NEWBORN CARE PRACTICES AMONG POSTNATAL MOTHERS IN GARISSA

COUNTY, KENYA

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P139/20118/2010

A RESEARCH THESIS SUBMITTED IN PARTIAL FUFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN PUBLIC REPRODUCTIVE HEALTH IN THE SCHOOL OF PUBLIC HEALTH OF KENYATTA UNIVERSITY

NOVEMBER 2015

DECLARATION

This thesis is my original work and has not been presented for a degree in any other University or for any other award.

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We confirm that the work reported in this thesis was carried out by the candidate under our supervision as University supervisors.

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DEDICATION

I dedicate this work to my wonderful family; in particular to my loving husband David and our son Favor for their love, support and allowing me to spend some of their family time for my studies and for their unwavering support, patience and constant encouragement without which this work would not have been accomplished.

ACKNOWLEDGEMENT

I wish to express my gratitude to my supervisors Prof. Ephantus Kabiru and Dr. Gaudencia Okumbe for their in valuable assistance, guidance and suggestions during the period of formulating the research proposal, data collection, analysis and writing of the thesis report. I give special thanks to David Gathara for in depth review and critique of the final thesis. I also recognize my friend classmates and colleagues who offered needful peer critique and encouragement whenever these were required. My gratitude goes to Onesmus Mutie for invaluable time and support during the data collection process. Above all, I thank the Almighty God for the grace, good health and wisdom He gave me to accomplish this study.

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OPERATIONAL DEFINITIONS

A **newborn** is an infant who is only hours, days, or up to a few weeks old.

Neonate: A newborn baby or an infant aged 0-28 days of birth.

Essential Newborn Care: A set of practices that reduces neonatal morbidity and mortality such as clean cord care, thermal care (keeping baby warm by wrapping in clean and dry clothes and delaying bathing until 24 hours after birth) and initiating breastfeeding within the first hour of birth.

Good Newborn Care Practices: The practice of cutting the cord and leaving it dry without applying anything ; the practice of breastfeeding child within an hour of birth (early breastfeeding) and the practice of not bathing the child until 24 hours after birth (delayed bathing) are considered good newborn care practices in this study.

Delayed Bathing/Good bathing; was considered as delayed bathing of the baby until after 24 hours after delivery to reduce the risk of hypothermia

Early Breastfeeding/Good breastfeeding: The practice of putting a newborn to the mother's breast within one hour of birth and initiate breastfeeding.

Good cord care practice was defined as nothing applied to the cord stump after cutting the umbilical cord.

Poor cord care practice was defined as when anything was applied to the cord stump after cutting which in this study included methylated spirit, oil, herbs, iodine and cow dung.

Health facility delivery: Delivery that occurred both in private and public health facility irrespective of the level.

Clean delivery materials: Sterilized or clean materials

ABBREVIATIONS AND ACRONYMS

ANC	Antenatal Care
CHVs	Community Health Volunteers
CUs	Community Units
DHS	Demographic Health Surveys
FGDs	Focused Group Discussion schedule
IMCI	Integrated management of Childhood Illnesses
KDHS	Kenya Demographic Health Survey
KSPA	Kenya Service Progressive Assessment
MDG	Millennium Development Goal
MOPH & S	Ministry of Public Health & Sanitation
NGO	Non-Governmental Organization
NMRs	Neonatal Mortality Rates
TBAs	Traditional Birth Attendants
WHO	World Health Organization

ABSTRACT

Every year, four million infants die within their first month of life, representing nearly 40 per-cents of all deaths of children under age 5 globally. In Kenya, neonatal mortality is 31 per 1000 live births with neonates contributing 42% of the under-five mortality while in North Eastern province (which hosts Garissa County the area of study) under-five mortality was 33 per 1000 with neonatal mortality contributing to 60% of infant mortality in the region. Delivery by a skilled birth attendant has remained low at 32% in this region with only 17% of births occurring in a health facility. Therefore understanding newborn care practices in the home environment where most newborns are born is essential in order to develop appropriate approaches for reducing neonatal mortality. The aim of this study was therefore to establish the newborn care practices (thermal care, cord care and breastfeeding) in the community among post-natal mothers in Garissa County, Kenya. A cross-sectional study design was used to evaluate newborn care practices in seven community units. Data was collected from 421 respondents from a randomly selected sample of postnatal mothers who had delivered in the past one year preceeding the study period in the community of study. Data was collected through semi-structured questionnaires, key informant interviews and focused group discussions. Data was analyzed using STATA. Chi-square and logistic regression were to test for association between the various explanatory factors and the newborn care practices. A total of 421 respondents were interviewed. The mean age of the respondents was 24 (SD 5) years with majority 70% between 20-29years. Majority of the respondents were married 97% (407). Most of the respondents, 51% (212) had no formal education. Newborn care practices were identified as poor in 14% of the respondents for all three practices, more specifically, 66% of the respondents had poor breastfeeding practices, 57% had poor cord care practices and 45% had poor thermal care practices. The following factors were significantly associated with poor newborn care practices: The logistic regression analysis revealed that, across all three newborn practices timing of the first ANC visit (P value <0.001) and place of delivery (P value < 0.001) had significant influence on newborn care practices. The significant predictors of cord care practice were marital status (P value= 0.025) and timing of first ANC visit P value <0.001. Religion (P value<0.001) and Maternal occupation (P value=0.002) were significantly associated with thermal care practice. Breastfeeding was found to be influenced by religion (P value <0.001), maternal occupation (P value <0.001), attendance of ANC (P value <0.001) and paternal occupation (P value=0.005). Newborn care is still largely poor with health facility delivery, ANC attendance and early timing of ANC visit as the main predictors of good newborn care. Results from FGD and KII revealed that harmful practices such as application of cow dung on the stump, immediate bathing of the newborn and introduction of pre-lacteals meals were still being practiced. This was driven by traditional beliefs. This study recommends need advocacy to mothers to deliver at health facilities and seek antenatal care early as this will promote good newborn care practices. The study recommends further research on assessing newborn care practices at among the health care providers at facility level.

CHAPTER ONE: INTRODUCTION

1.1 Background

Newborn care is of immense importance for the survival and proper development and healthy life of a baby(Shahjahan et al. 2012). It is strongly influenced by home care practices instituted by the mother, as well as by maternal and newborn cares services at health facilities. The women's social and health status are crucial as well. The three major causes of neonatal deaths worldwide are infections (36%, which includes sepsis, pneumonia, tetanus and diarrhoea), pre-term (28%), and birth asphyxia (23%)(Wang et al;2 014). Newborn care is very important in preventing neonatal deaths, particularly essential care of the normal newborn to prevent illnesses which include extra care of low birth weight babies, and access to quality emergency care for the sick newborn(Darmstadt et al. 2005). The health of a newborn depends on the care provided by the caregivers. The care given to the newborn immediately after birth and in both early and late neonatal period is critical in determining its survival. Simple cost effective interventions such as hygienic cord care and early and exclusive breastfeeding helps in prevention of infection and promote child growth respectively (Joy E Lawn, Cousens, and Zupan 2005).

However, the care needed by newborns may not be appropriately availed to them by their caregivers due to various factors including socio cultural, economic and demographic factors affecting mothers as well as other care givers. For instance, some cultural practices hinder the health and survival of the newborn..(Otoo, Lartey, and Pérez-Escamilla 2009). Young first-time mothers are often most likely to follow this blindly.

Improvement of newborn care has been central concern at International fora. These include Millennium Development Goals, Global Strategy for women and child health

and Health for all Policy among others. Current global evaluations confirm that commitment to improving newborn health makes meaningful socio-economic contributions(Yinger and Ransom 2003) . Newborn health is closely related to that of their mothers. In addition, newborns have a unique need that must be addressed in the context of maternal and child health services(Tinker Anne and Ransom Elizabeth 2003). Tinka and Ransom, 2003 further argue that millions of newborn deaths could be avoided if more resources were invested in proven low-cost interventions designed to address newborn needs. Although newborn care is a very essential element in reducing child mortality, it often receives less than optimum attention(Marah 2011). Each year close to four million newborns die worldwide (Joy E Lawn, Cousens, and Zupan 2005). Over 98% of these deaths occur in developing nations with the highest rates being in Africa (Joy E Lawn, Cousens, and Zupan 2005). In Kenya and other African countries neonatal mortality contributes significantly to under five mortality making achievement of MDG 4 difficult and hence the need to invest in addressing neonatal mortality through best newborn care practices. It is with this conviction that this study is undertaken in Garissa County to ascertain newborn care practices with a view to recommend low cost interventions to save the lives of many neonates that perish in this region.

1.2 Statement of the problem

According to Kenya Demographic Health Survey (KDHS) 2014, the neonatal mortality rate was 22 per 1000 live births with neonates contributing 42% of the under-five mortality. Neonatal mortality in North Eastern province (which hosts Garissa county) was higher than the national average at 33 per 1000 in 2009 compared to 31 per 1000 (KDHS 2009). However, this neonatal mortality contributed to 60% of infant mortality in the region. The situation is compounded by the fact that

most babies are born at home under care of unskilled attendants. Delivery by a skilled birth attendant has remained low at 32% in this region with only 17% of births occurring in a health facility. This is further complicated by immediate discharge (within 2 days) post-delivery making the situation worse in light that most of the neonatal deaths occur in the community where home delivery stands at 63% according to KDHS, 2014). In addition, community studies on newborn care practices in the region are scanty and hence the study is undertaken to help understand newborn care practices in the home environment which will help unpack the factors driving the observed high neonatal mortality rate in the region. Garissa County was selected for this study because it has high cases of neonatal mortality both rural and urban, with most deliveries at home (KDHS, 2014). Furthermore, trends in health indicators are scanty since initially, the area was not included in the KDHS until recently.

1.3 Justification

With most neonatal deaths in developing countries occurring at home and unattended by skilled professionals, it is necessary to understand the care given to the newborns in a home setting. Most home environments especially in Garissa county lack the basic sanitation required for survival of neonates. In addition, slow decline in neonatal mortality in Kenya calls for action to address factors contributing to acceleration of the situation thus hampering achievement of millennium development goal four. Provision of simple and low cost effective newborn care interventions at home where majority of the newborns are delivered is therefore necessary in bringing down number of newborn deaths. Additionally, understanding routine newborn care practices in the home environment will inform the designing and prioritising of interventions for newborn survival. Therefore, the information from the study would

be very useful to inform the County government in addressing county specific newborn care gaps.

While information on newborn care practices in the community in Kenya may be scanty, this study will provide an insight on the situation of newborn care in Garissa County to the policy makers for planning and decision making.

1.4 Research questions

1. What are the cord care practices among postnatal mothers in Garissa sub County?
2. What are the thermal care practices among postnatal mothers in Garissa sub County?
3. What are the breastfeeding practices among postnatal in Garissa sub County?
4. What are the socio demographic factors influencing newborn care practices among postnatal mothers in Garissa sub County?

1.5 Null hypothesis

Socio demographic factors do not influence newborn care practices among postnatal mothers in Garissa sub County.

1.6 Objectives of the study

1.6.1 Main objective

To establish newborn care practices among postnatal mothers in Garissa sub County.

1.6.2 Specific objectives

1. To determine cord care practices among postnatal mothers in Garissa sub County.
2. To describe thermal care practices among postnatal mothers in Garissa sub County.
3. To determine breastfeeding care practices among postnatal in Garissa sub County.
4. To identify the socio demographic factors influencing newborn care practices among postnatal mothers in Garissa sub County.

1.7 Significance of the study

This study makes significant contribution on interventions to improve newborn health and factors to address in bringing down neonatal mortality. This is of benefit to individuals and groups in local, national, regional and international arena.

The findings of this study will be useful in development of strategies to improve newborn care, and promotion of newborn survival. The data generated is useful in developing programs for community health interventions.

Information on household newborn care practices can be utilized in developing culturally appropriate interventions to address neonatal mortality in the region which predominantly practices nomadic pastoralist and generally lags behind in development.

Information from this study will be important to health care workers and policy makers in developing appropriate health messages for the clients attending MCH clinics both during pregnancy and the postnatal period with regard to care of their

newborns. The study is a requirement for the award of Masters Degree in Public Reproductive Health in Kenyatta University.

1.8 Limitation and Delimitations

Limitations: The North Eastern region where the study area is located is a marginalized area with poor socio-economic indicators and hence these findings can't be generalized to the rest of the country. The study required first hand information from the respondents yet most of them did not keep records. The accuracy of the information therefore depended on the respondents' ability to recall services offered in their most recent delivery.

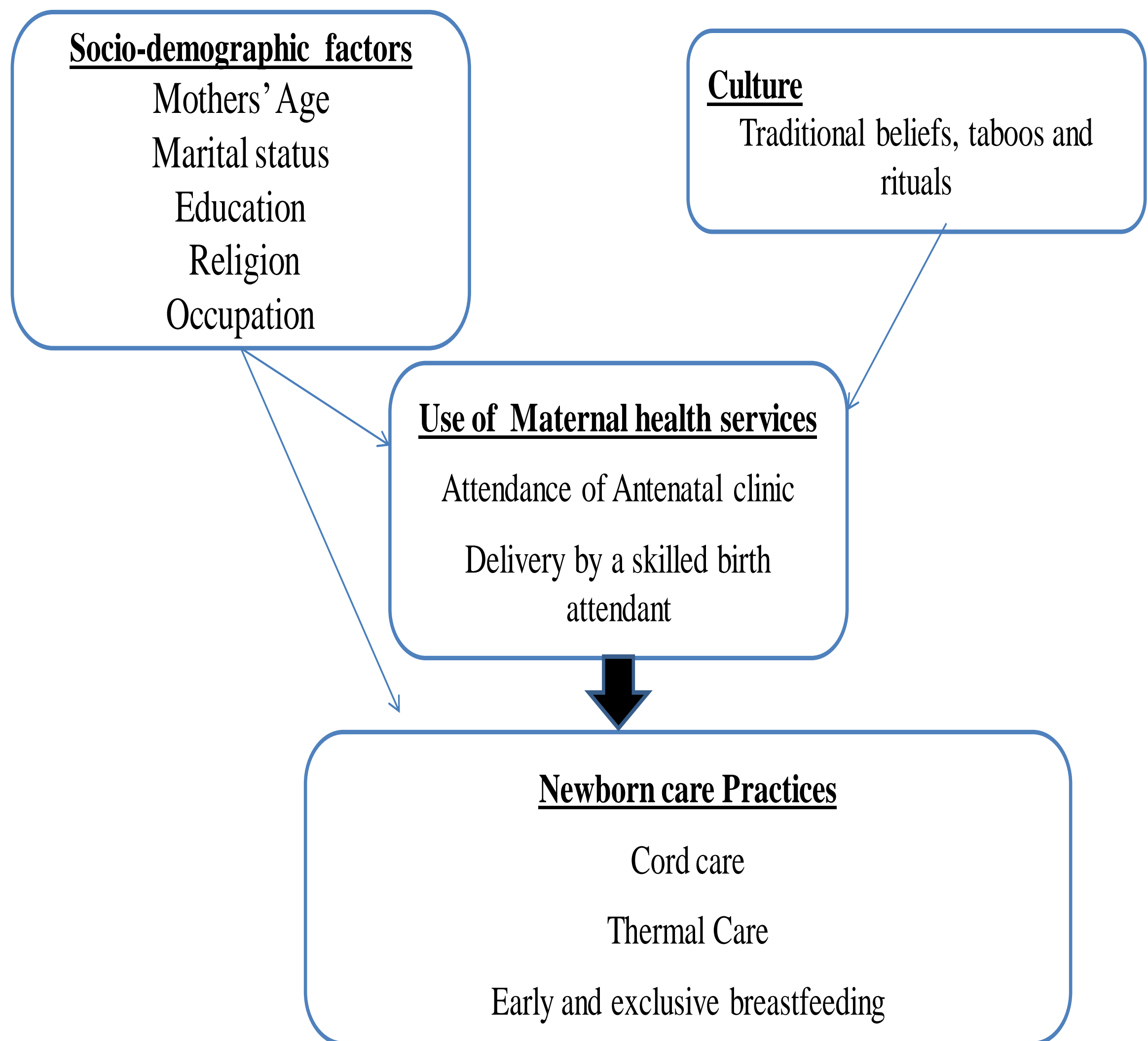
De-limitation: To minimize recall bias the study considered the most recent delivery with a limited period up to one year post delivery. The study findings can be replicated to other marginalized settings in the country.

