

**ASSESSMENT OF IMMEDIATE NEWBORN CARE PRACTICES
AMONG HEALTH CARE WORKERS AT RMBH, MTRH.**

KEITANY CAROLYNE JEMUTAI

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE
IN NURSING, MOI UNIVERSITY.**

© 2019

DECLARATION

I, the undersigned declare that this thesis is my original work, and has not been presented in any other university. This thesis has been written in partial fulfillment for the award of the Degree in Master of Science in Nursing.

CAROLYNE KEITANYSN/PGMNH/08/12

Signature.....Date.....

SUPERVISORS APPROVAL

This thesis has been submitted with our approval as the university supervisors:

MR.AMOS GETANDA

LECTURER, DEPT OF MIDWIFERY AND GENDER

MOI UNIVERSITY, SCHOOL OF NURSING

SIGNATURE.....DATE.....

KARANI MAGUTAH (PhD),

DEPT OF MEDICAL PHYSIOLOGY

SCHOOL OF MEDICINE, MOI UNIVERSITY

SIGNATURE.....DATE.....

DEDICATION

I dedicate this work to my family who despite all the challenges, they offered both financial and psychological support during the entire period of my studies.

ACKNOWLEDGEMENT

I wish to express my sincere gratitude to the people who have supported me in my work, with special thanks to:

Mr. Amos Getanda for his tireless guidance, advice and help through the three years in school: thank you for your time. Dr. Karani.Magutah for his valuable and scholarly guidance in writing this thesis. Both their efforts greatly facilitated me come up with this thesis. I am grateful because they sacrificed so much of their time and ensured that I completed my work on time, may God bless the work of your hands.

I wish to express my appreciation MTRH management for allowing this study to be carried out in the hospital and granting me time to attend my classes.

To my beloved family for their love, inspiration and financial support thank you for being there to give me joy after hard work.

ABSTRACT
ASSESSMENT OF IMMEDIATE NEWBORN CARE PRACTICES AMONG
HEALTH CARE WORKERS AT RMBH, MTRH.

Introduction: Care of all newborns includes immediate and thorough drying, skin to skin contact of the newborn with the mother, cord clamping and cutting after the first minutes after birth, early initiation of breastfeeding, and exclusive breastfeeding. Labour, birth and the immediate postnatal period are the most critical for newborn and maternal survival. Health care professionals in general play a role to ensure that the newborn has best possible beginning of life, be aware of the potential problems and be alert to the infants changing condition and to intervene appropriately when necessary. The study aimed at description of the activities done in preparation for delivery and newborn care, the immediate care provided to newborns and to determine performance of potentially harmful newborn practices.

Methods: This was a cross sectional study, whose 39 study participants were all health care practitioners involved in immediate care of neonates, the sampling method was purposive, and a checklist was used to collect the data. Analysis was performed using SPSS version 12 and analyzed into frequencies and percentages.

Results: A total of 39 health care workers participated in the study. Most items were available in the delivery room, sterile gloves (100%), clean gloves (97.4%) and hand sanitizer (64.1%). Initiation of breastfeeding within the first hour of birth is at 70.5%, reasons such as resuscitation of newborn, repair of episiotomy/tears were cited for not initiating breastfeeding. Performance of inappropriate newborn practices such as lack of provision of heat source during delivery (46.2%), inadequate drying of head (23.1%) and placements on a cold surface were noted (3.9%).

Conclusion: Study findings highlight that quality of care was good in areas such as preparation of items before delivery (sterile and clean gloves) and initiation of breastfeeding within first hour of birth, but it was poor in relation to unavailability of heat source and inadequate drying of newborn.

Recommendations: Provision of the needed supplies, items and equipment (heat source) before each delivery and for provision of recommended immediate newborn care.

TABLE OF CONTENTS

DECLARATION	II
DEDICATION	III
ACKNOWLEDGEMENT	IV
ABSTRACT	V
TABLE OF CONTENTS	VI
LIST OF TABLES	IX
LIST OF FIGURES.	X
LIST OF ABBREVIATIONS.	XI
DEFINITION OF OPERATIONAL TERMS	XII
CHAPTER ONE	1
INTRODUCTION.	1
1.1 BACKGROUND INFORMATION.	1
1.2 PROBLEM STATEMENT	6
1.3 JUSTIFICATION.	6
1.4 RESEARCH QUESTION.	8
1.5 RESEARCH OBJECTIVES.	8
1.5.1 Broad objective	8
1.5.2 Specific objectives.	8
1.6 CONCEPTUAL FRAMEWORK.	8
THE ELEMENTS OF CARE ARE ILLUSTRATED IN THE DIAGRAM BELOW;	9
1.7 MODIFIED EVIDENCE BASED PRACTICE MODEL.	10
CHAPTER TWO.	12
LITERATURE REVIEW.	12
2.0. INTRODUCTION.	12
2.1. TIME AND NON-TIME BOUND PROCEDURES.	12
2.2 BREASTFEEDING.	14
2.3 THERMAL CONTROL.	16
2.4 RESUSCITATION.	18
2.5 CHALLENGES AND SUCCESSES IN NEWBORN CARE.	21
CHAPTER THREE.	25

METHODOLOGY.	25
3.0 INTRODUCTION.	25
3.1 STUDY AREA.	25
3.2 STUDY DESIGN	25
3.3 STUDY POPULATION	26
3.4 STUDY SAMPLE.	26
3.5 SAMPLING TECHNIQUE.	26
3.6 ELIGIBILITY.	26
3.6.1 Inclusion criteria.	26
3.6.2	26
Exclusion criteria.	26
3.7	27
DATA COLLECTION.	27
3.7.1 Study instrument.	27
3.7.2 Research team	27
3.7.3 Pilot study.	28
3.7.4 Data collection	28
3.7.5 Data Validity.	28
3.7.6. Determining the reliability of the instrument	29
3.8 DATA MANAGEMENT AND ANALYSIS	29
3.8.1 Data quality control.	29
3.8.2 Data handling and cleaning	29
3.8.3 Data analysis	30
3.9. ETHICAL CONSIDERATION	30
3.10	30
LIMITATIONS OF THE STUDY	30
CHAPTER FOUR	31
RESULTS AND DATA ANALYSIS	31
4.1 BIRTH ATTENDANTS	31
4.2 AVAILABILITY OF ITEMS IN THE DELIVERY ROOM	32
4.3: ADHERENCE TO INFECTION PREVENTION AND CONTROL	32
4.5: AVAILABILITY AND FUNCTIONALITY OF SUPPLIES/ITEMS FOR RESUSCITATION.	34
4.6. ACTIVITIES DONE DURING DELIVERY	35
4.7 CONFIRMATION AND ESTIMATION OF APGAR SCORE	36
4. 8. STIMULATION OF THE NEONATE	36

4.9. NEWBORN NEEDED RESUSCITATION BY BAG AND MASK VENTILATION	37
4.10. NEWBORN RESUSCITATION	37
4.11. END POINT (OUTCOME)	38
4.12. TIME TAKEN TO INITIATE BREASTFEEDING	39
4.13. SUPPORT DURING INITIATION OF BREASTFEEDING	40
4.14. TYPE OF SUPPORT OFFERED DURING INITIATION OF BREASTFEEDING	41
4.15. SKIN TO SKIN CONTACT.	41
4.16. DRUG ADMINISTRATION.	42
4.17. PROVIDER CHECKS ON LATCHING AND BREASTFEEDING ESTABLISHMENT.	42
4.18. FREQUENCY OF NEWBORN OBSERVATION.	43
4.19. PRESENCE OF BIRTH COMPANION	44
4.20. POTENTIALLY HARMFUL PRACTICES.	45
CHAPTER FIVE.	46
5.0 DISCUSSION.	46
CHAPTER SIX	52
CONCLUSION AND RECOMMENDATIONS	52
6.1 CONCLUSION.	52
6.2 RECOMMENDATIONS.	53
6.2.1. Health care practitioners.	53
6.2.2. Hospital management.	53
REFERENCES.	54
APPENDICES	65
APPENDIX 1:	65
OBSERVATION TOOL (CHECKLIST)	65
STUDY TITLE: IMMEDIATE NEWBORN CARE PRACTICES AMONG HEALTH CARE WORKERS IN RMBH, MTRH.	65

LIST OF TABLES

Table 4.1: Availability of items in the delivery room.....	32
Table 2: Availability and functionality of supplies/items for resuscitation.....	34
Table 4.3: Activities done during delivery	35
Table 4.5: Newborn resuscitation	38

LIST OF FIGURES.

Figure 1.1 Conceptual Framework.	9
Figure 4.1 Birth attendants.....	31
Fig 4.2: Adherence to infection prevention and control	32
Fig 4.3: Items and conditions prepared for birth	33
Figure 4.4: Stimulation of the neonate.....	36
Figure 4.7: New-born needed resuscitation by bag and mask ventilation	37
Figure 4.6: End point (outcome).....	38
Figure 4.7: Time taken to initiate breastfeeding	39
Figure 4.8: Support during initiation of breastfeeding	40
Figure 4.9: Type of support offered during initiation of breastfeeding	41
Figure 4.10: Skin to skin contact.	41
Fig 4.11: Provider checks on latching and breastfeeding establishment	42
Fig 4.12. Frequency of newborn observation.	43
Fig 4.13: Presence of Birth companion	44
Fig 4.14: Potentially harmful newborn practices.....	45

LIST OF ABBREVIATIONS.

ANC	Antenatal Care.
APGAR	Appearance, Pulse, Grimace, Activity, Respirations.
ARVs	Anti-Retroviral.
ENC	Early Neonatal Care.
HIV	Human Immunodeficiency Virus.
IREC	Institutional Research and Ethics Committee.
L&D	Labour and Delivery.
MDG	Millennium Development Goals.
MTRH	Moi Teaching and Referral Hospital.
QOC	Quality of Care.
RMBH	Riley Mother and Baby Hospital.
SON	School of Nursing.
SSC	Skin to Skin Contact.
UNICEF	United Nations Children's Fund.
WHO	World Health Organization.

DEFINITION OF OPERATIONAL TERMS

Harmful practices:

Activities that have no proven benefit and may cause harm to the client.

Practices that are not indicated can be beneficial, but if they are routinely done in the absence of specific medical indications, they can be harmful.

Immediate Care of Newborn:

It is the care given to the neonate following birth within the delivery room like: clearing of airway, providing warmth & prevention of heat loss, initiation of breast feeding, protection from infections, early assessment of neonatal condition and continuation of further care, and in this study will be restricted to a period of one hour after birth.

Neonatal resuscitation:

The set of interventions at the time of birth to support the establishment of breathing and circulation

Practice:

Refers to the performance of health care workers according to prepared checklist regarding Immediate Care on Newborn.

Midwife:

A trained attendant at childbirth but is not a physician.

CHAPTER ONE

INTRODUCTION.

1.1 Background Information.

Essential newborn care is a set of comprehensive recommendations designed by WHO to improve health of the newborn through interventions before conception, during pregnancy, soon after birth and in postnatal period. It includes thermoregulation, clean delivery and cord care, initiation of breastfeeding, immunization, eye care, recognition of danger signs care of the preterm/low birth weight infant and management of newborn illnesses. Lack of effective use of the recommendations by the health care practitioners may lead to increased neonatal mortality (WHO, 2013).

Neonatal mortality remains high despite a declining proportion of deaths among children under 5 years of age. WHO estimated neonatal mortality around 45% of all deaths in under 5 mortalities (WHO, 2013). Up to two third of newborn deaths could be prevented if skilled health workers perform effective measures at birth and during the first week of life. Majority of these deaths occur in the first 24 hours of life (Kate M, 2014).

Every second of exposure to the outside environment results in heat loss via evaporation, conduction, convection and radiation. Thorough drying, direct skin-to-skin contact immediately upon delivery and covering with a blanket and bonnet (prior to cord clamping) mitigate this threat (WHO, 1993,1998). Drying also stimulates breathing. Sustained skin-to-skin contact also initiates colonization of the newborn with maternal flora (as opposed to hospital flora) and facilitates successful intake of colostrum and sustained breastfeeding (Moore et al., 2007) delaying cord clamping until cord pulsations

stop, typically around one to three minutes, reduces the risk of anemia (Rabe et al., 2004, Macdonald et al., 2008.).

Furthermore, in preterm infants, delayed cord clamping is associated with fewer transfusions and fewer intraventricular haemorrhages (Mercer et al., 2006). Initiation of breastfeeding within the first hour reduces the risk of infection-related death and increases the likelihood of sustained breastfeeding (Edmond et al., 2007). Finally, weighing, examining and providing vitamin K injections and hepatitis B vaccinations, while essential, should not interfere with the early, time-sensitive actions (ABM, 2008).

WHO documented that studies have shown that many newborn lives can be saved by the use of interventions that require simple technology. The majority of these interventions can be effectively provided by a single skilled birth attendant caring for the mother and the newborn. Care of all newborns includes immediate and thorough drying, skin to skin contact of the newborn with the mother, cord clamping and cutting after the first minutes after birth, early initiation of breastfeeding, and exclusive breastfeeding. Newborns who do not start breathing on their own by one minute after birth should receive positive pressure ventilation with room air by a self-inflating bag and mask (WHO, 2013).

After the first hour of life, newborns should receive eye care, vitamin K, and recommended immunizations (birth dose of OPV and Hepatitis B vaccine). They should be assessed for birth weight, gestational age, congenital defects and signs of newborn illness. Special care should be provided for sick newborns, those who are preterm and/or low birth weight, and those who are exposed or infected by HIV or have congenital syphilis (WHO, 2013).

Sub-Saharan Africa has the highest neonatal mortality rates (NMRs) (UNICEF, 2015), experiencing a mortality reduction of 28% since 1990 (SC, 2014). Despite the impressive efforts undertaken around the Millennium Development Goals (MDG) 4 to reduce child mortality, the decline of neonatal mortality has been much slower than for mortality among children aged 1–59 months; consequently, neonatal deaths now contribute to about 45% of total under-5 deaths in 2015 (UNICEF,2015). Recognising the importance of addressing this problem, in 2014 the World Health Assembly endorsed the Every Newborn Action Plan (ENAP)-a road map for ending preventable newborn deaths and stillbirths with a target for all countries to attain 12 or fewer neonatal deaths per 1000 live births by 2030 (WHO, UNICEF,2014). This target is included also in the Sustainable Development Goals (Chou et al, 2015).

Additionally, the ENAP's first two strategic objectives focus on strengthening and investing in quality of care (QoC) around the time of birth as mechanisms to achieving the mortality target (WHO, UNICEF,2014). Evidence suggests that the majority of these deaths can be prevented, particularly those occurring at birth and immediately thereafter, with simple, evidence-based essential newborn care (ENC) interventions conducted by skilled providers and supported with available commodities (Darmstadt et al,2005). An increased focus on quality improvement for patient care within the health system and in formulation and implementation of health policies is critically important. Identifying gaps in and barriers to quality newborn care in facilities is one of the critical steps in the improvement process (English et al 2009 & Duysburgh et al, 2013).

A study on Household knowledge and practices of newborn and maternal health in Pakistan showed that delayed initiation of breastfeeding, avoidance of colostrum and pre-lacteal feeding was almost universal but most women did breastfeed their babies (Khadduri et al. 2008). Important factors in establishing and maintaining breast-feeding after birth include: giving the first feed within one hour of birth, correct positioning that enables good attachment of the baby, frequent feeds, no prelacteals feeds or other supplements, and offering psychosocial support for breast-feeding mothers (WHO 2008).

Findings from a study conducted among the rural poor in Western Uttar Pradesh identified factors influencing newborn care, nearly all newborns were left wet and naked on the floor until the placenta was delivered and bathed immediately after birth, and very few birth attendants washed their hands with soap before assisting the delivery. It also reports the use of new blade dipped in hot water to cut the cord and unsterilized cord tie after birth. Timely initiating of breastfeeding was not done. Same study established that Mothers behavior were found to be influenced by Mother-in-Laws advice, traditional beliefs, and pursuance of a practice because it was the norm in the community (Sethi V & Kashyap S, 2005). Apart from breast milk which was the preferred feed during neonatal period, honey and water were also given in order to reduce colic as they were perceived to have health benefits (Tuladhar 2010; Parlato, Darmstadt, and Tinker 2004).

Some traditional practices of newborn care may not be in accordance with the recommended guidelines. The fact that most births take place at home shows that such traditional methods might be used more frequently. A study conducted Ghana established

that application of hot water and Shea butter on the cord was common and it is believed that applying nothing to the cord to ‘force it off’ and help it heal would negatively affect the newborn baby including discomfort and potential death for the baby, discomfort for the mother because she is confined to the room till the cord stump is off, and a delay in the child becoming a human being among some ethnic groups (Moyer et al. 2012; Marah 2011).

Studies done in Uganda by Bergstrom et al on impact of newborn bathing and the prevalence of neonatal hypothermia, prevalence and risk factors of neonatal hypothermia respectively have shown that even if it is a tropical country, hypothermia at birth is common (Bergström, Byaruhanga, and Okong 2005).

In a study done in eight (8) former Provincial Hospitals in Kenya, quality of maternal and newborn care observed during labour and delivery was below the internationally accepted standards for ANC and L&D practices as well as essential newborn care. Largely, 65% of women received the five elements of immediate newborn care: delayed cord clamping, placing the newborn skin-to-skin with the mother, drying and wrapping the baby, cutting and tying the cord, and helping the mother initiate breastfeeding. The most frequently observed harmful practice in new born care was holding the newborn upside down (7% of deliveries) (Kenya QoC, 2010).

Furthermore, work done in 8 district hospitals across Kenya by Opondo et al, (Opondo et al. 2009), demonstrated that district hospitals which are the first level referral centres are ill equipped to provide newborn care in Kenya a situation likely to be common in other

low resource settings. In addition, Gathara et.al, 2011 reported that quality of care provided in the same districts hospitals was sub-optimal highlighting the need to strengthen the health care system to take care of the severely ill newborns (Gathara et al. 2011).

The study recognizes good care as proper drying, skin to skin contact, breastfeeding, resuscitation and warming is done appropriately.

1.2 Problem Statement

Of the 3.1 million newborn deaths that occurred in 2010, a quarter to half of them occurred within the first 24 hours after birth. Many of these deaths occurred in babies born too early and too small, babies with infections, or babies asphyxiated around the time of delivery. Labour, birth and the immediate postnatal period are the most critical for newborn and maternal survival. Unfortunately, the majority of mothers and newborns in low- and middle-income countries do not receive optimal care during these periods (WHO, 2013).

Although standards for immediate newborn care exist in high- and low-income countries alike, direct observational studies may uncover substandard practices. Even in developed countries, the sequence and timing of critical interventions may still require changes or standardization (Sobel et al., 2011).

1.3 Justification.

The health care professional in general and nurses in particular play a role to ensure that the newborn has best possible beginning of life and the nurse must be aware of the potential problems and be alert to the infants changing condition and to intervene appropriately when necessary. The nurse is the first health care provider who has direct

contact with the neonate during birth. Hence nurses require the knowledge and skill to take care of the babies keeping in mind the basic principles so that many complications can be prevented (Fattah et al., 2012).

The effect of facility based neonatal resuscitation was assumed to be achievable with basic neonatal resuscitation, which is the clear priority for rapid scale up in facilities in low and middle income countries, given feasibility, skills required, and equipment costs. Furthermore, training programs should emphasize routine assessment of provider knowledge, competency and skill maintenance). Provider knowledge and performance skills to conduct resuscitation decline significantly over time (Lee et.al., 2011).

Further research has been recommended to determine the effectiveness of individual postnatal care components, such as neonatal resuscitation, immediate care of new born, skin-to-skin contact, early initiation of breastfeeding, special care of low-birth-weight babies, and management and referral of danger sign (Syed et al., 2006).

MTRH being the second referral hospital in Kenya, it strives to provide best care to the consumers including mothers and babies ensuring healthy mother and baby, this study may provide the baseline data about the quality of care received by the newborns immediately after birth which will help the policy makers and health professionals to plan for strategies where the quality of care is not satisfactory. However, there is no documented or published research on the care that is delivered especially in the area of the newborns which is very crucial part of the infant's life. Thus this justifies the aim to assess the quality of care that is provided by the health care providers to newborns in MTRH.

1.4 Research Question.

What is the immediate newborn care offered during delivery by health care workers in RMBH?

1.5 Research Objectives.

1.5.1 Broad objective

- To assess the immediate care provided to a newborn during delivery in RMBH.

1.5.2 Specific objectives.

- 1) To describe the activities done in preparation for delivery and newborn care.
- 2) To describe the immediate care provided to newborns in RMBH
- 3) To identify potentially harmful newborn practices at RMBH.

1.6 Conceptual Framework.

A conceptual framework is a structure which the researcher believes can best explain the natural progression of the phenomenon to be studied (Camp, 2001). In a statistical perspective, the conceptual framework describes the relationship between the main concepts of a study. It is arranged in a logical structure to aid provide a picture or visual display of how ideas in a study relate to one another (Grant & Osanloo, 2014). Interestingly, it shows the series of action the researcher intends carrying out in a research study (Dixon et al, 2001). The framework makes it easier for the researcher to easily specify and define the concepts within the problem of the study (Luse et al, 2012).

The elements of care are illustrated in the diagram below;

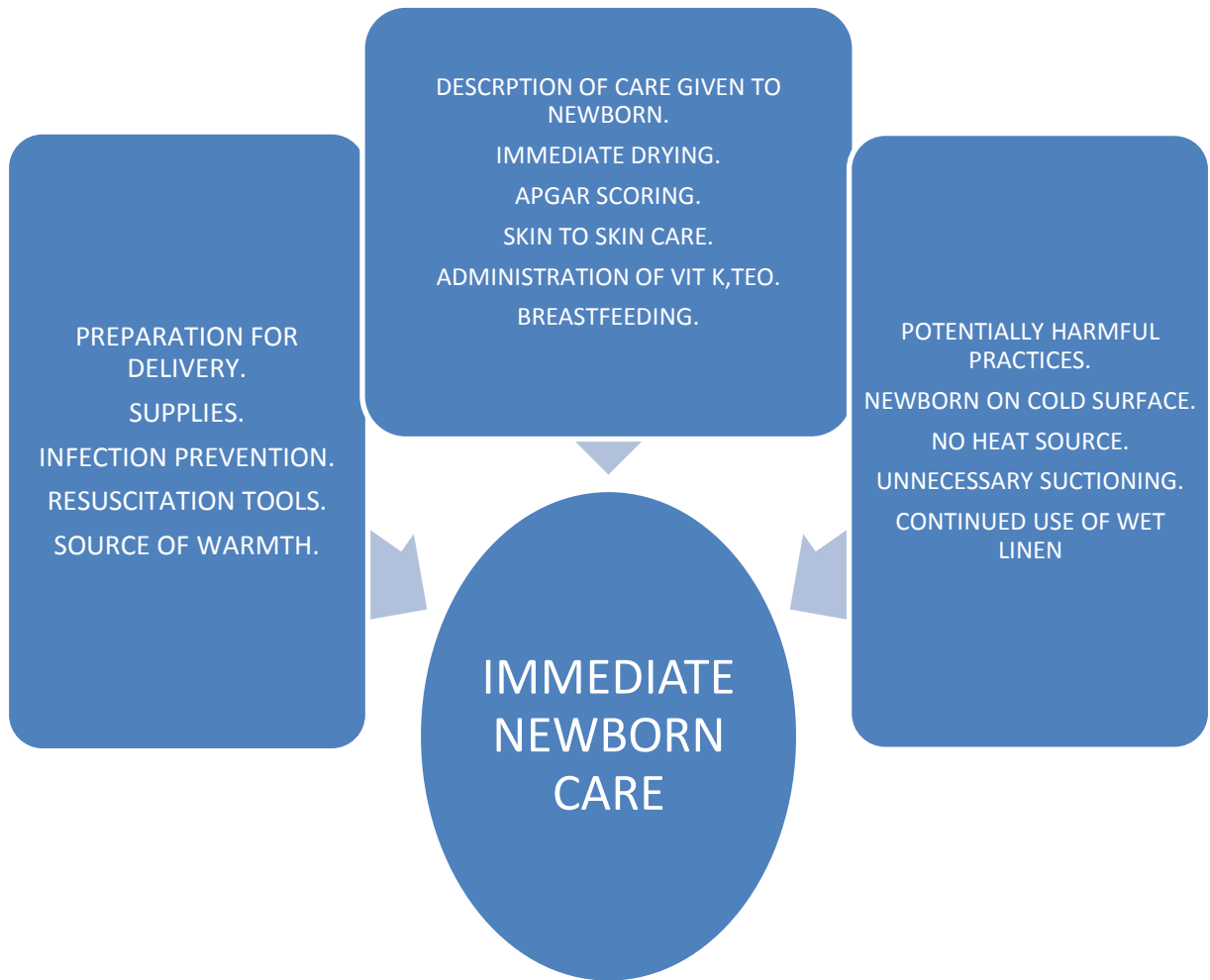


Figure 1.1 Conceptual Frameworks.

1.7 Modified Evidence Based Practice Model.

Evidence-based practice (EBP) is a term increasingly used to describe the application of empirically acquired knowledge in practice (Rycroft-Malone et al, 2004).

In the 19th century, early pioneers of improving quality in healthcare, such as Florence Nightingale and Louis Pasteur, sought to develop evidence-based practices by linking the processes and structures of healthcare with health outcomes of patients (Sheingold & Hahn, 2014).

Florence Nightingale led a group of nurses to care for soldiers during the Crimean war in 1854. Within six months of her arrival the death rate from disease dropped from 42.7% to 2.2% (Sheingold & Hahn, 2014). Nightingale had identified a link between hospital sanitation and mortality and introduced new practices such as hand washing, sanitising surgical tools, changing bed linen, good nutrition and fresh air (Meyer & Bishop, 2007)

In the neonatal period more than 70% of the current deaths could be prevented through evidence-based procedures (e.g. by exclusive breastfeeding and hypothermia management) (Darmstadt et al, 2005). However, health care workers involved in neonatal care need to have adequate knowledge about the different procedures before they can implement and use them (McClure et al, 2007). Staff knowledge regarding evidence-based practice is key, but also a number of contextual factors are highly influential for a well-functioning health care system, such as adequate geographical coverage of health care, sufficiency of material resources (e.g. equipment and drugs) and a certain level of activity (e.g. number of assisted deliveries) at the health care units (Wallin et al, 2006).

Louis Pasteur also linked healthcare processes and structures with health outcomes; linking morbidity and mortality rates with lack of sanitization and low hygiene standards. Pasteur's discovery, that disease was caused by microorganisms, helped contribute to wide-scale adoption of antiseptic practices and also "pasteurization" (utilizing heat to destroy harmful microorganisms) to improve health outcomes (Sheingold & Hahn 2014)

To continue this approach in the 20th century and the present day, research methodologies have been developed and deployed to systematically link health outcomes with healthcare processes and structures (Naylor 2002; Berwick 2005 & Glasgow et al. 2012)

The process of identifying and communicating evidence-based practices has led to vast improvements in health and healthcare quality throughout the 20th century, however, challenges still remain (Berwick 2008 & Naylor 2002). However, wide variation in the quality of care patients receive exists, such as variation between countries (Hussey et al. 2004), within countries (Burnett et al. 2012; Right Care 2015) and within organizations (Weiner & Alexander 2006)

CHAPTER TWO.

LITERATURE REVIEW.

2.0. Introduction.

Immediate proper care of newborn is vitally important for survival, growth and development of a newborn. Despite several studies conducted about maternal and child health care practices, little is known about factors that determine behaviors related to immediate care of newborn. Most people are unaware of importance of immediate care of newborn and many unsafe behaviours do exist such as common use of untrained attendants, unsafe cord care, immediate bathing of baby. (Gurung, 2008).

Maintaining and improving patient care requires active involvement of everyone in health care system in order to meet the needs for evaluating health care in its totality as well as to identify whether effective and appropriate care has been provided. The quality is ‘the major component of neonatal health care, and it demands participation from nurses rendering care. (Dalia, 2011).

To ensure newborn survival and reduce neonatal mortality newborn care need to be observed; clean atraumatic delivery, prevention of infection, provision of warmth, cord care, infant feeding, comprehensive first and subsequent examination, immunization and continuing health education and promotion for the caregivers. (NGQOPC, 2012).

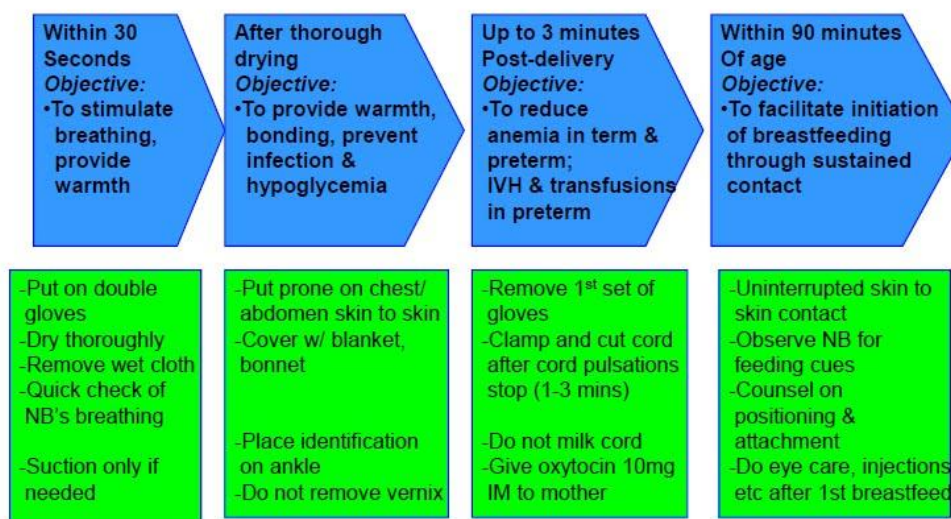
2.1. Time and non-time bound procedures.

The need for basic life-saving interventions and for beneficial parent–newborn interactions indicates that procedures carried out immediately after delivery should be standardized in time and order. Unnecessary procedures, such as routine suctioning, early

bathing and separation of newborns from their mothers, should be discontinued. Aside from potential for harm, these procedures burden already overworked hospital staff_ (Sobel et al., 2011)

The current practice of handling newborns, like clamping and cutting the umbilical cord and washing the baby right after birth, have been known to actually contribute to the high incidence of neonatal deaths and illnesses in the country. Thus the need for a paradigm shifts from the prevailing standard procedures into the new protocol. Health Secretary Duque of Philippines explained that the ENC Protocol involves focusing on the first hours of life of the newborn with the manual guiding health workers in providing evidence-based essential newborn care (UNC, 2011).

ENC Time-Bound Interventions



The guidelines categorize procedures into time-bound, non-time-bound and unnecessary procedures (UNC, 2011).

Sobel et al observed many interventions, such as drying, weighing, examining, providing eye prophylaxis and administration of vitamin K. Unfortunately, these interventions were performed in sequences that did not allow the newborns to benefit from *all* of their mothers' natural protection in the first hour of life, i.e. provision of warmth, blood transfusion from the placenta, protection from infection via skin-to-skin contact and completion of colostrum feeding (Sobel et al., 2011).

Ideally, early skin-to-skin contact (SSC) begins immediately after birth by placing the naked newborn baby prone on the mother's bare chest. This practice based on intimate contact within the first hours of life may facilitate maternal-infant behavior and interactions through sensory stimuli such as touch, warmth, and odour. Moreover, SSC is considered a critical component for successful breastfeeding initiation (RHL-WHO, 2009).

