



UNIVERSITY *of*  
RWANDA

**UMBILICAL CORD CARE KNOWLEDGE AND PRACTICES  
AMONG POSTNATAL MOTHERS LIVING IN KIBUNGO  
HOSPITAL CATCHMENT AREA**

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Masters of Sciences in Nursing (Neonatal Track)

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June 2019



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A dissertation submitted in partial fulfillment of the requirements for the degree of

**Masters of Sciences in Nursing (Neonatal Track).**

In the College of Medicine and Health sciences

Supervisor: Ass.Prof: MUKAMANA Donatilla

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June, 2019

## **DECLARATION**

Declaration I, Emmerance UWINGABIRE, do hereby declare that this dissertation submitted for the degree of Master of Science in Nursing/ Neonatal Track in University of Rwanda/ College of Medicine and Health Sciences is my original work and has not previously been submitted elsewhere. Also, I do declare that a complete list of references is provided indicating all the sources of information quoted or cited.

Student Name: Emmerance UWINGABIRE

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Date and signature

## **DEDICATION**

Dedication To my lovely husband SHUMBUSHO Didace who laid a foundation for my academic career and success in my life. To my loved family especially RUGINA Moise and MUJAWAYEZU Angelique family for your support during my study. All my classmates in master's program especially neonatal track.

Your love, support and tolerance helped me through this Master's learning.  
May almighty God abundantly bless you.

I dedicate this work

## **ACKNOWLEDGEMENT**

I do acknowledge with sincere gratitude, the support and guidance from my supervisors Ass.Prof MUKAMANA Donatilla and Mrs. TENGERA Olive. I also appreciate all staff from College of Medicine and Health Sciences. My appreciation also goes to my colleague and to all who actively participated in this study. I am indebted to my dear husband, my families for their support through this study.

Thank you so much.

## **ABSTRACT**

### **BACK GROUND:**

Globally, about 130 million neonates are delivered every year with an estimated 4 million deaths happening within 4 weeks after birth and 1, 5 million of those deaths are caused by infections. In absence of preventive measure on umbilical cord of neonates through the stump of the cord and sepsis including omphalitis can occur in the first week and two weeks after birth. However inadequate knowledge and harmful cord care practices among postnatal mothers are the cause to increase omphalitis and umbilical cord infection is the main cause of deaths among neonates in developing countries.

**THE AIM:** To assess umbilical cord care knowledge and practices among postnatal mothers living in Kibungo Hospital catchment area.

### **METHODOLOGY:**

A cross- section study and purposive sampling strategy were used to collect data from 224 mothers of neonates attending health centers in Kibungo Hospital catchment area. Study site was vaccination clinic at the health centers. A structured questionnaire instrument was used to collect data in this study. Descriptive and inferential statistics were used to analyze data.

**RESULTS:** Nearly all 93% were delivered at the health centers, this study highlighted that participants with poor knowledge on umbilical cord care were dominant (67%) and some mothers have applied substance on neonates umbilicus. The most substances used were body ointment like Vaseline (23%) and Movit (15%). Yet it is remarkable that there is a correlation between mothers' knowledge and substances applied on infants umbilicus as well as the days on which substances were used ( $R^2 = 0.224$ ,  $P = 0.001$ ;  $R^2 = 0.167$ ,  $P = 0.012$ ).

**CONCLUSION:** Knowledge of umbilical cord care is poor, and harmful practices are still practiced. Health care providers can educate mothers and improve umbilical cord outcome.

**KEY WORDS:** Knowledge, practice, neonate, umbilical cord, mothers.

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## **LIST OF SYMBOLS AND ACRONYMS /ABBREVIATIONS**

ANC: Antenatal Care

CI: Confidence Interval

CMHS: College Of Medicine and Health Science

CHWs: Community Health Workers

HC: Health Center

KAP: Knowledge, Attitude and Practice

IRB: Institutional Review Board

MDG: Millennium Development Goal

MOH: Ministry of Health

NISR: National Institute of Statistics of Rwanda

PNC: Postnatal Care

SPSS: Statistical Package for Social Science

TVET: Technical Vocation Education Training

UR: University of Rwanda

WHO: World Health Organization

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# **CHAPTER 1: INTRODUCTION**

## **1.1. INTRODUCTION**

Globally, around 130 million of the babies are delivered year after year with an approximation of 4 million deaths that occur within postpartum period and most of them around 1, 5 million are attributed to infections (Afolaranmi.,et al 2018 p9-11).Those infections can be from bacterial colonization of umbilicus because the umbilical cord care may be a place for infection to enter the baby body and it is important to care it properly (Children’s hospital of Philadelphia,. 2018). Umbilical cord care is to keep the cord clean, dry and exposed to the air World Health Organisation (WHO),2016.Umbilical cord care knowledge and practices among mothers who are often concerned vary in reflection of cultural traditional within different communities and disparities in health care practices globally(Coffey and brown.,2017). Mother’s knowledge on neonatal care and appropriate practice of that knowledge could help many expected situations as having healthy umbilicus of neonates in post-partum. This chapter describes the back ground, problem statement, aim of study, research objectives and questions, significance of the study, definitions of concepts, structure of study and conclusion of chapter.

## **1.2. BACK GROUND**

Each year around the world 3.3 million of neonatal death occur and 30% are caused by infections where some of them enter through umbilical cord (Gelano, Bacha, and Abate., 2019). The sources of bacteria that cause infection include the mother’s passage of delivery for neonates born vaginally, the surroundings of health facilities where neonate is delivered and hands hygiene (Karumbi et al,. 2013. p78-83). Aerobic bacteria are present in approximately 85% of infections, predominated by Staphylococcus aureus, group A Streptococcus, Escherichia coli, Klebsiella (Gallagher, 2017). Harmful traditional cord-care practices, home deliveries in low resources settings and births attended by unskilled birth attendants were the causes that have the role to aggregate the risk of neonatal tetanus, omphalitis and sepsis to umbilical cords newborns (Coffey and Brown, 2017.p 6). The same authors stated that knowing that risks are crucial to plan the interventions that require behavior change and worldwide the umbilical cord care practices affected by mother’s knowledge often depend with countries following the group’s culture in country. A perspective contemporary African setting research done on cord care has shown majority of

responding had a good overall knowledge and practice about umbilical cord care (Afolaranmi et al., 2018).

The main cause of neonatal deaths in developing countries include infection that affect the umbilicus in new born (Kinanu, Odhiamba, Mwaura and Habtu, 2016.p 27-37) . More than one million babies in Africa die in the first week of their life, 50% of them die at the first day of life and it was reported that undetected and uncounted deaths occur at home (Theoneste, 2016.p 98-102). Sub-Saharan Africa, including Rwanda has the elevated amounts of neonatal mortality. The health facility is the one among the causes facilitating neonatal mortality reduction by 29% in developing countries. Increasing the health facilities, adding environments empowerment and supporting their utilization during child delivery are important points in the regions where home delivery is likely to be practiced (Tura, Fantahun and Worku, 2013.p13-18).

In the past, there has been a remarkable decline in the mortality of children under five years worldwide due to the movement by Millennium Development Goal fourth(MDG), which the aim was to reduce the under 5 child mortality rate by two-thirds between 1990-2015(Misgna, Halftom, Haftu and Mulugeta.,2016).Even this goal hasn't been reached globally; child mortality has been reduced by 53% over this period while the reduction in neonatal mortality has been very slow. Neonatal mortality represented 44% of all deaths in children younger than five years. This show is essential to focus on neonates' deaths prevention (Peter Cooper, 2016.pe6-pe7).

Rwanda neonatal mortality rate was declined following the years. In 2000 neonatal mortality rate was 44%, it declined to 20% in 2015 and it targets to reduce neonatal mortality at 9% in 2030 (Khurmi et al., 2017. p 93).

As strategies Rwanda has moved from home birth to facility to reduce maternal and neonatal mortality rate supported by childbirth policy(Mukamurigo, 2019), emergency obstetric neonatal care and immediate postnatal care including prevention of infection even umbilical cord(Khurmi et al., 2017. p93).The studies are done in African countries about mothers knowledge and practice on umbilical cord care but in Rwanda, there is limited study about mothers knowledge and practice of umbilical cord care.

Rwanda shows that the infant and child mortality have decreased dramatically, but neonatal mortality remains a challenge (Farmer et al., 2013.p65). Yet the researchers did not show different causes and their percentage of neonatal deaths, most information given concerned

with neonatal mortality rate generally, thus study is needed to demonstrate umbilical cord care knowledge and practices among postnatal mothers who pass long time with newborn in this period by providing a care to the neonates including umbilical cord care.

### **1.3. PROBLEM STATEMENT**

Research showed that in Rwanda neonatal deaths between 8 to 28 days was 10%, from 2 to 7days was 30% and in primary causes of neonatal deaths infections was at 9% (Rwanda Annual Health Statistics, 2014). A new born survival case study done in Rwanda shown the neonates mortality rate of 89% occur in first week in District Provincial Hospital (DPH), health centers and home deliveries majority of them 10% are due to sepsis / infection (Khurmi, et al, 2017).In developing countries the deaths related infections are present due to poor hygiene in cord practices (Kinanu et al., 2016. P27-37). A systematic review and meta-analysis revealed the application of chlorhexidine on the cord after birth demonstrated a reduction of neonatal sepsis by 32% comparing to dry cord care and it reduces neonatal mortality in 13% by comparing to dry cord care (Gelano, Bacha and Abate, .2019).

A perspective contemporary Africa setting research has presented only 13.6% of mothers knew that permit the cord stump to be dried on its own is a good practice (Afolaranmi et al., 2018).Postnatal care (PNC) in the first seven days is important for preventing morbidity and mortality in new-borns where the health care providers can educate to the mothers on umbilical cord care. However Rwanda has target to reduce neonatal mortality by 9% in 2030, in 2015 it was 20% (Khurmi et al., 2017 p.93), and a little is unknown about knowledge and practice on umbilical cord care. In addition, the researcher during clinical supervision of student noticed that the nurses and midwives don't give information on umbilical cord care in postpartum and on respect of antenatal visits that play a major role to reduce neonatal umbilical infection that lead to death as unhealed umbilical cord is an important portal for local and invasive infections through the patent vessels that provide direct communication of microorganisms to the bloodstream (Kinanu et al., 2016pp.27-36).

In Rwanda, there is a gap in literature, because there is limited data showing the prevalence of mothers' knowledge and practices on umbilical cord care and the real resources of those infections in details. This study will be carried out to evaluate mother's knowledge and theirs practices on umbilical cord care.

### **1.4. THE AIM OF THE STUDY**

To assess umbilical cord care knowledge and practices among postnatal mothers living in Kibungo district Hospital catchment area.

## **1.5. RESEARCH OBJECTIVES**

### **1.5.1. Main objective**

To assess umbilical cord care knowledge and practices among postnatal mothers living in Kibungo District Hospital catchment area.

### **1.5.2. Specific objectives**

1. To determine level's knowledge of postnatal mothers living in Kibungo District Hospital catchment area toward umbilical cord care.
2. To identify mothers' practices toward umbilical cord care among postnatal mothers living in Kibungo District Hospital catchment area.
3. To determine the association between level's knowledge, practices and socio-demographic among postnatal mothers living in Kibungo District Hospital catchment area towards umbilical cord care.

## **1.6. RESEARCH QUESTIONS**

1. What is the level's knowledge of postnatal mothers living in Kibungo District Hospital catchment area toward umbilical cord care?
2. What are the practices toward stump cord care among postnatal mothers living in Kibungo District Hospital catchment area?
3. What is the association between knowledge, practices and socio-demographic among post natal mothers living in Kibungo District Hospital catchment area toward umbilical cord care?

## **1.7. SIGNIFICANCE OF THE STUDY**

This study will be of great benefits to the following people and groups:

1. **Nursing practice:** The study will remind working nurses/ midwives, mainly in Rwanda, by empowering nursing process in neonates' care following standard care on umbilical cord care. Identification and management of neonate's problem will become systematic and motivate neonatal nurses and midwives to bigger responsibility by educating mothers on umbilical cord care and permit them preserve high level of professionalism in neonatology.
2. **Heath facilities organization:** The major task of a healthcare institution is to make a quality healthcare to every client who will need services. Emphasizing appropriate



neonates care in postnatal period including umbilical cord care that can reduce neonates' infection and deaths.

3. **Education:** The study will help nurse educators review the curriculum and the course content of neonatology; and identify areas that will require review to meet up with current trends in nursing practice by emphasizing on health education that must be given to the clients /mothers and increase their knowledge.
4. **Research:** Nursing research provides the scientific basis for the practice of the profession. This study will help midwives/nurse's researchers and students generate ideas and conducting researches to quality of nursing neonatal care including umbilical cord care.

### 1.8. DEFINITION OF CONCEPTS

**Knowledge:** it is the facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject (Kinanuet al., 2016). In this study, it refers all information or the skills postnatal mothers have on umbilicus care from education given by others following their beliefs.

**Mothers:** It is a biological or adoptive female parent (Kabwijamu et al., 2016).In this study mothers refers to a person by female who give birth an infant and take care for her or him.

**Neonate:** In this study neonate refers to a neonate who is less than four weeks old(Amolo, Irimu and Njai, 2017)

**Neonatal death rate:** The number of babies who die soon after birth, shown per thousand babies born (Chaudhary, Dhungana and Ghimire, 2013).In this study it means newborn die in post natal period.

**Omphalitis:** Omphalitis is a manifestation of pus discharge combined with abdominal skin erythema or severe redness that can take an extension of two centimeter from cord stump .the pus can be present or not (Sankar et al., 2016).In this study it refers to inflammation or infection on neonate umbilicus can occur due to inadequate knowledge or poor practice towards umbilical cord care.

**Practice:** It is the act to do something many time for learning and improvement (Merriam-Webster, 2019). In this study it refers to the action or practices done to neonate's umbilicus.

**Umbilical cord:** Cord containing two arteries and one vein which links the fetus inside the uterus to the placenta (Kinanu et al., 2016). In this study umbilical cord refers to the small portion of umbilical cord that remains on the neonate after being separated to the placenta.

## **1.9. STRUCTURE /ORGANIZATION OF STUDY**

This study will be composed of six chapters: Introduction, Literature review, methodology, Presentation of the results, discussions and then conclusion and recommendations.

## **1.10. CONCLUSION TO CHAPTER ONE**

This research chapter provides a guidance of the survey that was directed. It shows the background, problem statement, research questions, the aim and objectives as well as the significance of study, definition of concepts that are in the following chapter of literature review.

## **CHAPTER2: LITERATURE REVIEW**

### **2.1. INTRODUCTION**

A literature review is an examinations books, articles or previous studies relevant to particular issue or area of research and theory, provides a descriptive, summary and critical evaluation of the works in relation to research problem being investigated, it helps in revealing any gaps that exist in the literature, contribute to understand the research problem being studied and locate the own research within the context of existing literature (Labaree, 2013).

This chapter debated about theoretical literature that debated about theoretical literature that shows different theories regarding knowledge, attitude and practice to umbilical care among mothers , empirical literature, critical review and research gaps identification then the conceptual framework. The comparable literature search studies were identified to be linked with the current study and identified on line studies through Google scholar, Medscape, PubMed.

### **2.2. THEORETICAL LITERATURE**

Worldwide, 4 million of neonatal deaths occur every year where by infections takes 36% and mal practices on umbilicus care after birth are related to neonates' deaths particularly in developing countries because of poor hygiene in cord care that affect umbilical infections ( Kinanu et al., 2016). Again mothers don't initiate breastfeeding in the first and nourish a new born other foods can lead to neonates infections (Dhingra et al., 2014 p.173).

The umbilical cord stump is a major route of infection that passes in the vein and arteries or presence of necrotic tissue that complicate to septicemia. About 2 to7% of infants born in low resource countries progresses omphalitis and 2 to 15% decease due to a systemic infection or neonatal sepsis (Kheir, Mustafa and Osman, 2015p.4946).

Umbilical cord care practices in prevention of infection is cut umbilical cord and retain the stump clean by applying the gauze ,only water and avoid tub a baby in water until the stump can dropped between 5 and 15days old. The collective symptoms specify infected cord is the foul smelling, yellow drainage from the stump, redness, swelling, or tenderness of the skin around the stump (Medline Plus, 2015).

Neonates umbilical cord infection deaths can be barred with different defensive measures, optimal cord care practices during the first week of life have potential significant to reduce

neonatal death secondary to sepsis ( Gelano, Bacha and Abate, 2019 p.40). Umbilical cord care can be taught to the pregnant women who attend in antenatal services and explain them about good practices of an umbilical cord care, teach mothers hygienic care at birth and during postnatal period (Dhingra et al., 2014).

World Health Organization (WHO), 2018 approves the use of chlorhexidine gluconate 7.1% for the first week after birth in case of umbilical stump care for the neonates born at home settings and with high mortality rate superior to 30 per 1000livebirths. Yet WHO recommends to practice dry cord care after health facilities deliveries and home births in the settings with low neonatal mortality rate and use chlorhexidine to treat the umbilicus in case the harmful substance have been applied to the cord stump(Osrin and Colbourn,2016 p766-768).

The best practices guide lines for umbilical cord care include the respect of hand hygiene before and after umbilical cord care, wear the protective gloves, use sterile instrument to cut the cord, apply minimal handling of the cord and surrounding area to prevent infection, keep the cord clean and dry using clean with pure water and clean with clean gauze and not use the cotton wool, keep the cord open to air, the health care providers teach the parents to examine and check for signs of infections and involve in umbilical cord care( Northern Devon Health District Hospital, 2018).

The umbilical cord should be examine regularly at least three times per day for observing bleeding, infection and other problems and it is contra indicated to cover with the gauzes (Nosan and Paro-Panjan, 2017p.1655-1658).

In Rwanda, among total deaths under five years including neonatal illness that present 70% and infection was the second source of neonates death in 2014 with 15% (Ministry Of Health Rwanda, 2014). To reduce the risk of infections originating from the cord stump, WHO presently recommends maintaining the cord clean and drying (Dhingra et al., 2014).

## **2.3. AMPIRICAL LITERATURE**

### **2.3.1. Mothers level'knowlge toward umbilical cord care**

WHO demonstrates that keeping the cord clean and dry, utilization of Chlorhexidine 7.1% as topical antiseptic to the cord stump especially in region known to be at high risk of infection are appropriate practices (Karumbi et al., 2013 p. 77-83 ).

Studies conducted have shown that the cord care after delivery changed following the knowledge of people, nation, beliefs and groups culture (Coffey and Brown, 2017).

Study conducted in Pemba Tanzania that assessed knowledge's level, attitude and practices of hospital staff and community care providers, shown around 22% of the women had information about the procedure of antiseptic solution to clean stump cord. The majority of mothers 99% were agree to use an antiseptic liquid for cord care, except 11.3% of women revealed the absence of money barrier to buy themselves chlorhexidine, 93% were ready to use chlorhexidine if they were trained to cord care by mothers Community Health Workers(CHWs) and 93% were understood to chlorhexidine cord application due to religious education (Dhingra et al., 2014).

Another study conducted at Kenyatta National Hospital shown that among 380 mothers, 98.4 of them knew it is obligatory to put substances on stump cord for aiding healing (Amolo, Irimu and Njai, 2017).A research directed conducted in Dhaka Shishu Hospital among 384 mothers, only 5.8%had excellent knowledge on different newborn care including umbilical care, 55.3% mothers had best possible knowledge, and 39% mothers had a poor knowledge (Begum and Khan, 2010).

A Study done in southern province Zambia on Local Perceptions, cultural beliefs and practices that shape umbilical cord care, breastfeeding mothers, grandmothers, and traditional birth attendants had the knowledge that umbilical heals when they put on baby's cord the powder, dust, Vaseline, motor oil, breast milk, cow dung and so on . In 46 participants interviewed on umbilical cord care only one of them had the knowledge regarding umbilical cord care (Herlihy et al., 2013p.1-14). Another study done in Nigeria on cord care education and its content given to mothers at Antenatal clinics in various health facilities in Edo state shown among 497 subjects studied, 98% of them received antenatal care and 72.3% received health education on cord care while 27.7 of them did not (Abhulimhen-Iyoha and Ibadin,2015p.129).

A study conducted in Gulomekada, District in Ethiopia on knowledge, practice and associated factors of essential newborn care at home among 296 mothers, 12.5% knew the babies took birth immediate after birth, 77.4% after 24 hours , 7.1% before 24 hours and 3% responded they don't know( Misgana, Gebru and Birhanu,2016 p.144).A another study done in contemporary Africa setting on cord care practices has shown that the level of knowledge of cord care among 324, 73.8% had a good knowledge on cord care and 26.2% had poor knowledge( Afolaranmi,T.et.al,2018 p.10).

### **2.3.2. Mothers' practices toward umbilical cord care**

World Health Organization recommends usage of chlorhexidine digluconate 7.1% to perform hygiene of neonates' stump cord that are born at home specifically in areas known to have poor hygiene and use traditional substance to care the cord however the chlorhexidine must be applied within one week after delivery (WHO,2018). Also it proposed to clean and dry cord to infants born at the health facilities and settings with low neonates mortality (WHO, 2013)

Umbilical cord care practices sometimes depend with countries 'culture and can be different following the regions, culture of groups within country (Coffey and Brown, 2017) .

A research conducted in Sylhet District, Bangladesh shown that they had a mal practice to cut the long cord at 4to7 fingers that cause delay in healing and put some substances associated with umbilical cord infections, 52% families applied substance to the cord immediately after separation. The substances likely used were turmeric 83% and boric powder 53%. Not only turmeric and boric power, they used the ginger, coconut oil, Nebanol ointment and so one (Alam et al., 2008p.s 61)

A cross sectional study in a Squatter Settlement Karachi, Pakistan revealed that there was common practice to apply made substances on stump cord. Among 565 women, more than fifty used ointment (33%), ghee (saturated oil) (27%), coconut oil (19%), mustard oil (9.5%), also surma , clove oil, turmeric and talcum powder were used on umbilical stump for some women (Ayaz and Saleem, 2010 p.e13783)

Another research conducted in Nigeria revealed that application of different substances were used like hot compress, herbs, native chalk, salt, sand, saliva, palm oil and so forth on umbilical stump among mothers, especially after discharge to health facilities. Again this study found that among 497mothers, 27.3 of them had an excellent performance on umbilical cord care and 71.8% mothers poor performance of umbilical cord care (Abhulimhen-Iyoha et al., 2012).

A study on newborn care knowledge and practices among 170 mothers attending pediatric outpatient clinic of a hospital in Karachi, Pakistan said that 60% was home deliveries and market bought razorblade was used to cut the umbilical cord, although 10% used a household knife and 74% had applied the substance to the cord stump like coconut oil, machine oil, olive oil, purified butter (Gul et al., 2014p.173). A systematic review done in Dhaka Shishu Hospital on knowledge and practices on neonatal care among selected mothers in Nepal

community argued that risk factor of omphalitis was associated with hand washing. 54% of mothers responded that the neonates umbilicus should be kept dry and not apply substance on it. In period of the same high frequency of newborn with high fever and omphalitis was detected and 94% of mothers had applied oil thought it was good for their neonates. Most of 87% participants used mustard oil and was applied two times per a day for 7 days gave rise of delay of recovery (Begum and Khan,2010).

Based on study done on assessment of determinant of umbilical cord infection among newborns at Pumwani maternity hospital shows 67.5% added hand/body or dettol soap in water to bath the neonates and those soaps were the causes in relationship with umbilical cord infection( Kinanu,. 2015). In Rwanda, there aren't publicized researches that show the practices toward umbilical care done by the women.

### **2.3.3. Association between level of knowledge and practices beliefs and socio-demographic among postnatal mothers toward umbilical cord care**

A study in Memba Tanzania revealed that due to the presence trained birth attendance the community had knowledge on importance of cord care and should practice the use of chlorhexidine if they are trained (Mullany et al., 2007p.203-211) .

Another study in Chitwan District Nepal revealed that among 181 mothers, 98% were literate following different level of education. This study shown the knowledge about danger signs had a good impact on new born care include cord care. 95% of mothers didn't apply any substances on umbilical cord only antiseptic while only 5% applied substances (Chaudhary, Dhungana and Ghimire, 2013p42-45).

Based on study conducted in Kenya, it shows that early education on new born care to the mother come in antenatal care services, can give good knowledge on cord care this means lack of education can be the factors influencing the poor knowledge on cord care. The same being the primi- gravida in this study shown it is also a factors cause a poor knowledge to umbilical cord care (Amolo, Irimu and Njai, 2017).

Another study conducted in Ethiopia on knowledge, practice and associated factors of essential newborn care at home among mothers detected that the good knowledge on essential newborn including umbilicus care was founded in mothers living in urban residence( Misgana, Gebru and Birhanu,.2016). In additional a population based survey studies done on knowledge and practice among postnatal mothers on newborn care in Mekelle town of Ethiopia demonstrated the knowledge and practice were limited in rustic

area and shown a significant difference of socio demographic and access to health facilities( Berhea, Belachew and Abreha,. 2018).

## **2.4 Critical review and research gap identification**

Standing on studies done, it is seen that cord infections are more common in developing countries especially in Sub-Saharan countries due to high rates of unhygienic cord care practices. Mothers and trained birth attendances don't have sufficient knowledge about umbilical cord care practices (Herlihyet al., 2013p.1-14). Therefore we need more research to explore the umbilical cord care knowledge and practices among mothers in other to reduce neonates' umbilical cord infections.

Regarding Rwanda no research that show specific data on knowledge and practices beliefs of umbilical cord care among mothers or different data that show the rate of umbilical cord infection occur in neonates. Only the report demonstrate that among different causes of neonates death, include infection 9%(MOH Rwanda, 2014).

## **2.5 CONCEPTUAL FRAMEWORK**

The conceptual framework is the abstract nature of the study that support it based on specified conceptual model to show the intangible definition of variables used in the study and help to assess the goals for research and develop appropriate research questions, methodology and shows gaps in the research and it is one of the way to show the gaps in current research and it can help to develop additional questions or experiments for it (Magher, 2018). This conceptual framework debates various concepts used in this study and shows the models used to demonstrate relationship between variables for example umbilical cord care knowledge and practice. This study will be directed by the conceptual frameworks which are Knowledge, Attitude and Practice (KAP) model (Ibrahim, 1995).

### **2.5.1 KNOWLEDGE, ATTITUDE AND PRACTICE (KAP) model**

A KAP survey is a representative study of a specific population to collect information on what is known, believed and done in relation to particular topic (Graham, Seeley and Saman, 2019).