1.9 Conceptual framework for factors influencing newborn care

Basic care for all newborns include promoting and supporting early and exclusive breastfeeding, keeping the baby warm, increasing hand washing and providing hygienic umbilical cord and skin care, identifying conditions requiring additional care and counselling on when to take a newborn to a health facility are a pre-requisite to provision of good newborn care(Darmstadt et al., 2005)(WHO 2013).

Several factors play a role in determining newborn care and survival (Fig 1-1). A mother's health and a newborn's health are inseparable from each other. The important maternal socio-demographic factors that influence newborn mortality and survival are the age of mother at birth, parity, education of mother and ethnicity. Health services important in maternal and newborn health include antenatal care which addresses birth preparedness and delivery by a skilled birth attendant. The

place of delivery is also an important indicator of health service utilization and an important factor in understanding newborn care practices. Underlying all the above factors are the culture, tradition and beliefs prevailing in the community which influence newborn care practices by women and families (Tuladhar, 2010).



Source: Adapted and modified from Tuladhar (2010)

CHAPTER TWO: LITERATURE REVIEW

2.1 Global Situation on Newborn Care

A newborn also known as a neonate is an infant who is only hours, days, or up to a four weeks old (28 days) after birth. Any death of an infant that occurs within the first month of life (neonatal period) is termed as a neonatal death. The newborn is at the highest risk of death in the first week of life with greatest of this risk being in the first day(Joy E Lawn, Cousens, and Zupan 2005). This high risk in mortality could be attributed to the many physiological and anatomical changes that occur at birth, therefore the environment and the circumstances surrounding these changes greatly influence the survival of a neonate. Essential Newborn Care (ENC) is recommended as a way to reduce neonatal morbidity and mortality (WHO 2013). The ENC refers to a set of practices that reduces neonatal morbidity and mortality such as clean cord care, thermal care (keeping baby warm by wrapping in clean and dry clothes and delaying bathing until 24 hours after birth) and initiating breastfeeding within the first hour of birth(WHO 2008).

Over the last 22 years all regions have experienced slower reductions in neonatal mortality than in under five mortality. Globally, neonatal mortality has declined 32 percent, from 32 deaths per 1,000 live births in 1990 to 22 in 2011—an average of 1.8 percent a year, much slower than for under-five mortality (2.5 percent per year)(UN-IGME 2011).

There are about 4 million neonatal deaths each year globally and nearly 75 % of these die in the first week and 40% in the first 24 hours after birth(Joy E Lawn, Cousens, and Zupan 2005). Newborns in developing countries are eight times more likely to die than newborns in industrialized countries. Ninety-nine percent of all newborn deaths occur in developing countries(Joy E Lawn, Cousens, and Zupan 2005). Newborn care

is provided globally through the WHO recommended ENC using cost effective interventions.

In many developing countries, deaths of newborns account for over half of all deaths in infancy, with the vast majority occurring in the first few days of life. The major causes of such deaths are serious infections such as sepsis, pneumonia, neonatal tetanus, (36 per cent), prematurity (27 per cent), birth asphyxia (23 per cent) and congenital malformations (7 per cent)(UNICEF 2009).

Neonatal mortality overall is higher in Africa than in other regions of the world. The underlying social determinants that contribute to the causes of newborn deaths are poverty, low levels of maternal education and inequities in access to quality health care. In addition poor socio cultural practices like applying cow dung on the cord stump, use of unsterile equipment during home deliveries and use of herbal concoctions during resuscitation have greatly contributed to neonatal mortality among newborns born at home(Moyer et al. 2012)(Marah 2011). Also, until recently, there has been insufficient attention paid to neonatal health and it has received relatively little funding in relation to the large numbers of deaths. Part of the problem has been a lack of reliable information on how many newborns are actually dying, since births and deaths are not always registered. It is estimated that as many as half of African newborns who die go unregistered, invisible to national and regional policies and programmes(J E Lawn et al. 2009; Joy E Lawn, Cousens, and Zupan 2005). It is very difficult to deliver the interventions to those who need them if we do not know where they are.

Two thirds of the newborn deaths could be prevented if all mothers and newborns had access to a small number of interventions that are well-known, feasible and deliverable without complex technology. These include tetanus toxoid immunization as part of antenatal care, birth care by a skilled attendant, early exclusive breastfeeding, cord care and warmth, and timely treatment for newborn illness. However, the current coverage of these effective interventions is too low(Bhutta et al. 2014).

Many African countries that have made specific efforts in the last five to ten years have made good progress in reducing newborn deaths(WHO 2007). Burkina Faso, Eritrea, Malawi, Uganda and the United Republic of Tanzania have all achieved neonatal mortality rates of between 21 and 35 per 1,000 live births, despite gross national income of less than $500 per capita(Chronicle 2015). In some of these countries, newborn mortality has been reduced by more than 20 per cent. It is no coincidence that they are the countries in the African region that have invested in maternal health, child survival, Integrated Management Childhood Illnesses (IMCI) and immunization. The lesson for other countries in the region is that, where there is political will and community commitment to improving health, it is possible to achieve results.

More attention has recently been given to Essential Newborn Care(WHO 2008). There is an increased awareness of the need to discourage some common practices detrimental to newborn health, such as slapping the newborn baby, holding the baby upside down, routine aspiration of a newborn’s mouth and nose at birth, covering the baby with only a thin towel, separating the baby from the mother, weighing the baby immediately, early bathing before 24 hours, and giving pre-lacteal feeds. The aim is to

promote evidence-based practices that contribute to improved newborn health, especially: drying and wrapping the baby immediately upon delivery, delivery onto the abdomen, hygienic cord care, early initiation of breastfeeding, and delay in weighing and bathing(Ministry of Health (MoH) 2010). Further, newborn health is directly linked to maternal health and hence improving birth outcomes depends on also improving maternal health care during pregnancy through antenatal care, skilled delivery, and the postpartum period by providing postpartum care. Improvements in maternal health care will help reduce newborn deaths(Kerber et al. 2007).

2.2 The Kenyan Situation of Newborn Care

Child mortality indicators in Kenya have shown some improvement over the last few years since 2008. Compared with 2008 findings, the findings of the 2014 KDHS(Kenya National Bureau of Statistics (KNBS) 2014) show a significant reduction in overall infant mortality, from 52 deaths per 1,000 live births in 2008 to 39 deaths per 1,000 live births in 2014. Similarly, the under-five mortality rate declined from 74 deaths per 1,000 live births in 2008 to 52 deaths per 1,000 live births in 2014. These improvements can be attributed in part to various government programmes and interventions, including: (1) the substantial increases in child immunisation coverage nationwide, (2) improvement in key malaria control measures such as ownership and use of insecticide-treated mosquito nets, (3) preventive treatment of malaria during pregnancy, and (4) presumptive treatment of childhood fever with antimalarials(Ministry of Health (MoH), 2010)). These interventions, however, do not have much impact on newborn mortality. Findings from the Kenya Demographic Health Survey show that newborn mortality has changed little during the same period (31 per 1,000 live births in 2008 and 22 per 1,000 live births in

2014(KDHS, 2014). Neonatal mortality accounts for approximately 60 percent of under-five mortality in Kenya(Kenya National Bureau of Statistics (KNBS), 2010).

Most newborn deaths in Kenya occur at home due to newborn care practices of the families especially by the mother, which are based on tradition and are not necessarily beneficial, perhaps sometimes even harmful. For instance application of cow dung or ghee on cord stumps among others. In part to change this situation, the former Ministry of Public Health and Sanitation (MOPH&S) now Ministry of Health (MOH) has made implementing community health services a top priority, with the plan that these community services can offer care quickly to newborns in trouble and also to advance healthful newborn care practices in the home. This is articulated well in the MOPHS Joint Programme of Work and Funding, 2006/07–2009/10 and in the MOPHS strategic plan of 2008-2010.

Further work done in 8 district hospitals across Kenya by Opondo *et., al* (Opondo et al. 2009), demonstrated that district hospitals which are the first level referral centres are ill equipped to provide newborn care in Kenya a situation likely to be common in other low resource settings. In addition, Gathara *et.al.,* 2011 reported that quality of care provided in the same districts hospitals was sub-optimal highlighting the need to strengthen the health care system to take care of the severely ill newborns(D Gathara et al. 2011). This situation is further complicated by the fact that more than half of the deliveries occur in the community where skilled care is limited and compromised by harmful socio cultural practices hence a more multi-level multi-sectoral problem.

2.3 Domiciliary care practices

In countries where a large proportion of deliveries take place at home (frequently with the assistance of TBAs, a support system from a health facility may increase a woman’s chances of having a safe delivery. Research has found that every pregnancy

is at risk of developing complications during birth; therefore, every pregnant woman should receive skilled care during delivery(Darmstadt et al. 2006). The concept of domiciliary care operates on the understanding that skilled care can be provided at the community level. A common approach is for facility staff to attend home deliveries, either routinely or only in cases of emergency. Retired midwives in the community can also provide skilled care to women during home deliveries(Darmstadt et al. 2006). Only 3 percent of facilities in Kenya have services supporting safe home delivery. NGO facilities (30 %) and facilities in North Eastern province (18 %) stand out as most commonly providing home delivery services(Kenya National Bureau of Statistics (KNBS) and ICF Macro 2010). Fifteen percent of facilities report that they have active TBAs working with the facility, while 44 percent have active community health workers (CHWs) working with the facility. In North Eastern province 64 % of the Health centres are most likely to be working with CHWs while 68% and 66% of government and NGO facilities also work with CHWS respectively). As for TBAs, 41 percent of facilities in North Eastern province work with them, with only 4 percent of facilities having active community midwives working with the facility(Kenya National Bureau of Statistics (KNBS) and ICF Macro 2010).

2.4 Newborn Care as a Continuum of Care

Poor newborn Care practices immediately following delivery contribute to the risk of morbidity and mortality of the newborn infant by predisposing to sepsis and hypothermia. Essential newborn care (ENC) comprises of a set of basic preventive measures including hygienic cord care, thermal control (including drying and wrapping, skin-to-skin, and delayed bathing), early and exclusive breastfeeding, and immunization. These measures are needed to ensure the survival of all newborns and to assist babies to breathe when needed. Additional components of ENC are early

recognition or detection and appropriate referral and treatment of sick newborns(Darmstadt et al. 2005). These essential newborn care practices are explained below in details.

2.4.1 Cord Care

Clean cord care has been identified as a proven intervention that saves newborn lives. Poor/unhygienic cord cutting and tying practices have been identified as risk factors for neonatal infection. There should be clean cord care procedures which are crucial in infection prevention. The umbilical cord should be cut with a clean (sterilized) blade and tied with clean (sterilized) materials, and no substances should be put on the cord stump(WHO 2006).

The cord stump remains the major means of entry for infections after birth. Principles of clean cord stump care stipulate keeping the cord dry and clean and nothing is applied on it, neither at home or in the health facility. The stump will dry and mummify if exposed to air without any dressing, binding or bandages. It will remain clean if it is protected with clean clothes and is kept from urine and soiling. No antiseptics are needed for cleaning. If soiled, the cord can be washed with clean water and dried with clean cotton or gauze. Local practices of putting various substances on the cord stump whether in health facilities or homes should be carefully examined and discouraged if found harmful and substituted with acceptable ones(WHO 2006).

2.5 Thermal Care

This is defined as keeping the newborn warm to reduce the hypothermia risk. It includes practices such as drying and wrapping the newborn immediately after delivery and delaying the new-born’s first bath to reduce the hypothermia risk(Baqui et al. 2007). Newborns regulate their body temperature much less efficiently than the adult and they lose heat more easily especially from the head(Bergström, Byaruhanga,

and Okong 2005), therefore recommended that, newborns should be thoroughly dried immediately after delivery and kept warm, the newborn to be thoroughly dried with clean towel as soon as the head and body are delivered in order to prevent hypothermia, this also helps in limiting the loss of body heat, and the stimulation produced could promote breathing and aid an asphyxiated newborn. It is also recommended that bathing should be delayed and should not be washed in the first 24 h in order to reduce the risk of hypothermia. However, studies done in Pakistan and Nepal observed that traditional birth attendants leave newborns unattended on the floor until placenta is delivered; babies are washed with warm water and soap 1-2 hours after delivery since they are considered dirty and are hardly wiped(Pagel et al. 2014; Darmstadt et al. 2006). Maintaining good thermal care at birth is crucial for preventing hypothermia, hypoglycemia and neonatal infections(Waiswa et al. 2012). Indeed, studies in Uganda by Byaruhanga *et.al.*(Byaruhanga, Bergstrom, and Okong 2005), 2005 and Bergstrom *et. al*(Bergström, Byaruhanga, and Okong 2005) 2005 on impact of newborn bathing on the prevalence of neonatal hypothermia: prevalence and risk factors of neonatal hypothermia respectively have shown that even if it is a tropical country, hypothermia at birth is common. Hence, the need for delayed bathing for newborn is recommended to prevent neonatal deaths due to hypothermia(WHO 2006).