Changing the timing of cord clamping and cutting from immediately after delivery of the baby to 1–3 minutes after delivery of the baby improves the iron status of the infant. Potential adverse effects on the infant of delayed cord clamping and cutting, such as jaundice requiring phototherapy, should be considered, especially in under-resourced settings (RHL-WHO, 2009).

2.2 Breastfeeding.

Exclusive breastfeeding" is defined as no other food or drink, not even water, except breast milk (including milk expressed or from a wet nurse) for 6 months of life, but allows the infant to receive ORS, drops and syrups (vitamins, minerals and medicines) (WHO,2013).

All babies need to be safely delivered, kept warm, and breastfed immediately. Low birth weight or premature babies may get cold, hungry, or sick more easily; therefore, these babies have special needs (WHO, 2006) while UNICEF recommend early initiation of breastfeeding, within one hour of birth, to protect the newborn from acquiring infections and to reduce newborn mortality (UNICEF, 2003)

Salone et al recommends that breastfeeding should be exclusive for about the first six months of life and should continue, with the introduction of appropriate complementary foods, to at least age 12 months or beyond, as desired by mother and child (Salone et al 2013). WHO and UNICEF currently recommend exclusive breastfeeding for the first 6 months of life with continued feeding through the first year among HIV positive mothers provided that they or their infants receive ARV drugs during the breastfeeding period (Guidelines for ART, 2011).

Breast-feeding is clearly associated with benefits to the infant, including significant protective effects for gastrointestinal infections (64%), middle ear (23- 50%), severe respiratory infections (73%) and for acute lymphocytic leukemia (19%) and sudden death syndrome in infants (36%). Also found are long-term benefits, such as reduction of obesity (7-24%) and other cardiovascular risk factors in adulthood. The mother also benefits from its protective effect from type 2 diabetes mellitus and cancers of the breast and ovary; proportionate to the duration of breastfeeding (Aquia and Silva, 2011).

Mannan et al (2008) provide evidence of effectiveness of breastfeeding support through early postnatal visits as part of a larger newborn and maternal care intervention. They concluded that, in addition to large scale mass communication-based promotional approach, one-on-one counseling and hands-on support to mothers for proper breastfeeding techniques by trained workers should be part of any postpartum package, and such support should be made available at the very early days, possibly within 72 h, to engender a successful initiation of breastfeeding (Mannan et al., 2008).

2.3 Thermal Control.

This is defined as keeping the newborn warm to reduce the hypothermia risk. It includes practices such as drying and wrapping the newborn immediately after delivery and delaying the newborn's first bath to reduce the hypothermia risk (Baqui et al. 2007). Newborns regulate their body temperature much less efficiently than the adult and they lose heat more easily especially from the head (Bergström, Byaruhanga, and Okong 2005).

Therefore, newborns should be thoroughly dried immediately after delivery and kept warm, the newborn to be thoroughly dried with clean towel as soon as the head and body are delivered in order to prevent hypothermia, this also helps in limiting the loss of body heat (Bergström, Byaruhanga, and Okong 2005). Maintaining good thermal care at birth is crucial for preventing hypothermia, hypoglycemia and neonatal infections (Waiswa et al. 2012).

For better thermal control, bathing should be delayed until 24 hours after birth and if this is not possible due to cultural reasons, it 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. The mother and baby should not be separated and should stay in the same room 24 hours a day. Communication and play with the newborn should be encouraged (WHO, 2013).

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 (Kagama 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%) (Plotkin et al., 2011).

Skin-to-skin contact (kangaroo care) with the mother, drying the newborn immediately after birth, and delaying bath until six hours after birth are essential care practices for keeping the newborn warm (Moore et al, 2012; Save the Children, 2004). These strategies can improve newborn health and survival. Kangaroo mother care method is an effective way of maintaining the body temperature in low birth weight babies, at birth for all babies, or during transport of sick babies. Drying after delivery is one of several thermal care practices that can improve infant health outcomes, as well as delaying first bath (ENCC, 2014).

The 'warm' chain is a set of interlinked procedures to be taken at birth and during the next few hours and days in order to reduce heat loss in all newborns. The 10 steps are

warm delivery room, immediate drying, skin-to-skin contact, breastfeeding, bathing/ weighing postponed, appropriate clothing and bedding, mother and baby together, warm transportation, warm resuscitation, training and awareness rising (WHO, 1997).

WHO strongly recommend that neonates in health facilities should not be sent home in the crucial first 24 hours of life and the care provided should include immediate and exclusive breastfeeding as well as infant warming (WHO, 2012).

According to WHO (1997) while newborns of all gestational ages are at risk of losing body heat after birth, premature and small babies are particularly vulnerable due to their physiologic disadvantages. A newborn's thermal regulatory mechanisms are highly sophisticated, but particularly in babies born prematurely easily overwhelmed. Neonatal anatomic characteristics add to the metabolic burden of increased energy requirements: term babies have a 2.7 times greater body surface and preterm babies an up to 4.0 time's greater surface per weight than adults. Several conditions of immature thermal regulation, such as LBW, prematurity, intrauterine growth restriction, and asphyxia (with heat loss due to lack of oxygenation and, where attempted, during reanimation efforts) during birth are significantly associated with an abnormal low body temperature. Hypoglycemia is an important contributor to hypothermia, and vice versa (WHO, 1997).

2.4 Resuscitation.

Neonatal resuscitation is defined as the set of interventions at the time of birth to support the establishment of breathing and circulation. Some non-breathing babies with primary apnea will respond to simple stimulation alone, such as drying and rubbing. Basic resuscitation with a bag-and-mask is required for an estimated 6 million of these babies each year, and is sufficient to resuscitate most neonates with secondary apnea, as their

bradycardia primarily results from hypoxemia and respiratory failure (Kattwinkel et al., 2010).

Intrapartum complications, including birth asphyxia, account for nearly a quarter of all neonatal deaths.¹⁷ Up to 10% of babies require support to initiate breathing in the first minutes of life (Save the Children, 2014 & Wall et al, 2009). Stimulation, including drying and rubbing, is required to initiate breathing in ~10 million babies at birth globally every year. This technology-free practice should be adequately performed by all skilled birth attendants. Approximately six million babies require resuscitation with bag and mask ventilation (Lee et al, 2011). Basic resuscitation, including bag and mask ventilation with room air, can have a big impact on survival and can be achieved with basic training and competencies (Chou et al, 2015, Wall et al, 2009 Lee et al, 2011)

Given proper training and adequately reprocessed functional equipment, neonatal resuscitation can be performed in low-resource settings (Newton et al, 2006). Basic resuscitation is adequate for most babies to survive; neonatal resuscitation training can avert 30% of deaths of full-term babies and 5–10% of preterm babies, saving hundreds of thousands of newborn lives. Less than 1% of asphyxiated babies require more advanced resuscitation (Lee et al, 2011). Maintenance of resuscitation skills requires ongoing practice and periodic refresher training through on-site and off-site courses and mentorship (MoHSW, 2015).

Anticipation, adequate preparation, accurate evaluation, and prompt initiation of support are critical for successful neonatal resuscitation. At every delivery there should be at least 1 person whose primary responsibility is the newly born. This person must be capable of

initiating resuscitation, including administration of positive-pressure ventilation and chest compressions.

Either that person or someone else who is promptly available should have the skills required to perform a complete resuscitation, including endotracheal intubation and administration of medications. With careful consideration of risk factors, the majority of newborns who will need resuscitation can be identified before birth. If the possible need for resuscitation is anticipated,

additional skilled personnel should be recruited and the necessary equipment prepared (Kattwinkel et al., 2010).

Providers' knowledge of how to manage an asphyxiated newborn, as demonstrated in the newborn resuscitation case study, was very poor (mean percentage of 22%). Their knowledge of the initial steps to take, including stimulation and suctioning, was even worse (mean percentage of 14%) (Kenya QoC., 2010). In 1952, Dr. Virginia Apgar devised a scoring system that was a rapid method of assessing the clinical status of the newborn infant at 1 minute of age and the need for prompt intervention to establish breathing (Apgar, 1953). A second report evaluating a larger number of patients was published in 1958 (Apgar, 1958). This scoring system provided a standardized assessment for infants after delivery. The Apgar score comprises 5 components: heart rate, respiratory effort, muscle tone, reflex irritability, and color, each of which is given a score of 0, 1, or 2. The score is now reported at 1 and 5 minutes after birth. The Apgar score continues to provide convenient shorthand for reporting the status of the newborn infant and the response to resuscitation.

The Apgar score has been used inappropriately in term infants to predict specific neurologic outcome. Because there are no consistent data on the significance of the Apgar score in preterm infants, in this population the score should not be used for any purpose other than ongoing assessment in the delivery room (AAP, 2000). The Apgar score is affected by gestational age, maternal medications, resuscitation, and cardiorespiratory and neurologic conditions. Resuscitative interventions modify the components of the Apgar score (Lopriore et al, 2004). It has been useful for more than four decades in focusing on five physiological signs (heart rate, respiratory effort, reflex irritability, muscle tone, colour) that denote the condition of an infant during the first critical minutes of life (Fraser et al 2004). It is taken at one and five minutes after birth. With depressed infants, repeat the scoring every five minutes as needed. The one-minute score indicates the necessity for resuscitation. The five-minute score is more reliable in predicting mortality and neurological deficits.

2.5 Challenges and Successes in Newborn Care.

According to a report by SNL (2001), the second half of the 20th century witnessed a remarkable reduction in child mortality, with a halving of the risk of death before the age of 5 years. Most of this reduction, however, has been because of lives saved after the first 4 weeks of life, with little reduction in the risk of death in the neonatal period for most babies worldwide. Neonatal deaths, estimated at nearly 4 million annually, now account for 36% of deaths worldwide in children aged less than 5 years. Given that the current global neonatal mortality rate is estimated to be 31 per 1000 livebirths, a substantial reduction in neonatal deaths will be required to meet MDG-4. There are various reasons

why the health of newborn babies has been neglected despite the huge number of deaths. Most neonatal deaths are unseen and undocumented (SNL, 2004).

In the East African region like the majority of sub-Saharan African countries, Tanzania suffers from a human resource crisis in the health sector. There is a critical shortage of skilled health providers in Tanzania, despite the existence of five medical schools, with paediatrics as a recognized post-graduate specialty (Situation analysis newborn health, 2009).

Kenya falls among 20 countries that have some of the highest newborn death rates in the world according to Save the Children 2013 state of the world's mother's report. The report ranks Kenya at the 156th position in the mother's ranking index, featuring 176 countries (Standard Digital, 2013).

Another barrier to action is the perceived complexity of reducing neonatal deaths. In industrialized countries care of newborn babies is associated with intensive technological approach. The greatest gap in care often falls during the critical first week of life when most neonatal and maternal deaths occur, often at home and with no contact with the formal health-care system. In addition, behaviours such as breastfeeding, which influence survival after the neonatal period, are started in the first days of life, yet contact with the health system during this important period is often non-existent (Lawn et al., 2004).

Relevant information does exist at many levels of care, but is often not used. Increasing the availability and use of relevant information in programmes and policy is essential if health care for newborn babies and their mothers is to be improved. Effective interventions are available to save lives of newborn babies. These interventions can be bundled in very cost-effective

Packages for delivery in health systems through outreach, family-community care, and facility-based clinical care (Lawn et al., 2004).

Current coverage rates for many of these interventions are extremely low interventions that have the greatest effect on neonatal deaths are less dependent on technology and commodities than on people with skills. Ideally, everywoman should be able to choose to deliver with a skilled

attendant present, and if either the mother or her newborn baby have complications, both have the right to access safe professional care (Knipperberg et al., 2005). Millions of newborn lives could be saved with low-cost interventions provided they could be implemented in primary care settings. Most countries with high neonatal mortality could scale up many of these interventions in the short term, while putting in place longer-term strategies essential to strengthening the health system and achieving sustainable improvements in neonatal health outcomes (Martinez et al., 2005)

The continuum-of-care approach encourages the delivery of mutually supportive interventions across both its dimensions and efficient use of scarce human and financial resources. It helps to avert deaths by ensuring that appropriate care is available to every women and every child whenever it is needed; and that it is effectively linked to other levels of care. When linked together and included as integrated programs, these interventions can lower costs, promote greater efficiencies and reduce duplication of resources (IFRC, 2013).

An evaluation of the health workforce in the public sector found that three cadres of health workers performed below competency levels for MNCH knowledge and skills, particularly in neonatal resuscitation and immediate newborn care skills (Ariff et al. 2010). Challenges such as staff absenteeism, poor maintenance and lack of equipment also prevent quality care at the time of birth in facilities (Ghaffar et al., 2000).

Simple immediate newborn care should be provided to newborns in all settings as part of essential newborn care, including warming, drying, stimulation, hygiene and thermal care.

These immediate steps are the first in neonatal resuscitation, and can even be performed by family members. The most rational program approach at all levels is to ensure training in essential newborn care, either before or concurrent with training in basic and advanced neonatal resuscitation. Basic neonatal resuscitation training can be effectively performed by a wide range of health providers (from traditional birth attendants, CHWs, nurses, and midwives to physicians) resulting in reductions in intrapartum-related mortality in both the facility and home settings (Lee et al., 2011).

CHAPTER THREE.

METHODOLOGY.

3.0 Introduction.

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, validity and reliability, ethical considerations and limitations of the study.

3.1 Study Area.

The research study was conducted in RMBH, Moi Teaching and Referral Hospital (MTRH) which is located in Eldoret town, Uasin-Gishu County. RMBH is an ultra-modern maternity with 18 delivery beds, 40 midwives, 2 registrars and 2 MO interns, has an average of 40 deliveries a day thus a total of 7,000 deliveries annually (MTRH Report, 2012/13) and 15 referrals-in from peripheral health facilities due to complications that arise during labour and delivery. MTRH is the 2nd largest referral hospital in Kenya after Kenyatta National Hospital, it is also a training Centre for all cadres of staff and its catchment covers a population of over seven million inhabitants and it also accepts referrals from Kenya's 13 million indigent population in the north and west.

3.2 Study Design

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

A Cross sectional descriptive study design was used and is concerned with describing a population with respect to important variables at a point in time. Quantitative method was employed. The study commenced in October 2015 to January 2016 for a period of four months.

3.3 Study Population

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

The study population comprised health workers primarily involved in offering immediate neonatal care in MTRH, these included midwives, registrars and MO interns.

3.4 Study Sample.

All the health care providers attending to these deliveries were sampled, this was a total of 35 midwives, 2 registrars and 2 MO interns, thus making a sample size of 39 participants.

3.5 Sampling Technique.

A census was used since the study population was small. We included all the population in the present study.

3.6 Eligibility.

3.6.1 Inclusion criteria.

The study included midwives, MO interns and registrars who attended to neonates born within 37-42 weeks gestation and with an APGAR score of 0 to 10 at 1,5 and 10 minutes.

3.6.2 Exclusion criteria.

We excluded any nurse working in labour ward, RMBH but not participating either in delivery or immediate newborn care. We also excluded neonates born to high risk mothers (Diabetes Mellitus, Hypertension and Heart Disease-these mothers are admitted in high risk delivery rooms and during these deliveries there is anticipation for emergencies thus leads to better preparation and at times more than one HCW attends to

them) and Students, Obstetric and Paediatric Consultants and Doctors on exchange programme attached to the RMBH.

3.7 Data Collection.

3.7.1 Study instrument.

An observational checklist was used to record practices and timing of immediate newborn care practices, formulated on the basis of standard intervention by WHO and American Heart Association resuscitation guidelines adopted and implemented by the hospital (Katwinkel et al, 2010).

The midwives duty list was acquired, and a code provided to each healthcare worker, the principal investigator and research assistant availed themselves either during the day or night. One participant identified at one given point of time and observed while conducting a delivery to a period of one hour, total of two deliveries per each participant were needed to fill in the checklists (both deliveries inclusive), and this was for high degree of correctness, reliability and accuracy.

3.7.2 Research team

The research team consisted of two members; the principal investigator and one research assistant. The assistant was recruited by the principal investigator in April, 2015 before the pilot study. The training involved familiarity with research issues and the specific areas under study, the instrument for study, ethical issues and how to fill the checklist.

3.7.3 Pilot study.

A pilot study was conducted in Webuye Sub-county hospital. Ten (10) nurses were observed on provision of immediate neonatal care. The main aim was to test and refine the study instrument. The findings of the study were useful in refining the checklist. Some items that had not been included, those that seemed not necessary removed, and clarification of unclear procedures in the checklist

3.7.4 Data collection

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 & Grove, 2001).

Data collection was done during the period of 20th October 2015 and 28th January 2016 through non-participatory observational study, a waiver consent was granted. The checklist contents filled while observing one health care worker conduct a delivery and the care offered to the neonate to a period of one hour. This study was done during the day as well as night due to midwives work schedule and coverage of the delivery rooms.

3.7.5 Data Validity.

Validity is defined as the degree to which an instrument can measure what it is designed to measure (Polit & Beck, 2006). In this study, content validity was applied by seeking expert opinion from the supervisors on the tool and their comments incorporated in the final data collection tool.

3.7.6. Determining the reliability of the instrument

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 (De Vos et al., 2006)). For this study, the questionnaire was developed by the investigator assisted by both supervisors. Studies concerning immediate newborn care guided the development of the questionnaire, which was piloted in near-same health facility on 10 nurses before data collection. formulated on the basis of standard intervention by WHO and American Heart Association resuscitation guidelines adopted and implemented by the hospital (Katwinkel et al, 2010).

3.8 Data Management and Analysis

3.8.1 Data quality control.

The data collection tool was pre-tested, and corrections were made, the research assistant was trained on proper data collection techniques and it involved regular progress meetings being held daily with the research assistant after data collection to review progress and address any challenges faced during data collection. Checks for errors and inconsistencies were done at all stages of research.

3.8.2 Data handling and cleaning

At the end of each working day, filled checklists were sorted out and checked for completeness; the duly completed checklists were kept under lock and key by the principal investigator

The entry and cleaning was done by the principal investigator to ensure completeness and consistency. In case missing values were detected, the corresponding checklist was traced and the values were entered appropriately.

3.8.3 Data analysis

To facilitate analysis, data collected was converted to numerical codes that represented the attributes of variables, coded and entered into SPSS version 12 statistical software package and analysed into frequencies and percentages. Data was presented in tables and figures.

3.9. Ethical consideration

Ethical approval: A formal approval was sought and granted from Institutional Research and Ethics Committee (IREC) and The Moi Teaching and Referral Hospital to carry out the study (See Appendix III).

A written authority was obtained from the management, Moi Teaching and Referral Hospital(Appendix IV) to conduct research within the MTRH-RMBH facility.

Confidentiality: The information gathered was treated with confidentiality, and the names of the respondents will not be recorded for the purposes of anonymity and privacy.

Justice: The sampling methodology gave equal chance of participation to all health care workers working in RMBH, delivery room.

3.10 Limitations of the Study

The study assessed immediate newborn care practices among health care workers at RMBH, MTRH and thus some limitations included inconsistent availability of supplies, broken equipment and staff shortage (midwives), hence some staff taking their annual leave in December thus prolonged period taken to collect data.

CHAPTER FOUR

RESULTS AND DATA ANALYSIS

4.1 Birth attendants

A total of 78 checklists were completed, midwives were the majority at 90% (35) while the registrars and MO-Interns had 4(5%) each as illustrated in the pie-chart below: -

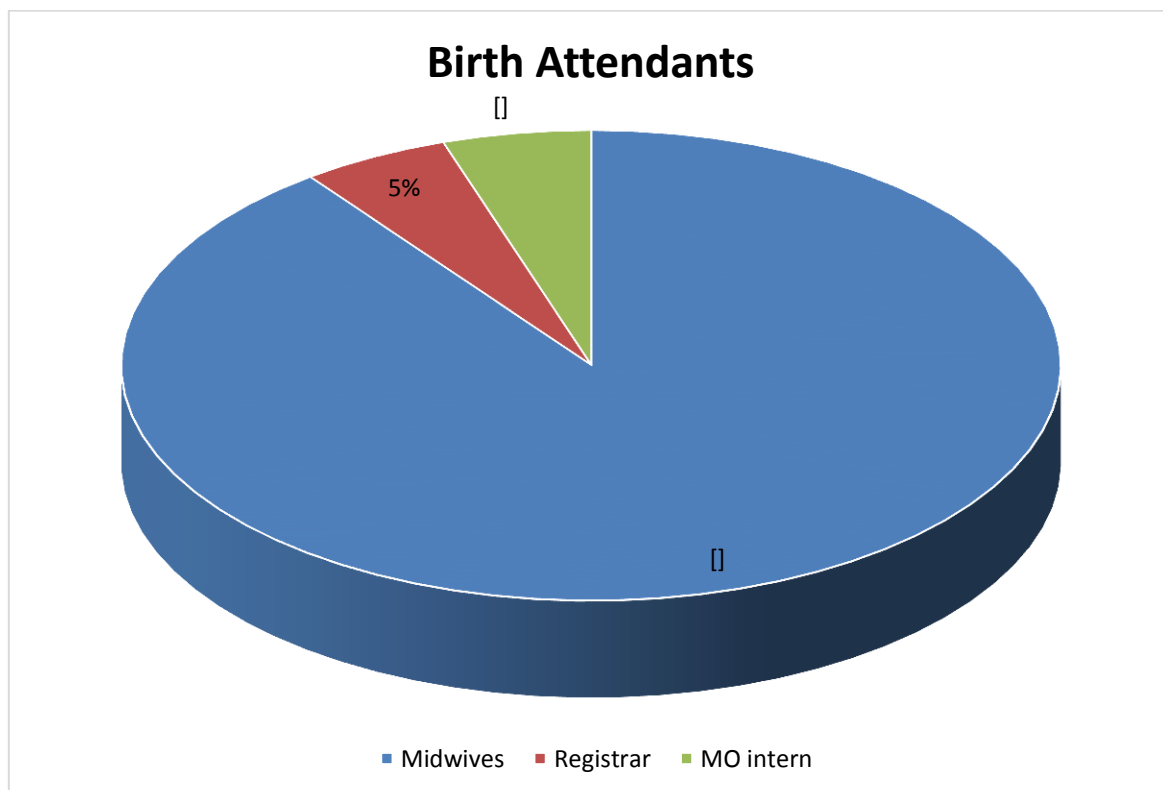


Figure 4.1 Birth attendants.

4.2 Availability of items in the delivery room

From the table below most available items were sterile gloves 78(100%) whereas hand sanitizer 50(64%) was the least available in the delivery room.

Table 4.1: Availability of items in the delivery room.

Item	Available	Not available
Sterile gloves	78(100%)	
Sink with running water	77(99%)	1(1%)
Clean gloves	76(97%)	2(3%)
Delivery pack(sterile)	76(98%)	2(2%)
Sterile cord clamps	76(97%)	2(3%)
Functional Wall clock	74(95%)	4(5%)
Soap	73(94%)	5(6%)
2-5 dry warm towels or cloths	73(94%)	5(6%)
Source of warmth (heater)	61(78%)	17(22%)
Sanitizer dispenser	53(68%)	25(32%)
Hand Sanitizer	50(64%)	28(36%)

4.3: Adherence to infection prevention and control

The graph below demonstrates that a high number 75(97%) of health care providers adhered to infection prevention and control by wearing sterile gloves whereas a lower number 13(17%) wore boots.

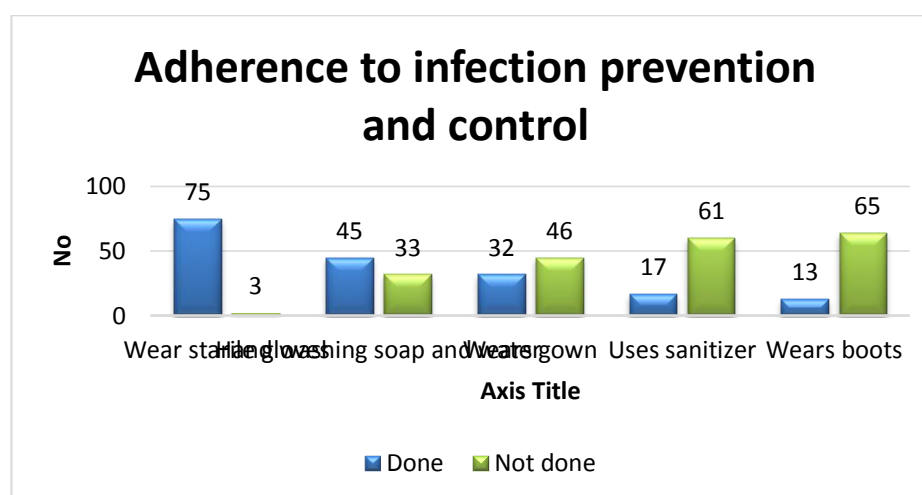


Fig 4.2: Adherence to infection prevention and control

4.4: Items and conditions prepared for birth

Preparation of towels/shawls by health care workers topped 75(95%) the items and conditions in preparation for birth while the lowest 24(31%) was the putting on the source of warmth. This is shown in the figure below: -

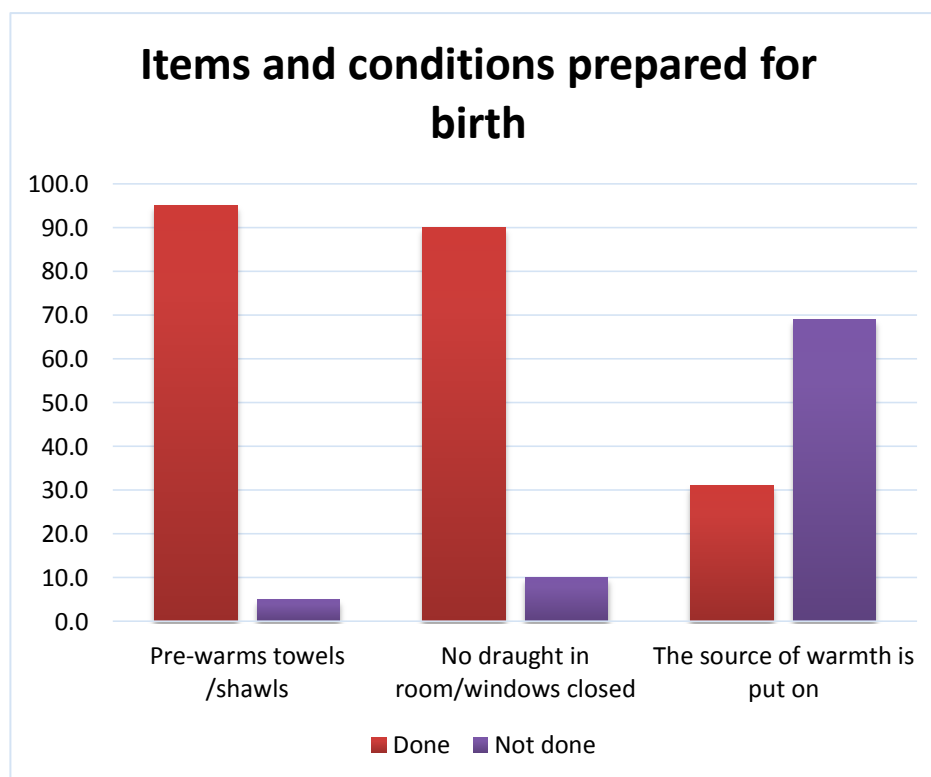


Fig 4.3: Items and conditions prepared for birth

4.5: Availability and functionality of supplies/items for resuscitation.

The most available and functional item was the newborn face mask 72(92%).However, suction catheters were the least items 37(47%) found in the delivery room as shown in the table below: -

Table 2: Availability and functionality of supplies/items for resuscitation

Item	Available		Not available
	Functional	Not Functional	
Wall clock	67(86%)	9(11%)	2(3%)
Bulb syringe	64(82%)	10(13%)	4(5%)
Self-inflating bag	52(67%)	7(9%)	19(24%)
Resuscitation table for the newborn	52(67%)	15(19%)	11(14%)
Newborn face masks (right size)	72(92%)	0(0%)	6(8%)
Suction catheters (right size)	37(47%)	0(0%)	41(53%)
Suction machine	59(76%)	19(24%)	0(0%)

4.6. Activities done during delivery

From the study results all 78(100%) the health care providers waited for restitution and delivery of shoulders while the lowest 53(67.5%) checks for cord pulsation before clamping and cutting as illustrated in the table below: -

Table 4.3: Activities done during delivery

No.	Activity	Done	Not Done	Done by Assistant
a	Prepares trolley with equipment.	58(74.1%).	9(12.4%).	11(13.5%).
b	Opens pack when cervix is fully dilated.	64(82.3%).	2(2.8%).	12(14.9%).
c	Arranges instruments on trolley before delivery of newborn.	60(76.8%).	9(12.4%).	8(9.8%).
d	Wipes face after birth of head (before delivery of shoulders).	74(94.5%).	4(5.5%).	0(0%).
e	Time head comes out.			
f	Checks cord around neck.	60(77%).	18(21%).	0(0%).
g	Waits for restitution.	78(100%).	0(0%).	0(0%).
h	Delivers anterior and posterior shoulder.	78(100%).	0(0%).	0(0%).
i	Delivers newborn onto the abdomen.	70(90.3%).	8(9.7%).	0(0%).
j	Notes/asks/communicates time of birth.	55(69.9%).	10(17.7%).	9(12.4%).
k	Immediately dries newborn thoroughly with towel.	70(90.3%).	8(9.7%).	0(0%).
l	Discards wet towel and covers with dry towel.	65(83.4%).	4(4.2%).	9(12.4%).
m	Announces/shows sex of newborn.	66(85.9%).	5(5%).	7(9.1%).
n	Places the newborn on skin to skin contact.	74(95.7%).	4(4.3%).	0(0%).
o	Checks for cord pulsation before clamping and cutting	53(67.5%).	25(32.5%).	0(0%).
p	Cuts cord with sterile scissors.	74(95.7%).	0(0%).	4(4.3%).
q	Weighs newborn.	63(82.1%).	4(4.4%).	11(13.5%).

4.7 Confirmation and estimation of Apgar score

Apgar scores were confirmed at the recommended intervals at birth, 5 minutes and 10 minutes after birth, and were accurate at 96.1%, 91% and 97.4% respectively throughout the study.

4.8. Stimulation of the neonate

Of the 12 new-borns who did not respond immediately on delivery, majority 10 (83%) of the new-borns were stimulated through drying while 2(17%) back rub as indicated in the figure below: -

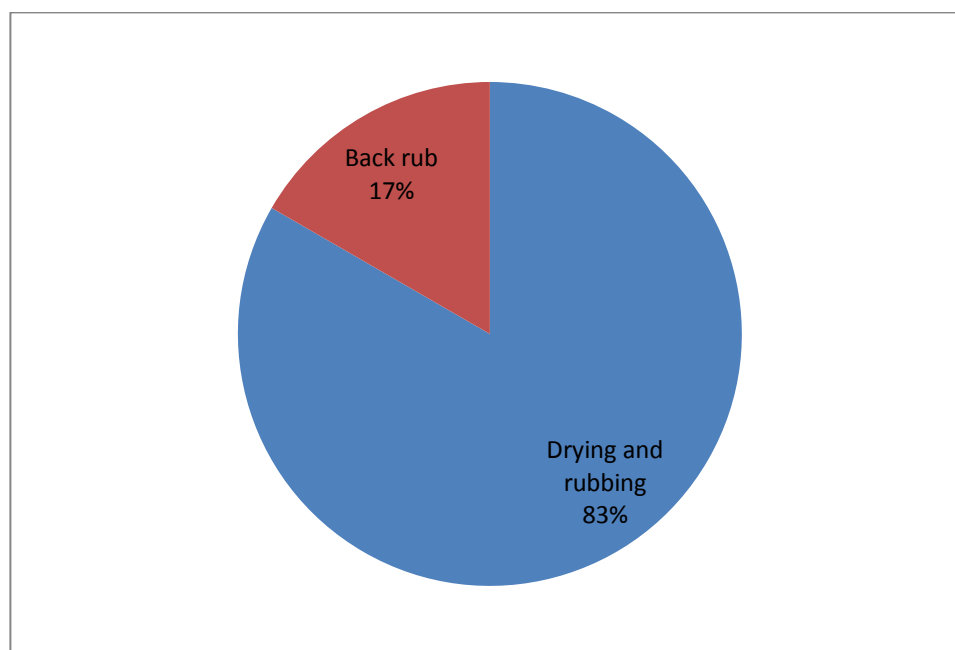


Figure 4.4: Stimulation of the neonate

4.9. Newborn needed resuscitation by bag and mask ventilation

The newborns who needed resuscitation by use of bag and mask ventilation were 7(58%) while the newborn who did not require use of bag and mask ventilation were 5(42%) as indicated in the chart below:-

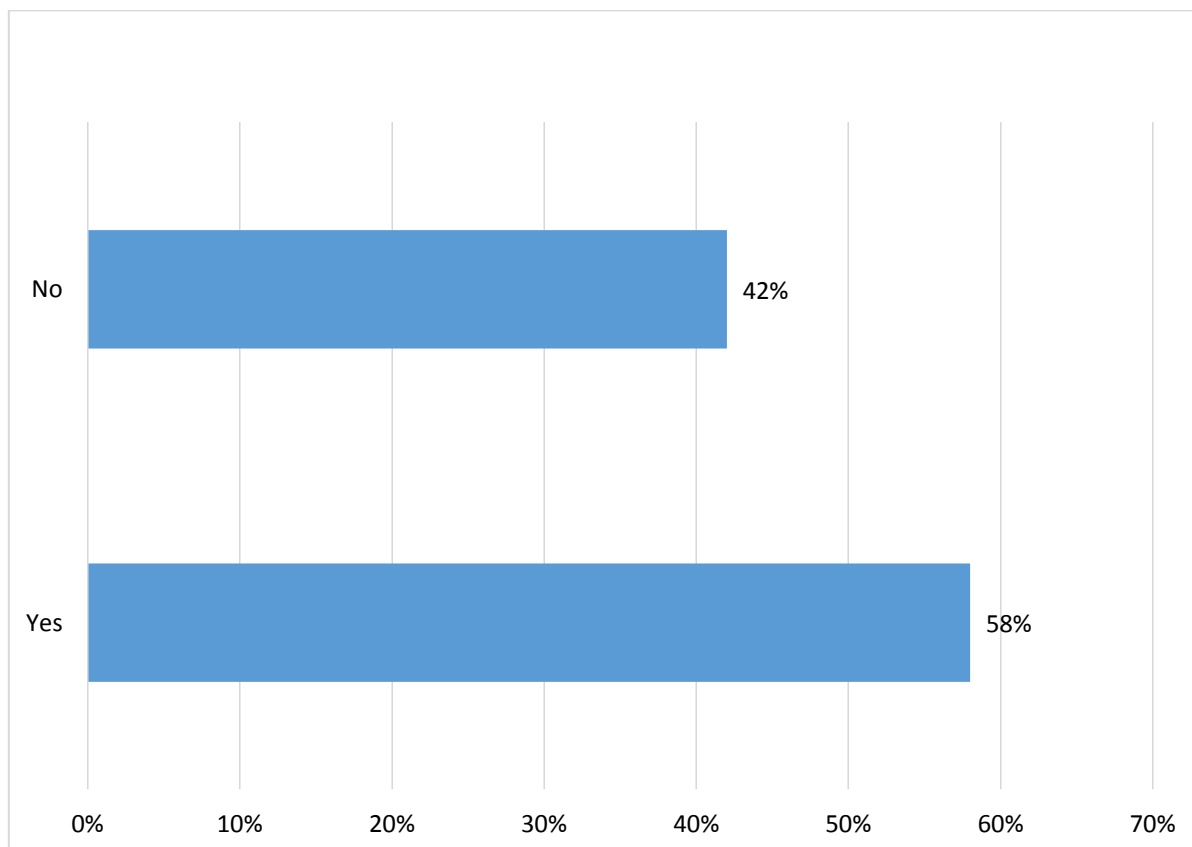


Figure 4.7: New-born needed resuscitation by bag and mask ventilation

4.10. Newborn resuscitation

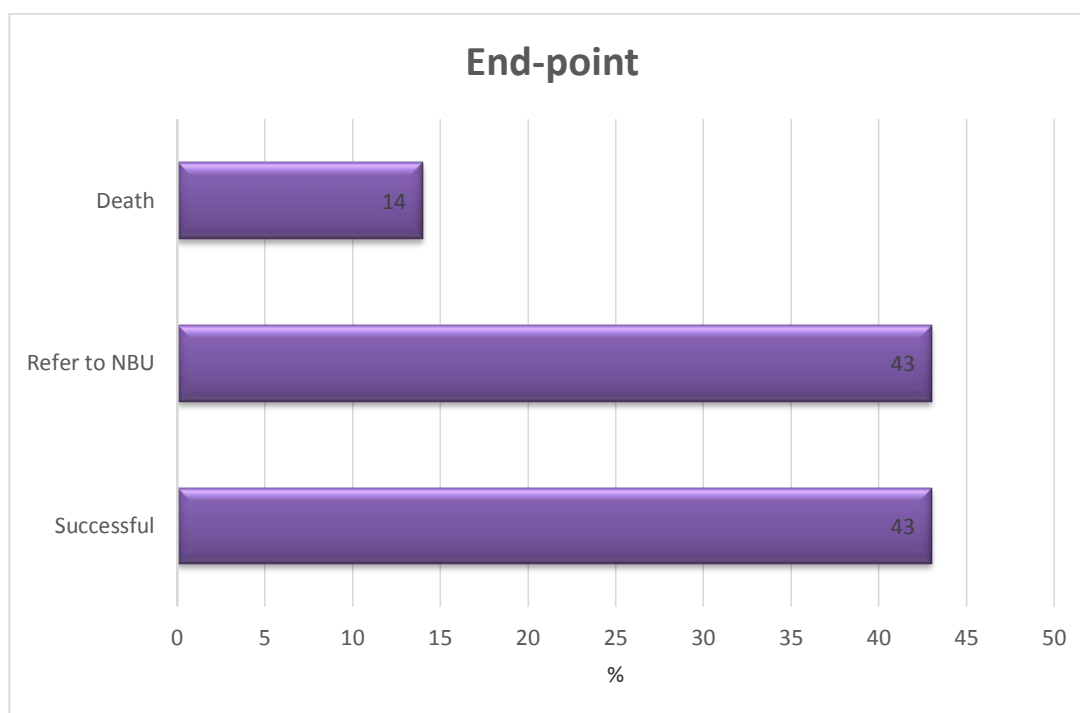
Newborns who needed further interventions had the cords cut immediately when need of resuscitation was established, checking of the bag and mask seal(43%), right position of head(57%), placement of correct mask size over chin(57%) and ventilation of 30 breaths per minute at an average of 57% as shown in the table below:-

Table 4.5: Newborn resuscitation

No.	Procedure	Out come
a	Cuts cord immediately.	7(100%)
b	Calls for help	4(57%)
c	Places on warm clean and flat surface.	7(100%)
d	Position head in slightly extended position.	4(57%)
e	Suction with bulb	4(57%)
f	Suction with catheter.	0(0%)
g	Places correct size mask covering chin.	4(57%)
h	Checks the seal by ventilating 2-3 times(observes chest rising)	3(43%)
i	Ventilation of 40 breaths per minute.	4(57%)
j	If breathing is normal, put on skin to skin care.	3(43%)

4.11. End point (outcome)

The outcome of the 7 newborns resuscitated using bag and mask were as follows; successful resuscitation for 3(43%) achieved, other 3(43%) were referred to NBU and only 1(14%) resulted in death.

**Figure 4.6: End point (outcome)**

4.12. Time taken to initiate breastfeeding

Higher proportion 27(36%) of the health care providers facilitated initiated breastfeeding within 30 minutes, 25(34%) 30 minutes and 1 hour while 22 (30%) did not initiate breastfeeding.

For those who did not initiate breastfeeding within 1 hour, the reasons noted were resuscitation of neonate or mother, transfer of newborn to New born unit , and repair of episiotomy/tears .

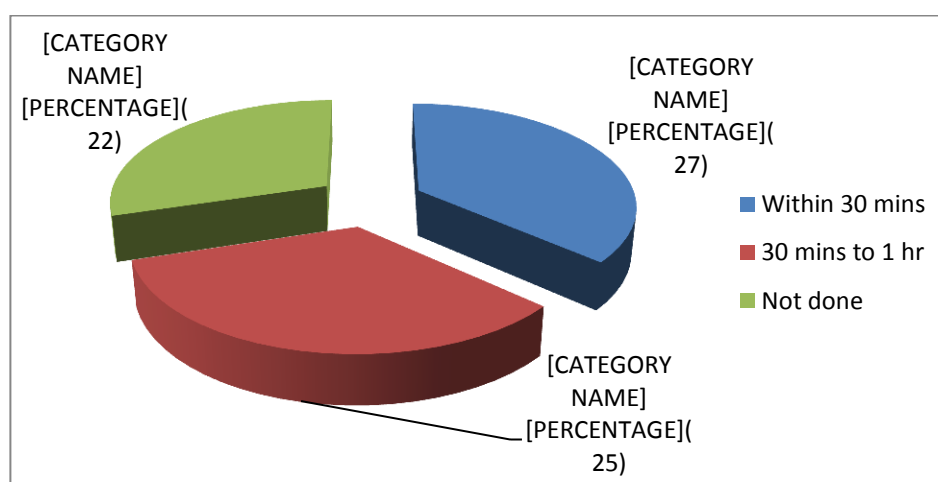


Figure 4.7: Time taken to initiate breastfeeding

4.13. Support during initiation of breastfeeding

Majority 57 (76%) of the mothers were offered support/supervision during initiation of breastfeeding while 19 (24%) did not (self-support) was done as indicated in the chart below: -

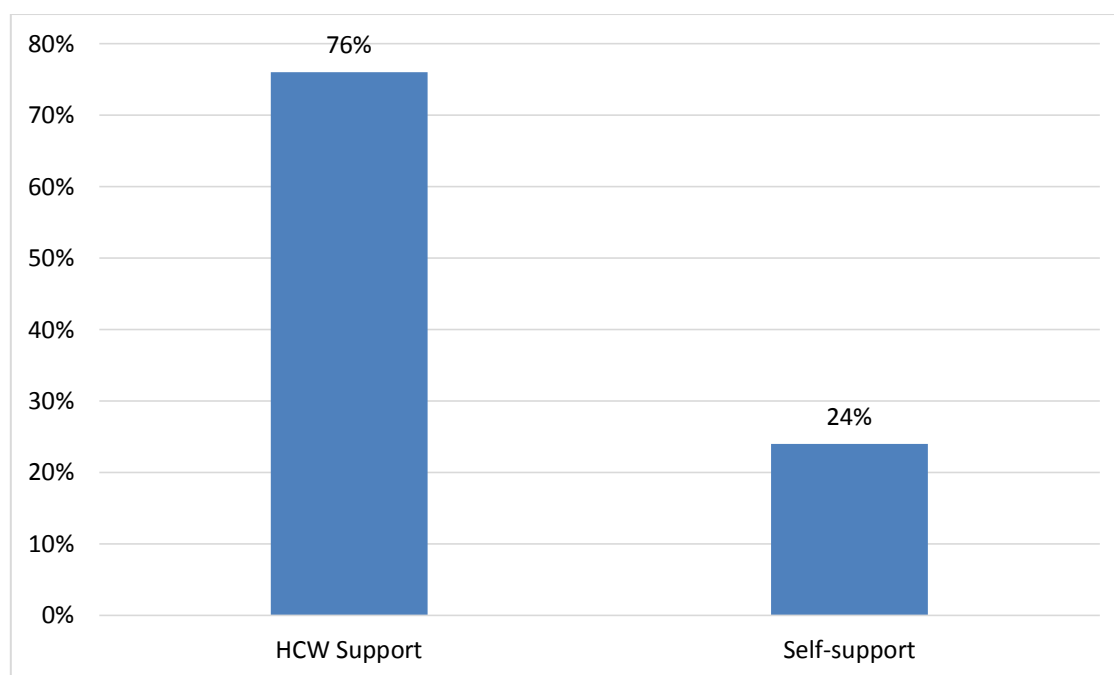


Figure 4.8: Support during initiation of breastfeeding

4.14. Type of support offered during initiation of breastfeeding

The study revealed that most 48(62%) of the mothers had encouragement as the utmost support offered, followed by latching 41(53%) while other support accounted for 10(13%). This illustrated in the graph below: -

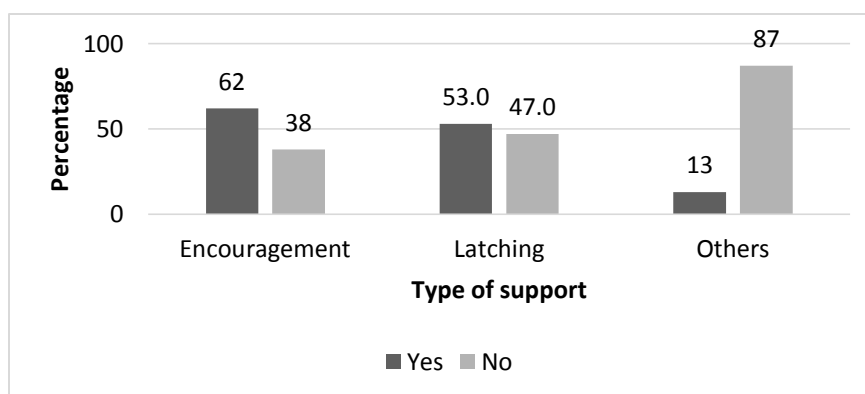


Figure 4.9: Type of support offered during initiation of breastfeeding

4.15. Skin to skin contact.

Skin to skin contact was practiced immediately after delivery and drying of the neonate with 95.7% of newborn placed on mothers' abdomen as shown in figure below:-

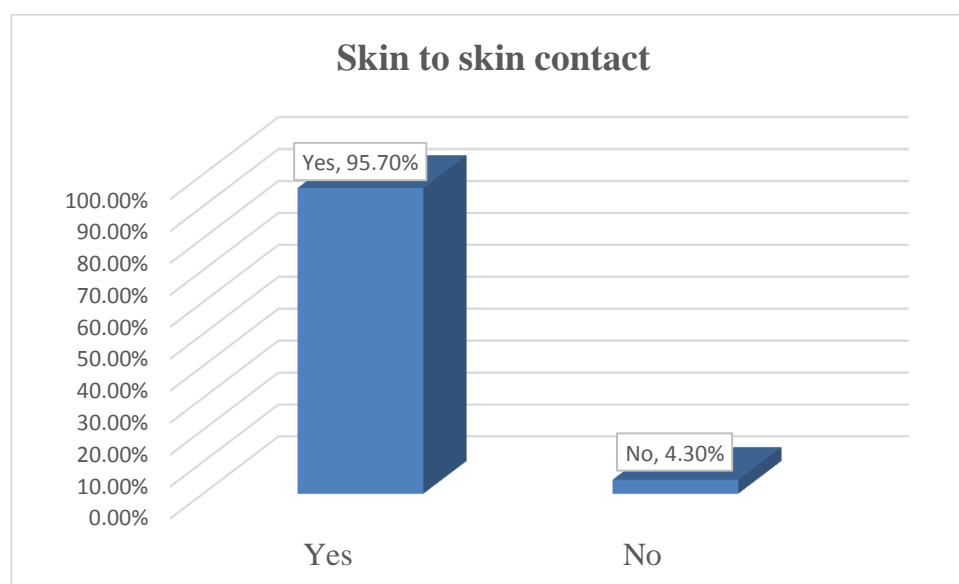


Figure 4.10: Skin to skin contact.

