TIMING OF UMBILICAL CORD CLAMPING: EXPERIENCES AND PERCEPTIONS OF NURSE-MIDWIVES`AND OBSTETRICIANS`AT TEMEKE REGIONAL REFERRAL HOSPITAL, DAR ES SALAAM, TANZANIA.

Dorkasi L. Mwakawanga (RM)

MSc. Midwifery & Women`s Health Dissertation
Muhimbili University of Health and Allied Sciences
October, 2018

Muhimbili University of Health and Allied Sciences (MUHAS)

Department of Community Health Nursing

TIMING OF UMBILICAL CORD CLAMPING: EXPERIENCES AND PERCEPTIONS OF NURSE-MIDWIVES`AND OBSTETRICIANS`AT TEMEKE REGIONAL REFERRAL HOSPITAL, DAR ES SALAAM.

By

Dorkasi L. Mwakawanga

A Dissertation Submitted in (Partial) Fulfillment of the Requirements for the Degree of Master of Science in Midwifery and Women`s Health of the

Muhimbili University of Health and Allied Sciences
October, 2018

CERTIFICATION

The undersigned certify that she has read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled "**Timing of umbilical cord clamping: Experiences and Perceptions of nurse-midwives` and obstetricians` at Temeke Regional referral hospital, Dar es Salaam"** in (Partial) fulfillment of the requirements for the degree of Master of Science in Midwifery and Women`s Health of Muhimbili University of Health and Allied Sciences.

.....

Dr. Lilian T. Mselle (PhD)

(Supervisor)

Date: .....

DECLARATION AND COPYRIGHT

I, **Dorkasi L. Mwakawanga,** declare that this **dissertation** is my original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

Signature: ..... Date: .....

This dissertation is a copyright material protected under Berne Convention, the Copyright Act of 1999 and other International and National enactments in that behalf on intellectual property. It may not be reproduced by any means in full or in part, except for short extracts in fair dealing, for research or private study, critical scholarly review or discourse with an acknowledgement, without the written permission of the Directorate of Postgraduate Studies, on behalf of both the author and the Muhimbili University of Health and Allied Sciences.

ACKNOWLEDGEMENTS

First and foremost, I would like to thank Almighty God who through his mercy and grace this work was made possible. This dissertation is a result of contribution of many people; it will be very hard to mention all of them by names.

In a very unique way, I would like to pay acknowledgment to my sponsors Muhimbili University of Health and allied sciences. Without their support, this couldn't have been achieved.

I am very appreciative to my supervisor, Dr. Lilian T. Mselle for her guidance throughout the proposal writing to the production of final dissertation. Special thanks go to the academic staff of the School of Nursing for their help and constructive inputs especially during the early development of the proposal.

I am also grateful to the Medical Chief In-charge of Temeke regional referral hospital and nurse in-charge of labour ward for their cooperation and assistance during preparation and actual data collection. Special thanks go to OBGY/labour ward staffs of Temeke regional referral Hospital, who were involved in this study for their cooperation and participation.

Furthermore, to my family especially my mother Edda Msalilwa for her consistent love, support and encouragement during the period of my study.

Last but not least, I would like to extend my appreciation to my son Francis Reuben, Arbogast Kilumbi`s family and my fellow MSc. Midwifery and Women`s Health students for their support and assistance during my study.

DEDICATION

This dissertation is dedicated to my son Francis Reuben for his tolerance during the whole period of my study.

ABSTRACT

Background: Umbilical cord clamping is a crucial step during the third stage of labour that is done to separate the newborn from the placenta. The timing of umbilical cord clamping is still a controversial across the world. Despite the available evidence that delayed umbilical cord clamping is more beneficial to infants and the existence of the WHO recommendation since 2014, its implementation is still low in many countries. In Tanzania little is known about the experiences, perceptions and factors influencing the practice regarding the timing of umbilical cord clamping.

Broad objective: This study aimed at exploring the experiences and perceptions of nurse-midwives` and obstetricians` regarding the timing of umbilical cord clamping at Temeke Regional Referral Hospital.

Methods: An exploratory qualitative research design was employed, involving one focus group discussion with ten nurse-midwives. Nine (9) in-depth interviews with six nurse-midwives and three obstetricians were conducted. Participants were recruited purposely. Discussion and interviews guides were used to collect data. The recorded interviews were transcribed and thematic analytical framework guided analysis of data.

Results: Three themes illustrating the experiences of nurse-midwives and obstetricians emerged from the analysis. These were clamping the umbilical cord within 60 seconds, clamping the umbilical cord after cessation of cord pulsation and depending of the baby`s condition. The perceived benefits of delayed cord clamping were oxygenation, increased blood volume and haemoglobin level, bonding and nutrients and perceived risks were blood overload and infection transmission. Having good knowledge, adequate skilled human and non human resources and availability of guidelines and SOPs were factors described to enhance application of evidence on umbilical cord clamping.

Conclusion: Despite that most of participants had experience of immediate umbilical cord clamping, nurse-midwives and obstetricians perceived that a delay of umbilical cord clamping has a potential benefit of oxygenation to the newborn requiring resuscitation. We recommend continuous and sustainable on-job training, allocation of adequate skilled human and non human resources and regular supervision as strategies to enhance application of evidence.

TABLE OF CONTENTS

CERTIFICATION II
DECLARATION AND COPYRIGHT III
ACKNOWLEDGEMENTS IV
DEDICATION V
ABSTRACT VI
LIST OF TABLES X
LIST OF FIGURES XI
ABBREVIATIONS AND ACRONYMS XII
DEFINITION OF TERMS XIII

CHAPTER ONE 1
INTRODUCTION 1
1.1 Background 1
1.2 Problem statement 3
1.3 The theoretical framework 4
1.4 Rationale of the study 6
1.5 Research questions 6
1.5.1 Main research question 6
1.5.2 Sub-research questions 6
1.6 Research objectives 7
1.6.1 Broad objective 7
1.6.2 Specific objectives 7

CHAPTER TWO 8
LITERATURE REVIEW 8
2.0 Introduction 8
2.1 Overview on the timing of umbilical cord clamping 8
2.2 Umbilical cord clamping 9
2.3 Experiences & perceptions regarding timing of umbilical cord clamping 9
2.4 Factors influencing the timing of umbilical cord clamping (UCC) 10

2.4.1 Knowledge, skills and attitudes of nurse-midwives and obstetricians on practicing DCC....10
2.4.2 Use of guidelines/policies on timing of umbilical cord clamping....11
2.4.3 Number and experiences of nurse-midwives and obstetricians....11
2.4.4 Supportive supervision....11
2.5 Conclusion....12

CHAPTER THREE....13
MATERIALS AND METHODS....13
3.0 Introduction....13
3.1 Study design....13
3.2 Study setting....13
3.3 Study population....13
3.4 Sampling and sampling procedures....14
3.4.1 Sampling....14
3.4.2 Sampling procedures....14
3.6 Inclusion criteria....14
3.7 Exclusion criteria....14
3.8 Data collection tools and process....14
3.8.1 Data collection guides....15
3.8.2 Interviews process....15
3.8.3 Focus group discussion....15
3.9 Trustworthiness of the study....16
3.10 Data analysis plan....16
3.11 Data management plan....18
3.12 Ethical consideration....18

CHAPTER FOUR....19
RESULTS AND KEY FINDINGS....19
4.0 Introduction....19
4.1 Demographic characteristics of the participants....19
4.2 Nurse-midwives and Obstetricians experiences about timing of UCC....20
4.3 Perceptions about umbilical cord clamping and cutting....22

4.4 Factors which may influence application of evidence on umbilical cord clamping.....25
4.5 Strategies to ensure competence of human resources.....28

CHAPTER FIVE 30
DISCUSSION OF FINDINGS.....30
5.0 Introduction.....30
5.1 Experiences regarding timing of umbilical cord clamping.....30
5.2 Perceptions about umbilical cord clamping and cutting.....31
5.3 Factors which may influence application of evidence.....32
5.4 Strategies to ensure competence of human resources on umbilical cord clamping.....33
5.5 Study limitation and mitigations.....34

CHAPTER SIX 35
CONCLUSION AND RECOMMENDATONS 35
6.1 Conclusion 35
6.2 Recommendations.....35
6.3 Recommendations for future studies 36
REFERENCES.....37
APPENDICES.....41
Appendix I: In-depth semi-structured interview guide for nurse-midwife/obstetrician (english version). 41
Kiambatanisho II: Mwongozo wa majadiliano kwa wauguzi-wakunga na madaktari wa uzazi (kwa kiswahili).....43
Appendix III: FGD Interview guide (english version) 45
Appendix IV: FGD Interview question guide (swahili version).....46
Appendix V: nformed consent form for nurse-midwives/obstetricians (english version).....47
Kiambatanisho VI: Fomu ya ridhaa kwa wauguzi-wakunga na madaktari wa uzazi (kwa kiswahili).....50
Appendix VII: Approval ethical clearance letter.....53
Appendix VIII: Permission to conduct this study.....54