2.5.1 Early and Exclusive Breast Feeding

Early and exclusive breastfeeding helps children survive, but it also supports healthy brain development, improves cognitive performance and is associated with better educational achievement at age 5. Breastfeeding is the foundation of good nutrition and protects children against disease. In this way, breastfeeding allows all children to thrive and develop to their full potential. Yet, less than half of the world's newborns

benefit from early breastfeeding and even fewer are exclusively breastfed for the first six months(Joy E Lawn, Cousens, and Zupan 2005).

According to the WHO (2006), breast milk provides optimal nutrition and promotes the child's growth and development; it is associated with improved growth during the first months of life. Breast-milk's vitamin 'A' component reduces the risk of eye problems, growth failure, illness, and death. Breastfeeding provides frequent interaction between mother and infant, fostering bonding, a sense of security, and stimulus to the baby's developing brain. By breast-feeding immediately, a mother begins the immunization process at birth and protects her child against a variety of viral and bacterial pathogens before the acquisition of active immunity through vaccination. Breast milk has unique anti-infective properties. Early contact (immediately after birth) between the mother and the baby, according to the WHO(WHO 2006), has a beneficial effect on breast-feeding. Early suckling provides the baby with colostrum that offers protection from infection and gives important nutrients. Breastfeeding benefits are not only limited to the child, mothers also benefits from breastfeeding. In the short term, breastfeeding increases oxytocin levels. Oxytocin, the love or bonding hormone, also contributes to maternal child bonding. The long term benefits of breastfeeding for women who breastfeed are that, they have lower their risk of developing uterine cancer, osteoporosis, type 2 diabetes, and breast cancer.(Rosenblatt and Thomas 1995) A study on Household knowledge and practices of newborn and maternal health in Haripur district, Pakistan showed that delayed initiation of breastfeeding, avoidance of colostrums and prelacteals feeding were almost universal but most women did breastfeed their babies(Khadduri et al. 2008). Important factors in establishing and maintaining breast-feeding after birth include: giving the first feed within one hour of birth, correct positioning that enables good

attachment of the baby, frequent feeds, no prelacteals feeds or other supplements, and offering psychosocial support for breast-feeding mothers(WHO 2008).

2.6 Traditional newborn care practices

Traditional practices cannot be neglected in considering the achievement of better newborn .care in developing countries; this is because most deliveries occur at home due to a number of factors including scarcity of health facilities and services. Even those babies delivered in hospitals may be affected by traditional practices after discharge and these practices have a major impact on neonatal morbidity and mortality patterns (WHO, 2006).

Some traditional practices of newborn care may not be in accordance with the recommended guidelines. The fact that most births take place at home shows that such traditional methods might be used more frequently. A study conducted in the Brong Ahafo region of Ghana established that application of hot water and Shea butter on the cord was common and it is believed that applying nothing to the cord to ‘force it off’ and help it heal would negatively affect the newborn baby including discomfort and potential death for the baby, discomfort for the mother because she is confined to the room till the cord stump is off, and a delay in the child becoming a human being among some ethnic groups(Moyer et al. 2012; Marah 2011).

A study conducted among the rural poor in western Uttar Pradesh, to identify factors influencing newborn care shows that nearly all newborns were left wet and naked on the floor until the placenta was delivered and bathed immediately after birth, and very few birth attendants washed their hands with soap before assisting the delivery. It also reports the use of new blade dipped in hot water to cut the cord and unsterilized cord tie after birth. Timely initiating of breastfeeding was not done. According to the study Mothers’/caretakers’ behavior were found to be influenced by Mother-in-Laws

advice, traditional beliefs, and pursuance of a practice because it was the norm in the community(Sethi Vani, Kashyap Sushma 2005).

Another study conducted in low socioeconomic settlements of Karachi, Pakistan, revealed that newborns were bathed immediately after delivery as the vemix was considered “dirty looking” and it was felt it should be removed. Daily massage of the newborn with mustard oil and risky feeding practices such as giving prelacteals, supplementary feeds, delaying first feed were common. Apart from breast milk which was the preferred feed during neonatal period, other feeds like honey, ghutti and water were also given in order to reduce colic or act as laxative, these were perceived health benefits mentioned by mothers as well as TBAs. (Tuladhar 2010; Parlato, Darmstadt, and Tinker 2004).

Not all traditional practices are harmful for instance: Massaging the baby using oil or ghee; Wrapping the baby in several layers of clothing; Exposing the baby to sun after massage and bath. Massage promotes relaxation and exposure to sun helps the skin to acquire vitamin D. Some modern practices, such as bottle feeding and the use of pacifiers or dummies are considered unsafe. Because each community has its own unique culture and tradition, traditional practices may differ from community to community(WHO 2006).Generally, traditional care practices at home and in the community inevitably affect maternal and newborn health and hence the need to assess them.

In summary neonatal mortality contributes the largest proportion of under-five mortality and the achievement of MDG 4 is greatly reliant on the success of reducing neonatal mortality. High impact, cost-effective interventions aimed at reducing neonatal mortality are available, however in low –income settings focus needs to

change from ‘one size fits all’ to focused approach in implementing interventions in areas of greatest need. For instance good cord care and thermal care have been shown to have a great impact in reducing neonatal mortality. While the challenge at a health facility level is optimum use of available interventions, in the community negative traditional practices like cleaning the baby immediately after birth and applying cow dung to the cord are likely to be the problem and therefore the health messages in these two groups cannot be the same. Consequently there is need to identify the newborn care practices at the community level and the factors influencing them to guide the development and/or adoption of targeted interventions.

CHAPTER THREE: MATERIALS AND METHODS

3.1 Study design

This was a descriptive cross-sectional study design which employed both quantitative approaches through the use of an interviewer – administered questionnaire and qualitative approaches through the use of key informant interview guides and Focused Group Discussions (FGDs). The study design was chosen so as to provide a snap-shot of the newborn care practices with qualitative aspect being included to help explore and get a deeper insight into the newborn care practices being used.

3.2 Study variables

3.2.1 Independent variables

These included socio demographic factors such as maternal age, marital status, religion, education level, paternal occupation, maternal occupation, and maternal health services including history of attending ANC, timing of ANC visit and place of delivery.

3.2.2 Dependent variables

Newborn care practices including simple cost effective interventions such as early and exclusive breastfeeding, thermal care and cord care.

3.3 Study area

The study was conducted in **Garissa sub County** in Garissa County, Kenya**.** Garissa sub County is one of the 11 sub counties in the former North Eastern province ***(Appendix 6)***. This sub county has surface area 5,588.9 km2 and is divided into 4 divisions namely Sankuri, Balambala, Central and Danyere with a total number of 32,118 households**.** The capital town of Garissa sub County is Garissa which is

cosmopolitan with a population of 116,317. Garissa sub County has a total population of 190,062 with a population density of 34 people per kilometre squared and a female population of 88,860 which constitute 46.8 % of the total population (KNBS 2011).The sub County is served by a level V Hospital, a low volume level IV hospital, 25 private clinics, 16 level II health facilities, 1 level III and 4 nursing homes. Most of deliveries occur at home with only 23.9 receiving assistance from a qualified medical assistant during birth. According to Kenya county fact sheet 2011, 0nly 52.4% of the population can read and write with 65 % and 9.6% of the population having primary and secondary education respectively. The number of trained health personnel is also very low with the doctor population ratio being currently 1:41,538 while the nurse population ratio is 1:2,453.

3.4 Study population

The study population comprised of women of reproductive age (15-49 years) within the community in Garissa sub County who had delivered in the past one year preceding the study.

The key informants included in-charges of health facilities and CHEWs.

3.4.1 Inclusion criteria-

All women of reproductive age who live in Garissa Sub-County and had delivered in the past one year preceding the study and gave consent to voluntarily participate in the study.

3.4.2 Exclusion criteria

All women of reproductive age who live in Garissa Sub-County and had delivered in the past one year preceding the study and declined to give consent to participate in the study.

3.5 Sampling techniques

The study area was purposively selected based on poor health indicators and on characteristics of the community or perceived poor newborn care practices. Garissa Sub County has seven community units namely: (Medina, Bor algi, Shimbrey, Raya, Balich, Korakora and Sankuri community units) of which all were included in the study to ensure that both rural and urban populations were represented.

Simple random sampling was used to select the respondents from each of the Community Unit (CU) by computer generation of random numbers as follows:

All mothers who had delivered in the past one year preceding the period of study in each of the CUs were identified with the help of Community Health Volunteers (CHVs) manning the households. These mothers were assigned numbers to create a sampling frame list. Probability proportional to size sampling strategy was used to apportion the number of respondents selected from each CU (Table 3-1). In each of the CUs the sample size was adjusted upwards by 15% to take into account the respondents who might not be available for interview as the communities living in this region are generally nomadic and to take care of non-respondents. During dry season the communities move to search for pastures and therefore, if data is collected during this period most of the mothers would not be found in their initial resident increasing non response but during rainy season they settle for a while one is likely to find most of them at home.

Random numbers representative of the sample size from each community unit was generated from the sampling frame from computer using a random generation table.

Mothers identified from the random table numbers were interviewed. It was a representative sample of the target population. If a mother declined to participate or could not be traced, the next mother in line from the list was interviewed until the desired sample size was achieved. Purposive sampling was used to select key informants since they were informative and possessed the required information.

3.6 Sample size determination

The sample size was determined by using a statistical formula for cross-sectional studies as outlined by Kirkwood and Sterne.(Jonathan 2003).

Since there are no previous studies on newborn care practices in the region, the maximum sample size was determined using the prevalence assumption of 50% prevalence for any of the newborn care practices; the following formula was be used;

$$n = \frac{z^2 \times p(1-p)}{d^2}$$

n=required sample size

z= confidence level at 95% (standard value of 1.96)

p =proposed percentage of any of the newborn care practices (50%).

d = margin of error at 5% (standard value of 0.05).

$$n = \frac{1.96^2 \times 0.5\ (1-0.5)}{0.05^2} = 384$$

The number of expected live births in a year from a population is given by 4% of the population (KNBS 2012).

Therefore, the number of expected live births in Garissa County will be; 190062*0.04 = 7602.48

Since 7602.48 is less than 10 000 the sample size was adjusted for finite population.

Therefore, sample size after correction for a definite population less than 10 000 using the finite population correction factor is

Cs=n x N/N+n

Cs=the corrected sample size

N=the total number of target population (7602.48)

n=the calculated sample size before correction

=384 x7602.48/7602.48+384

=365.54. Minimum sample size is therefore taken 366.

Probability proportionate to size (PPS) strategy was used to get the number of respondents from each of the Community Unit is described in table 3.1.

Because the community living in Garissa county and consequently the study area is mainly nomadic, the minimum sample size for each community unit was adjusted by inflating/increasing it by 15% to account for situations where certain households may have moved in search of pasture.

Table 3-1: Sampling procedure using probability proportion to size strategy

Community Unit	**No. of households per each CU‡ (A)**	**Proportion of respondents of the sample size to be interviewed per CU (A/19111)*100**	**No of respondents required per CU using PPS (B*366)/100**	**No of respondents Sampled per CU after adjustment* C*1.15**	**Actual number of respondents enrolled in the study**
	A	B	C	D	E
Medina	3884	20.3	74	85	84
Bor algi	2143	11.2	41	47	46
Raya	2250	11.8	43	49	50
Sankuri	2218	11.6	43	49	51
Balich	2502	13.1	48	55	54
Korakora	3012	15.8	58	67	69
Shimbrey	3102	16.2	59	68	67
Totals	**19 111**	**100**	**366**	**421**	**421**

* A 15% increase in sample size for every CU to account for respondents/families that might have moved in search of pasture due to the nomadic nature of the communities living in Garissa County.
‡ Number of households used to determine the size of CU for proportionate allocation of sample size

3.7 Pre-testing

The pretesting of the instrument was done at Fafi sub County which borders the Garissa sub County and has a population with similar characteristics. This was to ensure the questions were complete and standardized. Information gathered from the pre test was useful in ensuring proper flow of questions as well as correction of mistakes identified.

3.7.1 Validity

Validity was ensured through a well-designed questionnaire and instruments were pretested. Data was checked for completeness and accuracy daily on submission, any blanks, misplacement of information and number of questionnaires per day. Questionnaires were numbered in a sequential order before being dispatched to the field and confirmed after being received from the field. In addition, the questions used were standardised and closed ended where appropriate to ensure that the responses were guided.

3.7.2 Reliability

Reliability was done through selection of research assistants, who were; knowledgeable about the topic, the study area, with a nursing knowledge, understood the local language and topography was undertaken during the recruitment process. The study purpose and procedures as well as guidelines on sampling procedure were explained. They were trained on interview techniques and on how to record answers as precisely as they were provided. The data collection tool was translated from English to Kiswahili language. In addition, the research assistants were monitored and or supervised to ensure they were competent and administered the questionnaires correctly during pretesting of tools and thereafter during data collection to ensure consistency in data collection.

3.8 Data collection

Quantitative data was collected using interviewer administered questionnaire. The respondents were postnatal mothers who gave information on demographic, socio-cultural factors and newborn practices in the immediate neonatal period (28 days after birth). Qualitative data was later collected using two FGDs which involved

Community health volunteers (CHVs) and postnatal mothers and from Key Informant schedule. Separate FGDs were held for postnatal mothers and CHVs.

The FGD guide was used to capture traditional practices, beliefs and taboos relating to newborn care in the community. Key informant interviews were conducted among Traditional Birth Attendants (TBAs) and Community Health Extension Workers (CHEWs) in the community.

3.9 Ethical consideration

Approval to conduct the study was given by Kenyatta University Ethics Review Committee and authority to undertake the study was sought from the National Commission for Science, Technology and Innovation and the Ministry of Health at county level. All community entry protocols were observed from the County Commissioner to the respondents at the household level. The participants were explained about the study purpose, objectives, benefits and risks for informed consent. Informed consent was sought from the study participants including those below 18 years consent since they are mature minors since they had already delivered. The consent was in English and translated in Kiswahili. Participation in the study was voluntary and that the respondents had the right to accept or decline to participate, or withdraw from the study anytime (**Appendix 1**). Confidentiality of the participants' responses was maintained throughout the study by using codes to differentiate the responses and conducting the interviews in privacy. All data collected was analyzed and reported in formats that did not allow participant identification.

3.10 Data analysis and presentation

Data was analysed using STATA version 12 .Descriptive analysis was done for proportions for categorical variables. Chi-square and logistic regression have been used to

test for association between the various explanatory factors and the newborn care practices Bivariate logistic regression was used test the association between independent variables and newborn care practices (dependent variables). Multivariate logistic regression analysis was used to identify predictors of poor newborn care practices

Descriptive analysis

Descriptive results were reported and data quantified. Proportions were reported for categorical data while mean and standard deviation is reported for age. Data was summarized using descriptive statistics such as frequencies and presented by use of frequency tables, bar charts and pie charts, tables, figures and narration. The qualitative data was described, summarized and interpreted for each key informant guide and FGD. It was edited for grammar and in line with the interview guide. Similar responses were coded. Data with similar information was summarized together under the same theme, cleaned and interpreted. It was then reported descriptively paying attention to the issues and matters mentioned by the majority of the informants and capturing any unique experiences reported

Analysis strategy

The association between each of the newborn care practices (breast feeding, cord care and thermal care) and explanatory variables was explored using a *chi-square* test; further bivariate analyses between the outcome and all the explanatory factors was carried out to test for the magnitude of associations using logistic regression. The dependent variable newborn care practice was coded as (1 – bad practice, 0 – good practice)

As a final step a multivariate model to predict factors associated with poor newborn practice was built using results from the bivariate analyses for each of the care practices (breast feeding, cord care and thermal care).

Modelling strategy

To identify the independent predictors of a newborn care practice a multivariate predictive model was built using the step-wise forward selection method. The Hosmer-Lemshow criterion for statistical significance ($P<0.25$) was used to identify covariates from the bivariate analysis to add into the model starting with those with the strongest association. A step-wise approach was used where a covariate was added one at a time, the model with the additional covariate was compared with that without to help determine whether the model with the extra covariate improved the model fit or explained the data better. A likelihood ratio test of <0.05 was used as the cut-off for determining factors to be retained in the model that predicted a certain newborn care practice. For the univariate and multivariate analysis the odds ratio, accompanying 95% confidence intervals and Wald test p values (two-tailed) are reported.

Qualitative data from interviews were transcribed verbatim from the tape recorders. The key informant and FGD data were then coded into themes independently. They were then analysed using Nvivo 7 software (QSR international Pty Ltd 1999 to 2006) for qualitative data analysis. The results for KIs and FGDs were then interpreted together with the aim of understanding underlying causes of the reported newborn care practices.

CHAPTER FOUR: RESULTS

4.1 Socio-demographic characteristics of the study population

Overall, a total of 421 women of reproductive age were recruited to take part in the current study. The characteristics of respondents are outlined in **table 4.1**. The mean age of the respondents ranged from a minimum of 15years to a maximum of 40 years with the mean (standard deviation (sd)) age being 24±5 years with 70% being in the age group 20 – 29 years while 16% were aged <20 years. The mean age at first birth of the respondents was 18±1 years. Majority of the respondents were married 97% (407). Respondents practicing Christian faith were 5% (22) while Muslims were 95% (399) of the total respondents representing the majority. Most of the respondents, 51% (212) had no formal education with only 5% (20) and 1% (4) having secondary and tertiary education respectively. The unemployed respondents constituted the majority 86% (361) while 9% (38) were self-employed and only 2% (8) had salaried jobs. However, (39%) of the respondents' partners had a source of income from self-employment (casual labourers (33%) and as salaried workers (6%)) while 22% were unemployed. Descriptive characteristics of the respondents are described below.

Table 4-1: Socio-demographic characteristics of the respondents

		Frequency; N=421	Percentage
Age			
	15 to 19 years	67	16
	20 to 24 years	169	40
	25 to 29 years	126	30
	30 to 34 years	38	9
	35 to 49 years	21	5
Religion			
	Protestant	16	4
	Catholic	6	1
	Muslim	399	95
Education level			
	None	212	50
	Primary	183	44
	Secondary	22	5
	College/University	4	1
Marital status			
	Single	3	1
	Married	407	97
	Divorced	10	2
	Widowed	1	0
Maternal occupation			
	Unemployed	361	86
	Casual laborer	14	3
	Self-employed	38	9
	Salaried job	8	2
Partner occupation			
	Unemployed	23	23
	Casual laborer	33	33
	Self-employed	38	38
	Salaried job	6	6
Baby’s sex			
	male	257	61
	female	164	39

4.2 Use of maternal health services

4.2.1 Antenatal care practices

The respondents were interviewed on various aspects of antenatal care including whether they had attended ANC for their most recent pregnancy of the baby born one

year preceding the study, the number of ANC visits and the trimester at which they started ANC. Attendance of ANC was high among the respondents with 95% (391) reporting to have attended at least one ANC visit (Figure 4-1).

Majority of the respondents had made four or more ANC visits (43%) in their most recent delivery while 3% made only one ANC visit. WHO recommends that pregnant women should make a minimum of 4 ANC visits and during each visit a client to be provided with focused antenatal care.

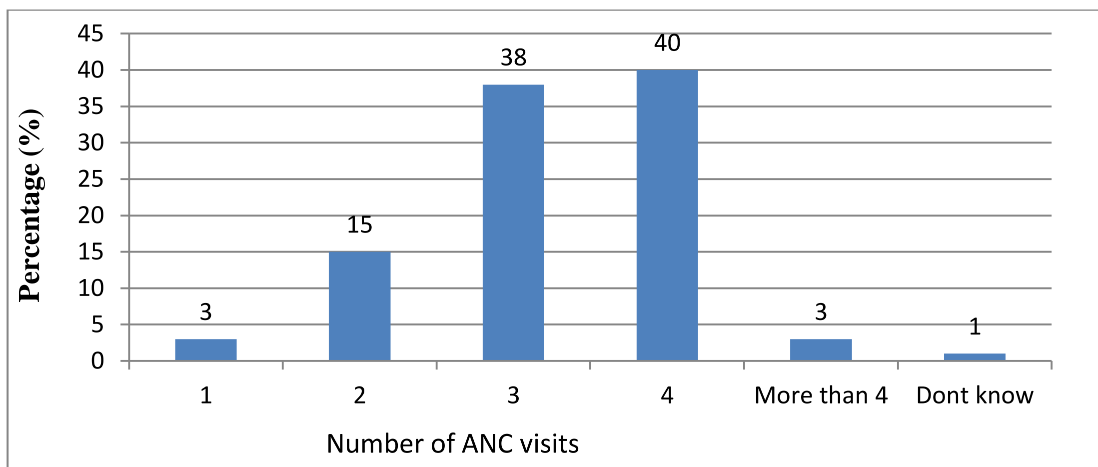


Figure 4-1: Number of ANC visits

Majority of the respondents made their first ANC in the 2nd trimester 78% (304) while 7% visited ANC clinic in their 3rd trimester, figure 4.2.

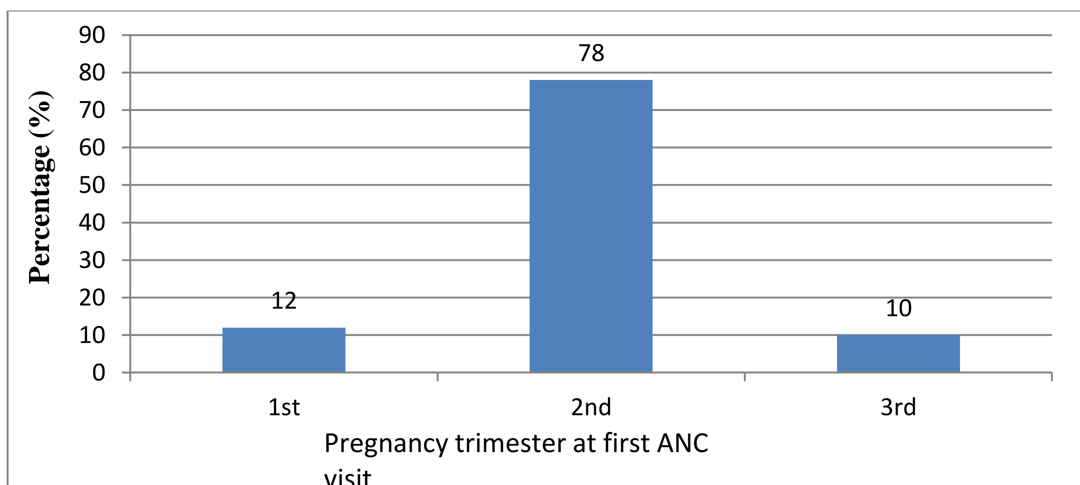


Figure 4-2: Pregnancy trimester at first ANC visit

4.2.2 Delivery practices

The respondents were also interviewed on aspects of delivery including mode of delivery, place of delivery, person who assisted in the delivery and the care given (Table 4-2).

Majority of the respondents had a normal vaginal delivery 98% (412) with only 2% (8) delivering by caesarean section.

Slightly more than half of the respondents delivered their babies at a health facility 53% (224) while 43% (181) had home deliveries. Of those who delivered at home majority were assisted by TBAs (84%), interestingly 7% were assisted by midwives. The respondents reported that 65% of their birth attendants washed their hands. Across the places of delivery, majority of the respondents 81% (340) had the delivery surface covered with a material with 90% of the materials used to cover the delivery surface being reported by the respondents as clean. After delivery 79% (327) of the respondents were given something to eat or drink while 21% were not provided with anything. Table 4.2 describes the delivery care practices in detail.

Table 4-2 Delivery care practices reported by the respondents

Indicator		Frequency n	Percentage %
Place delivered			
	Private HF	14	3
	Public HF	221	53
	Home	181	43
	On the way to HF	1	0
	Other	1	0
Person who assisted at delivery			
	Nurse/mid-wife	240	57
	Doctor	9	2
	TBA	154	37
	Relative	17	4
	Alone	1	0
Did birth assistant wash hands			
	Yes	272	65
	No	131	31
	Can't remember	17	4
Covered delivery surface			
	Yes	340	81
	No	30	7
	Can't remember	51	12
Material used to cover surface			
	Cloth	60	18
	Rubber Macintosh	233	69
	Sack	3	1
	Other	43	13
Material used clean			
	Yes	322	90
	No	10	3
	Can't remember	26	7
Any material applied to birth canal			
	Yes	25	6
	No	389	94
	Can't remember	1	0
Something to eat/drink after birth			
	No	87	21
	Yes	327	79

The study also endeavoured to find the reasons for the choice of place delivery from key informant and focused group discussions.

Reasons for home delivery

Fear of attendance by male health care workers "*mothers don't like men to deliver them in the hospital*" quoted by KI 5, the fear of operations and many vaginal examinations done during monitoring of labour "…*huko hospitali unapimwapimwa*" FGD 1"…*ukienda hospitali utakatwa*" FGD 2 ,moral support from family members at home, they belief they can get infections in hospital, lack of transport and trust TBA more than health care workers

Reasons for facility delivery

Availability of free maternal care services, safer delivery at the health facility, good health care workers, past good experiences at a health facility, facility located near home, previous unfavourable outcomes for home deliveries and advice from nurses and CHEWs.

The socio-cultural reasons were also reported including *lack of a female provider, husband did not allow and health facility delivery not being customary.*

4.3 Newborn care practices in Garissa sub County.

Overall only 14% (59) of the respondents had bad/poor practices in all the three newborn care practices that were assessed. Majority of the respondents (66%) initiated breastfeeding more than one hour after delivery, 57% didn't provide dry cord care and 45% bathed their babies earlier than 24 hours which is against the recommended guidelines. The overall rating of newborn care practices is illustrated in figure 4.3.

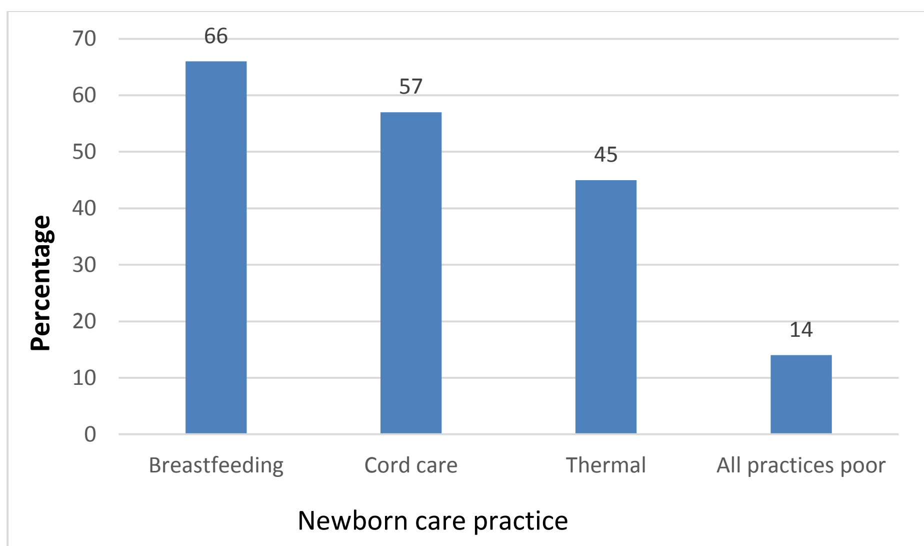


Figure 4-3 Overall rating of newborn care practice

4.3.1 Cord care practice

Overall there was bad cord care practice with 57% of the respondents reporting having been involved in a poor practice, see figure 4.4.

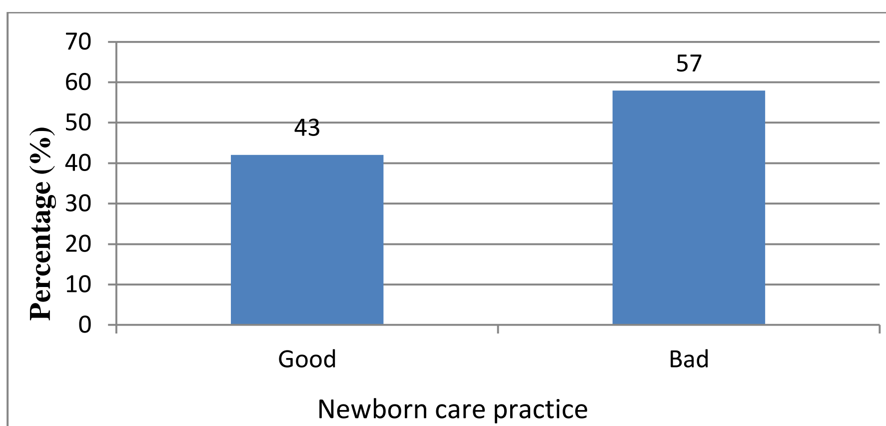


Figure 4-4 Cord care practice among the respondents

The respondents in health facility 93% (219) used a pair of scissors to cut the cord while majority of those who delivered at home used a blade 87% (159) and a few 5% (10) used a knife. During delivery at health facilities all the materials used to cut cord were reported as clean in all cases (232), however, for home deliveries 12% used dirty material to cut the cord. Of those respondents who delivered at health facility 61%

applied nothing on the cord stump while 37% applied Methylated spirit. Majority in home delivery cases had the cord applied 40% methylated spirit. An interesting finding was, 32 % and 8% applied oil and cow dung respectively. Cord care practices are described in detail in table 4.3.

Table 4-3 Cord care practices among the respondents

		Health facility n(%)	Home n(%)	Chi value	P value
What was used to cut cord‡					
	Scissors	219 (93)	11 (6)	30.00	<0.001
	Blade	15 (6)	159 (87)		
	Knife	0 (0)	10 (5)		
	Other	1 (0)	2 (1)		
Material used to cut cord clean					
	No	0 (0)	21 (12)	29.25	<0.001
	Yes	234 (100)	156 (88)		
Material used to tie cord					
	String	5 (2)	175 (96)		
	Cord clamp	230 (98)	6 (3)		
	other	0 (0)	1 (1)		
Material used to tie cord clean					
	Yes	232 (99)	132 (73)	66.37	<0.001
	No	0 (0)	8 (4)		
	Can't remember	2 (1)	42 (23)		
Material applied on cord stump‡					
	Methylated spirit	88 (37)	72 (40)	133.54	<0.001
	Iodine	2 (1)	2 (1)		
	Oil	1 (0)	58 (32)		
	Cow dung	0 (0)	14 (8)		
	Nothing	143 (61)	34 (19)		
	Others	1 (0)	2 (1)		

‡ Fisher's exact

4.3.1.1 Factors associated with poor cord care practices.

Results of multivariate analysis undertaken to explore predictors of poor cord care practice, revealed that, place of delivery, ANC visit in second trimester of pregnancy, and marital status were the significant predictors of poor cord practices (LRT P value=0.039). Table 4.5 describes the results in detail.

Table 4-4 Bivariate analysis for factors associated with cord care

	Cord care		Odds ratio	95% CI	P value
	Something	Nothing			
Marital status	n=244	n=177			
Single	0 (0)	3 (2)	----	----	0.091
Married	235 (96)	172 (97)	Ref		
Divorced/widowed	9 (4)	2 (2)	3.29	0.7 – 15.43	
Religion					
Protestant	7 (3)	9 (5)	Ref		0.232
Catholic	2 (1)	4 (2)	0.64	0.09 – 4.58	
Muslim	235 (96)	164 (93)	1.84	0.67 – 5.05	
Education level					
None	122 (50)	90 (51)	Ref		0.346
Primary	109 (45)	74 (42)	1.09	0.73 – 1.62	
Secondary	8 (3)	12 (7)	0.49	0.19 – 1.25	
College/University	3 (1)	1 (1)	2.21	0.23 – 21.63	
Not reported	2 (1)	0 (0)	----	----	
Maternal occupation					
Unemployed	215 (88)	146 (82)	Ref		0.356
Casual laborer	7 (3)	6 (3)	0.79	0.26 – 2.41	
Self-employed	17 (7)	21 (12)	0.55	0.28 – 1.08	
Salaried job	5 (2)	3 (2)	1.13	0.27 – 4.81	
Not reported	0 (0)	1 (1)	----	----	
Baby gender					
Male	148 (61)	109 (62)	Ref		0.930
Female	94 (39)	68 (38)	1.02	0.68 – 1.52	
Not reported	2 (1)	0 (0)	----	----	
History of newborn death in first month					
No	214 (88)	157 (89)	Ref		0.939
Yes	26 (11)	17 (10)	1.12	0.59 – 2.14	
Not reported	4 (2)	3 (2)	0.98	0.22 – 4.43	
ANC attendance					
No	17 (7)	4 (2)	Ref		0.072
Yes	222 (91)	169 (95)	0.31	0.1 – 0.94	
Not reported	5 (2)	4 (2)	0.29	0.05 – 1.62	
First ANC visit trimester					
1st	14 (6)	32 (19)	Ref		**<0.001**
2nd	184 (83)	120 (71)	3.5	1.8 – 6.84	
3rd	23(10)	17(10)	3.09	1.27 – 7.51	
Place of delivery					
Health facility	95 (39)	143 (81)	Ref		**<0.001**
Home	149 (61)	34 (19)	6.6	4.19 – 10.39	

4.3.1.2 Predictors of poor cord care practice.

Multivariate analysis was used to explore factors that could predict poor cord care practice.

After successful iterations place of delivery, pregnancy trimester when the first ANC visit happened and marital status were the significant predictors of poor cord practices (LRT P value=0.039). Table 4.5 describes the results in detail.

Table 4-5 Multivariate analysis for predictors of poor cord care (Care of the cord stump)

	Odds ratio	95% CI	Wald test P value	LRT
Place of delivery				0.039
Health facility	1			
Home	6.66	4.04 – 10.99	<0.001	
Timing of first ANC visit				
1st trimester	1.00			
2nd trimester	3.68	1.74 – 7.79	0.001	
3rd trimester	3.86	1.26 – 11.85	0.018	
Marital status				
Single	1.00			
Married	0.13	0.01 – 1.25	0.078	
Divorced	----			
Widowed	----			

4.3.2 Thermal care practices.

Hypothermia is one of the leading causes of newborn deaths and WHO guidelines among others recommend: immediate drying of the baby after birth, covering the baby in warm clothes and delayed bathing of the baby until after 24 hours. In this study good thermal care practice was considered as delayed bathing of the baby until after 24 hours while bad thermal care practice is defined as bathing of the baby within the first 24 hours after delivery.

Thermal care practice was reported as good in 55% of the respondents see figure 4.5.

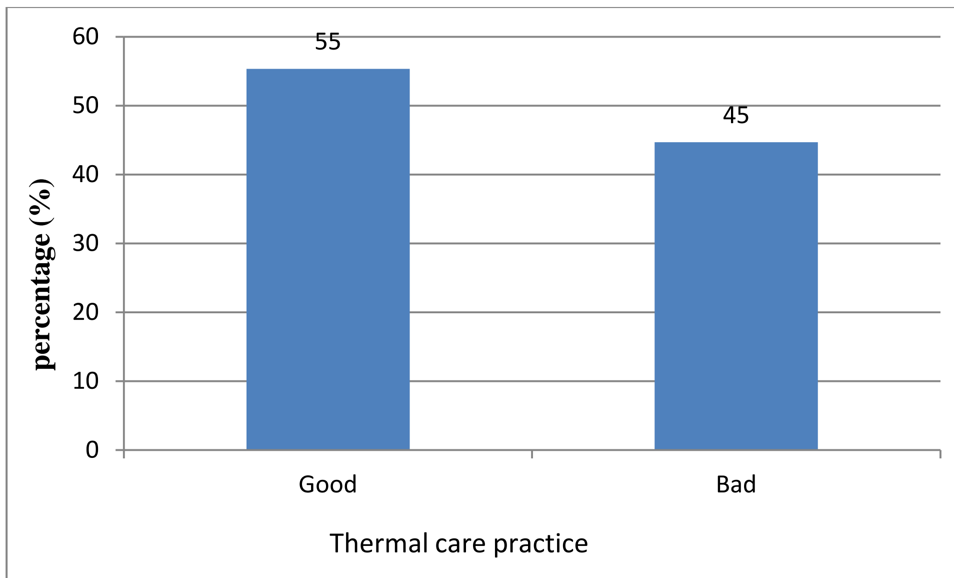


Figure 4-5 Description of thermal care practices.

Table 4.6 describes the thermal care practices. All babies born in the facility 100% (233) were dried immediately and covered after birth however, 15 % (27) of those born at home were not dried immediately. The first bath was delayed both at health facility and home deliveries with only 3% bathed immediately after birth in both health facility and home. Majority of the babies were first bathed after 48 hours both for health facility (44%) and home (67%) deliveries. Babies born to the respondents were mainly bathed once in a day. Table 4.6 describes the thermal care practices in detail.

Table 4-6 Thermal care practices among home and HF deliveries in Garissa sub County.

		Health facility	Home	Chi value	P value
When baby started bathing					
	No	1 (1)	27 (14)	33.75	<0.001
	Yes	233 (97)	155 (85)		
	Not reported	4 (2)	1 (1)		
Baby covered to prevent heat loss					
	No	1 (1)	6 (3)	5.07	0.024
	Yes	232 (97)	176 (96)		
	Not reported	5 (2)	1(1)		
When started bathing baby					
	Immediately	7 (3)	5 (3)	34.40	<0.001
	6hrs later	2 (1)	4 (2)		
	7-12 hours later	123 (52)	47 (26)		
	48 hrs later	103 (43)	122 (66)		
	72 hrs later	0 (0)	4 (2)		
	Not reported	3 (1)	1(1)		
Number of times bathe the baby in a day‡					
	Once	175 (74)	143 (78)	2.68	0.546
	Twice	51 (21)	32 (18)		
	Thrice	7 (3)	6 (3)		
	Other	2 (1)	0 (0)		
	Not reported	3 (1)	2 (1)		
Time of day baby bathed‡					
	Early morning	1 (0)	0 (0)	1.02	0.799
	Late morning	58 (24)	41 (22)		
	Afternoon	176 (75)	140 (77)		
	Not reported	3 (1)	2 (1)		

‡ Fisher's exact

4.3.2.1 Factors associated with poor thermal care practices

A bivariate analysis on the association between thermal care practice and the socio-demographic and pre-natal factors was undertaken.

Over all religion (p value<0.001) and maternal occupation (p value=0.02) were the significant socio-demographic factors associated with early bathing of the baby. Of the pre-natal factors, attending ANC (p value <0.001), trimester during which first ANC visit was attended (p value <0.001), and place of delivery (p value <0.001) were

the significant factors associated with early bathing of the newborn. Those who attend ANC early in the second trimester were less likely to have poor thermal care practices.

Attending ANC increased the odds of early bathing by 8.2 times when compared to women who did not attend ANC. However, with women who attended the first ANC visit in their first trimester as the reference group, women whose first ANC visit was in the 2nd trimester had a significantly decreased odds of 0.38 (95% CI 0.20 -0.72; p value=0.003) while those who attended in the 3rd trimester had a decreased odds of 0.40(95% CI 0.15-1.05; p value =0.067) although this was not significant. Table 4.7 outlines the thermal care bivariate results in detail.

Table 4-7 Bivariate analysis for factors associated with thermal care

	Thermal care practice		Odds ratio	95% CI	P value
	Early bathing	Delayed bathing			
Marital status					
Single	3 (2)	0 (0)	----	----	0.488
Married	179 (95)	228 (98)			
Divorced/widowed	6 (4)	5 (2)	1.52	0.46 – 5.09	
Religion					
Protestant	14 (7)	2 (1)	Ref		**<0.001**
Catholic	5 (3)	1 (0)	0.71	0.05 – 9.70	
Muslim	169 (90)	230 (99)	0.1	0.02 – 0.47	
Education level					
None	94 (50)	118 (51)	Ref		0.499
Primary	77 (41)	106 (45)	0.91	0.61 – 1.36	
Secondary	12 (6)	8 (3)	1.88	0.74 – 4.80	
College/University	4 (2)	0 (0)	----	----	
Not reported	1 (1)	1 (0)	1.26	0.08 – 20.34	
Maternal occupation					
Unemployed	149 (79)	212 (91)	Ref		**0.003**
Casual laborer	11 (6)	2 (1)	7.83	1.71 – 35.82	
Self-employed	22 (12)	16 (7)	1.96	0.99 – 3.85	
Salaried job	5 (3)	3 (1)	2.37	0.56 – 10.08	
Not reported	1 (1)	0 (0)	----	----	
Baby gender					
Male	117 (62)	140 (60)	Ref		0.556
Female	69 (37)	93 (40)	0.89	0.6 – 1.32	
Not reported	2 (1)	0 (0)	1		
History of newborn death in first month					
No	165 (88)	206 (88)	Ref		0.061
Yes	17 (9)	26 (11)	0.82	0.43 – 1.56	
Not reported	6 (3)	1 (0)	7.49	0.89 – 62.84	
ANC attendance					
No	2 (1)	19 (8)	Ref		**0.001**
Yes	181 (96)	210 (90)	8.19	1.88 – 35.68	
Not reported	5 (3)	4 (2)	11.87	1.67 – 84.52	
First ANC visit trimester					
1st	30 (17)	16 (8)	Ref		**0.002**
2nd	126 (70)	178 (85)	0.38	0.2 – 0.72	
3rd	24(13)	16 (8)	0.8	0.33 – 1.92	
Place of delivery					
Health facility	132 (70)	106 (45)	Ref		**<0.001**
Home	56 (30)	127 (55)	0.35	0.24 – 0.53	

4.3.2.2 Predictors of poor thermal practices

The aim of this section is to identify factors that can be used to predict potential for a woman having poor thermal practices. After successful iterations place of delivery, timing of the first ANC visit and religion were the significant predictors of poor cord practices (LRT P value=0.002). Detailed multivariate results on the predictors of poor thermal care practice are presented in table 4.8.

Table 4-8 Multivariate analysis for predictors of poor thermal care practices (Bathing the baby within 24 hours)

	Odds ratio	95% CI	Wald test P value	LRT
Place of delivery				0.002
Health facility	1.00			
Home	0.43	0.27 – 0.67	<0.001	
Timing of first ANC visit				
1st trimester	1.00			
2nd trimester	0.37	0.19 – 0.73	0.004	
3rd trimester	0.52	0.19 – 1.39	0.192	
Religion				
Protestant	1.00			
Catholic	0.89	0.06 – 13.08	0.934	
Muslim	0.16	0.03 – 0.74	0.019	

4.3.3 Breastfeeding practices.

Current WHO guideline recommendation is that breastfeeding should be initiated within 1 hour of delivery to promote bonding between baby and mother, improve uterine contractions and reduce bleeding and most importantly to prevent hypoglycaemia a leading cause of newborn deaths in the first hours of delivery. For purposes of bivariate analysis, good breastfeeding practice was defined as initiation of breastfeeding within 2 hours.

Overall good breast feeding practice was identified in 34% of the respondents see figure 4.6.

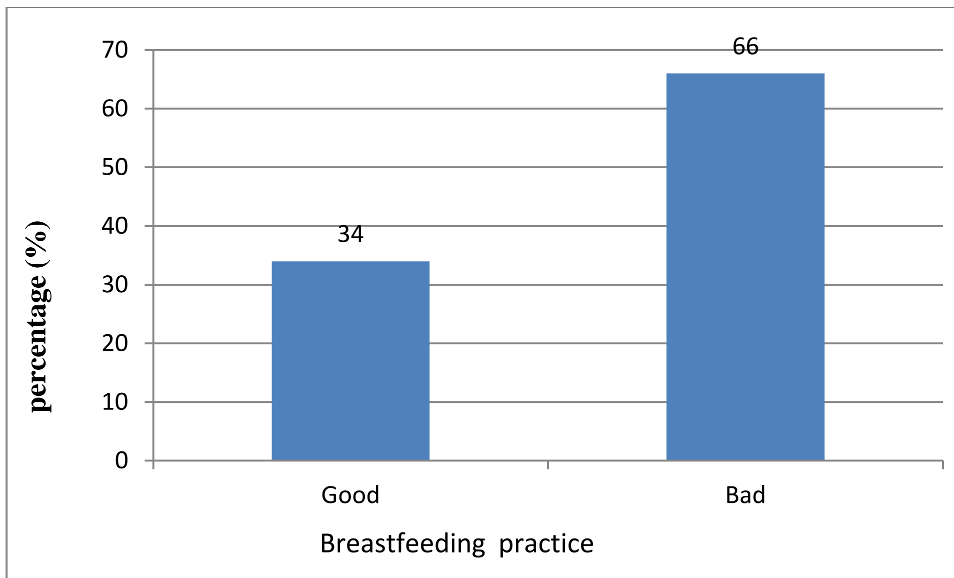


Figure 4-6 Description of breastfeeding practices

Among babies born at health facility 49% of mothers initiated breastfeeding within the first 30 minutes post-delivery and 51% were initiated 2hours later. In home delivery cases 70% of mothers had the babies initiated breastfeeding 2-4 hours later. Home delivery cases had 39% of the babies given fluid to drink immediately after birth while majority of babies born at the health facility 74% (171) were not given fluid in the first 28 days of life however, for home deliveries most of them 73% (132) were given fluids within the first 28 days. A detailed description of breastfeeding practices are presented in table 4.9

Table 4-9 Breastfeeding practices among home and HF deliveries in Garissa sub County

	Health facility	Home	Chi value	P value
How soon baby breastfed				
Immediately	28 (12)	6 (3)	79.93	<0.001
30min-1hr	88 (37)	20 (11)		
2-4 hours	119 (51)	128 (70)		
Days	0 (0)	26 (14)		
Other	0 (0)	2 (1)		
Give fluid immediately after birth				
No	221 (95)	110 (61)	73.79	<0.001
Yes	12 (5)	71 (39)		
Child given fluids first 28 days				
No	171 (74)	48 (27)	91.16	<0.001
Yes	60 (26)	132 (73)		
Clean breast before feeding				
No	183 (79)	171 (95)	21.09	<0.001
Yes	48 (21)	9 (5)		

4.3.3.1 Factors associated with late initiation of breastfeeding.

A bivariate analysis was undertaken to determine the independent factors associated with breastfeeding practices.

Overall religion (p Value<0.001), maternal occupation (p value <0.001) and paternal occupation (p value 0005) were the significant socio-demographic factors associated with late initiation of breastfeeding while attending ANC (p value<0.001), trimester at which first ANC was attended and the place of delivery (p value<0.001) were the significant pre-natal factors associated with late initiation of breastfeeding.

With protestants as the reference group, being Muslims had increased odds of late initiation of breastfeeding significantly by 9.6 (95% CI 2.7 – 34.3; p value<0.001). Attending ANC significantly decreased the odds of late initiation of breast feeding to 0.1(95% CI 0.02 -0.7; p value=0.02) with not attending ANC as the reference group.

Women who delivered at home had 5.7 (95% CI 5.3 -9.3; p value <0.001) times increased odds of late initiation of breastfeeding compared to mothers who delivered in a health facility. Detailed bivariate analysis is presented in table 4.10.

Table 4-10 Bivariate analysis for factors associated with initiation of breastfeeding.

	Breastfeeding initiation		Odds ratio	95% CI	P value
	Late; n=279	Early; n=142			
Marital status					
Single	0 (0)	3 (2)	----	----	0.395
Married	273 (98)	134 (94)	Ref		
Divorced/widowed	6 (2)	5 (4)	0.59	0.18 – 1.96	
Religion					
Protestant	3 (1)	13 (9)	Ref		**<0.001**
Catholic	1 (0)	5 (4)	0.87	0.07 – 10.42	
Muslim	275 (99)	124 (87)	9.61	2.69 – 34.33	
Education level					
None	138 (49)	74 (52)	Ref		0.499
Primary	130 (47)	53 (37)	1.32	0.86 – 2.01	
Secondary	10 (4)	10 (7)	0.54	0.21 – 1.35	
College/University	0 (0)	4 (3)	----	----	
Not reported	1 (0)	1 (1)	0.54	0.03 – 8.70	
Maternal occupation					
Unemployed	252 (90)	109 (77)	Ref		**0.003**
Casual labourer	4 (1)	9 (6)	0.19	0.06 – 0.64	
Self-employed	20 (7)	18 (13)	0.48	0.24 – 0.94	
Salaried job	2 (1)	6 (4)	0.14	0.03 – 0.73	
Not reported	1 (0)	0 (0)	----	----	
Baby gender					
Male	176 (63)	81 (57)	Ref		0.556
Female	103 (37)	59 (42)	0.8	0.53 – 1.22	
Not reported	0 (0)	2 (1)	----	----	
History of newborn death in first month					
No	245 (88)	126 (89)	Ref		0.061
Yes	31 (11)	12 (8)	1.33	0.66 – 2.68	
Not reported	3 (1)	4 (3)	0.39	0.09 – 1.75	
ANC attendance					
No	20 (7)	1 (1)	Ref		**0.001**
Yes	256 (92)	135 (95)	0.09	0.01 – 0.71	
Not reported	3 (1)	6 (4)	0.03	0.01 – 0.29	
First ANC visit trimester					
1st	14 (5)	32 (24)	Ref		**0.002**
2nd	217 (85)	87 (64)	5.7	2.90 – 11.20	
3rd	24(9)	16 (12)	3.43	1.41 – 8.36	
Place of delivery					
Health facility	122 (44)	116 (82)	Ref		
Home	157 (56)	26 (18)	5.74	3.53 – 9.34	**<0.001**

4.3.3.2 Predictors of poor breastfeeding practices

Place of delivery, timing of first ANC visit and religion were the significant predictors of poor cord care practices (LRT P value=0.016) identified from the multivariate modelling. See table 4.11.

Table 4-11 Multivariate analysis for predictors of poor breastfeeding practices

	Odds ratio	Lower CI	Wald test P value	LRT
Place of delivery				0.016
Health facility	1.00			
Home	4.90	2.79 – 8.60	<0.001	
Timing of first ANC visit				
1st trimester	1.00			
2nd trimester	6.88	3.28 – 14.45	<0.001	
3rd trimester	3.66	1.23 – 10.84	0.019	
Religion				
Protestant	1.00			
Catholic	0.54	0.04 – 7.59	0.648	
Muslim	5.94	1.58 – 22.40	0.008	

4.4 Qualitative findings

4.4.1 Newborn care practices

Four focused group discussions were held; two among CHVs and two among postnatal mothers to triangulate the quantitative findings. The major themes guiding these discussions are reported stratified by the newborn care practice.

Cord care practice

Discussions from FGD with women revealed that poor cord care practices were still in existence in the community. The use of blades, knives, broken bottles and pair of scissors were still used in cutting of the cord by some TBAs and friends or women who assisted in delivery. Similarly, strings, cord clamps and pieces of cloth were still used in tying of the cord after cutting the cord.

Concerning care of the cord, application of herbs, cows 'fat or ghee and in some cases cow dung on the cord stump were applied. The reasons for application of these substances are were given as reported as in the quotes below.

"*….mafuta ya ng'ombe inafanya kitovu iwe nyororo*" FGD 2 among postnatal mothers. The fat makes the stump to be soft.

"*….hiyo majani inafanya damu isimame kutoka kwa kitovu*"The herbs stops the cord stump from bleeding.

Thermal care

The provision of appropriate thermal care of drying of the baby immediately after birth was mainly by use of kanga/leso.

However the inappropriate practice of bathing the baby immediately after birth was reported with the main reason being to remove dirt. "*mtoto huzaliwa akiwa mchafu kwa hivyo lazima aoshwe*" FGD 1. This was linked to the belief that the baby is born dirty and with a bad smell. After bathing some mothers reported to massage their babies with oil.

Breastfeeding practices

Mothers reported that some babies are not initiated breastfeeding within the first two hours after birth, an inappropriate breastfeeding practice. Instead the babies were given glucose or sugar water with some of the reasons for this practice being:

"*mama hana maziwa*" FGD 2 – the mother does not have breast milk

"*maziwa ya ngamia iko na nguvu sana*" FGD 2 – camel milk has more energy

"….unajua….kuna matiti ya baba na mtoto" FGD 1 – one of the breasts is reserved for the husband

Other inappropriate breastfeeding practices included the introduction of prelacteal meals such camel milk, porridge, weetabix within the first 28 days.

The above practices were linked to the belief that there is no breast milk from newly delivered mothers a beleif commonly expressed by both mothers and TBAs at home.

Challenges in providing newborn care

Some of the practical challenges reported related to provision of newborn care included the lack of family, socio or community support during the healing period for the mother and hence no adequate time for the mother to look after the baby "…*kazi ni mingi….lazima utafutie watoto wale wengine….kwa hivyo unampatia maziwa alale*.." FGD 2.

Further the climatic conditions of the study area posed a challenge in the provision of care to the newborn *"…improper attire to newborns given that there is great wind and hot weather exposing newborns to chest infections in early life*" KI 4.

From a health services perspective, some of the inappropriate practices identified were linked to lack of knowledge on newborn care "…*..no skilled delivery….babies develop neonatal sepsis due to unsterile procedures*…." KI 3

CHAPTER FIVE: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Discussion

Overall newborn care practices are poor when assessed as composite outcomes. More specifically, 66% of the respondents had poor breastfeeding practices, 57% had poor cord practices and 45% had poor thermal care practices. Overall, only 14% of the newborns received appropriate care across the three newborn care practices combined. Although ANC attendance for at least one visit was 95% a caveat to this is that only two-thirds attended all the four recommended ANC visits suggesting that they potentially missed important messages offered during these visits and therefore the poor practices. Inadequate ANC follow up has been associated with poor newborn care practices and delivery practices. Further, second driving force to these poor practices is the high rate of home deliveries in this community. Despite there being trained TBAs a few bad and dangerous practices like applying cow-dung to the cord and feeding the baby with other substances (eg camel milk) may suggest some attachment to cultural practices. The median age for first birth was at 18 years meaning that most of the mothers in the region deliver their first baby during adolescent. This has implications in terms of neonatal morbidity and mortality.

The review of each of the newborn practice was done separately, discussing socio-demographic and antenatal and delivery practices associated with each of the newborn practice as below.

While current guidelines recommend application of nothing on the cord, 57% of the newborns still had a substance applied on the cord stump suggesting either poor dissemination or poor adherence to guidelines. Work done by English and colleagues demonstrate that there is poor dissemination or poor uptake of guidelines for

children(English et al. 2014) while Gathara and colleagues have shown that adherence to guidelines is poor for newborns in Kenyan district hospitals (David Gathara et al. 2011). The use of iodine and methylated spirit on the cord resonates with the above findings as these are outdated guidelines. A more worrying finding was the application of cow-dung on the cord stump which has been associated with neonatal sepsis and tetanus. The use of methylated spirit may be linked to the need of applying a product with antiseptic properties to prevent neonatal sepsis. The use of oil in 30% of the respondents who delivered at home suggests a cultural practice linked to some traditional belief, although the use of oil has recently been shown not to be detrimental. These findings on cord care are consistent with reports on community studies undertaken in Bangladesh and Nepal, where home delivery was associated with increased risk of poor cord care practice by up to 6 times(Baqui et al. 2007; Khadduri et al. 2008). With neonatal sepsis being the leading killer for neonates(Wang et al. 2014) and the main route of infection being the cord, inappropriate practices therefore pose a major challenge in reducing neonatal deaths.

The socio-demographic factors that were significantly associated with poor cord practice were marital status, timing of first ANC and place of delivery. Although ANC attendance reduced the risk of poor cord care practice by up to 70%, the timing of first ANC was seen as a very important factor with ANC attendance in the second and third trimester being associated with increased risk of poor cord care by 4 and 3 times respectively. This may point to the inadequacy of time to deliver all the required messages for newborn care in the one or two visits that the mother attends and the late presentation at the clinic during pregnancy. These findings are consistent with literature of ANC attendance and neonatal outcomes which report improved neonatal

outcomes and survival for newborns born from mothers who attend at least 4 visits. There is no clear link for the reduced risk of poor cord care for women who were married, however it might be argued that these have better psychosocial and financial support.

Neonatal hypothermia is widely recognized as an important contributing factor to neonatal morbidity, especially in low and middle income countries (Kumar et al. 2009) and has been associated with mortality risk in newborns (Mullany et al. 2010) and young infants aged 0-2 months (Sodemann et al. 2008). The World Health Organization (WHO) has included thermal care (including the prevention of neonatal hypothermia) as a component of essential care in newborns among a package of basic interventions recommended universally for all babies (WHO 2013). An incidence of hypothermia of 67% among neonates born outside of hospital was found in Ethiopia, while the incidence in a Ugandan hospital was 79% and 85% in Zimbabwe (Kambarami and Chidede; Byaruhanga, Bergstrom, and Okong 2005). Further, a study from Tanzania found a 22% prevalence of hypothermia among newborns admitted to a neonatal care unit (NCU) (Manji and Kisenge). In contrast to these reports, findings from this study indicate 30% and 55% home and health facility deliveries had bad thermal care (bathing of the baby within 24 hours) practices respectively. Further, compared to health facility deliveries home deliveries had a significantly increased risk of bathing within 24 hours.

The above results could be partly explained by fact that the area of study is a relatively hot place with average temperatures of 32 degrees celcius all year round, with hospital advice being not to cover up the baby to avoid heat rashes and discomfort. Therefore due to these climatic conditions in which the study was

undertaken these findings should be interpreted with caution. However it is important to note that the decision to bathe the baby immediately may have been guided by socio-cultural beliefs with the some of the respondents reporting that baby is usually born dirty.

Because of the known nutritional and health benefits to the infant, the World Health Organization recommends that women in resource-poor countries exclusively breastfeed until their babies reach 6 months of age(WHO 2006). Maternal colostrum, produced during the first days after delivery, has long been thought to confer additional protection because of its immune and non-immune properties. Current WHO and Kenya guidelines recommend immediate breastfeeding – breastfeeding initiation within 30 minutes of delivery(WHO 2006). With 98% of the respondents having had a normal delivery an equal proportion of neonates should have been breastfed. However, 66% of the respondents did not initiate breastfeeding within 2 hours of delivery a finding consistent with reports from Ghana by Edmond and colleagues where 57% of the mother s did not initiate breastfeeding within 1 hour of delivery(Edmond et al. 2006). Some of the reason given for late initiation of breastfeeding was that mothers believed they didn't have breast milk. Kakute and colleagues from Cameroon and Gloria from Ghana have demonstrated that cultural practices and traditional beliefs are likely to influence the breastfeeding practices more so if the delivery happened at home (Kakute et al.; Otoo, Lartey, and Pérez-Escamilla 2009). One of the reasons for delayed breastfeeding in this study was poor recovery or lack of strength after delivery. Anecdotal knowledge from this region is that often mothers are malnourished and have low blood levels (haemoglobin) - a common cause for poor recovery and hence an alternative to breastfeeding is provided while the mother recovers. A worse scenario is where the mother does not have breast

milk due to her poor health status a likely situation in this region where over 86% of the respondents were unemployed and the region is dry with the only economic activity being animal rearing. These sentiments echo findings from Otoo and colleagues where the mother's health status and financial ability of the mother or partner have a major role on the breastfeeding practices, with women not breastfeeding in order to resume work in instances where the mother is employed (Otoo, Lartey, and Pérez-Escamilla 2009).

Findings from other studies support our observation of decreased risk of poor breastfeeding practice for mothers who reported ANC attendance (Edmond et al. 2006; Baqui et al. 2007). Mothers with a history of newborn death in the first month of life had an increased risk of poor breastfeeding practices probably highlighting the presence of other harmful practices that may have led to earlier death(s).

More generally and consistent with work done elsewhere religion and occupation of the mother were significantly associated with poor newborn care practices with women with an income having a significantly decreased risk of poor breastfeeding practice. The area of study was in a semi-arid area where pastoralist activity is the main source of income, therefore, the lack of a source income for mother or partner is commonly associated with poor nutrition and malnutrition in pregnancy a factor that may cause lack of breast of milk at birth and hence delayed initiation. This finding is further augmented by the observation that a larger proportion (46%)of neonates were given fluids within the first 28 days and lesser proportion (20%) at birth despite 98% having had a normal delivery.

Other factors that may have indirectly contributed to poor newborn care include home delivery. With the exception of the 15% mothers whose reason for home delivery was either being too far or lack of transport to the facility, the rest provided socio-cultural reasons that included: "*lack of a female provider, husband did not allow, health facility delivery not being customary*" among others. These findings are consistent with work done in Malawi and Ghana that showed socio-cultural factors as the main drivers for home delivery. A more encouraging finding was the reasons given for seeking delivery services at a health facility which included: "*free maternal care services, safer delivery, good health care workers, past good experiences at a health facility, near home, previous unfavorable outcomes for home deliveries, as advise from nurses and CHEWs*", all of which are pointers to a functioning health system. The absence of negative reasons related to health facility in the reasons for home delivery further re-iterate the need for better health education and advocacy while exploring the socio-cultural issues around the choice of place of delivery in order to promote safer deliveries and good newborn practices linked to health facility delivery.

To understand the findings from the quantitative data we triangulated our results using qualitative methods. The main themes emerging from the FGD and KI interviews included: existing cultural practices and beliefs, ii) Lack of family and socio support and iii) health worker practices.

Most of the cultural practices identified were inappropriate and were linked to poor newborn care practices. For instance, for breastfeeding the neonates can only be fed from one breast as the other belongs to the husband hence denying the neonate the much needed high nutrient breast milk.

On cord care practice, there is a belief that that cow fat softens the cord while application of some herbs on the stump is believed to stop bleeding. The application of these substances increase the risk for neonatal sepsis and death. Similar practices have reported elsewhere in Ghana(Moyer et al. 2012; Otoo, Lartey, and Pérez-Escamilla 2009). This highlights the need for increased education within the community to promote better practices.

Consistent with literature from other developing countries, resource constraints emerged as one of the factors influencing newborn care(Costello and Manandhar 2000; Friberg et al. 2010). For instance, during delivery mothers have to often make do with what is available to cut the cord for example knives, broken bottles and unsterilized blades. This is especially common when the delivery happens during the period when the family is migrating in search of pasture. Another example is when the introduction of pre-lacteal foods during the neonatal period is done early so that the mother can resume work as soon as possible to fed for the rest of the family.

Reports from similar settings indicate that health worker practices influence health seeking behaviour with practices like beating women or abusing them during child birth being reported in their work(Pagel et al. 2014; Callaghan-Koru et al. 2013). Similarly, in this study some of the concerns raised included, poor public relations i.e being rude to mothers and crude practices like giving very big episiotomies. These practices might therefore be discouraging mothers from delivering in hospitals and hence home deliveries under the care of unskilled birth attendants leading to inappropriate practices. Similar to other findings, maternal educational attainment and occupation were unrelated to good newborn care of practices (Mahama S. and Mariam I, 2014)

5.2 Conclusions

1. Cord care practices including care of the stump, cutting and tying was as per guideline for the majority of the mothers who delivered at the facility. There were some harmful practices in the region where some mothers who delivered at home apply harmful substances such as cow dung to the cord stump predisposing to infections.
2. Majority of the mothers had their babies dried and covered after delivery both at home and health facility. Early bathing of newborns was practiced predisposing the new born to hypothermia. This was because of the belief in the community that babies are born dirty.
3. Late initiation of breastfeeding and early introduction of prelacteal meals was practiced in the region mainly influenced by traditional practices and beliefs. Babies were given fluids other than breast milk within the first 28 days post delivery. This was reported mainly among those who attended first ANC in the 3rd trimester and those who delivered at home.
4. Home delivery, late attendance of first ANC visit, traditional beliefs and practices were the key factors influencing poor cord care, thermal care and breastfeeding practices.

5.3 Recommendations

1. County Health Government (CHG) of Garissa and its stake-holders to promote health facility delivery and early ANC attendance to effectively promote good cord care and thermal care practices among postnatal mothers in the community. This can be done through advocacy and health promotions campaigns.

2. CHG of Garissa through community mobilization, advocacy and engagement of religious leaders to address harmful traditional care practices and beliefs that affect negatively affect thermal and breastfeeding practices. This can be done by increasing knowledge and creating awareness to dispel beliefs, traditional practices on newborn care.
3. CHG to provide community and household level care to the newborns through community mobilization, home visits, participation, behaviour change and other appropriate community-based management strategies.
4. Ministry of Health to promote facility delivery by strengthening implementation of the free maternity program.

5.4 Recommendation for further studies

1. Similar or comparative study need to be done in other counties for ease of generalisation.
2. A study on assessing newborn care practices at health facilities is needed to identify the care provided by health care providers.

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APPENDICES

Appendix 1: Consent Form

Questionnaire No: _________________ Name of interviewer: _____________________

Date of the interview: _________________Data checked by: ____________________

Introduction and consent

My name is Annastacia Kumola and we are conducting a research to establish the newborn care practices among postnatal mothers. I am therefore here to collect some information on the subject from mothers who have recently given birth. Your participation in this interview is voluntary. If you decide not to participate, you will not be penalized. Also, you can change your mind during the interview and choose not to participate.

This interview is private and confidential. I am not asking for your name, and your name will not be disclosed or used. The information you provide shall be used for the purpose of the study and not any other use. You can also skip any questions that you do not want to answer. This interview will take about 15 minutes.

There is no monetary or financial benefit you derive from the study. You will however benefit from health education and advice on looking after your child but more importantly you will get an opportunity to share your experiences. Since your ideas are important to help in coming up with interventions to improve on newborn care in this region and Kenya at large.

Apart from the time taken to answer questions (**about 15 min**) which may take time away from other activities, no other risks are foreseen.

Client Consent Check-Off

May I begin the interview now? **Yes** **No**

If client responds "yes," the interviewer should sign and date the statement below and continue with the interview.

I certify that I have read the above statement and that the client agreed to the interview. I also certify that any information the client discloses will remain confidential.

Signed: ______________________________________ Date: _____________

If respondent says "no," the interviewer should sign and date the statement below and move on to another respondent.

I certify that I have read the above statement and that the client did not agree to be interviewed.

Signed: ______________________________________ Date: _____________

For any enquiries you may contact the following:

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OR

Chairman KU ERC: P.O. Box 43844, Nairobi-00100; Tel: 8710901/12

Appendix II: Fomu ya kutoa idhini ya kushiriki katika utafiti

Nambari ya utafiti: ________________Jina la mtafiti msaidizi : ______________________

Tarehe: _________________Msahishaji wa habari ya utafiti: ____________________

Utangulizi

Jina langu ni Annastacia Kumola na tunafanya utafiti kuhusu jinsi akina mama wanaowashughulikia watoto wao kiafya wanapozaliwa katika mwezi wa kwanza .Niko hapa kukusanya habari kuhusu jambo hili kutoka kwa akina mama ambao wamejifungua hivi majuzi.Kushiriki katika utafiti huu ni kwa hiari.Uko huru kuamua kushiriki au la. Ukiamua kutoshiriki hakuna dhawabu yoyote na pia uko huru kubatilisha uamuzi wako na kujiondoa wakati wowote ule .

Tutaajibika kulinda habari zote tutakozopata kuhusu wewe na mtoto wako wakati na baada ya utafiti huu ili kuhakikisha habari hizo ni siri kati yetu na wewe. Hakuna watu au idara zozote zitakazopata habari hizo bila ya idhini yako. Pia tutahakikisha kuwa habari zinazoweza kukutambulisha wewe au mtoto wako hazinakiliwi kamwe katika ripoti za utafiti huu. Hautaulizwa jina lako au la mtoto na pia halitatajwa au kutumika. Habari utakazotoa kwetu zitatumika kwa utafiti huu pekee. Pia uko huru kuruka baahi ya maswali iwapo hutaki kujibu. Muda wa maswali ni dakika kumi na tano.

Hakuna pesa au faida ya pesa hutakayopata kutokana na utafiti huu lakini hutapewa mafundisho na mashauri kuhusu malezi bora ya mtoto wako na zaidi ya yote utapewa nafasi ya kueleza tajiriba na mawazo yako kuhusu malezi ya watoto. Kushiriki kwako katika utafiti huu kutatuwezesha kudadisi sababu zinazoweza kuhusishwa na malezi bora ya watoto. Hii itasaidia kubuni mikakati mwafaka ya kusaidia akina mama katika

malezi bora ya watoto wengi iwezekanavyo katika eneo hili na Kenya zima kwa jumla.

Kwa vile hakuna jambo la kukudhuru wewe au mtoto wako litakalofanywa kwenye utafiti huu na hakuna madhara yoyote yanayotarajiwa isipokuwa muda wako utakaotumia kuyajibu masawali ya utafiti huu .

Kushiriki Utafiti

Naweza kuanza kuuliza maswali? **Ndio**..... **La**.......

Ikiwa **UNAKUBALI** kushiriki utafiti huu, tafadhali weka sahihi hapa chini.

Sahihi ya mhusika.. Tarehe...

Ninathibitisha ya kuwa nimefuata taratibu zote za kuomba idhini katika utafiti huu.Na kwamba mhusika ameonyesha kuwa ameuelewa utafiti huu na lengo lake na amekubali kushiriki.

Sahihi ya mtafiti/msaidizi: ________________________________Tarehe: _______________

Ikiwa mhusika amekataa kulizwa maswali, mtafiti athibitishe kwa kuweka sahihi na tarehe hapa chini na aendelee na utafiti kwa mhusika mwingine.

Sahihi.. Tarehe..

Mawasiliano: Annastacia Kumola (**Mtafiti mkuu**)

Simu rununu: 0724 450 693 AU 0721 659 321 SLP 15, Okia Makueni.

Tofuti: amkumola@gmail.com / a_kumola@yahoo.com.

Watafiti wasimamizi: Prof Ephantus W. Kabiru, P.O BOX 43844 00100-Nairobi.

Cell phone:+254 721998558 and DR. Gaudencia Okumbe.P.O BOX 43844 00100-Nairobi.Cell phone:+254 715554229. Wote kutoka chuo kikuu cha Kenyatta.

AU

Mwenyekiti Chuo kikuu cha Kenyatta ERC: SLP 43844, Nairobi-00100; Simu: 8710901/12

Appendix III: Questionnaire on newborn care practices

Socio demographic data

1. In which year were you born?----------
2. How old were you in your last birthday?
3. Parity--
4. Have ever attended school? Yes: NO:
5. What is your highest level of school you attended?
    1. Primary
    2. Secondary
    3. college/University
6. What is your current marital status?
    1. Single
    2. Married
    3. Divorced
    4. Widowed
7. What is your religion?
    1. Traditional
    2. Protestant
    3. Catholic
    4. Muslim
    5. Other(specify)
8. At what age did you get your birth (yrs.)?-----------------------
9. Residence ……………………………………
10. Occupation

1. Unemployed
2. Casual labourer
3. Self-employed
4. Salaried job
5. Student

11. Husband/Partners occupation
    1. Unemployed
    2. Casual labourer
    3. Self-employed
    4. Salaried job
12. Baby's age (days)………………………………
13. Baby's Sex
    1. Male
    2. Female
14. Is there a Health facility in this community
    1. Yes
    2. No
15. If Q17 is Yes, name the facility --------------------------
16. For this baby did you attend ANC?
    1. Yes
    2. No
17. How many months pregnant were you when you first received antenatal care for this baby? 1-3months 4-6months 7-9months
18. How many times did you receive antenatal care in the last pregnancy?

    1 2 3 4 More than 4 don't know

19. First ANC attendance which semester.

    1st 2nd 3rd

DELIVERY CARE

20. Where did you give birth to?

    1. Private HF
    2. Public HF
    3. Home
    4. On the way to HF
    5. Others (specify) -------

    If the answer is home go to Q 24

21. Why did you choose to deliver in the above if the answer is not home? --------

    ----

    ----

22. If the answer to Q22 is Home, state why?

    1 Cost Too Much

    2 Facility not Open

    3 Too Far/ No Transportation

    4 Don't Trust Facility/Poor

    5 Quality Service

    6 No Female Provider at Facility.

    7 Husband Did Not Allow.

8 Not necessary.

9 Not Customary.

Other (s) Specify…………………………………………

(*Record All Mentioned)*

23. What was the mode of delivery of your baby?

    1. Normal vaginal delivery
    2. Vacuum/Instrument delivery
    3. Caesarean Section

24. Who assisted you during delivery?

    1. Nurse/Midwife
    2. Doctor
    3. TBA
    4. Relative-Specify
    5. Alone

25. Did he/she wash his/her hand before attending to you

    1. Yes
    2. No

26. Was any material used to cover the surface on which you delivered?

    1. Yes
    2. No
    3. Can't Remember

27. If yes to Q.28, what was used?

    1. Cloth
    2. Rubber Macintosh

3. Sack
4. Leaves
5. Other (specify-----------

28. Was the above mentioned material clean?
    1. Yes
    2. No
    3. Can't tell
29. Were there any materials applied to birth canal to ease labour
    1. Yes
    2. No
30. if yes what -------------------------------------
31. Were you given something to eat/drink immediately (within 2 hrs) after birth?
    1. Yes
    2. No
32. If yes what was it?...