4.16. Drug administration.

The study revealed that 60(80%) of the newborn had eye prophylaxis administered while 15(20%) did not. It was also observed that administration of vitamin K drug was administered in 60(80%) of the newborn whereas 15(20%) was not administered.

Reasons for lack of administration of drugs were as follows; 8(33%) of the newborn were transferred to NBU, 11(38%) high workload noted and 5(21%) due to unavailability of the drugs.

4.17. Provider checks on latching and breastfeeding establishment.

Health care practitioners 56(73%) are actively involved in ascertaining proper latching and breastfeeding establishment among the newborn.

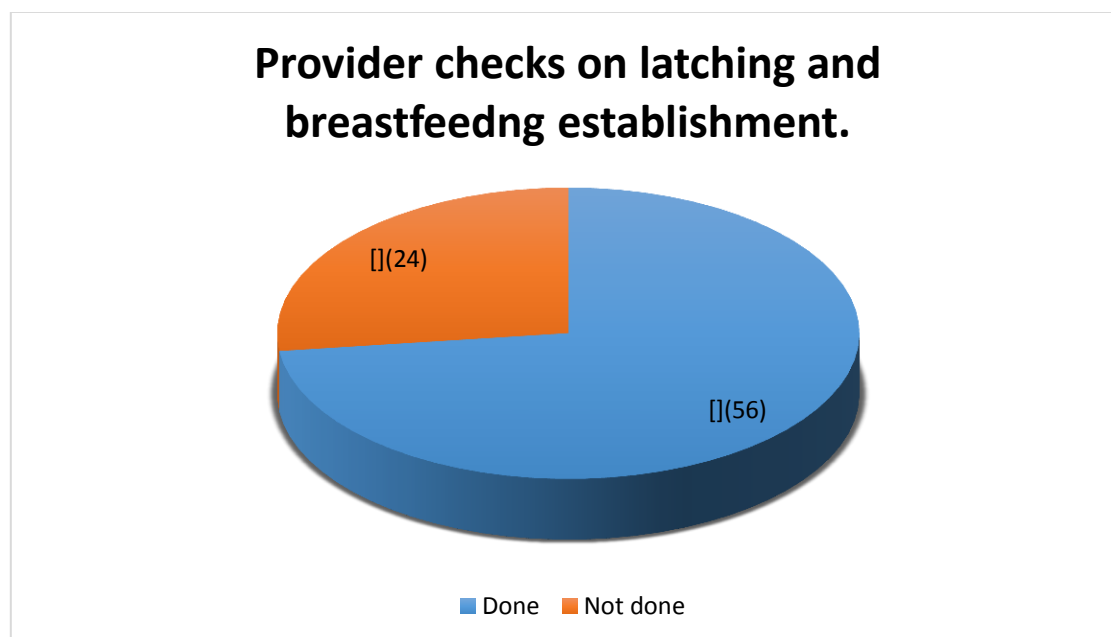


Fig 4.11: Provider checks on latching and breastfeeding establishment

4.18. Frequency of newborn observation.

The study showed that majority 58(88%) of the health care practitioners took 15 minutes to check on neonate, 49(79%) in 30 minutes, 49(69%) in 45 minutes and 42 (69%) in 60 minutes.

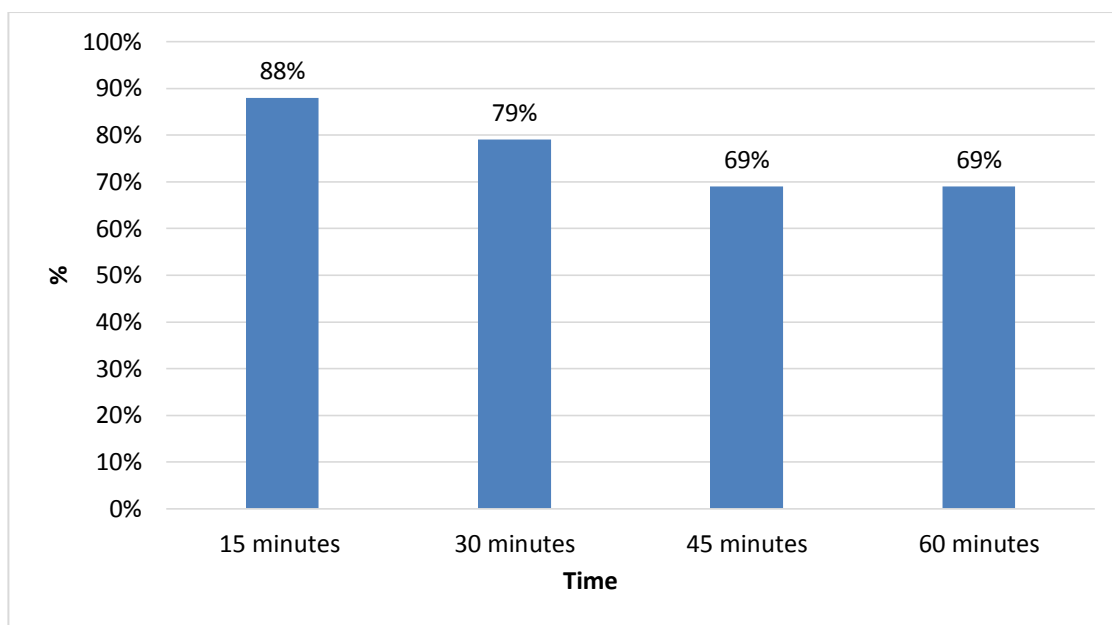


Fig 4.12. Frequency of newborn observation.

4.19. Presence of Birth companion

A significant number of mothers had birth companions 72(92%) compared to 6(8%) that did not have birth companions. On average, there was one birth companion (minimum 1, maximum 3).

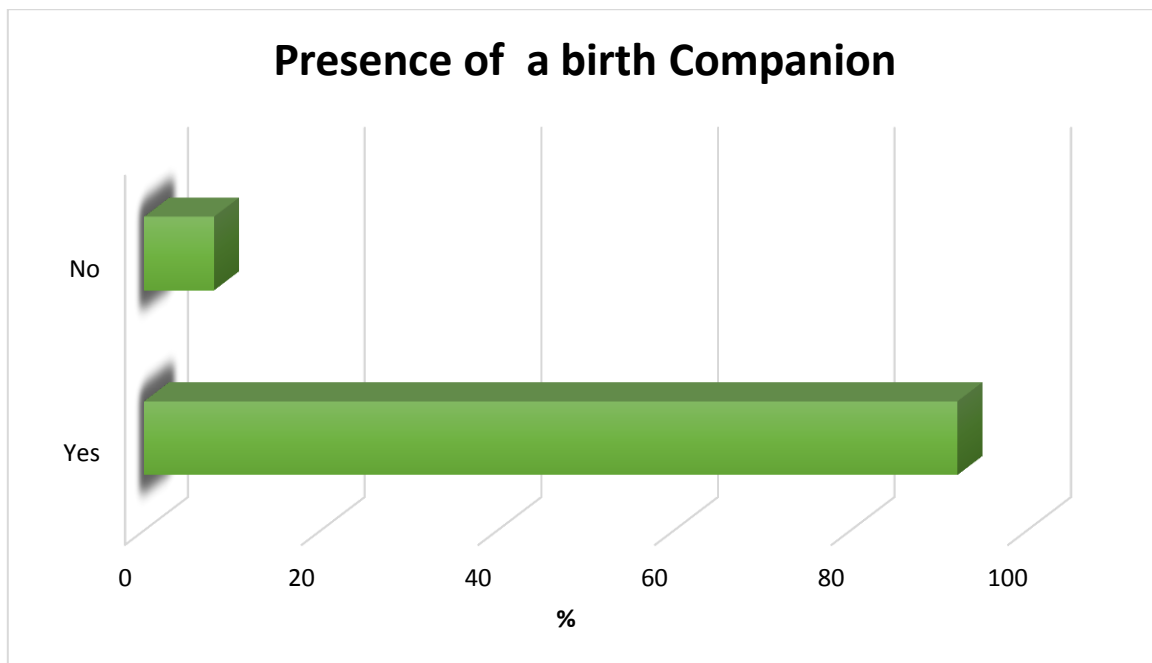


Fig 4.13: Presence of Birth companion

4.20. Potentially harmful practices.

Unavailability of a heat source is the most noted potentially harmful practice at 46.2%(33), and the least is placing a newborn on a cold surface 3.9%(3).

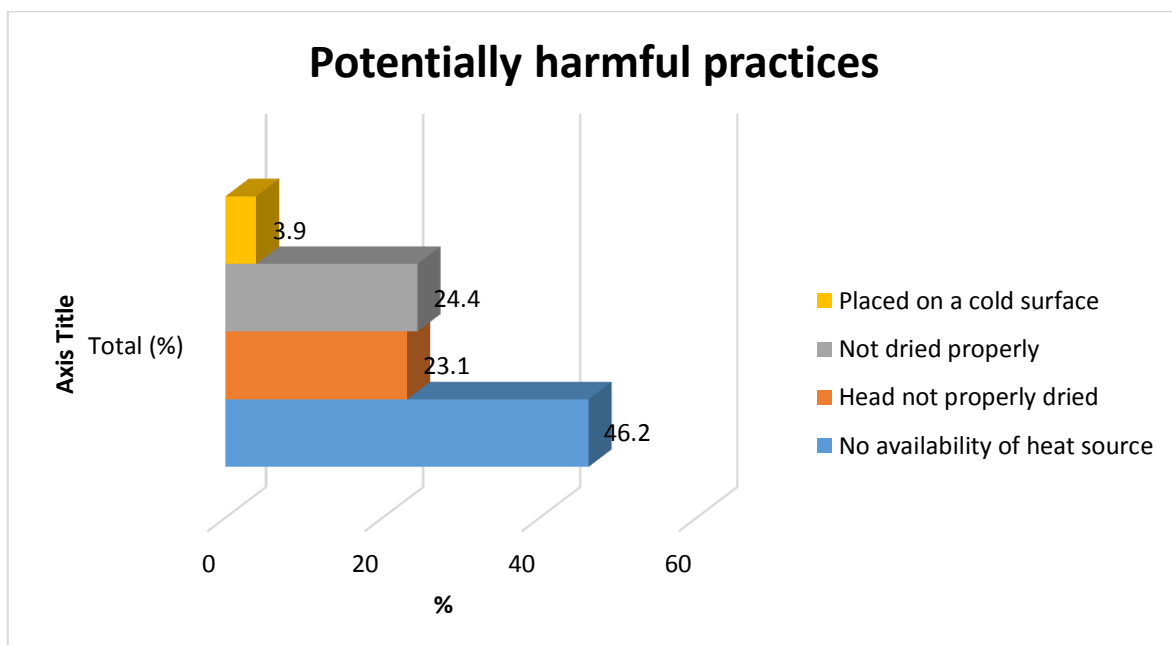


Fig 4.14: Potentially harmful newborn practices

CHAPTER FIVE.

5.0 DISCUSSION.

WHO has identified simple interventions that, if applied routinely, mitigate some of the threats newborns face. These early interventions are integral to hospital infection control practices because they reduce the risk of neonatal sepsis (Hemingstong et al, 2010). The need for basic life-saving interventions and for beneficial parent–newborn interactions indicates that procedures carried out immediately after delivery should be standardized in time and order.

Babies are born in a variety of settings around the world, especially when the birth is a normal delivery. Although vaginal delivery does not require the aseptic conditions of an operating room, a few simple practices can make the procedure safer for the mother, the infant and the health care provider.

People receiving health and medical care, whether in a hospital or clinic, are at risk of becoming infected unless precautions are taken to prevent infection. Nosocomial (hospital-acquired) infections are a significant problem throughout the world and are increasing (Alvarado 2000).

Because of the increasing risk of exposure to microorganisms, precautions such as hand washing, use of gloves, face shields and plastic or rubber aprons, can minimize this risk; therefore, appropriate use of personal protective equipment should be emphasized. Hand hygiene significantly reduces the number of disease-causing microorganisms on hands and can minimize cross-contamination (e.g., from health worker to patient), the study shows a reflection that both hand washing and use of a sanitizer is low, at an average of 58% (45) and 22% (17),

though the study findings reveal that availability of sinks with running water and soap was at an average of 99% (77) and 94% (73) respectively. This can further be linked to possible micro-organisms spread, according to Boyce and Pittet failure to perform appropriate hand hygiene is considered to be the leading cause of nosocomial infections and the spread of multi resistant microorganisms, and has been recognized as a significant contributor to outbreaks (Boyce and Pittet 2002).

Antiseptic hand rubs use in health care setting is quick, appropriate to perform and more effective in killing both transient and resident hand flora than hand washing (Girou et al 2002). Despite having these advantages and its availability in the delivery rooms at 64% (50), use of hand sanitizers in the study is low at 22% (17), despite provision of the sanitizer dispenser and its contents.

This study depicts adherence to infection a prevention and control having 96.2% of all health care workers wearing of sterile gloves, gloves however do not provide complete protection against hand contamination. According to Kotilaein et al, 1989, approximately 30% of staff who wear gloves while performing certain procedures or while caring for patients may have residual bacteria from patients. Given the generally poor compliance with hand hygiene practices, every effort must be made to reinforce the message that gloves do not replace the use of hand hygiene (Kotilaein et al,1989).

Hypothermic babies are susceptible to peripheral vaso-constriction, decreased peripheral perfusion, ischaemia, metabolic acidosis and increased metabolic rate. Low body temperatures may result in worsening of respiratory distress and can predispose neonates to pulmonary haemorrhage and disseminated intravascular coagulation (Loughhead et al,

1997). In anticipation to receive a newborn, this study established that warm chain is maintained through preparation of items and conditions such as towels to receive the neonate, closing the windows and putting on the source of heat at an average of 95%, 90% and 30.8% respectively.

However, the risk of developing hypothermia in this study may arise due to health care workers' low levels of putting on sources of heat, this is shown as way below half of the deliveries conducted in rooms that have no heater switched on. Dehdashtian et al reported that 85% of newborns had a rectal temperature of below 36^oc two hours after delivery (Dehdashtian et al,2009) and in Uganda, the prevalence of neonatal hypothermia within 90 minutes postpartum was 79% (Byaruhanga et al, 2005), while in Nigeria and Zimbabwe this rate was 68% and 85%, respectively upon admission of newborns (Kambarami et al 2003 and Ogunlesi et al 2009).

Many interventions, such as providing eye prophylaxis and vitamin K, were observed to be carried out in the study, scores for both interventions were at 80% (60). The reasons noted for the missed opportunities were drug unavailability, transfer of the neonate to NBU and the high work load. Though part of routine care, Vitamin K is administered to prevent haemorrhagic disease of the newborn and eye prophylaxis, against gonorrhoea conjunctivitis or ophthalmic neonatorum, Darmstadt et al noted that these interventions including weighing and examining were performed in sequences that did not allow the newborns to benefit from all of their mothers' natural protection in the first hour of life, such as provision of warmth, protection from infection via skin-to-skin contact (Darmstadt et al.,2008).

The Academy of Breastfeeding Medicine (ABM,2008) states that, for a healthy newborn, procedures should be delayed to allow early parent–newborn interactions and the first breastfeed. It is encouraging that most of the neonates (more than half), 70.5% did initiate breast feeding the first hour after birth, those that did not had various reasons cited for not initiating breastfeeding such as resuscitation of the neonate, repair of episiotomy/tears, and transfer of the neonate to NBU. According to KDHS 2014, nearly two thirds of children (62%) were breastfed within one hour of birth and vast majority (91%) of children were breastfed within one day of birth (KDHS, 2014).

Furthermore, breastfeeding within one hour of birth is evident of Kenyan Policy to initiate and exclusively breastfeed infants is practiced, the study shows a difference of approximately 8% higher than the national initiation of breastfeeding within the first hour of birth. It is evident that 56 (73%) primary health care workers offered the greatest support to mothers during initiation of breastfeeding, these findings are consistent with KQoC whereby initiation of breastfeeding was at an average of 76% (KQoC, 2010).

A difficult delivery can result in perinatal asphyxia if appropriate resuscitation is not available (Dawodu, 1998). Neonatal morbidity and mortality is mainly dependent on quality of resuscitation and stabilization of neonate after birth especially high risk infants (Garcia et al, 2007). The study reveals availability of functional resuscitation equipment to the participants, these includes self-inflating bag (67%), newborn face mask (92%) and bulb or penguin sucker (82%) respectively, hence an indication of resuscitation preparedness. KQoC established availability of suction bulb at 26% and suction machine at 71% in the participating health facilities (KQoC, 2010).

According to Russel et al, Microbial contamination is minimized by reducing the number of people permitted into an area and by defining the activities that take place there (Russel et al, 1982). Regulating the flow of visitors, patients and staff plays a central role in preventing disease transmission in health care facilities. Presence of birth companions for the mothers admitted in RMBH is encouraged to offer company, support, and encouragement during labour and to encourage mothers to breastfeed and keep neonate warm.

Because the number of microorganisms in a designated area tends to be related to the number of people present and their activity, microbial contamination is expected. The study provides an indication that mothers in labour receive great support during labour due to presence of birth companions, each mother had an average of one birth companion

Immediately following the delivery of the newborn, the birth attendant focuses mostly on the mother who is cleaned and taken care of so that she gets a chance to rest, and mostly after completion of cleaning and caring for the mother is the newborn taken care of, often placed next to the mother in bed. Performance of inappropriate newborn practices are a common practice in most hospital settings during delivery, the current study is no exception as provision of heat source during delivery at 46.2% (33), head not properly dried at 23.1% (3) and placement on a cold surface at 3.9% respectively. KQoC established harmful practices that were carried out in various health facilities such as slapping the neonate (2%), holding the neonate upside down (7%), compared to a study done in Ethiopia that identified slapping the neonate and holding the neonate upside down at 12% and 22% respectively (QoC,2011). According to Sobel et al in a study

carried out in Philippines, unsuitable interventions such as early bathing, non-immediate drying, placement on a cold surface and transfer to a nursery were observed (Sobel et al., 2011).

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion.

This study provides the baseline data about the quality of care received by the neonates immediately after birth which will help the policy makers and health professionals to plan for strategies where the quality of care is not satisfactory. Study findings highlight the fact that quality of care was good in areas such as preparation of towels and closure of windows before a delivery, support during initiation of breastfeeding, administration of Vitamin K and eye prophylaxis, but it was poor in relation to skin to skin care, hand washing and availability of heat source.

There is no data available regarding the infection arising from the lack of care immediately after the delivery, since mothers get discharged within few hours after delivery due to high turnover of patients admitted for delivery, treatment(Antenatal and postnatal) as well as mothers whose neonates are admitted in Newborn Unit.

6.2 Recommendations.

6.2.1. Health care practitioners.

Infection prevention and control messages be reinforced to enhance hand washing and sanitization as well as wearing gowns and boots before a delivery.

Observation of the newborn be consistent for 1 hour after delivery to reduce gap of complication development.

Enforcement of birth companion policy during delivery to reduce congestion in the rooms and improve infection prevention activities.

Reinforce information on potentially harmful newborn practices done and the effect it has on the newborn.

6.2.2. Hospital management.

To purchase and avail needed equipment and supplies such as resuscitaires, weighing scales and space heaters in each delivery rooms.

Provision of paper towels and dispenser to dry hands may enhance hand washing before and after procedures are carried out.

REFERENCES.

- Academy of Breastfeeding Medicine, (2008). ABM clinical protocol #5: peripartum breastfeeding management for the healthy mother and infant at term. Revision, June 2008. *Breastfeed Med* 2008, ; 3: 129–32.
- American Academy of Paediatrics, American Heart Association (2000). Textbook of neonatal resuscitation . (4th ed). Elk Grove Village (IL): American Academy of Paediatrics; Dallas (TX): American Heart Association.; 2000.
- Apgar, V, Holaday, D.A., James, L.S., Weisbrot, I.M., & Berrien, C., (1958). Evaluation of the newborn infant; second report. *JAMA* 1958, ; 168:1985–8.
- Apgar, V., (1953). A proposal for a new method of evaluation of the newborn infant. *Curr Res Anesth Analg* 1953, *Current Researches in Anaesthesia and Analgesia*, ; 32:260–7.
- Ariff, S, Soofi, S.B., & Sadiq, K et al. (2010). Evaluation of health workforce competence in maternal and neonatal issues in public health sector of Pakistan: an assessment of their training needs. *BMC BioMed Central Health Services Research* 10: 319
- Baqui, H., Williams, E. K., Darmstadt, G. L., Kumar, V., Kiran, T. U., Panwar, D., ... Black, R.E., (2007). Newborn Care in Rural Uttar Pradesh. *Indian Journal of Pediatrics* 74 (3): 241–47.
- Bergström, Anna, Romano, Byaruhanga, and Pius, Okong. (2005). The Impact of Newborn Bathing on the Prevalence of Neonatal Hypothermia in Uganda: A Randomized, Controlled Trial. *Acta Paediatrica* 94 (10): 1462–67.
- Berwick, D.M., (2005). Broadening the view of evidence-based medicine *BMJ Quality & Safety*, 14: (5)315-316.
- Boyce, J.M. and Pittet, D. (2002). Guidelines for hand hygiene in health care settings: recommendations of the Health Care Infection Control Practices Advisory Committee and the HICP/SHSA/APIC/IDSA Hand Hygiene Task Force. *Infection Control and Hospital Epidemiology*, 23(Supp): S3-S40.

- Burnett, S., Franklin D.B., Moorthy, K. Cooke, W.M., & Vincent, C., (2012). How reliable are clinical systems in the UK NHS? A study of seven NHS organizations. *BMJ quality & safety*, 21(6), pp.466–72.
- Burns, N. and Grove, S.K. (2001). *The Practice of Nursing Research, Conduct, Critique, and Utilization*; (4th Ed) Philadelphia, W.B. Saunders Company.
- Care of the Baby at Birth, During first hour after birth (National division, AIIMS, New Delhi),:www.newbornwhocc.org/enn/Care_at_Birth.
- Camp, W. G. (2001). Formulating and Evaluating Theoretical Frameworks for Career and Technical Education Research. *Journal of Vocational Educational Research*, 26 (1):27-39.
- Chou, D., Daelmans, B., Jolivet, R.R., Kinney, M., & Say, L., (2015). Ending preventable maternal and newborn mortality and stillbirths. *BMJ, Clinical Research*, 351:h4255.
- Dawodu, A. (1998). Neonatology in developing countries Problems, practices and prospects. *Annals of Tropical Paediatrics*, 18: S73-S79.
- Darmstadt, G.L., Bhutta, Z.A., Cousens, S., Adams, T., Walker, N., & De Bernis, L., (2005). Evidence-based, cost-effective interventions: how many newborn babies can we save? *Lancet*, 365:977–88.
- Darmstadt, G.L., Walker, N, Lawn, J.E., Bhutta, Z, Haws, R.A., and Cousens, S. (2008). Saving newborn lives in Asia and Africa: cost and impact of phased scale-up of interventions within the continuum of care. *Health Policy Plan*, 23:101-117.
- Deorari, A.K., (1999). Hypothermia in Newborn. *Asian Journal of Obstetrics & Gynaecological Practice*, 3 (1): 49-51.
- Dehdastian, M., Bayat, M.S. and Memari, A., (2009). Evaluation of Hypothermia Frequency in First 24 hours of Life in Alive Neonates in Ahvaz Imam Khomeini Hospital. *Singapore Medical Journal*, 7(4): 450-454.

- Dixon, J., Gulliver, A., Gibbon, D. & Hall, M., (2001). *Farming Systems and Poverty: Improving Farmers' Livelihoods in a Changing World*. Washington, DC: World Bank.
- Duysburgh, E., Zhang, W.H., Ye, M., Williams, A., Massawe, S., Williams, S....Temmerman, M., (2013). Quality of antenatal and childbirth care in selected rural health facilities in Burkina Faso, Ghana and Tanzania: similar findings. *Tropical Medicine and International Health*, 18:534–47.
- Edmond, K.M., Kirkwood, B.R., Amenga-Etego, S., Owusu-Agyei S., & Hurt, L.S., (2007). Effect of early infant feeding practices on infection specific neonatal mortality: an investigation of the causal links with observational data from rural Ghana. *The American Journal of Clinical Nutrition*, 86: 1126–31.
- English, M., Ntoburi, S., Wagai, J., Mbindyo, P., Opiyo, N., Ayieko, P.,... Irimu, G., (2009). An intervention to improve paediatric and newborn care in Kenyan district hospitals: understanding the context. *Implementation Science*, 4:42.
- Essential Newborn Care (2013). UnangYakap Campaign. Maternal and Child Health Nursing. Manilla: Department of Health, Philippines.
- Essential Newborn Care Corps (2014). Baseline Survey-Evaluation Programme To Rebrand Traditional Birth Attendants as Health Promoters in Sierra Leone. The Republic of Sierra Leone. Concern world Wide.
- Fattah, N., and Dean, N., (2012). Assessment of Quality of Nursing Care Provided Immediately After Birth at University Hospital. *Life Science Journal*, 9(4).
- Gathara, D, Opiyo, N., Wagai, J., Ntoburi, S., Ayieko, .P, Opondo, C., ... English M., (2011). Quality of Hospital Care for Sick Newborns and Severely Malnourished Children in Kenya: A Two-Year Descriptive Study in 8 Hospitals. *BioMed Central Health Services Research*, 11: 307. doi:1472-6963-11-307 [pii] 10.1186/1472-6963-11-307 [doi].
- Garcia, A.M.B., Zuruaga, A.P., Arraba,l T.M.C., and Arizcun, P.J., (2007). Factors related to respiratory complications in very low birth weight infants with respiratory distress syndrome. *Anales Pediatría*, 66(4):375-381.

- Getachew, A., Ricca, J., Canton, D., Rawlins, B., Rosen, H., Tekleberhan, A....Gibson, H., (2011). Quality of Care for Prevention and Management of Common Maternal and Newborn Complications: Study of Ethiopia's Hospital. Baltimore, USA. Jhpiego.
- Glasgow, R.E., Green, L.W., Taylor, M.V., & Stange, K.C., (2012). An Evidence Integration Triangle for Aligning Science with Policy and Practice. *American Journal of Preventive Medicine*, 42(6): 646–54.
- Grant, C. & Osanloo, A., (2014). Understanding, Selecting, and Integrating a Theoretical Framework in Dissertation Research: Creating the Blueprint for 'House'. *Administrative Issues Journal: Connecting Education, Practice and Research*, Pp. 12-22
- Gurung, G. (2008). Practices on immediate care of Newborn in the Communities of Kailali District. *Nepal Medical College Journal*, 10(1):41-44.
- Hengstermann, S., Mantaring, J.B., Sobel, H.L., Borja, V., Basilio, J., & Iellamo, A., (2009). Formula Feeding is Associated with Increased Hospital Admissions due to Infections Among Infants' Younger Than 6 Months in Manila, Philippines. *Journal of Human Lactation* 26:19–25.
- Hussey, P.S., Anderson, G.F., Osborn, R., Feek, C., Millar, J., & Epstein, A., (2004). How does the quality of care compare in five countries? *Health affairs (Project Hope)*, 23(3): 89–99.
- Kagama, F., Ricca, J., Rawlins, B., Rosen, H., Mukhwana, W., Lynam, P., & Miheso, A. (2011). Quality of care for prevention and management of common maternal and newborn complications: findings from a National Health Facility Survey in Kenya—are services provided according to international standards *Baltimore: Jhpiego*.
- Kambarani, R, and Chidedo, O., (2003). Neonatal hypothermia levels and risk factors for mortality in tropical country. *The Central African Journal of Medicine*, 49: 103-106.
- Katie, M., (2014). Lancet Launches Every Newborn Series; Where We Have Been & Where We Need to go. *Lancet*.

- Kattwinkel, J., McGowan, J. and Zaichkin, J., (2011). Textbook of Neonatal Resuscitation, (6th ed). . Elk Grove Village, Illinois. American Academy of Paediatrics
- Khadduri, R., Marsh, D. R., Rasmussen, B., Bari, A., Nazir, R., and Darmstadt, G. L., (2008). Household Knowledge and Practices of Newborn and Maternal Health in Haripur District, Pakistan. *Journal of Perinatology*, 28 (3): 182–87. doi:10.1038/sj.jp.7211903.
- Knippenberg, R., Lawn, J.E., Darmstadt, G.L., Begkoyian, G., Fogstad, H., & Waleliign, N., (2005). Systematic scaling up of neonatal care in countries. *Lancet*, 365(9464):1087-98. Published online March 3.
- Kotilalein, H.R., brinker, J.P., Avato, J.L., & Gantz, N.M., (1989). Latex and Vinyl Examination Gloves. *Archives of Internal Medicine*, 149(12): 2749-2753.
- Lawn, J., Cousens, S., Bhutta, Z., Darmstadt, G., & Martines, J., (2004). Why are 4 million newborn babies dying each year? *Lancet*, 364: 399–401.
- Lawn, J.E., McCarthy, B., & Ross, S.R., (2001). The healthy newborn: a reference guide for program managers. Atlanta: CDC and CARE.
- Lee, A.C., Cousens, S., Wall, S.N., Niemeyer, S., Darmstadt, L.G., Carlo, A.W.,.... Lawn, E.J. (2011). Neonatal resuscitation and immediate newborn assessment and stimulation for the prevention of neonatal deaths: a systematic review, meta-analysis and Delphi estimation of mortality effect. *BMC Public Health*, 11(Suppl 3): S12.
- Loughead, M.K.I., Loughead J.L., & Reinhart M.J., (1997). Incidence and physiological characteristics of hypothermia in very low birth weight infant. *Paediatric Nursing*, 23(1): 11-15.
- Lopriore, E., van Burk, G.F., Walther F.J., & De Beaufort, A.J., (2004). Correct use of the Apgar score for resuscitated and intubated newborn babies: questionnaire study. *British Medical Journal (Clinical Research Edition)*, 329:143–4.
- Luse, A., Mennecke, B., & Townsend, A., (2012). Selecting a Research Topic: A Framework for Doctoral Students. *International Journal of Doctoral Studies*, 7, 143-152.