In KAP model, knowledge is a set of understanding, attitude is a way of being, position and practice or behavior is observable actions of an individual in response to a stimulus (Sybille 2011 in Dong 2015). Knowledge effects attitude and then attitude influences the practice of



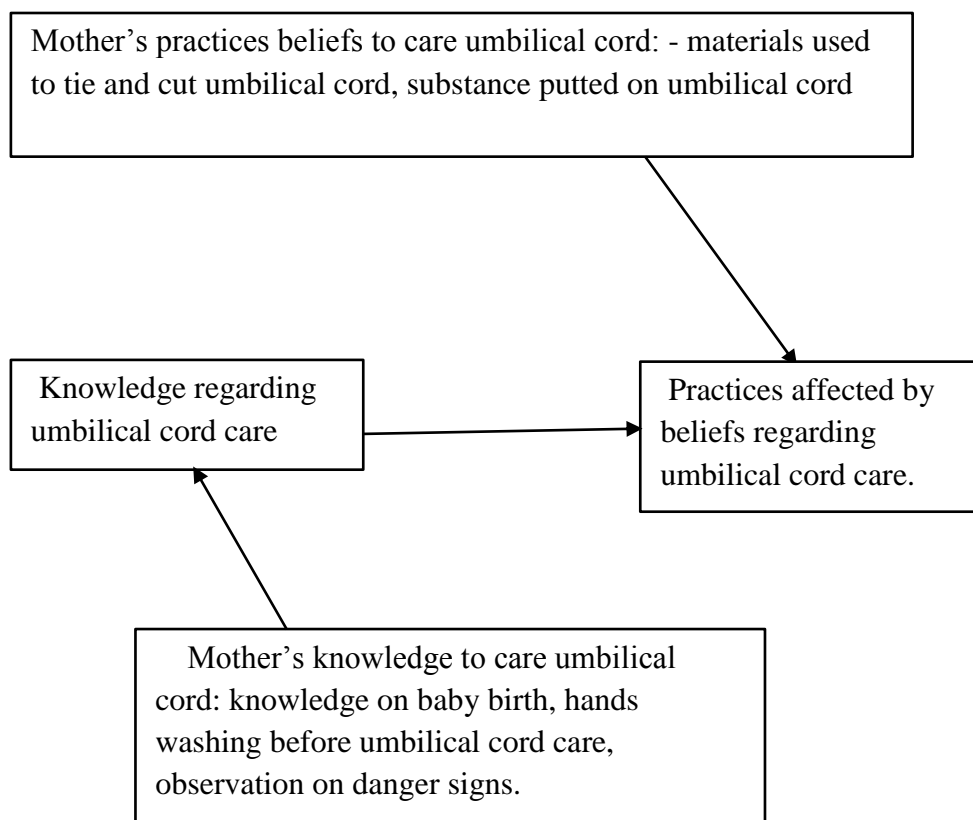
certain action (Badran, 1995). The attitude is used as a tool to measure beliefs and feelings of participants of study about the problem; it measures the information about a certain practice and preventive individual behaviors used to avoid a problem (Graham, 2019).

Conferring to relationships of the KAP and practice Dai and colleagues (2012) said that in the field of education, learner’s attitude is directly affected by knowledge and at the same time, attitude is converted into practice or behavior ordering.

In KAP model empowering the knowledge has impact on attitudes change and behaviors and this reduce the human economic burden diseases (Liu, Xu,Rao and Yua Chen , 2018 p.161)

As the study is aimed to assess umbilical cord care knowledge and practices among postnatal mothers, the framework below indicates the influence of knowledge on the practice

**Figure 1. Framework showing the influence of the knowledge, attitude and practice adopted from (Ramli at Al, 2018).**



**2.5.2. Research related to conceptual framework**

KAP model is used to know about a specific subject and measure effectiveness of the activities of health education in changing health behavior (Wahono and Chang, 2019).

According to Dayal and colleague (2018), in education the domain of knowledge, attitude of learners is direct affected by knowledge and the attitude is changed into practice behavior. Again the lack of knowledge is ignorant attitude or practices. In this study, the researcher has used only knowledge and practice concepts which were the variables to evaluate following the topic and study objectives. In addition the attitude or beliefs of mothers towards umbilical cord care is changed into practices.

A research done among allied health Sciences students in Public University in Malaysia shown there is an association between KAP regarding osteoporosis and the socio-demographic factors and there was reasonable level of knowledge and attitude but poor practices towards osteoporosis (Ramli, Rahman and Haque,2018).

A research conducted in Nigeria on determinants of cord care practices Abhulimhen and colleagues (2018) argued that an education is important as it gives essential information that can modify health behavior (Abhulimhen-Iyoha et al., 2012 p.210-213). And mother's level of knowledge is predictor of beneficial cord practice. In the study conducted in Dhaka Shishu Hospital more than half (54%) of the respondents believed that the umbilicus of the new born should be kept dry and nothing applied to it (Jones, 2015p.566-576).

A social-demographic characteristics study has demonstrated that poor knowledge on new born care practices is connected with job loss' mothers, primi-gravida (Amolo, Irimu and Njai, 2017) and young mothers or adolescents mothers (Kabwijamu et al., 2016)

## **CHAPTER3: METHODOLOGY**

### **3.1. INTRODUCTION**

This chapter addressed to research methods and discussed about the following subtitles: the research design, research approach, research setting, study population, study sample and strategy, validity and reliability of research instruments, data collection methods, procedures used problems and limitations of the study, data analysis.

### **3.2. RESEARCH APPROACH**

A quantitative approach was used in this study.

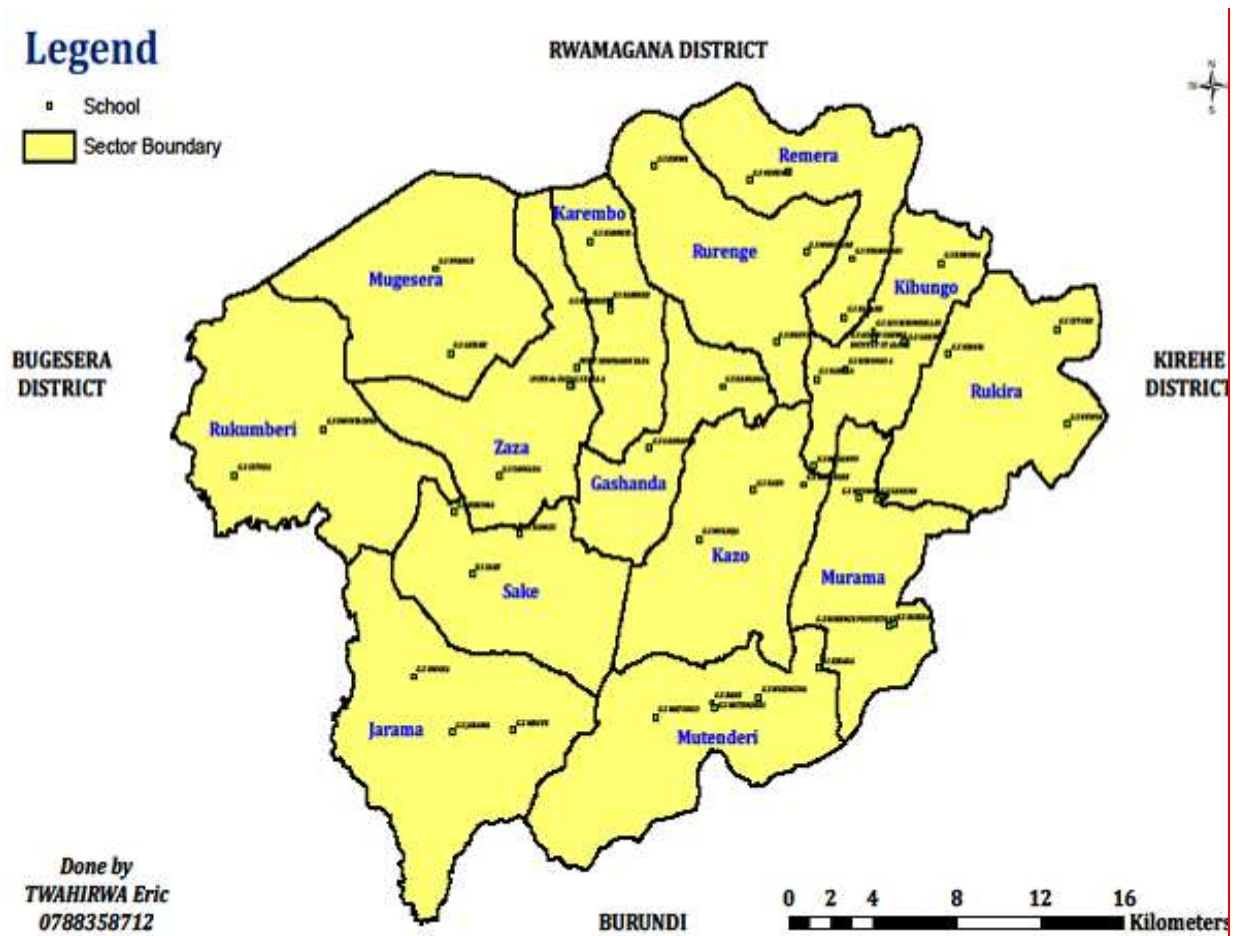
### **3.3. RESEARCH DESIGN**

A descriptive cross-sectional design was used in this study. It is a descriptive study because the researcher observed, described, documented aspect of a situation (Rahi, S., 2017) and it was cross sectional study because a researcher have used an observational research type to analyze data of variables collected at one given point of time through a sample population (Bhat,2018p.1-6).

### **3.4. RESEARCH SETTING**

Research setting is define as a social situations in which a researcher improves his or her information-gathering (Igi Global,.2019). This study has been conducted in catchment areas'kibungo district hospital. This hospital is located in Eastern Province, Ngoma District, Kibungo Sector, Karengé cell just about 100 km from Kigali city, with a catchment area of 310,955 inhabitants and it covers 15 health centers including those chosen randomly in this research, Nyange heath center allocated in Mugesera sector, Rukira HC in Murama sector, Kibungo HC in Kibungo sector, Remera HC in Remera sector and Mutendeli HC in Mutendeli sector. The researcher has chosen the area because during clinical placement supervision of students, the researcher noted the mothers had not knowledge on umbilicus care and annual health report statistics booklets in 2016 reported among districts holding lower rate of first ANC visit, Ngoma district had 43% rate and neonatal mortality rate of 12% , in addition it was the second district with high neonatal mortality rate in Eastern Province ( Annual Statistics booklets,. 2016.p 1-84).

Below is the map of Ngoma district showing the selected Health centers mentioned above in Kibungo District Hospital catchment area.



**Figure 2.**Administrative map of district of Ngoma (color figure available online)

### 3.5. TARGET POPULATION

A population refers to entire group of persons or objects in which a research is interested (Asiamah, Mensah and Oteng-Abayie, 2017). The same author defines study population as entire population, target population and accessible population. In this study the total target population was 519 estimated mothers giving birth during last 3 months before collecting data and living in Ngoma District that have brought their neonates for vaccination with age from day 1 to 1½ months.

### 3.6. SAMPLING

#### 3.6.1. SAMPLE SIZE:

A sample size is defined as a process of selecting a sample population from target population (Elfil, 2017). In this study sample size was calculated using Yamane (1967) sample size calculation formula, following estimation of 519 mothers post-delivery from 1 day to 1 month and half attended 5 health centers. The formula provided a sample size of 226 mothers with a confidence Interval (CI) level of 95 % and margin of error of 5% (Yamane,1967). A sample of 224 of mothers attended 5 health centers selected in 15 health centers come in vaccination were joined into the study ,have completed the questionnaire.

#### SAMPLE SIZE

Formula used:

$$n = \frac{N}{1 + N(e)^2}$$

Where

**n:** stands for sample size,

**e:** e is the level of precision / margin error of 5%

**N** stands for the population/ population size.

Given:

The CI of 95%

$$n = \frac{519}{1 + 519(0.05)^2}$$

$$n = \frac{519}{2.29} = 226$$

#### 3.6.2. SAMPLING PROCEDURE/STRATEGY

Sampling is the process of selecting segment of the population for investigation of entire population (Rahi, S., 2017). Simple random sampling was used to select 5 health centers between 15 composed Kibungo Hospital catchment area for research sites. All names of health centers were written on trivial paper, subsequently Kibungo, Remera, Nyange, Mutendeli, Rukira health centers were picked from a sample frame therefore the sample size was calculated from 5 health centers proportionally to the size of mothers were in postpartum

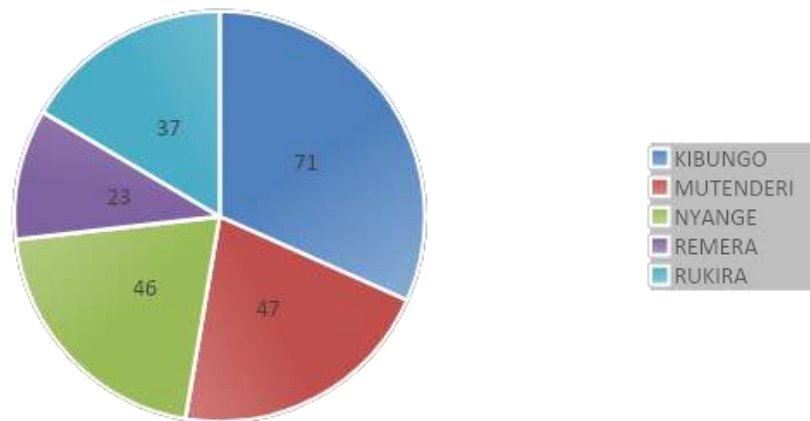
period. The purposive sampling was used to recruit the participants in the study that have required information with respect to study the objectives. The researcher has selected the participants who met inclusion criteria of being the mothers in postnatal with the baby from 1 day to 1 months and a half days.

#### Numberof mothers at the health centers

<b>Period</b>	<b>January</b>	<b>February</b>	<b>March</b>	<b>Total</b>
<b>HC</b>				
Kibungo HC	55	51	85	164
Mutendeli HC	38	36	36	109
Nyange HC	32	34	41	107
Remera HC	22	10	18	52
RukiraHC	33	31	25	87
<b>TOTAL OF MOTHERS</b>				<b>519</b>

#### Sample size calculation from each H.C

<b>HC</b>	<b>Sample frame</b>	<b>Proportion</b>	<b>Sample</b>
<b>Kibungo</b>	164	31.5%	71
<b>Mutendeli</b>	109	21%	47
<b>Nyange</b>	107	20.6%	46
<b>Remera</b>	52	10%	23
<b>Rukira</b>	88	16.7%	37
<b>Total</b>	<b>519 N</b>	<b>100%</b>	<b>224</b>



**Figure 3.** Schematic graph indicating the number of mothers selected in each health centers among 5 health centers (n=224).

The proportion was calculated by taking a total number of mothers attending each health center from January to March multiply a hundred then devising a total number of 519 postnatal mothers from five selected health centers made sampling frame.

### 3.6.2.1. Inclusion criteria

The participants were postpartum' mothers living in Kibungo catchment area come to health centers for seeking vaccination services with the babies aged from 1 day to 1 months and half who have delivered at 5 health centers selected among 15 , had equal chance to participate in the study on the days a researcher was on the sites.

### 3.6.2.2. Exclusion criteria

The mothers with babies aged from 2 to 15months coming for last vaccine were excluded to the study in another to receive current information from mothers .Those who have delivered at the Kibungo Hospital where the pilot study was took place and those who are not co-operative were also excluded.

