ASSESSMENT OF POSTNATAL CARE SERVICES PROVIDED TO MOTHERS AND NEONATES UPON DISCHARGE: MOTHER'S PERSPECTIVE AT MOI TEACHING AND REFERRAL HOSPITAL, ELDORET, KENYA

BY

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DECLARATION

Student Declaration:

This to certify that this dissertation is my original work and it has not been reproduced or presented in any other university or institution for an award of a degree or any academic credit.

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DEDICATION

This research work and dissertation report is dedicated to my loving family and all postnatal mothers/neonates.

ABSTRACT

Assessment of Postnatal Care Services provided to Mothers and Neonates upon discharge: Mother's perspective at Moi Teaching and Referral Hospital, Eldoret, Kenya

Background: In Africa, at least 125,000 women and 870,000 neonates die in the first week after birth annually yet this period receives less attention from health care providers. Care provided to both the mother and the neonate after birth is critical for their survival.

Objectives: To assess postnatal care services provided to mothers and neonates upon discharge: Mother's perspective at Moi Teaching and Referral Hospital

Methods: Used cross-sectional descriptive method involving mixed method approach. 270 postnatal mothers were sampled. Used researcher-administered questionnaires to collect data and analyzed using descriptive statistics via SPSS V20.Qualitative data from the open-ended questions was separately analyzed and consolidated into emerging key themes. Exact test was used to determine significant association.

Results: A total of 270 respondents with a median (IQR) age of 24(21, 28) years completed the questionnaires Most 255(94.4%) of the mothers had their uterus massaged, 226(83.7%) were assessed for severe bleeding, 211(78.1%) assessed for uterine involution and 61(2.6%) assessed for breast feeding difficulties. Majority 246(91.4%) of the mothers initiated breastfeeding within one hour of birth. Most known maternal danger signs were heavy vaginal bleeding 142(52.8%), severe headache 108(40.1%), and fever 103(38.3%). Most mothers had no pulse 210(77.8%), respiration 223(82.6%) and 195(72.2%) temperature monitored. Only 25(28.1%) of mothers got antibiotics for episiotomy/tear. Mothers received information mostly on; hand washing 169(62.6%), perineal care 174(64.4%) and personal hygiene 169(62.9%). Only 83(31.2%) neonates received vitamin K and BCG 15(5.7%). Half134(49.6%) of the mothers were told to keep the umbilical cord clean and dry with majority 189(70.3%) not told when to bath their babies.

Newborn danger signs mentioned mostly were; baby not breastfeeding 136(50.4%), vomiting everything 127(47%), fever 128(47.4%) and hypothermia 118(43.9%). Almost all (99.9%) mothers did not expect any others services. Significant associated was seen between unmarried mothers and support for positioning and attachment during breastfeeding, p =0.028.

Conclusion: Although53% of Mothers and 41% neonates receive postnatal care services before discharge, most services provided do not conform to WHO recommendation. There is lack of maternal knowledge and awareness on postnatal care services provided to both the mother and the neonate before discharge

Recommendation: Postnatal care services should be provided as recommended by WHO. Targeted health education should be provided to clients on available postnatal care services during perinatal visits to create awareness and increase maternal knowledge

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LIST OF ABBREVIATIONS

DHS	Demographic and Health Survey
IREC	Institutional Research and Ethics Committee
KDHS	Kenya Demographic Health Survey
LMIC	low- and middle-income country
MDGs	Millennium Development Goals
MMR	Maternal Mortality Rate
MTRH	Moi Teaching and Referral Hospital
PNC	Postnatal Care
RMBH	Riley Mother and Baby Hospital
SDGs	Sustainable Development Goals
SPSS	Statistical Package for Social Science
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
W H O	World Health Organization

OPERATIONAL DEFINITION OF TERMS

Assessment:	This is the process of gathering, analyzing, interpreting and using health information to improve provision of postnatal care services. In this study, assessment means determining the services provided to both the mother and the neonate upon discharge.
Neonate	A newborn baby under 28 days of age.
Postnatal period:	This period begins immediately after the birth of the baby and extends up to six weeks (42 days) after birth (WHO 2010). In this study, postnatal period refer to the time beginning after the birth of a neonate and continues up to discharge.
Postnatal Care	This is the care provided on all issues pertaining to the mother and the baby from birth up to 6 weeks (42 days) (WHO 2010). In this study, it referrers to care provided to both the mother and neonate as a unit before discharge from health facility to promote health and reduce complications and death.
Skilled Birth Attendant	A health professional with specialized training in midwifery care providing care to mother during pregnancy, child birth and immediately after delivery

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Although postnatal period is uncomplicated for most mothers and neonates, key part of maternity service provision is the care provided by health workers in the immediate postnatal period as this is the most vulnerable time for both the mother and neonate to monitor and address any deviation from expected recovery(Betrán et al., 2016; "<Bookshelf_NBK53617.pdf>,"). Many changes occur during this period that determines the wellbeing for both the mother and the neonate and is potential for a healthy future (Rylander, Øyvind Odland, & Manning Sandanger, 2013). The postnatal period represents a major transition in a woman's life, such that even different cultures have special postnatal customs such as special diet, isolation, rest, and assistance for the mother (Tomori, Palmquist, & Quinn, 2017).Care during this period offers an important opportunity to assess the physical, physiologic and psychosocial well-being of both the mother and the neonate (Shonkoff et al., 2011)

Global evidence suggests that postnatal morbidity/mortality and its impact on maternal and neonatal health should be an area of genuine concern (Gibbs, Wendt, Peters, & Hogue, 2012).Globally, 287 000 women die from complications related to pregnancy or childbirth annually and 3.8 million newborns die before reaching 28 days of life (Organization, 2018). Neonatal deaths account for 45% of all deaths among children under five globally with majority of all neonatal deaths (75%) occur during the first week of life, and between 25% to 45% occur within the first 24 hours (Lawn, Gravett, Nunes, Rubens, & Stanton, 2010). Half of all postnatal maternal

deaths occur within the first week of birth and the majority of these occur during the first twenty four hours. In low income countries, the risk of a woman dying as a result of pregnancy or childbirth during her lifetime is about one in six(1:6) compared with about one in thirty thousands(1:30,000) in high income counties such as Northern Europe (Adler, Filippi, Thomas, & Ronsmans, 2012). In Africa, at least 125,000 women and 870,000 newborns die in the first week following childbirth annually (Sakeah et al., 2018).

In both high and low income countries, hospital-based Postnatal Care (PNC) is rarely viewed or planned as part of a continuum of planned and effective maternity care for individual women and their neonates. It remains an over-looked aspect of maternity service delivery despite the mortalities and morbidities associated with this critical period and being the area that is least favorably reported by the women who use the service. Women's needs and those of their newborns during the postnatal period have all been too often eclipsed by the attention given to pregnancy and childbirth (Kirkham, 2010). Ideally, the early postnatal period is the most suitable time to deliver interventions to improve the health and survival of both the mother and the neonate yet care is least prioritized with continuing low prioritization among care providers in the care accorded to mothers and neonates in the crucial hours and days following delivery (Lawn, Kerber, Enweronu-Laryea, & Cousens, 2010). Care during this period is critical for the health and survival of both mother and neonate, and has the potential to help reduce maternal and child morbidity and mortality significantly (Bhutta, Das, et al., 2014).

Presumably, women who deliver in a health facility receive PNC, but this may not necessarily be the case (Mayhew et al., 2017). Analysis of Demographic and Health Survey (DHS) from 23 African countries indicated that approximately one-third of women in Sub-Saharan Africa (SSA) give birth in health facilities, and only 13% receive a postnatal care (PNC) within two days of delivery with some regions having as low as 2% (Lawn et al., 2012).

In Ghana, only 25.4% of mothers received PNC within 48 hours. In Tanzania, there is still a total lack of PNC for the mothers with shortages of staff, equipment and supplies a common complaint (Ouedraogo, 2018).In Kenya, Demographic Health Survey (KDHS) report showed that only 7% of mothers who deliver in the health facility received PNC services within 24 hours of delivery. Even though the latest survey indicate that over half (53%) of women receive postnatal checkup within two days, more than 2 in 5 women do not receive postnatal care at all. Newborns are less likely to receive postnatal check-up in the first 2 days after birth as 62% had no postnatal checkup at all (KNBS, 2010).This is despite the fact that PNC care during this period is critical for the health and survival of both mother and neonate, and has the potential to reduce maternal and child morbidity and mortality significantly (Ouedraogo, 2018).

To significantly reduce maternal and neonatal mortality, greater attention must be given to postnatal care as a key part of maternity service provision provided by health workers prior to discharge (Ouedraogo, 2018).

This study, therefore, seeks to assess the postnatal care services provided to mothers and neonates upon discharge: mother's perspective at Moi Teaching and Referral Hospital, Eldoret, Kenya.

1.2 Problem Statement

The period soon after childbirth poses substantial health risk for both the mother and the neonate. Globally, 50% of maternal deaths and 40% of neonatal deaths occur within 24 hours after childbirth and 65% of maternal and 75% of neonatal deaths occur within one week of birth (Ouedraogo, 2018).

Annually, four million infants die within their first month of life, with the highest rates in sub-Saharan Africa. Three-quarter of neonatal death occur in the first week and more than one-quarter occur in the first 24 hours (Bajaj, 2017). Approximately two-thirds of all maternal deaths occur in the postnatal period with half of the deaths happening during the first week of child birth and the majority of these occur during the first 24 hours of childbirth (Lawn et al., 2014).

Majority of mothers and newborns in low- and middle-income countries do not receive optimal care during these periods (Black et al., 2013). Kenya Demographic Health Survey report of 2008-09 showed that up to 58% of Kenyan women do not receive PNC within two days of delivery and that slightly more than half do not get it altogether (KNBS, 2010). At facility level, 46% of women in Kenya do not receive postnatal care at all after child birth (Ngome, 2016).Postnatal care (PNC) continues to be the ‘‘least emphasized’’ element in maternity services and its program interventions are among the weakest of all reproductive and child health worldwide(Kearns, Caglia, ten

Hoope-Bender, & Langer, 2016).Hospital-based postnatal care (PNC) remains an over-looked aspect of maternity service delivery and generally considered a lower priority compared with other episodes of maternity care despite the increased risk for mortalities and morbidities for both the mothers and neonates (Kearns et al., 2016). Hence a missed opportunity to provide health care during this critical period in developing countries such as Kenya (Group, 2014).

The significant break in the continuum of care in the service-delivery and the burden of maternal and neonatal complications and death is highest in the first few days of childbirth. This could potentially negate the outcome of a good birth experience and a positive start to parenting for the mother, her partner and the infant (Mannava, Durrant, Fisher, Chersich, & Luchters, 2015) and hindering efforts to meet the Sustainable Development Goals (SDGs) for maternal and child survival if left unchecked.

1.3 Justification

With global evidence suggesting that postnatal morbidity/mortality and its impact on women's health should be an area of genuine concern (Geller, Cox, Callaghan, & Berg, 2006), a key part of maternity service provision is the care provided by health workers in the immediate postpartum period as this is the most vulnerable time for both the mother and neonate (Renfrew et al., 2014).

Postnatal period also represent a critical opportunity to safeguard the health and survival of the mother and neonate when both experience a high level of vulnerability. The early postnatal period is an ideal time within the continuum of care for providing effective care for mothers and newborns which delivers key high impact life-saving interventions to

improve the health of mothers and neonates and has the potential to generate the greatest gains in survival and health of any period in the continuum of care (ten Hoope-Bender et al., 2014).

Data offer compelling evidence that maternal and neonatal care should be provided to all mothers and their neonates immediately after delivery as a concerted strategy to improve their survival. These interventions if done are potentially the most effective health interventions for preventing maternal and neonatal morbidity and mortality (Bhutta et al., 2013). It has been estimated that if routine postnatal and curative care in the postnatal period reached 90% of neonates and their mothers, 10-27% of newborn deaths could be averted and high PNC coverage could save up to 310,000 newborn lives each year in SSA (Lassi & Bhutta, 2015).

Besides that, evidence has shown that majority of maternal and neonatal deaths can be prevented if women have access to and use skilled care within the first days after delivery (Renfrew et al., 2014). Up to two thirds of newborn deaths could be prevented if skilled health workers perform effective health measures at birth and during the first week of life (Lawn et al., 2014).

Given the extent of mortalities of mothers and neonates in the period immediately after birth, In- hospital postnatal period is a critical window of opportunity for healthcare providers to deliver interventions which are critical for the health and survival of both mother and neonate, and has the potential to help reduce maternal and child morbidity and mortality and improve the health and survival of both the newborn and the mother (Britto et al., 2017)

Moi Teaching and Referral Hospital (MTRH) was chosen because it is the largest referral maternity hospital in Western Kenya serving a huge population and the provision of postnatal care (PNC) services is expected to be above the minimum standard of care and comparable to WHO PNC recommendation. However, this is not known and an assessment of immediate PNC services to establish its service delivery is called for.

1.4 Significance of the Study

The finding of this study is important in enhancing and disseminating midwifery education and practice. It will highlight postnatal care services provided to both the mother and the neonate and are important in carrying out the postnatal quality audit. Furthermore, the findings of this study is important in nursing research and policy development as it will provide baseline data that will identify gaps in provision of postnatal care (PNC). It will generate feasible solutions and identify strategies that can help prioritize care for policy review and amendment where necessary. These amendments if implemented will help improve provision of quality of PNC, improves pregnancy outcomes and contributes in reduction of maternal and neonatal morbidities and mortalities which is consistent with aims of Sustainable Development Goal 3.

1.5 Objectives

1.5.1 Broad objective

To assess postnatal care services provided to mothers and neonates upon discharge: Mother's Perspective at Moi Teaching and Referral Hospital.

1.5.2 Specific objectives

1. To describe the postnatal care services provided to mothers upon discharge: Mother's perspective at MTRH in relation to WHO Recommendation
2. To describe the postnatal care services provided to neonates upon discharge: Mother's perspective at MTRH in relation to WHO Recommendation
3. To assess knowledge and awareness of mothers on postnatal care services provided upon discharge: mother's perspective at MTRH

1.6 Research Questions

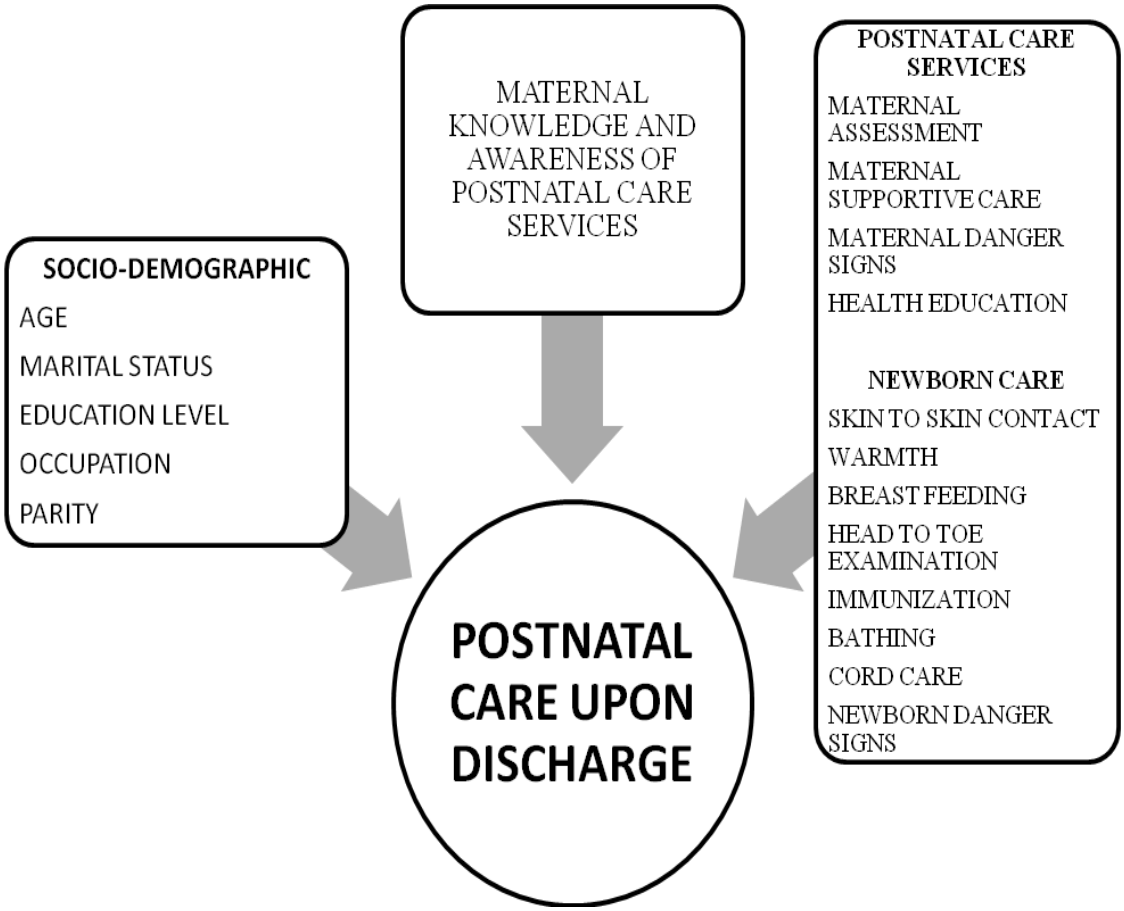
1. What postnatal care services are provided to Mothers upon discharge: mother's perspective at Moi Teaching and Referral Hospital (MTRH)?
2. What postnatal care services are provided to Neonates upon discharge: mother's perspective at Moi Teaching and Referral Hospital (MTRH)?
3. Are Mothers aware of postnatal care services they are supposed to receive before discharge: mother's perspective at Moi Teaching and Referral Hospital (MTRH)?

1.7 Limitations of the Study

The study assessed provision of postnatal care services in relation to WHO PNC recommendation and is based on reported care from mothers and not on actual observation or documented care. This may not necessarily indicate the PNC services provided to both mothers and neonates upon discharge. Recall bias could be present because of time variation in provision of postnatal care services and interview time which was on discharge and any service provided on the way out may have been missed.

1.8 Conceptual framework

The conceptual framework for this study was adopted and modified from WHO frameworks for assessing the institutional delivery of quality postnatal care services (WHO 1996). The elements of care are illustrated in the diagram below.



Modified WHO Postnatal Care Model, 1996

Postnatal care (PNC) can be meaningful if the services provided to both the mothers and neonates meet minimum international standards which recognize the fact that use of PNC services and its outcomes are as a result of both the quality of the provision and experience of care. The quality of the provision and experience of postnatal care in this model was reflected by maternal care services which include maternal assessment, maternal supportive care, immediate newborn care and health education.

Emotional support refers to a woman's access to her own social and emotional support as well as the support given by care providers. All women should have continual professional and option of social support in labour, delivery and immediate postnatal period.

The model emphasize that the ability of a facility to provide and perform its expected functions effectively is dependent on quality of human and physical resources. This involves ability of service providers to recognize and manage postnatal complication and emergencies with a functional referral system that is well known. Clients' data should be complete, comprehensive and used effectively to improve client management and service delivery. In reference to respect, dignity and equity, all women should be treated with the same standards of care regardless of education level, social class or age. This was assessed in the modified model using socio-demographic characteristic and obstetric history.

Experience of care is also an important determinant of quality. A woman's experience of care is influenced by availability of human and physical resources, her cognition, respect, dignity and equity of care she receives at the facility as well as the emotional support she receives during labour, delivery and after delivery. Women value interpersonal qualities such as respect, patience, courtesy, attentiveness, friendliness and straightforwardness. In this model, it was demonstrated using their knowledge and awareness about postnatal care services.

Postnatal care services are also influenced by cognition which means that the necessary information is conveyed effectively in a language that is understandable to a woman. It consists of communication between the client and the provider for the purpose of determination of management preference. The relationship between the two parties is characterized by privacy, confidentiality and informed consent.

CHAPTER TWO

LITERATURE REVIEW

This chapter presents a critical review of the literature on assessment of postnatal care services. Relevant studies in both high and low income countries were reviewed to broaden the knowledge base.

2.1 Postnatal Care Services

The postnatal period begins one hour after delivery of the placenta and continues until six weeks (42 days) after the birth of an infant (Mrisho et al., 2009). This period offer an important opportunity to assess the physical and psychosocial well-being of both the mother and the neonate (Norman, Sherburn, Osborne, & Galea, 2010)

According to WHO report, the period immediately after birth up to one week is the most vulnerable time for both the mother and neonate is (Blencowe et al., 2012). Care during this period is critical for the health and survival of both mother and neonate, and has the potential to help not only prevention of complications of impairment and disabilities but reduce maternal and neonatal morbidity and mortality (Renfrew et al., 2014).

It represents a major transition in a woman's life, such that even different cultures have special postnatal customs such as special diet, isolation, rest, and assistance for the mother (Lundberg & Thu, 2011). Postnatal care (PNC) services offered during this period are amongst the recommended interventions aimed at improving pregnancy outcomes for mothers and their neonates during the first one week of childbirth and preventing maternal and neonatal deaths worldwide and (Sondaal et al., 2016).

Postnatal care continues to be the ‘‘least emphasized’’ element in maternity services and its program interventions are among the weakest of all reproductive and child health worldwide (Koblinsky et al., 2016).

Majority of mothers and newborns in low- and middle-income countries do not receive optimal care during these periods (Black et al., 2013). PNC services, where available, often lack essential elements of care required for the optimum health of the mother and her newborn, and the quality of care for those who seek services is often poor with majority of mothers and neonates not receiving optimal care during these periods (Kung'u et al., 2018). This is despite the fact that PNC is known to reduce maternal and neonatal mortalities significantly (Workineh & Hailu, 2014).

Half of all postnatal maternal deaths occur during the first week of child birth and the majority of these occur during the first 24 hours. Each year, at least 1.16 million African neonates die in the first 28 days of life and 850,000 of these neonates do not live past the week they are born. In Africa, at least 125,000 women and 870,000 neonates die in the first week after birth with over 60% of maternal deaths occurring within the first 48 hours of child birth yet this is when coverage and programmes are at their lowest along the continuum of care. Despite the increased risk of mortality/morbidity and the benefits of PNC, most mothers and neonates do not receive postnatal care services from a skilled health care provider during the first few critical days after childbirth. Lack of care during this period may results in death or disability as well as missed opportunities to promote healthy behaviours, affecting mothers and neonates (Bhutta, Das, et al., 2014).

Presumably, women who deliver in a health facility receive PNC services but this is not necessarily the case according to demographic health surveys(Akhter, 2015). Hospital-based postnatal care (PNC) remains an over-looked aspect of maternity service delivery despite the increased risk for mortalities and morbidities for both the mothers and neonates. It is rarely viewed or planned as part of a continuum of planned and effective maternity care and least favorably reported by the women who use the service (Zaidi, 2012). This view is also supported by public hospital review report which showed that provision of hospital-based PNC is generally considered a lower priority compared with other episodes of maternity care (Bar-Zeev, 2013).

Demographic and Health Survey (DHS) data from 23 African countries shows that only 13% of all women in Sub-Saharan Africa receive PNC within two days, with some regions having as low as 2%(Mrisho et al., 2009). In Ghana, only 25.4% of mothers received PNC within 48 hours, with Maternal, Neonatal and Child Health (MNCH) services coverage among at 25.4% for PNC within 48 hours (Yeji et al., 2015). In Tanzania, there is still a total lack of PNC for the mothers within two days of delivery (Mrisho et al., 2009).

Kenya Demographic Health Survey (KDHS) report of 2008-09 showed that up to 58% of Kenyan women do not receive PNC within two days of delivery and that slightly more than half do not get it altogether. Correspondingly, the 2010-2014 KDHS report, indicate that slightly less than half (47%) of mothers and neonates receive postnatal care services yet mothers who deliver in the health facility do not received PNC services within the critical two days of delivery. Besides that, more than 2 in 5 women and a significant proportion (62%) of the neonates do not receive postnatal care/checkup at all in the first 2

days after birth (Fapohunda, Orobaton, Shoretire, & Lamiri, 2017). At facility level, substantial (46%) number of women in Kenya does not receive postnatal care at all after child birth (Gabrysch & Campbell, 2009).

Notably, the risks of mortality and morbidity are highest at birth and in the immediate post-natal period for both mother and neonates. This is compelling evidence to provide optimum and integrated maternal and neonatal care during the first few days after childbirth yet hospital-based postnatal care (PNC) remains an over-looked aspect of maternity service delivery (Jones, Chandra, Dazzan, & Howard, 2014)

Consensus guidance developed by members of the New Zealand College of Midwives and the Royal Australian and New Zealand College of Obstetricians and Gynaecologists highlighted that; all mothers and their neonates must receive active and ongoing assessment in the immediate postnatal period, regardless of the context around their birth. During this time, the mother and neonate should not be left alone. Care at this time supports the physiological processes of the mother's transition to motherhood and the neonate's transition to independent life. To assist these transitions there is ongoing observation of both the mother and neonate's wellbeing, promotion of skin-to-skin contact with support and oversight of the first breastfeed. Supporting these processes promotes the psychological attachment essential to the neonate's wellbeing within a safe and secure environment. Early skin-to-skin contact and breastfeeding should be facilitated and supervised as soon as possible after birth (Cook, Avery, & Frisvold, 2014). Therefore, attention to the postnatal period is critical for offering opportunities to deliver key preventive care services (immunization, infant feeding counseling and Family

Planning) and treatment of any ongoing morbidity for all mothers and their neonates (UNICEF., 2008).

Emphasis on careful evaluation of mothers and neonates by a health care provider before discharge presents an excellent opportunity to identify and address problems, counsel on essential care, and specifically provide the first follow-up appointment for the early visit. The first postnatal consultation also provides a valuable opportunity to assess and strengthen infant feeding, identify and address danger signs, reassure and counsel the mother on essential preventive care for herself and the neonate, and promote appropriate care seeking for subsequent problems (Richter et al., 2017). The findings by Charlotte et al. (Kerber et al., 2007) are in line with other studies which emphasized that the opportunity to provide health care during this critical period is often missed in developing countries such as Kenya.

2.2 Maternal Care Services

A good quality postnatal check should be a comprehensive package that covers a range of care services that include; physical examination of the woman to check for uterine involution; assessing breasts for signs of mastitis; assess blood loss, counseling on danger signs that might occur during the postnatal period; use of family planning; assess breast feeding and nutrition (C. E. Warren, 2015). In addition, assessment of the mother include; assessing the mother's overall sense of wellbeing and mobility, palpating uterine height, position and tone, monitoring temperature, pulse, respirations, blood pressure, urine output and consciousness level following all births (Ashwin & Anderson, 2017). Correspondingly, WHO recommends that all postnatal women should have regular

assessment of vaginal bleeding, uterine contraction, fundal height, temperature and heart rate (pulse) routinely during the first 24 hours starting from the first hour after child birth. Blood pressure should be measured shortly after birth. If normal, the second blood pressure measurement should be taken within six hours (Board, 2010). On the same note, study in Naivasha Kenya, affirms that majority (91%) of women who had vaginal delivery were examined within 24hours for vaginal bleeding (Njagi, 2017).

Breast feeding support includes information and demonstration on how to position and attach the neonate to the breast for breast feeding. Successful breastfeeding depends on the acquisition of basic skills, accurate information and practice, and is strongly influenced by the support provided to mothers following childbirth. Increasing breastfeeding exclusivity and duration is an acknowledged public health priority as shown in review of studies from developing countries that infants who are not breastfed are 6–10 times more likely to die in the first few months of life than infants who are breastfed (Victora et al., 2016). Health care practices therefore, have the potential to influence breastfeeding outcomes as correct positioning and attachment of the newborn to the breast is a crucial component of the successful establishment of breastfeeding (Douglas & Keogh, 2017).

Breastfeeding problems, especially with the healthy term neonate latching-on or feeding with a suboptimal latch, are common reasons for early breastfeeding termination when they result in inadequate breastfeeding, poor milk transfer, and sore nipples (Douglas & Keogh, 2017). Correct positioning and attachment technique reduces breastfeeding problems and enhances long-term breastfeeding. It is further supported that, *g*ood positioning and attachment of the baby during breastfeeding is crucial to encourage oxytocin and

prolactin release which facilitates milk production and release and helps prevent sore nipples, engorgement and mastitis (Meek, 2017). Besides that, the baby's positioning and attachment to the breast during breastfeeding are fundamental toward the occurrence of different sorts of nipple trauma (Meek, 2017). As an important intervention, it is emphasized that the staff of healthcare facility should ensure education of the mothers regarding position and attachment of infant to the breast before discharge from the healthcare facility. Effective breastfeeding is highlighted as a function of the proper positioning of mother and baby and attachment of neonate to the mother's breast. It points out that breast feeding problems experienced by mothers after childbirth are significantly associated with positioning and attachment of the neonate to the breast (Jennifer, 2013).

An observational, cross-sectional study conducted at in two hospitals in Benghazi, Libya, from November 2009 to February 2010 revealed that poor position (22.2%) and poor attachment (33.3%) were high among mothers aged less than 20 years as compared to other age groups (7.6–15.8% and 19.7– 23.4%, respectively). Mothers with two or more parity had low percentages of poor position (8.9–12.5%) and attachment (0–20.9%) observed. Although there was poorer positioning among nonworking (14.2%) than working mothers (10.3%), poor attachment was more in working (24.1%) than nonworking (21.6%) mothers. However, there was no statistically significant association between the mother's age and poor position (P = 0.238) and attachment (P = 0.662) of neonates to the breast during feeding. A statistically significant association was found between parity and position (P = 0.028) and attachment (P = 0.002). However, there was no significant association between maternal occupation and position (P = 0.238) and attachment (P = 0.903). Breast diseases such as cracked nipples, mastitis, and sore

nipples were more associated with poor position (57.1%) and attachment (71.4%). The findings were highly significant at P = 0.002 for position and P = 0.006 for attachment. Breast problems such as cracked nipples, mastitis, and sore nipples were significantly associated with poor position (57.1%) and attachment (71.4%) which is essential for effective breast feeding (Geda, Mesfin, & Tiruye, 2017). A study done by (KAMAU, 2014) looking at 18 different facilities of different care levels in Nairobi County showed that most (73%) of mothers were provided support on latching. High proportion (79%) of mothers from level 3 facilities endorsed the proposition with lower (63%) support reported in level 4 facilities, and least (57%) in level 6 facilities (KAMAU, 2014).

(Goyal, Banginwar, Ziyo, & Toweir, 2011) highlighted that women whose infants were incorrectly positioned were 1.94 times at risk (95% CI 1006–3749) of developing nipple trauma compared with women whose infants were correctly positioned.

In regard to Perineal tear/episiotomy, the anal sphincter is susceptible to trauma during a vaginal delivery. Third-degree lacerations involve the vaginal mucosa, perineal skin, and extend into the capsule and muscle of the anal sphincter and fourth-degree laceration extends through the anal sphincter into the rectal mucosa. These lacerations occur in 2.2–19% of vaginal deliveries in the United States (Landy et al., 2011),(Angioli, Gómez-Marín, Cantuaria, & O'Sullivan, 2000). Analysis of randomized control trial done in San Jones, Califonia, found that 93.75% women who received antibiotics had a significant decrease in purulent discharge from the perineal wound (Buppasiri, Lumbiganon, Thinkhamrop, & Thinkhamrop, 2014). The use of antibiotics among women with a vaginal delivery and a third or fourth degree perineal tear is recommended by WHO for

prevention of wound complications (Cornell, De Souza, Tacey, Long, & Veerasingham, 2016).

Monitoring of vital signs (blood pressure, pulse rate, respiration rate) is a crucial aspect of patient care in hospital because it indicates patient's clinical condition, and inform required interventions. Few alterations in vital signs occur after child birth. However, pulse and blood pressure should be checked at least once every hour, and temperature at least once in the first six hours. Mother and baby should be assessed within one hour of birth; and both monitored at 2, 3 and 4 hours after delivery and then every 4 hours until discharge from maternity (English, Kenny, & McCarthy, 2015). The Kenyan study done in Naivasha indicated that more than half (58.3%) of postnatal mothers had their temperature and majority (95.8%) had blood pressure examined and recorded at least once during their stay in hospital. A significant proportion (34.2%) of them never had their pulse rate monitoring recorded at all in the patient medical record. (Kairithia *et al*., 2015).

Comparatively, a study done in Malawi on postnatal services provided by health care providers in the health facilities showed that postnatal mothers were observed for 48 hours after delivery with monitoring of vital signs done at least once a day. Audit of the Malawian government facilities indicated that 63% of the midwives discharged mothers without monitoring vital signs for both the mothers and their neonate (Brenner et al., 2015).

Danger signs are warning signs that women encounter during pregnancy, child birth and postpartum. It cannot be assumed that successful delivery and healthy-looking mother and newborn in the immediate postnatal period will mean that they will continue in a good state of health. Complications may occur due to physiological adjustments in the mother and the rapid adaptations the neonate must make to adjust to life in the external environment need to be watched carefully in the immediate and later postnatal period. Early recognition of danger signs is an important indicator to seek healthcare promptly (Hailu, Gebremariam, & Alemseged, 2010).

A simple package of interventions, such as providing advice on postnatal danger signs, advice on self-care, and iron folate supplementation, as well as early detection and referral of postnatal maternal complications, are effective in reducing maternal mortality in developing countries (Organization & Unicef, 2015). This recommendation is also echoed by (Organization, 2014) that care for postnatal mothers include monitoring and referral for complications such as excessive bleeding, pain, and infection; counseling on breast care and breastfeeding; and advice on nutrition during breastfeeding, newborn care practices, and family planning.

Raising awareness on danger signs improve early detection of problems and reduces the delay in decision to seek obstetric care. Knowledge of danger signs of obstetric complications during pregnancy, labour and postnatal period is the first essential step for appropriate and timely referral (Bogale & Markos, 2015). WHO recommend that all women should be given information about the physiological process of recovery after birth with advice to report any health concerns to a health care professional, in particular:

Signs and symptoms of PPH: sudden and profuse blood loss or persistent increased blood loss, faintness, dizziness, palpitations/tachycardia. Signs and symptoms of pre-eclampsia/eclampsia: headaches accompanied by one or more of the symptoms of visual disturbances, nausea, vomiting, epigastric or hypochondrial pain, feeling faint, convulsions (in the first few days after birth). Signs and symptoms of infection*:* fever, shivering, abdominal pain and/or offensive vaginal loss. Signs and symptoms of thromboembolism:unilateral calf pain, redness or swelling of calves, shortness of breath or chest pain (Organization, 2014).

Evidence indicate that the dangers signs that should be identified in postnatal period include; excessive bleeding, headaches, dizziness, swollen hands, and feet, Foul-smelling vaginal discharge, problems urinating or leaking of urine/faeces, increased pain or infection in the perineum, swollen, red or tender breasts or nipples (Bililign & Mulatu, 2017).

The Kenyan study in Nairobi, indicate that, fever scored the highest (88%) followed by vaginal bleeding (86%) as danger signs mentioned to postnatal mothers (KAMAU, 2014).

A community-based study done in Ethiopia showed that vaginal bleeding (76.5%), Severe headache (39.8%) High fever (28.6%) and Foul-smelling vaginal discharge (23.5%) were the most frequently identified obstetric danger signs while Convulsion (10.2%) and Blurred vision (5.6%) were the least identified danger sign by respondents during postnatal period (Bogale & Markos, 2015).

On health Education, the study done in Nairobi noted that mothers were advised on the importance of Exclusive Breast Feeding (EBF) within the first 6 months. Information on personal hygiene scored the highest (93%) followed by maternal nutrition (83%) and family planning (62%). On the lower side, advices to the mother on perineal care was least mentioned (29%) (KAMAU, 2014).

2.3 Neonatal Care Services

Two-thirds of newborn deaths can be prevented if mothers and their neonates receive known, effective interventions. However, the current coverage of care in the first 24 hours after child birth in most developing countries is low. Studies have shown that newborn-care interventions can prevent 30% to 60% of newborn deaths in high-mortality developing country settings and also improve coverage of key newborn-care practices, such as early initiation of breastfeeding, exclusive breastfeeding, skin-to-skin contact, delayed bathing and attention to hygiene, such as washing hands with soap and, water and clean umbilical cord care (Organization, 2016). Moreover, it has been estimated that if routine postnatal and curative care in the postnatal period reached 90% of neonates and their mothers, 10-27% of newborn deaths could be averted and high PNC coverage could save up to 310,000 newborn lives each year in SSA (de Graft-Johnson et al.).

Consensus guidance developed by members of the New Zealand College of Midwives and the Royal Australian and New Zealand College of Obstetricians and Gynaecologists also highlighted that; all mothers and their neonates must receive active and ongoing assessment in the immediate postnatal period, regardless of the context around their birth. Care during this time supports the physiological processes and the neonate’s transition to

independent life. To assist these transitions there is ongoing observation of both the mother and neonate's wellbeing, promotion of skin-to-skin contact with support and oversight of the first breastfeed. Supporting these processes promotes the psychological attachment essential to the neonate's wellbeing within a safe and secure environment. Early skin-to-skin contact and breastfeeding should be facilitated and supervised as soon as possible after birth (LI, 2012). (Feldman-Winter, 2013) emphasize the importance of "skin-to-skin" contact immediately following birth for at least an hour and breastfeeding during this period. Therefore, attention to the postnatal period is critical for offering opportunities to deliver key preventive care services - immunization, infant feeding counseling and family planning, and treatment of any ongoing morbidity for all mothers and their neonates.

Facility survey (703 facilities) designed and implemented by the Maternal and Child Health Integrated Program (MCHIP) in Kenya in 2010 in collaboration with MCHIP colleagues in the United States indicated that drying and wrapping—a simple step that can help prevent the major causes of newborn death (hypothermia and sepsis) was practiced in only 60% of deliveries (Kagema et al., 2011). A similar survey done in Tanzania on newborn care indicated that drying and wrapping the infant immediately after birth was high (91% and 93%). Placing the baby skin-to-skin was low at regional hospitals (43%) and even lower at health centers and dispensaries (37%). Initiation of breastfeeding within first hour of birth was similarly low (40%) in regional hospitals and (55%) in health centers and dispensaries (Shamba et al., 2014).

WHO strongly recommend that neonates in health facilities should not be sent home in the crucial first 24 hours of lifeand the care provided should include immediate and

exclusive breastfeeding, infant warming, hand washing, hygienic care of umbilical cord and skin care, and timely identification of danger signs with referral and treatment. Hygienic umbilical cord and skin care should be promoted and the neonate should be assessed for signs of serious health problems, and advice families to seek prompt medical care if signs of newborn illness which include feeding problems, reduced activity, difficult breathing, fever, fits or convulsions, or feels cold are identified. Newborns and their mothers should be examined for danger signs and families should be counseled on identification of these danger signs and the need for prompt care seeking if one or more of them are present (Syed, Khadka, Khan, & Wall, 2008).

Newborns without complications should be kept in skin-to-skin contact with their mothers during the first hour after birth to prevent hypothermia and for breast feeding initiation which should be promoted and supported. After the first hour of life, newborns should receive eye care, vitamin K, birth dose of Oral polio vaccine (OPV) and Hepatitis B vaccine. All infants should receive their first dose of hepatitis B vaccine as soon as possible after birth, preferably within 24 hours. This is crucial in areas of high hepatitis B endemicity, and also important in intermediate and low endemicity areas. OPV, including a birth dose (known as zero dose because it does not count towards the primary series), is recommended in all polio-endemic countries and in countries at high risk for importation and subsequent spread. The birth dose should be administered at birth, or as soon as possible after birth and preferably before discharge from the health facility.

In settings where tuberculosis is highly endemic or in settings where there is high risk of exposure to tuberculosis a single dose of Bacille Calmette-Guerin (BCG) vaccine should be given to all infants (Hanekom, 2016).

Care to the neonate includes; physical assessment, information to the mother on essential newborn care, danger signs and where to seek care; and immunizations should be provided (Organization, 2014). Every newborn requires a brief physical examination within the first few minutes after birth and then a full and detailed assessment within the next 48 hours and prior to discharge from hospital. The newborn assessment provides an opportunity to: identify the newborn that is unwell and requires urgent treatment, diagnose congenital malformations and arrange appropriate management, recognize common neonatal problems and give advice about management, review any concerns the family have about the newborn, discuss matters such as newborn care, feeding, Vitamin K, Hepatitis B and BCG vaccines and any other matters relevant to the newborn (MacDonald & Seshia, 2015).

Breastfeeding is the goal standard for infant feeding and is beneficial to the health of both mother and infant with numerous studies from both developed and developing countries providing strong evidence that breastfeeding decreases the incidence and/or severity of a wide range of diseases in infants and mothers (Victora et al., 2016).

Recently published research and systematic reviews reinforced the conclusion that breastfeeding and human milk are the reference normative standards for infant feeding and nutrition (Wambach & Riordan, 2016). Evidence shows that exclusive breastfeeding reduces the risks of mortality and morbidity in the first month of life and improves post-neonatal outcomes. It also encourages improved birth spacing by delaying the return to fertility (Zalla, 2015).

The Kenyan survey of 18 facilities in Nairobi County indicated that most (70%) mothers initiated breastfeeding within the recommended 1 hour after delivery. Within level three, Private facilities had the highest proportion (74 %) of mothers initiating breastfeeding within the recommended 1 hour followed by NGO/FBO (70%). Similarly, 53 % of the respondents in public facilities initiated breast-feeding within 1 hour post-delivery. Similar responses (63.5% and 63.6%) were observed in level 4 institutions (Faith-Based Organization (FBO), Non-Governmental Organization (NGO) and public and facilities) which initiated breast-feeding within 1 hour respectively. In public level six facility a slightly lower proportion (57%) of mothers initiated breastfeeding within 1 hour (KAMAU, 2014).

A randomized controlled trial done in South Nepal indicated that there is a strong relationship with mortality risk increasing with later initiation time for breastfeeding. Initiation after 24 hours was associated with a 41% increase in mortality risk and 41.3% of neonatal deaths after 48 hours which might be prevented if breast-feeding was initiated within 1 hour of birth (Mullany et al., 2008).

A study in rural Ghana emphasized that promotion of early initiation of breastfeeding has the potential to make a major contribution to the achievement of the child survival goal. Significantly, 16% of neonatal deaths could be saved if all infants were breastfed from day 1 and 22% if breastfeeding started within the first hour (Organization, 2013). Furthermore, approximately 19.1% of all neonatal deaths may be avoided with universal initiation of breast-feeding within the first hour of life (Tilahun, Degu, Azale, & Tigabu, 2016).

A study in India showed that Majority (61.6%) of the newborn babies establish breastfeeding within half an hour of birth. The study emphasized that the staff of healthcare facilities should ensure education and demonstration to the mothers regarding position and attachment of infant to the breast before discharge from the healthcare facility(A. Dongre, Deshmukh, Rawool, & Garg, 2010).

Immunization is a technique used to induce immune resistance to a specific disease by exposing the individual to an antigen in order to raise antibodies to that antigen. Therefore, the goal of immunization is to protect individuals from vaccine preventable diseases and prepares the human's immune system to be able to ward off specific diseases in the future (Delany, Rappuoli, & De Gregorio, 2014).

After the first hour of life, newborns should receive eye care, vitamin K, and birth dose of either with an inactivated injectable vaccine (IPV) or with a live oral vaccine (OPV) and Hepatitis B vaccine (Cines & IMMUNIZATIO, 2014). The USAID supported Maternal and Child Health Integrated Program (MCHIP), operational in India from 2009 – 2014 provided technical support to the Universal Immunization Program (UIP) at the National level and in the states of Jharkhand and Uttar Pradesh. It advocated that newborn vaccination is identified as a critical parameter for evaluating the overall performance of immunization programs with guidelines clearly advocating for administration of BCG, OPV zero dose and Hepatitis B birth dose to newborns (Vashishtha et al., 2014). Neonates have low levels of vitamin K (phytonadione) due to the limited stores at birth and insufficient intake. Furthermore, intestines of a neonate are still sterile and do not synthesize vitamin K. This deficiency intensifies in the days after birth and severity can develop quickly in breast fed infants resulting in the appearance of classic vitamin K

Deficiency Bleeding (VKDB) during the first week of life or late VKDB during the first two months of life. Early VKDB presents within 24 hours of birth while classical VKDB occurs between 24 hours and 7 days of life and is associated with delayed or insufficient feeding. The clinical presentation is severe, with a mortality rate of 20% and intracranial haemorrhage occurring in 50%. In fully breast-fed infants who did not receive vitamin K at birth, the incidence is between 1/15,000 and 1/20,000. Both forms of the disease can be severe, causing brain damage and death. Vitamin K prophylaxis at birth effectively prevents VKDB, formerly known as "haemorrhagic disease of the newborn" (Newborn Services Clinical Guideline 2013; It is administered to the newborn in order to facilitate normal clotting until the newborn's intestinal tract produces the bacteria necessary to synthesize Vitamin K. Vitamin K should be given as a single intramuscular dose to all newborns within 6 hours of birth (Shearer, 2009) .Cochrane review of randomized controlled trials concluded that single dose (1.0 mg) of intramuscular vitamin K or oral (1.0 mg) vitamin K prophylaxis after birth is effective in the prevention of classic HDN and improves biochemical indices of coagulation status at 1-7 days (Puckett & Offringa2000). A report by CDC on a survey done at Tennessee hospital between the years 2007 and 2012 found that 96.6% of infants received Vitamin K injections at birth while, only 72% of infants born in local freestanding birth centers received Vitamin K (Class & Dekker). A Slovenian and Croatian study of 14 and 32 birth hospitals revealed that comparatively, 0 % Slovenian and 95.7 % Croatian maternity hospitals give vitamin K to all neonates. Similarly, 40 % birth hospitals in Slovenia and 43.5 % birth hospitals in Croatia, give vitamin K in the first hour after birth. 40 % birth hospitals in Slovenia and 52.2 % birth hospitals in Croatia give vitamin K from one to three hours after birth,

10 % birth hospital in Slovenia and 4.3 % in Croatia give vitamin K from three to 24 hours after birth (Došler, Petročnik, Mivšek, Zakšek, & Skubic, 2015).

According to research OPV administered at birth or as soon as possible after birth can significantly improve the sero-conversion rates of subsequent doses and induce mucosal protection before enteric pathogens can interfere with the immune response (Church, PRENDERGAST, Parker, Kirkpatrick, & Grassly, 2018). A randomized control trial in Guinea-Bissau indicated that neonate who receive Oral Polio (OPV) within first days of life appear to be associated with strongest benefits (Jensen et al., 2014).

Hepatitis B vaccine protects against the hepatitis B virus, which causes liver damage. According to Australian National Immunization Program (2016), Hepatitis B vaccine should be given to all infants as soon as practicable after birth. The greatest benefit is if given within 24 hours, and must be given within 7 days. One dose of Hepatitis B vaccine within 24 hours of birth (birth dose) helps prevent perinatal transmission of infection, which accounts for more than one third of chronic infections in areas of low endemicity. A delay in the birth dose results in an increased risk of Hepatitis B infection (Wen et al., 2013).

It has been shown that BCG vaccination can reduce neonatal mortality by 48% in low birth weight (LBW) children when administered at birth (Netea & van Crevel, 2014). However, most infant deaths occur during the neonatal period, particularly in the first week of life and any delays in BCG vaccination may have major consequences because children do not benefit from BCG when their mortality risk is highest. Hence, it is

important to identify obstacles to early BCG vaccination, as this will help target interventions to lower the age at vaccination (Thysen et al., 2014).

A randomized controlled trial done in Guinea-Bissau shows some delay in BCG vaccination with less than half of the children being BCG vaccinated by 1 month and only 11% being BCG vaccinated by 1 week of age despite recommended at birth in low-income countries. Hospital delivery was associated with increased likelihood of being BCG vaccinated (Aaby et al., 2011). Similarly, a study done in South Africa found that birth at a health facility reduced the risk of being unvaccinated by 47% (Burnett et al., 2012). Higher BCG vaccination coverage was also seen in Ethiopia for neonates born in a health facility (Legesse & Dechasa, 2015).

All newborns should receive a prophylactic agent against ophthalmia neonatorum, from gonorrhea or chlamydia. It is recommended that each eye be treated with a 1-cm ribbon of 0.5% erythromycin ointment. The administration may be delayed for up to two hours after birth to enable parent–infant contact and initial stabilization of the baby (Basavanthappa, 2015).

The study done in 14 Slovenian and 32 Croatian birth hospitals highlighted that neonatal eye prophylaxis is a mandatory intervention for all newborns in Slovenia. Prophylaxis against chlamydial and gonococcal eye infections is applied to all newborns in 100 % Slovenian and Croatian 69.9 % maternity hospitals. 21.7 % Croatian maternity hospitals, do not apply prophylaxis against chlamydial and gonococcal eye infections to any newborn. Prophylaxis against chlamydial and gonococcal infections of the eye during the first hour after birth is applied by 40 % Slovenian and 60 % Croatian birth hospitals,

while the prophylaxis of the 6 birth hospitals in Slovenia (60 %) and 40 % birth hospitals in Croatia is applied from one to three hours after birth (Došler et al., 2015).

To prevent hypothermia, WHO recommends that bathing a newborn should be delayed up to 24 hours after birth and if this is not possible due to cultural reasons, bathing should be delayed for at least six hours. Appropriate clothing of the baby for ambient temperature is recommended. This means one to two layers of clothes more than adults, and use of hats/caps (WHO 2014). Similarly, National Perinatal Association support that, it is necessary to delay/postpone bathing of a newborn until thermal, respiratory and cardiovascular stability is established (Duties). The initial bath in full term infants can be given once the baby's temperature has stabilized and the baby is hemodynamically stable (Sarkar, Basu, Agrawal, & Gupta, 2010). A study in Pemba, showed that delaying bathing practice was consistently performed among hospital deliveries by discouraging immediate bathing. The delay was not more than 24 hours as more than 70% of the neonates were given bath within 24 hours after delivery (Dhingra et al., 2014). Contrary findings were found in an experimental study done in the USA which concluded that a flexible bathing time is recommended according to the characteristics and stability of the newborn and to family desires because the timing of the bath, whether 1 hour of birth compared with 4 to 6 hours after birth, did not significantly impact infant temperature (Behring, Vezeau, & Fink, 2003). Similarly, a randomized controlled trial done in Iran from September –December 2005 did not demonstrate any negative effect of early bathing on the early adaptation of newborns and conclude that healthy full term newborns with rectal temperature over 36.5 °C can be bathed within 1-2 h of birth without any risk of hypothermia (S. Warren, 2018).

Care of the umbilical cord has always been an integral part of essential newborn care.

Cord care practices may directly contribute to infections in the newborn which accounts for the 26 % of global under-five deaths (Liu et al., 2015). The prevalence of cord infection in newborns ranges from 3-5.5% in most developing countries (Magadla, 2016). Good cord care practice is an important intervention to save newborn lives. Cochrane reviews conducted in the developed countries specifically, USA (4); Norway, Canada (2); Israel, UK (1 in each country) showed that few interventions for cord care have been evaluated by randomized controlled trials with no studies from developing countries or studies of sufficient size to examine outcomes in terms of serious neonatal infection which affect neonatal morbidity or mortality (Opara, Jaja, & Okari, 2012). A study done by (Karumbi, Mulaku, Aluvaala, English, & Opiyo, 2013) states that though evidence and experience suggests that healthcare providers vary in their care practice where others use alcohol, methylated spirit or povidone iodine to clean the cord, use of chlorhexidine 4% was found to be more effective if offered within the first 24 hours of birth even with efficacy of a single use. A randomized control trial has also shown benefits from chlorehidine topical application to the baby's cord with no adverse effects (El Arifeen et al., 2012). Similarly, a study done in Bangladesh on effects of cord cleansing with chlorhexidine found that there was lower neonatal mortality in the single cleansing group 22.5/1000 live births than in the dry cord care group 28.3/1000 live births (Saleem, 2013).Despite that, a study done in rural Uttah showed that only a small proportion of mothers (7%) reported that they got information about cord care (Baquil et al. 2007).

Health-seeking behavior of mothers for neonatal care relies greatly on their knowledge about neonatal danger sign. Early detection of neonatal illness is an important step

towards improving newborn survival (Nigatu, Worku, & Dadi, 2015). A multicenter study by the young Infants clinical signs study group indicates that, the seven clinical signs that predicted severity of illness in the first week of life were: history of difficulty feeding, movement only when stimulated, temperature below 35.5^0C, temperature above 37.5^0C, respiratory rate over 60 breaths per minute, severe chest in drawings and history of convulsions. Assessment of these signs will result in a high overall sensitivity and specificity for predicting the need for hospitalization of a newborn in the first week of life [Lancet, 2008]. In a study done in Ethiopia, neonatal danger signs pinpointed by mothers were high temperature (39.9%), vomiting (34%) and inability to feed (17.2%) (Nigatu et al., 2015)A survey done in Uganda indicated that fever and difficulty feeding was identified by approximately few (20%) mothers. The least known danger signs were convulsions, movement only when stimulated and hypothermia, as stated by less than 5% of the postnatal mothers (Abu-Shaheen et al., 2019). Elsewhere, a study done in Indian by (Sandberg, Pettersson, Asp, Kabakyenga, & Agardh, 2014) found difficulty feeding (22.2%), convulsions (9.7%) and hypothermia (2.5%) and fever (75%) mentioned by as neonatal danger sign to be watched postnatally. A small proportion (40.3%, 22.2% and 13.9%) of mothers identified difficulty in breathing, poor sucking and lethargy/unconsciousness as newborn danger signs respectively. Only 9.7% and 2.8% identified convulsion and hypothermia as newborn danger signs. The study in Nairobi, Kenya indicated that some of the neonatal danger signs mentioned by postnatal mothers include; baby refusing to feed which scored the highest (86%), followed by low body temperature (85%) and difficult breathing (71%). On the lower side, lethargy scored 34% and convulsion got the least (20%) (KAMAU 2014).

2.4 Maternal Knowledge and Awareness of Postnatal Care Services

Knowledge on postnatal care was assessed by asking the respondents whether they expected any other services required apart from the services asked in the questionnaire.

A qualitative study exploring what women want from PNC found the major areas of concern to include information, support, organisation of services, attitudes of the health team, contact with other mothers, and practical assistance, and concluded that listening to the women is an essential element in the provision of flexible and responsive PNC that meets the felt needs of women and families (Sandberg et al., 2014).

Another qualitative study done in Australia to explore women's views, expectation and experiences indicated that mothers were very concerned about the safety of their new babies, and were aware that they had responsibility for another life. This contributed to a perceived need for constant professional support.

Furthermore, Women's expectations of postnatal care and what they perceived they needed in relation to transition to motherhood and parenting were; breastfeeding support and education; professional support while acquiring new skills; and the opportunity to rest and be 'cared for' during this transitional time. Women felt there was a lack of professional support at times while they were in hospital, commenting that staffs were too busy or unavailable to provide the care that they expected. Additionally, Women felt that breastfeeding was a skill that ideally needed to be learnt before hospital discharge as most of them struggle with that at home. Hence, skill acquisition for baby care; consistent advice from health professionals; continuity of care; lack of staff time; and partner involvement during the postnatal hospital stay was emphasized (Forster et al., 2008).

Similarly, a Swedish study elaborated that women held expectations regarding self-care and infant care with a strong emphasis on breast feeding. They also anticipated that they would need emotional support, availability and understanding from a nurse/midwife. The "wish to have access to staff on the maternity ward" received the highest percentage (99.3%). Other expectations graded as important were "to stay as long as I want to" (94.9 %), to have a post-delivery talk (95%), to have support during breastfeeding (90.6%), to have the family staying on the maternity ward (86.3%), to have a room for oneself (84.9%), and to have information about breastfeeding (85.4.8%), infant behaviour (82%) and childcare (82.7%). The opportunity to have an "early discharge" was considered important by 61.2 % of the women; to have a "TV in the room" during their stay on the maternity ward was considered important by only 28.3%. Hence, access to caring staff, information and support were mentioned as important (Correa, Feliciano, Pedrosa, & Souza, 2014).This supported was also echoed by (Hanson, VandeVusse, Roberts, & Forristal, 2009) that women's expectation of PNC point out the strong need for Physical, emotional and practical support. A study in Kenya showed that 33% of postnatal mothers had poor knowledge on postnatal care (Kohler et al., 2014).

CHAPTER THREE

METHODOLOGY

This chapter presents the study design, study area and study population. In details, it describes sampling techniques, data collection and analysis, inclusion and exclusion criteria and ethical considerations

3.1 Study Area

The study was done at Riley Mother and Baby Hospital (RMBH) of Moi Teaching and Referral Hospital (MTRH). MTRH is the second largest referral hospi]tal in Kenya after Kenyatta National Hospital (KNH). It is located in Eldoret town in Rift Valley, UasinGishu County, Kenya. The Hospital has an 800 bed capacity with a catchment population of approximately 16 million mainly from Western Kenya, Part of Eastern Uganda and Southern Sudan. RMBH has a bed capacity of 120 beds and performs an average of 30 normal deliveries daily and a total of 7,000 deliveries annually (MTRH Report, 2012/13). RMBH specializes in provision of Reproductive care services to mothers in the antenatal period by providing services on week-days only from 8:00am-5:00p. Intra-partum and postnatal care is provided on a twenty-four hour basis. Staff at RMBH consists of; 2-Midwives, 31-General Nurses, and 15-Consultant Obstetricians working alongside 16-Gynecology registrars.

3.2 Study Population

Population is defined as the entire group of individuals, events, or subjects having common observable characteristics (OM Mugenda, 2003)

The target population was all postnatal mothers in RMBH postnatal wards, with the study population being all the postnatal mothers who delivered in RMBH via spontaneous vertex delivery (SVD) without any complication.

3.3 Study Design

The research design is a plan, structure and strategy of investigation to obtain answers to research questions or problems (D. Polit, Beck, & Hungler, 2006).

The study used a cross sectional descriptive study which is concerned with describing a population with respect to important variables. Mixed method approach was used involving both quantitative and qualitative methods. Quantitative approach measured the postnatal care services provided on discharge while qualitative measured attributes of postnatal care provided upon discharge and data was captured at one particular point in time.

The study describes the postnatal care services provided to postnatal mothers and neonates upon discharge compared to WHO recommendation and maternal knowledge and awareness of postnatal care services provided during the same period.

3.4 Sample size

Sampling is the process of selecting a number of individuals for the study in such a way that individuals selected represent the large group from which they were selected from (O Mugenda).

Using Fischer's formula the sample size for this study would be:

$$n = \frac{z_{\alpha}^{2} p(1-p)}{\delta^{2}}$$

Where Z value, the desired confidence level = 1.96; P, the proportion of mothers receiving PNC in Kenya **(**The proportion of women receiving adequate postnatal care in Kenya is unknown hence blinding has been used to estimate the prevalence in order to ensure maximum sample is attained. Hence 0.5 will be adopted); q is 1-p, which is 0.5, and e is the alpha value set at 0.05 for the acceptable margin of error at 95% confidence interval in this particular study.

The sample size would therefore be calculated to be;

= (1.96*1.96)0.5*0.5/0.05*0.05

= 0.9604/0.0025

= 384.16

=384 postnatal mothers.

In a day, there are 30 deliveries. Therefore, in one month (Data collection period)

= (30*30)

= 900

The projected population of postnatal mothers receiving care from RMBH from the catchment area is estimated at less than 10,000. There are also those who deliver at home, and other facilities, with the monthly deliveries in RMBH at 900, the sample size will be adjusted (Cochran, 1963) using finite population correction formulae as shown below.

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

$$n_o = \frac{n}{1+\frac{n}{N}}$$

Where;

N= is the total number of deliveries in MTRH in a month=900

n_0=384 (Sample derived from fisher et al. formula)

n = 384/1+(384-1/900)

n = 384/1.0423

n = 270

The actual sample in the current study will be 270 postnatal mothers.

3.5 Sampling Technique

Systematic sampling method was used in this study. This probabilistic sampling method become the most appropriate for the study since arrival of the clients to the facility was assumed purely random and a logical sequence of flow of clients to and from the facility was ascertained using their inpatient numbers. These numbers were ordered into a sampling frame as they become available.

Hospital data showed an average of 30 deliveries were conducted daily. Since the sample size required was 270, the daily target sample was 270 ÷30= 9. The k^{th} interval was arrived at by dividing 30 daily deliveries by 9 (270 participant divided by 30 data collection days) daily target and every 3^{rd} (30 daily deliveries' /9 targets daily=3.3) mother was sampled from the sampling frame (all mothers registered in maternity register). Hence, every third mother was interviewed. The sampling start point in the current study was chosen at random on the morning of each day of data collection between 1 and k, and the interval maintained throughout each day. However, in case one

decline consent or not meeting the study inclusion criteria, the immediate next mother would be sampled. This would continue until the desired sample size is attained. Data was collected daily as well as checking for completeness.

3.6 Eligibility Criteria

Eligibility criteria refer to "requirements that must be met for an individual to be included in the study (BURNS, GROVE, & Grove 2001).

3.6.1 Inclusion Criterion

- Must have delivered at Riley Mother and Baby Hospital (RMBH)
- Must have delivered via spontaneous vertex delivery (SVD) without any complication
- Must provide informed consent

3.6.2 Exclusion Criterion

Delivery in a referral facility is characterized by low rate of complication (less than 10%). Therefore to ensure homogeneity of sampled participants and the need for standardization of study design, exclusion of complicated cases was necessary. Caesarean section is surgical procedure which is different from SVD hence need for exclusion because results cannot be comparable to those with normal vaginal delivery. Based on the above, the following were excluded;

- Those who are unable to provide information due to altered mental status
- Those who are too weak to provide information

3.7 Pilot Study

Pre-testing is a trial run to determine, in so far as is possible, whether the instrument is clearly worded and free from major biases and whether it solicits the type of information required (Doody & Doody, 2015).

A pilot study was carried out by the Researcher and the Research Assistants at Webuye Sub-County Hospital's maternity unit where 27 mothers were sampled (10% of the study sample) and interviewed. The facility has a near similar catchment area and population as RMBH. This was done to pre-test the questionnaires to assess its effectiveness in terms of adequacy and appropriateness and to clarify unclear or culturally insensitive questions before the main study collection procedure. It also tested the techniques used for data collection and estimated time required for each interview and the appropriateness of the wording according to the interviewees' educational and socio-cultural backgrounds. The roles of Researcher and the Assistant's in the preparation and data collection exercise were also refined. These exercises facilitated the refinement of the instrument. Minor Changes were modifications before the main study. Split half technique was used whereby after data entry, the question items were divided into odd and even number items. Analysis was done using Pearson Product Moment Correlation (PPMC) which states that any co-efficiency of ≥ 0.5 is considered reliable and for my study, the co-efficiency was 0.6.

3.8 Data Collection Tools and Procedures

Data collection is the process by which information relevant to the characteristics of the population is being studied, is gathered and obtained in a systematic manner. Data collection tools are devices used to collect data (BURNS et al., 2001).

The researcher and two research assistants were involved in data collection. Research assistants were taken through all aspects related to Objectives, study design and overall purpose of the study with adequate mentorship on using the tools and its contents in depth before data collection exercise. The researcher was also involved throughout the duration of data collection period and provided guidance and supervision.

Data was collected using a semi-structured interviewer administered questionnaire to obtain information from mothers at the postnatal unit. Sampled postnatal mothers were approached by the researcher physically (face to face) and interviewed as the researcher/assistants fill the questionnaire during the interview process. The nature and purpose of the study was explained to the respondents as well as their rights. The explanation was given to the respondents that the participation in the research study was voluntary, and respondents had the right to withdraw from the study at any time or stage of the study. The respondents were interviewed on a one to one basis and the process took approximately 20 minutes. During the interview, questions were explained in a simplified way to clients' level of understanding. After the interview the researcher thanked the respondents. This was repeated until 270 interviews were completed.

3.9 Data Validity and Reliability

3.9.1 Validity

Validity is defined as the degree to which an instrument measures what it is designed to measure (Polit & Beck, 2010) In this study, content validity was applied by seeking expert opinion on the tool and their comments incorporated in the data collection tool.

3.9.2 Reliability

Reliability refers to the accuracy or precision of an instrument or the degree of consistency or agreement between two independent derived sets of scores; and the extent to which independent administrations of the same instrument yield the same results under comparable conditions (LoBiondo-Wood & Haber, 2014). For this study, the questionnaire was developed by the investigator assisted by statistician. Studies concerning postnatal care guided the development of the questionnaire, which was piloted in near-same health facility on 27 mothers before data collection. Most of the questions were formulated in line with WHO recommendations.

3.10 Data Management, Analysis and Presentation

The outcome variable (dependent) in this study is PNC care provided to both mothers and neonates before discharge at RMBH and Maternal knowledge and awareness of postnatal care services provided to both mother and neonate on discharge.

The independent variables are:

i. Demographic data; Age, marital status, education levels, occupation and parity.

Postnatal care services;

ii. Maternal Care

Maternal assessment: Uterine massage, assessment of severe bleeding, involution of the uterus breast assessment for breast feeding difficulties, vital signs, perineal care and psychological support.

Maternal support and assistance: Demonstration for positioning and attachment, assistance to position and attach the baby for breast feeding

Maternal danger signs; Heavy bleeding, severe headache, fever, foul smelling discharge, convulsion

Health information to the mother: Hand washing, perineal care, birth spacing, maternal nutrition, breast care, breast feeding and personal hygiene.

iii. Neonatal Care

Immediate newborn care; Skin to skin contact, warmth and initiation of breast feeding

Newborn care services; Newborn examination, immunization, bathing, cord care and newborn danger signs

iv. Maternal knowledge and awareness on postnatal care services provided

The Mothers were asked questions on basic minimum services every postnatal mother and neonate should receive and qualitatively asked what else apart from the services mentioned did the mother expected to receive before discharge from the health facility.

Both quantitative and qualitative methods of data collection were employed. Data was collected using researcher-administered questionnaires for postnatal mothers. Descriptive

statistics (frequencies, means and standard deviation) was used in analyzing the midwifery care services provided to both the mother and the neonate before discharge and knowledge and awareness of mothers on postnatal care services**.** All the analysis was done using Excel and statistical package for social sciences (SPSS V.20). Association between categorical variables was assessed using Fisher's exact test since the Pearson's Chi Square assumptions were violated for most of the variables. We reported the associated p-values.

Qualitative data from the open-ended questions was separately analyzed for content and consolidated into emerging key themes as follows;

- Maternal age and parity
- Any explanation given to mothers for lack of services and
- Description of cared provided to newborns immediately after birth
- Other care services expected by mothers while at RMBH

3.11 Dissemination of Findings

Findings from this study will not only be used for examination for the award of a master of science in nursing degree but will also be made available to Moi Teaching and Referral Hospital (MTRH) for recommendations for improvement of PNC in RMBH. Data generated will be published in peer reviewed journals. Findings will also be presented in scientific conferences and meetings as part of dissemination of the findings.

3.12 Ethical Consideration

Confidentiality refers to the management of information gathered from respondents while anonymity refers to the principle that the identity of research respondents is kept secret (Mouton, 2001). IREC approval was sought before the research was carried out. Research

permission was obtained from MTRH administration and the unit/ward in-charges of postnatal wards. The nature and purpose of the study, risks and benefits was explained to the participants before written informed consent was obtained. Mothers were assured that their participation was voluntary and had the opportunity to withdraw from the study at their free will at any time or stage during the study. Confidentiality was maintained by assuring the participants that the information they gave was not shared with unauthorized persons and their names were not identifiable. Data management was confidential and data integrity was maintained by pass wording the data base and locking filled questionnaire in lock and key data cabinet only accessed by the researcher and the assistants. There were no direct benefits to research participants except that the findings of the study may be used to improve midwifery care services at the hospital in future. This was a minimal risk study and the risk involved psychosocial risks. These risks were minimized by maintaining confidentiality that was achieved by consenting in semi-private consultation rooms. There was no financial or any other conflict of interest in this study.

CHAPTER FOUR

RESULTS

In this chapter the results of the study are described and the analysis of the data presented.

The demographic predictors used in the study were age, education, marital status occupation and parity. The outcome (dependent variable) was postnatal care service provided to both mothers and neonates. Knowledge and awareness on postnatal services offered was also assessed.

4.1 Socio-demographic characteristics of the study population

A total of 270 respondents completed the questionnaires. The median (IQR) age in years of the respondents was 24(22, 28) with a range of 18 to 43years. 96(35.6%) had attained primary as the highest level of education and 206 (76.3%) were married. The median no of children (parity) was 2(1,3) with the number of living children ranging from 1-7 as summarized in the table 4.1 below.

Table 4.1: Respondents' demographic data

Variable	Frequency	%	
Age (Years)			
< 20	27	10.0	
20-29	190	70.4	
30-39	44	16.3	
> 40	9	3.3	
Sub-total	**270**	**100**	
Education level			
None	3	1.1	
Primary	96	35.6	
Secondary	89	33	
College/university	82	30.3	
Sub-total	**270**	**100**	
Marital status			
Single	63	23.3	
Married	206	76.3	
Separated	1	0.4	
Sub-total	**270**	**100**	
Source for a living (Occupation)			
Farming	9	3.0	
Business	77	28.8	
Student	24	9	
Salary	30	11.2	
Housewife	52	19.2	
Wages	23	8.6	
None	54	20.2	
Sub-total	**269**		**100**
Parity			
1	122	45.2	
2	77	28.5	
3	43	15.9	
4	17	6.3	
5	6	2.2	
6	4	1.5	
7	1	0.4	
Total	**270**	**100**	

4.2 Postnatal care services provided to Mothers

Postnatal care services provided were;

4.2.1 Maternal Assessment

Assessment was done through inquiry on whether the health care providers asked, inspected and palpated the mothers for evidence of severe vaginal bleeding, involution of the uterus, breast, monitoring of vital signs, perineal care and psychological support. Majority 255(94.4%) of the mothers reported that their uterus was massaged immediately after delivery as shown in figure 4.1.

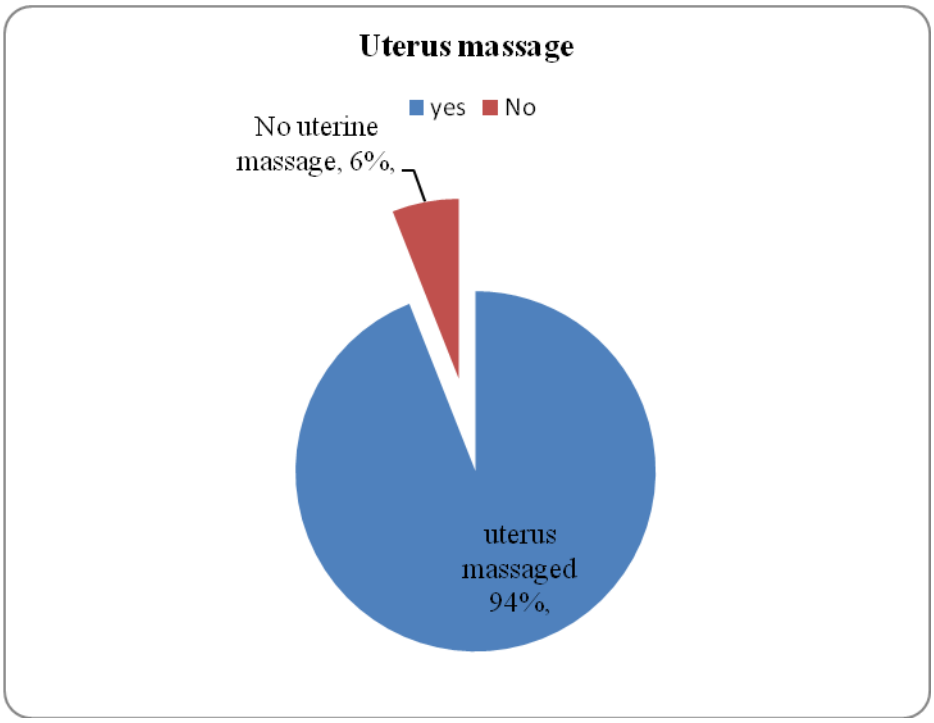


Figure 4.1 Uterus massage

226(83.7%) mothers were assessed for severe bleeding, 211(78.1%) for involution of the uterus. A few 61(22.6%) assessed for breast feeding difficulties had inverted nipple and cracked sore nipples 57(21.2%) as summarized in the figure 4.2 below.

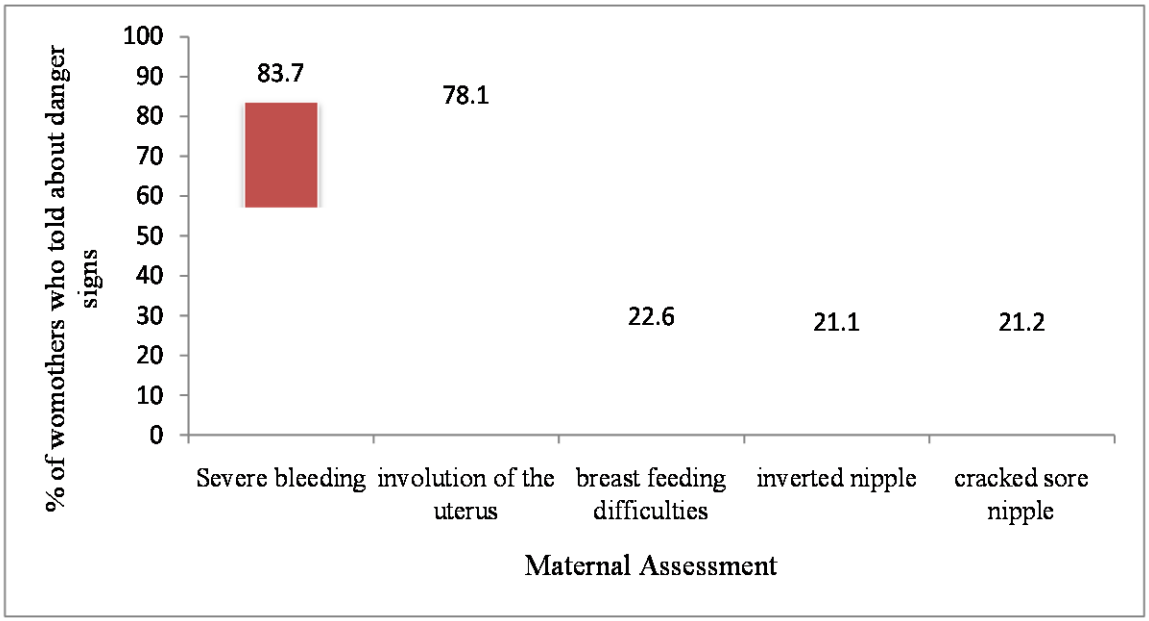


Figure 4.2Assessment for Severe Bleeding, Involution of Uterus and Breast Feeding Assessment

4.2.1.2 Vital signs monitored at MTRH

Monitoring of vital signs was assessed by questioning mothers whether their vital signs were checked initially and how often the monitoring was done. The assessment was done on the following vital signs; blood pressure, pulse, respiration and temperature. The study showed that 168(62.2%) mothers had their blood pressure monitored, pulse 57(21.1%), respiration 44(16.3%) and temperature 80(29.6%). 117(43.5 %) of the mothers reported to have had their blood pressure monitored once and 210(77.8%) reported their pulse were not monitored. Likewise, the respiration rate of most,223(82.6%) of the mothers had not been monitored. 195(72.2%) of the mothers reported that their temperature had not been taken as shown below.

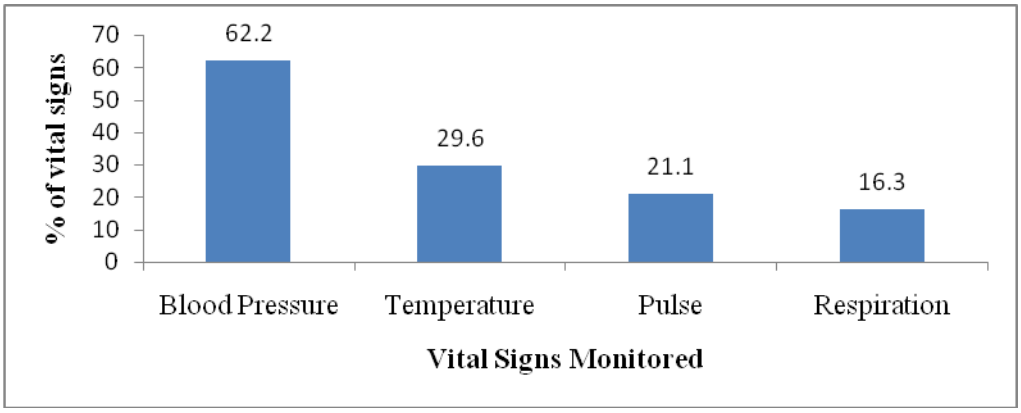


Figure 4.3 Maternal vital Signs Monitored

Table 4.2 Frequency of monitoring vital signs

Indicator	Frequency (n=270)	%
Blood pressure		
Once	117	43.5
Twice	39	14.5
Thrice	8	3
Four times	4	1.5
More than five times	1	0.4
Not done	100	37.2
Sub-total	**269**	**100**
Pulse		
Once	27	10
Twice	21	7.8
Thrice	6	2.2
Four times	5	1.9
More than five times	1	0.4
Not done	210	77.8
Sub-total	**270**	**100**
Respiration		
Once	21	7.8
Twice	17	6.3
Thrice	3	1.1
Four times	5	1.9
More than five times	1	0.4
Not done	223	82.6
Sub-total	**270**	**100**
Temperature		
Once	49	18.1
Twice	18	6.7
Thrice	3	1.1
Four times	4	1.5
More than five times	1	0.4
Not done	195	72.2
Sub-total	**270**	**100**

4.2.1.3 Perineal Care

In the study, perineal care was assessed by queryingwhether the mother received antibiotics after an episiotomy or tear. Mothers were given description of commonly used antibiotics before being asked if they received such medication. A few 95(35.2%) mothers reported to have been given an episiotomy or sustained a tear during delivery and among them, only 25(28.1%) received antibiotics.

4.2.1.4 Psychological Support

Psychological care involved allowing mothers time to talk about their birth experience or any concern. Small proportion 54(20.1%) of the mothers reported to have been given opportunity by the health care providers to talk about their birth experiences and any other concerns.

4.2.2 Maternal support and assistance

Assessment of maternal support involved breast feeding initiation, demonstration for positioning and attachment to the mothers and assistance to position and latching the baby for breast feeding

4.2.2.1 Initiation of breast feeding and latching

The study sought to find out how long it took to initiate breast feeding after child birth. Most 246(91.4%) mothers reported to have been given the baby for breastfeeding within one hour after delivery and only 2(0.7%) mothers reported that they breastfeeding their babies after 3 hours of birth , with details shown in fig. 4.4 below.

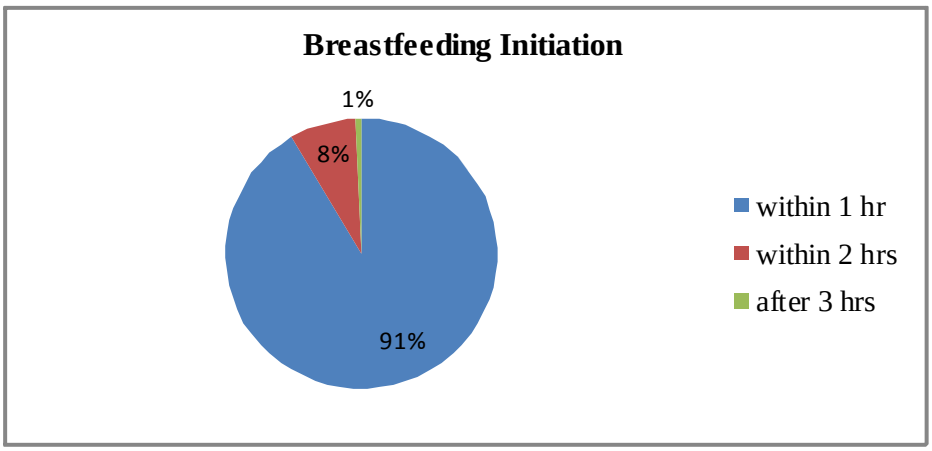


Figure 4.4 Time taken to initiate breastfeeding

4.2.2.2 Breast Feeding Demonstration

Demonstration is recommended for breastfeeding to ensure the mothers fully understand how to breast feed well. More than half 167(61.9%) of the mothers were not shown how to latch the baby to the breast as revealed in the fig. below.

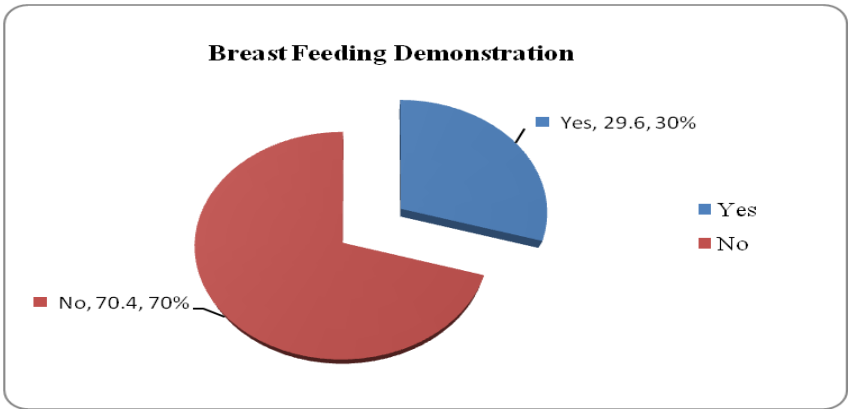


Fig 4.5 Breast Feeding Demonstration

Among 103(38.1%) the mothers that had demonstration on breast feeding, 63(61.2%) were shown how to breast feed by the nurse, 12(11.7%) by the nutritionist, 13(12.6%) by

a doctor, 2(1.9%) by clinical officer, 10(9.7%) by their mothers and 1(1.0%) by others as presented in figure 4.6.

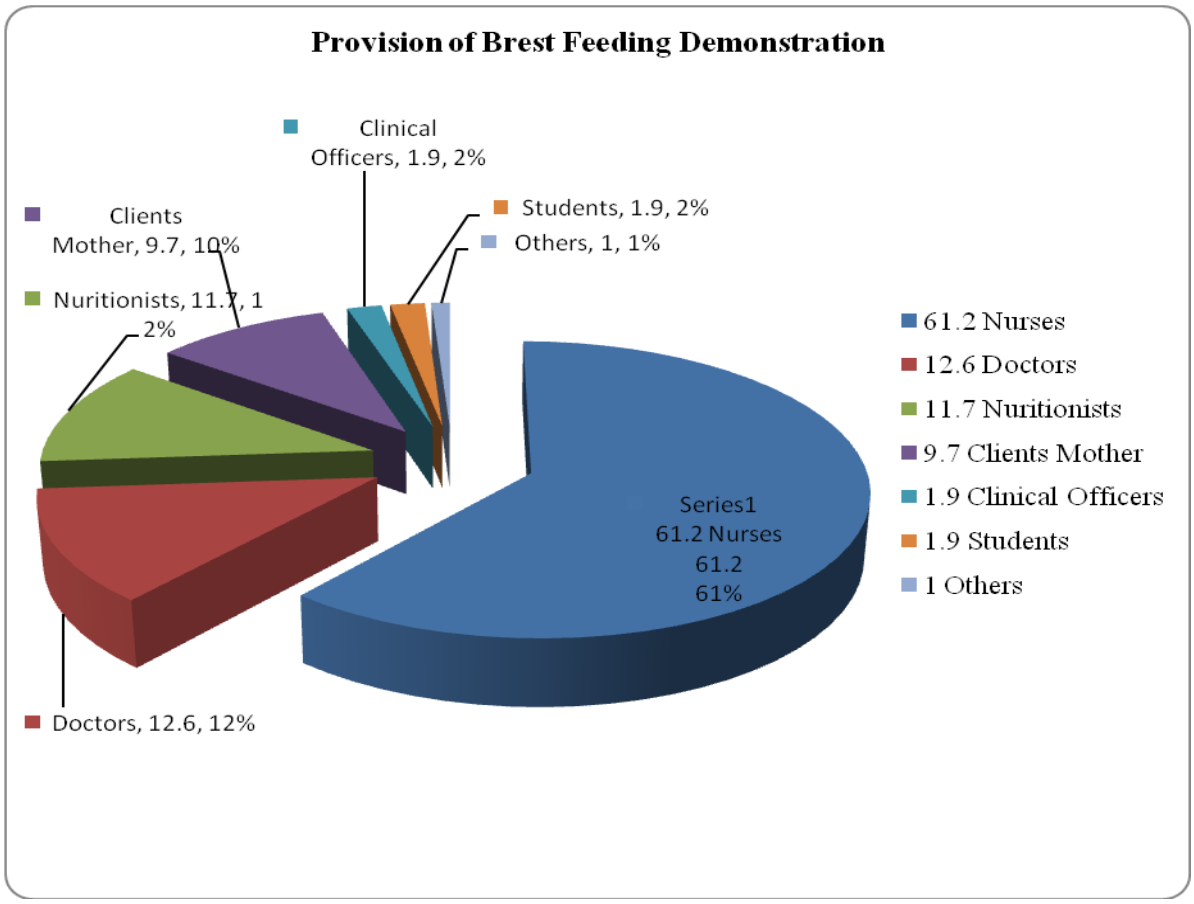


Figure 4.6 Health care providers who offered breast feeding demonstration

4.2.2.3 Assistance provided for breast feeding

This study sought to established whether mothers were offered assistance to position and latch the neonate no the breast for breast feeding. Majority 190(70.4%) of the mothers were not assisted to breast feed and for those assisted, 46(57.5%) were assisted by the nurse, 4(5.0%) by the nutritionist, 11(13.8%) by the doctor, 2(2.5%) by the clinical officer, 3(3.8%) by a student, 11(13.8%) by their mothers and 3(3.8%) by others.

4.2.2.4 Maternal Danger Signs

The study sought to find out whether mothers were given information on maternal danger signs such as heavy vaginal bleeding, severe headache, fever, foul smelling discharge and convulsion. 142 (52.8%) mothers reported getting information on heavy vaginal bleeding, 186(32%) on convulsion, 60(22.3%) on foul smell discharge, 103(38.3%) on fever, 108(40.1%) on severe headache as displayed in figure 4.7 below.

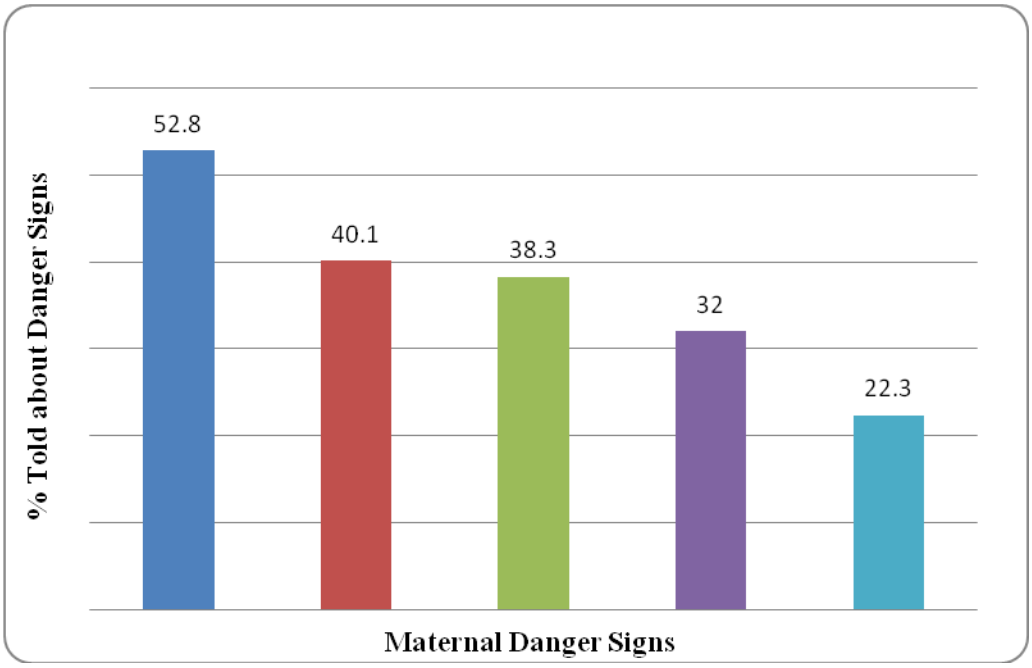


Figure 4.7 Maternal Danger Signs

4.2.2.5 Health Education provided to Mothers

Acquisition of information that is pertinent to maternal care was evaluated. The respondents were required to mention the information they had received from the care providerson; hand washing, perineal care, birth spacing, maternal nutrition, breast care, breast feeding and personal hygiene.More than half of the mothers 169(62.6%) reported to have received information on hand washing, 174(64.4%) on perineal care, 149(55.2%) on birth spacing and 132(49.1%) reported that they received information on maternal

nutrition. 149(55.2%) received information on breast care. 158(58.5%) of them received information on breast feeding and 169(62.9%) received education on personal hygiene.

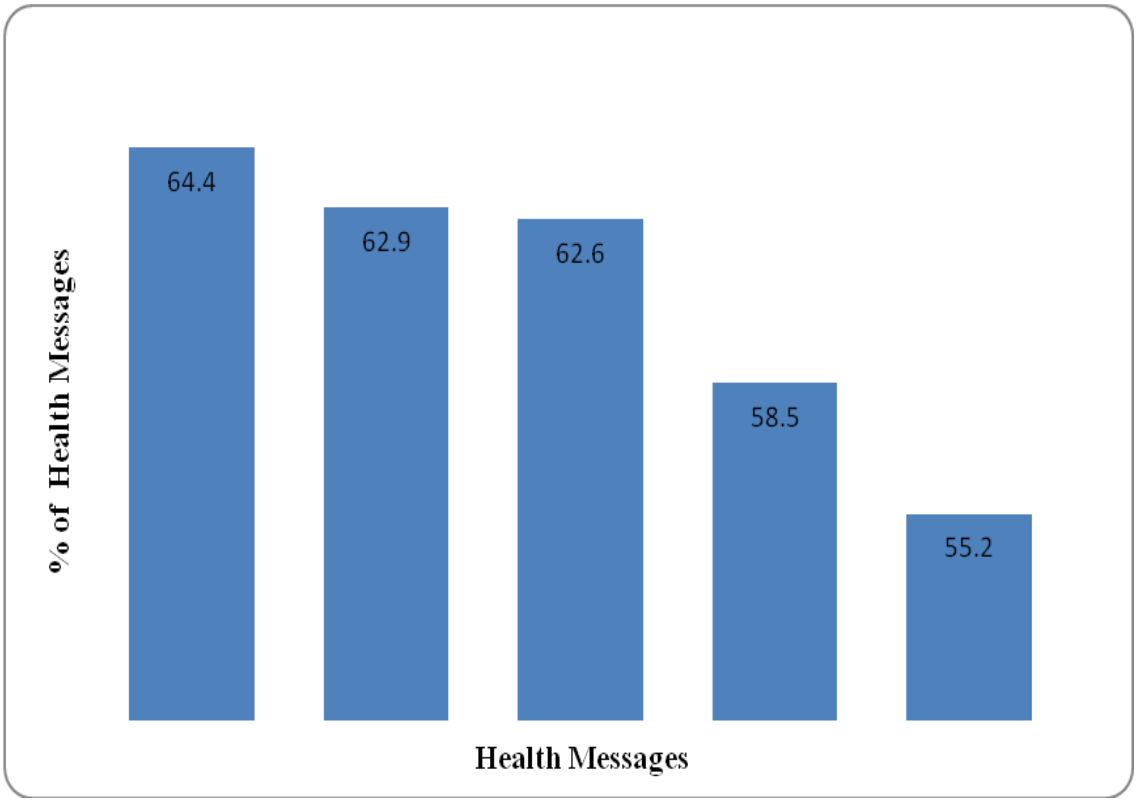


Figure 4.8 Health Messages to mothers

4.2 Neonatal care

The study focused on immediate newborn care which included skin to skin care, maintaining warmth and initiation of breast feeding, immunization, bathing, cord care and newborn danger signs. Mother described the care provided to their newborns as grouped in the figure 4.9.

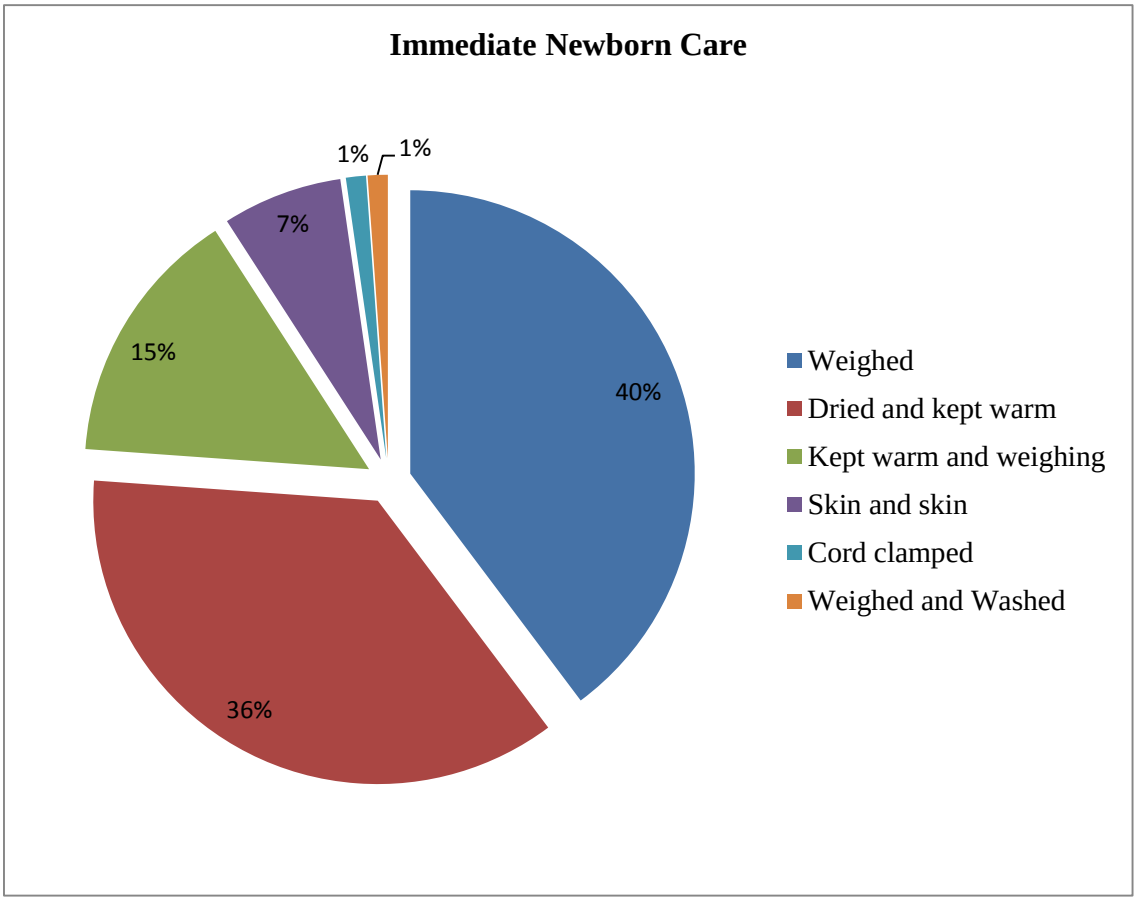


Figure 4.9: Immediate Newborn Care

4.3.1. Newborn assessment

The study inquired whether initial physical examination of neonates was done at birth followed by detailed assessment before discharge from health facility. Most 236(89.1%) of the mother reported that their babies were examined from head to toe only at birth with a few 18(6.8%) who could not tell whether their babies were examined. No discharge assessment was done on all neonates as seen in figure 4.9

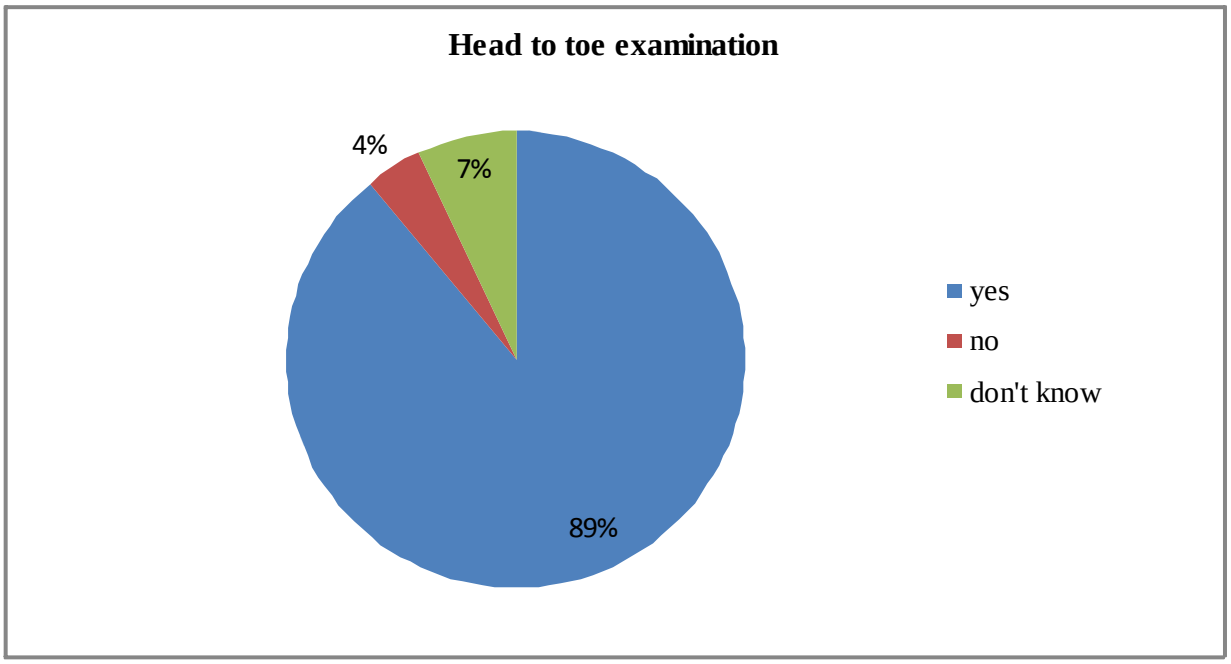


Figure 4.10 Newborn Assessment

4.3.2 Newborn Immunization

The study inquired from the mothers whether their neonates were vaccinated at birth.A small proportion 83(31.2%) of mothers reported that their babies were given vitamin k and 147(55.3%) got tetracycline eye ointment (TEO). Most of them 188 (70.7%) mentioned that their babies received birth polio and only 15(5.7%) received Bacillus Calmette-Guerin (BCG) as summarized in figure 4.11 below.

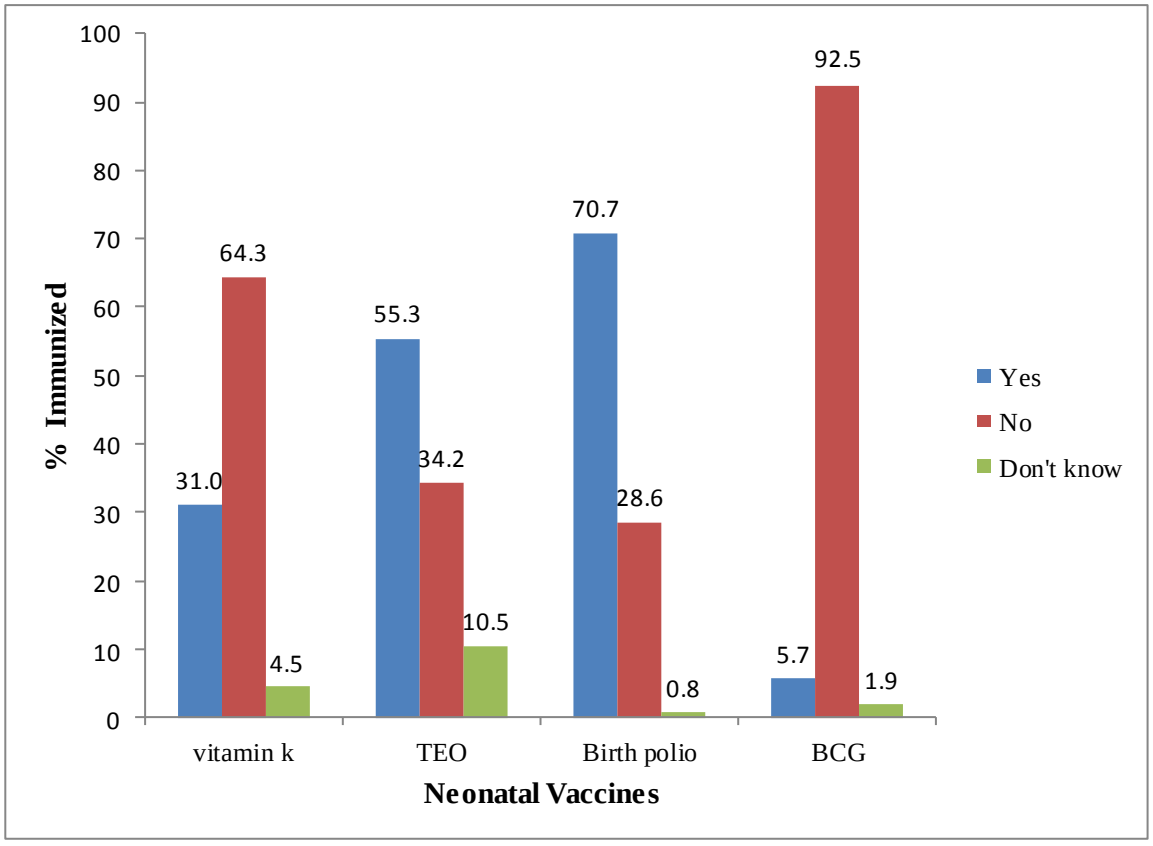


Figure 4.11 Newborn Immunization

4.3.3 Newborn Bathing and Cord Care

The study tried to determine whether mothers were told when to give the initial bath to the neonates and how to take care of the umbilical cord. Majority of the mothers 189(70.3%) reported to have not been told to bath their babies at any time and almost half of them 134(49.6%)were told to take care of the neonate's umbilical cord by keeping it clean and dry as revealed in table 4.3 and figure 4.12 below.

Table 4.3Newborn Bathing

Indicator	**Frequency**	**Percentage %**
Within 6 hours	6	2.2
Within 12 hours	1	0.4
After 24 hours	17	6.3
Not told	189	70.3
Can't remember	5	1.9
One week	42	15.6
Others	9	3.3
Total	**269**	**100**

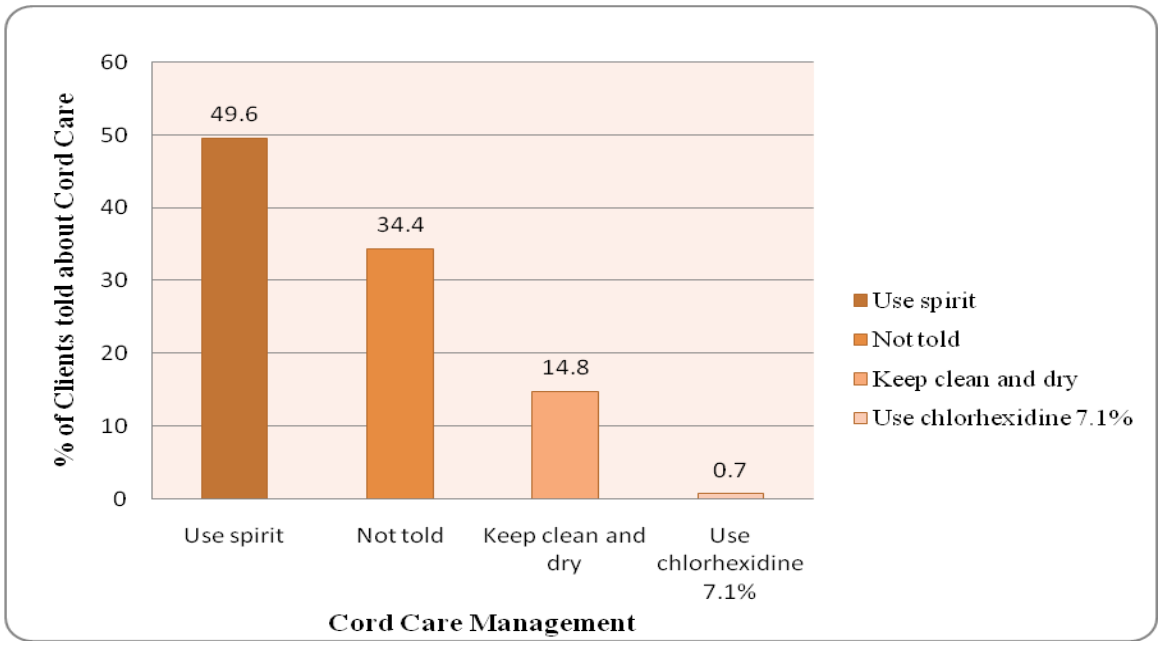


Figure 4.12Umbilical cord care

4.3.4 Newborn Danger Signs

The study sought to ascertain whether mothers were given information on neonatal danger signs. Half of the respondents 136(50.4%) reported to have been informed about baby not breastfeeding, 127 (47%) reported that they were informed about neonate vomiting frequently, 19(36.3%) we informed about convulsion and 113(41.9%) reported being informed about jaundice. One hundred and twenty eight (47.4%) reported being informed about fever and 118 (43.9%) reported on hypothermia. Only 66(24.5%) were informed about grunting and chest in drawing 45(16.7%) as part of the dangerous signs to be watched out for and reported. A few 49(18.1%) and 48(17.8%) reported being informed on fast and slow breathing, respectively. The neonatal danger signs mothers were informed to watch out and report immediately they noticed were summarized in the Fig 4.13.

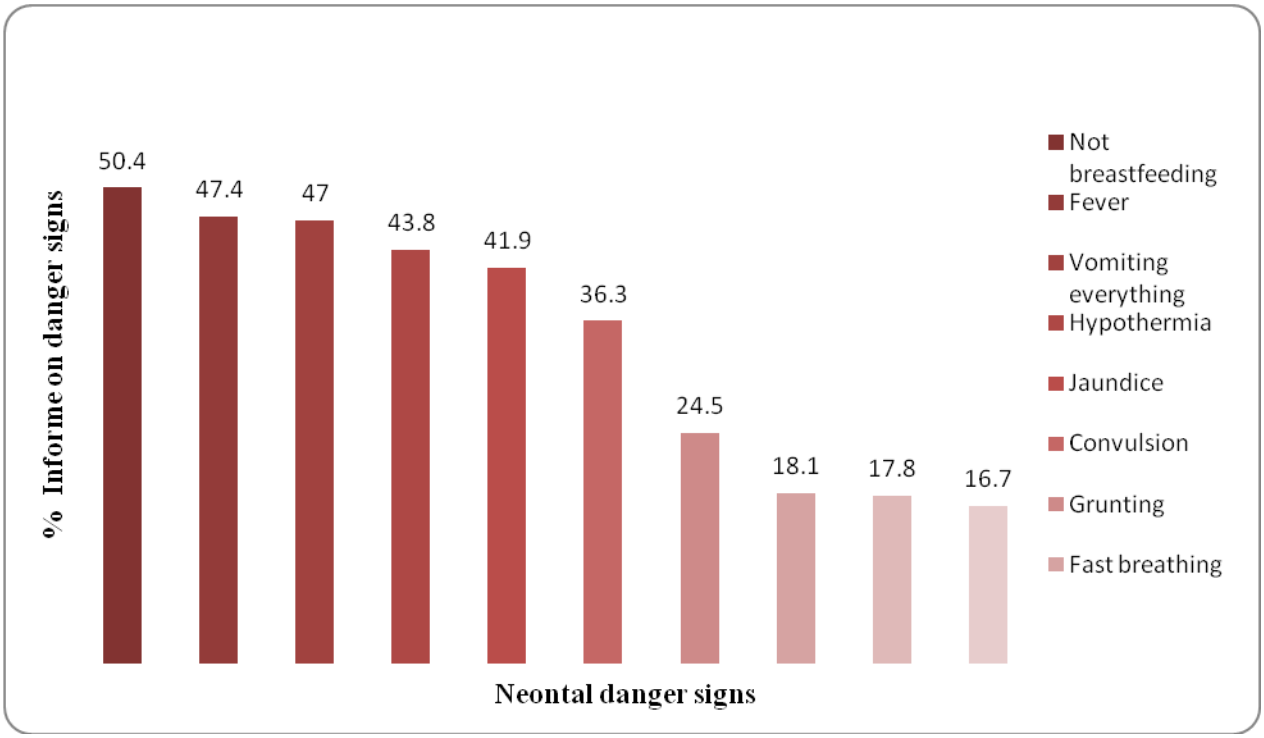


Figure 4.13 Neonatal danger signs mentioned to Mothers

4.3 Maternal Knowledge and awareness

This study sought to determine whether mothers were aware of postnatal care services provided at the facility by asking questions on basic minimum services every postnatal mother and neonate should receive and qualitatively asked what else apart from the services mentioned did the mother expected to receive before discharge from the health facility.

4.3.1 Maternal Knowledge and awareness on Maternal Services

On maternal care services offered at MTRH, only 53% of mothers received postnatal maternal care services while 47% never received the same services before discharge as highlighted in fig. 4.14 below.

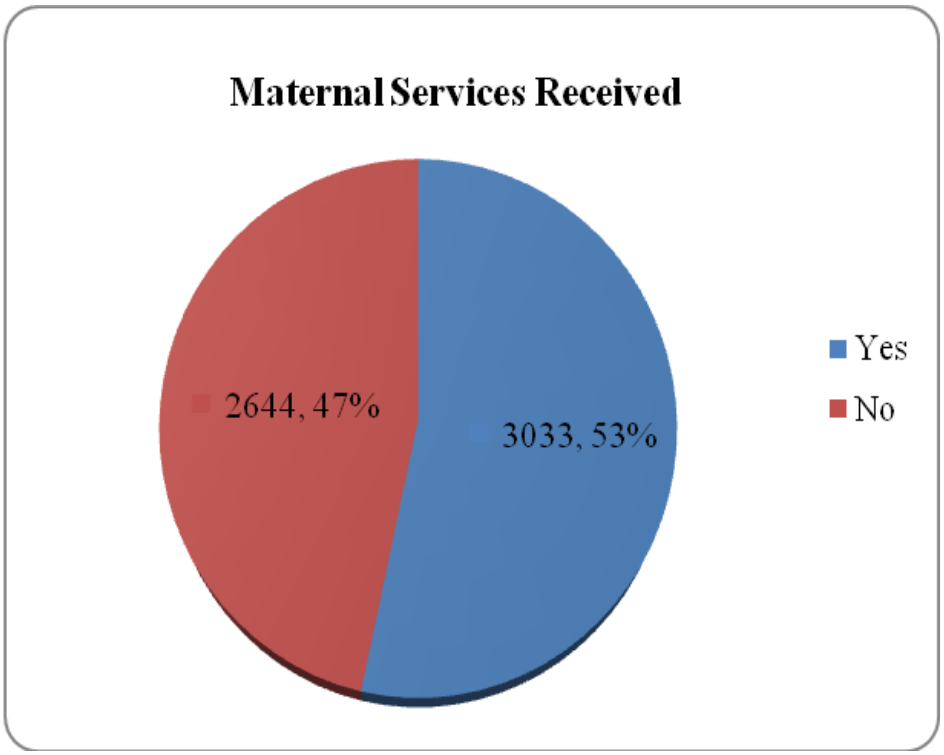


Figure 4.14 postnatal care services received by Mothers at MTRH

This study sought to find out the services not provided to mothers to assess their knowledge and expectation on the same postnatal services.

Table 4.4 Maternal care services not offered to Mothers at MTRH upon discharge

Maternal Services	Response	Frequency	Percent
Uterus massaged after delivery	No	15	5.6
Assessed for severe bleeding	No	44	16.3
Assessed for involution of the uterus	No	59	21.9
Assessed for breast feeding difficulties	No	209	77.4
Any one assistance on breast feeding	No	190	70.4
Foul smelling per vaginal discharge	No	209	77.7
Heavy vaginal bleeding	No	127	47.2
Convulsion	No	183	68.0
Fever	No	166	61.7
Severe headache	No	161	59.9
Episiotomy or a tear during delivery	No	175	64.8
Blood pressure	No	102	37.8
Hand washing	No	101	37.4
Hands on perineal care	No	96	35.6
Birth spacing	No	121	44.8
Maternal nutrition	No	137	50.9
Breastcare	No	121	44.8
Breastfeeding	No	112	41.5
Personal hygiene	No	101	37.4
Given opportunity to talk about birth	No	215	79.9

4.3.2 Maternal Knowledge and awareness on Neonatal Services

This study sought to assess maternal knowledge and expectation on neonatal care services by asking the mothers whether the neonate received services as per the questionnaire. Most (59%) neonates did not receive neonatal services upon discharge at MTRH as shown in the fig 4.15.

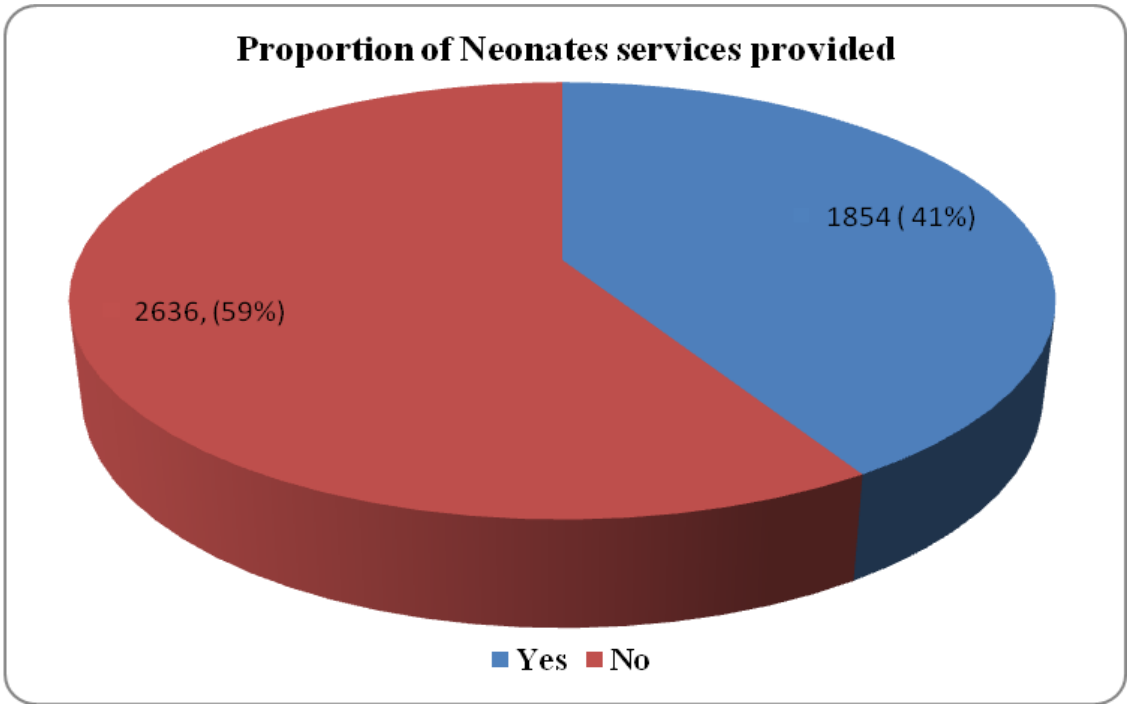


Figure 4.15 Proportion of neonates services provided at MTRH

Table 4.5 Neonatal Care not provided to Neonates upon discharge at MTRH

Neonatal services	Responses	Frequency	Percent
Newborn examination	No	11	4.2
Vitamin k	No	171	64.3
Tetracycline eye ointment	No	91	34.2
Birth polio	No	76	28.6
Bacillus Calmette-Guerine(BCG)	No	245	92.5
Told when to bath baby	Not told	189	70.3
Told about to care umbilical cord	Not told	93	34.4
Baby not breastfeeding	No	133	49.3
Vomiting everything	No	142	52.6
Convulsion	No	171	63.3
Jaundice	No	157	58.1
Fever	No	142	52.6
Hypothermia	No	151	56.1
Grunting	No	203	75.5
Chest wall in drawing	No	222	82.5
Fast breathing	No	219	81.1
Slow breathing	No	220	81.5

Overly, all (99.9%) mothers did not mention any other services they expected regardless of whether they received the services or not. Similarly, 49% of mothers and 59% of neonates who never received postnatal care services did not mention that they expected any services.

The mean rate of the maternal care received was 53% while neonatal care was 41% with respectively.

4.5 Association

Association between postnatal care services provided to both mothers and neonates and demographic characteristics was evaluated. The association between categorical variables was assessed using Fisher's exact test since the Pearson's Chi Square assumptions were violated for most of the variables. We reported the associated p-values .In this study**,** single, divorced, separated or widowed mothers were more likely to be shown how to latch the neonate to the breast for breast feeding compared to those who were married, 50.0% vs. 34.5%, p =0.028. Similar statistically significant relationship was also observed in the same group who were more likely to receive education on perineal care, p =0.025 as seen in table 4.6 below.

Parity was associated with assessment for severe bleeding. The results showed that a greater proportion of the first time mothers were more likely to assessed for severe bleeding compared to the multiparous mothers, 87.8% vs. 78.7%, p = 0.048 as indicated in table 4.7 below.

There was no association between the various outcome variables assessed and the age of the mothers, level of education, and source of living, p >0.05.

Table 4.6: Association between marital status and key outcome variables

	N	Single/Widowed/ Separated/Divorced/ cohabiting (n=64) n (%)	Married (n=206) n (%)	P value
Severe bleeding	270	54 (84.4)	172 (83.5)	1.000
Involution of uterus	270	48 (75.0)	163 (79.1)	0.492
Breast assessment	270	13 (20.3)	48 (23.3)	0.733
Demonstration of attachment	270	32 (50.0)	71 (34.5)	**0.028**
Blood pressure taken	270	39 (60.9)	129 (62.6)	0.883
Pulse taken	270	15 (23.4)	42 (20.4)	0.602
Respiratory rate taken	270	10 (15.6)	34 (16.5)	1.000
Heavy bleeding	269	32 (50.0)	110 (53.7)	0.668
Fever	269	24 (37.5)	79 (38.5)	1.000
Severe headache	269	26 (40.6)	82 (40.0)	1.000
Handwashing	270	45 (70.3)	124 (60.2)	0.183
Hands-on perineal care	270	49 (76.6)	125 (60.7)	**0.025**
Birth spacing	270	40 (62.5)	109 (52.9)	0.197
Maternal nutrition	269	29 (45.3)	103 (50.2)	0.567
Breast care	270	39 (60.9)	110 (53.4)	0.316
Breast feeding	270	41 (64.1)	117 (56.8)	0.314
Personal hygiene	270	43 (67.2)	126 (61.2)	0.460

Table 4.7 Association between parity and key outcome variables

		Parity		
	n	Para 1 (n=148) n (%)	multiparous (n=122) n (%)	P value
Severe bleeding	270	130 (87.8)	96 (78.7)	**0.048**
Involution of uterus	270	121 (81.8)	90 (73.8)	0.139
Breast assessment	270	35 (23.6)	26 (21.3)	0.664
Demonstration of attachment	270	51 (34.5)	52 (42.6)	0.208
Blood pressure taken	270	94 (63.5)	74 (60.7)	0.705
Pulse taken	270	31 (20.9)	26 (21.3)	1.000
Respiratory rate taken	270	24 (16.2)	20 (16.4)	1.000

CHAPTER FIVE

DISCUSSION

This chapter presents discussion of the findings of the study.

5.1. Maternal Care Services

To improve maternal and newborn health, the need to focus on immediate postnatal period has been highlighted (Bhutta, Cabral, Chan, & Keenan, 2012); (Bhutta, Salam, Lassi, Austin, & Langer, 2014).In this study, majority of the mothers received key elements of postnatal care services with high proportion (94%) of mothers having their uterus massaged immediately after child birth, most (83%) mothers were assessed for severe bleeding and quite a number (78.1%) were assessed for involution of the uterus. The study findings are consistent with results obtained in a study done in Naivasha, where majority of the mothers (91%) were examined within 24 hours for vaginal bleeding (KIGOTHO). WHO recommendation that all postpartum women should have regular assessment of vaginal bleeding, uterine contraction and fundal height routinely assessed during the first 24 hours starting from the first hour after child birth (WHO, 2014). (Cooper, 2012) highlighted that providing a check-up as well as relevant information within 24 hours before the women leave the health facility, could help prevent 38.72% of maternal deaths that occur within this crucial period.

Successful breastfeeding depends on the acquisition of basic skills, accurate information and practice, and is strongly influenced by the support provided to mothers following childbirth. Correct positioning and attachment of the newborn to the breast is a crucial component of the successful establishment of breastfeeding (Ingram, Johnson, Copeland, Churchill, & Taylor, 2015).

In the present study, findings revealed that small proportion of the mothers (22.6%) were assessed for breast feeding difficulties at birth and the majority (70.4%), were not assisted to position the neonate for breast feeding. Furthermore, more than half (61.9%) were not demonstrated on how to attach the baby to the breast for breast feeding and a quite a number (13.8%) of the assistance for positioning the baby for breast feeding was provided by either the nutritionist or the client's mother. This depicts that the minimum standards of care may not have been achieved and do not conform to the WHO recommendation. Contrary findings were observed in the Kenyan study in Nairobi County by KAMAU (2014) which showed that generally, most (73%) mothers were provided support on latching in the 18 facilities studied with slightly lower percentage (57%) receiving the same support in Kenyatta Nation Hospital(Level 6 facility). The difference can be attributed to the exact range of services offered and increased workload. A study by (Tiruye, Geda, & Mesfin, 2017) recommended that each mother should be observed for positioning and attachment at the onset of breastfeeding and guidance given as appropriate. In support of that, (Prajapati, Chandwani, Rana, & Sonaliya, 2016) also emphasized that the health care providers should ensure education and support of the mothers regarding position and attachment of infant to the breast before discharge from the healthcare facility. A study by (Goyal et al., 2011)indicate that women whose infants were incorrectly positioned were 1.94 times at risk (95% CI 1006–3749) of developing nipple trauma compared with women whose infants were correctly positioned.