LIST OF TABLES

Table 1: Showing study themes and subthemes.....17

Table 2: Demographic characteristics of participants interviewed at Temeke Regional referral hospital.....20

LIST OF FIGURES

Figure1: Framework from Ajzen`s theory of planned behaviour 4

Figure 2: Modified theoretical framework; Adopted from Ajzen`s Theory of Planned Behaviour 5

ABBREVIATIONS AND ACRONYMS

WHO	-	World Health Organization
PPH	-	Postpartum Haemorrhage
TDHS	-	Tanzania Demographic Health Survey
TNAP	-	Tanzania National Anaemia Profile
UCC	-	Umbilical cord clamping
DCC	-	Delayed Cord Clamping
ECC	-	Early Cord Clamping
MoHCDGEC	-	Ministry of Health, Community Development, Gender, Elderly and Children
SOP	-	Standard Operating Procedure
FGD	-	Focus Group Discussion
HIV	-	Human Immunodeficiency Virus
IPNM	-	In-depth Interview Participant Nurse-Midwife
IPOBS	-	In-depth Interview Participant Obstetrician
FGDP	-	Focus Group Discussion Participant

DEFINITION OF TERMS

Conceptual Definitions

Early cord clamping - Is the clamping of the cord which is generally carried out within the first 60 seconds of birth(1).

Delayed cord clamping – Is the clamping of the cord which carried out within one to three minutes of birth or when the cord pulsations have ceased(1).

Operational Definitions

Umbilical cord - Is a tube-like structure that connects the mother`s placenta and the foetus, it provides oxygen, nutrient-rich blood and removes waste products and deoxygenated blood away from the foetus to the maternal circulation where it can be processed and excreted.

Umbilical cord clamping- Is the practice done soon after birth to separate the newborn from the placenta.

Perceptions – Are the opinions of nurse-midwives and obstetricians regarding timing of umbilical cord clamping based on their understanding and working experience.

Experience - Is the practical knowledge gained through involvement in clamping and cutting of the umbilical cord when conducting deliveries or/and providing newborn care.

Cord clamping practice– Is the skill of performing cord clamping; either early cord clamping or delayed cord clamping.

CHAPTER ONE
INTRODUCTION

1.1 Background

Umbilical cord clamping is a crucial step during the third stage of labour that is done to separate the newborn from the placenta. The timing of umbilical cord clamping is still a controversial across the world. For example, there is a debate as whether the cord should be clamped immediately after birth for the purpose of preventing PPH and facilitation of blood gas sample from umbilical cord or to be clamped late to prevent Iron deficiency anaemia and conditions resulting from poor neurodevelopment(2).

World Health Organisation (WHO) classifies timing of umbilical cord clamping as early cord clamping which is considered to be carried out within the first 60 seconds of birth and delayed cord clamping which considered to be carried out within 1 to 3 minutes of birth or when the umbilical cord pulsations have stopped. This guideline recommended clearly that early umbilical cord clamping is generally contraindicated, unless the neonate is asphyxiated and needs to be moved immediately for resuscitation(1). Moreover WHO guidelines on Basic Newborn Resuscitation recommended that in case of newborn resuscitation, the cord should not be clamped earlier than 60 seconds in both term and preterm babies even when Positive Pressure Ventilation is required (3,4).

Previously early umbilical cord clamping together with uterotonic drugs and controlled cord traction were among the approaches used to treat and prevent the risk of postpartum haemorrhage which is a common fatal complication of childbirth in the world(5). Nurse-midwives and obstetricians started to implement early cord clamping to prevent incidences of PPH whereby the umbilical cord was clamped within 30 seconds of birth(6). The growing evidences have proved that early cord clamping has no effect on postpartum haemorrhage and currently it is recommended that immediate cord clamping should not be part of active management of third stage of labour to comply with the recommended practice of delayed cord clamping for improved newborn health outcomes(7,8). Most of the current studies, including Cochrane reviews and randomized trials have shown that delayed cord clamping or clamping after initiation of ventilation is associated with decreased risk of iron deficiency anaemia, the deficient that would require blood transfusion and improved neurodevelopment up to 4 years of age, increased haemoglobin, haematocrit levels, decreased rate of

intravascular haemorrhage, increase cerebral oxygenation and enhance cardiovascular stability in infants (9–12).

It is estimated that in Tanzania about 43 of every 1000 live birth infants die within first year of life and newborn death were 25 for every 1000 live birth in 2015; most of these deaths are caused by birth asphyxia(13). Worldwide, one quarter of maternal death is caused by PPH and it is a direct leading cause in low income countries(14). In Tanzania maternal mortality rate is 556 deaths per100, 000 live births and the most leading cause is postpartum haemorrhage (13). There is a revised recommendations that delayed umbilical cord clamping and cutting can be important on reducing the risk of anaemia and hypoxia to the infants and risk of postpartum haemorrhage to the mother(1).

Globally, 43% of below 5 years children (approximately 273 million) have anaemia, in which 425 is attributable to iron deficiency and 28.5 % of these children are residing in sub-Saharan Africa(15). In Tanzania 58% of under five years children had anaemia in 2015(13). Children with anaemia and iron deficiency have increased risk of impaired neurodevelopment, affecting their cognitive, motor, and behavioural abilities(16).

Nurse-midwives and obstetricians` practice of cord clamping which is potential in improving infant health outcomes at less cost to the health care system has shown less compliance to the recommendations of Delayed Cord Clamping (DCC). In the study done in Netherlands to investigate if guidelines for the timing of cord clamping are followed found out that only 33% of practitioners' recommended delayed cord clamping. This finding is similar with the study done in Canada to investigate the actual cord clamping time where 56% of practitioners reported to practice early cord clamping (ECC)(17,18). Moreover, several studies reported lack of policies and guidelines were the main reason to variations in timing of umbilical cold clamping practice.

1.2 Problem statement

At the time of birth, a newborn is attached to the mother via the umbilical cord and it will be separated from the placenta by clamping and cutting the umbilical cord. Early cord clamping is generally carried out within the first 60 seconds of birth, whereas late cord clamping is done within one to three minutes of birth or when cord pulsations have ceased (19).The WHO recommends delayed umbilical cord clamping of not less than one minute for both term and preterm newborns for improved health and nutrition outcomes and for prevention of anaemia in children(1,20).

Delayed cord clamping has many benefits including higher birth weight, early haemoglobin concentration, increased iron reserves in the infant and on the mother it reduces the risks of postpartum haemorrhage and retained placenta(1,11,21). In preterm infants delayed umbilical cord clamping decreases the risk of intravascular haemorrhage, blood transfusion, less surfactant, mechanical ventilation and increases cerebral oxygenation(9). Further, it allows the cardiovascular system transition of an infant by increasing pulmonary blood flow to prevent hypoxia/ischemic condition(16,21–25). In Tanzania about 43 of every 1000 live birth infants die within first year of life and newborn death were 25 for every 1000 live birth in 2015, most of these deaths are caused by birth asphyxia(13) and could be prevented by employing delayed umbilical cord clamping.

In Tanzania published studies on umbilical cord clamping focuses on describing the neonate outcomes following cord clamping after onset of spontaneous respirations and its benefits on cardiovascular stability(26,27). There is limited evidence regarding the nurse-midwives` and obstetricians experiences and perceptions regarding the timing of umbilical cord clamping. Therefore, this study aimed at exploring the experiences and perceptions of nurse-midwives` and obstetricians` regarding the timing of umbilical cord clamping at Temeke regional referral hospital in Dar es Salaam.

1.3 The Theoretical Framework

The Theory of Planned Behaviour

Theory of Planned Behaviour (TPB) as a theoretical basis has been used in several studies to identify important avenues to inform behaviour change strategies regarding healthcare professional on adoption of guidelines or following recommendations to improve patient/clients outcomes(28,29).

In this study Ajzen`s theory of planned behaviour was used to describe the experience and perception of nurse-midwives and obstetricians related to the timing of umbilical cord clamping and factors influencing their practice following the recommendations.

The TPB describe intention as the best determinant of behaviour, which is influenced by three factors: attitude, subjective norm, and perceived behavioural control. Attitude refers to positive or negative evaluations of the behaviour, subjective norm refers to perceptions of pressure from others to perform the behaviour and perceived behavioural control refers to perceptions of the ease or difficulty of performing the behaviour of interest, also considered to factors that directly influence behaviour(30).