## 3.7. VALIDITY AND RELIABILITY OF RESEARCH INSTRUMENTS

Validity is degree to which an instrument measures what is supposed to measure (Tobergte and Curtis, 2013). The some author define reliability as the consistence, accuracy and stability with which a tool extent an attribute. The research tool validity was evaluated in relations of face validity done by observation of items (Bolarinwa,2015) .Researcher's supervisors validated the face validity of the tool used in this study and verified that the

questions are clear, relevant, reasonable, unambiguous and related to the topic. In terms content validity, this measures the construct of interest which is conceptually defined and confirm relevant questions to assess the construct were asked for the reason that the tool was implemented from validated questionnaire from literature and supported documents on newborn care practices among mothers were used to confirm the tool and the content validity. The construct validity were used because the research questions and objectives were in relationship with conceptual frame work and the concepts for example knowledge and practice as it is mentioned in table (3.7.1).

Reliability concerns the extent to which a measurement of phenomenon offers consistent and stable result. It concerns with repeatability and a scale or test is reliable when repeat measurement made by it is under constant conditions give the same result again, a scale is said to have a high internal consistency reliability when the items of scale hang together and measure the same construct and the most commonly used internal consistency measure is Cronbach Alpha coefficient which should be equal or above 0.6 to be acceptable. The excellent is above or equal to 0.9 and the high reliability between 0.700 and 0.900(Taherdoost, 2016). The modified instrument adapted to postpartum mothers by adding, removing items and reforming them in understandable language Kinyarwanda was reliable in its internal consistency (Cronbach alpha=0.700) and SPSS statistics 22 was used to calculate the reliability of coefficient of the new adapted instrument.

**Table 1. Construct validity of instrument**

Objectives of study	Components of conceptual framework	Items in interview schedule
To determine level's knowledge of mothers toward umbilical cord care	KAP model , researcher used KP following the objectives	Section a, all items
To identify mother's practices toward umbilical cord care	KAP model : only two concepts was used KP The attitude is changed into practice behavior.	Section b, all items
To determine the association between mothers knowledge and practices toward umbilical cord care	KAP model : K P researcher used two concepts following objectives	Section c, all items



### **3.7.2. VARIABLES:**

#### **THE INDEPENDENT VARIABLE**

The independent is a manipulated variable by a researcher in order to understand its outcome on the dependent or controlled variable (University of Southern California, 2019). In this study, the independent variable was umbilical cord care knowledge among postnatal mothers.

#### **THE DEPENDENT VARIABLE**

Dependent variable is named variable depends on other factors that are measured and they are expected to change as a result of an experimental of independent variable (university of Southern California, 2019). The study shows the dependent variable is umbilical cord care practices among postnatal care.

#### **PILOT STUDY:**

It is a study conducted on a smaller scale than the main or full scale study to test reliability and validity of instrument and demonstrate the ability of research to implement the study( In ,2017).

A pilot testing was conducted in the study area at Kibungo District Hospital to assess the clarity of the questions, the time required to complete the questionnaire and to see how an instrument will respond to the research questions. The researcher selected 24 postnatal mothers which represent 10% of the simple size and who met the inclusion criteria. The researchers has explained the purpose of pilot testing to the mothers and provided to them the consent form and questionnaire to complete in order to determine the clarity and consistency of the questions and those participated in pilot study were not included in the main study.

### **3.8. DATA COLLECTION**

After obtaining the Institutional Review Board (IRB) and Kibungo Hospital approval to conduct the research in selected health centers that are in its catchment area. Data was conduct between March and April 2019 using Self-administered questionnaire which was given to the mothers with the babies aged from one day to one month and half, to assess umbilical cord care knowledge and practices among mothers in postnatal. An instrument was written in English as well as in Kinyarwanda. Helped by the nurses, postnatal mothers with babies aged from one day to one month and half were identified in selected health centers at each day of vaccination and referred to the researcher. The participants were given a questionnaire after explaining the purpose of study to them, obtaining consent form and

signed, and self-administered questionnaire for each mother was collected on the same day of administration.

Data collection was conducted by data collector assistants after being trained in collaboration with the researcher. To respect the privacy and ensure accuracy the data were collected in unoccupied rooms and during data collection mothers were comfortable with their babies because they were not overheard or seen by other clients except health care provider. Researcher and data assistant collectors conducted a research when the mothers were waiting for nurses to begin vaccination. This helped to meet with the mothers without being exhausted or stressed with babies after vaccination.

### **3.8. DATA COLLECTION INSTRUMENT**

Researcher has designed a data collection tool composed by nine (9) sections and these are include:

SectionA: Socio demographic characteristics included: Health center, Age of the mother, marital status,maternal profession, religion, husband/ partner level of education were measured in frequencies (7 items) ( table 1). Neonate weight, neonate age, parity, place of birth (5 items) (table 2and3).

Section B: Description of Knowledge assessment, variables were measured as Yes or No and (6 items)included: health care provider examine baby's umbilical cord during hospitalization period, midwife provided to the mother information about umbilical cord care from birth until the time it fell off, apart from a health provider, have you been educated by any another person on umbilical cord care, neonate took bath in the first week after birth, wash hands before cleaning umbilical cord. All variables were measured as frequencies (table4)

Section B .1: Knowledge scores, overall knowledge score variable (1 item) was categorized as low level of knowledge and high level of knowledge. Knowledge score was calculated to give the cut off point for knowledge levels whereby the mean score was 9 (table5).

Section B.2: overall knowledge score reported in frequencies (1 item) (table6).

Section B.3: mothers basic pre-requisite knowledge of umbilical cord care included 4 item's The time the baby was examined by health care provider(5items), If information was provided on cord care (7 items) , who educated them about cord care( 8 items) ,Have you

received any education on and measured in frequencies ( 11 items). All items are reported as frequencies (table 7).

Section B. 4 : Cord hygiene knowledge assessment include: overall (3 items) If yes at what time did you give bath to your baby( 5 items), If yes in the following substances which one did you add in baby's water ( 4 items), If yes, how do you wash hands( 3 items) reported in frequencies (table 8).

Section C: Cord care practices with (9 items) include: have you delivered at home has 2 variables were measured as Yes or No reported, material used to cut the umbilical cord(3 items), what did you use to tie the umbilical cord(5 items), substances applied after delivery( 8 items), other substances put on umbilicus( 14 items), beliefs about substances used( 5 items), frequency substance was applied on umbilical cord care(4 items), days substance were applied( 5 items), was it applied to the cord at any point from the time it was cut and tied until the time it fell 3 variables were measured as Yes or No and Not applied reported , the total items( 59 items)( table 9).

Section C.1: Practices of mothers towards umbilical care simplified (5 items) include: substance applied to umbilical cord after delivery, what is used to cut umbilical cord , what is used to tie the umbilical cord, days substance were applied, was it applied on the cord at any point from the time it was cut and tied until it was fell off. The variable were measured in frequencies and categorized poor practice (for mothers practiced contrary to standardize practice) and good practice (for those umbilical cord care done at the H.C). Good practices are referred in WHO (2018) country umbilical cord care and umbilical cord guide line approved by Pediatric Specialty in Team from Northern Devon District Hospital (2018) in United of Kingdom (table 10)

Section C.2: Relationship between knowledge and practice using bivariate model analysis and correlation is significant at the 0.05 level (2-tailed) (table 11).

Section C.3: The relationship between knowledge and health centers then bivariate model analysis model was used (table 12).

### **3.9. DATA ANALYSIS**

The quantitative data from the field were coded and entered in the computer using SPSS version 21.0, MS-Excel applications and double check to explore and eliminate some errors was done. Descriptive statistics in terms of frequency and percentage were used to present data in the tables and graphs. Inferential statistics were used to analyze the relationship between variables.

### **3.10. ETHICAL CONSIDERATION**

Before data collection, permission was sought from UR/CMHS Remera Campus, IRB, and ethical committee of Kibungo hospital and the head of health centers randomly sampled among 15. The researcher had state the purpose of the study, information about the procedure to the participants that were voluntary to participate. The participants were allowed to ask any questions regarding the study. No identifying details such as names or identity numbers was required in the bibliographical questionnaire and the consent form with a verbal explanation by their trusted witnesses for those who cannot read was provided. The researcher has ensured confidentiality.

### **3.11. DATA MANAGEMENT**

Data collected were entered in a computer using SPSS with a password to ensure confidentiality. The questionnaires with respondent's answers are kept by the researcher in locked cupboard and will be retained for five year before being destroyed.

### **3.12. DATA DISSEMINATION**

The findings will be submitted and presented to UR/CMHS ,School of Nursing and Midwifery masters in nursing science department, to Kibungo hospital and its catchment area (the head of health centers) and through publication in a journal.

### **3.13. LIMITATIONS OF STUDY**

The study was done in five health centers in Ngoma District of Eastern province, therefore the findings could not be generalized in all health centers in Rwanda. The mothers delivered at the health centers, it is a challenges to categorize their level knowledge on practices done by health care providers and practices done at home. The vaccination was done on the same days at some HC and this did not permit a researcher to do a follow up of data collectors assistant to see if data are collected in the same way and the time was limited.

### **3.14. CONCLUSION OF CHAPTER THREE**

The chapter argued the research methodology used in this study, study design, sampling and data collection procedure. The chapter expresses the validity and reliability of the questionnaire used and it finishes by showing how the ethical implication was considered, data management and its dissemination.

## **CHAPTER 4. RESULTS**

### **4.0. INTRODUCTION**

The present study assessed the umbilical cord care knowledge and practices among postnatal mothers living Kibungo district Hospital catchment area.

This chapter describes postnatal mothers characteristic. The chapter also presents the findings on level of knowledge of mothers toward umbilical cord care, mothers' practices toward umbilical cord care, and the association between mothers 'knowledge and practices toward umbilical cord care among the study participants.

### **4.1. THE RESPONSE RATE**

The present study response rate was as high as 99.5 % due to the fact that 224 out 226 responded to the questionnaire. The two who did not respond did not consent to be part of the study.

### **SECTION A. SOCIO-DEMOGRAPHIC CHARACTERISTICS**

This section present socio-demographic variable of study participants in relation in the present study. It present the health center in which mothers have delivered from, age, marital status, level of education of mothers, profession of the participants, religion and husband education.

The results in table 1 indicate that the majority of the participants were from Kibungo health center (32%) and most of them were between 21-35 years old (79%). It also show that the high percentage has attained primary education (70%). Most of the participants were farmers (85%) as the main source of income.

**Table 1. Socio-demographic variables**

<b>Variables</b>		<b>(n=224)</b>	<b>%</b>
<b>Health Center</b>	Kibungo	71	32
	Remera	23	10
	Nyange	46	21
	Mutenderi	47	21
	Rukira	37	17
<b>Age of the mother</b>	15 – 20	14	6
	21 – 35	177	79
	36 – 50	33	15
<b>Marital Status</b>	Married	181	81
	Single	38	17
	Separated	5	2
	Total	224	100
<b>Level of formal education of mothers</b>	Primary	156	70
	Secondary	38	17
	University	4	2
	Certificate/TVET	2	1
	No schooling/ education	24	11
<b>Profession of the participants</b>	Farming	191	85
	Civil service	2	1
	Trading	13	6
	Craft work	3	1
	Unemployed	15	7
<b>Religion</b>	Christian – Protestant	99	44
	Christian – Catholic	83	37
	Muslim	8	4
	Adventist	11	5
	Other beliefs	23	10
	Total	224	100
<b>Husband/ partner level of education</b>	Primary	128	57
	Secondary	40	18
	University	6	3
	No schooling/ education	17	8
	Others	7	3
	Don't know	26	12

**Table 2. Number of children and the birth weight of the children**

<b>Variables</b>	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std. D</b>
<b>Number of children</b>	221	1	8	3	2
<b>Birth weight</b>	224	1	5	2.97	0.6

The results in table 2 indicate that the mean number of the children in the family was 3, the minimum number of children were 1 while the maximum was 8. Children mean birth weight was 2.97kgs, the maximum was 5.

### **Child information**

The information related to the child are reported in the table here below. I was reported that female (61%) dominated the male while the majority felt in the category between 1-7 days. Although the majority of the children were delivered at the health Centre 93%, 4% were delivered at home and 3% were delivered on the road coming to the health facilities.

**Table 3. Child information**

<b>Variables</b>		<b>(n=224)</b>	<b>%</b>
<b>Sex</b>	Boy	88	39
	Girl	136	61
<b>Age</b>	between 1-7 days	73	33
	between 7- 14 days	66	29
	between 14-21days	13	6
	between 21-28 days	6	3
	between 28-35 days	12	5
	between 35-42 days	54	24
<b>Place of birth</b>	Health Center	208	93
	Home	10	4
	On the road coming to the health facilities	6	3

## SECTION B. KNOWLEDGE OF MOTHER ON UMBILICAL CORD CARE

This section describes the level of knowledge of mothers on umbilical cord care in selected health center. It starts with description of knowledge questions, knowledge scores as well as levels of knowledge, the knowledge on hygiene of the mother on umbilical cord also is reported in this section.

### The level of knowledge of mothers towards umbilical cord care

The levels of knowledge are reported in both descriptive and quantitative illustration of knowledge where the description part is reported in table 4. The quantitative measurement of knowledge is presented in table 4 and 5.

**Table 4. Description of Knowledge questions**

Variables	(n=224)		
			%
Baby examination on umbilical cord by health care provider in the first two days of hospitalization	Yes	38	17
	No	186	83
Information provision by a nurse or midwife about umbilical cord care from birth until the time it fell off	Yes	31	14
	No	193	86
Education on umbilical cord by another person apart from the nurse/ midwife	Yes	77	34
	No	147	66
Did your baby took bath in the first week after birth?	Yes	206	92
	No	18	8
Do you add any substances (hand/body soap or Dettol) to the baby's bath water?	Yes	133	59
	No	91	41
Before cleaning baby' umbilical cord, did you wash your hands?	Yes	196	88
	No	28	13

The results in table 4 reported that umbilical cord examination of the children by health care provider was not done in 83% of all children born in the health centers in Kibungo hospital catchment zone. It is clearly reported that most of the mother wash their hands before cleaning baby umbilical cord but they reported inappropriate way of washing their hand because 57 % use water in basin to wash their hands instead of using running water using a soap.



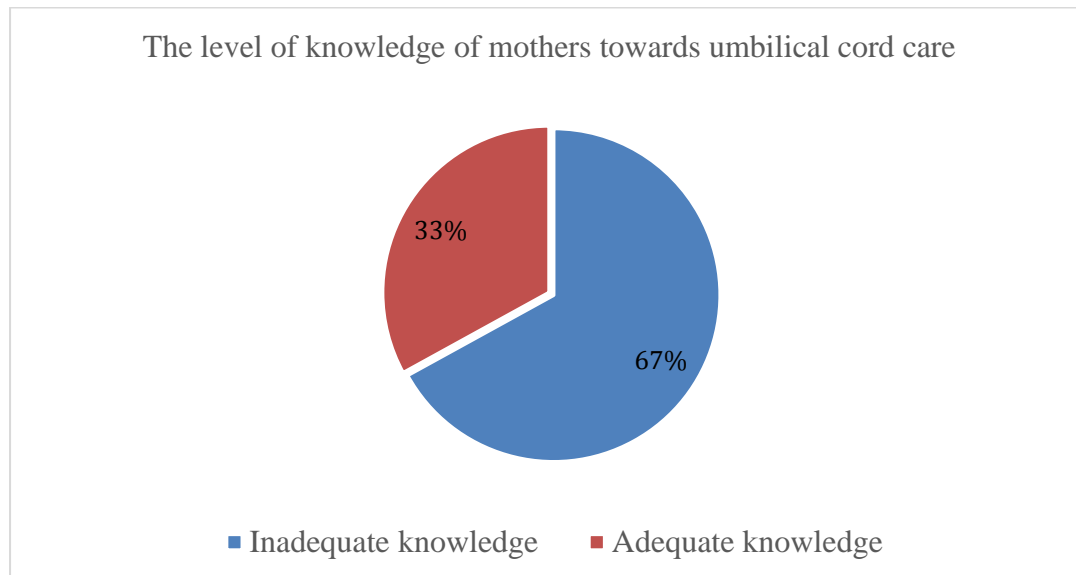
Questions on knowledge were computed to produce a composite variable for knowledge, then the mean knowledge score was calculated to give the cut off point for knowledge levels whereby the mean score was 9. Scores below the mean indicate inadequate knowledge while scores above the mean indicate adequate knowledge on umbilical cord care.

From table 5, the results show that the majority have scored below the average score.

**Table 5. Knowledge scores**

Variables		N	%	Knowledge levels
Overall knowledge scores	6.00	1		Inadequate of knowledge
	7.00	16	7	
	8.00	68	30	
	9.00	64	29	
	10.00	58	26	Adequate knowledge
	11.00	15	7	
	12.00	2	1	
	Total	224	100	

From the knowledge scores calculated in table 5, the level of knowledge is reported in figure 4 below



**Figure 4. The level of knowledge of mothers towards umbilical care**

Where the mother were taught about the cord the care, very few of them were taught not to put any substance on umbilical cord (7%) or no information was provided at all.

The level of agreement with knowledge items stimulated further search to confirm the applicability of the knowledge gained as stipulated in table 6.

### **Knowledge pre-requisite for umbilical cord care**

The results in table 6 are the pre-requisite that the mother should have as basic knowledge to help her in cord care of her child after delivery.

**Table 6. Basic knowledge pre-requisite for umbilical cord care**

<b>Variables</b>	<b>(n=224)</b>	<b>%</b>	
The time the baby was examined by health care provider	30 minutes after birth	10	4
	1 hour after birth	27	12
	2 hours after birth	9	4
	After one day	10	4
	She/ he didn't examine baby umbilical cord	168	75
If information was provided on cord care, what was all about?	She/he told me to clean with water and dry umbilical cord with clean clothes.	11	5
	She/ he educated me to put any substances on umbilical cord	5	2
	She/ he educated me to do not put any substance	6	3
	None of the above	107	48
	She/ he educated me to do not put any substance on umbilical cord except water	16	7
	Clean with clean water, clean piece of clothes and not put substance and apply air dry	9	4
	No information given	69	31
	If mothers were educated on cord care, who educated them about cord care	Mother	43
Grand- mother		10	4
Mother in low		14	6
Your husband		2	1
Your neighbor		9	4
Other mother and grand mother		6	3
Next of kin at the H.C		4	2
No one from health care providers and those said above		136	61

Table 6: **Basic knowledge pre-requisite for umbilical cord care(Continued)**

Have you received any education on	baby bathing	11	5
	baby dressing	12	5
	Application of any substance on umbilical cord	7	3
	Observation of umbilical cord	7	3
	On danger sign for new-born umbilical cord	4	2
	Application of any substance on umbilical cord and	2	1
	Observation of umbilical cord		
	baby bathing and observation of umbilical cord	7	3
	baby bathing ,dressing and application of any substance on umbilical cord	5	2
	baby bathing and application of any substance on umbilical cord	10	4
	bathing, dressing, application of substance and observation	4	2
	None of the above	155	69

The results in table 6 show that the main source of information on cord care is from their mothers (19%), and the majority of the mother reported that the umbilical cord of their children were not examined by health care providers(75%). It is in addition clear that most of mother did not receive any information regarding umbilical care as reported by 69(31%) of all participants

**Table 7. Cord hygiene knowledge questions**

<b>Variables</b>		<b>(n=224)</b>	<b>%</b>
If yes at what time did you give bath to your baby?	before 24 hours after birth	26	12
	one day after birth	96	43
	two day after birth	43	19
	above tree days	36	16
	No response	23	10
If yes in the following substances which one did you add in baby's water	Hands or body Solid soap	110	49
	Dettol soap	22	10
	other (specify)	2	1
	No substance added	90	40
If yes, how do you wash hands	water in basin	127	57
	running water using soap	72	32
	I didn't wash hands	25	11

The results in table 7 show that majority of the mothers (57%) have wrong information on hand hygiene, it was further noted that they have basic information on hygiene of their children the day after delivery. There is a significant number of mothers who reported that bathing the baby either before or after two days and this is far from the recommended normal time line to bath the baby after delivery which is 24 hours after delivery.

## SECTION C. PRACTICE OF MOTHERS ON CORD CARE

The practice of mothers towards umbilical cord is reported in addition to the basic knowledge information.

The results in table 8 are the descriptive data of what mothers do to ensure better health status of their children. The descriptive illustration of practice is followed by the combination of practices to bring about a binary data to be used as a true illustration of practice.

**Table 8. Cord care practices**

Variables		(n=224)	%
Have you delivered at home?	Yes	16	7
	No	208	93
Material used to cut the umbilical cord	Scissors from health centers	213	95
	Razor blade	9	4
	Other tools from home	2	1
What did you use to tie the umbilical cord?	Plastic material from health center	204	91
	Tie from health center	10	4
	Banana fiber	1	0
	Piece of clothes	5	2
	Other material	4	2
Substance applied to umbilical cord after delivery	chlorhexidine	6	2
	Air dry	157	70
	breast milk	4	2
	vaseline ointment	51	23
	Saliva	2	1
	cow ointment	4	2
	Onion	1	0
	Total	222	99
	Non response	2	1

**Table 8. Cord care practices (Continued)**

Other substance put on the cord	No substance applied	168	75
	Ashes	1	0
	Breast milk	2	1
	Excretary wastes from rat	2	1
	Family jelly	1	0
	Malayika jelly	2	1
	Movit	34	15
	Oignon	2	1
	Oil	2	1
	Pumpkin's flowers	5	2
	Sante soap	1	0
	The bread	1	0
	tree waxy	2	1
	vaseline ointment	1	0
Beliefs about substance used	umbilical cord will dry quickly	121	54
	umbilical cord will fall quickly	87	39
	baby will not have infection	2	1
	umbilical cord heal quickly	10	4
	umbilical cord will dry quickly and umbilical cord will fall quickly	4	2
Frequency to apply substance on umbilical cord per day	Once	33	14.7
	Twice	42	18.8
	More than said above	43	19.2
	None	106	47.3
Days substances were applied	One day	11	5
	two days	30	13
	Three	42	19
	More than three days	33	15
	None	108	48
Was it applied to the cord at any point from the time it was cut and tied until the time it fell off?	Yes	69	30
	No	44	20
	Nothing applied	111	50

The results on cord care in table 8 indicates that the majority of the children were born at the health facility and the scissor from health center were used to cut the umbilical cord (95%). Plastic material from hospital is mostly used to tie the umbilical cord (91%), while most of the participants did not put any other product on umbilical cord after delivery (75%). By applying the substance, the participants believed that umbilical cord will dry quickly (54%).

On the other hand, mothers are reported to use other substances to umbilical cord like movit (15%), Vaseline ointment (23%), breast milk, cow ointment, pumpkin's flowers at (2%) and the oil, onion, tree waxy, saliva, excretory wastes from rats were at 1%.

The cord care practice is classified as poor and good on practice questions by combining all answers which indicate good practice of cord care with reference to umbilical care standard of practice by WHO recommendations,2018 and Northern Devorn Health District Hospital,2018on Umbilical Cord Care Guideline (UCCG) approved by Pediatric Specialty in Team or poor practice for practice done contrary to standardize practice.

**Table 9. Practices of mothers towards umbilical care simplified**

Variables		(n=224)	%	Practice
Substance applied to umbilical cord after deliver	Air drying	159	71	Good practice
	Others	65	29	Poor practice
If yes, what did you use to cut umbilical cord?	Scissors from health center	213	95	Good practice
	Other tools	11	5	Poor practice
What did you use to tie the umbilical cord?	Materials from health centre	214	96	Good practice
	Home based materials	10	4	Poor practice
Days substances were applied	Once and above	116	52	Poor practice
	None	108	48	Good practice
Was it applied to the cord at any point from the time it was cut and tied until the time it fell off?	Yes	69	31	Poor practice
	None was applied	155	69	Good practice

The results on practice of mothers show that mothers apply air drying after delivery (71%), it is further reported that materials used to cut and tie umbilical cord were within the recommended practice where materials from health center were used at more than 90% as reported by the participants themselves. In addition, the majority (69%) did not apply any substance mentioned in table 9 at umbilical cord from the time it was cut and tied until the



time the cord fell off. Only 31% said that they have applied those substances. Furthermore, 48% mentioned that none of the day they have applied substance on the umbilical cord.

#### **SECTION D. RELATION SHIP BETWEEN LEVEL OF KNOWLEDGE AND PRACTICE**

The association between knowledge and practice was measured by means calculating the correlation coefficient between the overall knowledge which is a categorical data and practice questions which are more continuous variables. The association is reported at a p value equal or lesser than 0.05

The results in table 10 by mean of bivariate analysis indicated that women who delivered at the health center are likely to have improved knowledge (53%) compared to those who delivered at home

**Table 10. Correlation between overall knowledge and practices variables**

Variables		The overall level of knowledge
Have you delivered at home?	Pearson Correlation	.013
	P-Value	.845
	N	224
If Yes, what did you use to cut the umbilical cord?	Pearson Correlation	.058
	P-Value	.390
	N	224
What did you use to tie the umbilical cord?	Pearson Correlation	-.016
	P-Value	.812
	N	224
Days substances were applied	Pearson Correlation	.167*
	P-Value	.012
	N	224
Was it applied to the cord at any point from the time it was cut and tied until the time it fell off?	Pearson Correlation	.105
	P-Value	.119
	N	224
Substance applied on umbilical cord after deliver	Pearson Correlation	.224**
	P-Value	.001
	N	224

\*. Correlation is significant at the 0.05 level (2-tailed).

The correlation model by correlation coefficient in bivariate analysis in table 11 highlight that the overall knowledge is correlated with substance applied to umbilical cord as well as days on which that substance was applied. All R2 are reporting positive correlation and p values significant (R2 =0.224, P=0.001; R2 =0.167, P=0.012) respectively.

**Table 11. The relationship between knowledge and health centers**

		The overall level of knowledge			
Health center		Low level of knowledge	High level of knowledge	Total	P-Value
Kibungo	N	37	34	71	0.000
	%	52%	48%	100%	
Remera	N	12	11	23	
	%	52%	48%	100%	
Nyange	N	27	19	46	
	%	59%	41%	100%	
Mutenderi	N	40	7	47	
	%	85%	15%	100%	
Rukira	N	33	4	37	
	%	89%	11%	100%	
Total	N	149	75	224	
	%	67%	33%	100%	

The results on bivariate model analysis showed that there is a strong relationship between knowledge and health centers in which the mother have delivered from ( $P=0.000$ ). In the model, the level of knowledge in all health centers are reported to be low as was reported in overall knowledge scores. It was further reported that higher levels of knowledge are relatively low in all health centers.

## **CHAPTER 5. DISCUSSION**

### **5.1. INTRODUCTION**

The present study was conducted to assess umbilical cord care knowledge and practices among postnatal mothers from Kibungo Hospital catchment area. The level of knowledge was assessed and practice of hygiene of umbilical cord. The study was conducted on a sample of 224 postnatal mothers. Two levels (inadequate and adequate) knowledge were used. Practice was assessed through practice questions to be rated as good or poor practice of mothers towards umbilical cord.

### **5.2. SOCIO-DEMOGRAPHICS**

The results showed that the high percentage of participants have attained primary education (70%) and were farmers (85%) as the main source of income. The level of education and profession has something to say on level of knowledge and practice though the P values in the present study did not confirm the associations, but further research can be conducted to evaluate any linkage between these variables. The results indicated that the facility where the mother has delivered had influenced positively the level of knowledge. Inadequate level of knowledge was higher in Rukira Health centre (89%) followed by Mutenderi (85%) compared to Kibungo health centre (37%) which is mostly urban., and other rural health centres were reported above at above 50% on low level The last finding is in conformity with the study which found out that factors such residence in rural community, age and health facility delivery were predictors of cord care practices (Afolaranmi et al., 2018)

### **5.3. LEVEL OF KNOWLEDGE ON UMBILICAL CORD CARE**

In this study, 67% had inadequate level of knowledge while 33% adequate level of knowledge towards umbilical cord cares.

The reported low levels of knowledge are contextualized with the knowledge questions where the respondents rated that there is no education on cord care they got from any health facility(48%), most of them bathed their children after 24 hours as indicated by the literature which reported that about 294 (65.3%) of the mother who delivered had bathed the newborn after 24 hours(Chichiabellu et al., 2018).The reported level of knowledge on child hygiene after delivery in the present study is lower than the reported levels in Tesfaye Yitna Chichiabellu, 2018 study, and this indicates that more than a half (52%) of the participants do not bath their children in recommended timeframe; and this can be improved if targeted programs to increase awareness on umbilical cord care are implemented.

The knowledge on when to tie the umbilical cord and is quite good in the present study. The results are in conformity with the literature which reported baby bathing delay for at least 24 hours was 78% and clean cord care was 73% overall (home 21% vs health institution 93.6%). The cord was not tied in 11.6% of cases all of whom were home births ( $P < .001$ ) (Gebretsadik et al., 2018).

Mothers did not have knowledge on best practices to wash their hands, 57% prefer using water in basin instead of running water and the soap. This is explained by the fact that most of mother in rural setting mostly rely on basin water, and this was a practice for long time. This is contrary to the norms that hand washing is gold standard knowledge and practice for new born health (Ram et al., 2017)

Our study results are in support with the findings in a study from Dhaka Shishu Hospital in Bangladesh where more than 50% of the mothers had appropriate knowledge on care of the umbilicus. Looking at the results that did not show a significant difference in the levels of knowledge as for our study findings, the same study concluded that half of the respondents had an inadequate knowledge and adopted inappropriate practice that in the care of their neonates. (Begum and Khan, 2009). Another study conducted to assess the knowledge and practice of cord care within a contemporary setting had found the majority of the participants of have good overall knowledge and practice of cord care (Afolaranmi et al., 2018).

It is worth mentioning that a low knowledge level of the umbilicus is linked to umbilical cord infection which can subsequently cause neonatal mortality. The study conducted to assess knowledge into three levels (good, average, and excellent). They found that 61.6% have average knowledge, and 38.4% have good level of knowledge, and only 5.8% mothers had excellent knowledge on neonatal care regarding knowledge on newborn care. These findings are in the same direction with our study results though they used three levels. Considering the sum percentage of excellent and good levels both combined, we can closely compare both studies (Acharya et al., 2015).

Saadia and his colleagues also confirmed with evidence that knowledge regarding newborn care was poor among their study respondents. Their findings showed that 74% of women had applied some substance (coconut oil, mustard oil, ghee, olive oil, and machine oil) to the umbilical cord stump, while in the present study, most of the mother had applied vaseline ointment 23%, movit oil 15% as it is affordable at a low price. The health centers in which mother had delivered from had also reported to have influenced their level of knowledge and attitude among the study participants. This is contrary to study which concluded that institutional deliveries did not guarantee optimal practices (Gul et al., 2014).

Unlike the literature, our research findings did not show any association between level of knowledge, hygiene and selected socio-demographic variables. This inconsistency may be explained by the fact that our study sample was small and groups were too small to allow some sound correlational analyses.

#### **5.4. PRACTICE TOWARDS UMBILICAL CARE**

The results on practice of mothers show that mothers apply air drying after delivery (71%). Generally, mothers reported good practice where they used health facilities based material to cut and tie the cord of the baby. Other studies focused on breastfeeding within one hour after birth, more than 80% practice rooming in, all most all respondents postpone bath for first 24 hours of birth, Nearly two third of respondents(61.5%) practice of applying oil in umbilicus, more than 90% mother clean their baby's eyes and all babies was fully immunized(Stewart and Benitz, 2016). The results are in line again with the existing literature that the use of air drying is a safe method to use to reduce risk of infection in infants (Stewart and Benitz, 2016)

It is further reported that materials used to cut and tie umbilical cord were within the recommended practice where materials from health center were used at more than 90% as reported by the participants themselves. In addition, the majority (69%) did not apply any substance at umbilical cord.

Application of other materials on cord of the baby is a common practice especially in developing countries where health facilities are far from the neighborhoods. The study conducted in Ethiopia revealed that only 66.6 % of the participants responded that nothing should be applied to the cord stump, Of the 296 study participants 283(95.6 %) responded new tie should be used for cord binding while 7(2.4 %) of them did not know.

#### **5.5. RELATIONSHIP BETWEEN KNOWLEDGE AND PRACTICE OF CORD CARE AND SOCIO-DEMOGRAPHICS**

It is reported overall knowledge on cord care is correlated with substance applied to umbilical cord as well as days on which that substance was applied ( $R^2 = 0.224$ ,  $P=0.001$ ;  $R^2 = 0.167$ ,  $P=0.012$ ). This result is explained by the fact that a mother has applied a substance on cord of the child, this would be a true reflection of the knowledge that she has on cord care.

The place of delivery was also reported to be associated with knowledge on cord care (Stewart and Benitz, 2016; Berhe et al., 2017; Gebretsadik et al., 2018)

## **CHAPTER 6. CONCLUSION AND RECOMMENDATIONS**

### **6.1. INTRODUCTION**

The present research reported the knowledge gap in mothers who delivered at Kibungo hospital catchment zone. It is further indicated that substance applied on umbilical cord after deliver practice of mothers was associated with knowledge.

### **6.2. CONCLUSION**

Mothers are the one person connected to neonates. Knowledge of mothers on neonatal care and proper practices of that knowledge could help in avoiding many unexpected circumstances means neonatal infection and mortality and this can be prevented by simple intervention including proper umbilical cord care. The present study highlighted that participants with low knowledge on umbilical cord care were dominant (67%) and some mothers have applied substance on neonates umbilicus. The most substances used were body ointment like Vaseline (23%) and movit (15%). Yet it is remarkable that there is a correlation between mothers knowledge and substances applied on infants umbilicus as well as the days on which substances were used ( $R^2 = 0.224$ ,  $P = 0.001$ ;  $R^2 = 0.167$ ,  $P = 0.012$ ).

For father reason, health education on essential new born care practices including umbilical cord care should be integrated into community by community health workers, routine antenatal services and re-emphasized in the postnatal period to help improvement of maternal knowledge and practices towards essential new born care

### **6.3. RECOMMENDATIONS**

#### **To the administration**

1. The Ministry of Health should introduce the cholexdrine 7.1% ointment in essential new born drugs. In this study 16% deliveries were home deliveries thus umbilical clinical guideline must be implemented.
2. The Ministry of Health in collaboration with all health system level should review the post natal files and adding the part of neonatal history about essential new born care in other to know the sources of postnatal infection to neonates.
3. Ministry of Health, Hospitals, health center and community level should emphasize on respect of neonatal postnatal visits.

### **The school of nursing and midwifery / CMHS**

1. Neonatal nurses/ midwives should organize the community outreach in collaboration with health care providers from health centers to maintain and empower the knowledge on essential new born care including umbilical cord care.
2. Umbilical guide line should be added in the curriculum of nursing and midwifery department which can help nurses and midwives to give a quality care (clean and healthy umbilicus)

### **To Health center**

1. Health care provider should improve on education on umbilical care provided to mother in ante natal are visit.
2. Heath care should encourage all mothers to deliver at health facilities to improve on child hygiene

### **To mothers**

1. To attend antenatal care visits as recommended
2. Follow all training that are provided by health care providers

### **To the researchers**

1. The researcher can be expended in community setting in Rwanda. The experimental research can be done to see resources of infection.

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# **APPANDICES**

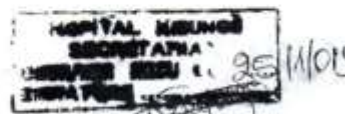
## APPENDIX 1: Ethical clearance from IRB



CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 14/01/2019  
Ref: CMHS/IRB/032/2019

UWINGABIRE Emmerance  
School of Nursing and Midwifery, CMHS, UR  
Tel: 0782443443




Dear UWINGABIRE Emmerance

**RE: ETHICAL CLEARANCE**

Reference is made to your application for ethical clearance for the study entitled "*Umbilical Cord Care Knowledge and Practices among Postnatal Mothers Living in Kibungo Hospital Catchment Area.*"

Having reviewed your protocol and found it satisfying the ethical requirements, your study is hereby granted ethical clearance. The ethical clearance is valid for one year starting from the date it is issued and shall be renewed on request. You will be required to submit the progress report and any major changes made in the proposal during the implementation stage. In addition, at the end, the IRB shall need to be given the final report of your study.

We wish you success in this important study.

  
Professor Jean Bosco GASHUTE  
Chairperson Institutional Review Board,  
College of Medicine and Health Sciences, UR

Cc:  
- Principal College of Medicine and Health Sciences, UR  
- University Director of Research and Postgraduate Studies, UR

**APPENDIX 2: A request letter to carry out a research at the health centers in catchment area of Kibungo District Hospital**

25/1/2019

UWINGABIRE Emmerance  
School of Nursing and Midwifery  
College of Medicine and Health Sciences  
University of Rwanda

To

The Director of Kibungo Hospital

Ngoma

Rwanda

Dear Sir

RE: Request to carry out research and data collection at the Health centers incatchment area of Kibungo District Hospital.

I am by names of UWINGABIRE Emmerance student in Masters in Nursing Sciences, neonatal track at the College of Medicine and Health Sciences. As a prerequisite to complete a masters, I am supposed to carry out a research and my study is entitled "**UMBILICAL CORD CARE KNOWLEDGE AND PRACTICES AMONG POSTNATAL MOTHERS LIVING IN KIBUNGO HOSPITAL CATCHMENT AREA**". My research will contribute to existing knowledge on appropriate and standard umbilical cord care acceptable in neonates among postnatal mothers in Rwanda.

I have submitted the requirements to the CMHS Institutional Review Board and an ethical clearance letter has been granted to me Ref: CMHS/IRB/032/2019 dated 14/1/2019. The tools to use and the ethical standards to be followed have been accepted. It is against this background that I seek authorization to carry out research and collect data at your institution. Kindly find attached the letter from CMHS Institution Review Board and my research proposal.

I hope my request will be put under your kind consideration.

Sincerely,



UWINGABIRE Emmerance  
Masters in Nursing Science neonatal track  
School of Nursing and Midwifery  
College of Medicine and Health Sciences  
University of Rwanda  
Email: [uwingabireemrrence@gmail.com](mailto:uwingabireemrrence@gmail.com)  
Tel: + 250788448443



### APPENDIX 3: Approval letter from Kibungo Referral Hospital

REPUBLIC OF RWANDA



MINISTRY OF HEALTH  
EASTERN PROVINCE  
NGOMA DISTRICT  
KIBUNGO REFERRAL HOSPITAL  
ETHIC COMMITTEE

Kibungo, 5<sup>th</sup> February, 2019

Ref no .....

To: Madame UWINGABIRE Emmerance.

Re: Approval notice for conducting a study in Kibungo Referral Hospital.

Dear Madame,

With reference to your letter dated 25/01/2019 requesting authorization to carry out a research and data collection at the health centres in the catchment area of Kibungo Referral Hospital in Ngoma District; research entitled: "UMBILICAL CORD CARE KNOWLEDGE AND PRACTICES AMONG POSTNATAL MOTHERS LIVING IN KIBUNGO HOSPITAL CATCHMENT AREA"; after reviewing your research proposal and the letter of ethical clearance from IRB of University of Rwanda; the Ethic Committee members of Kibungo Referral Hospital have sat on the 05<sup>th</sup> February, 2019, and analyzed your document above mentioned and your request to conduct this study in Kibungo Referral Hospital catchment area.

Ethic Committee has approved your request and recommended you to be allowed to start your study. However, you are required to respect ethical principles, policy and procedures guiding research, and the time limit as stated in proposal. You will also seek for authorization from every single health centre which will be sampled before starting data collection. Then at the end of your work, you are obliged to share the results of your research and recommendations to the Kibungo Referral Hospital Ethic Committee.

Sincerely,

Dr. MHIRIMBANYI Christophe  
Chairperson of Ethic Committee



CC

- Director General of Kibungo Referral Hospital
- Director of Administration and Finance
- Acting Director of Medical and Allied Health Services
- Acting Director of Nursing and Midwifery

## APPENDIX 4: Approval letter from Kibungo referral Hospital ethic committee

REPUBLIC OF RWANDA



MINISTRY OF HEALTH  
EASTERN PROVINCE  
NGOMA DISTRICT  
KIBUNGO REFERRAL HOSPITAL  
ETHIC COMMITTEE

Kibungo, 5<sup>th</sup> February, 2019

Ref no .....

Received on  
28/2/2019

To: Madame UWINGABIRE Emmerance.

Re: Approval notice for conducting a study in Kibungo Referral Hospital.

Dear Madame,

With reference to your letter dated 25/01/2019 requesting authorization to carry out a research and data collection at the health centres in the catchment area of Kibungo Referral Hospital in Ngoma District; research entitled: "UMBILICAL CORD CARE KNOWLEDGE AND PRACTICES AMONG POSTNATAL MOTHERS LIVING IN KIBUNGO HOSPITAL CATCHMENT AREA"; after reviewing your research proposal and the letter of ethical clearance from IRB of University of Rwanda; the Ethic Committee members of Kibungo Referral Hospital have sat on the 05<sup>th</sup> February, 2019, and analyzed your document above mentioned and your request to conduct this study in Kibungo Referral Hospital catchment area.

Ethic Committee has approved your request and recommended you to be allowed to start your study. However, you are required to respect ethical principles, policy and procedures guiding research, and the time limit as stated in proposal. You will also seek for authorization from every single health centre which will be sampled before starting data collection. Then at the end of your work, you are obliged to share the results of your research and recommendations to the Kibungo Referral Hospital Ethic Committee.

Sincerely,

Dr. MHIRIMBANYI Christophe  
Chairperson of Ethic Committee



CC

- Director General of Kibungo Referral Hospital
- Director of Administration and Finance
- Acting Director of Medical and Allied Health Services
- Acting Director of Nursing and Midwifery

## APPENDIX 5: Approval letter from five health centers

REPUBLIC OF RWANDA



MINISTRY OF HEALTH  
EASTERN PROVINCE  
NGOMA DISTRICT  
KIBUNGO REFERRAL HOSPITAL  
ETHIC COMMITTEE

Kibungo, 5<sup>th</sup> February, 2019

Ref no .....



To: Madame UWINGABIRE Emmerance.

Re: Approval notice for conducting a study in Kibungo Referral Hospital.

Dear Madame,

With reference to your letter dated 25/01/2019 requesting authorization to carry out a research and data collection at the health centres in the catchment area of Kibungo Referral Hospital in Ngoma District; research entitled: "UMBILICAL CORD CARE KNOWLEDGE AND PRACTICES AMONG POSTNATAL MOTHERS LIVING IN KIBUNGO HOSPITAL CATCHMENT AREA"; after reviewing your research proposal and the letter of ethical clearance from IRB of University of Rwanda; the Ethic Committee members of Kibungo Referral Hospital have sat on the 05<sup>th</sup> February, 2019, and analyzed your document above mentioned and your request to conduct this study in Kibungo Referral Hospital catchment area.

Ethic Committee has approved your request and recommended you to be allowed to start your study. However, you are required to respect ethical principles, policy and procedures guiding research, and the time limit as stated in proposal. You will also seek for authorization from every single health centre which will be sampled before starting data collection. Then at the end of your work, you are obliged to share the results of your research and recommendations to the Kibungo Referral Hospital Ethic Committee.

Sincerely,

Dr. MPRIMBANYI Christophe  
Chairperson of Ethic Committee



CC

- Director General of Kibungo Referral Hospital
- Director of Administration and Finance
- Acting Director of Medical and Allied Health Services
- Acting Director of Nursing and Midwifery

REPUBLIC OF RWANDA

Kibungo, 5<sup>th</sup> February, 2019

Ref no .....



MINISTRY OF HEALTH  
EASTERN PROVINCE  
NGOMA DISTRICT  
KIBUNGO REFERRAL HOSPITAL  
ETHIC COMMITTEE



*your reception  
le 15/02/2019  
C. S. Kgo*

To: Madame UWINGABIRE Emmerance.

Re: Approval notice for conducting a study in Kibungo Referral Hospital.

Dear Madame,

With reference to your letter dated 25/01/2019 requesting authorization to carry out a research and data collection at the health centres in the catchment area of Kibungo Referral Hospital in Ngoma District; research entitled: "UMBILICAL CORD CARE KNOWLEDGE AND PRACTICES AMONG POSTNATAL MOTHERS LIVING IN KIBUNGO HOSPITAL CATCHMENT AREA"; after reviewing your research proposal and the letter of ethical clearance from IRB of University of Rwanda; the Ethic Committee members of Kibungo Referral Hospital have sat on the 05<sup>th</sup> February, 2019, and analyzed your document above mentioned and your request to conduct this study in Kibungo Referral Hospital catchment area.

Ethic Committee has approved your request and recommended you to be allowed to start your study. However, you are required to respect ethical principles, policy and procedures guiding research, and the time limit as stated in proposal. You will also seek for authorization from every single health centre which will be sampled before starting data collection. Then at the end of your work, you are obliged to share the results of your research and recommendations to the Kibungo Referral Hospital Ethic Committee.

Sincerely,

Dr. MHIRIMBANYI Christophe  
Chairperson of Ethic Committee



CC

- Director General of Kibungo Referral Hospital
- Director of Administration and Finance
- Acting Director of Medical and Allied Health Services
- Acting Director of Nursing and Midwifery

REPUBLIC OF RWANDA



MINISTRY OF HEALTH  
EASTERN PROVINCE  
NGOMA DISTRICT  
KIBUNGO REFERRAL HOSPITAL  
ETHIC COMMITTEE

Received on 15/03/2019

Kibungo, 5<sup>th</sup> February, 2019

Ref no .....

To: Madame UWINGABIRE Emmerance.

Re: Approval notice for conducting a study in Kibungo Referral Hospital.

Dear Madame,

With reference to your letter dated 25/01/2019 requesting authorization to carry out a research and data collection at the health centres in the catchment area of Kibungo Referral Hospital in Ngoma District; research entitled: "UMBILICAL CORD CARE KNOWLEDGE AND PRACTICES AMONG POSTNATAL MOTHERS LIVING IN KIBUNGO HOSPITAL CATCHMENT AREA"; after reviewing your research proposal and the letter of ethical clearance from IRB of University of Rwanda; the Ethic Committee members of Kibungo Referral Hospital have sat on the 05<sup>th</sup> February, 2019, and analyzed your document above mentioned and your request to conduct this study in Kibungo Referral Hospital catchment area.

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Sincerely,

Dr. Mpirimbanyi Christophe  
Chairperson of Ethic Committee



CC

- Director General of Kibungo Referral Hospital
- Director of Administration and Finance
- Acting Director of Medical and Allied Health Services
- Acting Director of Nursing and Midwifery



REPUBLIC OF RWANDA



MINISTRY OF HEALTH  
EASTERN PROVINCE  
NGOMA DISTRICT  
KIBUNGO REFERRAL HOSPITAL  
ETHIC COMMITTEE

Kibungo, 5<sup>th</sup> February, 2019

Ref no .....

*Seen on 10/03/2019*

*[Handwritten signature]*  
*T. Inyambwe*



To: Madame UWINGABIRE Emmerance.

Re: Approval notice for conducting a study in Kibungo Referral Hospital.

Dear Madame,

With reference to your letter dated 25/01/2019 requesting authorization to carry out a research and data collection at the health centres in the catchment area of Kibungo Referral Hospital in Ngoma District; research entitled: "UMBILICAL CORD CARE KNOWLEDGE AND PRACTICES AMONG POSTNATAL MOTHERS LIVING IN KIBUNGO HOSPITAL CATCHMENT AREA"; after reviewing your research proposal and the letter of ethical clearance from IRB of University of Rwanda; the Ethic Committee members of Kibungo Referral Hospital have sat on the 05<sup>th</sup> February, 2019, and analyzed your document above mentioned and your request to conduct this study in Kibungo Referral Hospital catchment area.

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Sincerely,

*[Handwritten signature of Dr. Mpirimbanyi Christophe]*

Dr. Mpirimbanyi Christophe  
Chairperson of Ethic Committee



CC

- Director General of Kibungo Referral Hospital
- Director of Administration and Finance
- Acting Director of Medical and Allied Health Services
- Acting Director of Nursing and Midwifery

REPUBLIC OF RWANDA



MINISTRY OF HEALTH  
EASTERN PROVINCE  
NGOMA DISTRICT  
KIBUNGO REFERRAL HOSPITAL  
ETHIC COMMITTEE

Kibungo, 5<sup>th</sup> February, 2019

Ref no .....

Received on  
18/3/2019

To: Madame UWINGABIRE Emmerance.

Re: Approval notice for conducting a study in Kibungo Referral Hospital.

Dear Madame,

With reference to your letter dated 25/01/2019 requesting authorization to carry out a research and data collection at the health centres in the catchment area of Kibungo Referral Hospital in Ngoma District; research entitled: "UMBILICAL CORD CARE KNOWLEDGE AND PRACTICES AMONG POSTNATAL MOTHERS LIVING IN KIBUNGO HOSPITAL CATCHMENT AREA"; after reviewing your research proposal and the letter of ethical clearance from IRB of University of Rwanda; the Ethic Committee members of Kibungo Referral Hospital have sat on the 05<sup>th</sup> February, 2019, and analyzed your document above mentioned and your request to conduct this study in Kibungo Referral Hospital catchment area.

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Sincerely,

Dr. MPIRIMPANYI Christophe  
Chairperson of Ethic Committee



CC

- Director General of Kibungo Referral Hospital
- Director of Administration and Finance
- Acting Director of Medical and Allied Health Services
- Acting Director of Nursing and Midwifery

## APPENDIX 6: INFORMED CONSENT DOCUMENTS (English)

### Information sheet

My name is UWINGABIRE Emmerance; I am a student in Master's Program, Neonatology track at the University of Rwanda carrying out a study entitled :“UMBILICAL CORD CARE KNOWLGE AND PRACTICE AMONG POSTNATAL MOTHERS LIVING IN KIBUNGO HOSPITAL CATHMENT AREA”.I am requesting you to participate in this study.

In fact this study might not benefit you immediately but the findings may help to improve the quality of care and future postnatal care program. There are no obvious physical risks foreseen or emotional risks anticipated. The information will be gathered from the participants by filling the questionnaire. The information will include demographical data, knowledge and practices beliefs about umbilical cord care in preventing infection among mothers, so you are free to ask any questions.

Your participation in this study is voluntary, mean that you are free to withdraw from the study any time without any penalty. The service you receive at the immunization services and the relationship with the health care provider will not be affected in any way. All information will be confidential and your name will be anonymous. For any queries or questions, contact me through the University of Rwanda, College of Medicine and Health sciences the Chairperson of the CMHS IRB (0788 490 522) and of the Deputy Chairperson (0783 340 040), contact the supervisor of this research on 0788 429834 or use my cell phone 0788448443.

Will you please sign to your willingness to participate?

Participant's Statement:

The study described above has been explained to me to my full understanding and I voluntarily give consent to participate in this study.

Participant / Witness's Signature.....Date.....

Investigator's Signature.....Date.....

**1: ENGLISH VERSION**

**QUESTIONNAIRE MODIFIED AFTER APPROVAL FROM** a research conducted by Kabwijamu ,L. (2016) ‘Newborn Care Practices among Adolescent Mothers in Hoima District , Western Uganda

UMBILICAL CORD CARE KNOWLGE AND PRACTICE AMONG POSTNATAL MOTHERS LIVING IN KIBUNGO HOSPITAL CATHMENT AREA

Serial Number .....

Date: .....

**INSTRUCTIONS**

- Read carefully before responding
- Respond all questions
- Answer truthfully by: circle or filling in the provided space the correct answer

**Section A. Social Demographic Data**

**1. How old are you?**

- a. 15 – 20
- b. 21 – 35
- c.36 – 50
- d. 50- and above

**2. What is your marital status?**

- a. Married
- b. Single
- c. Divorced
- d. Separated
- e. Widowed
- f. Other

**3. What is your level of formal education?**

- a. Primary
- b. Secondary
- c. University
- d. Certificate
- e. No schooling/ education
- (0) f. Others

**4. Profession**

- a. Farming
- b. Civil service
- c. Trading
- d. Craft work
- e. Unemployed

**5. Which religion do you identify with?**

- a. Christian – Protestant
- b. Christian – Catholic
- c. Muslim
- d. Adventist

**6. What is the level of education that your husband/ partner has completed?**

- a. Primary
- b. Secondary
- c. University
- d. Certificate
- e. No schooling/ education
- f. Others
- g. Don't know

**Baby's information**

1. Sex: Boy      Girl

**2. How old is your baby?**

- a. Between 1-7 days
- b. Between 7- 14 days
- c. Between 14-21days
- d. Between 21-28 days
- e. Between 28-35 days
- f. Between 35-42 days

**3. Birth weight: .....**

**4. Where did you give birth to your baby?**

- a. At the health center
- b. At your home

- c. On the road coming to the health facilities
- d. Ather place.....

**SECTION B: KNOWLEGDE OF MOTHERS TOWARDS UMBILICAL CORD CARE**

**1. During the first two days after birth, did any health care provider examine your baby’s umbilical card during hospitalisation period?**

- a. Yes
- b. No

**If yes at which timehealth care provider examine your baby’s umbilical cord during hospitalisation period**

- a. 30 minutes after birth
- b. 1 hour after birth
- c. 2 hours after birth
- d. She/ he didn’t examine baby umbilical cord

**2. Did a nurse / a midwife provided to you information about umbilical cord care from birth until the time it fell off?**

- a. Yes
- b. No

**If yes what are information a nurse/ midwife provided to you about**

- a. She/he told me to clean with water and dry umbilical cord with clean clothes.
- b. She/ he educated me to put any substances on umbilical cord
- c. She/ he educated me to do not put any substance on umbilical cord
- d. She/he told me to use chlorixidrine to clean umbilical cord within one week after birth.
- e. She/he didn’t educate anything from the above
- f. She/ he educated me to do not put any substance on umbilical cord except water while I give birth to the baby
- g. She /he educated to clean with clean water and clean piece of clothes, not put any substances and apply air dry
- h. No information given following those mentioned after

**3. What have you taught about?**

- a. Only baby bathing
- b. baby dressing with pampers or others clothes in place of pempers
- c. Application of any substance on umbilical cord
- d. Observation of umbilical cord only
- e. On danger sign for new-born umbilical cord
- f. Application of any substance on umbilical and observation of umbilical cord
- g. Baby bathing and observation of umbilical cord
- h. Baby bathing, dressing and application of substance on umbilical cord care
- i. Baby birth and application of substance on umbilical card
- j. Bathing , dressing ,application of substance and observation

**4. Apart from a health provider, have you been educated by any another person on umbilical cordcare?**

- a. yes
- b. not

**5. If yes who educated you about cord care**

- a. Mother,
- b. grand- mother
- c. Mother in low,
- d. Your husband
- e. your neighbor
- f. other mother and grand mother
- g. next of kin at health center
- h. No one from the health center and those said above

**Baby hygiene**

**6. Did your baby took bath in the first week after birth?**

- a. yes
- b. not

**7. If yes at what time did you give bath to your baby?**

- a. Before 24 hours after birth

- b. One day after birth
- c. Two day after birth
- d. Above tree days
- e. No response**

**8. Do you add any substances to the baby's bath water?**

- a. Yes
- b. Not

**9. If yes in the following substances which one did you add in baby's water**

- a. Hands or body solid soap
- b. Dettol sap
- c. Herbs drugs
- d. Other (specify).....
- e. None substance added

**10. before cleaning baby' umbilical cord, did you wash your hands?**

- a. Yes**
- b. No**

**If yes**

- a. water in basin
- b. running water using soap
- c. I didn't wash hands

**SECTIONC: MOTHER'S PRACTICES TOWARDS UMBILICAL CORD CARE**

**Cord care practices**

**11. Have you delivered at home?**

- a. Yes
- b. Not

**If not, yes what did you use to cut the umbilical cord?**

- a. Scissors from heath centers
- b. Razor blade
- c. Others tools from home



**12. What did you use to tie the umbilical cord?**

- a. Plastic material from health center
- b. Tie from health center
- c. Banana fiber
- d. Piece of clothes
- e. Other material from home

**13. After birth the following substance was applied on your baby's umbilical cord?**

- a. chlohexidine
- b. Air dry
- c. Breast milk
- d. Vaseline ointment
- e. Saliva
- f. Cow ointment
- j. Onion
- h. Others (Specify) .....