WHO recommends vaginal examination to determine the degree of perineal tear and necessary intervention made to reduce occurrences of infection and complications. The

present study found that of the 35.2% mothers who got episiotomy or a tear during childbirth, low proportion (28.1%) were given antibiotics. This exposes them to the risk of developing infections and complications associated with the degree of perineal tear. This findings is an inconformity with WHO recommendation that all women who get episiotomy or third and fourth degree tears are given antibiotics (WHO 2014). A randomized control trial by (Duggal et al., 2008)found that low proportion of patients (8.2%) who received antibiotics developed a perineal wound complication compared to 24.1% patients who received placebo developed infection (P=0.037). Furthermore, a significant decrease in purulent discharge from the perineal wound was noted in women who had received antibiotics (4% compared with 17%; P=.036).

Vital signs are important examinations required for all postnatal mothers in detection of anomalies. The present study found that more than half of the mothers (62%) had their blood pressure taken only once while a significant proportion (77%) never had their pulse, respiration and temperature monitored while in hospital. These findings is against the standards which requires that mothers and baby should be assessed within one hour of delivery and both monitored at 2, 3 and 4 hours after delivery and then every 4 hours until discharge from maternity (Kerber et al., 2007). Contrasting findings were seen in a study done in Naivasha Kenya by (Ngonzi & Boatin, 2017) which pointed that most (58.3%) postnatal mothers had their temperature and majority (95.8%) had blood pressure examined and recorded at least once during their stay in hospital and some (34.2%) never had their pulse rate monitoring done at all. The difference in the findings observed in Naivasha study and the current study is that the current was done in a referral hospital which covers western Kenya, Eastern Uganda and Southern Sudan with a huge

workload as compare with geographically defined population coverage in the Naivasha study. Comparatively, a study done in Malawi on postnatal services provided by health care providers in the health facilities showed that postnatal mothers had monitoring of vital signs done at least once a day with Malawian government facilities showing that most (63%) of the midwives discharged mothers without monitoring vital signs (Chimtembo, Maluwa, Chimwaza, Chirwa, & Pindani, 2013). Similarly, findings observed in a study by (Lotto, 2015) also highlighted that not all mothers have their vital signs monitored within 48 hours of birth. The findings contravenes WHO (2014) recommendation that all postpartum women should have regular assessment of blood pressure, temperature and heart rate (pulse) routinely during the first 24 hours starting from the first hour after birth. Low monitoring of vital signs which are way below the recommendation, indicate that quite a number of anomalies may not have been detected and could result in preventable deaths and complication.

Maternal Danger signs are important indicators in averting morbidities, complications and mortalities. In the present study, significant number of mothers (52.8%) reported that they were informed on heavy vaginal bleeding as a danger sign but low proportion were given danger signs information appertaining convulsion (32%), foul smell discharge (22.3%), fever (38.3%), and severe headache (40.1%). Elsewhere, a community-based study done in Ethiopia showed that vaginal bleeding (76.5%), severe headache (39.8%) fever (28.6%) and Foul-smelling vaginal discharge (23.5%) were the most identified obstetric danger signs while Convulsion (10.2%) and Blurred vision (5.6%) were the least identified danger sign during postnatal period (Bogale & Markos, 2015). In the Kenyan study done in Nairobi County, fever scored the highest (88%) followed by

vaginal bleeding (86%) as danger signs mentioned to postnatal mothers (KAMAU 2014). This probably indicates that incompliance with WHO recommendation could have resulted in preventable complications and mortalities and even a possible readmission and increased cost of health care. It also possibly indicates low level of communication and poor interaction between the health providers and the clients. Evidence from developing countries suggests that a simple package of interventions, such as providing advice on postnatal danger signs, advice on self-care, and Iron and Folic Acid supplementation, as well as early detection and referral of postnatal maternal complications, are effective in reducing maternal mortality (KAVUMA, 2015).

Psychological support is one of the elements of the postnatal care as per WHO check list. In the current study, low proportions of the mothers (20.1%) were given opportunity by the midwives to talk about their birth experiences and any other concerns. Similar finding has been reported in a study by (Roomruangwong & Epperson, 2011) which found that low percentage of women (13.5%) were given time to talk about their birth experience after birth even though they feel it is important to mothers. This evidence suggests that mothers are not always given opportunity to discuss their births experience, and such communication is sometimes lacking during postnatal visits. Review of 19 publications by Gamble and (Gamble & Creedy, 2009) on postnatal counseling interventions also found that majority of authors considered providing women with the opportunity to discuss their birth experience was very vital. It is further documented that the key strategy of one-to-one time is not consistently implemented with 57% of women reporting that they received at most 10 minutes of uninterrupted time with a midwife and only 11% are provided with 20 minutes or more (Andersen, Melvaer, Videbech, Lamont,

& Joergensen, 2012). This could probably be because effective explanation and communication are adversely affected by interruptions and high demands on midwives' time (Fryer & Weaver, 2014). However, these findings contradict WHO recommendation that health professionals should provide an opportunity for women to discuss their birth experience during their hospital stay for prevention of postpartum depression among women at high risk of developing this condition.

Health education is an important public health intervention and key element of postnatal care advocated by the WHO. This study found that the health education component offered to postnatal care showed that most mothers (62.6%) reported to have received information or education on hand washing, hands-on-perineal care (64.4%), birth spacing (55.2%), maternal nutrition (49.1%) and breast care (55.2%). Disparate findings were seen in the study done in Nairobi county which highlighted that mothers were advised on breast feeding and the importance of exclusive breast feeding (EBF) within the first 6 months with information on personal hygiene scoring the highest (93%) followed by maternal nutrition (83%) and family planning (62%) with low proportions (29%) advices to the mother on perineal care (KAMAU 2014). The variance could be due to the different standards of care in different tier level of hospitals studied in Nairobi as the present study was in a national referral hospital which serves a wider region.

5.2. Neonatal Care Services

Neonatal care is an important element of postnatal care. During the first hour of birth, the neonate should be in skin-to-skin contact with the mother for warmth and the initiation of breastfeeding (Moore, Bergman, Anderson, & Medley, 2016). The present study indicated that majority of the mothers (90%) described that their neonates were dried, put

on their mother's abdomen and both covered with warm linen immediately after birth and birth weight taken after the baby's umbilical cord had been cut. These findings are compliant with WHO recommendation that immediately at birth, all babies should be dried thoroughly and their breathing assessed. In line with WHO recommendation, (Sears, Sears, Sears, & Sears, 2013) emphasized that simple intervention used at birth to keep the baby warm include drying and putting the baby on the mothers' abdomen (Skin-to-Skin) then both are covered with a warm linen. A Facility survey designed and implemented by the Maternal and Child Health Integrated Program (MCHIP) in Kenya in collaboration with MCHIP colleagues in the United States indicated that drying and wrapping was practiced in only 60% of deliveries (Kagema et al., 2011). A similar survey done in Tanzania indicated that drying and wrapping the infant immediately after birth was high (91% and 93%). Placing the baby skin-to-skin was low at regional hospitals (43%) and even lower at health centers and dispensaries (37%) (Plotkin, Tibaijuka, Makene, & Currie). The difference in finding could be due to difference in implementation of relevant health programs. Supporting these processes promotes the psychological attachment essential to the neonate's wellbeing within a safe and secure environment (D. F. Polit & Beck, 2008).

Keeping the baby warm is important element of WHO's postnatal care recommendation. It is essential for caregivers to provide warmth to neonate, as hypothermia and cold stress place a baby at increased risk for morbidity and mortality (WHO 2013). The present study found that low proportions of neonates (34.1%) were assisted to keep warm. This is an inconformity with WHO recommendation which advices that appropriate clothing of the baby for ambient temperature is required. This includes one to two layers of clothes

more than those of an adult and use of hats/caps. The mother and baby should not be separated and should stay in the same room 24 hours a day (WHO 2014).

Every newborn requires a brief physical examination within the first few minutes after birth and then a full and detailed assessment within the next 48 hours and prior to discharge from hospital (RACP, 2009; Queensland Clinical Guideline, 2014). Although WHO recommend that a full clinical examination should be done around 1 hour after birth and before discharge from health facility (WHO 2014), the current study found that most (89.1%) of newborn examination was done in labour ward and examination results communicated to the mother immediately. However, it was noted in the present study that there was no head-to-toe examination done on the newborns before discharge and discharge was done aggregately. This contrast the recommendation that careful evaluation of the mothers and babies be done individually, case by case, by a competent health provider before discharge. The immediate assessment provides an excellent opportunity to identify and address problems, counsel on essential care, and specifically provide the first follow-up appointment for the early visit. It also provides a valuable opportunity to assess and strengthen infant feeding, identify and address danger signs, reassure and counsel the mother on essential preventive care for herself and the baby, and promote appropriate care seeking for subsequent problems (Mazia et al., 2009).

In terms of breast feeding, the present study finding shows that majority (91.4%) of the neonates were initiated breastfeeding within one hour of birth as recommended by WHO. The Kenyan survey of 18 facilities in Nairobi County indicated that generally, most (70%) mothers initiated breastfeeding within the recommended 1 hour after Child birth. Within level three, private facilities had the highest proportion (74%) of mothers

initiating breastfeeding within the recommended 1 hour followed by NGO/FBO (70%). A slightly lower proportion (53%) of mothers in public facilities initiated breast-feeding within 1 hour post-delivery. Similar responses (63.5% and 63.6%) were observed in level 4 institutions (Faith-Based Organization (FBO), Non-Governmental Organization (NGO) and public and facilities) which initiated breast-feeding within 1 hour respectively. In public level six facility a slightly more than half (57%) of mothers initiated breastfeeding within 1 hour (KAMAU 2014). Consistently, a study in India showed that Majority (61.6%) of the newborn babies establish breastfeeding within half an hour of birth. A randomized controlled trial done in South Nepal indicated that there is a strong relationship with mortality risk increasing with later initiation time for breastfeeding. Initiation after 24 hours was associated with a 41% increase in mortality risk and 41.3% of neonatal deaths after 48 hours which might be prevented if breast-feeding was initiated within 1 hour of birth. Besides that, 22% of neonatal deaths could be saved if all infants were breastfed within the first hour of child birth and 16% of neonatal deaths saved if all infants were breastfed from day one (Dongre et al., 2010). Furthermore, approximately 19.1% of all neonatal deaths may be avoided with universal initiation of breast-feeding within the first hour of life (Debes, Kohli, Walker, Edmond, & Mullany, 2013).

The goal of immunization is to protect individuals from vaccine preventable diseases and prepares the human's immune system to be able to ward off specific diseases in the future (Rappuoli, Mandl, Black, & De Gregorio, 2011). WHO recommend that after the first hour of life, newborns should receive eye care, vitamin K, and birth dose of either with an inactivated injectable vaccine (IPV) or with a live oral vaccine (OPV) and Hepatitis B vaccine (Kumar, 2018). The finding of this study indicated that most neonates received

birth polio (70.7%) and Tetracycline Eye Ointment (TEO) (55.3%). However, low proportion of neonates (5.7%) received Bacillus Calmette-Guerin (BCG) and 31.2% were given vitamin K. The low coverage of BCG vaccination could be attributed to vaccine stock outs, lack of supplies for vaccine administration or increased work load. Kenya is among known high TB/HIV burden nations and this present finding did not conform to the recommendation that in countries and populations at high risk of tuberculosis infection, infants should receive BCG as soon as possible after birth (Organization, 2011). A meta-analysis and assessment of BCG vaccine has shown consistently high efficacy against childhood tuberculous meningitis and miliary tuberculosis and indicated that the numbers of cases prevented would be highest in South East Asia (46%), sub-Saharan Africa (27%), the western Pacific region (15%), and where the risk of tuberculosis infection and vaccine coverage are also highest. It recommends that BCG vaccination is a highly cost-effective intervention against severe childhood tuberculosis and should be retained in high-incidence countries as a strategy to supplement the chemotherapy of active tuberculosis (Trunz, Fine, & Dye, 2006).

A community-based study in Uganda showed that children received all vaccines within the recommended time ranges (45.6%) with timely vaccination for BCG vaccine scoring highly (92.7%) (Babirye et al., 2012). Contrary findings were seen in a randomized controlled trial done in Guinea-Bissau which showed some delay in BCG vaccination with less than half of the children being BCG vaccinated by 1 month and only 11% being BCG vaccinated by 1 week of age despite recommended at birth in low-income countries. Hospital delivery was associated with increased likelihood of being BCG vaccinated (Thysen et al 2014). A study done in South Africa found that birth at a health

facility reduced the risk of being unvaccinated by 47% (Fadnes et al 2011). Higher BCG vaccination coverage was also seen in Ethiopia for neonates born in a health facility (Moyer, Tadesse, & Fisseha, 2013).

WHO recommend that after the first hour of life, newborns should receive eye care, vitamin K, and birth dose of either with an inactivated injectable vaccine (IPV) or with a live oral vaccine (OPV) and Hepatitis B vaccine (WHO 2013). In support of that, the USAID supported Maternal and Child Health Integrated Program (MCHIP), operational in India from 2009 – 2014 advocated for administration of BCG, OPV zero dose and Hepatitis B birth dose to newborns (Taneja et al., 2015). It is further recommended that intramuscular administration of Vitamin K (phytonadione) which should be given to all newborns within 6 hours of birth is the most effective method of preventing hemorrhagic disease of the (Ipema, 2012). In fully breast-fed infants who did not receive vitamin K at birth, the mortality incidence is between 1/15,000 and 1/20,000 with a mortality rate of 20% and intracranial haemorrhage occurring in 50% of the clients with bleeding the disorder (Van Winckel, De Bruyne, Van De Velde, & Van Biervliet, 2009).

The recommended immunization is designed to protect infants and children early in life, when they are most vulnerable and before they are exposed to potentially life-threatening diseases.

Notably, Hepatitis B vaccine is not offered routinely to all neonates at birth at MTRH, the present study findings contradict the WHO recommendations on preventive care which includes giving vitamin K prophylaxis and hepatitis B vaccination as soon as possible after birth (within 24 hours), eye care and birth dose of oral poliomyelitis vaccine (OPV) and Hepatitis B vaccine should be provided around 1 hour after birth, when the baby has

had the first breastfeed (Pan et al., 2012), Hepatitis B vaccine should be given to all infants as soon as practicable after birth. The greatest benefit is if given within 24 hours, and must be given within 7 days. Consistent with that, leading health organizations (CDC, AAP, AAFP, and ACOG) recommend that all hospitals and healthcare professionals should protect newborns from hepatitis B virus (HBV) infection by administering the first dose of hepatitis B vaccine (Hep. B) to every baby at birth, no later than hospital discharge (CDC, 2008). A report by CDC on a survey done at Tennessee hospital between the years 2007 and 2012 found that 96.6% of infants received Vitamin K injections at birth while, only 72% of infants born in local freestanding birth centers received Vitamin K (Class & Dekker).

A randomized control trial in Guinea-Bissau indicated that neonate who receive Oral Polio (OPV) within first days of life appear to be associated with strongest benefits (Lund et al., 2015), Hepatitis B vaccine should be given to all infants as soon as practicable after birth. The greatest benefit is if given within 24 hours, and must be given within 7 days. A delay in the birth dose results in an increased risk of Hepatitis B infection (Pan et al., 2012).

All newborns should receive a prophylactic agent against ophthalmia neonatorum, from gonorrhea or chlamydia. The administration may be delayed for up to two hours after birth to enable parent–infant contact and initial stabilization of the baby (Health Canada, 2000).

A study, done in 14 Slovenian and 32 Croatian birth hospital neonatal eye prophylaxis is a mandatory intervention for all newborns in Slovenia. In comparison, 0 % Slovenian and 95.7 % Croatian maternity hospitals administer vitamin K to all newborns. Prophylaxis

against chlamydial and gonococcal eye infections is applied to all newborns in 100 % Slovenian and Croatian 69.9 % maternity hospitals. 21.7 % Croatian maternity hospitals, do not apply prophylaxis against chlamydial and gonococcal eye infections to any newborn. 40 % and 43.5 % birth hospitals in Slovenia and Croatia respectively, administer vitamin K in the first hour after birth. 40 % and 52.2 % apply vitamin K from one to three hours after birth, while 10 % and 4.3 % administer vitamin K from three to 24 hours after birth. Prophylaxis against chlamydial and gonococcal infections of the eye during the first hour after birth is applied by 40 % Slovenian and 60 % Croatian birth hospitals, while the prophylaxis of the 6 birth hospitals in Slovenia (60 %) and 40 % birth hospitals in Croatia is practiced from one to three hours after birth (Dosler, et al., 2015).

The present study found that majority (70.3%) of the mothers were not told when to bath their neonate babies. This finding is not compliant with WHO recommendations which expressly states that bathing should be delayed until 24 hours after birth and if this is not possible due to cultural reasons, bathing should be delayed for at least six hours (WHO, 2014). Similarly, National Perinatal Association advocates that it is necessary to delay/postpone bathing of a newborn until thermal, respiratory and cardiovascular stability is established (National Perinatal Association, 2013). A study in Pemba, showed that delaying bathing practice was consistently performed among hospital deliveries. Most (70%) of the neonates were given bath within 24 hours after delivery (Adejuyigbe et al., 2015). In contrast, findings in an experimental study done in the USA concluded that a flexible bathing time is recommended according to the characteristics and stability of the newborn and to family desires because the timing of the bath, whether 1 hour of birth compared with 4 to 6 hours after birth, did not significantly impact infant

temperature (Behring et al., 2003). Similar findings were also noted in a randomized controlled trial done in Iran which conclude that healthy full term newborns with rectal temperature over 36.5 °C can be bathed within 1-2 h of birth without any risk of hypothermia (Taheri, Fakhraee, & Sotoudeh, 2007).

The two different findings indicate that the initial bath in full term infants can be given once the baby's temperature has stabilized and the baby is hemodynamically stable (Sarkar, et al., 2010).

Good cord care practice is an important intervention to save the lives of neonates. Cord care practices contribute to infections in the newborn which accounts for the 26 % of global under five deaths (Moran et al., 2013)**.** The prevalence of cord infection in newborns ranges from 3-5.5% in most developing countries (Munos, 2012). The current WHO recommendation for new born cord care is daily chlorhexidine (7.1% chlorhexidine digluconate aqueous solution or gel, delivering 4% chlorhexidine) application to the umbilical cord stump during the first week of life for neonates who are born in settings with high neonatal mortality (30 or more neonatal deaths per 1000 live births). Clean, dry cord care is recommended for newborns born in low neonatal mortality settings (WHO 2014). The present study findings showed that almost half of the mothers (49.6%) were told to keep the cord clean and dry with a few (14.8%) being told to use methylated or surgical spirit and quite a number (34.4%) not told how to take care of the umbilical cord. This finding contrasted sharply with a Nigerian study which showed that high rates (95.3%) of mothers used methylated spirit to clean the cord and most (90.5%) of the mothers had received information on cord care (Opara, Jaja,,& Okari, 2012). A study done by Karumbi et al (2013) states that although evidence and

experience suggests that healthcare providers vary in their care practice of use of alcohol, methylated spirit or povidone iodine to clean the cord, use of chlorhexidine 4% was found to be more effective if offered within the first 24 hours of birth even with efficacy of a single use. Correspondingly, a randomized control study done in Bangladesh on effects of cord cleansing with chlorhexidine found that there was lower neonatal mortality of 22.5/1000 live births with single cleansing with chlorhexidine than in the dry cord care of 28.3/1000 live births (Arifeen, et al., 2012). Despite the importance of cord care, a study done in rural Uttah showed that only a small proportion of mothers (7%) reported that they got information about cord care (Baquil et al., 2009). However, regardless of the efficacy and recommended use of chlorhexidine for cord care, only 0.7% mothers were told to use chlorhexidine but not told where to get it or shown how to use.

Neonatal danger signs enable mothers to recognize anomalies with the new born. The study revealed that a half of the mothers were informed on the danger signs such as inability of a newborn to breast feed (50.4%), vomiting everything (47%) while majority were not told that about danger signs such as convulsion (63%), jaundice (58.1%), fever (52.6%), hypothermia (56.1%), grunting (75.5%), chest wall in-drawing (82.5%), tachypnea (81.1%) and slow breathing (81.5%). These contravenes WHO recommendation that the neonatal danger signs that should be assessed and if present should be referred for further evaluation include: Stopped feeding well, history of convulsions, fast breathing (breathing rate ≥60 per minute), severe chest in-drawing, no spontaneous movement, fever (temperature ≥37.5 °C), low body temperature (temperature <35.5 °C), any jaundice in first 24 hours of life, or yellow palms and soles

at any age. Different findings were observed in different studies. In an Ethiopian study, Mothers were able to mentioned high temperature (39.8%), vomiting (34%), and inability to feed (17.2%) as a key neonatal danger sign (Nigatu et al., 2015). A survey done in Uganda indicated that fast or difficulty breathing was the most commonly known danger sign referred to by almost 30% of the women while fever and difficulty feeding was mentioned by 20% of the women. The least known danger signs were convulsions, movement only when stimulated and hypothermia, as stated by less than 5% of the respondents (Sandberg et al. 2014). A study done in Indian found greater awareness with regard to knowledge of difficulty feeding (22.2%), convulsions (9.7%) and hypothermia (2.5%) with about most (75%) of the respondents mentioning fever as a danger sign. Other identified neonatal danger signs were difficulty in breathing (40.3%), poor sucking (22.2%) and lethargy (13.9%). Only a small number (9.7% and 2.8%) identified convulsion and hypothermia as newborn danger signs respectively (A. R. Dongre, Deshmukh, & Garg, 2009). Likewise, a study by (Sandberg et al., 2014) showed high (90%) knowledge of fever, from another part of India. Variations in findings might be explained by differences in the disease spectrum and a varying focus in the services provided to mothers by healthcare providers.

The poor maternal knowledge on newborn danger signs could be associated with poor interaction with health care worker during antenatal visit as well as lack of knowledge on newborn danger by healthcare providers as well as the effect of these danger signs on neonatal outcome. The results from the above findings could make mothers not to seek immediate medical attention hence probably increasing neonatal morbidity, complications and mortality.

5.3. Maternal Knowledge and awareness

Knowledge on postnatal care was assessed by asking the respondents whether they expected any other services required apart from the services asked in the questionnaire. Despite the fact that almost all (99.9%) mothers interviewed did not indicate what else they expected apart from the postnatal services offered, many (41% maternal and 59% neonatal) services were lacking essential components that all mothers were expected to know if antenatal preparation was done adequately. The level of education for most mothers was low which could affect their knowledge and level of awareness of basic postnatal care services.

A qualitative study done in Australia to explore women's views, expectation and experiences indicated that mothers were very concerned about the safety of their new babies, and were aware that they had responsibility for another life. This contributed to a perceived need for constant professional support. Furthermore, Women's expectations of postnatal care and what they perceived they needed in relation to transition to motherhood and parenting were; breastfeeding support and education; professional support while acquiring new skills; and the opportunity to rest and be 'cared for' during this transitional time. Women felt there was a lack of professional support at times while they were in hospital, commenting that staffs were too busy or unavailable to provide the care that they expected. Additionally, Women felt that breastfeeding was a skill that ideally needed to be learnt before hospital discharge as most of them struggle with that at home. Hence, skill acquisition for baby care; consistent advice from health professionals; continuity of care; lack of staff time; and partner involvement during the postnatal hospital stay was emphasized (Frei & Mander, 2011).

Contrary to the study findings, a Swedish study elaborated that access to caring staff information and support were mentioned as important. Women held high expectations regarding self-care and infant care with a strong emphasis on breast feeding. They anticipated that they needed emotional support and understanding of their situation from the nurses/midwives. The wish to have access to a health care provider on the maternity ward received the highest percentage (99.3%) while other expectations graded as important were the long hospital stay (94.9 %), to have a post-delivery talk (95%), support during breastfeeding (90.6%), to have the family staying on the maternity ward (86.3%), to have a room for oneself (84.9%), Information needed was on breastfeeding (85.4.8%), infant behaviour (82%) and childcare (82.7%). The opportunity to be discharged early was considered important by 61.2% of the women, a small proportion (28.3%) considered having a television in the room during as important (Mander, 2010).

Regarding association, results of the present study revealed no significant associations between various outcome variables and the maternal age, level of education and source of living ($p>0.05$). An explanation for lack of association in our study might be that similar standards of postnatal care were provided to all mothers and neonates.

Analysis in this study showed that marital status was found to be significantly associated with support for positioning and attachment for breast feeding whereby single, divorced, separated or widowed mothers were more likely to be shown how to attach the neonate to the breast for breastfeeding compared to those who were married, 50.0% vs. 34.5%, ($p = 0.028$). Similarly, the results also showed that same mothers were more likely to receive education of hands-on perineal care services ($p =0.025$). Corresponding association was obtained in a study conducted in Libya by (Fitzsimons & Vera-Hernández, 2013) which

reported significant association between parity and position (P = 0.028) and attachment (P = 0.002). Contrary findings in the same study indicated no significant association between maternal occupation and position (*P* = 0.238) and attachment (*P* = 0.903). In the current study, there was no association between receiving of the specific postnatal care services and the age of the mothers, p >0.05 (p >0.836- for those shown and assisted to position and attach the baby to the breast for breast feeding). On the same note, this findings confirms that no significant association was found between the mother's age and position (P = 0.238) and attachment (P = 0.662) of neonates to the breast during feeding (Fitzsimons & Vera-Hernández, 2013).

Significantly, parity was associated with assessment of severe bleeding. The results show that a greater proportion of the para 1 mothers were more likely to be assessed for severe bleeding compared to the multiparous mothers, 87.8% vs. 78.7%, p = 0.048. No previous studies are available for comparison.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 Conclusion

About 53% of mothers and 41% neonates receive postnatal care services before discharge as reported by Mothers, although the care provided lacked most of the components as recommended by WHO. Lack of expectation on postnatal care despite lack of essential components of care indicates poor maternal knowledge on basic postnatal care services provided at the health facility.

6.2 Recommendation

- All neonates should be assessed by health care providers before discharge from the facility as recommended by WHO.
- Health Care Providers attending to Antenatal Mothers should provide Health Education related to; Antenatal Care, Care during Labour and Delivery and Postnatal Care when prospective mothers are in the right mental, physical and emotional state. In addition, interactivity between health care provider and clients should be enhanced during hospital stay.
- The Hospital Management should consider providing targeted health education programs on available postnatal care services for both mothers and neonates during perinatal visits to create awareness and increase maternal knowledge of availability of these services.
- More research is needed on postnatal services provided in health facilities.

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APPENDICES

Appendix 1.Informed Consent Form

Study Title: Assessment of Postnatal Care Services provided to Mothers and Neonates upon discharge at Moi Teaching and Referral Hospital, Eldoret, Kenya

Researcher: I am Ms**.** Ruth Ngelechei, a Masters Student undertaking, Maternal child health at Moi University, School of Nursing. P.O Box 4606, 30100 Eldoret; Mobile no: +254 722916676.

My Supervisors are:

Prof. Violet Naanyu-+254 710 952 029

Dr. TheresiahWambui-+254 712 330 485

MrsEverlyneRotich-+254 722 358 834

Why the study:

This study aims to assess the Postnatal Care (PNC) services as currently offered to Mothers and Neonates upon discharge at Moi Teaching and Referral Hospital (MTRH), in the quest to describe the situation in this public National Referral hospital. This will be useful in ascertaining that guidelines on PNC find base.

Procedure:

By you consenting to participate, you will be asked questions by the researcher or the assistant with the only aim being to collect information to meet the purpose of this study.

Benefits:

No direct benefit will be achieved following participation in this study but the findings from it will benefit MTRH in improving PNC service delivery.

Risk:

This is a minimum risk study and the risk involves psychosocial risks such as discomfort. These risks will be minimized by assuring and maintaining confidentiality that will be achieved by consenting in semi-private rooms.

Confidentiality:

Information gathered in this study will be considered confidential and no names will be written on the questionnaire. Filled questionnaires and consent forms will be locked for access only by the investigator, to enhance confidentiality.

Right of participants:

Your participation in this study is voluntary. You are free to either refuse to take part or to withdraw at any stage in the course of study.

Signed Consent for Participation

I agree to participate in this study:

Sign..... Date ……...…….

Researcher/Consenter

Sign..... Date ……...…….

Appendix 2: Questionnaire for the postnatal mothers

Note: Information gathered here-in is intended for academic purpose only.

Any information you give will be treated with utmost confidentiality

Questionnaire no……..

Date filled ……

Data collector/Interviewer……..

Demographic Data

1. What is your age in years? .....
2. What is your marital status?

   Single [ ] Married [ ] Widowed [ ] Cohabiting [ ] Separated [ ]

   Divorced [ ]
3. What is your highest level of education?

   None [ ] Primary [ ] Secondary [ ] College/University [ ]
4. What do you do for a living? .....
5. What is your parity? ……

   Maternal Care
6. Was your uterus massaged after delivery?

   Yes [ ] No [ ]
7. After how long was it massage? ……..

8. Were you assessed for?
    a. Severe Bleeding Yes [ ] No [ ]
    b. Involution of the uterus Yes [ ] No [ ]
    c. Breast feeding difficulties Yes [ ] No [ ]
        i. Inverted nipple Yes [ ] No [ ]
        ii. Cracked, sore nipples Yes [ ] No [ ]
9. How long after delivery were you given the baby for breast feeding and rooming in?

    Within 1 hour [ ] within two hours [ ] after 3 hours [ ] don't know [ ]
10. Did anyone demonstrate to you how to latch the baby to the breast?

    Yes [ ] No [ ]

    If yes, who did the demonstration and assisted you?

    Nurse [ ] Nutritionist [ ] Doctor [ ] Clinical Officer [ ]

    Student [ ] (Specify)…… Others [ ](specify)……..

    Don't know [ ]
11. Did anyone assist to position and attach the baby to the breast?

    Yes [ ] No [ ]

    If yes, who assisted you to position and attach the baby to the breast?

    Nurse [ ] Nutritionist [ ] Doctor [ ] Clinical Officer [ ]

    Student [ ] (Specify)…… Others [ ](specify)……..

    Don't know [ ]
12. Did you get an episiotomy or a tear during delivery?

    Yes [ ] No [ ] Don't know [ ]

If yes, were you given antibiotics?

Yes [ ] No [ ] don't know [ ]

13. Were the following vital signs monitored?

    a. Blood Pressure Yes [ ] No [ ]

    b. Pulse Yes [ ] No [ ]

    c. Respiration Yes [ ] No [ ]

    d. Temperature Yes [ ] No [ ]

If the above vital signs were not monitored, what explanation (if any) was given?

.....

14. How many times have you had your vital signs monitored?

    a. Blood pressure

       Once [ ] Twice [ ] Thrice [ ] Four times [ ] More than five times [ ]

       Not done [ ] Can't Remember [ ]

    b. Pulse

       Once [ ] Twice [ ] Thrice [ ] Four times [ ] More than five times [ ]

       Not done [ ] Can't Remember [ ]

    c. Respiration

       Once [ ] Twice [ ] Thrice [ ] Four times [ ] More than five times [ ]

       Not done [ ] Can't Remember [ ]

    d. Temperature

Once [ ] Twice [ ] Thrice [ ] Four times [ ] More than five times [ ]

Not done [ ] Can't Remember [ ]

15. Were you given opportunity by the midwife to talk about your birth experience and any other concerns? Yes [ ] No [ ]
16. Were you told about the following danger signs to watch out for?
    a. Heavy vaginal bleeding Yes [ ] No [ ]
    b. Convulsion Yes [ ] No [ ]
    c. Foul smelling discharge Yes [ ] No [ ]
    d. Fever Yes [ ] No [ ]
    e. Severe Headache Yes [ ] No [ ]
17. Did you receive any information/education on?
    a. Hand washing Yes [ ] No [ ] Can't Remember [ ]
    b. Hands-on- perineal care Yes [ ] No [ ] Can't Remember [ ]
    c. Birth Spacing Yes [ ] No [ ] Can't Remember [ ]
    d. Maternal Nutrition Yes [ ] No [ ] Can't Remember [ ]
    e. Breast Care Yes [ ] No [ ] Can't Remember [ ]
    f. Breast Feeding Yes [ ] No [ ] Can't Remember [ ]
    g. Personal hygiene Yes [ ] No [ ] Can't Remember [ ]

Newborn care

18. Please describe how your baby was cared for immediately after birth.....
    ..

19. Was your baby examined from head to toe?

    Yes [ ] No [ ] Don't know [ ]

20. Was your baby given the following?

    a. Vitamin K Yes [ ] No [ ] Don't Know [ ]

    b. Tetracycline Eye Ointment (TEO) Yes [ ]

       No [ ] Don't Know [ ]

    c. Birth Polio Yes [ ] No [ ] Don't Know [ ]

    d. Bacillus Calmette-Guerin (BCG) Yes [ ] No [ ] Don't Know [ ]

21. When were you told to bath the baby?

    a. Within six hours [ ] Within 12 hours [ ] After 24 hours [ ]

    b. Not told [ ] Can't Remember [ ]

22. How were you told to take care of the baby's umbilical cord?

    a. Keep it clean and dry [ ] Use spirit [ ] Use chlorhexidine 7.1% [ ] Not told [ ]

    b. Others (Specify).....[ ] Can't Remember [ ]

23. Were you told of the following danger signs to watch out for and report immediately to healthcare provider?

    a. Baby not breast feeding Yes [ ] No [ ] Can't Remember [ ]

    b. Vomiting everything Yes [ ] No [ ] Can't Remember [ ]

    c. Convulsion Yes [ ] No [ ] Can't Remember [ ]

    d. Jaundice Yes [ ] No [ ] Can't Remember [ ]

    e. Fever Yes [ ] No [ ] Can't Remember [ ]

f. Hypothermia Yes [ ] No [ ] Can't Remember [ ]

g. Grunting Yes [ ] No [ ] Can't Remember [ ]

h. Chest wall in drawing Yes [ ] No [ ] Can't Remember [ ]

i. Fast Breathing Yes [ ] No [ ] Can't Remember [ ]

j. Slow Breathing Yes [ ] No [ ] Can't Remember [ ]

k. Others (Specify) ……

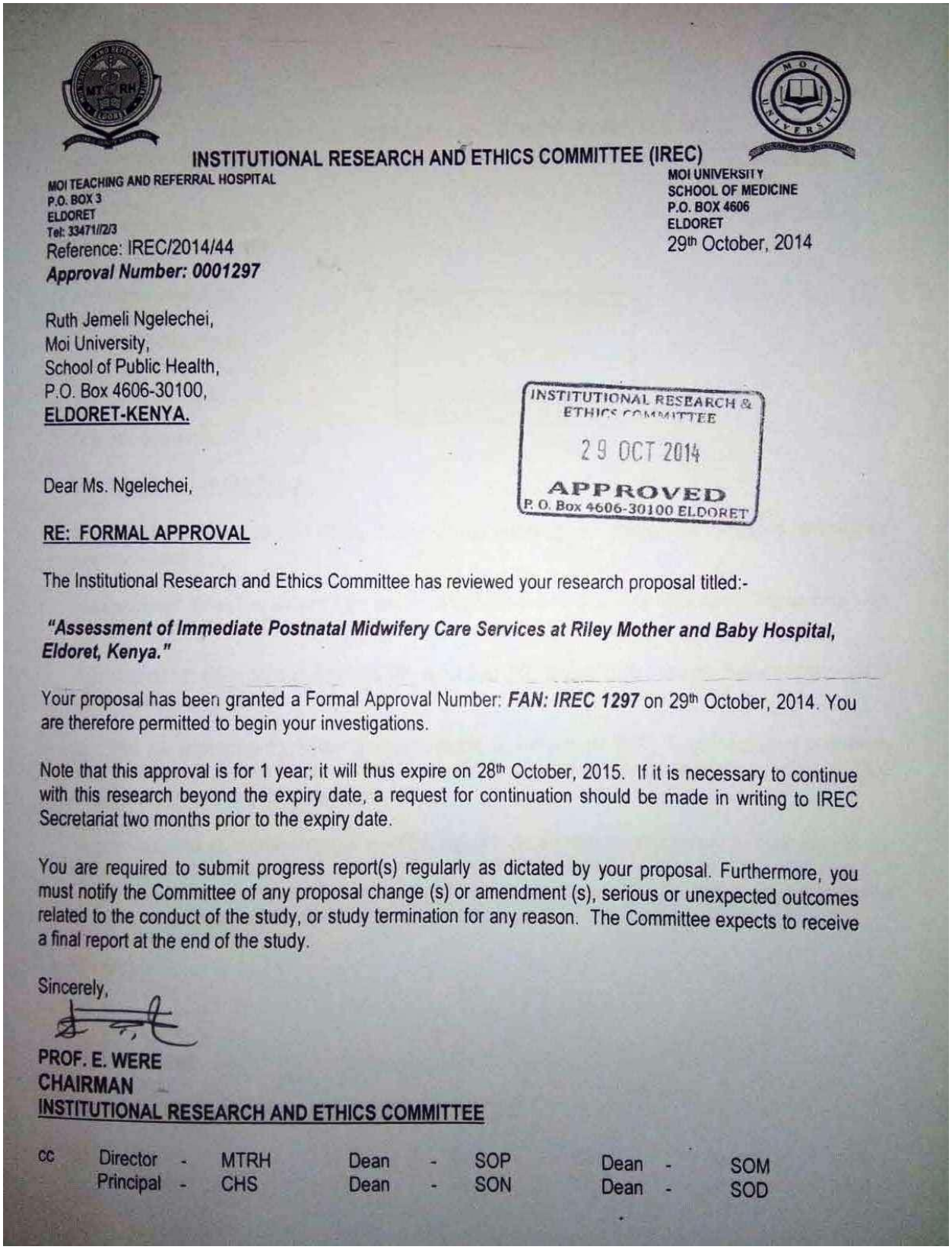
Maternal Knowledge and awareness

24. If no responses from the above mentioned maternal and neonatal services, did you expect any other service?

Yes [ ] No [ ]

If yes, please explain?.....

Appendix 3: Hospital Approval



INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

MOI TEACHING AND REFERRAL HOSPITAL
P.O. BOX 3
ELDORET
Tel: 33471/2/3

MOI UNIVERSITY
SCHOOL OF MEDICINE
P.O. BOX 4606
ELDORET

Reference: IREC/2014/44
Approval Number: 0001297

29th October, 2014

Ruth Jemeli Ngelechei,
Moi University,
School of Public Health,
P.O. Box 4606-30100,
ELDORET-KENYA.

INSTITUTIONAL RESEARCH & ETHICS COMMITTEE
29 OCT 2014
APPROVED
P. O. Box 4606-30100 ELDORET

Dear Ms. Ngelechei,

RE: FORMAL APPROVAL

The Institutional Research and Ethics Committee has reviewed your research proposal titled:-

"Assessment of Immediate Postnatal Midwifery Care Services at Riley Mother and Baby Hospital, Eldoret, Kenya."

Your proposal has been granted a Formal Approval Number: ***FAN: IREC 1297*** on 29th October, 2014. You are therefore permitted to begin your investigations.

Note that this approval is for 1 year; it will thus expire on 28th October, 2015. If it is necessary to continue with this research beyond the expiry date, a request for continuation should be made in writing to IREC Secretariat two months prior to the expiry date.

You are required to submit progress report(s) regularly as dictated by your proposal. Furthermore, you must notify the Committee of any proposal change (s) or amendment (s), serious or unexpected outcomes related to the conduct of the study, or study termination for any reason. The Committee expects to receive a final report at the end of the study.

Sincerely,

PROF. E. WERE
CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

cc Director - MTRH Dean - SOP Dean - SOM
Principal - CHS Dean - SON Dean - SOD

Appendix 4:IREC Approval

INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE (IREC)

MOI TEACHING AND REFERRAL HOSPITAL
P.O. BOX 3
ELDORET
Tel: 33471//2/3

MOI UNIVERSITY
SCHOOL OF MEDICINE
P.O. BOX 4606
ELDORET

Reference: IREC/2014/44
Approval Number: 0001297

25th August, 2016

Ruth Jemeli Ngelechei
Moi University,
School of Public Health,
P.O. Box 4606-30100,
ELDORET-KENYA.

INSTITUTIONAL RESEARCH & ETHICS COMMITTEE
25 AUG 2016
APPROVED
P. O. Box 4606-30100 ELDORET

Dear Ms. Ngelechei,

RE: CONTINUING APPROVAL

The Institutional Research and Ethics Committee has reviewed your request for continuing approval for your study titled:-

"Assessment of Postnatal Care Services Provided to Mothers and Neonates upon Discharge at Moi Teaching and Referral Hospital"

Your request has been granted Approval with effect from 25th August, 2016. You are therefore permitted to continue with your study.

Note that this approval is for 1 year; it will thus expire on 24th August, 2017. If it is necessary to continue with this research beyond the expiry date, a request for continuation should be made in writing to IREC Secretariat two months prior to the expiry date.

You are required to submit progress report(s) regularly as dictated by your proposal. Furthermore, you must notify the Committee of any proposal change (s) or amendment (s), serious or unexpected outcomes related to the conduct of the study, or study termination for any reason. The Committee expects to receive a final report at the end of the study.

Sincerely,

PROF. E. WERE
CHAIRMAN
INSTITUTIONAL RESEARCH AND ETHICS COMMITTEE

cc:	CEO	-	MTRH	Dean	-	SPH	Dean	-	SOM
	Principal	-	CHS	Dean	-	SOD	Dean	-	SON