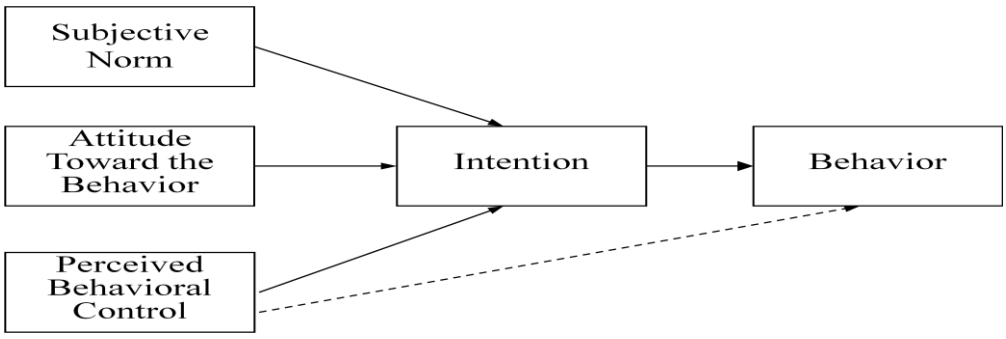


Figure1: Framework from Ajzen`s theory of planned behaviour

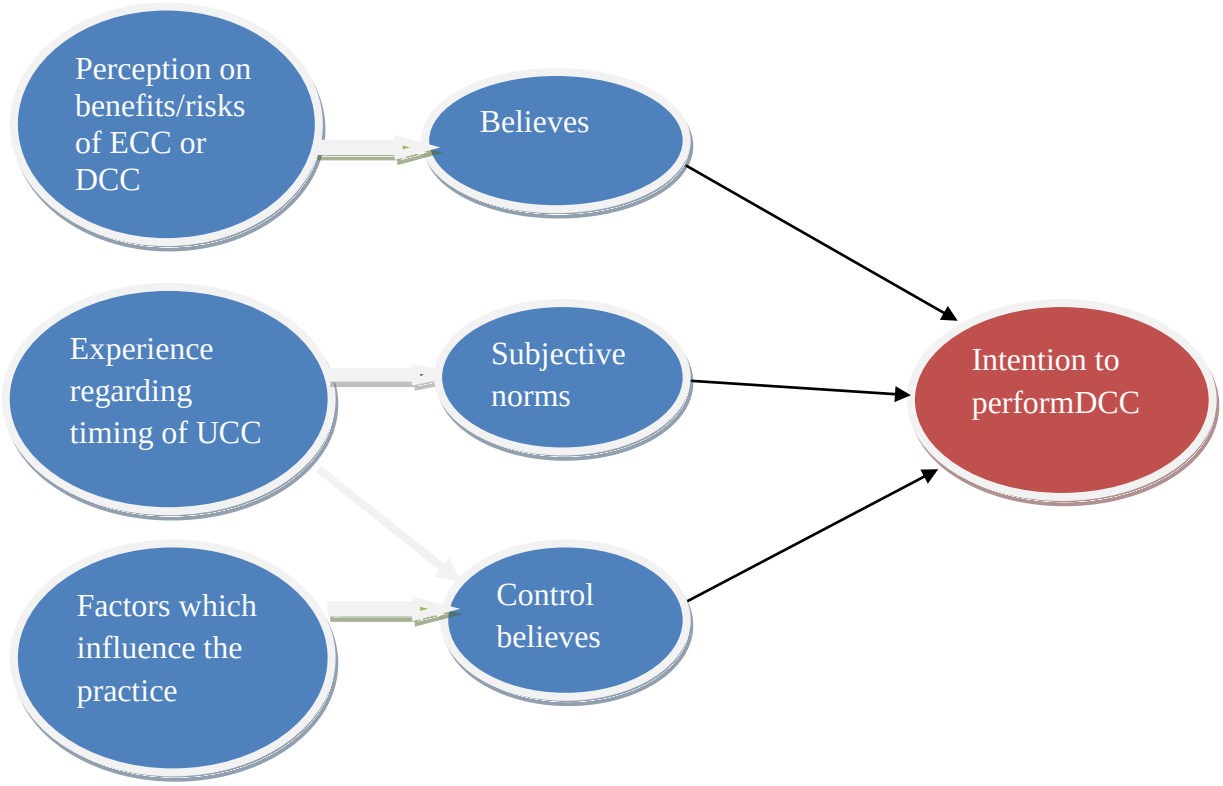


Figure 2: Modified theoretical framework; Adopted from Ajzen`s Theory of Planned Behaviour

In this study, according to TPB framework perceptions can be determined from the nurse-midwives and obstetricians behavioural beliefs about the benefits and risks of performing either early umbilical cord clamping (ECC) or delayed umbilical cord clamping (DCC). Subjective norms can be determined by nurse-midwives and obstetricians experiences to approve or disapprove their practice regarding timing of umbilical cord clamping in our context. Perceived behavioural control can be based on the nurse-midwives and obstetricians beliefs about whether there are personal and health facility factors that may prevent or assist their practice regarding timing of umbilical cord clamping.

1.4 Rationale of the study

This study aimed to explore the experiences and perceptions of nurse-midwives and obstetricians regarding the timing of umbilical cord clamping at Temeke Regional Hospital in Dar es Salaam. The generated findings are expected to give better understanding on the application of evidence on umbilical cord clamping to nurse-midwives and obstetricians. Also the gathered information about cord clamping will help to improve the practice of cord clamping and ensure that it is applied correctly as per evidence for improving maternal and newborn care in the country. Furthermore, the findings expected to help the municipal health authorities in working on identifying factors that motivate or hinder implementation of delayed cord clamping as recommended in the guidelines. Moreover, the findings will be used by the Ministry of Health and other stakeholders as an input for the review of existing guidelines and protocols based on the benefits of delayed cord clamping in line with the WHO and SDGs guidelines on umbilical cord clamping.

1.5 Research questions

1.5.1 Main research question

What are the experiences and perceptions of nurse-midwives` and obstetricians` regarding the timing of umbilical cord clamping at Temeke Regional Referral hospital?

1.5.2 Sub-research questions

1. What are the experiences of nurse-midwives` and obstetricians` regarding timing of umbilical cord clamping at Temeke Regional Referral Hospital?

2. What do nurse-midwives` and obstetricians` perceive about the timing of umbilical cord clamping at Temeke Regional Referral hospital?

3. What are the factors influencing nurse-midwives` and obstetricians` application of evidence on the timing of umbilical cord clamping at Temeke Regional Referral hospital?

1.6 Research objectives

1.6.1 Broad objective

To explore the experiences and perceptions of nurse-midwives` and obstetricians` regarding the timing of umbilical cord clamping at Temeke Regional Referral Hospital.

1.6.2 Specific objectives

1. To describe the experiences of nurse-midwives' and obstetricians` regarding timing of umbilical cord clamping at Temeke Regional Referral Hospital.

2. To describe the perceptions of nurse-midwives' and obstetricians` regarding timing of umbilical cord clamping at Temeke Regional Referral hospital

3. To describe the factors influence nurse-midwives` and obstetricians` application of evidence on the timing of umbilical cord clamping at Temeke Regional Referral hospital.

CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

This chapter reviews the literature from books, journals and guidelines related to the nurse-midwives` perceptions and practice on timing of umbilical cord clamping. The review will be done based on the three specific objectives: nurse-midwives` and obstetricians` experiences regarding timing of umbilical cord clamping, nurse-midwives` and obstetricians perceptions regarding timing of umbilical cord clamping, and factors influencing the practice regarding timing of cord clamping.

2.1 Overview on the timing of umbilical cord clamping

Umbilical cord is a tube-like structure that connects the mother`s placenta and the foetus, it provides oxygen, nutrient-rich blood and removes waste products and deoxygenated blood away from the foetus to the maternal circulation where it can be processed and excreted. At the time of birth, the infant is attached to the placenta via the umbilical cord. During the third stage of labour, which is the period of time from the birth of the infant to the delivery of the placenta the baby is separated from the placenta by clamping the cord with two clamps and cutting between the clamps (31). Active management of third stage of labour is a cornerstone of obstetric and midwifery practice which involves the procedure of cord clamping and cutting as a sub step after uterotonic drug administration step before performing the controlled cord traction of the umbilical cord (7).

The optimal timing of umbilical cord clamping is still a challenge with a lot of discussion all over the world and it varies across countries according to clinical policy and practice. Early cord clamping is generally carried within first 60 seconds of birth (most commonly in the first 15–30 seconds) whereby delayed or late cord clamping is generally carried within 1 to 3 minutes of birth or when the umbilical cord pulsations have ceased(32). In 2012 WHO, recommended clamping of the umbilical cord to be performed between one to three minutes of birth for improved newborn and maternal health and nutrition outcomes unless the baby is asphyxiated and requires resuscitation(3,19).

Several controlled clinical trials and reviews have showed that delayed cord clamping for about 1-3 minutes has benefits, which can significantly improve the hemodynamic and placental respiration to the infant. This is because of the increased blood volume, decreased

iron deficiency anaemia, increased total iron stores by over 50% at 6 months of age, improvements in long-term neurodevelopment, facilitates transplantation of stem cells and there is decreased blood transfusions in DCC compared with ICC (11,23,31,33). DCC reduces risk of intravascular haemorrhage, sepsis and enhances cerebral oxygenation in preterm neonates(9). ICC may increase the risk of restricted cardiac output, hypoxia and cardiac respiratory complications(22).

2.2 Umbilical cord clamping

Globally most evidence support the delayed umbilical cord clamping(19,21,23,34), early umbilical cord clamping is the routine practice in many countries and may be due to misunderstanding of the physiology of delayed umbilical cord clamping and due to lack of policies in health facilities regarding the practice of optimal timing of umbilical cord clamping (18,32). Study done in Norway on umbilical cord clamping practice revealed the wide variation in the practice for umbilical cord clamping in Norwegian maternity units, many of which had no written guidelines(35). Similar study, which was done in Netherlands, revealed that early cord clamp was recommended in 54% and delayed cord clamping in 33%. In their current practice delayed cord clamping was applied after uncomplicated vaginal deliveries for only term infants(18).

An observational study of umbilical cord clamping practice which was done in Canada by Hutton, Stoll and Taha in 2013 found out that among the 98 practitioners who were observed, more than half (56.2%) of all infants had their umbilical cord clamped immediately within 15 seconds after spontaneous vaginal birth. A similar study that was conducted in rural Tanzania revealed that 60% (n=1068) of neonates, the clamping of umbilical cord occurred before initiation of respirations which caused 7 deaths and 18 admissions(26). Despite the supportive evidence which recommend delayed umbilical cord clamping in the active management of third stage of labour for both pre-term and term infants; compliance with the current standard of care is still reported to be a challenge(17,32).

2.3 Experiences & Perceptions regarding timing of umbilical cord clamping

Experience and perceptions of nurse-midwives on timing of cord clamping are essential component on implementing delayed umbilical cord clamping and may differ across the countries. Nurse-midwives are responsible for performing active management of third stage of labour and apply the delayed umbilical cord clamping practice. Several studies on nurse-

midwives` believes, attitudes and practice regarding timing of umbilical cord clamping found out that their practice has been associated with what they believe on timing of umbilical cord clamping(32,35). For example, studies in Tanzania have reported the likelihood of the neonate death or admission following cord clamping done before or immediately after onset of spontaneous respirations(27,36). Furthermore, the experience of the nurse-midwives' and obstetricians` on the benefits has shown the influence to their practice (32).

Ibrahim and colleagues found that majority 69-71% thought that delayed umbilical cord clamping is generally good for both pre-term and term infants and 63% thought that benefits extends beyond the neonatal period. Furthermore, it was revealed that the attitudes towards DCC were different by gender and years of practice whereby, male providers were observed to have higher rate of positive attitude by 59% and providers who had many years of experience were observed to have higher rate of positive attitude towards DCC by 49% (32). Mercer with her fellows found out that the group of nurse-midwives who practiced early cord clamping believed that early cord clamping (ECC) facilitates management of the neonate and 73% who chose to delay clamping believed that delayed cord clamping (DCC) allows gradual transition to extra-uterine circulation. In case of distressed babies, they found out 84% were clamping early to facilitate resuscitation of neonate while 4.5% who chose DCC believed that newborns continues to receive oxygen from the mother while cord is pulsating(37).

2.4 Factors influencing the timing of umbilical cord clamping (UCC)

2.4.1 Knowledge, skills and attitudes of nurse-midwives and obstetricians on practicing DCC

The quality of nurse-midwives and obstetricians` in terms of knowledge, skills, and attitude is important for better health outcomes of mothers and their infants through practice of delayed cord clamping. This knowledge can be obtained through formal or on job clinical training. In a study done in Netherlands it was found out that delayed cord clamping was commonly practiced after uncomplicated vaginal birth and it was more based on clinical trainings on timing of cord clamping(18). Another study done in USA on Steps for implementing delayed cord clamping in a hospital setting reported training as one of potential strategy on DCC implementation(38). Therefore, knowledge which can be obtained through training may influence the practice of nurse-midwives` and obstetricians`.

Personal routine can also be the factor influencing the practice. Some nurse-midwives may have knowledge on the benefits of DCC and knows the recommended umbilical cord clamping practice but still their practice be dominated by their personal or hospital preferences. In the Survey of Umbilical Cord Clamping Practices in Canada, Personal routine was the most frequently cited reason for clamping the cord of a pre-term infant immediately by 40% (8).

2.4.2 Use of guidelines/policies on timing of umbilical cord clamping

The guidelines focus on facilitating the implementation of delayed cord clamping practice. Umbilical cord clamping guidelines may also provide guidance to nurse-midwives, obstetricians, policy-makers and health programme managers working in the field of maternal and child health. In the study done is US obstetricians 88% of respondents reported that their hospital had no umbilical cord clamping policy (39). Several other studies also reported lack of guidelines, policies, SOPs and protocols as factor on wide variation of umbilical cord clamping practice and in other study it was listed to be potential on DCC implementation in hospital setting (18,32,35,38).

2.4.3 Number and experiences of nurse-midwives and obstetricians

Experience of nurse-midwives' and obstetricians' on umbilical cord clamping has been found to contribute to DCC practice in Netherlands (18). For the implementation of delayed cord clamping to be successful, the experience of the nurse-midwives' and obstetricians` on the benefits may influence the practice. On the other hand, the shortage of nurse-midwives and obstetricians may contribute to the immediate umbilical cord clamping to large number of infants who at the end will suffer on the complications related to iron insufficiency anaemia.

2.4.4 Supportive supervision

Nurse-midwives, obstetricians and other health care providers need supportive supervision from higher authorities on the implementation of DCC as recommended on existing umbilical cord clamping guidelines (38). There is a committee responsible for providing support, regular monitoring and supervision on maternal and child health care in each District, Regional and Country wise. The supervision committee has to coordinate joint supervision visits to the health facilities using developed supervision checklists or tool. Lack of this supervision may hinder the implementation of recommended practice of DCC while its presence will promote the practice.

2.5 Conclusion

The literature review provides evidence on the benefits of delayed cord clamping in improving newborn health outcomes. The studies reviewed show that the practice is not implemented which may be related to high infants with anaemia and neurodevelopment problems worldwide. Most of the studies reviewed employed the quantitative approaches using questionnaires to assess the practice less on observational and qualitative methods. Furthermore, there are limited studies conducted in Tanzania regarding the timing of umbilical cord clamping to identify the experiences, perceptions and factors influencing the practice. Therefore, an exploratory study design using qualitative approach to explore the experiences, perceptions and factors influencing the practice of nurse-midwives' and obstetricians` regarding the timing of cord clamping at Temeke Regional hospital will enlighten strategies to identify barriers to implement the delayed cord clamping practice and contribute on making policies and guidelines in improving the maternal and newborn care.

CHAPTER THREE
MATERIALS AND METHODS

3.0 Introduction

This chapter presents the research design and explains about the study setting, study population, sample size and sampling techniques. It also describes data collection processes, data management, data analysis, ethical considerations and trustworthiness of data.

3.1 Study Design

An exploratory qualitative research design was used(40) to explore nurse-midwives` and obstetrician` experiences and perceptions regarding the timing of umbilical cord clamping. This design ensured gathering of in-depth and rich information from the nurse-midwives and obstetricians(40). The use of qualitative approach provided a rich descriptions and comprehensive picture of the nurse-midwives and obstetricians experiences and their perception about umbilical cord clamping and tends to be holistic, striving for an understanding of the phenomenon as a whole.

3.2 Study Setting

This study was conducted at Temeke regional referral hospital in Dar es Salaam, which is located Southern East of Tanzania mainland. As per Demographic and Population Census of 2012, Temeke Region had a population of 1,368,881(41). Temeke regional referral hospital is a public hospital, which conducts an average of 1000 deliveries per month(42). This is also a secondary level referral hospital for both complicated and uncomplicated deliveries and majority of women living in Dar es Salaam attend for normal childbirth care, in and outpatient health care services. This setting was suitable for this study because of its large number of deliveries and high prevalence of maternal and neonatal death. In 2017 Temeke regional hospital had 16 maternal deaths and 390 neonatal deaths of which 262 were caused by birth asphyxia. (42)**.** The study took place in the maternity block specifically in labour ward where most deliveries are conducted.

3.3 Study Population

This study involved nurse-midwives and obstetricians who were working in maternity block at Temeke regional referral hospital. Nurse-midwives` and obstetricians are the common professional group that assist deliveries. For example according to TDHS(13), 61.5% of 77%

of women who gave birth in public hospitals in Dar es Salaam were assisted by nurse-midwives and 27.4% were assisted by doctors including obstetricians.

3.4 Sampling and sampling procedures

3.4.1 Sampling

Sampling refers to the process used to select a portion of the population for study(42). Qualitative research is generally based on non-probability approaches(40). The primary interest of qualitative studies is the depth and breadth of information obtained, therefore the guiding principle for sample size was data saturation. Data saturation is a sampling of participant to the point at which no new information is obtained and redundancy is achieved(40). Nine participants were recruited purposeful. These included 6 nurse-midwives and 3 obstetricians**.** However, enrolments of participants were determined by the principle of data saturation.

3.4.2 Sampling procedures

Purposive sampling method was used. In this method participants were recruited based on pre-determined characteristics of participants relevant to the research question in order to provide in depth information based on their experiences(43). Therefore, this study included nurse-midwife and obstetrician who had working experience of not less than one year in the labour ward. Further, those who were currently involved in providing childbirth care. These participants were expected to provide depth and breadth information about the timing of umbilical cord clamping and factors influencing this practice based on their experience.

3.6 Inclusion criteria

- Nurse-midwives and obstetricians working in labour ward for not less than one (1) year

3.7 Exclusion criteria

- Nurse-midwife and obstetrician meeting criteria but were not around during data collection period.

3.8 Data Collection tools and process

Semi structured in-depth interviews and focus group discussion (FGD) were used as the primary methods to collect information from nurse-midwives and obstetricians(43), supplemented by field notes in consistent with qualitative studies(40). Audio recorder was used and ensured that the information provided by the participants was captured which helped

a principal investigator to use direct quotes from participants during data analysis. Additional notes on verbal and non-verbal aspects of the interview and discussion were taken to compliment with the audio recorded data. Prior to starting an interview or focus group discussion written informed consent was obtained from study participants on the study purpose and for the use of the audio recorder. The interviews and discussion were conducted in Kiswahili language spoken by all participants to get credible information.

3.8.1 Data collection guides

Semi-structured interview and focus group discussion guides were used during data collection. The interviews guide consisted of socio-demographic information, topics and probing questions aimed at exploring the nurse-midwives` and obstetricians` experiences, perceptions and factors influencing application of evidence on the timing of umbilical cord clamping that ensured coverage of all research questions. The questions for interviews and discussion were prepared by a researcher based on the research questions or objectives. All questions were open ended and non-directive to allow flexibility of participants.

3.8.2 Interviews process

Nine (9) semi structured in-depth interviews were conducted with six (6) nurse-midwives and three (3) obstetricians. Open ended questions on the in-depth Interview guide allowed exploration of participants' feelings and perspectives on the timing of umbilical cord clamping(40). Interviews were carried out at Temeke hospital in a comfortable and private room with no distractions suggested by the participants. The interview guide was used flexibly during the data collection process to capture information of relevancy as emerged(44). The interviews lasted between 30 to 40 minutes.

3.8.3 Focus group discussion

Focus group discussion with 10 nurse-midwives was conducted. The FGD was conducted with only nurse-midwives because of the nature, composition and numbers of participants required in the FGD(43) and limited number of obstetricians in the facility. All nurse-midwives who had experience of more than one year working in labour ward were invited to participate in the discussion. The discussion was moderated by the principal investigator using the FGD guide. This helped data from another data collection method to be complemented. During opening of the discussion, the purpose of the study was provided and the participants were encouraged to take active participation and were given equal opportunity to contribute. They were informed

that there is no right or wrong answers. An audio recorder was used to record the discussion and was supplemented by notes. The duration for discussion was 45 minutes.

3.9 Trustworthiness of the study

Qualitative researchers suggest the use of credibility, transferability, dependability and conformability as methods to ensure trustworthiness in qualitative studies(40). The researcher ensured credibility through use of multiple data sources (nurse-midwives and obstetricians) and data collection methods (semi-structured interviews and focus group discussion) which allowed results triangulation to increase validity and reliability in qualitative study (44). Also the researcher established good rapport, had a prolonged engagement in the field, used Kiswahili language, built trust with participants and the researcher quality limited the risk of misinformation(44) and bracketing during data collection and analysis was ensured. Dependability and confirmability were promoted through inquiry audit where by the researcher reviewed and examined the research process and the data analysis in order to ensure that the findings were consistent, the interview guide was also used to ensure consistency during data collection**.** Further thick description of the phenomenon using participant`s own words during analysis and write up was provided. Thorough description of the research process such as criteria of selecting study participants, the number of participants that were involved in this study, the data collection methods that were employed, the number and length of the in-depth interviews and the time period over which the data was collected, will allow for others to determine its transferability to other context(44).

3.10 Data analysis plan

The thematic analysis approach guided the analysis of data(44,45). Thematic analysis provides a flexible method of data analysis and allows researchers with various methodological backgrounds to engage(46). In this study, analysis using thematic approach involved six main steps. Audio-recorded data from the in-depth semi structured interviews and FGD were transcribed into verbatim by the researcher and were read and re-read to become familiar with the data and to get the general understanding of the participants' accounts. A list of potential and initial codes reflected with the pre-determined themes was created through data reduction. Codes helped the researcher to identify features of the data that were interesting and get the meaningful of data. Then themes were searched from the general list of codes created; the focus here was on broad patterns in the data, combining coded data with the proposed themes and examining how relationships were formed between codes and themes and between

different levels of existing themes. After themes identification, the principal researcher read and reviewed the coded data to see if they formed coherent patterns. The existing themes were then defined and refined for presentation in the final analysis. The final analysis involved report writing which will convince the reader on the merits and validity of the analysis. Main themes were illustrated with representative quotations.

Table 1: Showing study themes, subthemes and codes

Main themes	**Sub-themes emerged**	**Codes**
Experiences about timing of umbilical cord clamping	• Clamping the umbilical cord within 60 seconds • Clamping the umbilical cord after cessation of cord pulsations • Clamping time depend on the baby`s condition	• Provide oxytocin and then clamp the cord within a minute • I consider the cessation of cord pulsations before clamping • When the baby is born with good condition I do not waste time I just change glove and clamp the cord
Perceptions about umbilical cord clamping	• Perceived benefits of delayed cord clamping • Perceived risks of delayed cord clamping	• The baby keeps on getting a supply of oxygen from her mother through placenta • A transfusion that can cause blood overload in the baby`s blood circulation
Factors that may influence application of evidence on umbilical cord clamping	• Having good knowledge about umbilical cord clamping • Lack of guidelines and SOPs • In adequate skilled human and non-human resources	• I need to have adequate knowledge to provide quality care • Every facility to have SOPs and guidelines to abide with. • Adequate number of staff can help with clamping the cord at the right time
Strategies to ensure competence of human resources	• Continuous and sustainable on-job training • Regular supportive supervision	• Provision of on job training to inform current changes in practice • Training and supervising nurse-midwives to remind them advantages of clamping the cord at the recommended time

3.11 Data management plan

Management of data was at high level of confidentiality, only those directly involved in the study had access to the collected data. The audio records and transcripts were kept in a computer folder secured with a password and only the researcher had access to information. All physical copies were kept in a locked filling cabinet at MUHAS and will be destroyed later after completion of the study.

3.12 Ethical consideration

The ethical clearance to conduct this study was obtained from Muhimbili University of Health and Allied Sciences (MUHAS), Senate Research and Publications Committee (SRPC). Temeke Regional Referral Hospital granted the permission for data collection. Participants were fully informed about the purpose of the study and the use of audio recorder during the interviews and discussion. Each consenting participant was requested to sign the informed consent form for their participation and was informed of their right to decline answering one or more questions during the interview. Participants were also informed of their right to withdraw from the study at any time which will result in deleting any data collected from that participant. It was made clear that the information provided would be treated with high confidentiality and would be used only for research purposes. Serial numbers on data collection instruments in steady of their names or registration numbers to ensure enormity.

CHAPTER FOUR
RESULTS AND KEY FINDINGS

4.0 Introduction

This chapter presents results from both semi-structured interviews and focus group components of the study. The presentation is written consecutively. This section presents demographic characteristics of the interviewed study participants, experiences of nurse-midwives and obstetricians regarding timing of umbilical cord clamping, the perceptions of nurse-midwives' and obstetricians` about umbilical cord clamping and cutting, factors which may influence application of evidence on umbilical cord clamping and the strategies to ensure competence of nurse- midwives and obstetricians on umbilical cord clamping.

4.1 Demographic characteristics of the participants

Nine (9) participants were involved in this study. The study was comprised of two groups of participants which included; six (6) nurse-midwives (67%) and three (3) obstetricians (33%). Among the nurse-midwives three (3) had certificate in nursing and three (3) had diploma in nursing. Out of the 9 participants who consented to be interviewed 2 were males and 7 were females. All participants had working experience of more than 1 year and all were working in labour ward (see Table 2).

Table 2: Demographic characteristics of participants interviewed at Temeke Regional referral hospital

Informants	**Frequency (n=9)**
Age (years)	
<35	4
Above 35	5
Sex	
Female	7
Male	2
Profession	
Nurse-midwives	6
Obstetricians	3
Profession education level	
Certificate	3
Diploma	3
Degree	0
Masters	3
Years of experience	
1-2	1
3-4	2
5 and above	6

4.2 Nurse-midwives and obstetricians experiences about timing of UCC

In the analysis of the experiences of nurse-midwives and obstetricians about clamping the umbilical cord and timing considerations three (3) themes emerged: clamping the umbilical cord within 60 seconds, clamping the umbilical cord after cessation of cord pulsations and clamping depending on the baby`s condition.

Clamping the umbilical cord within 60 seconds

Participants in this study reported their experiences of clamping the umbilical cord immediately when the baby comes out and immediately start crying or breathing spontaneously.

> *"What I do sometimes when the baby is out and placed on the mother`s abdomen, is drying and cutting the cord if the baby cried it means the clamping is done immediately after birth like within a minute"* IP7OB

"*My experience about umbilical cord clamping after birth is within or after 60 seconds*" IP5NM

Participant from the focus group discussion reported different experience of delaying in clamping the umbilical cord even when the baby is well, and had this to say:

"(.....), if the baby is well it takes 2-3 minutes and if the baby is not well then you must perform resuscitation first, so the time will take a little longer" FGDP5

Clamping the umbilical cord after cessation of cord pulsations

Delayed cord clamping is the one carried out in 1-3 minutes or after cessation of cord pulsations. Participants in this study reported waiting the cessation of cord pulsations in their experience of timing the clamping of umbilical cord which was followed by cord milking towards the baby before clamping. For example one participant had this to say;

"Before clamping the umbilical cord I consider the cessation of cord pulsations, I observe the cord colour, and it is advised to pull the blood a little to the baby then followed by clamping" IP5NM

"(.....) It is often advised that, no cord pulsations should be felt, we should leave the transfusion of blood from placenta to the baby to take place and then clamp the cord" IP1NM

Clamping time depending on the baby`s condition

The status of the baby`s condition guided most of the participants on deciding whether to clamp the cord immediately or delay. Participants reported that they usually delay cord clamping for the baby who requires initial resuscitation and may benefit from placental respirations. They believed that when the mother takes a deep breathes while she is still a connected to her baby it may facilitate the initiation of breathing to the baby through oxygen carried in the cord blood.

"My experience is that, when the baby is born with good condition (.....)There is no need of wasting time is just injecting oxytocin, changing gloves and clamping the cord. But if the baby delayed to cry is when you also have to delay, so it depends on the condition of the baby" IP2NM

Similar experience was reported during FGD:

"If the apgar score is not good, as my colleagues said I will wait a little bit for the ventilation from the mother to the baby to take place while doing the resuscitation to the baby and then I will separate" FGDP10

"I look at the baby's condition, that's what makes me cut the cord. I can cut even within four or five minutes but it depends on the status of baby" FGDP2

Furthermore, the practice of maintaining warmth and encouraging bonding was reported as key on timing consideration. This has been done by drying the baby thoroughly, positioning skin to skin contact on the mother's abdomen and covering them well with a dry cloth before clamping the umbilical cord. They explained that encouraging warmth and bonding promotes extra-uterine life adaptations of the newborns but also has been used as initial intervention to the baby requiring resuscitation.

"When the baby comes out I put her on the mother's chest, dry thoroughly to give her warmth and then put her skin to skin contact with her mother cover the baby well to establish bonding, after that I will get into the task of cutting the cord" IP1NM

"*After putting the baby skin to skin contact with her mother, I do a quick assessment to exclude any complications, I make sure the baby is dry and then I clamp the cord"* IP8OBS

4.3 Perceptions about umbilical cord clamping and cutting

Early cord clamping is generally carried within first 60 seconds of birth (most commonly in the first 15–30 seconds) whereby delayed or late cord clamping is generally carried within 1 to 3 minutes of birth or when the umbilical cord pulsations have ceased(1,32). Several controlled clinical trials and reviews have showed that delayed cord clamping for about 1-3 minutes has benefits, which can significantly improve the hemodynamic and placental respiration to the infant. In this study the analysis of benefits and risks of delayed cord clamping as reported by informants generated two themes namely; Perceived benefits of delayed cord clamping (DCC) and perceived risks of delayed cord clamping (DCC).

Perceived benefits of Delayed Cord Clamping

Participants interviewed reported several benefits of delayed cord clamping, but mainly were those related to placental transfusion. The benefits reported were continuous oxygenation, increased blood volume and haemoglobin level, good extra-uterine respiratory adaptations from health self breathing, nutrients and immunity. They believed that there is an advantage of getting oxygenation for the baby with breathing problem through the blood carried by cord. This made some of the providers to wait for some time before clamping the cord to prevent hypoxia. One of the participants expressed that:

> *"There is something we talk about maternal circulation, the baby may get oxygenation because there is still a mother's blood in the cord so the baby can get oxygenation let us say the RBCs will be still carrying oxygen and the baby gets from the mother"* IP8OBS

> "*it is possible to clamp immediately when the baby comes out, but if there will be problems with breathing to the baby we will still need oxygen from the mother to prevent hypoxia which may be caused by limited oxygen"* FGDP9

> *"In my thinking by delaying on cutting the umbilical cord first helps even with prevention of anaemia through increased haemoglobin level as the baby will continue to get through cord from the placenta"* FGDP4

Early bonding and warmth was also seen as the benefit of delayed cord clamping by informants. They said that after birth the baby is always being placed skin to skin contact on the mother's chest to get warmth which stimulates the baby to be more active but also promotes bonding. One participant had this to say;

> *"(....) With delayed clamping there is a bonding made between the mother and the baby, as well as the baby gets warmth from the mother through skin to skin contact that also helps with stimulation of the baby to become more active"* IP6NM

Other participants reported benefits of nutrients and immunity from delayed cord clamping.

(.....)In delayed cord clamping the baby gets oxygen, nutrients and immunity" IP9OBS

"there are other substances that are in the placenta and are beneficial to the baby if left longer before clamping which I think the baby will be still getting, like nutrients" FGDP4

Perceived risks of Delayed Cord Clamping

Participants from this study reported blood volume overload (polycythermia), reverse transfusion (neonate to placenta transfusion), hypothermia and transmission of infection as risks of delayed umbilical cord clamping. One participant had this to say about blood overload;

"The risks of delayed cord clamping there is something called a transfusion that can cause blood volume overload in the baby`s blood circulation" IP7OBS

Another participant though that delayed cord clamping may cause reverse transfusion of blood from the baby to the placenta.

"In my perception (.....)if I continue leaving the baby for so long without clamping the blood may come back from the baby towards the placenta" IP4NM

Transmission of infection through the umbilical cord was also reported to be the concern for early cord clamping:

"(....) If we delay on clamping, there is a transmission of infection or there may be a high risk of infection transmission from mother to baby" IP7OBS

"The reason which make us find ourselves cutting the cord immediately is preventing the transmission of HIV from the mother to the baby (.....) so at birth we cut the cord quickly to prevent that" FGDP7

However participants during group discussion raised different concerns about delayed cord clamping allowing the transmission of infection. Explained that the risk of infection occurs when there is birth trauma and not through the blood carried by cord. Also added explanation

by saying that we just need the standard for us to adhere to the recommended time as described below;

> *"I have different ideas for I know that the mode of transmission of HIV from mother to baby is due to lacerations or trauma during childbirth but not through the cord so if it is a standard that the cord clamping if the condition of the baby is good should be after may be 2 minutes or after 1 minute I think that is a good thing"* FGDP9

> *"I do not think there is a transmission of infection from the mother to the baby because of delayed umbilical cord clamping"* FGDP3

4.4 Factors which may influence application of evidence on umbilical cord clamping

In this study nurse-midwives and obstetricians reported personal and health care facilities factors which may influence the application of evidence on timing of umbilical cord clamping. The analysis generated three themes namely; having good knowledge about umbilical cord clamping, lack of guidelines and SOPs, inadequate skilled human and non-human resources.

Having good knowledge about umbilical cord clamping

Knowledge about timing of umbilical cord clamping may enable their application of the information into real practice. They explained that lacking knowledge made them unable to change their attitude of doing things as a routine and practice based on the evidence. One of the informants said that:

> *"I need to have enough knowledge about delivery because every day there is changes concerning delivery"* IP2NM

Having good attitude was also reported as key factor because it may facilitate the willing to change and agree with what the published evidence recommend, hence change the practice;

> *"(....) we don't need anything rather than changing our attitude; so what I mean on changing the attitude is that we have to agree with the recommended time, we should not practice in our own way we should be ready to change because people have invested in research to give us findings and simplified by showing us which is a safe practice and which is not"* IP7OBS

Lack of guidelines and SOPs

In addition to knowledge nurse-midwives and obstetricians frequently spoke about having guidelines and standard operating procedures that would be very helpful for their practice. They explained that guidelines will remind and guide them on how to provide services, hence promptly implement stipulated interventions that promote maternal and newborn health. One of the participants expressed that;

> *"My thinking is that, every facility should have a SOP in addition to that of WHO, I know there is a national guideline, but standard operating procedures should be available for everyone for example of myself it is not like I don't know things, it is possible because there is no SOP that reminds me every time that's why I take things just simple as a routine"* IP7OBS

Participants from focus group discussion reported the same concern that displaying the protocol on their notice board where everyone can be able to read and get updated on various practices would help them on compliance with evidences.

> *"SOPs and protocol are very important (.....),so when SOP is displayed on notice board every nurse- midwife will visit the notice board and read the information that say how long should it take before clamping or separating the baby from the mother"* FGDP10

> *"(….) what can help us more is the availability of standard or guideline which show at what time we should clamp because changes are there and occur often, what I remember previously during my studies we practiced the immediate cord clamping but now things have changed that we have to wait for 1 minute before clamping even if the baby`s Apgar score is low"* FGDP9

Inadequate skilled human and non-human resources

Participants pointed out that high work load due to shortage of staff and equipment made it difficult for them to perform some of the procedures as required. They explained that having adequate skilled providers would influence them on application of evidence in their daily practice. They also reported that majority practiced early cord clamping because of being few compared to the number of clients, often they clamp immediately after birth because they have to move to the next client. One participant expressed that;

> *"Sometimes we are overloaded, I have to receive the baby put on her mother`s chest, cover them well and go to the other client do the same something which is wrong, so adequate number of staff will help us to clamp the cord at the right time"* IP2NM

Owing to poor working environment, severe shortage staff and equipment such as watch and delivery packs providers could not apply standards on most of the procedures even when had good knowledge.

> *"The things that are required are motivation in a different way for example improving the working environment, ensuring adequate number of staff, good ratio of providers and client's can help to improve the quality of care provided"* IP8OBS

Some providers reported that having adequate equipment especially of resuscitation would help them delay to clamp the cord as they will be able to provide bed side resuscitation. Sometimes this contributed to immediately cord clamping for the aim of moving to the other room or table where equipment for resuscitation can be accessible. They reported to have only one table set up specific for newborn resuscitation where everyone in labour ward use for resuscitation and it is not possible to move with instrument to the bed.

> *"Equipment to help the baby breathe should also be available in the delivery room where it will slow down the speed of cutting the cord quickly for the aim of resuscitation somewhere else, but if tools are available there, resuscitation can be done on bed side while still there a connection"* IP9OBS

4.5 Strategies to ensure competence of human resources

In this study participants suggested some strategies that could improve their practice on delaying umbilical cord clamping in order to promote the newborns health. These included availability of on-job training, good supportive supervision and motivation.

Continuous and sustainable on-job Training

On job training can increase knowledge levels, hence ensure competence among human resources. Providers reported that they had been conducting continuous medical education in every two weeks to improve their knowledge and skills surprisingly they have never been trained on this important evidence which has shown potential benefits to the newborn health. They explained that the availability of in-service training on umbilical cord clamping would encourage them to practice based on the standard to promote the newborns health. One participant had this to say:

> *"People should be trained in order to be aware of the current changes regarding the timing of umbilical cord clamping, its benefits and other things about conducting delivery for us to practice as per standard, so we should be given that education"* IP5NM

Other participants thought that on-job training and CME sessions on benefits and risks of delayed and immediate cord clamping respectively can be helpful. They spoke that these sessions would help to identify areas of improvement that can be addressed.

> *"Regularly we need to get in-service education sessions to remind us that there are some changes so that we also change our practice because sometimes we tend to overlook some of the areas"* IP3NM

> *"We should be given education through continuing medical education (CME); we may be given information about changes on a certain practice through on-job trainings for everyone to be aware of the available changes"* FGDP6

Regular supportive supervision

In addition to on-job training nurse-midwives frequently described how regular supportive supervision would influence their practice basing on the evidence. They reported that professional and technical guidance is important as they may be thinking that they are providing quality care while they do not apply the evidence on their practice. They remarked that supportive supervision with trained members and specialists would provide updates and help them to demonstrate best practice on newborn health care services. One participant explained that;

> *"Any leader may be reminding us through supervision because the way I am doing all things I may not be doing correctly even though I have been taught in class what I am supposed to do but at some point someone else can see what I am doing I should probably make some changes"* IP4NM

Focus group discussion participants reached consensus that supervision from experts can help to identify areas which needs more emphasis or areas which needs to offer more trainings to improve care. As one participant pointed out;

> *"on my side I see that supervision should be available for people to know that they are required to practice while following guidelines in conducting deliveries, we do have regular supervision but in the issue of timing of cord clamping we have never been trained or supervised"* FGDP5

CHAPTER FIVE
DISCUSSION OF KEY FINDINGS

5.0 Introduction

This chapter discusses key findings obtained from this study following specific objectives. To better understand the nurse-midwives and obstetricians' experiences and perceptions on timing of umbilical cord clamping a qualitative method was used. Participants were recruited from Temeke Regional Referral Hospital in Dar es Salaam. Descriptive data was obtained through in-depth interviews with six nurse- midwives and three obstetricians and focus group discussion with 10 nurse-midwives. This study has illuminated an overview of general experiences and perceptions related to the timing of umbilical cord clamping.

5.1 Experiences regarding timing of umbilical cord clamping

According to the findings from this study, participants had various practices on timing of umbilical cord clamping based on their experiences. Those who clamp the umbilical cord within 60 seconds following uncomplicated birth had experience of not seeing any difference in the neonatal outcome with early or delayed clamping. This is different from what was revealed in Netherlands, where delayed cord clamping were widely used after uncomplicated vaginal term and preterm deliveries using cessation of cord pulsation as the time point for cord clamping(18). However in the observational study done in Canada similar findings were reported where by more than half (56.2%) of all infants observed had their umbilical cord clamped immediately within 15 seconds after spontaneous vaginal birth(17).

Key findings also revealed that those who have been clamping the umbilical cord after cessation of cord pulsations or within 2-3 minutes had ever experienced the changes in baby`s apgar score (good muscle tone and colour). Furthermore, other participants had experience of looking on the status of the baby`s condition in order to provide initial resuscitation, encourage warmth and bonding before clamping the umbilical cord for the baby who is requiring resuscitation to benefit from placental respirations. This is different from other countries where by delayed umbilical cord clamping has been a standard of care. For example in Saudi Arabia nurse-midwives and obstetricians practiced delayed cord clamping because they believed that it was generally good for both preterm and term babies because it has long term benefits beyond neonate period(32). One possible explanation of this variation could be that both nurse-midwives and obstetricians in Temeke hospital may not be well aware of the

existence of newly established WHO and TANP recommendations on the benefits of delayed cod clamping. According to the findings of this study, cadres or years of working experience in maternal and newborn health care didn't show any difference in practice of timing of umbilical cord clamping.

5.2 Perceptions about Umbilical Cord Clamping and cutting

This study found out that there were few or less perceived risks and benefits of delayed cord clamping reported by nurse-midwives and obstetricians which are consistent to the published evidence of the benefits associated with delayed umbilical cord clamping. Providers were more likely to practice a delayed cord clamping for continuous oxygenation. They also reported to opt for delayed cord clamping for potential benefit of increased blood volume and haemoglobin level, increased pulmonary blood flow to prevent hypoxia, onset of extra-uterine respirations, nutrients and immunity. Other potential benefits such as decreased risk of intravascular haemorrhage, increased iron storage up to six months, late onset sepsis, cardiovascular system transition and neuro-development were not significantly reported by informants even though are published evidence associated with delayed cord clamping to lower the newborn risks. This is similar from what was revealed in the study done is USA where by the risks and benefits of optimal timing of umbilical cord clamping believed by obstetricians' were inconsistent with what is in the current literature(39).

Furthermore, the perceived risks of delayed cord clamping reported by informants were not substantiated by the current evidence and may need to be addressed through training. They reported different concerns as their reasons of not opting delayed cord clamping such as blood volume overload, fetal-placental transfusion, hypothermia and infection transmission. However, some of the participant`s opinions were against these assumptions and shown positive perception towards delayed cord clamping. The current evidence doesn't show if infection such as HIV can be transmitted through a delay in clamping cord. Moreover, the evidence has shown that delayed cord clamping is associated with placental transfusion towards the baby and decreases the risk of blood transfusion, with doing so it is not associated with foetal to placenta transfusion to cause anaemia to the neonate. The evidence says that immediately after the baby is born placental blood continues to flow in the direction of the child as long as he or she is positioned up to 10 cm above the level of the placenta(47).

Variations in participants' perception toward DCC were markedly higher rates of positive perceptions toward DCC among young professionals and among those with fewer years in practice. This is different from what was observed in Saudi Arabia where by higher rates of positive attitudes toward DCC were noted among male respondents and among those with more years of obstetrics and gynaecology practice(32).

5.3 Factors which may influence application of evidence

The key findings from this study revealed that the implementation of the recommended timing of umbilical cord clamping in Temeke Regional Referral hospital would be influenced by several personal and health care facilities factors. These were having good knowledge about umbilical cord clamping, lack of guidelines and SOPs, inadequate skilled human and non-human resources.

The key findings from this study revealed that it may be easy to apply evidence on timing of umbilical cord clamping if providers will be provided with the current knowledge and skills through training during their studies or through on job training. This was because the topic was seen as new to participants thus why they were not able to provide adequate information on the benefits and risks of delayed cord clamping. This implies that participants had no good knowledge on the timing of umbilical cord rather their practice was based on the routine care. This finding is different from the study done in Netherlands where by most providers practiced delayed cord clamping and had capacity to provide adequate information about recommended time of umbilical cord clamping and benefits of delayed cord clamping because they were exposed to clinical trainings on this evidence (12).

The key results from this study also pointed out a need of guidelines and SOPs for guiding nurse-midwives and obstetricians on the application of evidence on timing of umbilical cord clamping to implement this practice. They reported that WHO guideline may be existing but the availability of National guidelines focusing specifically on umbilical cord clamping time in their working place may be very useful tool on the application of this evidence. This is similar to findings from other studies that reported lack of guidelines, policies, SOPs and protocols as factor on wide variation of umbilical cord clamping practice and it was listed to be potential on delayed cord clamping implementation in hospital setting(18,32,35).

Shortage of supporting resources such as staff and equipment was reported to be possible factor which may hinder them to apply the evidence based practice on timing of umbilical cord clamping. This implies that due to shortage of providers the existing staffs were overwhelmed with work load which contributed to the immediately clamping of umbilical cord for the purpose of saving time to move to the next client in the situation where more than one woman may be in pushing stage while there is only one midwife in the unit. They reported that availability of staff and equipment such as wall watches would help them on the application of evidence on timing of umbilical cord clamping after being impacted with the knowledge of optimal time for clamping cord.

5.4 Strategies to ensure competence of human resources on umbilical cord clamping

Due to the fact that most participants were unaware of the timing of umbilical cord clamping and the various potential benefits of delayed cord clamping, on-job training and good supportive supervision were reported as key strategies to use in order to improve their practice. They suggested that having regular continuing medical education sessions on timing of umbilical cord clamping may help them to increase knowledge level and improve their practice. Training is the most effective way of transmitting the current knowledge and skills which may be useful in changing their routine practice to evidence based practice and promote the maternal and new born health. Furthermore, the direct quotes from informants showed the great need of on-job training as a way to reach large number of audiences but also as the main way of reminding them important skills to apply in their practice. Interdisciplinary on-job training sessions can provide an open forum for midwives and obstetricians to discuss several concerns about appropriate umbilical cord clamping time for the benefits of the newborn. This is similar to the study done in Saudi Arabia where they found out the need to offer educational programs on the various benefits of delayed cord clamping for midwives and non-Saudi obstetricians' professionals for improving their knowledge and practice(32).

Interviewed informants reported that they received regular monitoring and supportive supervisions from Ministry of health, Regional Health Management Team (RHMT) and Non-Governmental Organization working in the municipality however the supervision never included the practice of umbilical cord clamping. Regular supervision would provide them with new updates on the recommended optimal time for umbilical cord clamping and its benefits to the newborn. Furthermore, supervision to specific new/current practice would help them on the application of evidence on timing of umbilical cord clamping.

It is well documented that regular supportive supervisions to health care facilities provide health care providers with new updates on the implementation of delayed cord clamping as recommended on existing umbilical cord clamping guidelines(38). This finding entails that successful implementation of evidence on timing of umbilical cord clamping will highly depend on regular supportive supervision.

The study revealed the need of motivation through different ways such as allowances, good working environment, and adequate supporting resources as a strategy to foster good practice. Similar finding has been documented in other studies that motivation to the targeted staff can contribute to the readiness towards the change of practice or implementation of the new practice(38).

5.5 Study limitation and mitigations

Using in-depth interview in the presence of the researcher could make some participants to over report good behaviour and under report undesirable behaviour (social desirability bias). This was mitigated by asking indirect questioning to countercheck responses and effective interview techniques.

It was very difficult to organize the FGD. Only one FGD was conducted and successful organized with the help of the ward in charge

The researcher being a midwife may influence the information from the participants. However, this was mitigated through ‘bracketing’ to minimize the researcher’s influence during data collection and analysis(40).

CHAPTER SIX
CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Results from this study have demonstrated a variation of experiences on timing of umbilical cord clamping. Despite the nurse-midwives and obstetricians experience of clamping the umbilical cord immediately or within 60 minutes, they acknowledge that delay in umbilical cord clamping has a potential benefit of oxygenation to the newborn requiring resuscitation. However, other potential benefits of delayed umbilical cord clamping such as decreased risk of intravascular haemorrhage, increased iron storage up to six months, late onset of sepsis, cardiovascular system transition and neuro-development were not reported. Perceived risks of delayed cord clamping such as transmission of infection which are not substantiated by the current evidence were reported by majority and may need to be addressed.

Despite the benefits of delayed umbilical cord clamping participants were unaware of the recommended optimal time for umbilical cord clamping and its benefits. Having good knowledge about umbilical cord clamping, lack of National guidelines and SOPs and inadequate supporting resources such as staff and equipment are factors reported to influence uptake and realisation of the evidence. On-job training and regular supportive supervision were suggested by participants as among strategies to improve skills of health personnel.

6.2 Recommendations

Policy

The Ministry of Health, Community Development, Gender, Elderly and Children should prepare the National umbilical cord clamping guidelines consistent with WHO and Tanzania National Anaemia Profile recommendations and ensure that it is realised to improve neonate outcomes.

Nursing/Midwifery Education

On job training programmes on evidence practice of delayed cord clamping and its benefits to the newborn that extends to infancy should be provided to health care providers especially to nurse-midwives, obstetricians and paediatricians. The acquired knowledge will encourage a routine change in practice into evidence based practice on timing of umbilical clamping, hence promote the newborn health. More over to strengthen the pre-service training of intrapartum

and newborn care where timing of umbilical cord clamping is included to foster competence based practice and improve the neonatal health and nutrition outcome.

Practice

The Regional/District/Hospital management team should provide regular supportive supervision, dissemination of research findings and ensure that evidence is used to improve practice of umbilical cord clamping.

The nurse-midwives and obstetricians to participate in peer learning, coaching and mentorship programs in order to improve their skills.

The government to employ adequate number of nurse-midwives and other health care providers in Temeke municipality to match with the workload thus improve quality of maternal and newborn care.

6.3 Recommendations for Future Studies

This study has established an overview on the experience and perceptions regarding timing of umbilical cord clamping at Temeke regional referral hospital, I recommend that a quantitative study be carried out to identify the magnitude of the problem to complement findings of this study. It has also explored some factors and strategies which can enhance the human resources competences. Intervention study that will include the training on delayed umbilical cord clamping followed by prospective study employing participant observation method to assess its effectiveness. We also recommend a randomized clinical trial to assess the outcome of infants` haemoglobin levels following early versus delayed cord clamping.

REFERENCES

1. WHO. Guideline: Delayed umbilical cord clamping for improved maternal and infant health and nutrition outcomes. Geneva World Heal Organ 2014.
2. McDonald S, Middleton P. Effect of timing of umbilical cord clamping of term infants on maternal and neonatal outcomes (Review). Cochrane Database Syst Rev. 2008;(2).
3. WHO. Guidelines on Basic Newborn Resuscitation. Geneva World Heal Organ 2012.
4. Weeks AD, Watt P, Yoxall CW, Gallagher A, Burleigh A, Bewley S, et al. Innovation in immediate neonatal care : development of the Bedside Assessment , Stabilisation and Initial Cardiorespiratory Support (BASICS) trolley. BMJ Innov. 2015;(1):53–8.
5. Prendiville W, Elbourne D, Mcdonald S. Active versus expectant management in the third stage of labour. Cochrane Database Syst Rev. 2000;(4).
6. McDonald S. Physiology and management of the third stage of labour. Myles Textbook for Midwives. 14th Editi. Fraser D CM, editor. Churchill Livingstone; 2003.
7. WHO. WHO recommendations for the prevention and treatment of postpartum haemorrhage. Geneva, World Heal Organ 2012.
8. Stoll K, Hutton E. A survey of umbilical cord clamping practices and attitudes of Canadian Maternity Care Providers. Can J midwfery Res Pract. 2012;II(3):18–29.
9. Polglase GR, Dawson JA, Kluckow M, Gill AW, Davis G, Pas AB, et al. Ventilation Onset Prior to Umbilical Cord Clamping (Physiological-Based Cord Clamping) Improves Systemic and Cerebral Oxygenation in Preterm Lambs. PLoS One. 2015;10(2):1–13.
10. Andersson O, Hellstrom-Westas L, Andersson D, Clausen J, Domellof M. Effects of delayed compared with early umbilical cord clamping on maternal postpartum hemorrhage and cord blood gas sampling : a randomized trial. Acta Obs Gynecol Scand. 2013;92:567–74.
11. Ashish KC, Rana N, Målqvist M, Ranneberg L, Subedi K, Andersson O. Effects of Delayed Umbilical Cord Clamping vs Early Clamping on Anemia in Infants at 8 and 12 MonthsA Randomized Clinical Trial. JAMAPediatrics. 2017;171(3):264–70.
12. