DETERMINANTS OF NEONATAL CARE PRACTICES AMONG POSTNATAL MOTHERS AT THE KIAMBU AND THIKA HOSPITALS, KIAMBU COUNTY, KENYA

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SEPTEMBER, 2022

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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DEDICATION

I dedicate this thesis first to the almighty God, my late father, James Kariuki for his wise words, my mother Bibian Njeri for the prayers, love and support you have accorded to me throughout this process and to the children who inspire me every day.

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LIST OF ABBREVIATIONS AND ACRONYMS

ANC -	Antenatal Care
ENC -	Essential Newborn care practices
HPM -	Health Promotion Model
IUGR-	Intra-uterine growth restriction
IYCF-	Infant and Young Child Feeding
KDHS-	Kenya Demographic Health Survey
KMC -	Kangaroo Mother Care
KNBS -	Kenya National Bureau of Statistics
KNH -	Kenyatta National Hospital
MDG -	Millenium Development Goal
MOH -	Ministry of Health
SDG -	Sustainable Development Goal
WHO -	World Health Organization

OPERATIONAL DEFINITIONS

Neonate - A newborn baby, specifically a baby in the first 4 weeks of birth.

Neonatal care practices - This are essential cost effective interventions performed by the mother to prevent illnesses e.g. optimal cord care, breastfeeding practices e.t.c..

Thermal regulation - Process by which core internal body temperature is maintained by tightly controlled self-regulation mechanisms, regardless of their surroundings.

Breast feeding practices- The practices to be followed in breastfeeding a baby.

Cord care practices- This is the practice of keeping the cord clean, dry and prevents entry of infections through the stump.

Skin care practices- Range of practices that support skin integrity, enhance its appearance and prevent skin conditions

Immunization - This is a process where the body induces immunity to a disease as a result of a vaccine. It is an effective way of preventing harmful diseases before contact by giving an injection or an oral drug.

Women's reproductive age- According to WHO, this are all women aged 15-49 years

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ABSTRACT

Neonatal health is necessary in decreasing child mortality but often gets minimal attention. Research evidence in third world countries has shown that practices such as poor cord care and breastfeeding practices impact on neonatal health. This study aimed to determine the neonatal care practices among postnatal mothers and the relationships between various factors and these practices at the Kiambu and Thika County Hospitals. This was a cross sectional descriptive study design. Stratified sampling method was used to identify the sample for the study. Self-administered and interviewer administered questionnaires were used to collect data, practice was assessed through a likert scale, analyzed through SPSS and presented using descriptive statistics. Chi square test of significance ($p \leq 0.05$) was used to test the relationships between the various explanatory factors and the neonatal care practices among postnatal mothers. A total of 128 postnatal mothers participated in the study with the mean age being 26 ±5.8 years. There was negative relationship between information received on breastfeeding, eye care, thermoregulation, immunization and actual care practices ($p<0.05$). Adequate knowledge was found towards cord care with gaps in practice existing in breastfeeding, eye care and thermoregulation. Social demographic, socio-economic, socio-cultural and institution factors did not influence neonatal care practices. More emphasis should be put on maternal education regarding neonatal care practices (thermoregulation, eye care, skin care and breastfeeding practices). Further research is recommended to find out why there are negative practices on breastfeeding and eye care despite being knowledgeable on those practices.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Two and a half million neonates die before they reach twenty eight days of age, globally. Forty-seven percent (47%) of all deaths under 5 years account for the neonatal period and 75% of these mortalities happen in the first week of life (Irimu et.al.,2021;Gul,et al., 2014). Of the 33.3% of the estimated 2.5 million neonatal mortalities that occur yearly, sepsis is usually responsible for a good percentage with other major causes including birth asphyxia 45.5%, prematurity 12.5% and hypothermia 11% (Olack et. al, 2021).

The World Health Organization (WHO) recommends essential neonatal care practices (ENC) that include exclusive breastfeeding, thermal regulation, hygienic cord and skin care, vaccination and recognition of danger signs to serious illness, to reduce neonatal mortality and morbidity (Ganchimeg et al, 2014). Various factors affecting postnatal mothers may hinder neonatal care practices. For instance, some cultural practices may hinder or derail the neonate's health (Jenifer and Benjamin, 2020;Otoo, Lartey and Perez-Escamilla, 2009).

Care provided by postnatal mothers is largely critical in determining the survival of the neonate at birth up to twenty eight days of age. Lawn, et al.,(2014),found out that inadequate care given to neonates led to 52% of neonatal mortalities, which are preventable through low cost interventions. However, previous childrearing experiences and social support mostly determine how postnatal mothers adapt to motherhood and neonatal care practices (Kumar et.al.,2018; Sriyasak, Akerlind and Akhavan, 2013).

Ninety eight percent of neonatal deaths occur in third world countries with high rates being in Africa (Irimu et.al.,2021).In a Nigerian study, a proportion of neonatal deaths in developing countries occur from sepsis(Olack et.al.,2021;Opara,et al.,2012).Poor practices among postnatal mothers are characterized by poor cord care practices in Southern Africa. However, early bathing, a 'ritual pollution' practice, leads to neonatal hypothermia , giving pre- lacteal feeds (e.g. with water and other fluids) may expose neonates to infections, poor vaccination adherence and poor breastfeeding practices and exposure of sick neonates to medicinal smoke from burned herbs to treat diseases(Pillay et. al.,2018;Thairu,Pelto,2008).

Regionally, cord care, thermal protection and breastfeeding which are some of the sub optimal practices have been a major challenge among postnatal mothers with the neonatal mortality rate at twenty eight per a thousand live births (Grady,et al.,2017).Irrespective of the mothers' age, social class, income and education, provision of care has always been of great value traditionally. Current evidence shows that improving neonatal health leads to positive socio economic contributions (Islam and Biswas,2021;Yinger and Ransom,2003). Tinka and Ransom (2003), argue that many neonatal deaths could be averted if enough investments were directed towards low cost interventions meant to address neonatal care.

In Kenya, the neonatal morbidity and mortality significantly contribute to the under-five mortality making achievement of SDG3 difficult. According to Kenya Demographic Health Survey(KDHS,2018), the neonatal mortality rate among postnatal mothers was at twenty one per a thousand live births which contributes to 42% of under-five

mortality which is 45.6 deaths per 1000 live births. It is thus this study was undertaken at the Kiambu and Thika County Hospitals to evaluate neonatal care practices among mothers.

1.2 Problem Statement

Neonatal mortality rate continually remains high at 21 deaths per 1000 live births in most third world countries and is affecting the attainment of Sustainable development Goal 3 (SDG 3). International efforts in the reduction of neonatal mortality among postnatal mothers has recently stagnated despite evidence of simple, affordable and low-cost interventions to prevent neonatal deaths, thus, strong evidence suggests that delivery of poor neonatal care practices impacts on neonatal sepsis in developing countries(Ghosh and Sharma,2011;WHO 2019).Elevated rates of unhygienic cord care and poor breastfeeding practices have made cord infections and malnutrition remain prevalent in third world countries (Berhan,& Gulema, 2018).

In Africa, 52% of neonatal mortalities are due to inappropriate care given to neonates, which are preventable through good neonatal care practices (Semanew, et al.,2019). In Ethiopia, the practice of neonatal care was generally not high. Some postnatal mothers had inadequate knowledge and practice of essential neonatal care and neonatal danger signs (Yitayew et al.,2021).

Regionally, Kayom et al. (2015), reported that 79.4% of postnatal mothers had been taught on breastfeeding antenatally. However, 31.5% had ceased breastfeeding by one month of age hence the need for follow-up training on points to be emphasized. Insufficient milk related to early cessation of breastfeeding, emphasizes that regardless

of the knowledge provided antenatally to mothers, their knowledge is not adequate to cause behavioral change and more interventions are necessary(Rollins,et al.,2016).

In a Kenyan study, Amolo, Njai and Irimu (2017), found out that though health education on community and institutional levels has been used to improve neonatal care practices, the percentage of postnatal mothers who had heard of thermoregulation practices and could explain some of them but did not practice included skin to skin care (7%), warm environment (4%) and warm clothing (93%).A high number of mothers were knowledgeable on breastfeeding practices but a percentage of them did not practice. On vaccines, 17.8% of postnatal mothers identified birth vaccines such as Bacillus Calmette-Guérin (BCG) and Oral Polio Vaccine (OPV) while only 4% of mothers knew nothing should be used on the umbilicus. This indicated a knowledge gap regarding care.

Kiambu and Thika County Referral Hospitals receive a large number of mothers from within Kiambu County and also from Nairobi County. Kiambu county has a high neonatal mortality rate of 42/1000 live births(KDHS,2014).Studies on neonatal care practices in the county are scanty and hence the study is undertaken to help understand neonatal care practices among postnatal mothers which will help unpack the factors driving the observed high neonatal mortality rate in the region.

1.3 Research Question

This study seeks to answer the following questions;

1. What is the level of knowledge on neonatal care practices among postnatal mothers with neonates at the Kiambu and Thika County Hospitals?

2. What are the neonatal care practices among postnatal mothers with neonates at the Kiambu and Thika County Hospitals?

3. What are the social economic and cultural factors influencing neonatal care practices among post natal mothers at the Kiambu and Thika County Hospitals?

4. What is the role of the institution in neonatal care practices among mothers at the Kiambu and Thika County Hospitals?

1.4 Broad Objective

To determine the neonatal care practices among postnatal mothers at the Kiambu and Thika County Hospitals.

1.4.1 Specific Objectives

1. To determine the relationship between socio-demographic characteristics and neonatal care practices among postnatal mothers at the Kiambu and Thika county hospitals.

2. To determine the relationship between knowledge and practice of neonatal care among postnatal mothers at the Kiambu and Thika county hospitals.

3. To determine the social economic and cultural factors that influence mothers' neonatal care practices among postnatal mothers at Kiambu and Thika County Referral Hospitals.

4. To find out the institutional factors that influence neonatal care practices among postnatal mothers at the Kiambu and Thika County Referral Hospitals.

1.5 Justification

The World Health Organization (WHO) recommends essential neonatal care practices which include breastfeeding practices, thermal protection for instance, skin to skin contact, umbilical cord care and hygienic skin care practices among others to bring down neonatal morbidity and mortality rates(WHO, 2017).Additionally, understanding routine neonatal care practices among postpartum mothers will help in the planning and organization of interventions for neonatal survival and formulation of policies that can be easily put into practice.

Neonatal care is very essential in the success of SDG3.Neonatal mortality has been a major challenge in Kenya especially in Kiambu County having a high mortality rate of 22 per 1000 live births (Kiambu health services, 2017),the national average being 21 per 1000 live births. At the Kiambu county hospital, admissions to postnatal and pediatric wards are very high.Out of the mothers who are admitted with sick babies in the pediatric wards, 45% are postnatal mothers with neonates. This is despite being highly informed on neonatal care practices through updates from the Ministry of Health and its proximity to the city. Hence, this study aimed to evaluate the practices done by the postnatal mothers against the set standards and how they affect neonatal morbidity and mortality.

1.6 Expected Benefits of the Study

This study will generate information on influencers of neonatal care practices among mothers. The findings will be useful to the County Government of Kiambu, Kiambu and Thika county referral hospitals, the Ministry of Health (MOH) and other institutions

working with child survival programmes to create solutions that improve neonatal care practice. The findings will also be helpful in the ongoing research efforts on breastfeeding and neonatal survival.

This will also give information to the ministry of health for training of health care workers and provide resources that promote appropriate neonatal care practices. The information is also helpful in curriculum development on neonatal care practices and support for health care providers.

1.7 Conceptual Framework

The conceptual framework to be used in this research will be adopted from the Health Promotion Model (HPM). A model developed by Nola J. Pender in 1982 and revised in 1996, which emphasizes the active role that a person has in initiating and maintaining health, and in shaping their own environment to support health-promoting behaviors(Laranjo,2016,p83). It provides a framework that explains key concepts that show how neonatal care practices are affected. The concepts are explained in three components using this model as determinants which include individual characteristics, behavior specific cognitions and influences and behavioural outcomes.

Personal qualities and experiences: directly relate to the mother and the neonate and have a direct or indirect result on perceived self-efficacy (Pender, 2002). In this study, these are depicted by the independent variables e.g. socio demographic characteristics, knowledge and practice of good neonatal care, mothers' actual practice, institutional factors.

Behavior specific cognitions, influences and experiences: These are the basic motivational mechanisms to neonatal care (Pender. 2002). These include socioeconomic such as situational factors e.g. number of children and mothers' occupation, cultural factors such as traditional beliefs, taboos and rituals which also influence the dependent variables.

Behavioral outcomes: This refers to the likelihood to engage in behavior that promotes health. It is the desired behavioral outcome and is the end point in the HPM, in this case, optimal neonatal care practice (Pender, 2002).The model focuses on self-efficacy of individuals in their interaction with the environment to improve their health. These will be the dependent variables that are optimal neonatal care practices e.g. good cord care, thermal care, breastfeeding, immunization, skin care and recognition of danger signs.

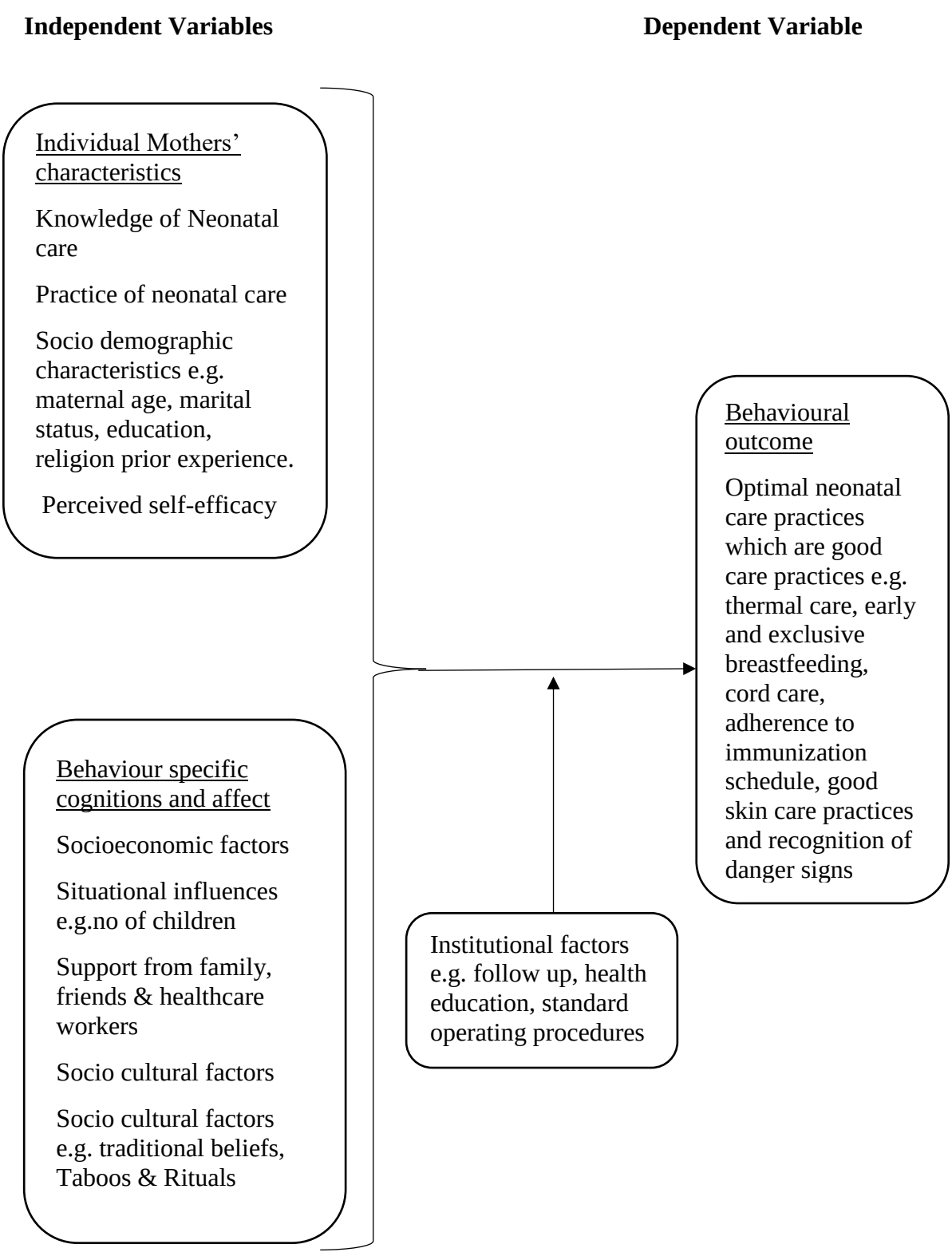

Figure 1: Conceptual Framework

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter focuses on the in-depth description of neonatal care practices among postpartum mothers and the role of the institution as well as health care workers. The literature also compares the role that training plays in derailing these practices among mothers as well as improving them. The search for literature endeavors to look for researches done on the above areas globally, regionally, locally and narrow down to related researches done amongst nurses.

2.2 Neonatal Care Practices among Postnatal Mothers

Neonatal care practices are very vital during the first month of life and have a vital role in determining the growth and development of the child. However, mothers' practices have a deep hand in the care of neonates. Reduction of neonatal mortality received adequate support from the international community through the Millennium Development goals (MDG's) before 2015 and now the Sustainable Development goals(SDG's) (Acheampong et. al., 2019; Lai&Towriss,2015).

The high risk in morbidity and mortality could be as a result of the many physiological and anatomical changes that happen at birth, thus the environmental circumstances surrounding this changes greatly influence the survival of the neonate (Neal et al., 2018).Providing essential neonatal care practices such as breastfeeding, skin, cord care and thermal practices improves neonatal health and survival (Callaghan-Koru et.al.,2013; UN,2015;WHO 2019).

Much of the neonatal care practices practiced at home especially by older mothers are sub-optimal with monthly income, prenatal care, mode of delivery and follow up care being influencers of neonatal care (Semanew,et al.,2019).Maternal age and parity increase the risk of unpleasant neonatal outcomes, such as restricted growth in utero commonly referred to as intra-uterine growth restriction (IUGR), prematurity and small for dates but with poor neonatal practices for instance inadequate breastfeeding, increase chances of morbidity and mortality(Garces et al.,2020; Kozuki, et al,2013).

World Health Organisation (2017) recommends Essential Newborn care (ENC) for example umbilical care, thermal care, immediate and exclusive breastfeeding practices as ways to decrease neonatal morbidity and mortality rates which weigh heavily on SDG 3.However,Lai&Towriss (2015)as cited by Roets, Chelagat and Joubert (2018) recommend the need for multi-sectoral response to provide efficient support for postnatal mothers during each phase of motherhood which may start during pregnancy and continues postnatally throughout the neonatal period.

Counseling on breastfeeding and Infant and Young Child Feeding(IYCF) practices during the neonatal period instills confidence and improves nutrition for neonate(Hackett, et al.,2015;WHO,2021). Social attitudes during the first week postnatally also play a great role in discovering the health seeking and feeding practices of postnatal mothers, particularly, attitudes of healthcare workers and the community. Involvement of community health workers at times may be necessary (Diamond-Smith et.al.,2022;Lai &Towriss, 2015).

The 2018 Kenya Demographic Health Survey (Kenya National Bureau of Statistics, (KNBS) 2018) findings show that the under-five mortality rate declined from 74 deaths per 1000 live births in 2008 to 52 deaths per 1000 live births in 2014 to 45.6 deaths per 1000 live births in 2017.This was influenced more by the neonatal mortality rate. Health care professionals should acquire deeper knowledge and understand different care practices in order to interact with postnatal mothers bearing in mind that their knowledge and practices comprise values and beliefs that influence their routines which impact positively or negatively on the morbidity and mortality rate (Berhan &Gulema,2018).

2.3 Level of Knowledge on Neonatal Care Practices among Postnatal Mothers

Maternal knowledge and practice on neonatal care greatly affects the prevention of illnesses and death. Socio demographic factors may be associated with the mother's knowledge and practice of neonatal care. Maternal education and that of their family members is important in neonatal care hence health professionals should overcome the communication barriers experienced during health education (Mandal,Ghosh,2016). Translators may be very helpful.

Better maternal education on neonatal care practices is received in the antenatal period when mothers come for antenatal care. However, postnatal mothers have inadequate knowledge on neonatal care including those who fail to fully attend antenatal clinic visits and those who are not taught neonatal care antenatally. The missing parts in key areas of neonatal care greatly influence the achievements of neonatal care practices (Berhan&Gulema,2018).

Previous maternal experiences on childrearing as well as social support influence neonatal care practices as mothers practice what they have learned (Sriyasak, Akerlind &Akhavan, 2013).Kebede (2019) in his study found out that although most mothers had ample knowledge on practice of neonatal care, maternal age, occupation, gestation at first ANC visit, overall knowledge and how they think and feel was significantly associated with their neonatal care practices.

Therefore, standards of and accessibility to antenatal care services through the community health practitioners in the community must be supported especially in low income settings as it is a good opportunity to learn good neonatal care practices (Berhea, Belachew, Abreha, 2018).First time postnatal mothers are not able to tell signs of cord infections such as reddening around the umbilical stump and or around the skin and pus discharge. For instance, minimal discharge is expected after umbilical cord separation. Thus, to promote healing, the umbilicus should not be left dirty and wet hence the importance of being aware of signs of umbilical cord infection (Meseka,2017).

Kwabijamu et al., (2016) in their study found out that although 62% had adequate knowledge on neonatal care practices, only 31% practiced correct hygienic cord care which is suggestive of a gap in practice even with knowledge. Owor, et al., (2016), further explain that healthcare workers who should be educating mothers about beneficial neonatal care practices also have limited knowledge.

A Sri Lankan study on knowledge and practices by mothers on thermoregulation of neonates showed that 65% of postnatal mothers had information on preventive methods

but 35% had inadequate practical applications (Madhvi, et al, 2014;Musabyemaria,2019). However, Kayom et al (2015) in their study found out that most first time mothers have no knowledge of thermal care practices e.g. kangaroo mother care (KMC) or skin to skin contact.

Suboptimal knowledge on thermal regulation practices by mothers leads to less likelihood to practice optimal thermal protection (Kwabijamu et al.,2016). WHO recommends use of "warm chain" in 10 steps that ensure prevention of hypothermia in neonates(Nyandiko, Kiptoon and Lubuya,2021). It is thus important to maintain warm chain at home, whether birthing took place at home or in the hospital. Rooming in, breastfeeding on demand, dressing the neonate suitably and delayed bathing of the neonate after birth preferably after six hours or up to forty-eight hours of life reduces chances of hypothermia (Nyandiko, Kiptoon and Lubuya,2021;WHO,1996;WHO 1997).

In an Ethiopian study by Callaghan-Koru,et al., (2013) as cited by Tesfau et al.,(2022), postnatal mothers having minimal contact with health care providers reduces chances of health education on neonatal care practices, thus World Health Organizations (WHO) recommendations are rarely practiced whereas those who come in contact with health care providers, despite being health educated, still don't practice good neonatal care practices in general. Inadequate knowledge as a result of minimal contact with health care workers creates a gap in practice.

2.4 Practice of Neonatal Care among Postnatal Mothers

Practice of good neonatal care goes hand in hand with knowledge. If the mother has inadequate knowledge on practice she is probably going to use dangerous practices which affects the health and growth of her neonate (Berhea,Belachew&Abreha,2018). Relationship between attitude and practice is evident based on the mothers' willingness to give the right care to the neonate(Castalino, Nayak, D'Souza, 2014).

According to Kebede(2019),ANC visits should be used to influence the practice of neonatal care by ensuring mothers especially first time mothers are taught the right practices. Mothers are taught step by step care practices of the cord which includes hand washing, cord cleaning, rubbing with chlorhexidine, air drying the cord and how to cover it. However, postnatal mothers' practice may be influenced by previous experiences and discussions with their peers which influences neonatal care either positively or negatively and is evident among postnatal mothers from low socio economic status (Kayom et al,2015).

2.5 Socio-Economic and Socio-Cultural Factors among Postnatal Mothers Affecting Neonatal Care Practices

Socio-economic factors are very critical in the health of the neonate. In trying to balance and attain the basic necessities, a good number of postnatal mothers end up performing poor neonatal care practices which impact neonatal morbidity and mortality (Muhindo,2015;Sanjel et.al.,2019). Toker et al., (2016), in their study found out that most first time postnatal mothers' neonatal care practices were dependent on the society

with results indicating inadequate efficiency and sufficiency when it came to neonatal care.

Improving access to facility care by reducing the cost of health care and making practices better in the home environments, for illiterate and non-illiterate women by teaching them non-costly interventions, for instance kangaroo mother care, improves newborn care practices (Jonge, et al., 2018). Owor, et al.,(2016), assessed socio economic differences used in neonatal care practices informing policy and programming. Less privileged women have low odds of access to routine healthcare for their neonates as well as themselves. Improving policies and programmes that allow access to health care positively impacts neonatal care practices

Postnatal mothers' characteristics including maternal age, inadequate school education, multi-parity which have an influence on their finances, were associated with inadequate contact with health care providers (Okawa et al,2019).Selemani, et al(2014), in their study showed that neonates born to primi gravidas had a 64% increased possibility of dying than those of experienced mothers. First time postnatal mothers face social economic problems that lead to poor neonatal care. Also, inexperience in neonatal care leads to an increase in neonatal mortality (Kebede et al al.,2022).

A study by Owor,et al.,(2016), in Eastern Uganda revealed that first time postnatal mothers of the middle class were most likely to perform good neonatal care practices as compared to low socio economic status. Higher economic statuses are beneficial to postnatal mothers because they allow easier accessibility to health care at specific health facilities which are not fairly distributed and accessibility to basic needs e.g. food,

clothing and shelter which may not always be the case with postnatal mothers in low economic status.

Postnatal mothers in the poor urban settlements e.g. slums don't go for maternity leave and thus they get back to work earlier than usual leaving their neonates, with caretakers or in day care nurseries(Talbert et al.,2018). These neonates, apart from being breast fed fewer than 8 times in twenty four hours, are fed with solid foods and given other fluids e.g. porridge indicating a low uptake of the recommended WHO breastfeeding practices (Muhindo,2015; Talbert,et al.,2018).

Cooke, et al.,(2018),found out that the skin of term neonates born in low income settings may be changed by intrauterine growth restriction and poor hygienic skin care practices. Factors that affected emollient choices vary and include social pressure, cost, availability and traditional norms. Massage with the wrong emollients damages the skin. Use of herbs by mothers advised by their older peers as a result of inaccessibility to the right health interventions was common. A mixture of various herbs is used to bathe neonates as part of skin care (Kayom et al, 2015).

In developing interventions to improve neonatal care practices, socio cultural influences within the families and communities are considered (Buser, et al., 2020).According to Kumola (2015),most neonates become ill and perhaps die due to the mother's neonatal care practices which are mostly based on cultural traditions that are not necessarily beneficial, perhaps sometimes even harmful. For example, application of herbs or cow dung or ghee on the umbilicus to feeding infants with toxic herbs when they are unable to feed or when they are ill (Asong,Asampong and Adongo,2022).

In a Ugandan study, postnatal mothers used salty water, herbal concoctions, talcum powder on the umbilical cord with traditional reasons being perceived, exposing the neonate to infections (Kwabijamu et al, 2016). The practice of immediate bathing of the neonate culturally after delivery is associated with the belief of "ritual pollution" (Saaka,Ali and Vuu,2018;Thairu, Pelto, 2008) decreasing body smell later in life and keeping the baby clean and comfortable while sleeping (Hill, et al., 2010 as cited in Bee, Shiroor and Hill,2018). This lowered body temperature predisposing the neonate to hypothermia.

"Didaring", late initiation of breastfeeding, a cultural practice was found beneficial among Indonesian postnatal mothers to prevent low body temperature. It is economical and the family can use it to keep the room warm (Sutan&Berkat, 2014).Relaxing so close to the fire may keep the neonate warm but may affect the respiratory system. Postnatal mothers' cultural beliefs passed on from older mothers derail good neonatal care practices.

2.6 Role of the Institution In Postnatal Mothers' Neonatal Care Practices

According to Gul, et al.,(2014);Pirzada et al.,(2021) optimal neonatal care practices were not guaranteed by institutional deliveries but through health information to improve mothers' knowledge concerning newborn care practices. Health care workers must be aware of postnatal mothers' neonatal care practices in order to help them plan for quality care for their neonates. Therefore, strategies focused on postnatal mothers should be used to improve neonatal health. Hence, new creative measures by health

workers could improve neonatal care among mothers (Mbuthia, Reid and Fichardt,2019;Tomoleri and Marcon, 2009).

To improve neonatal care practices, interventions should be carried out both in the community and heath institution level as part of a universal coverage strategy. In spite of the set up policies, most interventions are not available to neonates, hence, a policy to practice gap especially on education to practice. Prenatal clinics provide opportunities to teach postpartum mothers on essential neonatal care practices that can be maintained throughout postnatally (Berhan and Gulema, 2018).

In a Ugandan study, provision of information on neonatal care practices to mothers during the antenatal period was lower as compared to postnatal (Kwabijamu,2016). During the antenatal period so much information is about the pregnancy. An Ethiopian study found out that it is crucial to note that a large proportion of health workers' knowledge on neonatal care practices is incorrect and outdated (Toker, et al.,2016) thus the information given to postnatal mothers is also incorrect. It is therefore advised that health education should be provided at all levels and health workers knowledge updated.

Thermal control in practice by health care workers comprise the implementation needed to achieve and sustain a normal body temperature of neonates, whether the need is to keep the neonate warm, or to cool down if the temperature exceeds 37.5°C (Srivastava et. al.,2022). According to American Congress of Obstetricians and Gynecologists (ACOG) standards, ambient air should be kept between 22°C and 26°C with a relative humidity of 30%-60% for neonates on cots.

Inadequate knowledge and unacceptance to maintain warm chain among postnatal mothers as well as inadequacy of some healthcare workers to maintain the same from birth throughout the neonatal period are some of the risk factors associated with poor thermal care practices(Leta 2021; Mangwi et al 2014).Postnatal mothers who are discharged at a later date from hospital are more at an advantage from the health education and supervised postnatal care practices by nurses and midwives for the neonate as well as the mother(Kwabijamu et al,2016).

World Health Organisation and the International Liaison Committee on Resuscitation 2010 guidelines recommend that atmospheric temperatures should be greater than 25°c-26°C. Additional measures like use of incubator and radiant heater care may be necessary for prematures and low birth weight neonates since they are at a higher risk of low body temperature (WHO, 2018).These equipments are not available in most facilities. Kangaroo mother care among postnatal mothers has shown decreased neonatal morbidity and mortality but very few practice it due to inadequate education and spaces provided by the institution. Its awareness should be emphasized by the health care workers (Chan et.al.,2017;Sutan & Berkat, 2014).

Immunization is dependent on knowledge and attitude of the mother which is mostly influenced by health care workers. Consequentially, correct knowledge and positive attitude of the mother leads to high immunization rates (Meseka, 2017).Moreover, maternal and health care workers hand washing habits have been shown to reduce infections in neonates. However, first time mothers are not taught on these habits.

2.7 The Health Promotion Model

The model was revised in 1996 but developed by Nola J Pender in 1982. It provides a framework for integrating nursing practice and behavioral science perspectives which influence health behavior. The main concept of the HPM is self-efficacy and it describes the diverse nature of persons as they communicate within their environment to pursue health (Pender, Murdaugh &Parsons, 2002).

Reducing neonatal mortality among postnatal mothers is a meaningful health problem in rural and urban environments. In using the model developed by Pender 1982, from the expectancy value theory and socio cognitive theory, postnatal mothers can get the health and emotional backing they need antenatally and postnatally that increase positive outcomes of their neonatal care practices.

Attention on the good rather than the bad aspects and risks can significantly affect postnatal mothers' practices. This model supports attitudes and behaviors that promote health and wellbeing. Postnatal mothers, especially young first time mothers may be in a situation where they are already being stigmatized lowering their attitudes. Creating and developing safe surroundings for neonates antenatally impacts their practices postnatally (Chasse,2017).

2.8 Summary of the Gaps Identified

The relationship between knowledge and practice on neonatal care has been elucidated. The existing gap in knowledge greatly affects the success of neonatal care which should be addressed. For instance, postnatal mothers have inadequate knowledge on neonatal care practices regardless of whether they attended antenatal clinics or not. In some

cases, mothers have knowledge on the right practice but do not perform the right practices when providing neonatal care. However, the key question on how socio demographic characteristics, previous child rearing experiences and social support are associated with neonatal care practices still remain.

Cultural factors that affect neonatal care practices should be noted. It has been studied and reported that most neonates become ill and perhaps die due to the mother's neonatal care practices which are mostly based on cultural traditions that are not necessarily beneficial, perhaps sometimes even harmful. For example, spreading of herbs or cow dung or ghee on the umbilicus to feeding infants with toxic herbs when they are unable to feed or when they are ill.

The question of whether the role of healthcare institutions ensures optimal neonatal care practices still remains. Health care workers must be aware of postnatal mothers' neonatal care practices in order to plan quality care for the neonate. Strategic focus should be used on postnatal mothers to improve neonatal health. Creative measures by health workers could improve neonatal care among mothers.

It is also important to note that despite established policies, most neonatal practices are not available to neonates, hence, a policy to practice gap. It is crucial to note that a large proportion of health workers' information on neonatal care practices is incorrect and outdated.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter talks about the research methodology that was used in this thesis by providing a framework for the study. In this chapter, an elaborate discussion of the research design, target population, study area, determining the sample size, study instruments, pre testing the questionnaire, data collection procedures, data analysis methods and ethical considerations was discussed.

3.2 Study Design

This was a descriptive cross-sectional study design which measured the outcome and exposures of the study participants at a specific point in time. It employed an analytical approach in which the collected quantifiable information was used in the analysis of the population sample. The study design had been chosen because different sections belonging to the same group were studied as they were.

3.3 Study Area

This study was conducted at the Kiambu and Thika County Referral Hospitals, in Kiambu County. Kiambu referral county hospital is located at the heart of Kiambu town 16 kilometers from Nairobi. It has a bed capacity of 400 and provides inpatient and outpatient care. Kiambu County hospital has 1 pediatric ward with a bed capacity of 50 but caters for more than 80 patients, Newborn unit has a bed capacity of 40 with 10 incubators and 40 cots but caters for as high as 80-100 neonates and a functional postnatal ward and well-baby clinic.

Thika County referral Hospital is situated at the heart of Thika town in Kiambu county 45 kilometers from Nairobi along General Kago Road, Kamenu Thika town. It has a bed capacity of 374 patients and provides both inpatient and outpatient care to a very large population.It has 1 pediatric ward with a bed capacity of 63,Newborn unit which has a bed capacity of 68 but always cater for a higher number of patients a postnatal ward that caters for the over a hundred patients and a well-baby clinic that caters for over 30 babies a day. The location was chosen because of its accessibility and it is a prime catchment point for the study topic.

3.4 Study Population

The study population comprised of postnatal mothers aged between the ages of 15-49 years (this is inclusive of teenage mothers) with neonates admitted in pediatric wards, those in the postnatal ward and those who attended the well-baby clinic for a 2 week postnatal check up at the Kiambu or Thika County Hospitals as shown in table 1.

Table 1: Postnatal Mothers with Neonates in Specific Units at Kiambu and Thika Hospital.

DEPARTMENT/UNIT	NO. OF POSTNATAL MOTHERS IN KIAMBU HOSPITAL WITH NEONATES	NO.OF POSTNATAL MOTHERS AT THIKA HOSPITAL WITH NEONATES
PAEDIATRIC WARD	**33**	**44**
POSTNATAL WARD	**30**	**35**
WELL BABY CLINIC	**22**	**28**
TOTAL	**85**	**107**

Source: Kiambu and Thika County hospital records between August to October 2019

3.5 Sampling Procedures/Techniques

3.5.1 Sample size Determination

Since there was no estimate of the population, 50% was used using the Cochran's formulae. The Cochran's formulae allowed for calculation of an ideal sample size given a desired level of precision, desired level of confidence and the estimated population.

Hence:

$$n_{\circ} = \frac{Z^2pq}{e^2}$$

where:

Z (1-∞) = Statistic level of confidence which is 1.96.The z-value is found on the Z-table.

P= population proportion with assumption of 50% postnatal mothers had some knowledge on neonatal care practices.

Q= 1-p

E=margin of error i.e. desired level of precision.

Since the target population of postnatal mothers with neonates was less than 1,000(at an estimate of 175) the required sample size is smaller.

Thus:

$$n_{\circ} = \frac{Z^2pq}{e^2}$$

$$n_{\circ} = \frac{(1.96)^2(0.5)(0.5)}{(0.05)^2}$$

$n_o = \frac{(3.84)(0.5)(0.5)}{0.0025}$

$n_o = \frac{0.96}{0.0025}$

$n_o = 384$

Since the population size was less than 1000

$n = \frac{n_o}{1 + (n_o - 1)\, N}$

where:

N was the desired sample size(when population was less than 1000)

n_o was the desired sample size when the population was more than 1000

n was the estimated population size

Hence:

$n = \frac{n_o}{1 + (n_o - 1)\, N}$

$n = \frac{384}{1 + (384-1)/192}$

$n = 384/1+(383)/192$

$n = \frac{384}{1+1.99}$

n= 384÷2.99

n= 128.4 =128

Thus the minimum sample size was 128 study participants.

3.5.2 Sampling Method

Stratified random sampling which is a probability method was used. It involved the division of the population into smaller groups known as strata. The study population was divided into subsets based on where the participants were, that is, from well-baby clinic and Paediatric and postnatal wards from the two hospitals. The elements (study participants) were then randomly selected to equally represent the population where participants names were drawn from a pool where everyone had an even probability of being chosen.Stratification was based on the characteristics of the mother's which included age, number of children, level of education, employment status e.t.c. but in the particular subsets. Hence there were four stratas in each subset making them twelve stratas.

The samples were representative of the specific demographics representing the population. The population of the two hospitals was added; each department was divided by the population and multiplied by the sample size used to get the representation by different stratas as shown in the table 2 below. Calculation of sample size in different departments at Kiambu and Thika hospitals to get the number of study participants in each department.

Kiambu (85 ÷ 192)×128 = 57

Thika (107÷ 192) ×128=71

Table 2: Calculated Sample Size in Each Department (Strata) at the Kiambu and Thika County Hospitals

	KIAMBU		**THIKA**	
DEPARTMENT/UNIT	Total postnatal mothers with neonates	Sample size	Total Postnatal mothers with neonates	Sample size
PAEDIATRIC WARD	**33**	**22**	**44**	**29**
POSTNATAL WARD	**30**	**20**	**35**	**23**
WELL BABY CLINIC	**22**	**15**	**28**	**19**
TOTAL	**85**	**57**	**107**	**71**

3.5.3 Inclusion &Exclusion Criteria

Inclusion Criteria

Mothers with neonates admitted in pediatric, postnatal wards as well as those attending the 2 weeks well-baby clinic at the Kiambu and Thika county hospitals have a neonate preceding the study and gave consent to voluntarily be involved in the study will be included in the study.

Exclusion Criteria

Post natal mothers with neonates who had congenital anomalies admitted to pediatric wards and postnatal wards at the Kiambu and Thika county hospitals, or very sick neonates in ICU. Those who had congenital anomalies were excluded because they are still in the hospital by the end of the neonatal period and have always been under the care of health workers.

3.6 Study Variables

3.6.1 Independent variables

These included socio demographic characteristics, knowledge and practice of good neonatal care, mothers' actual practice, socio- economic and cultural factors & institutional factors.

3.6.2 Dependent variables

They included optimal neonatal care practices e.g. good breastfeeding, thermal care, immunization, cord care, eye care, skincare& recognition of danger signs.

3.7 Data Collection Method

3.7.1 Data collection tool

Data was collected using 128 self-administered questionnaires which were interpreted for those who could not read and write with both open and closed ended questions as shown in Appendix V. This is because the questionnaire gave a higher level of objectivity and also ensured participant confidentiality. Information was collected in a standardized way and respondents have time to think about their answers, that is, they are not required to answer immediately.

3.7.2 Pretesting

The pretesting of the instrument was done on a selected group of postnatal mothers who were not part of the population but from Mbagathi County Referral Hospital which shared the same characteristics. The objective was to ensure that the questions being asked were accurate and reflected the information I desired and that the respondents could answer the questions. This was to ensure the questions were complete and

standardized for reliability and validity. The information gathered from the pretest was useful in ensuring proper flow of questions and corrected mistakes identified.

3.7.3 Data collection process

The researcher was the principal investigator assisted by research assistants. The research assistants were two BSc.N interns working in the hospitals because they had been taught research methods. They were taught on the data collection process. The research assistants travelled to the study area and identified the study sample from the admission registers. They issued questionnaires and conducted interviews on those who were not able to read and write. All questionnaires were filled hence results are reliable.

3.8 Data Analysis

The data was managed using Microsoft access data base to store information for reference and reported and then analyzed using SPSS software. An initial descriptive analysis to summarize the characteristics of all the postnatal mothers in the study sample was conducted. Measures of central tendencies including mean, mode and median was used to analyse mothers' demographic profile and were tabulated in frequency tables.

To determine how knowledgeable the participants were, each correct response consistent with WHO guidelines on essential neonatal care was assigned a score of 1 and a score of 0 for responses inconsistent with the WHO guidelines. Mothers with over 50% correct responses are considered knowledgeable.

- ✓ Good practice for breastfeeding is defined as initiation of breastfeeding within the first hour of life, breastfeeding on demand and continued and exclusive breastfeeding for six months.
- ✓ Good practice of cord care is defined as leaving the cord dry, uncovered and with no bandages and application of chlorhexidine on the cord.
- ✓ Good practice of eye care is defined as instillation of eye drops or ointment at birth as a preventive measure unless there is eye disease.
- ✓ Good practice of thermoregulation includes rooming in, delayed first birth up to 48 hours preferably on day 2 or 3 of life, skin to skin contact and use of appropriate clothing.
- ✓ Good practice of immunization is vaccine administration of BCG/OPV within one week after delivery.
- ✓ Early recognition and immediate referral and treatment of signs of serious illnesses in the neonate

Descriptive analysis was done for proportions of categorical variables. Chi-square was used to test the association between the various explanatory factors and the neonatal care practices among postnatal mothers. Outcome (dependent) variable was measured using nominal and ordinal levels of measurement.

3.9 Ethical Considerations

To conduct the study,clearance was obtained from the County Government of Kiambu, Medical Superintendents of the Kiambu and Thika County Referral Hospitals, Kenyatta

University Ethics Review and authority to undertake the study was sought from the National Commission for Science, Technology and Innovation (NACOSTI). The study participants were explained to about all that pertained an informed consent before a written consent form was obtained.

The consent was in English and translated in Kiswahili. Participation in the study was voluntary and the respondents had a right to participate or decline or withdraw from the study any time. To assure confidentiality, the consent forms were numbered and the information obtained was used for the study analysis and thesis write up only. Participants' responses were confidential and codes were used to differentiate the responses and interviews conducted privately to maintain confidentiality. Data analysis was done and reported in formats that keep participant's identity private.

3.10 Limitations and Delimitations

3.10.1. Limitations

Study population comprised of postpartum mothers admitted with neonates at the well-baby clinic, postnatal and pediatric wards at the Kiambu and Thika hospitals during the period of study hence results may not be generalizable nationally and also some are from Nairobi County visiting the two hospitals.

3.10.2 Delimitations

The scope of my study included parameters about the population of study which included maintaining the population of postnatal mothers with neonates. The data collected was specific to Kiambu County collected from the Kiambu and Thika hospitals well-baby clinic, postnatal and pediatric wards.

CHAPTER FOUR: RESULTS

4.1: Introduction

The results of the study are presented in this chapter. The broad objective was to describe the neonatal care practices among postnatal mothers at the Kiambu and Thika county hospitals. Between the months of December 2020 and April 2021, a total of 192 postnatal mothers from Kiambu County were invited to participate in a study at Kiambu and Thika county hospitals. A sample size of 128 mothers was needed to which a total of the same was eligible and enrolled in the study from whom 128 questionnaires were duly filled. This being 100% of the required sample size.

4.2: Demographic Characteristics

The study findings on the socio-demographic characteristics of the postnatal mothers showed that the mean age of the participants was 26 ±5.8 years. Out of the 128 participants, majority were married 98(76.6%).Mothers in small scale business accounted for 53(41.4%).The proportion of mothers who received secondary education was 67(52.3%),while those who had tertiary education(college/university) was 41(32%).The majority of participants were Christians at 124(96.9%) as shown on table 3.

Table 3.0: Demographic Characteristics

Variables	Categories	Frequency(n=128)	Percent(%)
Age	Below 20	16	12.5
	20-29	75	58.6
	30-39	35	27.3
	Above 40	2	1.6
Marital status			
	Married	98	76.6
	Single	27	21.1
	Divorced	2	1.6
	Widowed	1	0.8
Occupation			
	Farming	9	7.0
	Office work	5	3.9
	Housewife	53	41.4
	Business	53	41.4
	Student	6	4.7
	Teacher	1	0.8
	Casual labourer	1	0.8
Education level			
	Primary education	20	15.6
	Secondary education	67	52.3
	College/University	41	32.0
Religion			
	Christian	124	96.9
	Islam	4	3.1

4.3 Knowledge on Neonatal Care Practices

4.3.1 Sources of knowledge on neonatal care practices

Of the 128 participants 82% (n=105) reported to have received information on neonatal care practices, 59% (n=62) during pregnancy, 39% (n=41) after delivery while 1.9 % (n=2) during delivery. This information was mostly provided by Nurses/Midwives at 53.3% (n=56), and Doctors 34.3% (n=36) while 12.4% (n=13) of the participants sort

out information from other sources (internet, older mothers, friends e. t. c) as seen on table 4.

Table 4.0: Sources of knowledge on neonatal care practices

Variables	Responses	Frequency(n=128)	Percent(%)
Received info on neonatal care practices			
	Yes	105	82.0
	No	23	18.0
If yes, when?		**n=105**	
	During pregnancy	62	59.0
	During delivery	2	1.9
	After delivery	41	39.0
Provided info by		**n=105**	
	Doctor	36	34.3
	Nurse/Midwife	56	53.3
	Other sources(internet, older mothers, friends e.t.c.)	13	12.4

4.3.2 Information provided by various sources on neonatal care practices

The study findings on the information provided by Doctors, Nurses and from other sources on neonatal care practices among the study participants indicated that 91(88.3%) of the participants reported having received information on breastfeeding, 67(65%) on cord care, 40 (38.8%) received information on immunization and signs of serious illness while 30(29.1%) on eye care and 17(16.5%) on thermoregulation as seen on Fig 2.

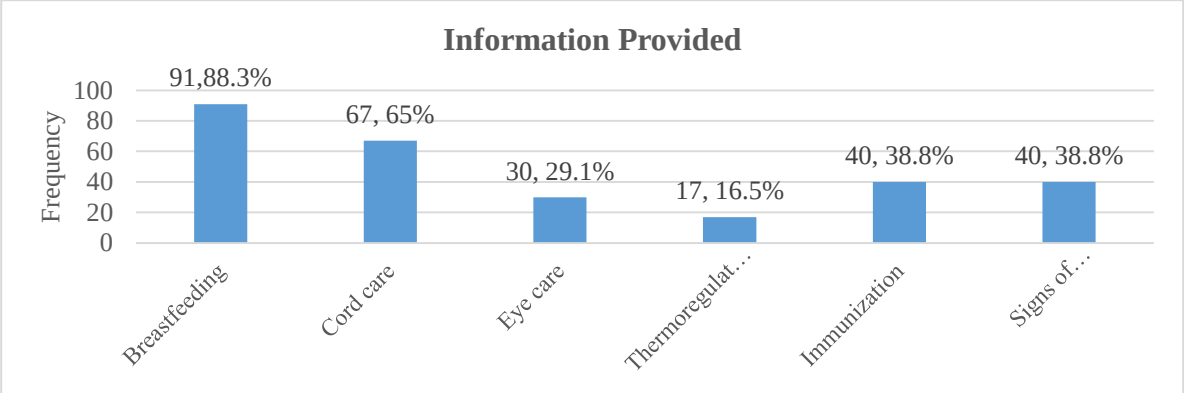

Figure 2: Information provided on neonatal care practices

4.3.3 Practice of any of the care practices since delivery

When the postnatal mothers were asked whether they practiced any of the neonatal care practices (e.g. breastfeeding, cord care, eye care, thermoregulation) since they delivered their baby, 82.8%(n=106) said they did, while 17.2%(n=22) said they did not practice some of the neonatal care practices either because the neonate was very ill and on fluids, or is new mother and did not know what to do.

4.3.4. Knowledge on Breastfeeding

The study findings on knowledge on breastfeeding showed that 56.3% (n=72) knew breastfeeding should begin immediately after birth. On other feeds within 28 days, 55.5% (n=71) reported that a neonate should be breastfed only. The frequency of breast feeding neonate was correctly mentioned by 71.9% (n=92), that breastfeeding should be on demand. Meaning of exclusive breastfeeding was correctly defined by 22.7% (n=29) who reported that exclusive breastfeeding should take place for 6 months and on demand. There were 80.5% (n=103) of the postnatal mothers who reported feeding the neonate colostrum while the other 19.5% (n=25) suggesting that colostrum should be

thrown away, of which 14.1% (n=18) of them gave the reason that it was unhealthy as shown in Table 5.

Table 5.0: Knowledge on Breastfeeding

Variables	Responses	Frequency(n=128)	Percent(%)
Breastfeeding after delivery started			
	Immediately	72	56.3
	After one hour	47	36.7
	After 24 hours	9	7.0
Other feeds for neonate before 28 days			
	Cerelac	2	1.6
	Fortified milk/Nun	36	28.1
	Water	19	14.8
	None	71	55.5
Frequency of breast feeding			
	On demand	92	71.9
	According to a set timetable	36	28.1
Meaning of exclusive breastfeeding			
	According to a set timetable	7	5.5
	Breastfeed continuously for 6 months	29	22.7
	Don't know	63	49.2
	On demand	29	22.7
Colostrum			
	Feed to the baby	103	80.5
	Throw it away	25	19.5
Reason for throwing it away			
	It is unhealthy	18	14.1
	It is against traditional belief	2	1.6
	No reason	5	3.9

4.3.5 Knowledge on Cleanliness & Cord care

Among the participants interviewed, the study findings showed only 32.8 % (n=42) correctly mentioned that the umbilical stump should be uncovered. On what to use when cleaning the umbilical stump, 68% (n=87) of postnatal mothers reported that chlorhexidine or spirit provided by the hospital should be used. About 62.5% (n=80) reported that the umbilicus should be cleaned twice a day and 53.9% (n=69) reported applying substance after cleaning of which, 78.3% (n=54) reported using surgical spirit.

Table 6.0: Knowledge on Cleanliness and Cord care

	Responses	**Frequency(n=128)**	**Percent(%)**
Care of umbilical stump			
	Covering	67	52.3
	Exposing	42	32.8
	Don't know	19	14.8
Cleaning of umbilical stump			
	Clean with saliva	17	13.3
	Clean with water	21	16.4
	Apply alcohol/spirit/ chlorhexidine	87	68.0
	Don't clean	3	2.3
How often			
	Once a day	40	31.3
	Twice a day	80	62.5
	Once a week	3	2.3
	Never	5	3.9
Substance applied after cleaning			
	Yes	69	53.9
	No	46	35.9
	Don't know	13	10.2
If yes, material used		**n=69**	
	Surgical spirit	54	78.3
	Alcohol	5	7.2
	Saliva	5	7.2
	Cow dung	3	4.3
	Baby oil	2	2.9

4.3.6 Knowledge on Thermoregulation

Among the study participants, 62.5% (n=80) reported wrapping the neonate in warm clothing to keep the baby warm after delivery. On time taken before the first bath, 43% (n=55) of the postnatal mothers correctly reported delayed bathing for days. This is shown in Table 7.

Table 7.0: Knowledge on Thermoregulation

	Categories	Frequency(n=128)	Percent(%)
Keeping baby warm after delivery			
	Skin to skin contact	48	37.5
	Wrap the baby in a cloth	80	62.5
Time taken to give first bath after delivery			
	Minutes	29	22.7
	Hours	32	25.0
	Days	55	43.0
	Don't know	12	9.4

4.3.7 Knowledge on Immunization

The study results showed that 96.1% (n=123) were aware of the need of vaccination at birth, of which 50% (n=64) reported only BCG was required at birth while 39.8% (n=51) reported that both BCG and OPV were required. About 84.4% (n=108) of the postnatal mothers reported that neonates should be vaccinated immediately at birth. Vaccines required by the government up to 28 days were correctly identified as BCG 82.8% (n=106) and OPV 50.0% (n=64) of the study participants as seen on table 8.

Table 8.0: Knowledge on Immunization

	Categories	Frequency(n=128)	Percent(%)
Baby require any vaccination at birth			
	Yes	123	96.1
	No	1	0.8
	Don't know	4	3.1
Vaccines required at birth			
	BCG	64	50.0
	OPV	1	0.8
	BCG & OPV	51	39.8
	Don't know	7	5.5
	Not applicable	5	3.9
Neonates be vaccinated immediately at birth			
	Yes	108	84.4
	No	20	15.6
If no, reason *(n=20)*			
	Baby is small and fragile	14	70.0
	Don't know	3	15.0
	Improve immunity	2	10.0
	Not good	1	5.0
Vaccines requirement by the government up to 28 days			
	BCG	106	82.8
	OPV	64	50.0
	Measles	2	1.6
	Hepatitis	1	0.8
	Vitamin K	1	0.8
	Vitamin A	3	2.3

4.3.8. Knowledge on Signs of serious illness in neonates

Over 80% of postnatal mothers could identify yellowness of the eyes, neonate stops breastfeeding, fever, difficulty in breathing, diarrhoea and vomiting as signs of serious illness, 50%-79% identified umbilical and eye discharge and redness, cold to touch,

lethargy and irritability while 49% and below could only identify abnormal shaking or movement of limbs and eyes and abdominal distension as shown on Table 9.

Table 9.0: Knowledge on signs of serious illness in neonates

	Frequency	Percent of participants
Yellowness of the eyes, soles and palms	106	82.8%
Umbilicus and surrounding skin red, discharging pus	70	54.7%
Swollen, sticky, red eye or draining pus	80	62.5%
Baby stops breastfeeding	110	85.9%
Abnormal shaking movements of limbs and eyes	54	42.2%
Dyspnea (Difficulty in breathing)	110	85.9%
Hotness of body (Fever)	114	89.1%
Baby cold to touch	71	55.5%
Baby previously active becomes lethargic	72	56.3%
Swollen abdomen (Abdominal distension)	60	46.9%
Loose stools (Diarrhoea)	105	82.0%
Vomiting	106	82.8%
Inconsolable cry (Cries excessively/Irritable)	80	62.5%

4.4 Socio Economic & Cultural Factors Affecting Neonatal Care Practices

The study findings revealed that 85.9% (n=110) of the postnatal mothers stayed at home to take care of the neonate. About 76.6% (n=98) had enough income for provision for their neonates and those who were able to provide for their neonate's healthcare needs were 74.2% (n=95).

Table 10: Socio economic factors

Care of the neonate	Responses	Frequency (n=128)	Percent(%)
Care of neonate			
	Leave at home for someone else to look after	6	4.7
	Carry the neonate to work	9	7.0
	Stay at home and take care of the baby	110	85.9
	Take the baby to a day care centre	3	2.3
Income enough for provision of neonate			
	Yes	98	76.6
	No	30	23.4
Able to provide for baby health care needs			
	Yes	95	74.2
	No	33	25.8

Sociocultural Factors Affecting Neonatal Care Practices

The study results on table11 show that on traditional methods used on neonates skin, 19.5% (n=25) mentioned use of saliva to take care of neonates skin. Herbal medication ensure cord falls off faster was identified as false by75% (n=96). On cultural practices taught by other mothers 82.8% (n=106) said they had not been taught any cultural practices, and about 78.9% (n=101) mentioned that none of the cultural practices were beneficial to neonates. The study noted that only 13.3% (n=17) believed that herbal medication is better than vaccines.

Table 11: Socio cultural factors

	Categories	Frequency(n=128)	Percent(%)
Traditional methods used on neonates skin			
	Saliva	25	19.5
	Ash	3	2.3
	Cow dung	4	3.1
	Herbs	17	13.3
	None	79	61.7
Herbal medication ensure cord falls off faster			
	True	31	24.2
	False	96	75.0
	Don't know	1	0.8
Cultural practices taught by other mothers			
	Apply ash to prevent heat rash	2	1.6
	None	106	82.8
	Place paper on the face to stop hiccups	2	1.6
	Use of cow dung to ward off curses	2	1.6
	Use of herbs	6	4.7
	Use of saliva on eyes, skin and cord	10	7.8
Cultural practice beneficial to neonate			
	Apply ash to prevent heat rash	5	3.9
	Extreme cultural practices	4	3.1
	None	101	78.9
	Place paper on the face to stop hiccups	1	0.8
	Use of herbs	8	6.3
	Use of saliva on eyes, skin and cord	9	7.0
Herbal medication is better than vaccines			
	Yes	17	13.3
	No	111	86.7

4.5: Institutional Factors Influencing Neonatal Care Practices

The study sought to determine the factors influencing neonatal care practices by documenting the experience of the postnatal mothers at the institution where they had their delivery. The findings indicate that 59.4% (n=76) had been educated on neonatal care practices by health care workers of which 55.3% (n=42) of them were taught during pregnancy. There were 64.1% (n=82) of the postnatal mothers who admitted that they were health educated on neonatal care practices at the prenatal clinic. When asked if the institution avails reading materials on practices, 51.6% (n=66) acknowledged availability, and 88.3% (n=113) agreed that the institution did not provide follow up care on neonatal care practices.

Table 12: Institutional factors influencing care practices

	Categories	Frequency (n=128)	Percent(%)
Educated on neonatal practices by HCW			
	Yes	76	59.4
	No	52	40.6
If no, institution failed		**n=52**	
	Yes	43	82.7
	No	9	17.3
If yes		**n=76**	
	During the pregnancy	42	55.3
	After delivery	32	42.1
	During the pregnancy and after delivery	2	2.6
Institution avails reading materials on practices			
	Yes	66	51.6
	No	62	48.4
Health educated on neonatal care practices in prenatal clinic			
	Yes	82	64.1
	No	42	32.8
	Don't know	4	3.1
Institution should provide follow up care on neonatal care practices			
	Yes	113	88.3
	No	8	6.3
	Don't know	7	5.5

4.6 Practices on Neonatal Care

On practices of neonatal care, participants were asked questions on thermoregulation, skin care, cord care and eye care. A score of out of four was made where these scores were then converted into percentages and those who scored below two (50%) were considered to have poor practice while those who scored equal or greater than two (50%) were considered to have good neonatal care practice.

When the participants were asked whether babies can be covered with warm clothes to prevent heat loss,79.7%(n=102)of them were in agreement, and on whether mother-baby skin to skin contact provides warmth to the baby and prevents heat loss,81.3%(n=104)of them agreed. However, when asked if their baby can be bathed within the first day of life, only 40.6% (n=52)were in agreement. The mothers were asked if a previously used razor blade can be cleaned and used to cut the cord,83.6%(n=107)of them disagreed as seen on table 13. On application of any other substances apart from that prescribed by the doctor if they noted discharge, reddening or swelling of neonate's eyes, only 16.4% (n=21) mentioned they did, of which 61.9%(n=13)of them applying breast milk as shown on Table 14.

Table 13.0: Practices of neonatal care

Practice	Response	Frequency	Percent
Babies can be covered with warm clothes to prevent heat loss	Agree	102	79.7
	Disagree	22	17.2
	Don't know	4	3.1
Mother-baby skin to skin contact provides warmth to the baby and prevents heat loss	Agree	104	81.3
	Disagree	17	13.3
	Don't know	7	5.5
Your baby can be bathed within the first day of life.	Agree	52	40.6
	Disagree	63	49.2
	Don't know	13	10.2
A previously used razor blade can be cleaned and used to cut the cord	Agree	15	11.7
	Disagree	107	83.6
	Don't know	6	4.7

Table 14.0: Application of other substances to the eyes

	Category	Frequency(n=128)	Percent(%)
Apply other substance apart from medicine prescribed			
	Yes	21	16.4
	No	107	83.6
If yes, substance applied			
	Breast milk	13	61.9
	Breast milk/Saliva	1	4.8
	Saliva	4	19.0
	Salty water	3	14.3

4.7: Analysis of factors associated with neonatal care practices.

To measure the dependent variable to indicate whether good or poor, questions were used to assess practice.A score out of four selected questions was made where these scores were then converted into percentages and those who scored below 50% were considered to have poor practice while those who scored greater than 50% were considered to have good neonatal care practice. The summary of the individual items assessed and the overall score of the practices is as shown on table 15a and 15b below. This tool was developed in line with the WHO recommended practices.

Table 15a: Participants assessments on practices on neonatal care

Practice	Response	Frequency	Percent
Babies can be covered with warm clothes to prevent heat loss	Correct	102	79.7
	Wrong	26	20.3
Mother-baby skin to skin contact provides warmth to the baby and prevents heat loss	Correct	104	81.3
	Wrong	24	18.8
Your baby can be bathed within the first day of life.	Correct	63	49.2
	Wrong	65	50.8
A previously used razor blade can be cleaned and used to cut the cord	Correct	107	83.6
	Wrong	21	16.4

Table 15b: Participants Score on Neonatal Care Practices

	Frequency	Percent
Good	84	65.6
Poor	44	34.4

4.7.1 Relationship between socio demographic characteristics and Practice of Neonatal care among postnatal mothers

A chi-square test of independence was used to determine the relationship between socio demographic characteristics among postnatal mothers and neonatal care practices. There was no statistical significance association between age ($X^2(1)=1.597, p=.456, p<0.05$) marital status ($X^2(1)=.550, p=.458, p<0.05$) education ($X^2(2)=5.332$, $p=.070, p<0.05$) and neonatal care practices. Also on occupation ($p=0.486$, $p<0.05$) religion ($p=1.000$, $p<0.05$) and neonatal care practices there was no statistical association as well.

Table 16: Relationship between demographic characteristics & Practice of neonatal care

		Practice		
Age	**N**	**Poor, *n (%)***	**Good, *n (%)***	**P**
<20	16	7 (15.9)	9 (10.7)	χ^2 =1.597 , df =2 , p = 0.456
20 – 29	75	27 (61.4)	48 (57.1)	
≥30	37	10 (22.7)	27 (32.1)	
Marital status				
Married	98	32 (72.7)	66 (78.6)	χ^2 =0.550 , df =1 , p =0.458
Single/Div./Wid.	30	12 (27.3)	18 (21.4)	
Occupation				
Farming	9	2 (4.5)	7 (8.3)	0.486*****
Office work	6	1 (2.3)	5 (6.0)	
Housewife	54	16 (36.4)	38 (45.2)	
Business	53	23 (52.3)	30 (35.7)	
Student	6	2 (4.5)	4 (4.8)	
Education				
Primary	20	6 (13.6)	14 (16.7)	χ^2 =5.332 , df =2 , p =0.070
Secondary	67	29 (65.9)	38 (45.2)	
Tertiary	41	9 (20.5)	32 (38.1)	
Religion				
Christian	124	43 (97.7)	81 (96.4)	1.000*
Islam	4	1 (2.3)	3 (3.6)	

*Fishers exact test (2 sided)

4.7.2. Relationship between maternal knowledge and neonatal care practices.

To determine the relationship between maternal knowledge and practice of neonatal care, participants were asked questions on various aspects regarding information received concerning neonatal care practices. A Chi-square test was used to examine the relationship between maternal knowledge and neonatal care practices. The results indicated that there was statistical significance between information received on breastfeeding (X^2 (1)=5.511, p=.019, p<0.05) eye care (X^2(1)=6.243, p=.012, p<0.05) thermoregulation (X^2(1)=7.995, p=.005, p<0.05) and immunization (X^2(1)=4.443, p=.035, p<0.05) and neonatal care practices but no association with information received on cord care (X^2(1,N=128)=0.538, p=.538, p<0.05) signs of serious illness (X^2(1)=1.703,p=.192, p<0.05). There was also no statistical significance on information received (X^2(1)=1.984, p=.159, p<0.05) time information was received (p=0.148,p<0.05), information provider (p=0.103, p<0.05) as well as practices after delivery (X^2(1)=0.047, p= .829,p<0.05) and neonatal care practices as seen on Table17.

Table 17: Maternal knowledge in relation to neonatal care practices

		Practice		
Received info	**n**	**Poor, *n (%)***	**Good, *n (%)***	**P**
Yes	105	39 (88.6)	66 (78.6)	χ^2 =1.984 , df =1 , p =0.159
No	23	5 (11.4)	18 (21.4)	
Time info received				
During pregnancy	62	22 (50)	40 (47.6)	0.148*
During delivery	2	2 (4.5)	0 (0)	
After delivery	41	15 (34.1)	26 (31)	
Did not receive	23	5 (11.4)	18 (21.4)	
Info received				
Breastfeeding				
Yes	91	37	54	**χ^2=5.511 , df =1 , p =0.019**
No	37	7	30	
Cord care				
Yes	67	25	42	χ^2 =0.538 , df =1 , p =0.538
No	61	19	42	
Eye care				
Yes	30	16	14	**χ^2 =6.243 , df =1 , p =0.012**
No	98	28	70	
Thermoregulation				
Yes	17	11	6	**χ^2 =7.995 , df =1 , p =0.005**
No	111	33	78	
Immunization				
Yes	40	19	21	**χ^2 =4.443 , df =1, p =0.035**
No	88	25	63	
Signs of illnesses				
Yes	40	17	23	χ^2 =1.703 , df =1 , p =0.192
No	88	27	61	
Info provider				
Doctor	36	16 (36.4)	20 (23.8)	0.103*
Nurse/Midwife	56	16 (36.4)	40 (47.6)	
Others	13	7 (15.9)	6 (7.1)	
Did not receive	23	5 (11.4)	18 (21.4)	
Practices after delivery				
Yes	106	36 (81.8)	70 (83.3)	χ^2 =0.047 , df =1 , p =0.829
No	22	8 (18.2)	14 (16.7)	

*Fishers exact test (2 sided)

4.7.2.1 Knowledge on breastfeeding in relation to actual practice

Knowledge on breastfeeding was tested against actual practice as summarized on table 18, where there was no statistical significance association between start of breastfeeding (p= 0.238, p<0.05) alternative feeds before 28 days (p=0.186, p<0.05) time for

breastfeeding ($X^2(1)=0.966$, p=.326, p<0.05) and use of colostrum ($X^2(1)=0.078$, p= .780,p<0.05) against practice.

Table 18: Knowledge on breastfeeding in relation to practice

		Practice		
Start of breastfeeding	**n**	**Poor, *n (%)***	**Good, *n (%)***	**P**
Immediately	72	24 (54.5)	48 (57.1)	0.238*
After 1 hour	47	19 (43.2)	28 (33.3)	
After 24 hours	9	1 (2.3)	8 (9.5)	
Feeds before 28 days				
Cerelac	2	1 (2.3)	1 (1.2)	0.186*
Fortified milk/nun	36	8 (18.2)	28 (33.3)	
Water	19	9 (20.5)	10 (11.9)	
None	71	26 (59.1)	45 (53.6)	
Time for breastfeeding				
On demand	92	34 (77.3)	58 (69)	χ^2 =0.966 , df =1 , p =0.326
According to timetable	36	10 (22.7)	26 (31)	
Colostrum use				
Feed the baby	103	36 (81.8)	67 (79.8)	χ^2 =0.078 , df =1 , p =0.780
Throw it away	25	8 (18.2)	17 (20.2)	

*Fisher's exact test (2 sided)

4.7.2.2 Knowledge on thermoregulation in relation to actual practice

Results on Table 19 indicate relationship between knowledge on thermoregulation and practice. There were no associations between baby warmth ($X^2(1)=0.924$, p=.337, p<0.05) first bath after delivery (p=0.245, p<0.05) and practice.

Table 19: Knowledge on thermoregulation in relation to practice

		Practice		
Baby warmth	**N**	**Poor, *n (%)***	**Good, *n (%)***	**P**
Skin to skin contact	48	14 (31.8)	34 (40.5)	χ^2 =0.924 , df =1 , p =0.337
Wrap baby in a cloth	80	30 (68.2)	50 (59.5)	
First bath after delivery				
Minutes	29	12 (27.3)	17 (20.2)	0.245*
Hours	32	12 (27.3)	20 (23.8)	
Days	55	14 (31.8)	41 (48.8)	
Don't know	12	6 (13.6)	6 (7.1)	

*Fishers exact test (2 sided)

4.7.2.3 Knowledge on cleanliness and cord care in relation to actual practice

Study participants were asked questions on practices of cleanliness and cord care to determine the relationship between knowledge and practice. A summary of table 20 showed no association between knowledge on care for the umbilical stump $X^2(2)=0.331$,p=.847,p<0.05 cleaning of the umbilical stump p=0.418,p<0.05 time of cleaning of the cord p=0.356,p<0.05,substances applied to heal p=0.764, p<0.05 material applied to heal p=0.225,p<0.05 and practice in respect to maternal knowledge on cleanliness and cord care.

Table 20: Knowledge on cleanliness and cord care in relation to practice

		Practice		
Care for umbilical stump	**n**	**Poor, *n (%)***	**Good, *n (%)***	**P**
Covering	67	24 (54.5)	43 (51.2)	χ^2 =0.331 , df =2 , p =0.847
Exposing	42	13 (29.5)	29 (34.5)	
Don't know	19	7 (15.9)	12 (14.3)	
Clean umbilical stump				
Clean with saliva	17	8 (18.2)	9 (10.7)	0.418*
Clean with water	21	8 (18.2)	13 (15.5)	
Apply alcohol/etc.	28	28 (63.6)	59 (70.2)	
Don't clean	3	0 (0)	3 (3.6)	
Time cleaning cord				
Once a day	40	16 (36.4)	24 (28.6)	0.356*
Twice a day	80	27 (61.4)	53 (63.1)	
Once a week	3	1 (2.3)	2 (2.4)	
Never	5	0 (0.0)	5 (6.0)	
Substance applied to heal				
Yes	69	26 (59.1)	43 (51.2)	0.764*
No	46	14 (31.8)	32 (38.1)	
Don't know	13	4 (9.1)	9 (10.7)	
Material applied				
Surgical spirit	54	22 (84.6)	32 (74.4)	0.225*
Alcohol	5	1 (3.8)	4 (9.3)	
Saliva	5	1 (3.8)	4 (9.3)	
Cow dung	3	0 (0)	3 (7)	
Baby oil	2	2 (7.7)	0 (0)	
None	59	18 (40.9)	41 (48.8)	

*Fisher's exact test

4.7.2.4 Knowledge on immunization in relation to actual practice

On knowledge on immunization in relation to actual practice, there was no statistical significance difference between vaccination at birth p=0.181,p<0.05 vaccination required p=0.593, immediate vaccination X^2 (1)=1.186,p=.276,p<0.05 and practice as seen on table 21.

Table 21: Knowledge on Immunization in relation to practice

		Practice		P
Vaccination at birth	**n**	**Poor, *n (%)***	**Good, *n (%)***	
Yes	123	41 (93.2)	82 (97.6)	0.181*
No	1	0 (0.0)	1 (1.2)	
Don't know	4	3 (6.8)	1 (1.2)	
Vaccination required				
BCG	64	23 (52.3)	41 (48.8)	0.593*
OPV	1	0 (0.0)	1 (1.2)	
BCG & OPV	51	15 (34.1)	36 (42.9)	
Don't know	7	3 (6.8)	4 (4.8)	
Does't require	5	3 (6.8)	2 (2.4)	
Vaccination immediately				
Yes	108	35 (79.5)	73 (86.9)	χ^2 =1.186 , df =1 , p =0.276
No	20	9 (20.5)	11 (13.1)	

4.7.2.5 Knowledge on danger signs in the neonate in relation to actual practice

To determine the relationship between knowledge of danger signs and practice, respondents were asked to identify the various danger signs they were aware of. A chi square test was done to analyse the results. Study results in table 22 showed no statistical significance difference between maternal knowledge on yellowness of the eyes $X^2(1)=0.077$, p=.781, p<0.05,umbilical discharge $X^2(1)=0.525$, p=.469,p<0.05 swollen eyes $X^2(1)=0.332$, p=.564, p<0.05 stop breastfeeding $X^2(1)=0.189$, p=.664, p<0.05 abnormal shaking X^2 (1)=0.844,p=.358,p<0.05 difficulty breathing $X^2(1)=1.371$,p=.242, p<0.05 fever p=0.378, p<0.05, baby cold to touch $X^2(1)=0.943$,p=.331,p<0.05 ,baby lethargic $X^2(1)=0.712$,p=.399,p<0.05, abdominal distension $X^2(1)=0.958$,p=.328,p<0.05,diarrhoea $X^2(1)=0.193$,p=.660,p<0.05,vomiting $X^2(1)=0.047$, p=.829,p<0.05, excessive cries $X^2(1) = 0.332$, p=.564,p<0.05 and practices.

Table 22: Knowledge on danger signs in the neonate in relation to practice

		Practice		
Yellowness of eyes	**n**	**Poor, *n (%)***	**Good, *n (%)***	**P**
Yes	106	37 (84.1)	69 (82.1)	χ^2 =0.077 , df =1 , p =0.781
No	22	7 (15.9)	15 (17.9)	
Umbilicus discharge				
Yes	70	26 (59.1)	44 (52.4)	χ^2 =0.525 , df =1 , p =0.469
No	58	18 (40.9)	40 (47.6)	
Eye swollen, etc				
Yes	80	29 (65.9)	51 (60.7)	χ^2 =0.332 , df =1 , p =0.564
No	48	15 (34.1)	33 (39.3)	
Stop breastfeeding				
Yes	110	37 (84.1)	73 (86.9)	χ^2 =0.189 , df =1 , p =0.664
No	18	7 (15.9)	11 (13.1)	
Abnormal shaking				
Yes	54	21 (47.7)	33 (39.3)	χ^2 =0.844 , df =1 , p =0.358
No	74	23 (52.3)	51 (60.7)	
Difficulty breathing				
Yes	110	40 (90.9)	70 (83.3)	χ^2 =1.371 , df =1 , p =0.242
No	18	4 (9.1)	14 (16.7)	
Fever				
Yes	114	41 (93.2)	73 (86.9)	0.378*
No	14	3 (6.8)	11 (13.1)	
Baby cold				
Yes	71	27 (61.4)	44 (52.4)	χ^2 =0.943 , df =1 , p =0.331
No	57	17 (38.6)	40 (47.6)	
Baby lethargic				
Yes	72	27 (61.4)	45 (53.6)	χ^2 =0.712 , df =1 , p =0.399
No	56	17 (38.6)	39 (46.4)	
Abdominal distention				
Yes	60	18 (40.9)	42 (50.0)	χ^2 =0.958 , df =1 , p =0.328
No	68	26 (59.1)	42 (50.0)	
Diarrhoea				
Yes	105	37 (84.1)	68 (81)	χ^2 =0.193 , df =1 , p =0.660
No	23	7 (15.9)	16 (19)	
Vomiting				
Yes	106	36 (81.8)	70 (83.3)	χ^2 =0.047 , df =1 , p =0.829
No	22	8 (18.2)	14 (16.7)	
Cries excessive				
Yes	80	26 (59.1)	54 (64.3)	χ^2 =0.332 , df =1 , p =0.564
No	48	18 (40.9)	30 (35.7)	

4.7.3. Relationship between socioeconomic factors and neonatal care practices

A chi square test was done to determine the relationship between socio economic factors and neonatal care practices. The findings on table 23 showed that there was no association between neonatal care p=0.504, enough income X^2 (1)=0.332,p=.564,p<0.05 provision for neonatal care X^2 (1)=3.415,p=.065,p<0.05 and neonatal care practices among postnatal mother.

Table 23: Relationship between socio economic factors and neonatal care practices

		Practice		
Neonate care	**N**	**Poor, *n (%)***	**Good, *n (%)***	**P**
At home with someone	6	2 (4.5)	4 (4.8)	0.504*
Carry to work	9	1 (2.3)	8 (9.5)	
At home with neonate	110	40 (90.9)	70 (83.3)	
Daycare center	3	1 (2.3)	2 (2.4)	
Income enough				
Yes	98	35 (79.5)	63 (75.0)	χ^2 =0.332 , df =1 , p =0.564
No	30	9 (20.5)	21 (25.0)	
Provision for neonatal care				
Yes	95	37 (84.1)	58 (69.0)	χ^2 =3.415 , df =1 , p =0.065
No	33	7 (15.9)	26 (31.0)	

***Fisher's exact test**

4.7.4 Relationship between sociocultural factors and neonatal care practices

On sociocultural factors, chi square test results did not indicate any statistical significance association between neonatal skin care p=0.153,p<0.05 herbal medication on cord care X^2(1)=1.037,p=.309,p<0.05,herbal medication and vaccines X^2(1)=1.022,p=.312,p<0.05 and neonatal care practices as shown on table 24 below.

Table 24: Socio cultural factors in relation to Practice

		Practice		
Neonate skincare	**n**	**Poor, *n (%)***	**Good, *n (%)***	**P**
Saliva	25	11 (25.0)	14 (16.7)	0.153*
Ash	3	0 (0.0)	3 (3.6)	
Cowdung	4	3 (6.8)	1 (1.2)	
Herbs	17	7 (15.9)	10 (11.9)	
None	79	23 (52.3)	56 (66.7)	
Herbal medication and cord care				
True	31	13 (29.5)	18 (21.4)	χ^2 =1.037 , df =1 , p =0.309
False	97	31 (70.5)	66 (78.6)	
Herbal medication and vaccines				
Yes	17	4 (9.1)	13 (15.5)	χ^2 =1.022 , df =1 , p =0.312
No	111	40 (90.9)	71 (84.5)	

4.7.5 Influence of institutional factors on neonatal care practices

Association between institutional factors and practice among postnatal mothers was determined by questioning the respondents on whether they had received any education from the institution at any one point during pregnancy up to two weeks after delivery, whether the institution provided any reading materials like brochures and whether they were health educated on neonatal care practices either during pregnancy and after delivery and if they believed follow up care if and when provided by the institution would be helpful. A chi-square test was used to examine the influence of institution factors on neonatal care practices. The study results showed there were no statistical associations between institution factors on those who received education $X^2(1)=0.825,p=.364,p<0.05$, reading materials $X^2(1)=0.395,p=.530,p<0.05$, those health educated $X^2(1)=0.005,p=.942,p<0.05$ & follow up care $X^2(1)=0.448,p=.504,p<0.05$ and neonatal care practices among postnatal mothers as seen on table 25.

Table 25: Influence of institutional factors on practice

		Practice		
Health educated	**n**	**Poor, *n (%)***	**Good, *n (%)***	**P**
Yes	76	24 (54.5)	52 (61.9)	χ^2 =0.825 , df =1 , p =0.364
No	52	20 (45.5)	32 (38.1)	
Reading materials				
Yes	66	21 (47.7)	45 (53.6)	χ^2 =0.395 , df =1 , p =0.530
No	62	23 (52.3)	39 (46.4)	
Institutional failure				
Yes	82	28 (63.6)	54 (64.3)	χ^2 =0.005 , df =1 , p =0.942
No	46	16 (36.4)	30 (35.7)	
Follow up care				
Yes	113	40 (90.9)	73 (86.9)	χ^2 =0.448 , df = 1, p =0.504
No	15	4 (9.1)	11 (13.1)	

CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Introduction

Study findings are discussed in this chapter in line with the objectives. Other studies, both local and international, have been compared with the result of this study. Here, conclusions drawn from the findings, recommendations and areas for further research have also been outlined.

5.2 Discussion

Breastfeeding, thermoregulation, cord care, immunization, eye care and signs of serious illnesses were the essential neonatal care practices studied. World Health Organisation advocates on the importance of thermoregulation in neonates and use of kangaroo method (skin to skin contact) in places with increased neonatal mortality rates, use of hygienic practices for eye care and tetracycline eye ointment in the prevention of eye infections. The Maternal and Child Health Program by the WHO emphasizes on the importance of the prevention of neonatal hypothermia especially on the first day of life (Safari et al., 2018).

5.2.1 Socio-demographic characteristics in relation to neonatal care practices

The findings in this study revealed that most postnatal mothers,58.6%, were aged between 20-29 years. However, age did not influence neonatal care practices. This findings differed with other studies which found poor practices to be higher in mothers below 20 years of age (Singh,et al.,2019).This is so because mothers whose first pregnancy occurred above 20 years of age were more likely to be knowledgeable on neonatal care practices as compared with mothers at a younger age.

Findings on marital status did not influence neonatal care practices which was in contrast to other studies which showed that married women had higher odds of good neonatal care practice (Berhea, Belachew & Abreha, 2018; Misgna, Gebru &Birhanu,2016). This study findings indicated that there was a positive impact especially on breastfeeding practices among postnatal mothers if they were married and a housewife as they were higher than an Ethiopian study done by (Alemu, Eshete, 2019; Berhe,et al., 2017).This findings could be as a result of the positive support system provided by the partner and perhaps improved socio economic status.

Maternal education did not influence neonatal care practices among postnatal mothers. This findings differed with studies done in Ethiopia, Uganda, Ghana and India (Berhea et al, 2017; Sitrin et al, 2015;Sinha et al,2014).The inconsistency may be due to community and political concerns on educating women in developing countries. Maternal education is a global agenda to be promoted and carried out playing a big role in improving neonatal care practice. Improvement in neonatal care could be achieved through valid cheaper interventions like health and nutrition education beginning from community to institutional levels.

Maternal occupation status did not influence neonatal care practice among postnatal mothers which corresponds with study findings from Tigray and North Ethiopia (Berhea et al,2017; Misgna,Gebru&Birhanu,2016).This findings were positively associated with good cord care practices which was comparable to a study done in India(Jonge et al.,2018).Findings were also comparable to a study by Sanjel,et al., (2019)which revealed that postnatal mothers were able to demand quality health

services especially when they became more aware of signs of serious illnesses in the neonate. Having an occupation allows mothers to access, education and healthcare which directly or indirectly impacts on neonatal care practices.

5.2.2 Maternal Knowledge in relation to Neonatal Care Practices

Postnatal mothers need to be equipped with the correct knowledge on essential neonatal care practices in order to combat neonatal morbidity and mortality. This study found out that 82% received information on neonatal care practices, majority 59% provided antenatally compared to the postnatal period 39%.Information received was helpful in ensuring good neonatal care. This findings were consistent with studies done in Ghana and Ethiopia (Saaka & Idrissu, 2014; Misgna et al 2016).

Prenatal care and follow care were found to positively influence neonatal care practices especially among lactating mothers which was comparable to a study by Alemu &Eshete (2019) but also led to poor neonatal care practices. This findings were attributed to health education being concentrated more on the pregnancy. Postnatal care was associated with knowledge gaps hence poor neonatal care practices which was consistent to Beraki, et al., (2020) who found out that the low rate of provision of information postnatally on all components of essential neonatal care is attributed towards an upward trend of early postnatal discharge leasing to inadequate time for maternal health education.

The main source of information being medical personnel mainly nurses/midwives 53.3%, doctors 34.3% and 12.4% from other sources (internet, older mothers, friends e.t.c.) implying that postnatal mothers in Kiambu county rely on healthcare providers

mainly nurses and midwives for information on neonatal care rather than family, peers and technology leading to good neonatal care practices,47.6%. This findings corresponds with Berhea, Belachew and Abreha (2018) who showed that health education from a health care provider improves neonatal care practices.

This study showed that most of the postnatal mothers had adequate knowledge on breastfeeding 88.3%(Fig. 2).However, there was inadequate knowledge on thermoregulation and eye care, which were consistent with Amolo's (2017) findings at Kenyatta National Hospital. According to Dida(2020),the inadequacy of knowledge in this two areas was likely due to concentration on other practices like breastfeeding and cord care. There was fair knowledge on immunization and signs of serious illness.

On breastfeeding, my study showed that majority of the postnatal mothers were aware of breastfeeding on demand 71.9%, use of colostrum 80.5% but only 22.7% knew of exclusive breastfeeding. However, though knowledgeable on breastfeeding, this study found out that the practice of early initiation of breastfeeding was poor which was mostly attributed to absence of breast milk. Findings also corresponded with other studies which showed that all cause neonatal mortality rate may be greatly decreased by 16.3% if breastfeeding was started within the first 24 hours of life and by 22.3% if started within the first hour of life (Karen et.al.2007; Meseka,2017). These also emphasizes the importance of health education on latching from a skilled healthcare provider (Amolo, 2017). Focus on breastfeeding is mainly on exclusivity and on demand.

This study also revealed that 44.5% (Table 5) of postnatal mothers believed that pre-lacteal feeds should be used, which was comparable with an Ethiopian study which showed that 82.6% practiced pre-lacteal feeding (Amele,et al.,2019).About 14.1% of postnatal mothers believed that colostrum was unhealthy to give to neonates, this findings were consistent with an Ethiopian study where grandmothers and traditional birth attendants thought colostrum caused abdominal cramps in neonates and thus discouraged mothers from giving(Legesse,et al., 2015).This emphasizes on the need for health education on feeding postnatally.

Cord care is crucial in prevention of infection. This study revealed that about 60% of the participants were knowledgeable on clean and dry cord care as recommended by WHO and agreed that a dirty cord could cause infection. Most mothers, 83.6%, agreed that a previously used razor blade should not be used to cut the cord and 68% of the participants reported using chlorhexidine in cleaning the stump. This findings were comparable to a study by Amolo (2017) at KNH where only four mothers were unaware of cord care. However, this findings were inconsistent with a Nigerian study which showed greater percentage had poor knowledge on cord care (Chizoma, Fisayo & Abimbola,2020).This variation in knowledge was possibly due to difference in population and data gathering tools.

Positive practices were seen among postnatal mothers on cleanliness and cord care where 83.6% disagreed on use of a previously used razor blade to cut the cord. A good number of mothers 34.5% exposed the umbilical stump and 70.2% cleaned it with chlorhexidine as recommended by WHO guidelines ($p<0.05$). This findings were

comparable to an Ethiopian study which also confirmed positive cord care practices (Misgna,Gebru,Birhanu,2016). On cordcare, importance of chlorhexidine use is further emphasized by Imdad et al.,2013;Muriuki et al.,2017;Tomedi, 2018 who showed a significant reduction in neonatal mortality rate from umbilical cord infections especially among home deliveries.

However, this findings were inconsistent with a related study in Sokoto, Nigeria which revealed that mothers applied multiple agents to the cord including toothpaste (Kaoje,et al., 2018). Similarly, another Nigerian study reported use of methylated/surgical spirit in cleaning the cord (Afolaranmi, et al.,2018). World Health Organisation advocates for the use of aseptic practices during cord care which is a common source of neonatal sepsis.

In order to prevent infection majority, 63.1%, reported cleaning at least twice a day. This findings were inconsistent with a South Sudan study which reported that over half of the postnatal mothers had negative cord care practices (Meseka, Mungai&Musoke,2017). At Pumwani Maternity hospital, Nairobi, Kenya, inconsistent cleaning routines as well as air drying (55%), followed by use of surgical spirit (25%) as well as use of saliva, water and ash(10%) were observed(Kinanu,et al.,2016). Such unclean substances are probable causes of infection as they are likely to be contaminated by bacteria(Moraa,Mweu,Njoroge,2019).

On thermoregulation, the inability of a neonate to self-regulate temperature puts them at risk of complications which include hypothermia. Hence, delayed bathing and promotion of kangaroo care (skin to skin contact) is recommended which helps in

thermoregulation during transition from intrauterine to extra uterine life (Missmer & Kajeepeta, 2015;Dida, 2020). This study revealed that postnatal mothers were less aware of skin to skin contact (kangaroo care) as a method of neonatal care, 37.5%, which was consistent with a Sudanese study (Meseka, 2017).This was due to inadequate health education antenatally and postnatally.

On practice, 68.2% covered the neonates with warm clothes to prevent heat loss. This study findings though higher, were comparable to Safari, Saeed, Hasan and Banaem(2018) in their study reported that 42% of neonates who did not receive kangaroo care had hypothermia while only 2% of those who had kangaroo care developed hypothermia. This showed poor practice of kangaroo care (skin to skin) despite acknowledging it as a method of thermoregulation. The maternal and child health programme by the WHO recommends kangaroo care as a method of preventing neonatal hypothermia (WHO,1997).

This study found out that a good number of mothers,43%,had positive practice on WHO recommended practice on delayed bathing as a method of thermoregulation which was consistent with a Lebanese study(Mardini,et al.,2020) but this was out of convenience as the mothers felt the weather was too harsh for the neonate especially the first few days. In this study, 48.8% of the mothers delayed bathing up to 48 hours as recommended by WHO($p<0.05$).This findings were comparable to other studies in Ethiopia and India which acknowledge delayed bathing as a method of thermoregulation(Semenew et al.,2019; Vijayalkashmi, Patil & Datta, 2014).A neonate

is most vulnerable to morbidity and mortality within the first 48 hour and it is crucial to maintain constant body temperature .

This study showed that a majority of the postnatal mothers, 96.1%, were knowledgeable on the need of vaccination and the prevention benefits but only 39.8% could identify BCG and OPV as the vaccines required at birth. This findings were higher as compared to a Malysian study which estimated only 57.5% of the mothers were knowledgeable on vaccination (Singh,et al.,2019). When asked which vaccines were required within 28 days, majority of the postnatal mothers,82.8%, could only identify BCG as the only vaccine required by the government. The findings were suggestive of poor dispersion of information on immunization.

An interesting finding in this study is that nurses responsible for immunization visit postnatal wards and offer OPV and BCG but never explain to the mothers what they are and what they prevent. Hence if they missed either of vaccines, chances of complete vaccination of the neonate were greatly reduced. These findings differed with Amolo's study (2017) which showed that postnatal mothers at KNH knew what diseases were prevented by BCG and OPV respectively. This discrepancy could be as a result of difference in population characteristic and data collection tools. Maternal education on immunization should be done on a community and institutional level, impacting positively on uptake of the practice.

Recognition of danger signs in neonates has been of great concern in third world countries. In this study, majority of postnatal mothers recognized yellowness of the eyes 82..8%, neonate stopped breastfeeding 85.9%, fever 89.1%, difficulty in breathing

85.9%, diarrhoea 82% and vomiting 82.8% as signs of serious illness hence prevention and early recognition prompted health seeking practices. This was higher as compared to a study by Kibaru and Otara (2016) in Nakuru county which revealed that 84.5% could only identify less than three neonatal danger signs.

Umbilical and eye discharge and redness, lethargy was recognised by 50-79% while less than half recognised abnormal shaking or movement of limbs and eyes and abdominal distension. This was consistent with studies done in Africa and India. In Ghana, a study done by Kuganab& Yidan(2014) revealed that study participants had poor knowledge on neonatal danger signs. Similarly, in India, only 13.9% could only identify lethargy as a neonatal danger sign (Nigatu, Worku & Dadi,2015).The difference in findings could be as a result of the different populations, level of education and data collection tools. However, the disparity in information on serious illnesses in our set up if not addressed, could lead to an increase in neonatal morbidity and mortality (Amolo, Irimu & Njai,2017).

On eye care, 83.6% did not agree with application of other substances other than those prescribed (tetracycline eye ointment) by the doctor if they noticed reddening, discharge or swelling. This was in contrast to Amolo's study at KNH which depicted gaps in eye care practices (Amolo,Irimu&Njai,2017).However of those who agreed,61.9% applied breast milk as an alternative to what the doctor prescribed. This findings were similar to a Ghanian study which attributed the unsatisfactory practices that depicted that 92.6% had poor knowledge on eye infections, prevention and treatment (Boadi-Kusi,et al., 2021).The difference in findings may be due to the different study populations.

5.2.3 Socio-economic and Socio-cultural factors affecting Neonatal care practices among postnatal mothers

This study found out that majority of the postnatal mothers,83.3%, stayed at home to take care of the neonate, had enough income and could provide the basic necessities needed including health care($p<0.05$) but this did not influence their neonatal care practices. Findings were comparable to an Indian study which showed social economic status is less important for the neonatal care received (Jonge, et al., 2018).Accessibility to healthcare in our set up is made easier by government led programmes.

However, these findings were inconsistent with an Indian study which found out that poor economic status influenced neonatal care practices increasing neonatal morbidity and mortality (Islam & Biswas, 2021).According to Sanjel et al.,(2019)accessibility to healthcare among postnatal mothers even for illiterate women is prudent in improving neonatal care practices in the home setting. Improved social economic status allows mothers to access, education, healthcare, economic independence and decision making which directly or indirectly contributes to good neonatal care practices.

On socio-culture, good number of postnatal mothers acknowledged use of saliva 25%,cow dung 6.8% and herbs15.9% as a method of skin care, believed in the use of herbal medication on cord care, 29.5% but did not acknowledge herbal medication were better than vaccines,90.9% which did not impact on neonatal care practices. This findings were comparable to Sutan & Berkat (2014) where they emphasize on the need of improving maternal factors as a way of improving neonatal care practices. Health

education of the mothers recognizing the cultural practices used improves neonatal care practices hence reducing morbidity and mortality rates.

5.2.4. Institutional factors affecting neonatal practices

This study found out that health institutions factors through health care workers did not influence neonatal care practices. This findings were in contrast with an Indian study which indicates an urgent need to increase awareness on services available to mothers relating to neonatal health care practices (Singh, et al., 2019).

Similarly, Pagel, et al.,(2014) agree that there remains a substantial scope for health facilities to improve on, especially education on thermal care and hygiene which greatly affect neonatal morbidity and mortality. According to Efa, et al.,(2020),institutions play a vital role in health education, promotion of essential newborn care, provision of counselling through follow up care in improving neonatal care practices especially in third world countries.

5.3 Conclusion

1) Socio-demographic characteristics were not associated with inadequate maternal knowledge and neonatal care practices.

2) Postnatal mothers had adequate knowledge on breastfeeding practices, cord care, signs of serious illness and immunization but there was inadequate knowledge on thermoregulation and eye care. Though there was positive knowledge on breastfeeding practices, there was negative breastfeeding practices, a significant number did not breastfeed on demand and gave pre-lacteal feeds.

3) There was negative eye care practice where mothers applied breast milk when they noticed discharge, reddening and swelling though majority of the mothers knew that they should only apply what was prescribed by the physician.

4) Socioeconomic and socio-cultural factors did not affect neonatal care practices. Accessibility to health care despite socio economic status positively influences neonatal care practices. However, promotion of health education of postnatal mothers recognizing the cultural practices used improves neonatal care practices hence reducing morbidity and mortality rates.

5) Institutional factors did not influence neonatal care practices though there is room for improvement on health education especially during follow up care and availability of reading materials.

5.4 Recommendation

1) Knowledge and practice should go hand in hand in the improvement of neonatal care practices. More emphasis on maternal education regarding neonatal care practices (thermoregulation, cord care, eye care, skin care and breastfeeding practices) is needed. Institutions should ensure continuous health education on neonatal care practices postnatally and avail reading materials.

2) Further research is recommended to find out why there are negative practices on breastfeeding and eye care despite being knowledgeable on those practices.

3) Follow up care which also includes referral on a need basis is recommended regarding neonatal care practices to ensure proper neonatal care practices are practiced as recommended by WHO.

4) Similar or comparative study needs to be done in other counties to ease generalization.

5.5 Dissemination of Findings

The study findings will be shared with the stakeholders who will include the Ministry of Health (MOH), County Government of Kiambu, The National Commission for Science, Technology and Innovation (NACOSTI), Kenyatta University Ethics and Research committee who provided ethical approval to carry out the study and Kiambu and Thika County Hospital.

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APPENDICES

APPENDIX I: QUESTIONNAIRE

TOPIC: DETERMINANTS OF NEONATAL CARE PRACTICES AMONG POSTNATAL MOTHERS AT THE KIAMBU AND THIKA HOSPITALS, KIAMBU COUNTY, KENYA.

Serial No……. Date of Data Collection ……/……./……. **Hospital Ward……..**

INSTRUCTIONS

Kindly tick (√) in the box provided next to the right response and where there are no responses or choices provided please insert your answer in the provided space.

PART 1: DEMOGRAPHIC CHARACTERISTICS OF THE MOTHER

1. Please state your age? ……..

2. Please tick the box that indicates your marital status

   A. Married ☐
   B. Single ☐
   C. Divorced ☐
   D. Widowed ☐
   E. Any other (Specify)…….

3. Please state your occupation?

   A. Farming ☐
   B. Office work ☐
   C. House wife ☐
   D. Business ☐

E. Any other (Specify)……

4. Please state your level of education?

A. Primary Education ☐
B. Secondary Education ☐
C. College/University Education ☐
D. Any other (Specify)…….

5. Please state your religion?

A. Christian ☐
B. Islam ☐
C. Hindu ☐
D. Other (Specify)……..

PART 2: KNOWLEDGE ON NEWBORN CARE PRACTICES

1a).Have you ever received any information on newborn care practices?

Yes ☐ No ☐

b).When did you receive this information?

A. During pregnancy
B. During delivery
C. After delivery

c).If yes to question 1a), what information were you provided with? Tick all that apply.

A. Breastfeeding ☐

B. Cord care ☐

C. Eye care ☐

D. Thermoregulation ☐

E. Immunization ☐

F. Signs of serious illnesses in the newborn ☐

G. None of the above ☐

d. From whom did you get this information?

A. Doctor ☐

B. Nurse/Midwife ☐

C. Any Other (Specify)…….

2. Have you practiced any newborn care practices since you delivered the baby?

Yes ☐ No ☐

If No, why?.....

A.KNOWLEDGE ON THERMOREGULATION

1. What can you do after delivery, to keep your baby warm?

A. Kangaroo mother care ☐

B. Use a cloth to wrap the baby ☐

C. Other(Specify)……..

2. How long should you take before giving your baby the first bath after delivery?

A. Minutes ☐

B. Hours ☐

C. Days ☐

D. Don't know ☐

B. KNOWLEDGE ON CLEANLINESS AND CORD CARE

1. What can you do to care for the umbilical stump of your neonate?

   A. Covering ☐

   B. Exposing ☐

   C. Don't know ☐

   D. Others (Specify)…….....

2. What can you clean umbilical stump of your neonate with?

   A. Saliva

   B. Water

   C. Apply alcohol/ spirit/chlorhexidine

   D. Others (Specify)…….

3. How often should you clean the cord?

   A. Once a day ☐

   B. Twice a day ☐

   C. Once a week ☐

   D. Never ☐

4. A) Would you apply any other substance after cleaning your neonate's soiled umbilical stump, for it to heal?

   ☐

Yes ☐ No ☐ Don't Know

B).If yes, what other substance would you apply on the umbilical stump?

A. Surgical spirit ☐

B. Alcohol ☐

C. Saliva ☐

D. Cow dung ☐

Others (Specify)…….

C.KNOWLEDGE ON BREASTFEEDING

1. How soon did you put your baby on the breast, after delivery?

A. Immediately ☐

B. After one hour ☐

C. After 24 hours ☐

2. What other feeds can you give the neonate before 28 days of age?

A. Cerelac ☐

B. Fortified milk/Nun ☐

C. Water ☐

D. None ☐

3. How often would you breastfeed your neonate?

A. On demand(When the neonate wants to breastfeed)

B. According to a set timetable

C. Others (Specify)……

4. What does it mean to exclusively breastfeed your baby?

.....

5. What would you do with the first milk (colostrum)?

A. Feed the baby ☐

B. Throw it away (Go to Q6) ☐

C. Other (Specify)(Go to Q6) ☐

6. Why would you not feed your baby the first milk (colostrum)?

A. It is Unhealthy ☐

B. It is against traditional belief ☐

C. No reason ☐

D.KNOWLEDGE ON IMMUNIZATION

1. Is it necessary to vaccinate your baby at birth?

Yes ☐ No ☐ Don't know ☐

2. What vaccines does your baby require immediately after birth?

A. BCG ☐

B. OPV ☐

C. BCG&OPV ☐

D. Don't Know ☐

E. Others (Specify……..

3. Should the neonates be vaccinated immediately after birth?.....

   Yes ☐ No ☐

   If No, Why?.....

4. What vaccines does the government require a neonate to get upto 28 days of age? List all that you know…….

E.DANGER SIGNS IN THE NEONATE

1.Would you know if your baby is seriously ill? Tick all that apply.

DANGER SIGN	RESPONSE
Yellowness of the eyes, soles and palms	
Umbilicus and surrounding skin red, discharging pus	
Eye swollen, sticky, red or draining pus	
Baby stops breastfeeding	
Abnormal shaking movements of limbs and eyes	
Difficulty in breathing	
Fever	
Baby cold to touch	
Baby previously active becomes lethargic	
Abdominal distension	
Diarrhoea	
Vomiting	
Cries excessively/Irritable	

PART 2: PRACTICESON NEONATAL CARE

Please tick the boxes provided

	Agree	Disagree	Don't know
1. Babies can be wrapped warmly to prevent heat loss.			
2. Kangaroo care provides warmth to the baby and prevents heat loss.			
3. Your baby can be bathed within the first 24 hours.			
4. The cord can be cut using a previously used razor blade.			

5. Apart from those medicine prescribed by the doctor would you apply any other substances to your neonate's eyes if you noted discharge, reddening or swelling?

Yes ☐ No ☐

PART 3: SOCIAL ECONOMIC FACTORS AFFECTING NEONATAL PRACTICES

1 . How do you take care of your neonate?

A. Leave at home for someone else to look after ☐

B. Carry the neonate to work ☐

C. Stay at home and take care of the baby ☐

D. Take the baby to a day care center ☐

2. Is your form of income enough to provide for your neonate?

Yes ☐ No ☐

3. Are you able to provide for your baby's health care needs, for example pay hospital bills? Yes ☐ No ☐

4. If No, how do you cater for your baby's health care needs?.....

PART 4: SOCIO CULTURAL FACTORS AFFECTING NEONATAL PRACTICES

1. What traditional methods do you use to take care of your neonate's skin?

   Saliva ☐

   Ash ☐

   Cowdung ☐

   Herbs ☐

   None ☐

2. Herbal medication ensures the cord falls off faster than medication given by the doctor? True ☐ False ☐

3. What cultural practice have you learned from the other mothers that is better than modern practice, for example in health? .....

4. What cultural practice do you practice that is beneficial to your neonate?

   .....

5. Do you believe herbal medication are better than vaccines? Yes ☐ No ☐

6. If yes, please explain your reason……

PART 5: INSTITUTIONAL FACTORS AFFECTING MOTHERS' NEONATAL PRACTICES

1. Have you ever received any form of education from the health care workers on neonatal care practices? Yes ☐ No ☐

2. If Yes, was it during the pregnancy or after delivery? .....

3. Does the institution avail to you reading materials on neonatal care practices…….

4. Were you health educated on neonatal care practices in the prenatal clinic?

Yes ☐ No ☐ Don't know ☐

5. Do you think the institution should provide follow up care on neonatal care practices?

Yes ☐ No ☐ Don't know ☐

APPENDIX III: Research Approval from Kenyatta University

KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 020-8704150

Internal Memo

FROM: Dean, Graduate School

DATE: 19th August, 2020

TO: **Ms. Lilian W. Kariuki**
C/o Medical Surgical Nursing &
Pre-Clinical Science Department

REF: R50/39760/2016

SUBJECT: APPROVAL OF RESEARCH PROPOSAL

This is to inform you that Graduate School Board, at its meeting on **1st July, 2020**, approved your Research Proposal for the M.Sc. Degree entitled, **"Neonatal Care Practices among Postnatal Mothers at the Kiambu and Thika Hospitals, Kiambu County, Kenya."**

You may now proceed with your Data collection, subject to clearance with the Director General, National Commission for Science, Technology & Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking and Progress Report Forms per semester. The Forms are available at the University's Website under Graduate School webpage downloads.

Thank you.

KENYATTA UNIVERSITY OFFICE OF DEAN 18 AUG 2020 GRADUATE SCHOOL P.O. BOX 43844-00100 NAIROBI

JULIA GITU
FOR: DEAN, GRADUATE SCHOOL

CC. Chairman, Medical Surgical Nursing & Pre-Clinical Science Department

Supervisors:

1. Dr. Grace Githemo
   C/o Medical Surgical Nursing & Pre-Clinical Science Dept.
   Kenyatta University

2. Dr. Maina Ngugi
   C/o Paediatrics & Child Health Dept.
   Kenyatta University

JG/ww

APPENDIX IV: Research Authorization from Kenyatta University

KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 020-8704150

Our Ref: R50/39760/2016 **DATE: 19th August, 2020**

Director General,
National Commission for Science, Technology
and Innovation
P.O. Box 30623-00100
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION FOR MS. LILIAN W. KARIUKI – REG. NO. R50/39760/16

I write to introduce Ms. Lilian W. Kariuki who is a Postgraduate Student of this University. She is registered for M.Sc. degree programme in the **Department of Medical Surgical Nursing & Pre-Clinical Science.**

Ms. Kariuki intends to conduct research for a M.Sc. thesis Proposal entitled, **"Neonatal Care Practices among Postnatal Mothers at the Kiambu and Thika Hospitals, Kiambu County, Kenya."**

Any assistance given will be highly appreciated.

Yours faithfully,

KENYATTA UNIVERSITY * OFFICE OF DEAN * 19 AUG 2020 * P.O. BOX 43844-00100 NAIROBI

PROF. ELISHIBA KIMANI
DEAN, GRADUATE SCHOOL

COUNTY GOVERNMENT OF KIAMBU
DEPARTMENT OF HEALTH SERVICES

All correspondence should be addressed to HEAD
HRDU – HEALTH DEPARTMENT
Email address: mudiritu@gmail.com
mkwasa@live.com
Tel. Nos: 0721641516
0721974633

HEALTH RESEARCH AND DEVELOPMENT
UNIT
P. O. BOX 2344 – 00900
KIAMBU

Ref. No.: KIAMBU/HRDU/20/11/30/RA_KARIUKI Date: 30th NOV 2020

TO WHOM IT MAY CONCERN

RE: CLEARANCE TO CONDUCT RESEARCH IN KIAMBU COUNTY

Kindly note that we have received a request by Ms. Lillian Wangari Kariuki of Kenyatta University to carry out research in Kiambu County, the research topic being on "Determinants of Neonatal Care Practices Among Postnatal Mothers at the Kiambu and Thika Hospitals in Kiambu County, Kenya"

We have duly inspected her documents and found that she has been cleared by NACOSTI to carry out the research for a period ending 5th October 2021. She thus does not need any further clearance with another regulatory body in order to conduct research within the county of Kiambu.

However, it is incumbent upon the institution where she is carrying out research to ensure that she receives adequate supervision during the process of conducting the research. This note also accords her the duty to provide a feedback on her research to the county at the conclusion of her research.

.

DR. MWANCHA KWASA
COUNTY CLINICAL RESEARCH OFFICER
KIAMBU COUNTY

Kenyatta University
P.O Box 43844-00100
Nairobi-Kenya

REF: KU/ERC/APPROVAL/VOL1/1 Date: 23rd September, 2020

Lillian Kariuki
P.0 Box 43844-00100
NAIROBI

Dear Ms. Kariuki ,

APPLICATION NUMBER: PKU/2139/I1282 NEONATAL CARE PRACTICES AMONG POSTNATAL MOTHERS AT THE KIAMBU AND THIKA HOSPITALS, KIAMBU COUNTY, KENYA

This is to inform you that ***KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE*** has reviewed and approved your above research proposal. Your application approval number is **PKU/2139/I1282.** The approval period is ***23rd September, 2020 – 23rd September, 2021.***

This approval is subject to compliance with the following requirements;

i. Only approved documents including (informed consents, study instruments, MTA) will be used
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by ***KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE.***
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to ***KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE*** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to ***KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE*** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to ***KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE.***

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://oris.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely

23 SEP 2020

Prof. Judith Kimiywe

CHAIRPERSON- KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE.

APPENDIX V: Permit letter from NACOST

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **570688**

Date of Issue: **05/October/2020**

RESEARCH LICENSE

This is to Certify that Ms.. LILIAN WANGARI KARIUKI of Kenyatta University, has been licensed to conduct research in Kiambu on the topic: DETERMINANTS OF NEONATAL CARE PRACTICES AMONG POSTNATAL MOTHERS AT THE KIAMBU AND THIKA HOSPITALS, KIAMBU COUNTY, KENYA for the period ending : 05/October/2021.

License No: **NACOSTI/P/20/6968**

570688

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is Guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014

CONDITIONS

1. The License is valid for the proposed research, location and specified period
2. The License any rights thereunder are non-transferable
3. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research
4. Excavation, filming and collection of specimens are subject to further necessary clearence from relevant Government Agencies
5. The License does not give authority to tranfer research materials
6. NACOSTI may monitor and evaluate the licensed research project
7. The Licensee shall submit one hard copy and upload a soft copy of their final report (thesis) within one year of completion of the research
8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice

National Commission for Science, Technology and Innovation
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E-mail: dg@nacosti.go.ke / registry@nacosti.go.ke
Website: www.nacosti.go.ke

COUNTY GOVERNMENT OF KIAMBU

DEPARTMENT OF HEALTH SERVICES

Telephone: (066) 2022191
Email address:
kiambudistricthospital@yahoo.com

When replying please quote:

KIAMBU COUNTY REFERRAL
LEVEL 5 HOSPITAL
P. O. BOX 39 – 00900,
KIAMBU

REF: KBU/STAFF 17/VOL.XLII/91

Date: 19th February, 2021

Lillian Kariuki

P.O.BOX 569, 00900

KIKUYU

RE: DATA COLLECTION

Your letter dated 1st December 2020 refers.

Kiambu hospital has no objection in your request of collecting data in this facility for the purpose of research study.

MEDICAL SUPERINTENDENT
KIAMBU SUB COUNTY LEVEL 4
HOSPITAL
P.o. Box 39-00900
KIAMBU
TEL: 0662022191

MARY NYAKIO KINUGA

FOR: MEDICAL SUPERINTENDENT

KIAMBU COUNTY REFERRAL HOSPITAL

88

01 DEC 2020

LILIAN W KARIUKI
P.O.BOX 569,00900
KIKUYU

THE MEDICAL SUPERITENDANT
KIAMBU COUNTY HOSPITAL
P.O. BOX 39,00900
KIAMBU.

Dear Sir/Madam,

REF: REQUEST TO COLLECT DATA FOR MY RESEARCH STUDY IN YOUR FACILITY.

I humbly request to collect data for my research study as a requirement to finish my thesis in your facility specifically in the postnatal and pediatrics wards as well as the wellbaby clinics. I am a student at Kenyatta University, registration number R50/39760/2016, currently pursuing my Masters degree in Paediatrics.

My research study is titled DETERMINANTS OF NEONATAL CARE PRACTICES AMONG POSTNATAL MOTHERS AT THE KIAMBU AND THIKA HOSPITALS, KIAMBU COUNTY, KENYA.

I have already pretested my questionnaire at the Mbagathi hospital which on analysis has proven to be valid and reliable with a chronbach's alpha score of 0.8.

My questionnaire is both self-administered and interviewer administered. This means that subjects who are able to read will be given the questionnaire to fill and interviews held with those who are not able to read.

Attached are the approvals received from graduate school, ethics and nacosti allowing me to go ahead with data collection. **Above all, all covid-19 prevention protocols will be observed.** Your assistance will be highly appreciated.

Yours sincerely,

LILIAN W KARIUKI

KIAMBU LEVEL 5 HOSPITAL
Address : - 39-00900 KIAMBU KIAMBU
, Tel : -
CASH RECEIPT

Receipt : 044920 Date : 2021-02-12
Patient No : WK609420 Patient Name : LILIAN WANGARI KARIUKI
A sum of Five Thousand Kshs And Zero Cents

DESCRIPTION	AMOUNT KSHS
Research Masters Degree Six Months	5,000.00
Total	5,000.00

Pymt Mode: M-Pes Cash Point: Till 1
ier: ENGARUI

COUNTY GOVERNMENT OF KIAMBU
DEPARTMENT OF HEALTH SERVICES

P.O BOX 227-01000 THIKA, KIAMBU
TEL:+254722106797 EMAIL: thikahospital@yahoo.com
REF: MOH/TKA/GEN/VOL.IV/923

DATE: 4th September, 2020

APPROVAL TO CARRY OUT RESEARCH

Principle Investigator: LILIAN W. KARIUKI

RE: DETERMINANTS OF NEONATAL CARE PRACTICES AMONG POSTNATAL MOTHERS AT THIKA LEVEL 5 HOSPITAL – KIAMBU COUNTY, KENYA

Following deliberations by Thika Level 5 Hospital Research Committee, your proposal to carry out the above research at this facility has been approved. However, you will need to provide us with license from NACOSTI or Ethical Clearance from KEMRI before you can commence the data collection.

Take note that you are required to submit a copy of your research findings upon completion of the study to the hospital. It is also expected that ethical consideration and the research subjects' confidentiality will be maintained as you have outlined in your proposal.

Any patient confidential information that you may access during your research should not be used without consent. This letter is valid up to 1st June, 2021.

For any queries fell free to contact the committee chair through the Medical Superintendent's office or training, research and ethics committee office. Thank you and all the best.

SAMWEL ONDIEK
CHAIR TREC/SHAO
THIKA LEVEL 5 HOSPITAL