**14. If the above substance was applied, you thought that it will: (belief)**

- a. Umbilical cord will dry quickly
- b. Umbilical cord will fall quickly
- c. Baby will not have infection
- d. Umbilical cord heal quickly
- e. Umbilical cord will dry quickly and umbilical cord will fall quickly

**15. If one of the above substance was used, how often it was applied during a day?**

- a. Once
- b. Twice
- c. More than said above
- d. None applied

**16. How many days it was applied?**

- a. One day
- b. Two days
- c. Tree
- d. More than said above
- e. Not applied (no days was applied).

**17. Was it applied to the cord at any point from the time it was cut and tied until the time it fell off?**

- a. Yes
- b. not
- c. Nothing applied

**Thank you**

## APPENDIX 7: Consent form in Kinyarwanda and questionnaire

### UMUGEREKA 2: Kwemera kwinjira mubushakashatsi

Amazina yanjye nitwa UWINGABIRE Emmerance; umunyeshuri muri Kaminuza y'Urwanda, agashami ko kwita kubuzima bw'abana bakivuka kugezakuminsi 28 bavutse nkaba ndigukora ubushakashatsi mukureba ubumenyi ababyeyi bafite mukwita ku isuku y'umukondo w'umwana nyuma yo kuvuka muri aka gace mutuyemo gafashwa nibitaro bya Kibungo. Ubu bushakashatsi nta gihembo buri bungenere, ahubwo buzafasha mukongera serivisi nziza itangwa irebana na gahunda yo kurinda abana bakivuka indwara zishobora kwica abana zitewe na mikorobi yakwinjirira mumukondo bitewe no kutamenya uko twakwita ku mukondo w'umwana ukuvuka, kandi ku wemera gufatanya muri ubu bushakashatsi ntangaruka mbi bizamutera. Amakuru atangwa uwemeye gufatanya mu bushakashatsi asubiza urutonde rw'ibibazo rukubiyemo; amakuru ku irangamimerere, ubumenyi nibikorwa bikorwa mukwita ki isuku y'umukondo w'umwana ukivuka , kandi ufite uburenganzira bwo kubaza ikibazo waba ufite.

Gufatanya mu bushakashatsi ni ubushake kandi ufite uburenganzira bwo guhagarika ubu bushakashatsi igihe cyose ushatse ntazindi nkurikizi zibayeho. Serivisi muhabwa kukigo nderabuzima ndetse n'imibanire hagati yabayibaha ntabwo izahungabana nagato. Amakuru yose azabikwa mu ibanga kandi nta zina rizajyaho. Uramutse ugize ikibazo kubijyanye n'ubu bushakashatsi wahamagara ni mero zikurikira: Uhagarariye ubushakashatsi muri Kaminuza y'Urwanda (0788 490 522) umwungirije (0783 340 040) cyangwa ukurikirana ubu bushakashatsi (0788 429834) cyangwa uri gukora ubushakashatsi (078844844).

Nimwemera ko dufatanya muri ubu bushakashatsi, murasinya ku rupapuro ahabugenewe.

### Kwemera gufatanya mu bushakashatsi

Numvise neza igikorwa cy'ubushakashatsi nasobanuriwe, nka ba nemeye kubushake gufatanya muri ubu bushakashatsi

Umukono w'umubyeyi .....itariki.....

Umukono wuri gukora

ubushakashatsi.....itariki.....

Icyitonderwa:Ufite imyaka iri muni ya 21 asinyirwa numubyeyiwe cg umwishingizi

1: IBIBAZO MURURIMI W'IKINYARWANDA

UBUSHAKASHATSI KUREBA UBUMENYI BW'ABABYEYI NYUMA YO KUBYARA  
N' IMIKORERE MUGUSUKURA UMUKONDO W'UMWANA.

NIMERO: .....

ITARIKI: .....

**AMABWIRIZA:**

- Soma neza mbere yo gusubiza
- Usubize ibibazo byose
- Subizanya ukuri :ushyira akaziga cyangwa wuzuzwa ahabugenewe.

**IGICE CYA A: UMWIRONDORO**

**1. Ufite imyaka ingahe?**

- a. 15-20
- b. 21-35
- c. 36-50
- d. 50-kuzamura

**2. Nirihe ranga mimerere yawe?**

- a. Ndubatse
- b. Ingaragu
- c. Natandukanye byemewe n'amategeko
- d. Natandukanye bitemewe n'amategeko
- e. Umupfakazi
- f. Ibindi.....

**3. Ufite abana bangahe?.....**

**4. Amashuri wize?**

- a. Amashuri abanza
- b. Amashuri yisumbuye
- c. Amashuri ya kaminuza
- d. Imyuga
- e. Ntamashuri

**4. Akazi ukora**

- a. Ubuhinzi
- b. Akazi ka leta
- c. Ubucuruzi
- d. Imyuga

e. Umushomeri

**6. Idini yawe**

- a. Umukirisito- umuporoso
- b. Umukiristo- Gatorika
- c. Umuyisiramu
- d. Umudivantisiti

**7. Amashuri umugabo wawe yize**

- a. Abanza
- b. Ayisumbuye
- c. Kaminuza
- d. Imyuga
- e. Ntamashuri
- f. Andi
- g. Ntabwo mbizi

**IMYIRONDORO Y'UMWANA**

1. IGITSINA CY'UMWANA: Hungu            Kobwa.

**2. Umwana wawe angana iki?**

- a. Afite iminsi iri hagati y'iminsi 1-7
- b. Afite iminsi iri hagati y'iminsi 7-14
- c. Afite iminsi iri hagati y'iminsi 14-21
- d. Afite iminsi iri hagati y'iminsi 21-28
- e. Afite iminsi iri hagati y'iminsi 28-35
- f. Afite iminsi iri hagati y'iminsi 35-42

**3. Yavukanye ibiro bingahe? .....**

**4. Uyu mwana yavukiye ahagana he?**

- a. Yavukiye ku bitaro
- b. Yavukiye ku kigo nderabuzima
- c. Yavukiye murugo iwawe
- d. Yavukiye munzira uza kwa muganga
- f. Ahandi hatari mubyo tuvuze haruguru

**IGICE CYA B: UBUMENYI BW'UMUBYEYI MUGUSUKURA UMUKONDO W'UMWANA**

**1. Mu minsi ibiri yambere umwana akivuka hari umuforomo wasuzumye umukondo w'umwana igihe cyose wamaze mubitaro?**

niba ari yego yawusuzumye nyuma yigihe kingana iki?

- a. Nyuma y' iminota mirongo itatu
- b. Nyuma y'isaha
- c. Nyuma y'amasaha abiri
- d. Ntiyigeze asuzuma umukondo narimwe

**2. Hari Umuforomo cyangwa umubyaza wigeze aguha inyigisho zijyanye no gukorera isuku umukondo w'umwana kuva akivuka kugeza akunguye?**

- a. Yego
- b. Oya

**Niba yarakwigishije yakubwiye**

a. Umuforomo cyangwa umubyaza yakwigishije ko umukondo uwogeshya amazi meza ukahumutsa nagatambaro keza.

b. Umuforomo cyangwa umubyaza yakwigishije gushyiraho ikindi kintu kumukondo w'umwana.

c. Umuforomo cyangwa umubyaza yakwigishije kutagira ikintu nakimwe ushyira ku mukondo w'umwana.

d. Umuforomo cyangwa umubyaza wakigishije gukoresha chorixidine mucyumweru cya mbere umwana avutse

e. Ntanakimwe mubyavuzwe ruguru umuforomo cga umubyaza yigeze anyigisha

f. Umuforomo cyangwa umubyaza yanyigishije kutagire icyo nshyira kumukondo buretse amazi mugihe cyo koza umwana

g. Umuforomo cyangwa umubyaza yanyigishije kuhogeshya amazi meza kuumutsa nagatambaro keza , kutagira icyo ashiraho no kuhareka hakikumutsa.

h. Nibi bivuzwe nyuma ntabyo umuforomo cyangwa umubyaza yanyigishije

**3. Waba warigishijwe kuri ibi bikurikira?**

- a. Uko boza umwana byonyine
- b. Uko bambika umwana pempegisi cg ikibindo mugihe nta pampegisi mfite
- c. Kutagira ikindi kintu washyira kumukondo w'umwana
- d. Uburyo wagenda ureba umukondo ko wagize ikibazo byonyine
- e. Ibimenyetso mpuruza by'umukondo w'umwana nyuma yo kuvuka
- f. Kutagira icyo nshyira kumukondo w'umwana no kureba ko wagize ikibazo
- g. Uko boza umwana no kureba ko umukondo wagize ikibazo
- h. Koza umwana , kumwambika pampegisi, kutagira icyo ashyira kumukondo.
- i. Uko boza umwana no gusyira ikintu kumukondo w'umwana
- j. Koza umwana, kumwambika, gushyiraho ikindi kintu, kuraba ko wagize ikibazo

**4. Buretse umuforomo cyangwa umubyaza , hari undi muntu waba yarakwigishije uko bakorera isuku umukondo w'umwana?**

- a. Yego
- b. Oya

**5. Niba ari yego, ninde waba warakwigishije ?**

- a. Umubyeyi wawe
- b. Nyogokuru wawe
- c. Nyoko bukwe
- d. Umugabo wawe
- e. Umaturanyi wawe
- f. Umubyeyi wanjye na nyogokuru
- g. Umubyeyi twari kumwe kwa muganga nawe wari wabyaye
- h. Nta numwe mubaforomo cyangwa umubyaza ndetse naba bavuzwe wigeze inyigisha.

**6. Umwana wawe yaba yaroze mu cyumweru cya mbere nyuma yo kuvuka?**

- a. Yego
- b. Oya

**7. Niba ari yego, ni nyuma yikihe gihe waba waramwojeje?**

- a. Mbere y'amasaha makumyabiri nane nyuma yo kuvuka
- b. Nyuma y'umunsi amaze kuvuka

- c. Nyuma y'iminsi ibiri
- d. Hejuru y'iminsi itatu
- e. Ntagisubizo

**8. Mumazi wogesheje umwana wawe, haba hari ikindi kintu wongereye mumazi wamwogesheje?**

- a. Yego
- b. Oya

**9. Niba hari ibyo washyize mumazi wogesheje umwana muri ibi bikurikira niki waba warongeye mumazi wogesheje umwana wawe?**

- a. Isabune y'amazi cyangwa itari iyamazi (ikomeye).
- b. Isabune ya detolo
- c. Umuti w'ibyatsi
- d. Ikindi ( sobanura).....
- e. Ntakintu ntashyize mumazi

**10. Mbere yo gusukura umukondo w'umwana ukaraba intoki zawe?**

- a. Yego
- b. Oya

**niba ari yego ni mubuhe buryo ukaraba intoki?**

- a. Gukaraba amazi ari mumazi
- b. Amazi atemba ukoresheje isabune
- c. Ntabwo nakarabye intoki

### **IGICE CYA 3: IBIKORWA BY' UMUBYEYI MUGUKORA ISUKU Y'UMUKONDO W'UMWANA**

**Ibikorwa kumukondo w'umwanda**

**11.Mwaba mwarabyariye murugo?**

- a. Yego
- b. Oya

**Niba ari oya , yego ni ikihe gikoresho wakoreshije mu kugenya umukondo w'umwana ?**

- a. Umukasi wo kwa muganga
- b. Urwembe
- c. Ikindi gikoresho cyo murugo



**12. Igikoresho cyakoreshejwe mukugenya umukondo w'umwana nikihe muribi bikurikira?**

- A. Akakoresho gakoze muri pulasitike ko kwamuganga
- b. Utudondo two kwa muganga
- c. Ikirere cyo kunsina
- d. Agace k'umwenda
- e. Ikindi gikoreho cyo murugo

**13. Nyuma yo kubyara muri ibi bikurikira niki cyashyizwe kumukondo w'umwana?**

- a. umuti wo kwa muganga witwa korerisidirine
- b. umwuka wo kuhumutsa
- c. Amase y'inka
- d. Amashereka
- e. Amavuta ya vaseline
- f. Amacandwe
- g. Amavuta y'inka
- h. Ibyatsi
- i. Igitunguru
- j. Ibindi mubitavuzwe ruguru ( ni ikihe) .....

**14. Niba warakoresheje kimwe mubizuzwe harugure, wizeraga ko cyaba kirafasha iki?**

- a. Kuma byihuse k' umukondo w'umwana.
- b. Byafasha umukondo w'umwana gukungura vuba
- c. Byafasha umwana kutagira indwara mundimi zamahanga bavuga infegisiyo
- d. Byafasha umukondo gukira vuba.
- e. Byafasha umukondo w'umwana kuma vuba no gukungura byihuse.

**15. Niba kimwe mubyavuzwe ku kibazo cya gatatu cyarakoreshejwe ,ni inshuro zingaha mumunsi?**

- a. Rimwe kumunsi
- b. Inshuro ebyiri ku munsi

- c. Inshuro zirenze izavuzwe ruguru
- d. Ntakintu nashyizeho

**16.** Ni iminsi ingahe wabishyizeho ?

- a. Umunsi umwe
- b. Iminsi ibiri
- c. Itatu
- d. Hejuru y'iminsi itatu
- e. Nta munsi numwe

**17.** Tugendeye kukibazo cya gatatu , mubyashyizwe kumukondo byagiyeho uhereye igihe bagutandukanya n' umwana , kugenya no gukura kumukondo?

- a. Yego
- b. Oya
- c. Ntakintu nashyizeho

**MURAKOZE**