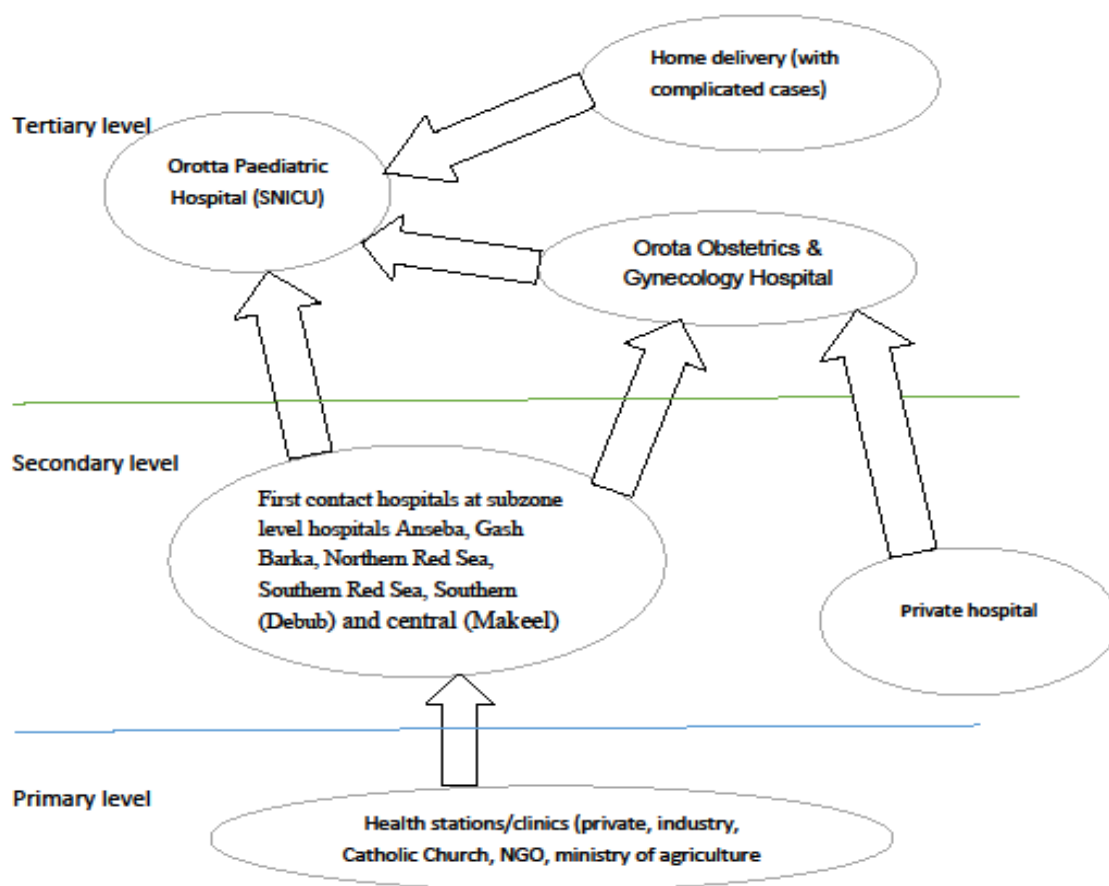


Figure.2 Schematic representation of the health system for paediatric care in central region and all the six regions in Eritrea (Source ministry of health, 2005)

Transport from the district hospital to the national referral hospital is by ambulance. However, there is an inadequate number of hospital ambulances, and these are poorly maintained and often unreliable.

3.2. Research design

Phenomenography is centred on a second-order viewpoint which means how participants (the individual/people of the research) perceived an object (aspect of the world) or an experience in a specific situation (Marton, 1986, cited by Khan, 2014). In a phenomenographic approach the researcher can be described as the interpreter of research participants' perception who have qualitatively different ways in which they experience, conceptualise, understand, and perceive the characteristics or phenomena in the world around them (Marton, 1986). A phenomenographic approach fits well with the exploration of research questions designed to explore and understand peoples' qualitatively diverse experiences of the world in terms of descriptive categories (Marton, 1986, cited by Khan, 2014).

A mixed methods approach was adopted in a phenomenographic study to collect information and perceptions of staff. The researcher is interested in exploring, from the perspective of staff delivering care to newborn infants, what they understand about the parts that constitute KMC, and how the practice of KMC relates to delivering care to newborn infants and their mothers, or the family in the SNICU at Orotta Paediatric Hospital (OPH). KMC has several structural parts and a meaning component. The experience of KMC must be discerned from the context the SNICU at OPH. As explained by Marton and Booth (1997) the structural aspect of experiencing KMC is twofold, meaning discernment from the whole (practice of KMC) from the context (SNICU), and discernment of the parts and their relationship to the whole (newborn care). The referential aspect of experience in this study relates to what KMC practice means to staff who participated in the study (Linder & Marshall, 2003). Marton and Booth's perspective, applied to this study, relates to which constituent parts are discerned and appears in the staff member's focal awareness (Marton & Booth, 1997). Individual experiences of KMC in the context of delivering care to newborns in the SNICU at OPH depend on which critical aspects are brought into focal attention (Linder & Marshall, 2003).

3.2.1. Theoretical framework

A theoretical framework, is an abstract model with a logical structure that directs the researcher to develop the study and enables them to relate the findings to the nursing body of knowledge (Burns & Groves, 2011). The theoretical framework phenomenography suggested by Marton (1986), was used as a guide in recognising the themes from the qualitative interviews (Ornek, 2008:1). The aim of the phenomenographic approach is to recognize the phenomena as they are perceived by the participants (Ornek, 2008, cited by Khan, 2014). Marton (1986) emphasised that this framework could help “to answer questions about thinking and learning, particularly for educational research” (Ornek, 2008; 1).

Figure 3 depicts a model of the conceptual framework related to the factors that impact the practices of KMC. This included staff educational background and work experience, staff routine practices in the SNICU, staff knowledge about the practice of KMC, attitudes of staff towards KMC practice, availability of KMC guidelines and protocols, and availability wards in the unit dedicated to KMC (Bang, 2011; Bergh et al., 2012b; Bergh et al., 2014; Bogonko, 2013). In addition, it included the facilitators, and barriers perceived by staff to the practice of KMC (Bergh et al., 2014; Blomqvist et al., 2013; Lee et al., 2011).

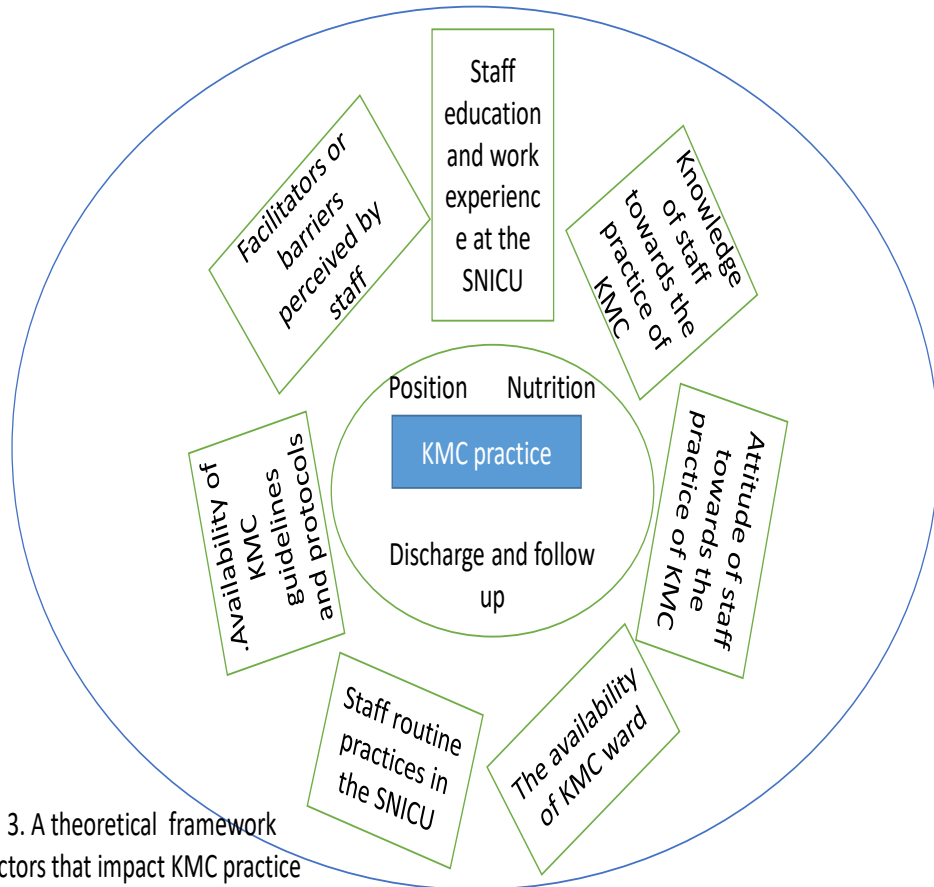


Figure 3. A theoretical framework the factors that impact KMC practice and facilitators and barriers perceived by staff.

3.2.2. Study population

The study population included all the staff who work in the SNICU at OPH. They were recruited for participation in the study based on their work experience and knowledge of KMC (Brink, 2012). During the study, they were 11 staff including one physician, one registered nurse and nine health assistant nurses. All of them were capable of communicating in both English and Tigrigna, which both the researcher and the research assistant are totally conversant with, and they could provide informed consent. The majority of the participants who provided information relating to KMC were health assistants who were assisting mothers to provide routine nursing care in intermittent kangaroo position.

3.2.3 Inclusion and exclusion criteria of the study

3.2.3.1. Inclusion criteria:

- I. All SNICU staff with more than two years of work experience in the SNICU were included in the study;
- II. All staff who were able of communicating in English and Tigrigna were included.

3.2.3. 2. Exclusion criteria:

- I. Staff with less than two years' work experience in the SNICU;
- II. Staff who work in the other paediatric wards at OPH;
- III. Staff who were not fluent in English and Tigrigna.

3.2.4. Data collection method and instruments

A mixed methods approach was adopted in a phenomenographic study to collect information and perceptions. Phenomenographers implement a particular methodological strategy for data collection (Tight, 2014). This involved the use of interviews as a method for collecting data on the KMC practice. In-depth interviews were conducted by means of a semi-structured interview guide and were audio-recorded (see Appendix 3. – Interview Guide Questions). A semi-structured interview guide is a list of open ended questions that provides a guide for the researchers to cover the topic (Brink, 2012; Burns & Grove, 2011). The questions consisted of general information such as educational background and work experience of staff at the SNICU, the availability of KMC guidelines and protocols, and questions that explored staff's personal experiences with KMC practice. Questions included staff perceptions, knowledge, practices and attitudes embedded in their personal experiences, while factors that facilitate or hinder the KMC practice were gathered at an individual (see Appendix 3: Semi-structured Interview).

The questionnaire was designed in English and the participants were able to understand it. However, there were questionnaires available that had been translated into the local language, Tigrigna (see appendix 4: Tigrigna Translated semi – structured interview). Permission was obtained before recording the participants' interview. During the interview, digital recordings and note-taking was done and then both were translated into English. Finally, the written documents were compared with the audio recordings and the observation checklist.

The timeframe for the interviews was directed by the quantity of the information participants chose to share and disclose. Generally, these interviews took between 45 minutes to an hour for each participant. This included the time for explaining the research topic and obtaining informed consent from participants.

The observation component included an assessment of the interaction between staff and caregivers regarding the specific needs (see Appendix 7: Observation Checklist). Healthcare providers' communication with parents or mothers in SNICU, and the presence or absence of protocols and guidelines for KMC implementation was assessed (Appendix 7: Observation Checklist). These questions were delivered in a framework to guarantee that comparable data domains were obtained from all the sampled staff.

In this study, the context in which the kangaroo position or skin-to-skin (KMC in Eritrea) was practised was central to understanding the experiences of study participants. Observation was therefore an important component of the data collection process. An observation sheet was prepared prior to the study (see Appendix 7: Observation Checklist). To prepare for the observation component, the researcher visited the KMC ward at Groote Schuur Hospital, in Cape Town, South Africa to allow her to prepare the list of questions (see Appendix 7: Observation Checklist). This helped the researcher to focus on the main information to be

observed in the SNICU. The implementation of observations was organised with the head of the SNICU. The researcher paid specific attention to:

- a. The interaction/communication between staff and caregivers regarding the assessed specific needs such as post-partum KMC skills and staff routine care.
- b. The presence or absence of KMC protocols and guidelines, and how they were implemented.

The post-partum KMC skills and routine care checklist included the following 12 lists. Observing staff if they congratulate the mother for practicing KMC and explain why they would like to assess how the mother is practicing KMC. It also comprised if they observe if the newborn infant is dry and clean, has a cap and a diaper on or if the newborn infant is not naked, and explains the importance of newborn infant being naked for KMC. In addition, it observed if the mother's positioned the newborn infant upright between her breasts, feet below her breasts and hands above and if the mother is not practicing correctly or instructs the mother about KMC position. Besides, it evaluated if staff observes the newborn infant head turned to one side and if the head is not rightly placed helps the mother to position correctly. Furthermore, it measured if participants observe how the newborn infant is wrapped to her body: places the centre of a sari over the back of the newborn infant on the mother's chest. Additionally, it evaluated if staff ask the mother for any concern during KMC practice and address accordingly and ask mother with any feeding difficulties of the newborn infant.

The staff work experience, education level and KMC training was not part of the observation checklist. However, it was added later in the table for contrasting and comparing with the post-partum KMC skills and routine care checklist score. All the eleven participants were observed while doing the post-partum KMC and routine care checklists. All the participants who participated in the study were observed while doing the post-partum KMC and routine care checklists during the 10 weeks of the data collection. A two-day observation period was

scheduled for each participant before and after their interview. The researcher observed without participating, interacting or reacting to participants' activities. This nonreactive technique allowed her to form her own opinion of her observations. In addition, this process allowed for making information available that could be used to validate information provided by the study participants. The researcher also observed different aspects of the services that were interconnected with KMC practices, including relevant protocols and guidelines and interactions between mothers and staff. When the observation outcome compared to the participant individual interview data, there was no increased KMC performance even for the staff who had worked more years in the SNICU. For example, there were staff who have worked for 13 years with limited KMC knowledge and KMC position performance.

During the study, a local medical doctor was hired as a research assistant for the duration of the data collection, and she was compensated for her contribution. No training was provided as she was experienced in conducting research.

3. 3. Research procedure

3.3.1. Pilot study

A pilot study tests the practical aspects of the study and is part of the planning phase (Burns & Grove, 2011). The advantages of doing a pilot study are that it helps to identify and address possible emerging problems and provides an opportunity to make some corrections to the method used, or to re-check the feasibility of the research project (Brink, 2012). A pilot interview was done with three volunteers from Mowbray Maternity Hospital in Cape Town, South Africa to establish if the research questions were interpreted correctly, and whether the questions were suitable for the participants. The result of the pilot study showed that the three volunteers understood the study questionnaires and answered the anticipated answers accordingly. In addition, after preparing the observation checklist sheet for KMC the

observations for the pilot study was done in Neonatal intensive care unit (NICU) in the KMC ward at Groote Schuur Maternity Hospital in Cape Town, South Africa.

3.3.2. Recruitment and enrolment

The researcher intended using purposive sampling but there were only 11 staff members who met the inclusion criteria, hence the researcher decided to interview all of them. Therefore, the researcher selected and recruited participants who were charged with the responsibility of teaching the kangaroo position or skin-to-skin contact at the SNICU. The researcher made contacts with the ministry of health before carrying out the study and then the research assistant followed it up. The research assistant was not a staff in the SNICU. However, she was an intern when she was a medical student and this helped her to create better relationship between the participants since and both the researcher and research assistant were the ones who sought the consent.

The recruitment was done with the permission and cooperation of the head of Human Resource Development (HRD) at the Hospital. The researcher then approached the head of SNICU for permission and made sure that participants were recruited based on the inclusion and exclusion criteria. Every effort was made to prevent interference in routine service delivery.

3.4. Feasibility and ethical considerations

The proposed study was feasible in terms of the human and other resources needed to carry out the research (see Appendix 6: Research budget). The study was carried out under the ethical considerations as presented in the Declaration of Helsinki (2013), Belmont Report (1979), and Council for the International Organisation of Medical Sciences guidelines (1982) that includes voluntary participation, privacy, confidentiality, anonymity and no harm done by the research. Prior to conducting the study, the research protocol was sent to the University of Cape Town, Faculty of Health Sciences Human Research Ethics Committee for ethical approval, and

approval for the study was obtained from HREC (see Appendix 8–Reference Number 345/2015). In addition, the research protocol was submitted to the Eritrean Ministry of Health, and HRD, an independent, recognised Institutional Review Board (IRB) in Eritrea. It was only after clearance was obtained from HRD (see Appendix 9 - Reference number 62/4225/2014), that data collection commenced.

3.4.1. Informed consent

The researcher and the research assistant described the aim of the study was to assess staff KMC experience in the SNICU and made sure that every participant had understood the described aim. The consent form was then distributed to each participant to be signed. The consent forms were both in English and Tigrigna, and included an explanation of the research information, its objectives, potential discomforts and benefits. It also contained a clear declaration that participation in the study was completely voluntary and that participants were free to refuse to participate or to withdraw from the study at any time without undesirable penalties (Declaration of Helsinki, 2013; Belmont Report, 1979). The consent form was provided to each participant to read and they were given an opportunity to ask questions and seek explanations about the research topic. Subsequently, the participants were asked to return the written informed consent of their own free will based on the information specified (see Appendix 1, Information Sheet; Appendix 2: Consent Form for Semi-Structured Interview; and Appendix 4, Tigrigna Translated Semi-Structured Interview). Participants were required to sign the consent form to participate in the study.

The time to participate in the research was exclusively dictated by the participants. The researchers attempted to schedule the meetings during times that were suitable for staff to assist participants in minimising their workload. There were 17 staff in the SNICU in 2008 (Zemichael, Nyarang'o & Mufunda, 2008). However, 6 of the staff leaved to work in other places over the six years and only 11 of the staff were present during the study. All the

participants gave their agreement to participate only after the study had been described. None of the 11 participants chose to decline the participation in the interview after signing the agreement.

3.4.2. Privacy and confidentiality

Several procedures were taken to guarantee the privacy and confidentiality of the research participants. These comprised providing choices for participants to select the time and venue for their own individual interviews, and confirmation that each participant felt comfortable to be interviewed in spaces that were safe and private. To guarantee anonymity, no names were written on any of the records or on the permission forms. Instead, each participant was assigned a number to facilitate data analysis. Moreover, all collected raw data was kept in a locked cupboard to which only the researcher and research assistant had access. The captured data, transcripts, and digital recordings will be saved for a period of up to five years in order to assist with an expected publication and distribution article or paper, after which the data will be shredded and destroyed.

Before any consent was asked, the researcher made it clear that there would be no financial gain to be anticipated neither for the researcher nor the participants. The participants experienced costs only with respect to their time to talk about their experiences and knowledge about skin-to-skin-contact.

3.5. Data analysis and management

For the observation section, the researcher used a combination of field notes and checklists to record the observation (see Appendix 7: Observation checklist). These staff were compared and contrasted based on the low or high observations score they had. In addition, the scores were compared to the participants prior KMC training and work experience in the SNICU.

The researcher followed four steps of qualitative data analysis. Firstly, identifying of the broad themes occurred. The second stage was focused on making comparisons and expanding the emerging thematic. Thirdly, categories were refined and the researcher searched for relations within the data. The fourth stage involved theorising about the insights gained and understanding the meaning of KMC practice from the perspective of study participants and the context in which it was practised (Heath & Cowley, 2003). The discussion involved expanding the themes in relation to other experiences of KMC practice (Creswell, 2009; Ulin *et al*, 2005).

With the interview questions as a guide, data was collected using digital recordings and these were transcribed and translated into English. Participants were provided with an opportunity to share experiences in their own words regarding their understanding of the practice of KMC, especially skin-to-skin contact from the time of the newborn infant's admission to SNICU to their discharge.

Data analysis included thorough examination, scrutiny of recording content and analysis of each specific transcript of the 11 staff members who participated. A course of repetitive listening to interviewed recordings and reading of the transcribed interview data was commenced line by line. Then repetitive reading and marking were done where the participants gave responses to the three main questions such as KMC, presence and absence of KMC guidelines and KMC ward. In these passages aspect for what the focus of the staff attention was and how they described their way of KMC practice in the SNICU. An initial description

of each participant principal way of understanding the KMC position in the SNICU followed. After that grouping was done based on their similarities and differences. Then formulation of categories of explanation occurred while looking for non-dominant ways of understanding. Finally, discovery of a structure in the outcome space to each category of description was done.

3.6. Trustworthiness and rigour

Qualitative data should be assembled from trustworthy data (Creswell, 2009; Ulin, et al., 2002). Credibility, transferability, dependability and conformability were used to describe characteristics of trustworthiness of this qualitative study (Brink, 2012).

During the entire analysis process, the researcher and research assistant discussed the results until an agreement was reached; this strengthened the trustworthiness of the results. To improve credibility, the researcher used researcher triangulation in which the researcher and the research assistant both interpreted the data to improve credibility (Hays & Singh, 2012). The participants were staff who have some knowledge of KMC and the researcher reminded the participants on the importance of providing clear, honest responses so that the research question can be fully explored. Participants were reassured that their conversations would not influence their work in any way, and that their identities would be protected at all times through rigorous privacy mechanisms. The researchers also reflected on participant responses to ensure that they understood the information correctly.

Transferability is also known as extensibility or applicability of fit (Speziale & Carpenter, 2007). For transferability, enough contextual information should be provided for others to reach judgements that are as similar as possible to those of the researchers (Brink, 2012). Therefore, transferability was enhanced through participants' providing enough contextual information for others to reach judgements that are as similar as possible to those of the researchers (Burns & Grove, 2011).

Dependability is also called auditability, and research is auditable when another investigator is able to understand the decision trail used by the researcher in the study (Ulin, et al., 2002). The researcher made the research procedures clear and transparent so that the process was easy to understand and track. Additionally, the researcher kept thorough notes of all research procedures so that it could be understood and traced easily. Comparison of two sets of data revealed no interpretive discrepancies. Finally, conformability, which is the maintenance of the distance between the observer and reduction of any opportunistic effect of the investigators' values on the method of enquiry (Speziale & Carpenter, 2007) was assured through note-taking during the observation phase of the participants.

Rigour is another important aspect to consider in a qualitative research. An experienced qualitative data analyser was hired to review the transcribed interview data using ATLAS.TI to increase the rigour. The goal of the researcher was to use a phenomenological approach to explore the lived experience of health carers using the kangaroo position in the context of SNICU. The experiences presented from the authentic perspectives of study participants in relation to the theoretical understanding of KMC practice contributed to the rigour of the study (Hays & Singh, 2012).

To assess the reliability of observations part of the study, the researcher used an inter-rater reliability (Brink, 2012; Speziale & Carpenter, 2007). This involved comparing the ratings of the observation done in the NICU, South Africa and the first few observations in the SNICU in Eritrea. In order to improve the validity of the observations, the participants were not aware of that they are being observed and did not behave in a certain way.

Chapter 4: Results

The study will outline the observation part of the study that includes the results for the communication between staff and caregivers regarding the assessed specific needs such as post-partum KMC skills checklist and staff routine care observation. In addition, it will include the results for the semi-structured interviews such as routine staff practice in the SNICU, participants' knowledge of KMC, participants' attitude towards the practice of KMC, KMC guidelines and protocols, availability of a KMC ward in SNICU and factors that facilitate or hinder KMC practice.

4.1. Educational background, work experience and KMC training of the staff participants'

Eleven participants were interviewed and observed, nine for staff whom were health worker assistants with minimum work experience of two years at the SNICU. The other two were a physician and registered nurse. Seven of 11 (64%) of the staff had a working experience of 13 years each and two of 11 (18 %) three years' work experience each respectively. In addition, one of 11 (9%) participants had a working experience of three years and one of 11(9%) participants had two years' work experience. From this group, only three of 11 (27%) members of staff had formal KMC training. The rest of the staff had heard about KMC from their fellow SNICU staff members, mainly from the head nurse.

The table 1 describes participants' general information such as education level, working experience and KMC training at the SNICU. Staff education with level three were considered as medical doctors, level two as diploma nurse and level one as health assistant. Participants' working experience were ranged between two-thirteen years. However, work experience was coded from 0-4 for the participants work experiences. The code four was for participants who have the most work experience, code three participants were with more work experience, code two participants were with an average work experience and code zero for participants with less

work experience. Staff KMC training in the SNICU was also coded one (yes) or zero (No). Participants' post-partum KMC Skills checklist and routine care contained 11 lists of questions and each list was scored as zero or one. Then the final score was added and compared to the staff working experience and KMC training that the staff had. Then the 11 questions for the post-partum KMC skills and routine care checklist scores for each participant were added and then they were compared and contrasted to each participant work experience and prior KMC training.

<i>Participant</i>	<i>Education level</i>	<i>Work experience (years)*</i>	<i>KMC training</i>	<i>Observation score</i>	
				<i>Score out of 11</i>	<i>Percentage</i>
<i>P1</i>	<i>Health assistant</i>	4	No	2	18%
<i>P2</i>	<i>Diploma nurse</i>	4	yes	11	100 %
<i>P3</i>	<i>Health assistant</i>	4	No	3	27%
<i>P4</i>	<i>Health assistant</i>	3	Yes	6	55%
<i>P5</i>	<i>Health assistant</i>	0	No	2	18%
<i>P6</i>	<i>Health assistant</i>	4	No	4	36%
<i>P7</i>	<i>Health assistant</i>	3	No	4	36%
<i>P8</i>	<i>Health assistant</i>	4	No	2	18%
<i>P9</i>	<i>Health assistant</i>	2	No	4	36%
<i>P10</i>	<i>Health assistant</i>	4	No	2	18
<i>P11</i>	Medical doctor	4	Yes	11	100%
Mean				4.64	42%

Table 1. Participants' observation score.

The table 1 above describes the participants' observation score. The average mean for the participants was 4.64 (42%). This means that the average number of questions responded by

participants was 4.64, this indicates that the observation part of the study had low response rate. Overall, three of 11 (27%) of the participants had higher score for post-partum KMC skills checklist and staff routine care with 100 % and 55 % respectively. These three participants with the higher score were staff who had prior KMC training. On the other hand, the other four (36%) of the participant with low for post -partum KMC skills and staff routine score (18%) were staff with no prior KMC training.

4.1.1. The interaction/communication between staff and caregivers (mothers/parents) regarding assessed specific needs such as Post-partum KMC Skills and Staff Routine Care Checklist.

The interaction between study participants' and mothers focused mostly on providing health education, hygiene, importance of breastfeeding and the required nursing care, depending on the condition of the newborn infant. Therefore, the observation results showed that all (100%) of the participants were able to provide newborn infants the care and assess them for any feeding difficulties.

Healthcare providers' communication with parents/mothers happens during their stay in SNICU. Two of 11 (18%) of the participants had conversation and demonstrations about skin-to-skin contacts which happens once a week. The only time participants encouraged mothers to practice regular skin-to-skin contact was whenever there was a power outage, which occurs once in a month in the SNICU. Four of 11 (36%) of the participants were able to do the observation while mothers practice for KMC position. It was also observed that five of 11 (45%) participants know how to position the newborn infant's head during KMC, and three of 11 (27%) of the participants were able to assess the mother for KMC position. In contrast, two of 11 (18%) of the participants were able to wrap the newborn infant's body, demonstrate the importance of baby naked for KMC, practice KMC position correctly, and ask the mother if they had any concerns during the practice of KMC position in comparison to nine of 11 (82%)

of the participants who were not able to wrap the newborn infant and practice KMC position correctly.

4.2. Results of the semi-structured interviews

4.2.1. Routine staff practice in the SNICU

Routine care in the SNICU included basic aspects of nursing care like monitoring of vital signs, nutrition and warmth as well as more advanced clinical care such as administration of intravenous lines or oxygen, withdrawing blood samples and neonatal resuscitation. Routine care was delivered mainly in caring for preterm newborn infants with complications such as birth asphyxia, hypothermia, neonatal jaundice and respiratory distress syndrome.

Participants reported that all mothers should practice KMC as routine care. They also indicated that mothers were made aware that supporting and preparing mothers to care for their newborn infants is integral to the routine care in the SNICU. All mothers of preterm infants were provided with information about KMC soon after delivery, especially if their newborn infant was preterm. Mothers were made aware of the whole range of care practices for newborn infants as explained by one of the participants:

“We involve mothers through practice by showing them how to clean neonate, how to feed neonate and apply Vaseline. We also provide information about vaccination, return if neonate is sick, breast feeding technique, hygiene (neonatal and maternal) not to practice harmful traditional practice-FGM and uvulectomy. We also inform them to comeback for circumcision if the newborn is male and advise them to exclusively breast feed for 6 months.” (p. 10)

4.2.2. Participants' knowledge of KMC

All participants explained that they feel that they are delivering KMC when they keep the infants warm. Ten of the eleven participants felt that they were delivering KMC when bonding, love and attachment between the mother and the infant was being promoted, and when mothers were made to feel confident about bonding with, and feeding the newborn infant. A participant expressed as follows:

“KMC prevents hypothermia, reduces unnecessary expenses, bonding with the infant, confidence for mothers, and facilitates breast milk production.” (p. 2)

It is important for staff to be aware of KMC position for effective KMC practice. All participants considered the KMC position to be significant; most of the participants understood kangaroo position as placing the infant in a skin-to-skin, upright position between the breasts, with the infant’s head turned to one side. A few of the participants were concerned about the KMC position as illustrated in the quotations below:

“The infant should be placed horizontally like breastfeeding.” (p. 3)

“The infant should be placed for KMC with his own clothes.” (p. 8)

The perception and experience of KMC shared by all participants was that the type of KMC practiced in the SNICU is an intermittent type of KMC care.

Beliefs about how KMC should be practiced varied between the 11 participants: two felt that it should be practised continuously and two said daily while others stated that it should be provided during electrical power outages. The two participants who supported continuous KMC practice were with more working experience who had received training and workshops on KMC in Zimbabwe and Eritrea. The other two of the participants thought that KMC should be provided every three hours. However, three other participants stated that KMC should be provided when the newborn infant is cold. Only one participant urged that KMC should be provided every 25-30 minutes. Regardless of staff KMC training, staff said essentially the same common-sense thing, which implies that even those not trained in KMC have observed enough to know what to do. Some responses of the participants included:

“KMC should be provided continuously.” (p. 7)

“KMC should be provided when the electricity is off.” (p. 1)

Participants perceived the infant's condition to be an important factor in KMC practice. Most participants indicated that KMC was not practical especially for unstable infants with complications and for infants less than one week old. Overall, most of the participants stressed that provision of KMC should start after stabilisation, which is after one week of survival. Nevertheless, a few participants urged that KMC should be provided as soon as they were born:

“KMC can be provided for unstable infants but under close supervision and monitoring.” (p. 8)

“KMC is possible for unstable newborn infants with complications through a close monitoring.” (p. 9)

Participants perceived the newborn infant's health status to be a major aspect for a KMC discharge. All the participants agreed that newborn infants who required KMC were only discharged once the infants were healthy and able to suck breast milk. Thereafter, the mother is then advised about the importance of KMC practice at home. Follow-up of all infants should happen every four weeks depending on the prematurity and complications of the newborn infants. However, one participant had a different point of view:

“The follow-up is provided after six hours, six days and six weeks depending upon the newborn infant's condition.” (p. 11)

Participants perceived that KMC has scientific benefits for both the newborn infants and the mother. The three participants who had KMC training, and in which the two of them agreed that KMC practice is important for both the mother and newborn infant as demonstrated by the following:

“KMC is very important and scientifically proven in the health outcomes of preterm infants in low socioeconomic countries.” (p. 11)

“KMC is very important, more effective and natural method which keeps the infant warm.” (p. 4)

However, two participants disagreed that KMC is essential and they indicated that newborn infants could get conventional care using the available heaters and warmers:

“There is no need to provide KMC due to the presence of enough incubators and heaters in the SNICU.” (p. 1)

Participants perceived that KMC information and education for mothers is the routine care. A participant reported that:

“KMC education is provided especially for mother’s preterm infants and the mothers should know about KMC during antenatal care and we make sure if they have a better understanding of the importance KMC practice.” (p. 5)

4.2.3. Participants’ attitude and perceptions towards the practice of KMC

Participants perceived the newborn infant’s condition to be a vital aspect for KMC practice. In general, participants had poor perceptions of KMC practice for preterm infants with complications as revealed. The following statements were from two of the participants:

“Provision of KMC for preterm infants with complications is not practical at the SNICU, they should be stabilised first.” (p. 11)

“KMC cannot be provided for preterm infants with complications.” (p. 2)

However, two participants had a different view:

“KMC could be done for preterm infants with complications under close supervision.”
(p. 8)

“KMC could be done for preterm infants but under frequent monitoring.” (p. 9).

Participants perceived that KMC practice provides parental confidence. They had the following comment:

“KMC makes the mother confident by making her believe that she is fit for handling her newborn infant.” (p. 2)

“KMC improves parental attachment.” (p. 9)

However, one participant who expressed reservations about the KMC practice:

“I am not sure whether KMC provides parental confidence or not.” (p. 11)

Most of the participants perceived that encouraging all parents to practice KMC at the hospital and at home after discharge as useful. One participant described a benefit of KMC as follows:

“Parents can practice KMC regularly.” (p. 4)

Mothers could practice KMC regularly if they are encouraged. Family members such as husband and mother in-law encourage mothers to practice KMC. Half of the participants mentioned that the husbands of the women with newborn infants in the SNICU encouraged their practice of KMC. Some of the participants demonstrated this view as follows:

“The husband is the influencer for the mother to practice KMC.” (p. 2)

“The husband can be the main influencer and even he can participate in the practice.”
(p. 10)

However, others had a different opinion. For example, this comment is from one participant:

“The mother herself is an influencer for KMC practice.” (p. 9)

Participants perceived that professional satisfaction is a key for regular KMC practice. Amongst the 11 participants, 9 of them were professionally satisfied with the practice of KMC. Some of the participants illustrated this as follows:

“I am satisfied when practicing KMC as it prevents unnecessary deaths.” (p. 4)

“Provision of KMC provides me professional satisfaction as KMC is like other lifesaving interventions that I do.” (p. 7)

Participants perceived that KMC is time consuming and increased workload. This was due to staff perception that critically-ill newborn infants needed more follow-up, care and monitoring.

Participants said that:

“KMC creates workloads as it should be monitored frequently.” (p. 3).

And

“There is no time to practice KMC because of many other critical newborn infants.”

(p. 2)

On the other hand, some of the participants had different views:

“KMC doesn’t create workload as it is done occasionally only when there was an electricity outage.” (p. 4)

“KMC does not create workload as the mother holds the infant during KMC practice.”

(p. 6)

Participants perceived that KMC practice is similar in function with incubator care. Therefore, most of the participants saw no need for KMC practice at the SNICU. Yet, some participants mentioned that KMC is much easier and safer than incubator care as illustrated in these quotes:

“At first frequent monitoring when the newborn infant is on KMC, later mother gets more experienced and she can monitor it herself.” (p. 7)

“A mother can assist even more when the newborn infant is on KMC.” (p. 8)

Nakedness’ above the waist for both a newborn infant and mother during skin-to-skin contact can be perceived as a taboo in a community. A participant expressed a concern about the cultural acceptability for KMC practice in the community and emphasised that:

“KMC is a public concern that is not culturally accepted since the culture is very conservative.” (p. 11)

Participants perceived that KMC practice during night could be challenging. Seven of the participants agreed that KMC is impossible to practice during night. Two participants demonstrated in the statements below:

“Mother is too tired.” (p. 1)

“No KMC at night. At night time, it is warmer to put newborn infants in the incubators and under radiant warmers.” (p. 4)

However, other participants were hesitant to practice KMC for newborn infants with less weight. They thought that:

“KMC can be practiced but it should be monitored.” (p. 8)

“Mother should be cautious as it can suffocate the newborn infant during KMC practice in the night.” (p. 3)

4.2.4. KMC guidelines and protocols

Participants perceived that KMC guidelines and protocols is crucial for effective KMC practice although there were no KMC guidelines and protocols available in the SNICU. However, one participant emphasised that:

“KMC guidelines and protocols do exist in a combination of Integrated Management of Neonatal and Childhood Illness (IMNCI) but not particularly in the SNICU.” (p. 11).

The study results also showed that all the participants urged that there should be proper guidelines and protocols because:

“Guidelines and protocols would have made the KMC practice regular.” (p. 10)

4.2.5. Availability of a KMC ward in SNICU

Most of the participants perceived that there is enough and convenient space for parents to practice the kangaroo position. However, two of the participants disagreed and they stated that:

“The space at the SNICU was not enough and convenient to practice full KMC.” (p. 2)

“The space at the SNICU was very limited and inconvenient to practice KMC.” (p. 11).

In addition, most participants stated that opening a new or extending to a KMC ward would not be expensive as the same materials and staff available at SNICU could be used for the KMC ward. However, two of the participants emphasised that:

“Opening of a new KMC ward will need finding a bigger space, blankets and beds.”

(p. 2)

Participants felt that KMC can be provided by the mother during a newborn’s transportation especially when they are stable. For instance, one of the participants commented that:

“KMC practice during travel to home is a good practice, however, it can be practiced under closer monitoring to prevent suffocation.” (p. 8)

In contrast, three of the participants were hesitant about as it as illustrated below:

“Ambulatory KMC is not possible because infants usually travel when they are too critical.” (p. 1)

4.2.6. Factors that facilitate or hinder KMC practice

Participants revealed the factors that hinder and facilitate KMC practice. Most of the participants mentioned that a shortage of staff was one of the major challenges in the SNICU. In addition, lack of regular training, lack of convenient setup and unmotivated staff were among the other top challenges for the practice of KMC. Some of the participants said the following:

“There is no convenient set up and regular training for KMC here at the SNICU.”

(p. 2)

“There is lack of staff motivation to practice KMC.” (p. 3)

Some of the participants mentioned that there were factors that could facilitate KMC as follows:

“The setup should be improved; mothers reside too far away from the neonates and thus it is impractical to provide regular KMC at the SNICU.” (p. 2)

“There should be practical training for parents on TV since KMC practice is not culturally accepted.” (p. 11)

However, the perception of some of the participants and who did not see a need to practice KMC could be seen as another barrier to implementation:

“We have enough radiant warmers and incubators and KMC is seldom necessary.”

(p. 6).

“The infant can be kept warm artificially such as radiant warmers and incubators and bonding can be attained through proper breast feeding.” (p. 9).

Chapter 5: Discussion

5.1. Introduction

To the best of the researcher's knowledge, this study is the first known KMC-focused study conducted at Orotta Paediatric Hospital (OPH) in Eritrea. This study does not necessarily represent the perceptions, attitudes and experiences of all staff caring for newborn infants in Eritrea, hence the findings of this study may not be generalizable to other contexts and should be implemented with caution. The focus of this study was to explore the experiences and perceptions of staff towards the practice of KMC and some key aspects of this study could be relevant in the SNICU at OPH, in Asmara, Eritrea.

In Eritrea, an intermittent type of KMC was introduced in 2008. However, the sustainability of continuous KMC depends on adequate staff knowledge and positive attitudes towards KMC practice (Bogonko, 2013; Strand, 2011). The study results showed that there was limited staff knowledge of KMC practice and a mixed response regarding staff attitudes towards the practice of KMC. The literature suggests that a separate KMC ward and proper KMC guidelines and protocols facilitate regular KMC practice (Bettercare, 2014; Davanzo et al., 2013). Yet, there was not a dedicated KMC ward nor were KMC guidelines and protocols available in the SNICU. Furthermore, community support for KMC practice, involvement of mothers to practice KMC at home and in the hospital setting, and good staff-parent relationships are also the requirements for regular KMC practices (Blomqvist & Nyqvist, 2011; Maastrup et al., 2012; Lemmen, Fristedt & Lundqvist, 2013). To date, community awareness for KMC has not yet been studied.

5.2. Findings from the observation part of the study

The observation part of the study included an observational assessment of the interaction between staff and caregivers regarding specific needs such as post-partum KMC skills and staff routine care. It also assessed the presence or absence of KMC protocols and guidelines.

5.2.1. Assessment of the interaction and communication between staff and caregivers regarding specific needs such as the post-partum KMC skills and staff routine care.

In the absence of KMC training, some staff were noted to implement the KMC position without due attention to other components of KMC practice such as nutrition. Some of the participants who had prior KMC training were also able to demonstrate the KMC position and ask the mother if she had any concerns during the practice thereof. Similarly, the study findings of Flynn & Leahy-Warren (2010) proved that staff who had prior KMC training and KMC knowledge tended to perform KMC components and interact with the parents nicely. Another study about staff who had more information and communication to parents, encouraged and motivated the parents to practice KMC (Lemmen, Fristedt & Lundqvist, 2013).

Overall, the post-partum KMC skills and staff routine care were scored on a checklist for all of the eleven participants. Their scores were between 2 and 4 out of the 11 questions posed. This shows that most of the participants score was low and most of the participants lacked prior KMC training as they all scored low in this domain. However, some staff with more KMC experience and training had higher scores and better understanding in performing the KMC position effectively. A study done by Bogonko (2013) showed that the staff with adequate knowledge are more likely to perform KMC effectively. In general, the staff with better score of KMC skills during observation were also the staff who had adequate knowledge and positive attitudes towards the practice of KMC during the individual interview.

5.3. Discussion on the in-depth interviews

5.3.1. *Staff knowledge and attitude towards the practice of KMC*

The findings discussed here are what the 11 SNICU staff perceived about KMC for preterm infants. Some of the staff were experienced with intermittent KMC position. While the benefits of KMC practice are already known globally, an underuse of KMC in developing countries' NICUs remains. The study results shows that the majority of the participants were aware of how to do the KMC position and knew the theoretical benefits of KMC practice. They mentioned that KMC keeps the newborn infant warm, increases bonding, love and attachment between the mother and the newborn infant, that KMC builds parental confidence, gives pleasure for mothers as well as it facilitates breast milk production. Despite this knowledge, KMC was not practiced fully in the SNICU. This finding is unlike studies that report that staff who had enough knowledge and who worked in hospitals where KMC was provided tended to practice KMC regularly (Bang, 2011; Blomqvist et al., 2012b; Bogonko, 2013). El-Nagar, Lawend & Mohammed (2013) study also showed the effectiveness of training staff using KMC guidelines and protocols on refining their knowledge and practice towards KMC practice. Understanding that KMC is a means of facilitating the parent–infant attachment, leads to changed perceptions, attitudes and practices of staff in promoting KMC within a NICU setting. Therefore, KMC training is required for better practices and understanding of all the KMC components.

The discharge and follow up is another component of KMC that begins in the NICU and continuous at home with regular follow-up appointments (WHO, 2003). This is to monitor the infant's growth, observe for danger signs like the onset of jaundice and respiratory distress syndrome, and to counsel mothers on breast feeding (Nyquist et al., 2010; WHO, 2003). Ambulatory care also supports a discharge and follow-up system. This happens when a preterm infant is discharged from hospital in the kangaroo position instead of conventional method that

comes with a consistent follow-up system (Charpak & Ruiz-Pela, 2006; Ruiz & Charpak, 2007). The study found that newborn infants are supposed to be discharged with ambulatory care once they have stable vital signs. However, KMC position during discharge is rarely practiced at the SNICU.

KMC practice requires limited time and it can be practiced with less staff in LICs setting (WHO, 2015). The study results showed that participants were less prepared to encourage KMC components since they felt it might be time-consuming and increase the workload by placing additional demands on the limited number of staff in the SNICU. A study by Olsson et al., (2012) agreed that KMC practice needed more time and increased staff workload in the context of staff shortages in numerous degrees, to various inhabitants and to varying degree. However, there are other opinions that suggest that for staff to become comfortable with implementation of KMC practice might require additional time initially. However, once they know that parents can take the responsibility for their newborn infants' care earlier and relieve staff from performing some responsibilities, it may improve their KMC practice (Johnson, 2007). This might be the situation for the SNICU staff.

Unstable newborn infants weighing 2000gram or less at birth or stable newborn infants with a birth weight under 2000gram should be cared for under radiant warmers or in incubators (WHO, 2015). However, there is substantive evidence that KMC practice is safe even for preterm infants weighing even under 1500gram who were intubated but hemodynamically stable (Azevedo, Xavier & Gontijo Fde, 2012). Participants in this study felt that unstable newborn infants should first be stabilised before KMC administration. The staff were scared of losing control and access to the newborn infant to deliver the required care and carry out of the necessary interventions when mothers are holding their newborn infants too closely. This outcome is similar to studies in which the nurse's view on newborn infant security and medical risk has been recognised as an obstacle to an intermittent KMC practice (Olsson et al., 2012;

Flynn & Leahy-Warren, 2010). Nurses' fear of loss of control because of the limited access to the newborn infant was also reported by Mörelius & Anderson (2015).

The lack of information, combined with the absence of a protocol supporting KMC practices, could possibly contribute to the mixed attitude that participants had towards the KMC practice. This finding contrasts with the knowledge and attitudes demonstrated by participants who had KMC training and worked in health services where KMC was integrated (Flynn & Leahy-Warren, 2010; Strand, 2011). Other studies showed that staff who have adequate knowledge and positive attitudes would encourage mothers to practice KMC frequently (Strand et al., 2013; Valizadeh et al., 2013). Furthermore, researchers found that staff with advanced education and training about KMC would have a better understanding of the benefits of KMC for a newborn infant and the mother (Bang, 2011; Bergh et al., 2012b; Bogonko, 2013). This outcome further supports the need for KMC training and education for staff.

There is evidence that the provision of continuous KMC has more benefits compared to an intermittent KMC practice (Blomqvist & Nyqvist, 2011; Charpak et al., 2006, cited by Bergh et al., 2012b). KMC facilitates mother-infant bonding which contributes to improved health outcomes for both the newborn preterm infant and the mother (Athanasopoulou & Fox, 2014; Bera et al., 2014; Bang, 2011; Bigelow et al., 2012). Another study also revealed that encouragement of continuous skin-to-skin contact could lead to continuous breastfeeding and parents' regular presence in the NICU setting (Maastrup et al., 2012). Furthermore, in another study, lack of KMC continuation was associated with early death of newborn infants (Lakew & Worku, 2014). In this study, eight participants had poor understanding about continuous KMC as the unit was only practicing an intermittent kangaroo position. In contrast, the staff from another study were more positive and confident, and they used KMC practice more often with sick infants than the staff who restricted parents to practice continuous KMC (Strand et al., 2013).

KMC support is defined as the physical and emotional support and encouragement provided to the mother by the nursing staff, and family members such as the husband, mother, father and grandmother and community during KMC practice (Bettercare, 2014; Tessier et al., 2003; WHO, 2003). As a result, KMC practice in communities is influenced by the attitudes of husbands, older children, the extended family and the community (Maulik & Darmstadt, 2009; Tessier et al., 2003; Wallin et al., 2011). The fathers often regarded their role as providing support to the mother (Nirmala, Rekha & Washington, 2006). Similarly, seven of the participants in this study mentioned that the husband and the mother herself were the most significant influencers for KMC practice in the SNICU. This suggests that the husbands can be a big part of the KMC practice.

Parental confidence is important for regular and safe practice of KMC both at home and in the NICU settings (Calais et al., 2010). However, parents gaining parental confidence depends on good staff and parent relationships as this can impact their confidence in the hospital (Lemmen, Fristedt & Lundqvist, 2013; Pallás-Allonso et al., 2012). These studies found that most participants perceived that KMC improved parental confidence to provide care for their newborn infants. Other studies confirmed that KMC provides parental confidence (Bang, 2011; Maastrup et al., 2012). The husbands became more confident, less anxious and collaborative with their partner in the care of their newborn infants, both in the NICU, and after discharge at home (Finigan & Long, 2014). The father can also offer the practical continuous KMC position, providing the mother some free time and an interval from almost continuous KMC position. Therefore, the husband's approval and support is important for effective KMC in a household where he is the head of the family, which is the case in a conservative country like Eritrea.

Nurses can promote the continuation of KMC practice at home by sharing information with relatives and friends who visit the newborn infant while still in hospital (Lemmen, Fristedt & Lundqvist, 2013). Therefore, staff should support parents to share KMC information with

family and visitors (El-Nagar, Lawend & Mohammed, 2013). Staff teaching both parents about KMC and encouraging them to practice KMC also has better outcomes (Calais et al., 2010; Pallás-Allonso et al., 2012). Similar views are confirmed in other studies which state that staff with strong views about KMC encouraged parents to participate in KMC (Blomqvist et al., 2012a; Pallás-Allonso et al., 2012). Mothers expressed a desire for a motivated staff to be present to provide them with continuous guidance, as well as the need for consistent information sessions (Solomons & Rosant, 2012). Most of the participants in this study described encouraging all parents to practice KMC at the hospital and after discharge at home as useful. It is evident from the data that SNICU staff now have a better understanding that encouragement by staff could strength the bond between the mother and infant. Therefore, it is important to encourage parents to practice KMC as it can play a significant role in strengthening the bond between newborn infants and their mothers during the postnatal period. Continuous KMC practice including during the night is crucial for the newborn's growth and development (WHO, 2015). Three of the participants were more positive about parents' practice of KMC during night. This shows that majority of the participants were not ready to practice KMC during night. Therefore, training regarding the benefits of continuous KMC practice is required for SNICU staff.

Although most of participants' knowledge and skills of KMC was low, nine of the participants found facilitating KMC professionally satisfying, a crucial aspect for effective KMC implementation (Chia, Sellick & Gan, 2006). Yet, knowledge alone does not essentially modify clinical practice (Johnson, 2007), it is key that all staff practice KMC on a regular basis to expand their experience and sustain practical skills. The main factor in developing staff positive attitude is when they find the facilitation of KMC practice professionally satisfying and observed the improved outcome for both parents and preterm infants during KMC, it provides

them motivation to work toward further enhancement the KMC practice (El-Nagar, Lawend & Mohammed, 2013).

Being naked above the waist for KMC practice can be considered as a taboo in a community where there is little known about KMC benefits. One participant who had a prior KMC training expressed concern about the cultural acceptability of KMC in the community. However, educating the community to accept KMC and involvement and awareness of the benefits of KMC was found to be one of the supporting factors for KMC practice (Bettercare, 2014). This is because community support and cultural acceptability is essential for parents to practice KMC continuously in the SNICU setting.

5.3.2. Availability of KMC guidelines and protocols, and a dedicated KMC ward

5.3.2.1. KMC guidelines and protocols

Clinical practice at the bedside, rules of procedures both at clinics and hospitals, and health expenses by administration and management are affected by the absence or presence of KMC guidelines and protocols in the KMC unit (USAID, 2012). Staff with proper KMC guidelines and protocols perform better than staff without it (Bergh et al., 2014; Schoch et al., 2014; Stikes & Barbier, 2013). In addition, if there is no KMC ward, it can impact the implementation of KMC guidelines and protocols in the KMC unit (Davanzo et al., 2013). The current study results showed that there were no KMC guidelines and protocols except as part of the guidelines in the Integrated Management of Newborn and Childhood Illness at the SNICU that had been established in 2008 at OPH. Therefore, it would be beneficial for staff and management if the SNICU staff have evidence-based guidelines and protocols that will lead to effective implementation of KMC.

5.3.2.2 *KMC wards*

A KMC ward is a separate ward where the newborn infant stays for days, weeks or even months based on the newborn infant's level of prematurity (El-Nagar, Lawend & Mohammed, 2013). This area is used to educate and demonstrate to parents on how to provide KMC practice (Save the Children, 2008). Such a ward is the place where an optimal environment for the care of the premature newborn infant is demonstrated (Strand, 2011). While the KMC position can be practiced in an overcrowded NICU, it might not be as effective as in a separate KMC ward (Bettercare, 2014). The current study found that only the KMC position was practiced when it was necessary. However, in a separate KMC ward, newborn infants would receive more attention as their mothers can be trained effectively to care for them in the KMC position (Lemmen, Fristedt & Lundqvist, 2013; Rulo, 2013). Creating a KMC ward in the SNICU is not likely to be expensive as the same materials and staff that are available at SNICU can be used. However, should a hospital decide to establish a dedicated KMC ward, space will be needed to provide for the full practice of KMC.

5. 4. Strengths of the study

The strength of this research was that the phenomenographic mixed research methodology allowed the researcher to conduct an in-depth exploration about the practice of KMC at the SNICU, OPH, Asmara, Eritrea. This also helped to identify the staff education needs and the importance of KMC protocols and guidelines, and a need for a separate KMC ward in the SNICU and in the Makeel region.

Observer bias is the subjective way the observer selectively attends to aspects of the situation or activities within the situation and participants being observed (Speziale & Carpenter, 2007). However, some strategies were put into place to address this effect (Creswell, 2009; Ulin, et al., 2002). The research assistant made every effort to avoid distorting observed behaviour.

This included listening and observing without interrupting the flow of routine activities in the SNICU. The researcher developed a checklist to use as a guide so that the observer was not focused on her own ideas. Therefore, for the observation component, the researcher was able to compare the data obtained from the interviews with notes obtained from the observations of KMC practice.

5.5. Limitations of the study

Staff in the SNICU at OPH do not necessarily represent the perceptions, attitudes and experiences of all staff caring for newborn infants in Eritrea, hence the findings of this study may not be generalizable to other contexts in Eritrea. However, it may be that some key aspects could be relevant in other parts of the country. Additionally, the research was limited to the information provided at the SNICU. Furthermore, because the researcher was unable to do the data-collection herself, the research assistant appointed might not have had the same level of understanding of KMC practice as the researcher did. Therefore, this is also a limitation of the study.

Chapter 6: Conclusion and recommendations

6.1: Conclusion

The current study showed that there is an intermittent type of KMC practised in the absence of a KMC ward, protocols and guidelines in SNICU by those staff who were willing to facilitate the practice. A convenient KMC ward, proper KMC training for staff and community support could help for implementation of regular KMC practice. This would include postnatal care policies with integrated KMC and implementation of the protocols and guidelines in the unit and at the regional level, which could potentially improve child health outcomes in the NICU setting. Once staff are provided with KMC training and guidelines, there will potentially be an increase of KMC practice, and a decrease in the neonatal mortality rate in the SNICU and at regional level.

The results of the study highlighted that the lack of KMC implementation was due to several factors. The barriers included lack of a convenient set up and protocols and guidelines, unmotivated staff, shortage of skilled staff, irregular training, high staff workload and irregular practice of KMC.

6.2. Recommendations of the study

Based on the findings of this study, the following recommendations are made:

6.2.1. KMC training and education is recommended to improve staff performance in the SNICU and Makeel region.

KMC training and education could potentially help for effective KMC practice in the SNICU then spread into the Makeel region. Knowledge gaps experienced by the participants highlight the necessity for on-going training and education. Teaching and training the staff to use models for the implementation of facility-based KMC integration are among the factors that can improve provision of KMC in the SNICU. The results showed that there is a need for regular

KMC training and motivation of staff, which could contribute to improved understanding, attitudes and motivation in practicing KMC (Stikes & Barbier, 2013).

Notwithstanding the need to have sufficient skilled human resources, the unevenness of numerous in-service training platforms and workshops for nurses (Strasser, Kam & Regalado, 2016; United Nations Population Fund, [UNFPA], 2012) may end up removing some staff for long periods, thereby producing resentment among the staff left to carry a heavier load, and this could hinder care such as KMC practice (Strasser, Kam & Regalado, 2016; UNFPA, 2012). To diminish this, educators of in-service training, ongoing education and skills development should be cognisant of the need to minimize the impact on staff efficiency. This will then need a wisely-planned skills description in the mentorship for on the job training to avoid disrupting service provision.

Internationally, the existence of Internet Communication Technology (ICT) has brought about other new ideas about KMC which can be explored. As an example, ICT can be used in semi-urban and urban settings around Asmara to advance the benefits of distance learning systems, which in turn can grow skills and at the same time improve output. ICT-based education will be convenient for staff who live all over Makeel region of Asmara.

As a way of inspiring professional skills building, the Eritrean Medical Doctors' and Nurses' Association should be tasked with a supervisory obligation to ensure that maintenance of licences to practice and registration is tied to annual, mandatory professional development. This is an initiative for the Eritrean Nursing Association to adopt, motivate and improve skill-building among nursing staff.

6.2.2. Developing of KMC guidelines and protocols is recommended at the SNICU and Makeel region.

It is essential to develop policy guidelines that can be used at the OPH, SNICU, Makeel region initially and later in the other regions in Eritrea. The results have shown that there were no KMC policy or guidelines for the Makeel region. Reviewing WHO KMC guidelines and protocols in the health agendas and policies could help in developing the guidelines and protocols, which could see KMC identified as an ordinary care for all preterm newborn infants. The content of the policy should include an introduction of KMC, vision and mission of the KMC practice, the objectives and the resources that will be required for the implementation of KMC. The policy and guidelines should be for all health care workers including doctors, nurses, managers and policy makers in Eritrea. The policy development process should be a consultative process with many draft forms distributed throughout the six regions for comments and amendment. In the end, the developed policy should be translated in to Tigrigna, the national language. After implementation in the Makeel zone, an evaluation both in the SNICU and Makeel zone should be done to compare effectiveness. Once a protocol is agreed upon, it should then be distributed to the other five district offices, district hospitals and health care services, regional health facilities, non-governmental organisations and other facilities for full implementation and support based on the results in the Makeel zone. Other facilities and executives such as the Provision of Services, Eritrean Human Resource Development and Health Information Systems should be consulted and participate in the policy development and implementation process.

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Appendices

Appendix 1: Information sheet

My name is Elsa Semere Araya. I am studying towards a Master's degree at the University Of Cape Town, South Africa. As part of my course fulfilment, I am carrying out a study with the aim of exploring knowledge, attitudes and practices of Kangaroo Mother Care (KMC) of staff in a Specialised Neonatal Intensive Care Unit (SNICU) at Orotta Paediatric Hospital (OPH), Asmara, Eritrea. I would like to invite you to participate in the study. The findings will be used to determine staff's knowledge, attitudes and the practices of KMC, as well as their strengths and weaknesses regarding the provision of intermittent KMC in SNICU, at OPH, Asmara, Eritrea. The findings will further help to identify the training needs for staff, especially nurses. The information that you give in the interview will help me to understand the opportunities and benefits of KMC, as well as the difficulties you may experience in implementing KMC practices. This can help to improve the practices of KMC in the unit, so it is very important that you give honest, clear and detailed information to the questions in the questionnaire I am using for this study.

Do I have to take part?

You are welcome to join the study freely. You may withdraw from the study at any time without providing any reasons. Your unwillingness to be part of the research will not put your job at risk. If you agree to be involved in the study, you will be asked to sign the consent form. The information that you provide will be kept private and no one will know who answered which questions, as no names will be mentioned in the discussions. I will keep your information by giving your answers to the questions a code that only you, I and my research supervisor will know. No one at this hospital or anywhere else will know who I interviewed and what each person said in the interview.

To make sure that I do not miss anything important I would like to record our conversation. I will take notes as we go along and after the interview I will listen to the recording to make sure that I have all the information you gave me. My supervisor and I will be the only people who know what is on the recording. The information will be kept on a computer that is protected with a password that only I know. No one else will be able to get the information. I will destroy the recordings and my notes after five years.

If I take part, what will happen?

You will be asked some questions about the kangaroo mother care that you offer to preterm infants. The semi structured interviews will take 60-90 minutes.

What are the possible risks of taking part in the study?

I do not expect that there will be any risks to you. However, if you start feeling unhappy, agitated, or tired we can stop and continue at another time.

What are the possible benefits of taking part of the study?

There is no direct financial benefit, except that the researcher will provide soft drinks during the interview. As explained before, the outcome of this research will be helpful for planning better care for mothers and their newborn infants.

What will happen if something goes wrong during the study?

Concerns regarding the course of study can be forwarded to: Elsa Semere Araya, University of Cape Town, South Africa

Permission to record the interview:

Yes

No

Contact for more information:

If you have further information or concerns in any part of the study, please contact

Ms. Elsa Semere Araya, Email addresses: elsar_semere@yahoo.com

Cell number; +27636094171

Chairperson

Faculty of Health Sciences Research Ethics Committee

Room E52-24 Old Main Building

Groote Schuur Hospital Observatory

Cape Town, South Africa

Tel: +27 21 4066492

Email: sumayah.ariefdien@uct.ac.za

Supervisor contact details: **Supervisor: Dr. Jawaya Shea**

M.Phil. Module convenor, Email: jawaya.shea@uct.ac.za

Telephone: +27 (021) 658 5030, University of Cape Town, South Africa

Dr Nils Bergman: Co-Supervisor Email: nils@kangaroomothercare.com, University of Cape
Town, South Africa

Appendix 2: Consent form for the interview

PLEASE READ AND SIGN THIS FORM IF YOU ARE GOING TO BE PART OF THE STUDY.

1. I have read and understood all the information provided in the sheet. I understand the aim of the study and the problems that might occur during the study.
2. I agree to participate voluntarily, to be asked questions and to offer answers to the best of my knowledge.
3. I know I can withdraw in any time without providing any reason and this will not put my job at risk.
4. I understand I will not be harmed during the course of the study and the information provided to the researcher will not be used against me in the future.
5. I understand that information provided to the researcher will be kept confidential and will only be used by the researcher or the people directly related to the study.
6. I understand there will be no financial benefit.
7. I know how to contact the researcher if I want to.

.....
Staff member's Number	Signature	Date
.....
Researcher's Name	Signature	Date

Appendix 3: Semi – structured interview questions

Participant number:

Part A. General Information

Interviewer: I would like to start by getting to know some details about your educational and professional background.

Interviewer: What about the length of work stay and experience at the SNICU?

Part B: Staff routine practices in the unit

Interviewer: *let us start by you telling me about the routine work that you do. (What are the routine activities in your ward?)*

: With how many preterm infants do you work daily/ monthly?

: When do the preterm infants usually get admitted to the SNICU?

: What kind of care do preterm infants usually need?

: How do you involve the mother in taking care of her preterm newborn infant?

: Can you tell me about the kind of information you usually give to mothers of infants you care for?

C. Staff's knowledge of KMC

Interviewer: What comes to your mind when you think about KMC?

Probes:

- *What are the potential benefits of administering KMC to a preterm neonate, and to mothers?*
- *When do you think KMC should be administered?*
- *For how long should KMC administered?*
- *How do you think newborn infant should be kept in position during KMC?*
- *Which infants do you think should not be provided KMC?*

- *Who do you think should take the infant out of the incubator for KMC?*
- *How do you think a newborn infant should be monitored during KMC?*

Interviewer: When do you practice KMC, how and when do you usually start that type of care (KMC)? *When does KMC start in the SNICU setting?*

: What kind of KMC do you provide for preterm newborn infants during their stay at SNICU?

Probes: Are you satisfied with the KMC services that you provide so far?

: Elaborate

Interviewer: Could you describe your own experience of providing KMC to preterm newborn infants?

Probes:

- *How crucial do you, as staff, think KMC is?*
- *How would you rate the KMC provided to preterm newborn infants at SNICU?*
- *What feeds should be usually provided to preterm newborn infants during KMC?*
- *When do you think a newborn, infant can be discharged home for KMC?*
- *How often do you think newborn infants should, receiving KMC at home, be brought to the clinic for check-ups?*

Interviewer: Do you have mothers who practice KMC in the SNICU?

Probes:

- *Which women do you think should know about KMC?*
- *When do you think should mothers first be told about KMC?*
- *How do you support mothers who practice KMC?*

Part D: staff's attitude towards the practice of KMC

Interviewer: Could you explain the benefits of administration of KMC for newborn infants with preterm complications?

Do you think practice of KMC can have a positive effect on parental confidence?

Elaborate

Interviewer: Could you describe the benefits of encouraging all parents to practice KMC at the hospital and after discharge at home?

Probe: Who do you think has the most influence mainly on a woman who is deciding whether or not to provide KMC at home?

Interviewer: Do you think parents can feel forced to practice KMC?

Elaborate

Interviewer: In your opinion, is facilitating KMC professionally satisfying?

Elaborate

Interviewer: Could you explain how KMC could increase work load for staff?

Interviewer: Who do you think should order the practice of KMC?

Elaborate

Interviewer: Do you consider checking over the infant while on KMC equivalent to incubator care?

Interviewer: Do you think practicing KMC takes up too much of staff member's time?

Interviewer: Would you encourage parents to practice KMC over incubators even though you understand it might create staff work load?

Elaborate

Interviewer: What is your opinion for parents to practice KMC during the night?

Interviewer: Would you describe the availability of enough space for parents to practise KMC?

Part E: Availability of KMC guidelines and protocols

Interviewer: What guidelines and protocols does SNICU use during the provision of KMC?

Main probe: Are you aware of any protocols regarding KMC?

Probe:

- *How do you use the protocols for KMC practice?*
- *Can you remember how it was first introduced?*
- *Are the protocols easy to understand?*
- *Did you have any training?*
- *Did the staff meet to discuss about it?*

Interviewer: If there is a policy or guideline, what made it easy to implement the policy?

Can you tell me about the challenges you experienced in trying to implement the KMC policy?

Probes:

- *What would happen if you used the protocols and guidelines when making decisions about KMC practice?*
- *How accessible are KMC protocols and guidelines to you (staff)?*

Part F: KMC ward availability

Interviewer: Do you think the SNICU KMC ward is adequate?

Main probe: *How expensive do you think to run a Kangaroo Care ward?*

Probes:

- *What facilities do you think are required for a kangaroo care ward?*
- *What staff do you think are required for a kangaroo care ward?*
- *What special facilities do you think are required to provide KMC in the nursery?*

Interviewer: what comes to your mind when you think about ambulatory KMC?

Probes: Who do you think can provide KMC during transport in an ambulance?

Part G: Factors that facilitate or hinder the practice of KMC

Interviewer: *In your opinion, what things can facilitate comprehensive KMC practice?*

What should be improved with regard to provision of KMC?

Interviewer: *Could you explain the major challenges that the staff are facing during the practise of KMC?*

Interviewer: *Is there anything else that you would like to share with us about KMC?*

Closing remarks: Thank you for being part of this study. The results will be disseminated to University of Cape Town and to the Eritrean Ministry of Health when the results are ready.

Appendix 4: Tigrigna translated semi – structured interview

ተሳታፊ ቁጽረ :

Part A. General Information

ሓታቲት: ናይ ትምህርትኻን ስራሕኻን ድሕረ ባይታ

—

ሓታቲት: ኣብ ዋርድ A ብስራሕ ዝጸናሕክሉ ግዜን ተሞክሮኻን

Part B: Staff routine practices in the unit

ሓታቲት: በቲ ልሙድ/መዓልታዊ ትሰርሕዮ ስራሕ ኣብ ዋርድ A ክንጅምር

_____ : ኣብ መዓልቲ/ወርሒ ምስ ክንደይ preterm infant's ትሰርሒ

_____ : Preterm infant's መብዛሕትኡ ግዜ መዓስ admitted ይኾኑ

_____ : መብዛሕትኡ ግዜ ንpreterm infants እንታይ ዓይነት care የድልዮም

_____ ; ከመይ ገይርኪ ንmothers ኣብ መስርሕ ናይ care ናይ neonate ተሳታፊት (involve) ትገብርያ

_____ : ንኣዴታት መብዛሕትኡ ግዜ እንታይ ምኽረ/ሓበሬታ ትህብዮን

C. Staff's knowledge of KMC

ሓታቲት: ብዛዕባ KMC ክትሓስቢ ከለኪ ኣንታይ ሓሳባት ይመደልኪ

Probes: ኣገዳሲ ጥቅምታት ናይ KMC ንpreterm infants

_____ : ኣገዳሲ ጥቅምታት ናይ KMC ንmothers

_____ : KMC መዓስ ክግበር ኣለዎ ኢልኪ ትሓስቢ

_____ : KMC ንክንደይ ዝኣክል እዋን ክወሃብ ኣለዎ ኢልኪ ትሓስቢ

_____ : KMC ክግበር ከሎ እቲ infant ኣብ ከመይ position ክተሓዝ ኣለዎ

:ብናትኪ ሓሳብ ኣየኖት neonates እዮም KMC ክወሃቡ
ዘይብሎም _____

: መን ኢዩ ንneonate ካብ incubator ከዉጽኦ ዘለዎ for
KMC _____

: during KMC neonate ብከመይ monitored ክከዉን ኣለዎ ኢልኪ
ትሓስቢ _____

ሓታቲት: KMC practice ክትገብረ ከለኺ መዓስን ብኸመይን ትጅምረ፣ ኣብ ward A KMC መዓስ
ይጅምር _____

:እንታይ ዓይነት KMC ትህቢ ኣብ ward A (intermittent-continous)

Probe: ክሳብ ኡጂ ብዝወሃብ ዘሎ KMC ዕግብቲ ዲኺ

:መነጻርታ

ሓታቲት: ናትኪ ተመክሮ ኣብ KMC ንinfants ምሃብዎ
ምገለጽክለይ _____

Probe: ንስኪ ከም staff KMC ክሳብ ክንድምንታይ ኣገዳሲ
ይመስለኪ _____

: ኣብዚ setup ንKMC ከመይ
ምገምገምኪዮ _____

: ኣብ ግዜ KMC ንinfant እንታይ ምግብና ክቅረበሉ
ኣለዎ _____

: Neonate መዓስ discharged ክከዉን ይኸእል for
KMC _____

; ኣብ ገዛ neonate ኣብ ክንደይ KMC ክወሃብ
ኣለዎ _____

; ካብ ገዛ neonate ኣብ ክንደይ ንcheck up ክመጽእ
ኣለዎ _____

ሓታቲት: ኣብ ward A KMC practice ዝገብሩ mothers ኣለዎዎ

Probes: ኣየኖት ኣንስቲ እዮን ብዛዕባ KMC ክፈልግ ዘለዉን ኢልኪ
ትሓስቢ _____

:ሓንቲ Mother ንመጀመርታ ግዜ መዓስ ብዛዕባ KMC ክትንገር ኣለዎ ኢልኪ
ትሓስቢ _____

:ነmothers KMC practice ዝገብራ ብከመይ
ትድግፊዮን/support _____

Part D: staff's attitude towards the practice of KMC

ሓታቲት: ጥቅምታት KMC ኣብ neonates with preterm complications? _____

:KMC ኣብ parental confidence ኣወንታዊ ጽልዎ ክህልዎ ይክእል ኢልኪ
ትሓስቢ _____
መነጻርታ: _____

ሓታቲት: ጥቅሚ ናይ ምትብባዕ KMC ንኩሎም parents ኣብ hospital ን ናብ ገዝአም discharge ምስ
ተበሃሉን _____

Probe: ንሓንቲ ኣደ KMC practice ክትገብር እቲ ቀንዲ ጽልዎ ዘለዎ ሰብ መን እዩ ኢልኪ
ትሓስቢ _____

ሓታቲት: ንparents KMC practice ክገብሩ ክነገድዎም ንክእል ኢልኪ ዶ
ትሓስቢ _____
መነጻርታ: _____

ሓታቲት: ብናትኪ ሓሳብ ንKMC ምትብባዕ ሞያዊ ዕግባት የምጽእ
ዶ _____
መነጻርታ: _____

ሓታቲት: KMC ከመይ ኢሉ work load for staff ክብዝኹ
ይክእል _____

ሓታቲት: መን order ክገብሮ ኣለዎ
ንKMC _____
መነጻርታ: _____

ሓታቲት: ንneonate ኣብ KMC ከሎ check ምግባርን ንneonate ኣብ incubator ከሎ ckeck ምግባርን ከመይ ተወዳድርዮ?
ሓደ ዓይነት
ከይኑዶ ይስመዓኪ?

ሓታቲት: ንKMC practice ምግባር ንናይ staff ግዜ የዐርዩ/ማራ ዝወድእዶ ከይኑዶ
ይስመዓኪ _____

ሓታቲት: ዋላ ንstaff ጻዕቂ ስራሕ ከም ዝፈጥር እነተተረደኡኪ ንወለዲ KMC (ኣብ ክንዲ incubator) practice ምግባር
መተባብዕክዮምዶ?

መነጻርታ: _____

ሓታቲት: ኣብ ግዜ ለይቲ ወለዲ KMC practice ክገብሩ ብናትኪ ሓሳብ ከመይ
ትርእዮ _____

ሓታቲት: ወለዲ KMC practice ንክገብሩ ብናትኪ ሓሳብ እኹል ቦታ
ኣሎዶ _____

Part E: Availability of KMC guidelines and protocols

ሓታቲት: ንKMC ዝምልከት ኣብ ward A እንታይ guideline and protocol ኣሎ _____

Main probe: ብዛዕባ ንKMC ዝምልከት ዝኾነ protocol ህላዉነት (awareness) ኣፍልጦ ኣለኪዶ _____

Probe: ንኖይ KMC practice protocol ብኸመይ ትጥቀምሉ _____

ብኸመይ ንመጀመርታ ከም ዝተኣታተዎ ትዝክርዮዶ _____

እቲ Protocol ክትርድኦ ቀሊልዶ _____

ዝኾነ Training ወሲድኪ ትፈልጢዶ _____

Staff ተኣኪብክን discuss ገይርክናሉ ነይርክንዶ _____

ሓታቲት: Policy ወይ guideline እንተሎ, ንኸትትግብሮ ቀሊል ዝገበሮ ነገር? ንኸትትግብሮ ብድሆ ዝኾነክ? _____

Probe: ብዛዕባ KMC practice ዉሳነታት ክዉሰድ ከሎ ቦቲ protocol ወይ guideline እንተትምርሒ እንታይ መጋጠመ ነይሩ? _____

: ኖይ KMC protocol and guidelines ክሳብ ክንደይ ብቀሊሉ ክትረኽብዮ (access) ትኽእሊ _____

KMC unit's availability:

ሓታቲት: ንኣዶ kangaroo care ward run ክትገብር ክሳብ ክንድምንታይ ክቡር ይመስለኪ _____

Probe: ን kangaroo care ward ክሰርኹ እንታይ ዓይነት facility ዩድልዩ ኮይኑ ይስመዓኪ _____

ን Kangaroo care ward ክሰርኹ እንታይ ዓይነት staff ዩድልዩ ኮይኑ ይስመዓኪ _____

ኣብ ኣዶ neonates ዝድቅሱሉ ቦታ KMC practice ንምግባር እንታይ ፍሉይ ምሳልዮጣ ዩድሊ ኮይኑ ይስመዓኪ _____

ሓታቲት: ብዛዕባ ተንቀሳቃሲ KMC ክትሓስቢ ከለኺ እንታይ ትዝክረ/ኣብ ሓንጎልኪ ይመዳልኪ _____

Probe: አብ ግዜ ምንቅስቃስ ብambulance ሙን KMC ክህብ ይግብኦ ኢልኪ ትሕስቢ_____

Part F: Factors that facilitate or hinder the practice of KMC

ሓታቲት: ብናትኪ ሓሳብ KMC በቲ ግቡእ ሙንገዱ ንክዉሃብ እንታይ ነገራት ክግበር ኣለዎ_____

ሓታቲት: ስፕላይን ክሙሕዮሽ ዝግብኦ ነገራት ኣሎ KMC ንምሃብ_____

ሓታቲት: Staff KMC practice ንክይገብሩ እቲ ቀንዲ ብድሆ ኮይኑ ዘሎ ነገር ክትገልጽለይ ትኸእሊዎ_____

ሓታቲት: ዝኾነ ካልእ ብዛዕባ KMC ክትብልዮ ትደልዩ ነገር እንተሎ_____

መዕጻዊ: ኣብዛ መጽናዕቲ ክትሳተፊ ድልዉቲ ብምንባርኪ ከመስግነኪ እደሊ። እቲ ዉጽኢት ምስ ተወደኦ ናብ University of Cape town and ሚኒስትሪ ጥዕና ናይ ኤርትራ ክዝርጋሕ እዩ።

Appendix 5: Dissertation time line

Activity	Month											2016	Dec 2017
	Nov 2014	Dec 2014	Feb 2015	Apr 2015	May 2015	Jun 2015	Aug 2015	Sep 2015	Oct 2015	Nov 2015	Dec 2015		
Development of research proposal													
Proposal submission to human research ethics committee													
Literature review and writing													
Data collections													
Data analysis													
Report writing and Dissemination of findings													
Submission of research for marking													
Correction of the paper by examiners													
Graduation													

Appendix 6: Research budget

Item	No.	Duration	Unit Cost of item	Total Cost
Salaries				
Research assistant (local medical doctor)	1	2 months	1 7 staff x R100per hr	R1, 700
<i>Subtotal</i>				<i>R1,700</i>
Travel				
International travel (return ticket)	1	Entire project	1x R 15, 000	R15, 000
Local travel allowance for researcher and research assistant	2	2 months	2 x 2 x R 60	R240
<i>Subtotal</i>				<i>R15, 240</i>
Services				
Internet service		2 months	2hrs per day xR10 x30days	R 600
<i>Subtotal</i>				<i>R600</i>
Stationery				
Reams of papers	6		R6x6	R36
Ball point pens	10		R2x10	R20
Pencils	5		R1x5	R5
Erasers	4		R1x4	<i>R4</i>

Sharpeners	4		R2x4	R8
Tippex	2		R50x2	R100
Small Envelope	18		R0.5x18	R9
A 4 envelop	20		R1x20	R20
Audio digital recorder	2		R200x2	R400
Rechargeable batteries	4		R20x4	R80
<i>Subtotal</i>				R 682
Printing and binding charges				-
Language editing		Entire project	1xRo.15 x25,000words	R 3,750
Interview guides	20		20x R0.35x6	R42
Printing Proposals	4		4xR0.35x30	R42
Binding proposals	4		4xR25	R100
Consent forums	20		20xR0.35x2	R14
Data analysis			1xR100x20hr	R2000
Printing dissertation	4		4x0.35x70	R98
Binding dissertations	4		4xR25	R100
<i>Subtotal</i>				R8,396
Other costs				
Accommodation	2		R5,000/month	R10,000
Airtime		Entire project		R1,000
<i>Subtotal</i>				R11,000
<i>Grand total</i>				R38,118

Appendix 7: Observation checklist

Post-partum KMC skills and staff routine care checklist:					
<i>Participant's number:</i>					
<p><i>Evaluator: Read the following case situation and instructions to the participant:</i></p> <p><i>“You are conducting a MNC 1 visit, the newborn was in KMC position. You have completed the newborn check-up for danger signs. Now you ask the mother to put the baby back in KMC position. Please demonstrate what assessment and counselling you will provide this mother with regards to KMC.</i></p> <p><i>(Note: This information may be given in any order.)</i></p>					
Steps					Scores (0 or 1)
1	<p>A. The interaction/ communication between staff and caregivers with regard to assessing specific needs during their stay in SNICU.</p> <p>Congratulate the mother for practicing KMC and explains that she would like to assess how the mother is practicing KMC</p>				
2	<p>Observes if the newborn infant is dry and clean, has a cap and a diaper/nappy/kantha on</p>				

Post-partum KMC skills and staff routine care checklist:

3	If the newborn infant is not naked, explains the importance of baby being naked for KMC					
4	Observe the mother's position the newborn infant upright between her breasts, feet below her breasts and hands above.					
5	If the mother is not practicing correctly, instructs/helps the mother and the NCP position the baby upright between her breasts, feet below her breasts and hands above.					
6	Observes the newborn infant's head turned to one side.					
7	If the head is not rightly placed helps the mother to turn newborn infant's head to one side					
8	Observes how the newborn infant is wrapped to her body: Places the centre of a sari/lungi over the back of the baby on the mother's chest. Crosses the ends of the cloth behind the mother's back, brings them back around, and ties them in the front underneath the newborn infant.					
9	If the mother is not wrapping properly shows the mother how to snugly wrap the newborn infant to her body					

Post-partum KMC skills and staff routine care checklist:

10	Ask the mother if she has any concern in practicing KMC and address accordingly					
11	Ask mother with any feeding difficulties of the newborn infant, addresses them appropriately					
	<i>Add up all the ones (1) and write the total number in this box</i>					
	<i>Date and signature of the person who scored the performance:</i>					

Appendix 8: Approval letter from Human Research Ethics Committee, UCT



UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee



Room E52-24 Old Main Building
Groote Schuur Hospital
Observatory 7925

Telephone [021] 406 6338 • Facsimile [021] 406 6411

Email: shuretta.thomas@uct.ac.za

Website: www.health.uct.ac.za/fhs/research/humanethics/forms

16 November 2015

HREC REF: 345/2015

Ms J Shea

Child health Unit
(SCAH) School of Child & Adolescent Health
Red Cross War Memorial Children's Hospital

Dear Ms Shea

PROJECT TITLE: KNOWLEDGE AND ATTITUDES TOWARDS THE PRACTICE OF KANGAROO MOTHER CARE (KMC) AMONG STAFF IN ASMARA ERITREA (MPhil-candidate- E Araya)

Thank you for submitting your response to the Faculty of Health Sciences Human Research Ethics Committee dated 3 November 2015.

It is a pleasure to inform you that the HREC **has formally approved** the above-mentioned study.

Please note: the study will only occur at one paediatric facility in the country, this is therefore not a national study. The timeline schedule will have to change.

Approval is granted for one year until the 30th November 2016.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.

(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

Please quote the HREC REF in all your correspondence.

We acknowledge that the student, Elsa Araya will also be involved in this study.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Yours sincerely


PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE

Federal Wide Assurance Number: FWA00001637.

Institutional Review Board (IRB) number: IRB00001938

This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical

HREC 345/2015

Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Convention on Harmonisation Good Clinical Practice (ICH GCP), South African Good Clinical Practice Guidelines (DoH 2006), based on the Association of the British Pharmaceutical Industry Guidelines (ABPI), and Declaration of Helsinki (2013) guidelines.

The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

Appendix 9: Eritrean Ministry of Health ethical approval letter

ሃገረ ኤርትራ
ሚኒስቴር ጥዕና



دولة ارتريا
وزارة الصحة

The State of Eritrea MINISTRY OF HEALTH

Date: 24/07/2014
Ref. No. /5.62/4225/14

To : Elsa Semere Araya
University of Cape Town
South Africa

Subject: Acceptance of your proposal and permission to collect data

It is to be recalled that you submitted a draft proposal on knowledge of and Attitude Toto the Practice of Kangaroo Mother Care among staff in Orotta Pediatric Hospital, a Specialized Neonatal Intensive Care Unit. Asmara, Eritrea.

Hence the Ethical and Proposal Review Committee of our Ministry reviewed it and got acceptance. And you are given permission to collect data from the specified health facility.

On this occasion the Division of the Health Research and Documentation of the Ministry of Health of the State of Eritrea is ready to collaborate and give help needed during your stay in Asmara.

Regards,



Dr Berhane Hebru
Director of Health Research Division
Policy Planning and HRD Department
Ministry of Health, Eritrea

ቴሌ/ Tel. 120297
202917

ፋክስ / Fax. 291 - 1 - 122899
ፋ.ሳ.ፖ. P.O.Box 212

ፋክስ 1-122899-291
ሪ.ቁ. 212

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