- Marah A., (2011). Assessing Household Practices That Influence Neonatal Survival in the Asante-Akim North District of Ashanti Region – Ghana.KNUST Space (Doctoral Dissertation).
- Martines, J., Paul, V.K., Bhutta, Z.A., Koblinsky, M., Soucat, A., Walker, N. ...Costello, A., (2005). Neonatal survival: a call to action. *Lancet*, 365(9465): 1189-97.
- Maternal and Child Health Intergrated Programme, (2010). Report of Second Technical Working Group Meeting on Pre-Eclampsia/Eclampsia. USAID;Washington DC. *Jhpiego*.
- Maternal, Newborn and Child Health Framework, (2013). *International Federation of Red Cross and Red Crescent Societies*. Switzerland, Geneva: MNCH Framework.
- McDonald, S.J. & Middleton, P., (2008). Effect of timing of umbilical cord clamping of term infants on maternal and neonatal outcomes. *Cochrane Database Systematic Review*; 4: CD004074. doi: 10.1002/14651858.CD004074.pub2
- McClure, E.M., Carlo, W.A., Wright, L.L., Chomba, E., Uxa, F., Lincetto, O., & Bann C., (2007). Evaluation of the educational impact of the WHO Essential Newborn Care course in Zambia. *Acta Paediatrica*, 96:1135–1138
- Mercer, J.S., Vohr, B.R., McGrath, M.M., Padbury, J.F., Wallach, M. & Oh, W. (2006). Delayed cord clamping in very preterm infants reduces the incidence of interventricular hemorrhage and late-onset sepsis: a randomized, controlled trial. *Pediatrics*, 117:1235–42.
- Meyer, B.C. & Bishop, D.S., (2007). Florence Nightingale: nineteenth century apostle of quality. *Journal of Management History*, 13(3), pp.240–254.
- Ministry of Health and Social Welfare (MoHSW). [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF International (2015). Tanzania Service Provision Assessment Survey 2014–15. Rockville, MA, USA: MoHSW,

- MoH, NBS, OCGS, and ICF International.
<http://dhsprogram.com/publications/publication-SPA22-SPA-Final-Reports.cfm>.
- MTRH,(2014). *Moi Teaching and Referral Hospital report, 2012/2013*.Eldoret, Kenya: MTRH.
- Moore, E.R., Anderson, G.C., & Bergman, N (2007). Early skin-to-skin contact for mothers and their healthy newborn infants. *Cochrane Database Systematic Review*; 3: CD003519. doi: 10.1002/14651858.CD003519.Pub2.
- Moore, E.R., Anderson, G.C., Bergman, N, & Dowswell, T., (2012). Early skin-to-skin contact for mothers and their healthy newborn infants. *Cochrane Database of Systematic Reviews*, Issue 5.
- Moyer, I., Chery, A., Raymond, A.A., Gideon, L., Gideon, A., Rominski, S., ...Engmann, C.,(2012). Clean Delivery Practices in Rural Northern Ghana: A Qualitative Study of Community and Provider Knowledge, Attitudes, and Beliefs. *BMC Pregnancy and Childbirth* 12 (1): 50. doi:10.1186/1471-2393-12-50.
- Mugenda, O. M. & Mugenda, A. G., (2003). *Research methods: Quantitative and qualitative Approaches*. Nairobi: African Centre for Technology Studies.
- National AIDS/STI Program (NASCO) (2011).*Guidelines for Antiretroviral Therapy in Kenya*, (4th ed).Nairobi, Kenya: NASCO.
- Naylor, C.D., (2002). Putting evidence into practice. *The American journal of medicine*, 113(2), pp.161–3.
- Neonatal Mortality, (2013). *Situation & Trends*. Switzerland, Geneva: World Health Organization.
- Newton, O., & English, M., (2006). Newborn resuscitation: defining best practice for low-income settings. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 100:899–908
- Ogulensi, T.A., Ogunfowora, O.B., and Ogudenyi, M.M., (2009). Prevalence and risk factors for hypothermia on admission in Nigeria babies <72hours of age. *Journal of Perinatal Medicine*, 37(2):180-184.

- Opondo, C, Ntoburi, S, Wagai, J., Wafula, J., Wasunna, A., Were, F., ... English, M., (2009). Are Hospitals Prepared to Support Newborn Survival? - An Evaluation of Eight First-Referral Level Hospitals in Kenya. *Tropical Medicine and International Health*, 14 (10): 1165–72. doi:TMI2358 [pii] 10.1111/j.1365-3156.2009.02358.x [doi].
- Parlato, Ronald P, Gary, Darmstadt, L., and Anne Tinker, (2004). *Qualitative Research to Improve Newborn Care Practices, Saving Newborn Lives Initiative*. Washington DC, USA: Save the Children.
- Plotkin, M., Tibaijuka, G., Makene, C. L., Currie, S., & Lacoste, M. (2011). *Quality of Care for Prevention and Management of Common Maternal and Newborn Complications: A study of 12 regions in Tanzania*. Baltimore: Jhpiego.
- Polit, D.E. and Beck, C.T. (2006) *Essentials of Nursing Research*. (6th ed), Lippincott Williams & Wilkins, Philadelphia.
- Quality of Care for Prevention and Management of Common Maternal and Newborn Complications in Kenya (2010). Findings from a National Health Facility Survey in Kenya. Are Services provided According to International standards? (Kenya QoC 2010).
- Rabe, H., Reynold,s G., & Diaz-Rossello, J., (2004). Early versus delayed umbilical cord clamping in preterm infants. *Cochrane Database Systematic Review*; 4: CD003248. doi: 10.1002/14651858.CD003248.pub2.
- Right Care, (2015). *The 2015 NHS Atlas of Variation in Healthcare. Reducing unwarranted variation to increase value and improve quality*. England: National Health Services.
- Rycroft-Malone, J., Seers, K., Titchen, A., Harve,y G., Kitson, A., & McCormack, B., (2004). What counts as evidence in evidence-based practice? *Journal of Advanced Nursing*, 47:81–90.

- Salone, L., Vann, W.F. and Dee, L.D. Breastfeeding (2013): An Overview of Oral and General Health Benefits. *Journal of the American Dental Association*, 144(2): 143-151.
- Save the Children (2004). *Every Newborn's Health: Recommendations for Care for All Newborns*. Washington, DC: Save the Children
- Saving Newborn Lives (2001). *The state of the world's newborns: a report from Saving Newborn Lives*. Washington DC: Save the Children: 1–44. http://www.savethechildren.org/publications/newborns_report. Accessed June,2005.
- Save the Children (2014). *Ending Newborn Deaths: Ensuring Every Baby Survives*. London, UK: Save the Children.
- Situation Analysis of Newborn Health in Tanzania (2009). *Current Situation, existing Plans and Strategic Next Steps for Newborn Health*. Dar es Salaam: Save the Children.
- Sheingold, B.H. & Hahn, J.A., (2014). The history of healthcare quality: The first 100 years 1860–1960. *International Journal of Africa Nursing Sciences*, 1, pp.18–22.
- Jamah, A., (9th May 2013). *Preventable Maternal and Neonatal Deaths*. Standard Digital. www.standarddigital.com
- Syed, U., Assirudin, S.K., Helal, S.I., mannan, I., & Murray, J., (2006). Immediate and Early Postnatal Care For Mothers and Newborns in Rural Bangladesh. *Journal of Health Population of Nutrition.*, 24(4): 508-518.
- Tuladhar, S., (2010). The determinants of good newborn care practices in the rural areas of Nepal, Unpublished Master's Thesis. New Zealand: University of Canterbury <http://ndi.handle.net/10092/5061>.
- Waiswa, P., Peterson, S.S., Namazzi, G., Ekirapa, E.K., Naikoba, S., Byaruhanga, R.,... Pariyo, G., (2012). The Uganda Newborn Study (UNEST): An Effectiveness

Study on Improving Newborn Health and Survival in Rural Uganda through a Community-Based Intervention Linked to Health Facilities - Study Protocol for a Cluster Randomized Controlled Trial. *Trials* 13 (1). *Trials*: 213. doi:10.1186/1745-6215-13-213.

- Wall, S.N., Lee, A.C., Niermeyer S., English, M., Keenan, W.J., Carlo, W.,...Lawn, J.E., (2009). Neonatal resuscitation in low-resource settings: what, who, and how to overcome challenges to scale up? *International Journal of Gynaecology and Obstetrics*, 107(Suppl 1): S47–62, S63–4.
- Wallin, L., Ewald, U., Wikblad, K., Scott-Findlay, S., & Arnetz, B.B., (2006). Understanding work contextual factors: a short-cut to evidence-based practice? *Worldviews on Evidence-Based Nursing*, 3:153–164.
- Weiner, B. & Alexander, J., (2006). Quality improvement implementation and hospital performance on quality indicators. *Health Services Research*, April, 41 (2): 307-34.
- UNICEF (2015). *Child Mortality Estimates. Secondary Child Mortality Estimates*. USA: UNICEF.
- WHO, (2007).The WHO Reproductive Health Library (November, 2007). Geneva: WHO.
- WHO, (2009).The WHO Reproductive Health Library (March, 2009).Geneva: WHO.
- World Health Organization (1993). *Thermal control of the newborn, a practical guide. Maternal Health and Safe Motherhood Programme*. Geneva: WHO.
- World Health Organization (1997). *Basic Newborn Resuscitation: a practical guide*. Geneva:WHO.http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/MSN-98-1/en/index.html
- World Health Organization and UNICEF (2003). *Global strategy for infant and young child feeding*. Geneva, Switzerland: World Health Organization.
- World Health Organization (2006). *Standards for Maternal and Neonatal Care. Department of Making Pregnancy Safer*. Geneva, Switzerland: World Health Organization.

World Health Organization (2012). *Trends in maternal mortality: 1990 to 2010*. WHO, UNICEF, UNFPA and The World Bank estimates. Geneva, Switzerland: World Health Organization

World Health Organization (2013). *Recommendations on Postnatal Care of the Mother and Newborn*. Geneva, Switzerland: World Health Organization.

World Health Organization (2016). *Fact Sheet No 333 on Neonatal Mortality*. Geneva, Switzerland: World Health Organization.

WHO, UNICEF (2014). *Every Newborn: An Action Plan to End Preventable Deaths*. Geneva, Switzerland: World Health Organization.

APPENDICES

APPENDIX 1:OBSERVATION TOOL (CHECKLIST)

STUDY TITLE: IMMEDIATE NEWBORN CARE PRACTICES AMONG HEALTH CARE WORKERS IN RMBH, MTRH.

CODE NO:

ROOM NO:

1). Birth attended by:

Midwife { } Registrar { } MO- intern { }

2). Check whether the following items are available in the delivery room and tick as appropriate.

No.	Item.	Available.	Not available
a	Sink with running water.		
b	Soap.		
c	Sanitizer dispenser.		
d	Sanitizer.		
e	Sterile gloves.		
f	Clean gloves.		
g	Delivery pack(Sterile)		
h	Source of warmth (heater).		
i	2-5 dry towels or cloths.		
j	Functional wall clock.		
k	Sterile cord clamps.		

3). Check if infection prevention and control is adhered to through the following activities (tick appropriately).

No.	Procedure.	Done.	Not done.
a.	Hand washing using soap and water		
b	Uses sanitizer.		
c	Wears sterile gloves.		
d.	Wears gown.		
e.	Wears boots.		

4). Ascertain if the following items and conditions are prepared for birth (tick appropriately).

No.	Item.	Done.	Not done.
a	Prepares towels/shawls.		
b	The source of warmth put on		
c	No draught in room/windows closed.		

5). Check on availability and preparation of supplies/items for management of birth asphyxia before delivery in the delivery room (tick appropriately).

No.	Item.	Functional	Not functional	Not available.
a	Self-inflating ventilation bag			
b	Newborn face masks(right size)			
c	Bulb syringe.			
d	Suction machine			
e	Suction catheters.			
f	Resuscitation table for the newborn.			
g	Functional wall clock.			

6). Observe the following activities during delivery and care of a newborn for one (1) hour (tick appropriately).

(Timer set on): Time started.....

No.	Activity.	Done.	Not done.	Done by assistant.		
a	Prepares trolley with equipment.					
b	Opens pack when cervix is fully dilated.					
c	Arranges instruments on trolley before delivery of newborn.					
d	Wipes face after birth of head (before delivery of shoulders).					
e	Time head comes out.					
f	Checks cord around neck.					
g	Waits for restitution.					
h	Delivers anterior and posterior shoulder.					
i	Delivers newborn onto the abdomen.					
j	Notes/asks/communicates time of birth.					
k	Immediately dries newborn thoroughly with towel.					
l	Discards wet towel and covers with dry towel.					
m	Announces/shows sex of newborn.					
n	Places the newborn on skin to skin contact.					
o	Checks for cord pulsation before clamping and cutting.					
p	Cuts cord with sterile scissors.					
q	Weighs newborn.					

7) Confirmation and estimation of Apgar score from one (1) minute to ten (10) minutes of birth.

No	Time	Score estimates	Score estimates
		satisfactory	not satisfactory
a	At birth.		
b	5 minutes.		
c	10 minutes.		

8). Checks whether any of these potentially harmful newborn practices are carried out(tick appropriately).

No.	Harmful practice.	Done.	Not done.
a	No availability of heat source.		
b	Draft in the delivery room.		
c	Head not properly dried.		
d	Not dried during resuscitation.		
e	Continued use of wet linen.		
f	Newborn placed on a cold surface.		
g	Suctioned unnecessarily/more than once.		
h	Fisrt head to toe examination.		

IF RESUSCITATION IS NEEDED, SKIP TO NO.13.

9). Estimate the time taken to initiate breastfeeding.

Within 30 minutes { } 30 minutes to 1 hour { } Not done { }

If not done, note the reason(s) why it is not done below;

No.	Noted reason	Tick appropriately.
a	Resuscitation of mother.	
b	HIV/AIDS	
c	Repair of episiotomy/tears.	
d	Mother not willing to breastfeed.	
e	Resuscitation of newborn.	
f	Transfer of newborn to New Born Unit.	
g	Others.	

10). If breastfeeding was initiated in 9 above, was support offered during initiation?

Yes { } No { }

11.) (i) If yes in 10 above, by whom?

By self { } Primary attendant { }

(ii) What kind of support was offered during initiation of breastfeeding?

No	Type of support	Tick appropriately.
a	Encouragement	
b	Latching	
c	Other	

12.) Is skin to skin contact continued with breastfeeding?

Yes { } No { }

(Resuscitation)

13). Stimulation of newborn achieved by;

Drying and rubbing { } Tap on sole of foot { } Back rub { }

Holding newborn upside down { }

Any other method noted.....

14.) Does the newborn need resuscitation by bag and mask ventilation?

Yes { } No { } **Time started:**

15.) If yes, check for the following activities (tick appropriately).

No.	Activity	YES	NO	Not Applicable.
a	Cuts cord immediately.			
b	Calls for help			
c	Places newborn on warm clean and flat surface.			
d	Position head in neutral/sniffing position(proper position)			
e	Suction with bulb/penguin sucker.			
f	Suction with catheter.			
g	Places correct size mask covering chin.			
h	Checks seal by ventilating 2-3 times (observes chest rising).			
i	Ventilation of 40 breaths per minute.			
j	If breathing is normal, put on skin to skin care.			

Time ended:Successful { } Refer to NBU { } Death { }

16). Note any deviation from normal on the above.

.....

17.) Any reasons for the above noted practice.

.....

.....

.....

18.) Check administration of these drugs (tick appropriately).

(i)

No.	Drug.	Administered.	Not administered.
a	Eye prophylaxis.		
b	Vitamin K.		

(ii) If no, note any reason below:

No.	Noted reason(s)	Tick appropriately.
a	Not available.	
b	Transfer to NBU.	
c	High workload.	
d	Other(s).	

19.) Ascertain if the newborn is observed every 15(fifteen) to 60 (sixty) minutes after birth (tick appropriately).

Time(minutes)	Done.	Not done.
15		
30		
45		
60		

20) Ascertain if health care provider checks on latching and breastfeeding establishment of newborn after birth.

Done { } Not done { }

21.) If 20 above was done, approximate time taken to do so;

15 minutes { } 30 minutes { } 45 minutes { } 60 minutes { }

22.) Is a birth companion(s) present during immediate care of newborn?

Yes { } No { }

If yes, how many?

ACTION PLAN Helping Babies Breathe

