



**IMMEDIATE NEWBORN CARE AND ASSOCIATED
OUTCOMES IN THE DELIVERY ROOM: AN
OBSERVATIONAL STUDY IN RWANDA.**

Francoise MUJAWAMARIYA

College of Medicine and Health Sciences

School of Nursing and Midwifery

Masters of Science in Nursing (Neonatal track)

June 2019



**IMMEDIATE NEWBORN CARE AND ASSOCIATED OUTCOMES IN
THE DELIVERY ROOM: AN OBSERVATIONAL STUDY AT A
DISTRICT HOSPITAL IN RWANDA**

By

MUJAWAMARIYA Francoise

Reg. Number: 218000218

A dissertation submitted in partial fulfillment of the requirements for a
MASTERS OF SCIENCES IN NURSING (Neonatal Track)

In the College of Medicine and Health Sciences

Supervisors: Dr Pamela Meharry

Co-Supervisors: Mrs. UWINGABIRE Fauste

June, 2019

DECLARATION

I declare that this thesis has been composed solely by myself and that it has not been submitted, in whole or in part, in any previous application for a degree. Except where stated otherwise by reference or acknowledgment, the work presented is entirely my own.

Student Name and Number

Signed:

Date:

DEDICATION

I dedicate this project to the God supreme.

To my family, in particular my husband and my two sons for their love, support, allowing me to spend some of their time for my studies and for their unwavering support, patience and constant encouragement without which this work would not have been accomplished. Lastly to my colleagues for their support and a great moment that they provide to me.

AKNOWLEDGEMENTS

I address my pleasure to our Almighty God for his that allow me to reach this level of studies I acknowledge our Government of Rwanda for providing the opportunity to learn with security, the authorities of University of Rwanda and College of Medicine and Health Sciences for promoting nurse neonates in their career development, the authorities of the Ministry of Health and Human Resources for Health program for allowing and supporting the program of Masters in Nursing, the entire faculty for providing knowledge and guidance, during this program. Special recognition is accorded to my supervisors, Dr Pamela Meharry and Mrs. UWINGABIRE Fauste for their valuable suggestions, comments, guidance, support and encouragement are unforgettable. I recognized the support and friendship provided by my colleagues. I address my thanks to others who spend their time for assistance in different activities that permit to complete this project. My special thanks also extends to my family for the continual encouragement and support.

ABSTRACT

Background: Globally, almost half of under-five deaths are newborns, yet about 80% of these are preventable using cost-effective intervention. Each year, one million of neonatal deaths occur due to perinatal problems including asphyxia and hypothermia from delivering room.

Aim: To assess immediate newborn care and associated outcomes in delivery room at a selected District Hospital in Rwanda.

Methods: The study was a quantitative description with cross sectional design. Sampling strategy was convenience in order to get a sample size of 171 newborns in delivery room at the site setting in 2019. The checklist was used to collect data. The data was analyzed by using SPSS version 21. Test used were Chi-square test and logistic regression to identify the variables relationship. IRB ethical clearance and approval letter from the hospital were given prior to collect data.

Results: The majority immediate newborn care included newborn dried thoroughly 129 (75.4%); skin to skin contact 115(67.3%); delayed cord clamping and cut116 (67.9%); proportion of resuscitated (bag mask) 10 (5.8%) of all newborn had birth asphyxia and 100% of them were well resuscitated within one minute; physical assessment103 (60.2%). However, only a limited number of newborns initiated breastfeeding within one hour 17 (9.9%).

The practice show the significant on suction and resuscitation materials not available to be associated good outcome (stable) with (OR=3.222, 95% CI=1.324-7.655, P-value=0.029); mouth and nose cleared if meconium (OR=10.965.95% CI=2.154-25.850. P.value=0,004)

Conclusion: The majority of newborns were stable within the first hour after birth. However, nearly one quarter was unstable and required intervention. There is a need of protocol and guideline concerning initiation of breastfeeding in labor ward due to results showed a limited number of initiation of breastfeeding.

Key words: Newborns, Immediate newborn care, outcomes

TABLE OF CONTENTS

DECLARATION	i
DEDICATION	ii
ACKNOWLEDGEMENTS.....	iii
ABSTRACT.....	iv
TABLE OF CONTENTS.....	v
LIST OF ABBREVIATIONS AND ACRONYMS	viii
List of tables.....	ix
List of figures and graphs	x
List of Annexes	xi
CHAPTER ONE: INTRODUCTION.....	1
1.1. Introduction	1
1.2. Background	1
1.3. Problem statement.....	3
1.4. The aim of the study.....	3
1.5. Research objectives	3
1.6. Research questions	4
1.7. Significance of the study	4
1.7.1 Significance to nursing administration	4
1.7.2 Significance to nursing practice	4
1.7.3 Significance to nursing research	5
1.7.4 Significance to nursing education	5
1.8. Definition the concepts.....	5
1.9. Structure/Organization of the study	6
1.10. Chapter one conclusion	6
CHAPTER TWO. LITERATURE REVIEW	7
2.0. Introduction	7
2.1. Theoretical literature	7
2.1. 1. Immediate care practices for newborn	7
2.1.2. Skin-to-skin contact in the first hour of life	7
2.1.3. Cord clamping	7
2.1.4. Initiation of breastfeeding	7
2.1.5. Readiness in assistance of none breathing newborn	8

2.1.6. Process of immediate care for the babies who do not initiate breathing at birth	8
2.1.7. Intervention Initial steps.....	9
2.2. Empirical literature.....	9
2.2.1. Readiness to deliver newborn care at delivery room	9
2.2.3. Immediate newborn care at delivery room.....	9
2.2.4. Components of standardized immediate and routine newborn care at delivery room	10
2.2.5. Outcomes of immediate newborn care at delivery room	11
2.2.6. Gaps in immediate and routine care given to the newborn at delivery room.....	12
2.3. Research gap identification and Critical review	13
2.4. Conceptual framework	13
.....	15
2.6 .Study variables	15
2.7. Conclusion.....	15
CHAPTER THREE: RESEARCH METHODOLOGY.....	16
3.0. Introduction	16
3.1. Research design.....	16
3.2. Research approach.....	16
3.3. Research setting.....	16
3.4. Population.....	17
3.5.1. Inclusion criteria.....	18
3.5.2. Exclusion criteria.....	18
3.6. Sampling.....	18
3.6.1. Sample size.....	18
3.6.2. Sampling strategy	19
3.7. Measures.....	19
3.8. Validity& Reliability	20
3.8.1 Face validity	21
3.8.2 Reliability of the instrument	21
3.8.1. Data Collection Instruments.....	22
3.8.2. Data collection procedure	22
3.9. Data analysis	22
3.10. Ethical considerations	23
3.11. Data management.....	23
3.12. Data Dissemination	24

3.13. Limitations and challenges	24
3.14. Conclusion to chapter three	24
CHAPTER FOUR: PRESENTATION OF RESULTS.....	25
4.1 INTRODUCTION.....	25
4.1. Socio- Demographic characteristics	25
4.2. Readiness and availability of materials to deliver immediate newborn care at delivery room	26
4.2. Standardized immediate and routine care given to the newborn at delivery room	27
4.2.1: Standardized immediate care given to the newborn at delivery room	27
4.2.3 Newborn infection prevention.....	29
4.3: The immediate outcome of immediate newborn care	30
4.4: Reason of instability.....	30
4.5: Orientation/place of stay of newborn	32
4. 6. Association between immediate care provided to newborn and immediate outcome ..	33
4 7: Multinomial Logistic Regression Model for reflecting the outcome.....	35
CHAPTER FIVE: DISCUSSION	32
5.0 Introduction	32
5. 1. Demographic characteristics of participants	32
5.2. Readiness and availability of materials to deliver standardized immediate newborn care in delivery room.....	32
5.3. Standardized immediate newborn care	33
5.3.1. Routine of newborn care	34
5.4. Newborn condition.....	34
5.5. Outcome variables following intervention	35
5.6: Association between immediate cares provided to newborn and immediate outcome..	35
CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS.....	37
6.1. Conclusions	37
6.2. Recommendations	37
REFERENCES.....	39
APPENDICES	43

LIST OF ABBREVIATIONS AND ACRONYMS

%: Percent

CC: Chest Circumference

CI: Confidence Interval

CINAHL: Cumulative Index to Nursing and Allied Health Literature

GA: Gestational Age

HC: Head Circumference

HCPs: Health care providers

HCPs: health care providers

IRB: Institutional Research Board

Min: minutes

MoH: Ministry of Health

n: Sample size

NBC: Newborn Care

P: Page

P: Probability Value

PP: Post-Partum

RNC: Routine newborn care

SPSS: Statistical Package of Social Sciences

SSC: Skin to Skin Contact

UNFPA: United Nations Fund for Population Activities

UNICEF: United Nations Children's Fund

UR/CMHS: University Of Rwanda /College Of Medicine and Health Sciences

WHO: World Health Organization

List of tables

Table 4.1: Socio-demographic characteristics of participants	26
Table 4.2: Readiness and availability of materials to deliver immediate newborn care at delivery room	27
Table 4.3: Routine care of newborn.....	29
Table 4.4. Association between immediate cares provided to newborn and immediate outcome.....	34
Table 4.5: Multinomial Logistic Regression Model for reflecting the outcome	36

List of figures and graphs

Figure 1. Conceptual framework adapted from Watson's caring theory (Watson, 2016).....	15
Figure 4.2: Standardized immediate newborn care given to the newborn at delivery room ...	28
Figure 4.3: Newborn infection prevention	29
4.3: The immediate outcome of immediate newborn care.....	30
Figure 4.5. The immediate outcome of immediate newborn care	30
Figure 4.6: Reason of instability.....	31
Figure 4.7: Orientation/place of stay of newborn	32

List of Annexes

ANNEX 1. UR ETHICAL XLEARANCE.....44

Annex 2. KABGAYI APPROVAL LETTER45

Annex 3: INFORMED CONSENT FORM46

Annex 4: INFORMED CONSENT EXPLANATION FORM.....47

ANNEX 5: CHECKLIST48

CHAPTER ONE: INTRODUCTION

1.1. Introduction

Globally 2.7 million of new newborn deaths possibly be prevented with the quality care provided at birth and during the postnatal period (Enweronu-Laryea et al., 2015)

Regionally, in sub-Saharan Africa and South Asia there the neonatal mortality rate was high with each estimated at 27 deaths per 1,000 live births in 2017. Newborns in sub-Saharan Africa or in South Asia are nine times more likely to die in the first month than a child born in a high-income country. According to Graft-Johnson *et al.*,(2017). The risk the of dying in the across countries in the first month of life was about 50 times higher in the highest mortality country than in the lowest mortality country.

In Rwanda the study done by Victor Ndaruhutse (January 2019) shows that neonatal death was 1.401 where neonatal death between 8-28 days was 14%; the death at birth was 17%, and neonatal death between 0-7 days was 69%; neonatal death before 7 days was 86%.

1.2. Background

According to Enweronu-Laryea *et al.*, (2015), an estimated two-thirds of the world's 2.7 million newborn deaths could be prevented with quality care at birth and during the postnatal period. However, approximately one million neonatal deaths occur each year due to perinatal problems including asphyxia and hypothermia from delivering room (United Nations Inter-Group for Child Mortality Estimation, 2017). Immediately after the baby is born, doctors, nurses or midwives administer neonatal care to ensure the babies are stable and healthy. According to the World Health Organisation, (2014) immediately after birth, all newborns including those who need resuscitation necessitate essential newborn care to minimize the risk of illness and preventable death. The WHO 2015 protocol shows that newborn care in delivering room include birth readiness where ambu-bag, suction , resuscitation materials and emergency trolley are early prepared. That protocol also include drying baby thoroughly within soon after birth, wrapping a baby In a dry towel, delaying umbilical cutting cord, immediate skin to skin, preventing infection through keeping a baby on a clean surface, immediate skin to skin , keeping the mother and baby in delivery room and initiation of the baby on breast within 30 minutes(WHO, UNFPA &UNICEF, 2015).

A study in Bangladesh found that only 26% of newborns in all birth during the period of the study received immediate skin to skin(Singh et al., 2017).Regarding delaying umbilical cutting a study done in Oman found that 70-72.6% of birth attendants clamped umbilical cord within 1 min for both normal term and preterm newborns(Madhavanprabhakaran *et al.*, 2018). The results found in Studies conducted in Viet Nam and Asia shown that the risk of newborn morbidity and mortality were increased by the use of outdated and harmful clinical practices done by health works during and after delivery (Tran *et al.*, 2018). In Africa , a study done in Nigeria found that only 10% of newborns were put skin to skin in delivery room(Singh et al., 2017). According to (Marchant et al., 2016) an urgent priority in newborn health care is to accelerate the scale-up of cost-effective essential interventions, especially during labor and the immediate postnatal period. Also, tracking intervention coverage is a key activity to support scale-up.