IMMEDIATE NEWBORN CARE PRACTICES

CORD CARE PRACTICES

33. What was used to cut the cord after delivery?
    1. Scissors
    2. Blade
    3. Knife
    4. Other (Specify)---------------------
34. Was the above mentioned material clean (sterilized)?
    1. Yes

2. No

35. What was used to tie the cord?

1. String
2. Rubber band
3. Cord clamp
4. Wire
5. Others (specify)___________

36. Was the material above clean (sterilized)?

1Yes

2No

3Can't tell

37. What was applied on the cord stump?

1. Methylated spirit
2. Iodine
3. Oil
4. Cow dung
5. None
6. Others (Specify

THERMAL CARE

38. What was used to wrap baby after birth?.....................................

39. Baby dried at birth

1. Yes
2. No

40. Baby covered to prevent heat loss

1. Yes

2. No

41. When did you initiate bathing the baby?

    1. Immediately after birth
    2. 6hrs after birth
    3. 7-24hrs after birth
    4. 48hrs after birth
    5. 72hrs after birth
    6. Other specify)

42. What time of the day?

    1. Early morning
    2. late morning
    3. afternoon
    4. late in the night

43. Has the baby had illnesses since birth up to the 28 th day?

    1. Yes
    2. No

BREASTFEEDING PRACTICES

44. Approximately how long after birth did you first put your baby to the breast?

    1. Immediately
    2. 30minutes -1 hr
    3. 2-4hrs
    4. Days
    5. Other (specify)

45. What was the first feed you gave to baby immediately after delivery?....................

46. Did you give any fluid to baby immediately after delivery?

    1. Yes
    2. No

47. If yes to Q.49, what did you give?

    1Plain water

    2Gripe water

    3Sugar water

    4Camel milk

    5Cow milk

    6 Others (specify)___________________

48. Was the baby given fluids in the first 28 days?

    1. Yes
    2. No

49. Do you clean your breast before breastfeeding the baby?

    1. Yes
    2. No

50. If yes, what do you use to clean your breast before breastfeeding…………………..

51. How often do you breastfeed baby in a day?..................................

52. Was your baby immunized at birth?

    1. Yes
    2. No

Appendix IV: Newborn care practices Focus Group Discussion Guide

Date………/………. /…………   Venue…………………………..........

Facilitator……………………………

Moderator…………………………...

No. of discussants……   Time for discussion 1hr. Start………

Finish………..

INSTRUCTIONS

1. Introductions.
2. Explain purpose of study.
3. Assure discussants of confidentiality.
4. Ask discussant for their informed consent to participate in discussion.
5. Explain importance of recording the discussion.

QUESTIONS

1. How do mothers in this community provide care to their newborn in the following area?
    a. Cord care?
    b. Keeping baby warm?
    c. Breastfeeding
2. Are there any beliefs in this community that relate to:
    a. Cord care?
    b. Keeping the baby warm?
    c. Breastfeeding?
3. Are there any traditional practices in this community related to:

a. Cord care? __________________________

b. Keeping the newborn warm? _______________________

c. Breastfeeding? ____

4. Do you think there any taboos in this community regarding breastfeeding?
5. In your own opinion what are the main reasons why mothers in this community deliver at home?---
6. In your opinion what are the effects of beliefs, taboos on newborn care?
7. What challenges do you think mothers in this community face as they provide newborn

   care?____

   ____
8. What would recommend to mothers regarding newborn care?

Give the group space to raise any other issues that they feel are relevant

END.

Thank you for your cooperation

Appendix V: Key Informant Interview Guide

Date………/………. /……………….Venue…………………………..........

Interviewer's name……………………………

Designation of the Key informant.......................

Time: Start…………. Finish………..

Time for discussion: 45minutes.

INSTRUCTIONS

1. Introductions.
2. Explain purpose of study.
3. Assure key informant of confidentiality.
4. Ask key informant for their informed consent to participate in the discussion.

QUESTIONS

1. In your own opinion why do most women in this region deliver at home?

   ……………………………………………………………………………

   ……………………………………………………………………………

   ……………………………………………………………………………

   ……………………………………………………………………………

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2. Are you aware of any traditional practices in this community that are detrimental to a newborn's health?

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3. In your opinion what challenges do women face as they provide newborn care in the community?

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4. What do you think can be done to improve newborn care among postnatal mothers in this community?

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Thank you for your cooperation.

Appendix VI: Map of Study Area: Garissa County

Source: Kenya National Bureau of Statistics, 2013

Appendix VII: Chi Square Results

Cord care practices

		Cord care practice				
		Bad	**Good**	chi2	P value	df
Marital status		**n=84**	**n=337**			
	Single	0 (0)	3 (1)	6.72	0.095	3
	Married	79 (94)	328 (97)			
	Divorced	5 (6)	5 (1)			
	Widowed	0 (0)	1 (0)			
Religion						
	Protestant	0 (0)	16 (5)	4.21	0.088	2
	Catholic	1 (1)	5 (1)			
	Muslim	83 (99)	316 (94)			
Education level						
	None	43 (51)	169 (50)	2.46	0.513	4
	Primary	37 (44)	146 (43)			
	Secondary	2 (2)	18 (5)			
	College/University	1 (1)	3 (1)			
	9	1 (1)	1 (0)			
Maternal occupation						
	Unemployed	77 (92)	284 (84)	4.14	0.389	4
	Casual laborer	1 (1)	12 (4)			
	Self-employed	4 (5)	34 (10)			
	Salaried job	2 (2)	6 (2)			
	9	0 (0)	1 (0)			
Partner occupation						
	Unemployed	17 (20)	76 (23)	3.34	0.498	4
	Casual laborer	25 (30)	113 (34)			
	Self-employed	35 (42)	124 (37)			
	Salaried job	4 (5)	20 (6)			
	9	3 (4)	4 (1)			
Baby gender						
	Male	51 (61)	206 (61)	0.52	0.937	2
	Female	33 (39)	129 (38)			
	9	0 (0)	2 (1)			
History of newborn death in first month						
	No	67 (80)	304 (90)	7.16	0.023	2
	Yes	15 (18)	28 (8)			
	9	2 (2)	5 (1)			
Attend ANC for this baby						
	No	15 (18)	6 (2)	38.16	<0.001	2
	Yes	66 (79)	325 (96)			
	9	3 (4)	6 (2)			
Timing of first ANC visit						
	1st	7 (11)	39 (12)	8.30	0.060	3
	2nd	47 (72)	257 (79)			
	3rd	11(17)	29 (9)			
Place of delivery						
	Health facility	7 (8)	231 (69)	99.21	<0.001	1
	Home	77 (92)	106 (31)			

‡ Fisher's exact test

Thermal care practices

		Early bathing	Delayed bathing	chi2	P value	df
‡Marital status						
	Single	3 (2)	0 (0)	5.15	0.124	3
	Married	179 (95)	228 (98)			
	Divorced	5 (3)	5 (2)			
	Widowed	1 (1)	0 (0)			
‡Religion						
	Protestant	14 (7)	2 (1)	16.37	<0.001	2
	Catholic	5 (3)	1 (0)			
	Muslim	169 (90)	230 (99)			
‡Education level						
	None	94 (50)	118 (51)	7.39	0.088	4
	Primary	77 (41)	106 (45)			
	Secondary	12 (6)	8 (3)			
	College/University	4 (2)	0 (0)			
	Not reported	1 (1)	1 (0)			
‡Maternal occupation						
	Unemployed	149 (79)	212 (91)	15.03	0.002	4
	Casual laborer	11 (6)	2 (1)			
	Self-employed	22 (12)	16 (7)			
	Salaried job	5 (3)	3 (1)			
	Not reported	1 (1)	0 (0)			
Partner occupation						
	Unemployed	45 (24)	48 (21)	3.81	0.425	4
	Casual laborer	56 (30)	82 (35)			
	Self-employed	69 (37)	90 (39)			
	Salaried job	14 (7)	10 (4)			
	Not reported	4 (2)	3 (1)			
Baby gender						
	Male	117 (62)	140 (60)	2.84	0.269	2
	Female	69 (37)	93 (40)			
	Not reported	2 (1)	0 (0)			
History of newborn death in first month						
	No	165 (88)	206 (88)	5.24	0.077	2
	Yes	17 (9)	26 (11)			
	Not reported	6 (3)	1 (0)			
‡Attend ANC for this baby						
	No	2 (1)	19 (8)	11.34	0.001	2
	Yes	181 (96)	210 (90)			
	Not reported	5 (3)	4 (2)			
Timing of First ANC visit						
	1st	30 (17)	16 (8)	23.56	<0.001	3
	2nd	126 (70)	178 (85)			
	3rd	24(13)	16 (7)			
Place of delivery						
	Health facility	132 (70)	106 (45)	25.87	<0.001	1
	Home	56 (30)	127 (55)			

‡ Fisher's exact test

Breastfeeding practices

		Breastfeeding initiation				
		Late	Early	chi value	P value	DF
Marital status		n=279	n=142			
	Single	0 (0)	3 (2)	8.15	0.035	3
	Married	273 (98)	134 (94)			
	Divorced	6 (2)	4 (3)			
	Widowed	0 (0)	1 (1)			
Religion						
	Protestant	3 (1)	13 (9)	24.02	<0.001	2
	Catholic	1 (0)	5 (4)			
	Muslim	275 (99)	124 (87)			
‡Education level						
	None	138 (49)	74 (52)	12.46	0.010	4
	Primary	130 (47)	53 (37)			
	Secondary	10 (4)	10 (7)			
	College/University	0 (0)	4 (3)			
	Not reported	1 (0)	1 (1)			
‡Maternal occupation						
	Unemployed	252 (90)	109 (77)	19.12	<0.001	4
	Casual laborer	4 (1)	9 (6)			
	Self-employed	20 (7)	18 (13)			
	Salaried job	2 (1)	6 (4)			
	Not reported	1 (0)	0 (0)			
Partner occupation						
	Unemployed	60 (22)	33 (23)	15.68	0.004	4
	Casual laborer	99 (35)	39 (27)			
	Self-employed	109 (39)	50 (35)			
	Salaried job	9 (3)	15 (11)			
	Not reported	2 (1)	5 (4)			
Baby gender						
	Male	176 (63)	81 (57)	5.02	0.083	2
	Female	103 (37)	59 (42)			
	Not reported	0 (0)	2 (1)			
‡History of newborn death in first month						
	No	245 (88)	126 (89)	2.38	0.311	2
	Yes	31 (11)	12 (8)			
	Not reported	3 (1)	4 (3)			
Attend ANC for this baby						
	No	20 (7)	1 (1)	12.36	0.001	2
	Yes	256 (92)	135 (95)			
	Not reported	3 (1)	6 (4)			
Timing of First ANC visit						
	1st	14 (5)	32 (24)	32.71	<0.001	3
	2nd	217 (85)	87 (64)			
	3rd	24 (10)	16 (12)			
Place of delivery						
	Health facility	122 (44)	116 (82)	55.19	<0.001	1
	Home	157 (56)	26 (18)			

‡ Fisher's exact test

Appendix VIII: Letters for approval

KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE

Fax: 8711242/8711575
Email: kuerc.chairman@ku.ac.ke
kuerc.secretary@ku.ac.ke
Website: www.ku.ac.ke

P. O. Box 43844
Nairobi, 00100
Tel: 8710901/12
Tel: 8710901/12

Our Ref: KU/R/COMM/51/276

Date: 22nd January, 2014

Anastacia Kumola,
Department of Environmental Health,
Kenyatta University,
P.o Box 43844

APPLICATION NUMBER PKU/164/I 144 –"NEWBORN CARE PRACTICES AMONG POSTNATAL MOTHERS IN GARISSA COUNTY, KENYA"- Version2

1. IDENTIFICATION OF PROTOCOL

The application before the committee is with a research topic "Newborn care practices among postnatal mothers in Garissa County, Kenya" dated 6th January, 2014.

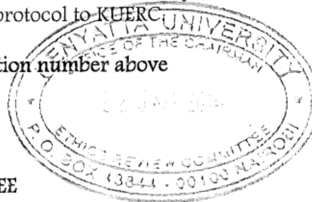
2. DECISION

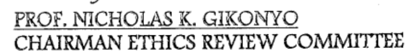
The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines **AND APPROVED that the research may proceed for a period of ONE year from 22nd January, 2014.**

3. ADVICE/CONDITIONS

i. Progress reports are submitted to the KU-ERC every six months and a full report is submitted at the end of the study.
ii. Serious and unexpected adverse events related to the conduct of the study are reported to this board immediately they occur.
iii. Notify the Kenyatta University Ethics Committee of any amendments to the protocol.
iv. Submit an electronic copy of the protocol to KUERC.

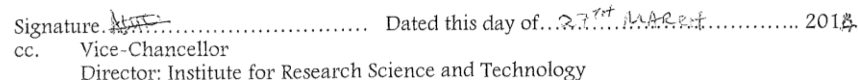
When replying, kindly quote the application number above





PROF. NICHOLAS K. GIKONYO
CHAIRMAN ETHICS REVIEW COMMITTEE

I .... accept the advice given and will fulfill the conditions therein.



Signature.............................. Dated this day of.............................. 201..

cc. Vice-Chancellor
Director: Institute for Research Science and Technology

NACOSTI

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471, 2241349, 310571, 2219420
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Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

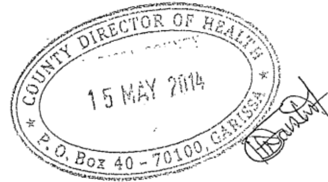
Ref: No.

Date:

9th May, 2014

NACOSTI/P/14/5948/1259

Annastacia Mutono Kumola
Kenyatta University
P.O.Box 43844-00100
NAIROBI.



RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *"Newborn care practices among postnatal mothers in Garissa County, Kenya,"* I am pleased to inform you that you have been authorized to undertake research in Garissa County for a period ending 31st March, 2015.

You are advised to report to **the County Commissioner, the County Director of Education and the County Coordinator of Health, Garissa County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

SAID HUSSEIN
FOR: SECRETARY/CEO.

Copy to:

The County Commissioner
The County Director of Education
The County Coordinator of Health
Garissa County.

THE PRESIDENCY

MINISTRY OF INTERIOR & CO-ORDINATION OF NATIONAL GOVERNMENT

Telegrams: "COUNTY" GARISSA.
Telephone: Garissa
When replying please quote
ccgsacounty@gmail.com

OFFICE OF THE
COUNTY COMMISSIONER
P.O BOX 1-70100
GARISSA.

REF.NO: DC/EDU/7/7.VOL.I/(86)

13 May 2014

Annastacia Mutono Kumola
Kenyatta University
P. O. Box 43844-00100
NAIROBI.

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Newborn care practices among postnatal mothers in Garissa County, Kenya"***

I am pleased to inform you that you have been authorized to undertake your research in Garissa County.

H. R. KHATOR
COUNTY COMMISSIONER
GARISSA COUNTY.