Found that less than 40% of the midwives in delivery room had attended infection control training courses and hand hygiene. This study concluded that development of appropriate policies and protocols for infection control practices in labor and delivery units and also midwives training on clean delivery practices are key elements to prevent and reduce neonatal infection related morbidity and mortality(Cross *et al.*, 2016)

A Study done in 6 countries of Africa including, Kenya, Ethiopia, Mozambique, Madagascar, Tanzania and Rwanda found the following results: among 2377 babies observed 20% of newborns were not immediately dried after birth and received clean cord care in most of the studied facilities. From all facilities, only 43% of babies were initiate on breast feeding within the first hour of life, and only 45% of newborns were placed skin-to-skin immediately after delivery(De Graft-Johnson et al., 2017)

Little is known regarding Rwanda regarding solutions to improve on the provision of basic standardized newborn care at delivery room, WHO and other researchers recommend improving workforce performance, availability of essential commodities, and well-integrated health service delivery were the key solutions proposed (Dickson et al., 2015, WHO, (2015). In Rwanda the little is known about immediate care to newborn.

1.3. Problem statement

An estimated two-thirds of the world's 2.7 million newborn deaths could be prevented with quality care at birth and during the postnatal period (Enweronu-Laryea *et al.*, 2015). In Rwanda, the current report from Rwanda Biomedical Center (RBC) shows that 17 percent of babies died at birth from January to April 2019 whereas at Kabgayi District Hospital 93 babies died in that given period.

Providing essential newborn care in the delivery room can help to minimize unnecessary and preventable neonatal mortality and morbidity. In addition every country by the year of 2035 will be required to increase scale-up of the greatest effective care regarding main newborn death causes, for meeting target of every newborn of ten or less neonatal deaths and ten or less stillbirths per 1000 births (Dickson *et al.*, 2015). Hence, various researchers found that once newborn care protocol is not well respected it can lead to increased risks of neonatal mortality and morbidity within the perinatal period.

Despite neonatal mortality rate is still high in Rwanda and especially at Kabgayi district hospital, little information is available on WHO standardized immediate newborn care provided in the delivery room in Rwanda and particularly at Kabgayi District Hospital. Therefore, this study will assess immediate newborn care and associated outcomes in delivery room at a chosen Rwanda district hospital.

1.4. The aim of the study

To identify provided immediate newborn care and associated outcomes in a delivery room at a chosen district hospital in Rwanda.

1.5. Research objectives

1. To assess readiness to deliver immediate care newborn in the delivery room at a chosen district hospital in Rwanda.
2. To assess immediate and routine care given to the newborn at delivery room at a chosen district hospital in Rwanda.
3. To identify the immediate outcomes from immediate newborn care in delivery room at a chosen district hospital in Rwanda.

4. To assess the association between immediate cares provided to newborn and immediate outcomes at a chosen district hospital in Rwanda.

1.6. Research questions

1. What is the readiness to deliver immediate newborn care in delivery room at a chosen district hospital in Rwanda?
2. What are the immediate and routine care given to the newborn in delivery room at a chosen district hospital in Rwanda ?
3. What is the outcome of immediate newborn at a chosen district hospital in Rwanda?
4. What is the association between immediate care provided to newborn and immediate outcomes at a chosen district hospital in Rwanda?

1.7. Significance of the study

1.7.1 Significance to nursing administration

The Kabgayi District Hospital will focus on the results from this study for enhancing the training of midwives working in labor ward, and with the time, the permanent gynaecologist and paediatrician in labor ward for improvement neonatal outcome. Results from this study will help healthcare policy makers to recognize immediate neonatal outcome and how to deal with them.

1.7.2 Significance to nursing practice

Through research findings and recommendations, this study will help to show up and strengthen what is going well and improve on what is not going well regarding the provision newborn care at delivery room among attendant midwives from this, there will be improved and quality newborn care practice in delivery room.

The results will help the selected district hospital to recognize the most common neonatal outcome from immediate newborn care at their hospital and how to deal with them. With the identified gaps and barriers to the practice regarding standardized immediate newborn care, the selected district hospital of Rwanda will establish policies and guideline to support the areas of weakness in management of immediate newborn care in labor ward of the hospital.

1.7.3 Significance to nursing research

From this study, researchers will use its findings in their studies and it will boost other researchers to go down on the field and study what happens in delivery rooms regarding the care provided to newborns in delivery room. This study also will serve as evidence based practice after it will be reviewed by other competent researchers, and they will use it as a source of further researches.

1.7.4 Significance to nursing education

Based on findings and recommendations, nursing educators will reflect on what they have to put emphasis on while teaching, demonstrating and supervising students in skills lab and clinical practice especially newborn care practice, student will use this study as source of further researches, and nursing education will use in elaboration of curriculum necessary in teaching the immediate outcome from immediate newborn care.

1.8. Definition the concepts

Newborn: In human life, the period from birth to 28 days of age is known as neonatal period (WHO, 2014). **In this study is** a baby born in maternity in the 1st hours of age and who is still with his/her mother in delivery room.

Immediate newborn care: Early management of the newborn in delivery room

(WHO,2015)states that such intention is an integral part of care in normal birth **In this study is** all set of care or procedures that include birth readiness(preparedness) where ambu-bag, suction, resuscitation materials and emergency trolley are early prepared, drying the baby thoroughly within soon after birth, wrapping a baby in a dry towel, delaying umbilical cutting cord, immediate skin to skin, preventing infection through keeping a baby on a clean surface, immediate skin to skin , keeping the mother and baby in delivery room and initiation of the baby on breast within 30 minutes

Readiness: Ready for a normal delivery and having the resources and information prepared to respond quickly in case of an emergency (WHO, 2015). **In this study** all delivery kit including ambu-bag, suction and resuscitation materials and emergency trolley early prepared before the baby birth

Outcome : Something that follows as a result or consequence(Silvestre *et al.*, 2018).

In this study outcome signifies stable (without any problem) or unstable newborn after immediate care are provided within the first hour of life. Transfer of the baby in neonatology, respiratory distress and hypothermia will be signs of unstable newborn.

Key words: Newborn, Immediate newborn care, outcome.

1.9. Structure/Organization of the study

This thesis contains two main parts: Part one made by title page, declaration, dedication, acknowledgements, abstract, table of content, a list of symbols and abbreviations/acronyms, a list of tables, list of figures, and list of annexes.

Part two was composed by first chapter which was introduction, in this part the researcher shows the study background, the problem statement, the aim of the study, research objectives, and research questions, significance of the study and definition of concepts, chapter two is reserved for the literature review where the researcher presents and discusses theoretical literature, empirical literature and conceptual framework.

The third chapter contained methodology, fourth chapter was research findings, fifth chapter was discussion and the last chapter which was conclusions and recommendation, references and annexes.

1.10. Chapter one conclusion

This chapter gives an orientation of the study, the problem statement, research questions, the aim and specific objectives, significant of the study and the definition of concepts and its aim to assess immediate newborn care and associated outcomes in delivery room at a selected Rwanda District hospital.

CHAPTER TWO. LITERATURE REVIEW

2.0. Introduction

This chapter of review literature discusses on theoretical study framework, study conceptual framework and the central part that was widely and deeply discussed is empirical literature. This chapter also shows different research done on care provided to newborn at delivery room. It ends by showing a critical review and identifies the research gap on this topic. The researcher used resources retrieved from PubMed, Cochrane Library, Google Scholar and CINAHL, Furthermore, all theoretical and empirical articles written on this issue were explored.

2.1. Theoretical literature

2.1. 1. Immediate care practices for newborn

Based on WHO recommendation these are the practices that must be done in immediate newborn care: Immediate drying and additional stimulation, Suction in newborns who start breathing on their own, Suction in newborns who do not start breathing on their own, Cord clamping, Vitamin K prophylaxis and Initiation of breastfeeding (WHO, 2017).

2.1.2. Skin-to-skin contact in the first hour of life

Newborns without complications should be kept in skin-to-skin contact with their mothers during the first hour after birth to prevent hypothermia and promote breastfeeding (WHO, 2017).

2.1.3. Cord clamping

Late cord clamping (performed after 1 to 3 minutes after birth) is recommended for all births while initiating simultaneous essential newborn care. Early cord clamping (<1 minute after birth) is not recommended unless the neonate is asphyxiated and needs to be moved immediately for resuscitation(WHO, 2017).

2.1.4. Initiation of breastfeeding

All newborns, including low-birth-weight babies who are able to breastfeed, should be put to the breast as soon as possible after birth when they are clinically stable, and the mother and baby are ready. (WHO, 2017).

2.1.5. Readiness in assistance of none breathing newborn

When a baby doesn't initiate immediate breathing, resuscitation must be started right away. If supplies are not prepared, much time can be lost before starting resuscitation. With this lost time a baby can become worse. Preparations should include having warm environment, equipment and supplies. The essential materials should be prepared before such as warm room with temperature $>25^{\circ}\text{C}$, a clean, dry and warm delivery surface, a radiant heater, Two clean, warm towels/clothes, with cord clamps or threads/tie, A folded piece of cloth the neonatal resuscitation bag (250-500 ml) with oxygen reservoir; face masks, term and pre-term (0 sizes; suction devices & catheters; a feeding tube with the 20 ml syringe in case prolonged ventilation is needed; oxygen with flow meter and tubing (if available); oxygen air blender (if available); pulse oxymeter (if available); a clock with seconds hand; stethoscope for evaluation and Medications like: Epinephrine, normal saline; identification band (AIIMS, 2014)

Equipment must be cleaned and checked after each delivery and checked again before the next delivery to ensure it is ready for use. Broken equipment is dangerous and should be replaced. Equipment must be of the appropriate size. Pediatric and adult bag and masks cannot be used on newborn babies who have small and fragile lungs. The volume of the bag should not be more than 240-500 mL; it should be able to generate a pressure of at least 35 cm of water. If a mucus extractor is used the trap should be big enough (20 mL) to prevent aspirated fluid going into the resuscitator's mouth.

2.1.6. Process of immediate care for the babies who do not initiate breathing at birth

The Apgar score is one of the first checks of your new baby's health. The Apgar score is assigned in the first few minutes after birth to help identify babies that have difficulty breathing or have a problem that needs further care. The baby is checked at one minute and five minutes after birth for heart and respiratory rates, muscle tone, reflexes, and color. Each area can have a score of zero, one, or two, with 10 points as the maximum. A total score of 10 means a baby is in the best possible condition. Nearly all babies score between eight and 10, with one or two points taken off for blue hands and feet because of immature circulation. If a baby has a difficult time during delivery, this can lower the oxygen levels in the blood, which can lower the Apgar score. Apgar

scores of three or less often mean a baby needs immediate attention and care (stanford children health, 2018).

2.1.7. Intervention Initial steps

If the baby is not breathing or crying, begin initial steps of resuscitation. Provide initial care (refer to algorithm) cut cord immediately and place under radiant warmer and provide initial steps such as drying, positioning, cleaning airway as necessary (it may involve suctioning the trachea to remove meconium), and evaluate respiration and heart rate of the baby after (AIIMS, 2014).

2.2. Empirical literature

2.2.1. Readiness to deliver newborn care at delivery room

Newborn care at delivery room requires health providers that are prepared and this is referred as “newborn care readiness”. According to newborn care readiness structures include early availability and preparation of necessary infrastructure, equipment, drugs, health providers and guidelines that are needed to provide a package of care(Moxon et al., 2018).

Prior delivery, the readiness of resuscitation equipment was higher in hospitals in Tanzania and Madagascar than in health centers. The availability of resuscitation tables was 72.4%, newborn-specific bag and mask readiness 81.9%(De Graft-Johnson et al., 2017). The findings the study conducted in Madagascar shown that only 13% -57% of birth attendants at all health centers had prepared resuscitation equipment prior delivery(De Graft-Johnson et al., 2017)

A study done in six sub-Saharan African countries found that cord ties were available before delivery at 99.5% of all facilities. However, there was a big gap for towels and blankets necessary to dry and wrap newborns or cover them if placed skin-to-skin and promote thermoregulation. Only 40.5% of birth attendants of all facilities prepared those equipment prior the mother delivers(De Graft-Johnson et al., 2017).

2.2.3. Immediate newborn care at delivery room

Basic immediate newborn care are low-cost procedures that could prevent many newborn deaths around the time of birth and on the first day of life(Enweronu-Laryea *et al.*, 2015). Different studies shown that many newborn lives can be saved by the use of interventions that

require simple technology. The majority of these interventions can be effectively provided by skilled birth attendant at delivery room. According to WHO, care of all newborns at delivery room includes immediate and thorough drying, skin to skin contact of the newborn with the mother, cord clamping and cutting after the first minutes after birth, early initiation of breastfeeding, and exclusive breastfeeding. WHO, (2015). Also WHO states that Newborns who do not start breathing on their own by one minute after birth should receive positive pressure ventilation with room air by a self-inflating bag and mask.

Regarding routine newborn care, WHO, UNFPA and UNICEF, (2015) recommend that after the first hour of life, newborns should receive eye care, vitamin K, and recommended immunizations at birth. They added that a baby should be assessed for birth weight, gestational age, congenital defects and signs of newborn illness. About special care, (Bhutta et al., 2014) stated that Special care should be provided for sick newborns, those who are preterm and/or low birth weight, and those who are exposed or infected by HIV or have congenital syphilis.

2.2.4. Components of standardized immediate and routine newborn care at delivery room

The World Health Organization in 2016 has established standards of newborn care at delivery room. The main aim of those cares is to drive to measurable improvements in the quality of care around childbirth. According to WHO, (2015) early newborn care include early essential newborn care and routine newborn care. In early essential newborn care, the WHO includes birth readiness where ambu-bag, suction, resuscitation materials and emergency trolley are early prepared. Then drying baby thoroughly within soon after birth, wrapping a baby in a dry towel, delaying umbilical cutting cord, immediate skin to skin, preventing infection through keeping a baby on a clean surface, immediate skin to skin, keeping the mother and baby in delivery room and initiation of the baby on breast within 30 minutes.

Among routine newborn care, the WHO include eye care, administration of vitamin K, weighing and taking the baby's other measurements such as head, arm and chest circumference, length and also putting the name tag on the newborn baby (WHO, 2015a). In addition to that, neonatal resuscitation a set of interventions to support the establishment of breathing and circulation for babies who require assistance to breathe at birth and timely provision of resuscitation if needed is a critical to newborn survival (Enweronu-Laryea *et al.*, 2015).

2.2.5. Outcomes of immediate newborn care at delivery room

Immediate basic newborn care at delivery room can help in prevention and reduction of neonatal mortality and morbidity. According to Enweronu-Laryea et al., (2015), an estimated two-thirds of the world's 2.7 million newborn deaths could be prevented with quality care at birth and during the postnatal period. The research conducted as part of the Every Newborn Action Plan and the Every Newborn Lancet series demonstrated that two key packages of interventions could prevent the majority of neonatal deaths (Dickson *et al.*, 2014). Care given after birth could prevent more than 40 per cent of neonatal deaths due to those interventions included care by a skilled birth attendant, emergency obstetric care, immediate care for every newborn such as breastfeeding support and clean birth practices, cord care, thermal care and newborn resuscitation (Mason *et al.*, 2014).

In a randomized controlled trial study, results showed evidence that immediate skin to skin contact at delivery room promote good newborn breastfeeding (Moore *et al.*, 2016). In addition, delayed cord clamping at birth has shown to benefit neonates with increased placental transfusion leading to higher haemoglobin concentrations, additional iron stores and less anaemia later in infancy, higher red blood cell flow to vital organs and better cardiopulmonary adaptation. In a randomized controlled trial study done in Nepal, results showed delayed umbilical cord clamping reduced anaemia in newborn. In addition, it was found that newborn whose delayed umbilical cord clamping was done, cardiopulmonary adaptation was better than those with early umbilical cord clamping (Ashish *et al.*, 2016).

The proportion of deliveries in health institutions increases in low- and middle-income countries, thus do the challenges of maintaining standards of hygiene and preventing healthcare-associated infections (HCAIs) in mothers and babies (Cross *et al.*, 2016). Therefore, cleanliness is very essential in prevention of neonatal infection. However, a study done in Bangladesh and India, infection control were done in only 38.1% and in all deliveries medical waste management was done between 73.9% to 87.0% and infection control related standard infrastructures and equipment were done in 55.9% deliveries (Cross *et al.*, 2016). Hypothermia incurred during routine postnatal care at delivery room is a world-wide issue with associated

morbidity and mortality(McCall *et al.*, 2018).Various studies showed that skin-to-skin care is effective in reducing the risk of hypothermia when compared to conventional incubator care.

Furthermore keeping mothers and babies together is a safe and healthy birth practice. Various evidences support immediate, uninterrupted skin-to-skin care after vaginal birth and during and after caesarean surgery for all stable mothers and babies, regardless of feeding preference. A study done found association between keeping the baby with the mother together at delivery room and newborn breastfeeding(Crenshaw, 2014). Separating infants from their mothers after birth may reduce the frequency of breastfeeding and hence the amount of breast milk a mother produces.

Whereas, infants staying together with the mother throughout their hospital stay would have more frequent suckling of the breast and thus promote closeness and bonding(Romano and Carter, 2014). In Viet Nam showed significant reduction in risk of NICU admissions at level of 71%, hypothermia on NICU admission 72% and sepsis 28%. Moreover, exclusive breastfeeding rates in NICU increased from 49% to 88% and of kangaroo mother care (KMC) from 52% to 67%(Tran *et al.*, 2018). Early routine newborn care is associated with reduced adverse neonatal outcomes. A study done Finally, according to Romano and Carter, (2014) ,separate care might allow the mother to rest and reduce stress, which also might improve milk production

2.2.6. Gaps in immediate and routine care given to the newborn at delivery room

Studies done in Viet Nam and Asia shown that the risk of newborn morbidity and mortality were increased by the use of outdate and harmful clinical practices done by health works during and after delivery (Tran et al., 2018). A study done in Ghana found that of the 418 newborns, only 36.8% (154) was judged to have had safe cord care, 34.9% (146) optimal thermal care, and 73.7% (308) were initiated to the breast within the first hour after birth(Saaka, Ali and Vuu, 2018). Skilled care at birth and postnatal check-ups are essential to the well-being of both mother and newborn.

Quality skilled care at birth would ensure that the newborn receives essential newborn care including thermal and cord care, and immediate breastfeeding. It also increases access to emergency care in the event of life-threatening complications. A newborn who is not breathing at birth will die within minutes if not properly cared for. However, globally, in 2016

more than one in five births were not delivered by a skilled health personnel (22 per cent). This proportion increased about half of all births in least developed countries. Newborns are most vulnerable during the first hours and days of life, yet this critical window is being missed. Data indicate that in least developed countries, only about half (54 per cent) of newborns are weighed at birth and a similar proportion (53 per cent) initiate breastfeeding immediately after birth (Souza *et al.*, 2014). Moreover according to (De Graft-Johnson *et al.*, 2017), globally only 59 per cent of mothers and only one in three newborns (34 per cent) received a post-natal health check within the recommended time period.

2.3. Research gap identification and Critical review

Different authors conducted various studies that focused on the essential newborn care such as bathing baby, delayed cord clamping not discussed in deep on outcome of immediate newborn care of immediate newborn care in general, from health care providers was used and care provided by mothers and related outcomes literature was excluded. The authors' not associated data demographic characteristics with the immediate outcome the researcher not found any study which talk about it even they could affect the newborn outcome.

Very limited current researches in Rwanda are available.

2.4. Conceptual framework

In this study, the researcher was use caring theory. It is a theory that was developed by Jean Watson. In that theory, by actively engaging in caring through authentic presence and intentionality, the nurse is able to optimize her patient's ability to heal from within (Watson, 2016). In addition, Watson's theory of human caring focuses on holistic care and the authentic relationship between caregivers and patients. Watson's theory major elements include transpersonal caring relationship, carative factors, and caring occasions or movements. Based on major concepts of 4 metaparadigms (Nurse, human being, health, environment) from Watson's theory, a conceptual framework will be built.

According to Watson, (2016) caring theory is focused on "the centrality of human *caring* and on the *caring-to-caring* transpersonal relationship and its healing potential for both the one who is *caring* and the one who is being cared for"

Watson's theory of human caring describes caring as the foundation of nursing and the nurse as the conduit of caring. Creating a good and safe healing environment and providing human basic needs are among 10 vital carative factors from Watson(Cara, 2018).

Watson's model is made of seven assumptions including (1) Caring can be effectively demonstrated and practiced only interpersonally. (2) Caring consists of carative factors that result in the satisfaction of certain human needs. (3) Effective caring promotes health and individual or family growth. (4) Caring responses accept the patient as he or she is now, as well as what he or she may become. (5) A caring environment is one that offers the development of potential while allowing the patient to choose the best action for him or herself at a given point in time. (6) A science of caring is complementary to the science of curing. (7) The practice of caring is central to nursing.

Watson, (2016) stated that "society" provides the values that determine how one should behave and what goals one should strive toward. Watson added that "human being" is a person to be valued, he needs care, must be respected, nurtured, assisted, and understood; in general a philosophical view of a person as a fully functional integrated self. Watson defined "health" is the harmony and unity within the mind, soul and body, health is related with the degree of equivalence between the self as experienced and the self as perceived. It is defined as an indicator of physical, mental, and social wellbeing; a general adaptive-maintenance level of daily functioning; and the absence of disease, or the presence of efforts leading to the absence of disease. On Watson's side, "nursing" is a human science of persons and human health-illness experiences that are mediated by professional, personal, scientific, esthetic, and ethical human care transactions.

The caring model was used to assess nurses' physical caring behaviors in the maternity of Alexandria Hospital and it was realized that the model helped to improve the caring experience among nurses working in labor and delivery rooms(Rogers and Fahimi, 2010).

The theory of Human Caring model was the theory of Watson used in the neonatal intensive care unit (NICU) at St. Joseph’s Regional Medical Center in Paterson, New Jersey. In the end, it was found that it helped in improved neonates outcomes and supported quality nursing care in NICU(Faber, 2013)

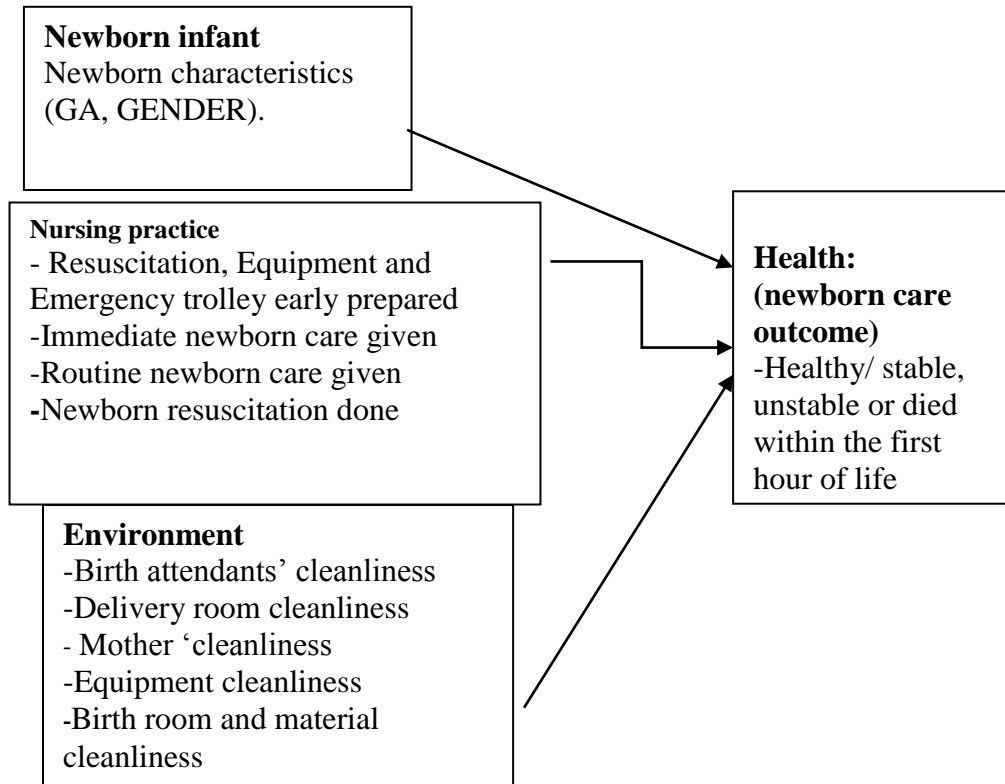


Figure 1. Conceptual framework adapted from Watson’s caring theory (Watson, 2016).

2.6 .Study variables

Independent variables for this study will be standardized immediate and routine newborn care.

Dependent variables will be immediate outcome of newborn care.

2.7. Conclusion

The literature of this study will concentrate on immediate newborn care and routine newborn care provided to newborn babies in delivery room.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0. Introduction

Research methodology is described by means of Polit and Beck (2014) as a systematic investigation that improves expertise on the necessary problems for giving profession, looking at all its aspects. This chapter gives image of research design and approach, target population, sample size and sampling strategy, data collection procedures and instruments used, data analysis method and ethical consideration of ethical issues, and management of data, dissemination of data, limitation and challenges that the researcher faced.

3.1. Research design

Research designs are types of inquiry within quantitative, qualitative and mixed methods approaches that provide specific direction of procedures in a research design (Creswell 2014). A design use to be nicely equipped in quantitative lookup with close manipulate over extraneous variables (Polit and Beck, 2014, p.65). This study used an observational, descriptive cross-sectional design because every participant was observed once during the period of the study. The reason of choosing observational method is that direct observations of labor and delivery care are considered the gold standard in low-income and middle-income settings and more reliable than chart reviews, provider interviews or client exit interviews for assessing provided care(De Graft-Johnson et al., 2017).

3.2. Research approach

The research approach was in nature Grove and colleagues' (2013, p.23) are plans and describe quantitative research as a formal objective, systematic technique by way of which numerical information are processed to get new data about the world. Procedures of research that span the steps from broad assumptions to detailed methods of data collection, analysis and interpretation. (Creswell et al., 2014).

This study used the quantitative research approach. From this, obtained data was translated into statistical data.

3.3. Research setting

Research setting is generally defined as the site where the research will be conducted. Research settings can be in various forms: health care facilities, individuals' homes, classrooms, etc. It's

selected basing on the research question and needed information to answer it. (Polit and Beck, 2014, p28).

This study took area in gyneco-obstetrical ward in the delivery room at Kabgayi District Hospital located in Rwanda, Southern Province, Muhanga District, Nyamabuye Sector and Gahogo Cell, Kamazuru Village. This health facility was built in 1930 as the property of the Catholic Church represented by Monsignor Classes and officially inaugurated on 9th September 1937. This is a first referral district hospital for sixteen health centers and for general and obstetric cases. Maternity is one of the department of Kabgayi District Hospital with a capacity of 40 beds and 5 tables of deliveries.. The bed capacity for the hospital increased and now the hospital has 480 beds in total. It has a total of 308 staffs including nurses, midwives, doctors, technicians and administrative staff. Kabgayi district hospital has been chosen because it is easy to access it considering time management and financial and resources limited.

3.4. Population

A population is an entire group of individuals, substance or objects that meet inclusion criteria set by the researcher (Grove and Gray, 2013, p. 44); Population refers to the total set of individuals who meet the sampling criteria (Burns & Grove, 2009:343-344).

This study was done on newborns who were born within the period of data collection and only inborn (born at the site) were counted.

The populace is a whole group of individuals, substance or objects that meet inclusion criteria set through the researcher (Grove and Gray, 2013, p. 44); Population refers to the complete set of individuals who meet the sampling standards (Burns & Grove, 2009:343-344). Thus the target population of this study was newborns born by spontaneous vaginal delivery in the study site which is Kabgayi District Hospital. The accessible population was the 4 deliveries room's pregnant women who were on third stage of labor at the time of observation.

3.5. Sampling criteria

Sampling criteria refers to the criteria for selection of the population that has the required characteristics for the phenomenon under study (Burns & Grove, 2009, p.344); The sampling approaches in quantitative research refer to the technique of deciding on an element of the populace of interest for representation in order to draw inferences and conclusion (Polit and Beck,2014,p.307);

3.5.1. Inclusion criteria

Inclusion criteria are defined as the conditions that specify the under-study population characteristics (Polit& Beck, 2014, p290).

Inclusion criteria of this study were being born only by spontaneous vaginal delivery and when the researcher was present in delivery room.

3.5.2. Exclusion criteria

Exclusion criteria are those characteristics that the study population has not to possess (Polit& Beck, 2014, p290). In this study the exclusion was being born out of delivery room or who born before researcher arrival in delivery room.

3.6. Sampling

A sample is a portion of the population selected to be representative for the whole population under study; then a sample can be considered as a subset of population individuals or elements (Polit& Beck, 2014, p291). Larger group of population is represented by a small group of case which is called sample size. This section discusses the sampling strategy with inclusion and exclusion criteria; and sample size that will be used in this study.

3.6.1. Sample size

This study has used the formula of Taro Yamane (1967) to calculate the sample size of newborns for representing all newborns delivered in labor ward in the selected district hospital of Rwanda.

According to recent recorded number of deliveries in maternity registry in last six months, the average is 300 spontaneous vaginal deliveries (SVD) each month. Thus the sample size equals

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

to: $300:1.75=171$

Where:

n=sample size

N=population

e=error=0.05

The sample size for this study was 171 newborns/deliveries within 1 months of data collection. Here, the researcher was attended 171 deliveries.

Taro Yamane formula was used to calculate the sample size.

3.6.2. Sampling strategy

A sampling strategy is the system of taking a defined and quantified proportion of a large populace of target gadgets as being consultant of the population as a whole (Berinsky,2008). The sampling strategy in this study was convenient. The study was explained to staff one month before and invited to participate during observations while conducting the labor, details about the study were explained after the morning meeting and the mothers were asked the verbal consent,. midwives who agreed to participate signed the informed consent before data collection From this, the researcher was take a time to go in labor room to see if there are no women are at the second stage of labor, then, whoever seen at first and meeting inclusion criteria was taken as the study participant.

3.7. Measures

The checklist for the current study was adopted from the checklist on essential newborn care of WHO, 2015, and adapted to the Rwandan context and to the protocol of Ministry of Health. Same items were added by the investigator. Following modification were made to the tool such birth attended prepared, Apgar score evaluated and documented without evaluated. Also more possibilities on immediate outcome of newborn care such us stable newborn, newborn died, instability newborn (mild respiratory distress, severe distress, hypothermia, congenital malformation, preterm low birth weight) and decision taken such us newborn monitored in delivery room, with the mother in post-partum, referred in neonatology or to referral hospital. The checklist consisted of 50 items and included the following:

Section A: Demographic characteristics (5 items) (Gestation age, gender, mode of delivery, time of birth, time of first crying).

Section B: Readiness for newborn care (4 items), emergency trolley; section + resuscitation materials; and birth attendant preparation prior to birth).Scoring: Yes or Not

Section C: Immediate care (16 items) (SSC ; APGAR evaluated; APGAR documented without evaluation newborn dried; wet clothe removed; newborn wrapped; kept warm; mouth and nose

cleared; newborn resuscitated; unnecessary suction, newborn resuscitated in minute, breathing checked, delay cord clamp and breastfeeding within 15-30 min; 45-60 min, within 60 minutes; beyond 60 min (16 items). Scoring: Yes or Not

Section D: Routine care and routine care to prevent infection (12 items) (physical assessment; measurement of HC; HT; CC; administration of Vitamin K; eye care; clothed newborn ;newborn identification ; birth environment clean; newborn kept in clean surface; instruments kept clean and sterile; changing gloves before cutting cord). Scoring: Yes or No

Section E: Immediate newborn care outcome (3 items) (stable; unstable and demise).

Scoring: Yes or No

Section E: Outcome variables of unstable newborn (7 items) (mild respiratory distress; severe RD; hypothermia; congenital malformation; birth tracing abnormal; preterm; LBW).

Scoring Yes or No

Section F: Intervention done based on outcome of newborn condition (4 items) (newborn monitored in labor ward; with the mother in PP; referred to neonatology; transferred at referral Hospital (4 items). Scoring: Yes or No

3.8. Validity & Reliability

Validity is the way the instrument measures the concept that is invented to appraise (Polit and Beck, 2010). In this study for the validity, only the checklist's content was focused based on the purpose and objectives of the study. Items that was used in the checklist are from WHO newborn care protocol (WHO, 2015a).

Therefore this WHO checklist is already approved and validated. For the reliability, in this study a whole description of the design, methodology, a manage and recheck of tool variables and accompanying literature control to hold clarity was used. After getting the research approval from the University of Rwanda and hospitals Research Committees, a pre-test study was conducted to identify any obstacles or constraints in conducting the study. Once study feasibility is found, the researcher was at hospitals either on day or night duty shift hours during the period of data collection.

3.8.1 Face validity

Face validity is a type of content material validity that uses an expert's opinion to decide the accuracy of an instrument (Polit & Beck, 2010). In this study, after the development of the instrument, it has been given to the expert to judge its accuracy. For this study, the content and construct validity have been ensured by categorizing items of the tool according to the research objectives, literature review and theoretical framework.

Internal validity

Internal validity is the degree to which the results can be attributed to the independent or predictor variables. (Polit & Beck, 2004). The assessment of internal validity was controlled by avoiding the use of confusing and complicated words in data collection tool.

The validity of research instrument

Validity of a research tool is referred to as the degree to which a tool really measures what it is supposed to measure (Polit & Beck 2014, p. 205). For the content validity, the researcher gave the developed tool to the student midwife level 3 in the field of labor ward for testing if the content of the tool was valid and if it would produce the consistent relevant results.

Construct validity

Construct validity testing is the method that the researcher can use to determine the ability of an instrument actually to measure the research concepts or constructs. (Polit & Beck, 2004). In this study, the researcher checked the agreement between the theoretical concept of the study and the designed measuring device (instrument).

3.8.2 Reliability of the instrument

The reliability refers to the consistence which it measures the target attribute (Polit and Beck, 2014, p.416). For the reliability testing, the researcher conducted a pilot study at a selected district hospital among 10 newborns in delivery room to pre-test the instrument. After that, the researcher gave the same tool to one of the student who are in internship in maternity ward unit for testing if that tool would provide the same results as these found from first pilot study. The consistency of the tool has been used to test the reliability. Consistency of a measure is when same scale used by 2 data collectors or in 2 settings would yield the same results.

The Cornbrach's alpha which is the most common approach to estimating internal consistency, is based on the inter-correlation or co-variance of all the items in a scale examined simultaneously, where alpha varies from 1 to 0, with 1 denoting perfect internal consistency and no internal

consistency. For this study the Cronbach's alpha has not been used to determine the internal consistence because Cronbrach's Alpha is strongly recommended when using Likert-type scales, but there is no clear consensus about its usefulness with binary data. I have a questionnaire with 50 items and binary data.

3.8.1. Data Collection Instruments

Data collection instrument are equipment used to gather information for an evaluation, including serves, questionnaire, interview, test, instrument, attendance record and case logs (Corlien, 2003). The instrument that was utilized for this study is a newborn care checklist. This tool was adapted from WHO newborn care protocol(WHO, 2015a).

3.8.2. Data collection procedure

The researcher assistant was trained before to collect data. She was trained she was given briefing of keeping the questionnaire herself because it is the checklist for the observation, and confidentiality.

Data collection is an activity of collection information from the subject with an objective to Capt. Information, to maintain on record, to take decisions about main issues and share information with others (Marketing Dictionary 2009).

With permission to start collecting data in maternity delivery room from matron, the researcher was establish good relationship with birth attendant (midwives /doctors) through self-introduction to gain trust and create a warm and accepting atmosphere. After that, the research was get a signed consent from the birth attendant before starting observation. Then after, the verbal consent was sought from laboring client. After that, the researcher was attended and observe care given to the newborn at delivery room. With a prepared and printed checklist, the researcher was tick what every and each item according to what care the newborn received. To avoid Hawthorne effect, the researcher created the relationship with the attendants but the checklist items will not presented to them. Also, no other information was given regarding observation components apart from "newborn care provided".

3.9. Data analysis

Data analysis is a process which includes ways of working with information(data) to support the work, goals and plans of your program or agency.(AED/TAC-12 Spring 2006)

SPSS version 21 was used to analyze data, data was analyzed by descriptive and inferential statistics, and chi-square test and multivariate analysis were carried out to assess the association between independent variables and the outcome of immediate newborn care. The power of relationship between variables was determined by setting 95% of the confidence interval and the probability of less than 0.05 was made as statistically significant. The data were presented in tables and in figures.

3.10. Ethical considerations

When in research humans being were used as study participants the researcher must ensure that human rights are respected (Pilot and Beck, 2008, p.141). Grove and colleagues suggest that a research that is conducted ethically must keep rights of their participants; signed informed consent should be signed by the participants before to collect data. In this study the participants' right was respected, the importance of participating in this study was explained to the participants before; participation in this study was volunteer and they were assured that the access to participant's data was reserved and managed by the researcher and her assistant.

IRB of University of Rwanda provided permission letter to the researcher for conducting this study and then the approval letter from Kabgayi District Hospitals administration and research committees was given. Before data collection, the purpose of the study was clearly explained to the birth attendant (midwife/doctor) and the delivering mother was asked the permission through verbal informed consent. Also, the nature of participation expected, how the results will be used and published, as well as the manner in which confidentiality and privacy was be ensured. The birth attendant was indicated that accepting the researcher to observe care provided to newborns is voluntary and that even after agreeing the researcher to observe both attendants and the client may decide to terminate the agreement and no coercion was exercised. Confidentiality and anonymity was guaranteed and maintained during and after the period of the study. In order to assure the participant anonymity, only a code number was written on the study checklist tool.

3.11. Data management

Data collected was well reviewed before to enter it in computer and then after researcher recorded the data as required and protect it with a password. Data on the report was destroyed after five years. Results from this research were disclosure to the supervisor, the directorate of

postgraduate studies at UR-CMHS with a copy to the school of nursing and midwifery. The findings of this study will be published in one of scientific journal.

3.12. Data Dissemination

The results from this study was presented to the University of Rwanda, Kabgayi District Hospital and in different workshops, national /international conferences and seminars. Hence, a copy of this study will be deposited in the library.

3.13. Limitations and challenges

The purpose of this study was accomplished. The below items describe limitations and constrains faced during this study.

Findings from this study cannot be generalized due to that the sample size is small, it was conducted at only one district hospital and no randomization was used.

The researcher was hoping to observe caesarian section but there was a problem with insufficient scrubs.

3.14. Conclusion to chapter three

This chapter talked about the research methodology which was used; It given the image regarding the study, the sampling method and data collection procedure, it shown the vailidity and reliability of the used tool in data collection, lastly shown how ethical consideration was implicated in data management and data sclodure. The purpose of this study was the assessment of immediate newborn care and associated outcomes by direct observation in delivery room at a selected district hospital in Rwanda. A checklist tool was used to collect data. The study population was involved only newborns and not mothers.

CHAPTER FOUR: PRESENTATION OF RESULTS

4.1 INTRODUCTION

This chapter gives image of the research results. The findings from this study are designed to respond to the research questions by starting from socio-demographic characteristics of participants.

The results are presented in eight following sections: Section 1: Socio-demographic characteristics; Section 2: Readiness to deliver immediate and routine newborn care at delivery room; Section3: Standardized and routine care given to the newborn at delivery room; Section 4: Immediate outcome from immediate newborn care; Section 5: Newborn condition at birth; Section 6: Outcome variables following intervention ; Section 7: Association between immediate cares provided to newborn and immediate outcome; Section 8: Multinomial Logistic Regression Model for reflecting the outcome.

Tables and figures were used to present all research findings from this study and frequencies and percentages are used for interpretation.

4.1. Socio- Demographic characteristics

According to the table 4.1. There were large number 160 (93.6%) is term; female are presented in great proportion 112 (65.5%); concerning vaginal delivery the totality171 (100.0%) was SVD (spontaneous vaginal delivery); time of delivery was asked in this study, over half 95 (55.6%) was AM (Ante meridiem: before noon). A large proportion 113 (66.1%) reported that the first crying was <5 minutes.

Table 4.1: Socio-demographic characteristics of participants

Variables	Frequency (n %)	Percent (%)
Gestation age		
Preterm	11 (6.4%)	6.4
Term	160 (93.6%)	93.6
Gender		
Male	59 (34.5%)	34.5
Female	111 (65.5%)	65.5
Mode of delivery		
SVD	171 (100%)	100.0
DVD	0	
Time of delivery	95 (55.6%)	55.6
AM	76 (44.4%)	44.4
PM		
First crying	113 (66.1%)	66.1
< 5min	58 (33.9%)	33.9
>5 min		

4.2. Readiness and availability of materials to deliver immediate newborn care at delivery room

Resuscitation equipment was assessed and the results showed that nearly all 155 (90.6%); the emergency trolley was not available in nearly all 166 (97.1%) and not prepared before birth; The suction and resuscitation materials were not available and prepared before birth in 155 (90.6%) cases. However only half of birth attendant had done physical preparation 94 (55.0%) before birth.

Table 4.2: Readiness and availability of materials to deliver immediate newborn care at delivery room

Availability of materials and prepared birth attendant to deliver immediate newborn care at delivery room	Yes n (%)	No n(%)
Delivery pack	155 (90.6)	16 (9.4)
Emergency trolley	5 (2.9)	166 (97.1)
Suction and resuscitation materials	16 (9.4)	155 (90.6)
Birth attendant had done physical preparation	94 (55.0)	77 (45.0)

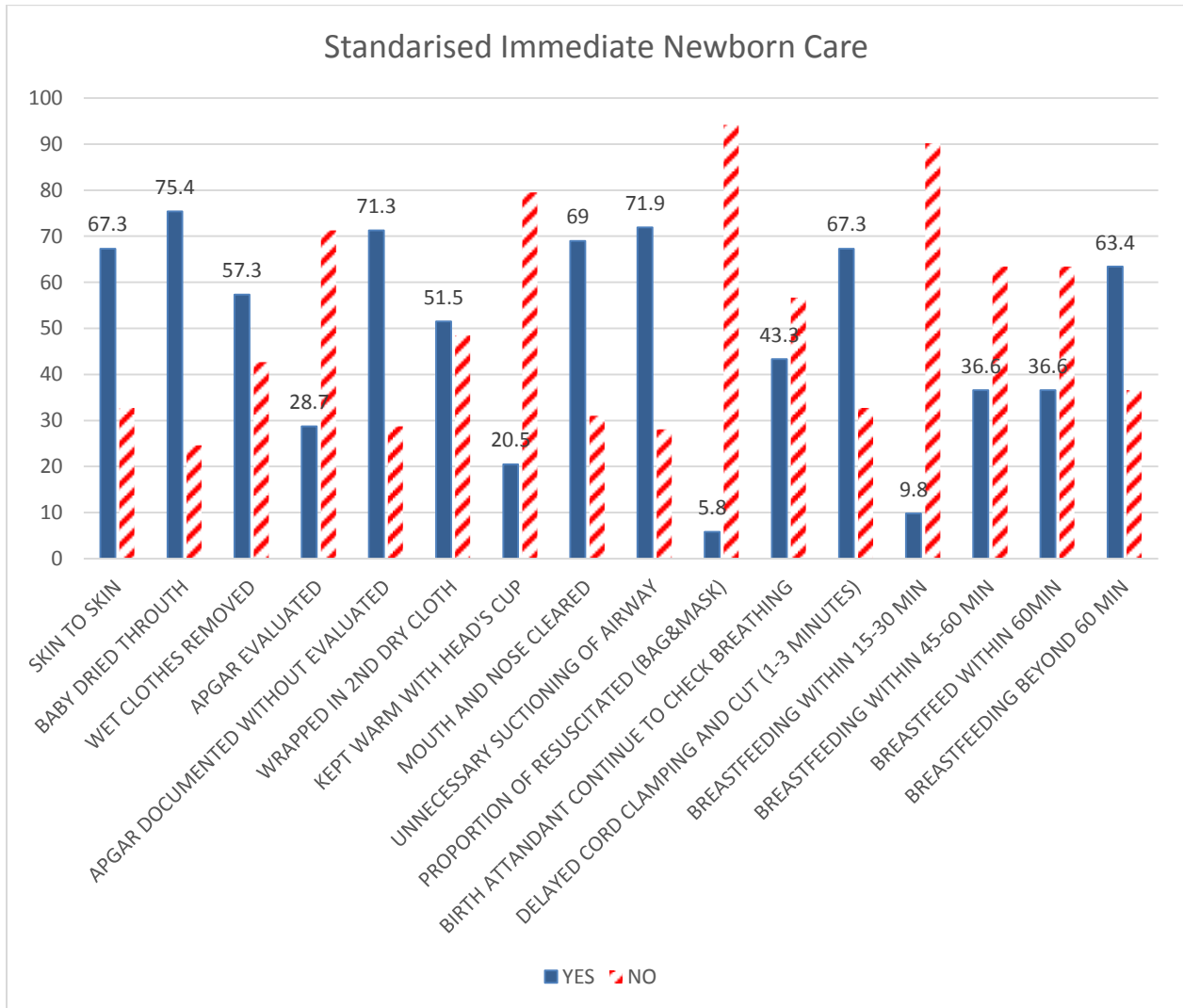
4.2. Standardized immediate and routine care given to the newborn at delivery room

4.2.1: Standardized immediate care given to the newborn at delivery room

The APGAR documented without evaluated was 122 (71.3%); newborn dried thoroughly with

129 (75.4%); newborns not kept warm with head's cap 136 (79.5%) ; Airway cleared unnecessary suctioning was 123 (71.9%)cases; Breastfeeding within 15-30 minutes was 154 (90.1%); Breastfeeding within 45-60 minutes was 155 (90.4%).

Figure 4.2: Standardized immediate newborn care given to the newborn at delivery room



4. 2.2. Routine care of newborn

Table 4.2.1 shows that weight check was 108 (63.2%); physical assessment was 103 (60.2%), head and chest circumference, and length measurements was not performed in 96 (56.1%); administration of Vitamin K was 89 (52.0%), eye care tetracycline was 138 (80.7%), and newborn clothed was 102 (59.6). However, a limited number of newborns received identification was 2 (1.2%).

Table 4.3: Routine care of newborn

Routine Newborn Care	Yes n (%)	No n (%)
Physical assessment	103 (60.2)	68 (39.8)
Weight	108 (63.2)	63 (36.8)
Other measurements (HC, CC, Length)	75 (43.9)	96 (56.1)
Administration of Vitamin K	89 (52.0)	82 (48.0)
Eye care (tetracycline 9%)	138 (80.7)	33 (19.3)
newborn clothed	102 (59.6)	69 (40.4)
Newborn identification	2 (1.2)	169 (98.8)

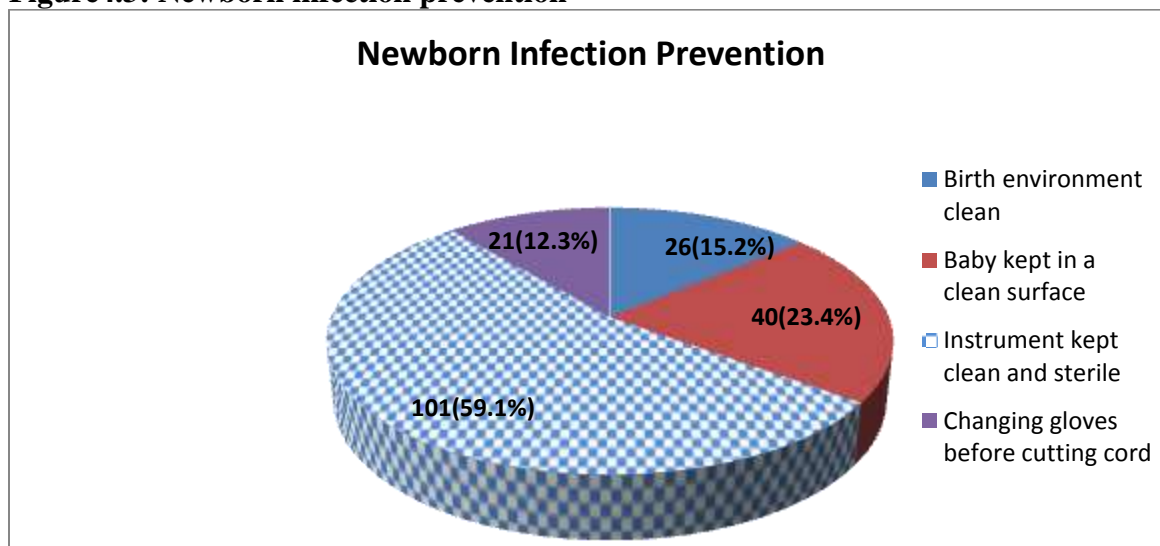
4.2.3 Newborn infection prevention

Newborn infection prevention results are displayed in figure 4.2.3

Measures to prevent new born infection were assessed and the majority instruments of delivery room had that were clean and sterile 40 (23.4%) of newborns were kept in a clean surface.

A limited number had a clean birth environment 26 (15.2%), and HCPs changed gloves before cutting cord was 21 (12.3%).

Figure4.3: Newborn infection prevention

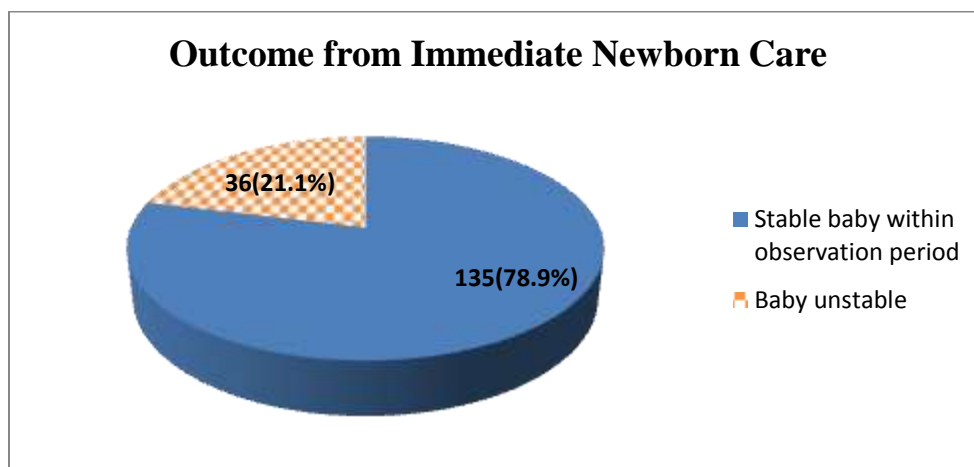


4.3: The immediate outcome of immediate newborn care

The immediate outcome from immediate newborn care is displayed in figure 4.3

The majority were stable within the observational period. However nearly quarters were unstable during the first hour after birth. There was no newborn demise.

Figure 4.5. The immediate outcome of immediate newborn care

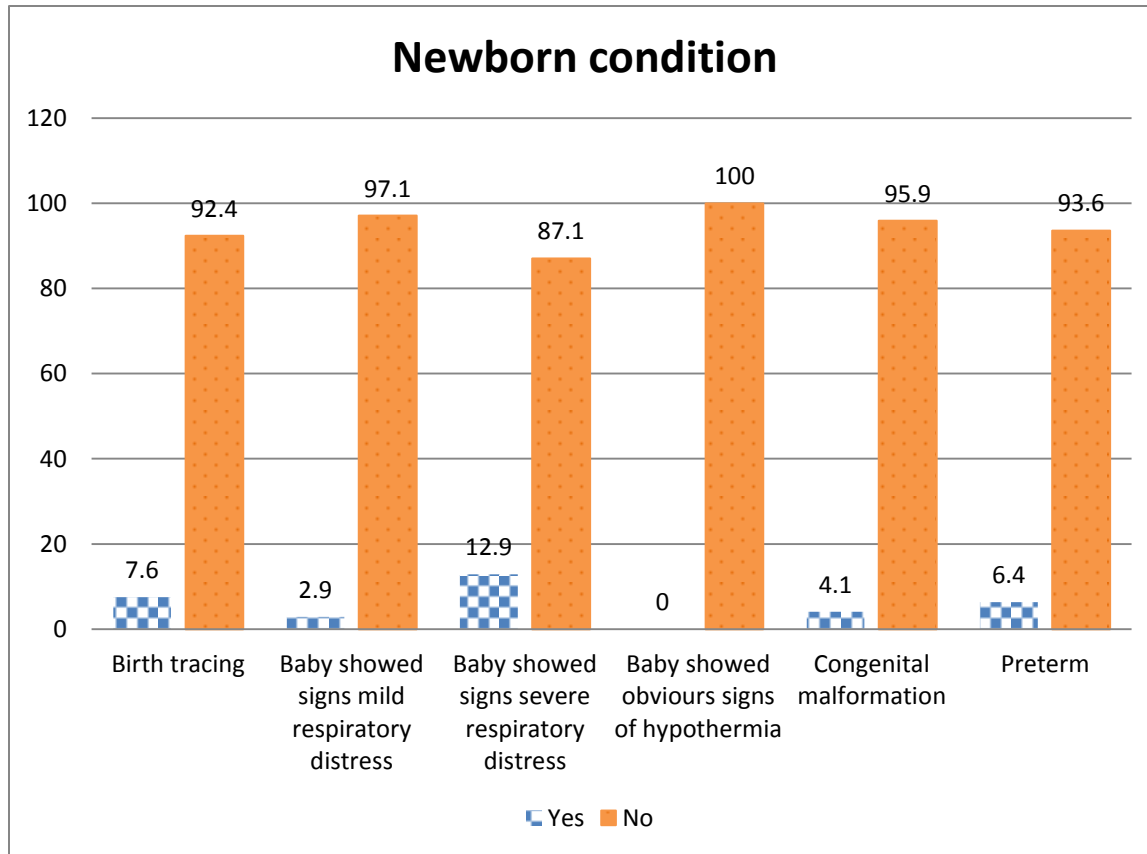


4.4: Reason of instability

The results for instability of the newborn at birth are displayed in figure 4.4.

13 (7.6%) of newborn showed signs of mild respiratory distress; obvious signs of hypothermia were present in 22 (12.9%); low birth weight was 22 (12, 9%); others that were less frequent included preterm 11 (6.4%), severe respiratory distress was 5 (2.9%), and there appeared to be none with congenital malformation.

Figure 4.6: Reason of instability

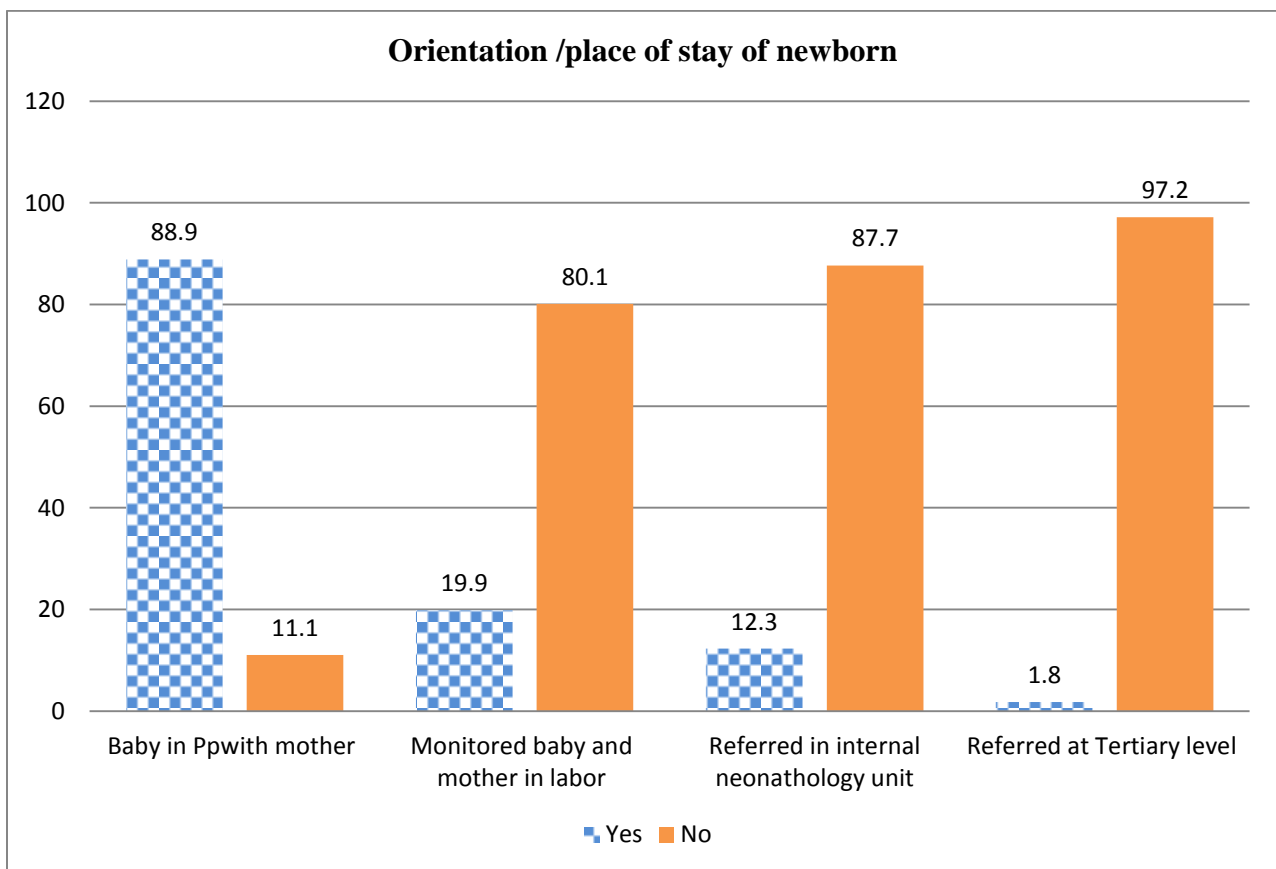


4.5: Orientation/place of stay of newborn

The results of the outcome variables following intervention are displayed in figure 4.5.

Among intervention done 152 (88.9%) of newborns and mothers together were referred in post-partum, among them 34 (19.9%) of newborns were monitored in labor, of them 21 (12.3%) were referred in Neonatology, and 3 (1.8%) referred a referral hospital.

Figure 4.7: Orientation/place of stay of newborn



4. 6. Association between immediate care provided to newborn and immediate outcome

The association between immediate care provided to newborn and immediate outcome was carried out, and the results showed that Suction and resuscitation materials available and prepared before birth ($p=0.025$), birth attendant physical preparation ($p< 0.001$), For the immediate newborn care the statistically significant results were baby dried thoroughly ($p=0.007$), wet clothes removed ($p=0.026$); mouth and nose cleared if meconium ($p=0.002$); airway cleared unnecessary suctioning ($p<0.001$), birth attendant continue to check breathing ($p=0.001$); Breastfeeding within 15-30 min ($p=0.034$), within 45-60 min($p=0.025$) and within 60 minutes($p=0.006$). Other variables were not statistically significant including kit available before birth($p=0.554$); emergency available and prepared ($p=0.7171$); skin to skin contact ($p=0.232$); APGAR score evaluated ($p=0.548$);APGAR documented without evaluated ($p=0.537$);newborn wrapped in 2nd dry cloth (0.350); head cap ($p=0.087$);newborn resuscitated on time ($p=0.647$); cord clamping ($p=0.628$); breastfeeding beyond 60 minutes (0.128) ($P=>0.05$)

Table 4.4. Association between immediate cares provided to newborn and immediate outcome

Immediate care	Immediate outcome		Chi-square value	Degree of freedom	P value
	Stable baby n (%)	Unstable baby n (%)			
ENC and newborn resuscitation equipment availability					
Kit available and prepared before birth	13 (81.3)	3 (18.8)	1.000	1	0.554
No	122 (78.7)	33 (21.3)			
Yes					
Emergency trolley available and prepared before birth	131(78.9)	35 (21.1)	1.000	1	0.7171
No	4 (80.0)	1 (20.0)			
Yes					
Suction and resuscitation materials available and prepared before birth	119 (76.8)	36 (23.2)	4.707	1	0.025*
No	16 (100.0)	0 (0.0)			
Yes					
Birth attendant prepared (physical preparation)	71 (92.2)	6 (7.8)	14.819	1	<0.001*
No	64 (68.1)	30 (31.9)			
Yes					
Immediate newborn care					
Skin to skin contact immediately	41 (73.2)	15 (26.8)	1.647	1	0.232
No	94 (81.7)	21 (18.3)			
Yes					
APGAR score evaluated	94 (77.7)	27 (22.3)			
No	41 (82.0)	9 (18.0)	0.396	1	0.548
Yes					
APGAR documented without evaluated	39 (79.6)	10 (20.4)			
No	96 (78.7)	26 (21.3)	0.017	1	0.537
Yes					
Baby dried thoroughly	39 (92.9)	3 (7.1)	6.481		0.007*
No	96 (74.4)	33 (25.6)		1	
Yes					
Wet clothes removed	52 (71.2)	21 (28.8)	4.561		0.026*
No	83 (84.7)	15 (15.3)		1	
Yes					
Baby wrapped in 2nd dry cloth	64 (77.1)	19 (22.9)	0.328		0.350
No	71 (80.7)	17 (19.3)		1	
Yes					
Baby kept warm with head's cup	104 (76.5)	32 (23.5)	2.452		0.087
No	31 (88.6)	4 (11.4)		1	
Yes					
Month and nose cleared if meconium	49 (92.5)	4 (7.5)	8.429	1	0.002*
No					
Yes					

Association between immediate cares provided to newborn and immediate outcome (Cont.)

Airway cleared unnecessary suctioning	86 (72.9)	32 (27.1)	11.448	1	
No	46 (95.8)	2 (4.2)			<0.001*
Yes					
Baby resuscitated earlier on time	89 (72.4)	34 (27.6)	0.007	1	
No	127 (78.9)	34 (21.1)			0.647
Yes					
Birth attendant continue to check breathing	8 (80.05)	2 (20.0)			
No			10.164	1	
No					
Delayed cord clamping and cut (1-3 Minutes)	85 (87.6)	12 (12.4)			0.001*
No	50 (67.6)	24 (32.4)			
Yes					
Breastfeeding within 60 minutes			0.234	1	
No	43 (76.8)	13 (23.3)			0.628
Yes					
Breastfeeding within 15-30 minutes	92 (80.0)	23 (20.0)	7.454	1	
No	75 (72.1)	29 (27.9)			0.006*
Yes	60 (89.6)	7 (10.4)			
Breastfeeding within 45-60 minutes			4.385	1	
No	120 (76.9)	36 (23.1)			0.034*
Yes	15 (100)	0 (0.0)	5.034	1	
Breastfeeding beyond 60 minutes	118 (76.6)	36 (23.4)			0.025
No	17 (100)	0 (0.0)	1.764	1	
Yes	84 (82.4)	18 (17.6)			0.128

4 7: Multinomial Logistic Regression Model for reflecting the outcome

Multinomial logistic regression model was carried out and the results showed that when suction and resuscitation materials were available the babies were stabilized more than three compared to cases in which suction and resuscitation materials were not available (OR=3.222 ,95% CI= 1.324-7.655 ,P-value 0.032) .When Birth attendant was prepared (physical preparation) the babies were more than one time more likely to be stabilized compared to cases in which it was not prepared (OR=1.265 ,95% CI=0.921-3.870,P. value= 0.029. When mouth and nose were cleared if meconium present stabilized the baby eleven times compared to cases in which mouth and nose was not cleared if meconium (OR=10.965, 95% CI=2.154-25.830, P.value0.004).

Table 4.5: Multinomial Logistic Regression Model for reflecting the outcome

Outcome		OR	95%
CI	P- value		
Unstable baby			
Suction and resuscitation materials available=1	3.222	1.324-7.655	0.032
Suction and resuscitation materials available=0			
Birth attendant prepared (physical preparation)=1	1.265	0.921-3.870	0.029
Birth attendant prepared (physical preparation)=0			
Baby dried thoroughly=1	1.288	0.891-2.122	0.069
Baby dried thoroughly=0			
Wet clothes removed=1	1.3925	1.054-35.830	0.304
Wet clothes removed=0			
Month and nose cleared if meconium=1	10.965	2.154-25.830	0.004
Month and nose cleared if meconium=0			
Airway cleared unnecessary suctioning=1	1.452	1.077-4.644	0.062
Airway cleared unnecessary suctioning=0			
Attendant continue to check breathing =1	1.203	0.965-2.435	0.099
Attendant continue to check breathing=0			
Breastfeeding within 60 minutes-=1	0.975	0.432-2.338	0.086
Breastfeeding within 60 minutes-=0			
Breastfeeding within 15-30 minutes=1	1.143	0.876-2.452	0.063
Breastfeeding within 15-30 minutes=0			
Breastfeeding within 45-60 minutes=1	1.562	1.032-3.42	0.074
Breastfeeding within 45-60 minutes=0			

Reference category: Stable newborn

CHAPTER FIVE: DISCUSSION

5.0 Introduction

The purpose of this study is to discuss findings with study objectives. The findings of this study were compared with the other researchers' findings to exchange observations of authors on the objectives. This chapter discusses the implications of data collected and reported in chapter four; their significance was identified in relationship with literature.

5. 1. Demographic characteristics of participants

In this study the majority of participants were the female (65.5%); term (93.6%); SVD (100%) similar to study conducted on improving immediate newborn care practices in Philippine hospitals

(Silvestre *et al.*, 2018) Where they found female (66.9%); Term (98%) and SVD (99%).the study done in china on change climate shows that though scientist do not know how stress affects gestation but Fukuda theorize that the vulnerability of Y-bearing sperm cells, male embryo to stress is why significant in sex ratios occur(Susan,2019)

5.2. Readiness and availability of materials to deliver standardized immediate newborn care in delivery room.

In this study the majority of the deliveries have been conducted while the delivery pack was prepared at (90.6%) of all deliveries, the similar study was conducted in sub-Saharan Africa on assessment of quality of new born care immediately after birth; where they found that the preparation of delivery pack before birth was at the of 95.4% (Graft-Johnson *et al.*, 2017). The emergency trolley was prepared at 5% of all deliveries; may be this is due to ignorance of health care providers because trolley is available but it is not prepared before birth as recommended, this rate is too few compared to the results found by Thomas *et al.*, (2014) in their study conducted at Liverpool Women's Hospital, on Providing newborn resuscitation at the mother's bedside: assessing the safety, usability, where they found that the emergency trolley was prepared of 98.7% of all deliveries. Suction and resuscitation materials were prepared on 16% of all deliveries, this may be due to insufficiency and lack of some materials compared to the number of deliveries given to this hospital, the contrast results were found by Graft-Johnson *et al.*, (2017) in their study on assessment of quality of new born care immediately after birth in

sub-Saharan Africa where they found that suction materials were 90.7% while resuscitation materials were 72.4%. Before delivery it is important to check and certify that the requisite equipment were prepared and functioning well.

5.3. Standardized immediate newborn care

In this study, the majority had skin to skin contact 67.3%, breastfeeding within 60 min were 39.2%; the results may be influenced by the shortage of health care providers where the pregnant woman is assisted by one midwife; and spend more time in caring the mother; this delay to initiate early breastfeeding. These results were contrast to the results found by Singh *et al.*, (2017) where they found that only 10% of newborns in Nigeria were put on skin to skin contact and early breast feeding was slightly similar to this study where they found that 42% have early breast feeding. Early initiation of breastfeeding has been shown to have positive effects when done within the first hour after delivery.

The newborn dried thoroughly were 75.4%, these results were slightly similar to the results found by Silvestre *et al.*, (2018) in study done on improving immediate newborn care practices in Philippine hospitals; in their results newborn dried thoroughly were 80.2%. In this study delayed cord clamping and cut were 67.3% which are few compared to their results where they found 78%.

In this study in case of presence of meconium in airway only 69% were correctly cared and wet clothes are removed on 57.5% of all newborns this may be due ignorance of following newborn care guideline, the contrast results were found by Graft-johnson *et al.*, (2017) where they found that newborn well cared from meconium were 40% while remove of wet clothes were 72%. The newborn wrapped in 2nd dry cloth were 51.5% this number was slightly high compared to the results found by Graft-johnson *et al.*, (2017) where the newborn wrapped in 2nd clothe were 41%.

In this study 5.8% of all newborn had birth asphyxia, 100% of them were well resuscitated on time, the contrast results were found by Graft-johnson *et al.*, (2017) in their study on Assessment of immediate newborn care in sub-Saharan; they found that only 42% of asphyxiated baby were well resuscitate on time.

5.3.1. Routine of newborn care

Weight check 108 (63.2%), physical assessment 103 (60.2%), administration of Vitamin K 89(52.0%), eye care tetracycline 138 (80.7%), and newborn clothed 102 (59.6) (Table 3). However, a limited number of newborns received identification 2 (1.2%).

The overall aim of the thesis was to observe the outcome of immediate new born care after birth, during maternal-infant separation, the nurse or midwife as primary caregiver and the mother's experiences of separation and later reunion with the infant. The study conducted in Nigeria add what could be understood as phenomenological, after the new born care intervention, the majority of babies are stable 135 (78.9%) whist 36 (21.1%)of babies remained unstable, which is contrary with the study conducted in Nigeria, most new born babies are most sensitive to hypothermia during the stabilization period in the 1st 6-12h after birth because they have poor thermal insulation, small body mass and also the inability to change posture in response to thermal stress(Bhutta et al,2014) Hypothermia can threaten new born with delayed fetal to newborn circulatory adjustment, acidosis and hyaline membrane disease.

5.4. Newborn condition

13(7.6%) of newborn showed signs of mild respiratory distress, obvious signs of hypothermia were present 22 (12.9%) and 22 (12, 9%) low birth weight. Others that were less frequent included preterm 11 (6.4%), severe RD 5 (2.9%), and there appeared to be none with congenital malformation.

After the infant is delivered and dried with a clean cloth, a fully reactive infant need to be placed prone on the maternal abdomen and covered with a warm and dry cloth. This was however noted not done in all the cases in this study. Immediate and infant is necessary for new born adaptation after birth, especially as protection against hypothermia and hypoglycemia .Mazurek et al (2014) found lower glucose in babies swaddled and lying beside mother as against those that have skin-skin contact with mother. It is important to note that routine delivery room practices that separate the mother and infant (such as cleaning and weighing the infant) have been shown to negatively impact on early ignition of breastfeeding. Nakao et al (, 2015) argued that uninterrupted skin to

skin contact may optimize the baby's success at the first breastfeed. During this period of study 13(7.6%) of newborn showed signs of mild respiratory distress, and 22 (12.9%) of hypothermia.

5.5. Outcome variables following intervention

The study conducted in Australia found that the baby's body cools down rapidly, unless measures are taken such as keeping them dry and in a warm environment. A fall in body temperature can be reduced by skin-to-skin contact between baby and mother. Hypothermia should be prevented, and if it occurs, it should be corrected immediately by adequate measures.

It should be kept in mind that hypothermia in a newborn may be one of the first symptoms of (infectious) disease.

The babies bathed immediately after birth, 20 percent had their babies bathed between 1-2 hours, while 2 percent had their babies bathed day(s) after birth (probably due to the fact that their babies were sick). Similarly, a study in Nepal reports that newborn babies are considered dirty since they came out of their mother's womb, so almost all newborn babies are bathed within the first hour after delivery. (Souza *et al.*, 2014)also report in their study that *Dais* leave newborns unattended to, sometimes on the floor until the placenta is delivered, then the babies are washed with warm water and soap 1-2 hours after delivery, and that the hardly wipe babies with dump cloth. This suggests that the WHO's (20014) recommendation, supported by (S.M., Kim et al, 2018) at there should be delayed bathing for 4-6 hours is not being practiced.

This is contrast with the best practice a birth after 24 hour because when newborn bathed before 24 hours can cause to newborn hypothermia, decrease of immune response and decrease of glucose (WHO, 2015).

5.6: Association between immediate cares provided to newborn and immediate outcome

Association between immediate care provided to newborn and immediate outcome was carried out, and the results showed that availability of Suction and resuscitation materials prepared before birth was statistically associated with newborn stability after birth; the similar results were found by Silvestre *et al.*, (2018) in their study on Improving immediate newborn care practices in Philippine hospitals. In this study Birth attendant prepared (physical preparation) and baby dried thoroughly were associated with good outcome of newborn (stable) there is a high

similarity with the findings of the study done in Graft-johnson *et al.*, (2017) but the contrast results were found by Shikuku *et al.*, (2018) in their study, they found that baby dried at 150 (88%) but association with good outcome to the new born were statistically not significant even if the percentage was high. In this study the above results influence positively good outcome of newborn because 135(78.9%) were stable; as the studies shown that good practices in immediate newborn care reduce morbidity and mortality (Bhutta., et al., 2014).

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions

In this study the majority of newborns were stable within the first hour after birth. However nearly one quarter were unstable and required intervention. The following practices are found as the practices that have a high impact on good outcome of newborn: availability of suction and resuscitation materials, physical preparation of birth attendant before assisting delivery, clearing mouth and nose of newborn if meconium are present. Other practices were also provided during immediate newborn care and have good influence on newborn stability but in this study their association with good outcome is not statistically significant.

6.2. Recommendations

The suggestion to develop practice, administration, research, and education were addressed to the following level:

To the nursing practice

The selected District Hospital need to recognize the immediate outcome of mismanagement for the immediate and routine care for the newborn in delivery room after birth. The standardized immediate newborn care must be strengthened and they must be an improvement of nursing and midwife practices related to immediate and routine care for neonate. With the identified gaps and barriers to the practice regarding immediate newborn care, the selected district hospital there is a need of establish policies and guideline in delivery room to support the areas of weakness in management of newborns in delivery room of the hospital. A qualitative study is needed to elaborate immediate newborn care knowledge and practice for midwives working in labor ward. Continuous training and updates on standardized immediate newborn care as well as providing standards care to prevent newborn instability after birth.

To nursing research.

There is a need of conducting further researches on unstable newborns referred in neonatology for seeing their outcome and the follow up in other districts of Rwanda as it remains a challenging health problem and researches conducted in Rwanda are very few and yet done the follow up the problem is there.

Further researches are needed in districts hospitals regarding newborn care because these hospitals delivered care to a big number of pregnant women as they located in community.

The qualitative study components to explore HCPs perception are needed.

Administration and leadership

The main cause of newborn instability is contributing to few midwives in comparison with the number of deliveries there is a need of increasing the number of midwives in the health settings.

To the health setting there is a need of avail a permanent paediatrician in labor ward to improve good outcome of newborn.

To the hospital should make principles that are intended to reduce newborn instability after birth.

To the matron of maternity should establish guidelines and protocols in every delivery room concerning standards immediate newborn care.

To the nursing education

To higher learning institution need to strengthen the existing curriculum on the newborn care.

There is a need of providing a much time to the student to integrate the theory into practice.

The higher learning institution should provide workshops and continuous training to health profession and relevant training for midwives and nurses is essential to enable quality standards to be implemented effectively according to their roles; also to the lectures on new practices on newborn care is highly needed in order to provide enough and current knowledge to the students.

The UR/CMHS should organize the mentorship for the midwives working in maternity and nurses working in neonatology in the clinical settings.

REFERENCES

- AIIMS, N. D. (2014) 'Module 5 : Resuscitation of the Newborn Baby Module 5 : Resuscitation of the Newborn Baby', in *resuscitation of the newborn baby*. 1st edn. India: WHO, pp. 1–14.
- Ashish, K. C. *et al.* (2016) 'Effect of timing of umbilical cord clamping on anaemia at 8 and 12 months and later neurodevelopment in late pre-term and term infants; a facility-based, randomized-controlled trial in Nepal', *BMC Pediatrics*. doi: 10.1186/s12887-016-0576-z.
- Aslam, H. M. *et al.* (2014) 'of pediatrics “ Risk factors of birth asphyxia ”', pp. 1–9. doi: 10.1186/s13052-014-0094-2.
- Bhutta, Z. A. *et al.* (2014) 'Can available interventions end preventable deaths in mothers, newborn babies, and stillbirths, and at what cost?', *The Lancet*. doi: 10.1016/S0140-6736(14)60792-3.
- Cara, C. (2018) 'A Pragmatic View of Jean Watson's Caring Theory', *International Journal of Human Caring*. doi: 10.20467/1091-5710.7.3.51.
- Children, H. (2018) *Assessments for Newborn Babies*.
- Crenshaw, T. (2014) 'Healthy Birth Practice #6: Keep Mother and Baby Together—It's Best for Mother, Baby, and Breastfeeding', *Journal of Perinatal Education*. doi: 10.1891/1058-1243.23.4.211.
- Cross, S. *et al.* (2016) 'Hygiene on maternity units: lessons from a needs assessment in Bangladesh and India', *Global Health Action*. doi: 10.3402/gha.v9.32541.
- Dash2, A. P. A. & M. (2018) 'Early Initiation of Breastfeeding on Outcome of Third Stage of Labour among the Intra-Natal Mothers at Rggw & Ch , Puducherry', *Acta Scientific Paediatrics Volume*, 1(2), pp. 9–16.
- Dickson, K. E. *et al.* (2014) 'Every Newborn: Health-systems bottlenecks and strategies to accelerate scale-up in countries', *The Lancet*. doi: 10.1016/S0140-6736(14)60582-1.
- Dickson, K. E. *et al.* (2015) 'Scaling up quality care for mothers and newborns around the time of birth: An overview of methods and analyses of intervention-specific bottlenecks and solutions', *BMC Pregnancy and Childbirth*. doi: 10.1186/1471-2393-15-S2-S1.
- Enweronu-Laryea, C. *et al.* (2015) 'Basic newborn care and neonatal resuscitation: A multi-country analysis of health system bottlenecks and potential solutions', *BMC Pregnancy and Childbirth*. doi: 10.1186/1471-2393-15-S2-S4.
- Faber, K. (2013) 'Relationship-Based Care in the Neonatal Intensive Care Unit', *Creative*

Nursing. doi: 10.1891/1078-4535.19.4.214.

De Graft-Johnson, J. *et al.* (2017) 'Cross-sectional observational assessment of quality of newborn care immediately after birth in health facilities across six sub-Saharan African countries', *BMJ Open*, 7(3). doi: 10.1136/bmjopen-2016-014680.

Madhavanprabhakaran, G. K. *et al.* (2018) 'Knowledge and Practice of Umbilical Cord Clamping among Maternity Care Providers.', *Journal of Midwifery & Reproductive Health*. doi: 10.22038/JMRH.2018.23553.1252.

Marchant, T. *et al.* (2016) 'Improved measurement for mothers, newborns and children in the era of the Sustainable Development Goals', *Journal of Global Health*. doi: 10.7189/jogh.06.010506.

Mason, E. *et al.* (2014) 'From evidence to action to deliver a healthy start for the next generation', *The Lancet*. doi: 10.1016/S0140-6736(14)60750-9.

Mccall, E. M. *et al.* (2018) 'Interventions to prevent hypothermia at birth in preterm and/or low birth weight infants', *Cochrane Database of Systematic Reviews*. doi: 10.1002/14651858.CD004210.pub5.

Moore, E. R. *et al.* (2016) 'Early skin-to-skin contact for mothers and their healthy newborn infants', *Cochrane Database of Systematic Reviews*. doi: 10.1002/14651858.CD003519.pub4.

Moxon, S. G. *et al.* (2018) 'Service readiness for inpatient care of small and sick newborns: what do we need and what can we measure now?', *Journal of Global Health*. doi: 10.7189/jogh.08.010702.

Rogers, S. M. and Fahimi, B. (2010) 'Impact of Intentional Caring Behaviors on a Labor and Delivery Unit', *Journal of Obstetric, Gynecologic & Neonatal Nursing*. doi: 10.1111/j.1552-6909.2010.01129.x.

Romano, M. and Carter, C. H. (2014) "Keep Me with My Mom": An Evidenced-Based Initiative to Keep Mother and Newborn Together Following Cesarean Birth', *Journal of Obstetric, Gynecologic & Neonatal Nursing*. doi: 10.1111/1552-6909.12342.

Saaka, M., Ali, F. and Vuu, F. (2018) 'Prevalence and determinants of essential newborn care practices in the Lawra District of Ghana', *BMC Pediatrics*. doi: 10.1186/s12887-018-1145-4.

Shikuku, D. N. *et al.* (2018) 'Practice and outcomes of neonatal resuscitation for newborns with birth asphyxia at Kakamega County General Hospital , Kenya : a direct observation study'. *BMC Pediatrics*, pp. 1–11.

Silvestre, M. A. A. *et al.* (2018) 'Improving immediate newborn care practices in Philippine

hospitals : impact of a national quality of care initiative 2008 – 2015’, 30(March), pp. 537–544. doi: 10.1093/intqhc/mzy049.

Singh, K. *et al.* (2017) ‘The importance of skin-to-skin contact for early initiation of breastfeeding in Nigeria and Bangladesh’, *Journal of Global Health*. doi: 10.7189/jogh.07.020505.

Souza, J. P. *et al.* (2014) ‘Essential Newborn Care’, *BMC pregnancy and childbirth*. doi: 10.1038/jp.2015.181.

Tabatabaei, S. M., Pour, F. B. and Azadeh, H. (2016) ‘Infection Control Practices and Program Management in Labor and Delivery Units : A Cross-Sectional Study From Iran’, 3(2). doi: 10.17795/iji-32788.

Thomas, M. R. *et al.* (2014) ‘Providing newborn resuscitation at the mother ’ s bedside : assessing the safety , usability and acceptability of a mobile trolley’, 14(1), pp. 1–6. doi: 10.1186/1471-2431-14-135.

Tran, H. T. *et al.* (2018) ‘Early Essential Newborn Care Is Associated With Reduced Adverse Neonatal Outcomes in a Tertiary Hospital in Da Nang, Viet Nam: A Pre- Post- Intervention Study’, *EClinicalMedicine*. doi: 10.1016/j.eclinm.2018.12.002.

United Nations Inter-Group for Child Mortality Estimation (2017) *Levels and trends in child mortality: Report 2017, UNICEF WHO World Bank Group United Nations*. doi: 10.1016/S0140-6736(10)60703-9.

Waiswa, P. *et al.* (2015) ‘Differences in essential newborn care at birth between private and public health facilities in eastern Uganda’, *Global Health Action*. doi: 10.3402/gha.v8.24251.

Watson, J. (2016) ‘theory of human caring Content of the Theory’, *Watson Caring Science Institute*. doi: <http://dx.doi.org/10.1007/s40271-014-0047-2>.

WHO (2015a) *19th WHO Model List of Essential Medicines, WHO*. doi: 10.1016/S1473-3099(14)70780-7.

WHO (2015b) ‘Pregnancy, Childbirth, Postpartum and Newborn Care: A guide for essential practice’, *Integrated Management of Pregnancy and Child Birth*. doi: 10.1017/CBO9781107415324.004.

WHO (2017) *Newborn health, World health organization*.

WHO, UNFPA and UNICEF (2015) *Pregnancy, Childbirth, Postpartum and New Born Care: A Gilde for Essential Practice, I.World Health Organization. II.UNFPA. III.UNICEF. IV.World*

Bank. ISBN. doi: 10.1017/CBO9781107415324.004.

World Health Organisation (2014) 'Every Newborn', *Who*, p. 58.

APPENDICES

ANNEX 1. UR ETHICAL CLEARANCE



CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 14/01/2019
Ref: CMHS/IRB/025/2019

MUJAWAMARIYA Francoise
School of Nursing and Midwifery, CMHS, UR


Dear MUJAWAMARIYA Francoise

RE: ETHICAL CLEARANCE

Reference is made to your application for ethical clearance for the study entitled "*Outcomes of Immediate Newborn Care at Selected Southern Hospital*".

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 GAHUTU
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

Annex 2. KABGAYI APPROVAL LETTER

PO #18
Paen Accard/
08/04/2019
28 Mars 2019
Kigali
N° 20/1773/BCP/HFIS/2019

REPUBLIC OF RWANDA



MINISTRY OF HEALTH
P.O. BOX: 84 KIGALI
www.moh.gov.rw

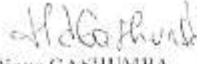
MUKASHYAKA Joëlla/ Tel: 0788489231
MURAWAMARIYA Françoise/ Tel: 0783302009
MUREKATETE Claudine/ Tel: 0788545982
School of Nursing
University of Rwanda/CMHS
KIGALI

Re: Authorization of research

Reference is made to the letters requesting authorization of research for completion of your master's program in Nursing;

I hereby authorize your research as well as those of your colleagues in same situation to facilitate the entire cohort to speed up their academic activities. The students will have to present the CMHS/URB research approval letter with this one to any health facility to have access of data.

Sincerely,


Dr. Diane GASHUMBA
Minister of Health



- Cc:
- Principal of College of Medicine Health Sciences
 - Dean of School of Nursing and Midwifery/CMHS/UR

Annex 3: INFORMED CONSENT FORM

RESEARCH PARTICIPANT INFORMED CONSENT

I agree to facilitate in this research project on “**Outcome of immediate newborn care at a selected southern hospital**” which is being conducted by MUJAWAMARIYA Francoise.

I understand that this study involves only observation. I understand that my facilitation in this study is entirely voluntary, and that if I wish to withdraw from the study, I may do so at any time, and that I do not need to give reason for doing so. If I withdraw from the study, I understand this will have no effect on my relation with researchers.

I understand that I may not receive any direct benefit from facilitating in this study, but my facilitation may help save newborn lives. I understand the confidentiality of I and my patient will be kept to the extent permitted by law. I have read and I understand this information and agree to take part in the study.

Signature of participant

Date

Annex 4: INFORMED CONSENT EXPLANATION FORM

STUDY TITLE: Outcome of immediate newborn care at a selected southern hospital

Dear birth attendant, My name is MUJAWAMARIYA Francoise, a Masters student in Master of Sciences in Nursing (Neonatology track) at University of Rwanda, College of Medicine and Health Sciences. I am carrying out a scientific study on the “Outcome of immediate newborn care at a selected southern hospital“

The study forms a part of the requirements for the award of a Master’s Degree under the supervision of Mrs UWINGABIRE Fauste and Dr. Pamela MEHARRY who are my lecturers in the University of Rwanda. A total of 120 persons will be observed in the study. I invite you to facilitate this study through reassuring your client about my presence at the delivery time. At the end of the study; recommendations will be made.

Please note the following:

1. It will be just observation
2. There will be NO compensation for taking part in this research.
3. Your facilitation is voluntary
4. You can withdraw from the study at any time without any penalties or loss of benefits.
5. Your name will not be used anywhere in the study, all information obtained will be professional and the information gathered will be treated with confidence and solely for this study and for an intervention project based on findings herein.
6. No harmful or invasive procedures shall be conducted on you or your client.
7. Feel free to ask any questions at any time of conducting study. I kindly request you to sign the statement below after reading through it.

Signature of participant

Date

ANNEX 5: CHECKLIST

CHECKLIST OF OUTCOME OF IMMEDIATE NEWBORN CARE AT A SELECTED SOUTHERN HOSPITAL

SECTION A: Socio-demographic

CODE:

DATE:

- 1. Gestation Age: Preterm Term
- 2. Gender: Male Female
- 3. Vaginal Delivery:
 SVD (Spontaneous Vaginal delivery)
 AVD (Assisted Vaginal Delivery)
- 4. Time of birth: AM , .PM
- 5. Time of baby's first cry/breath :(**in minutes**) -1st 5th10th..... Or >10th

SECTION B. IMMEDIATE NEWBORN CARE

B.1 READNESS AND AVAILABILITY OF MATERIALS

ITEM TO BE CHECKED	Yes	No
1.Individual delivery kit available and prepared before birth		
2.Emergency trolley available and prepared before birth		
3.Suction &resuscitation materials(ambu-bag,oxygen,adapted facial mask) available and prepared before birth		
4.Birth attendant prepared(physical preparation)		

SECTION C: Standardized newborn care

ITEM TO BE CHECKED	Yes	No
1. Baby put skin to skin contact immediately		
2. APGAR score evaluated at 1 minute, 5 minutes and 10 minutes		
3. APGAR score documented without evaluated		
4. Baby dried thoroughly		
5. Wet clothes removed		
6. Baby wrapped in 2nd dry cloth		
7. Baby kept warm with head's cap		
8. Baby's mouth and nose cleared if Meconium		
9., Airway cleared unnecessary suctioning		
10. Baby resuscitated earlier if birth asphyxia on time (within golden minute)		
11. Birth attendant continues to check baby's breathing and/or crying		
12. Delayed cord clamping and cut (1-3 minutes)		
13. Baby put on breastfeeding within the 60 minutes:		
14. 15-30 minutes		
15. 45-60 minutes		
16. Beyond 60 minutes		

SECTION D: ROUTINE NEWBORN CARE

ITEM TO BE CHECK	Yes	No
1.Quick physical assessment		
2.Weight taken		
3. Measuring baby Head circumference, Height, Chest circumference		
4. Administration of vitamin K		
5. Eye care (tetracycline 9%)		
6. Wearing the baby		
8.Baby identification		

SECTION E: Newborn Infection prevention

ITEM TO BE CHECKED	Yes	No
1.Birth environment clean		
2.Baby kept in a clean surface		
3. Delivery instrument equipment and instruments kept clean and sterile		
4. Hand rubbing and changing gloves before cutting cord done		

SECTION F: IMMEDIATE OUTCOME OF NEWBORN CARE

ITEM TO BE CHECKED	Yes	No
1.Stable baby within observation period		
2.Baby died within the first hour of life		
3.Baby unstable:		
4.Baby showed signs mild respiratory distress		
5.Baby showed signs severe respiratory distress		
6.Baby showed obvious signs of hypothermia		
7. Congenital malformation		
8. Birth tracing (abnormal fetal heart rate tracing pattern during labor)		
9. Preterm		
10.Low birth weight		

SECTION G: DECISION TAKEN

1.Baby and mother together referred in post-partum		
2 Baby monitored in labor ward.		
3.Baby referred to neonatology		
4. Baby referred in NICU (Referral hospital)		

This tool was adapted from WHO (2015) newborn care protocole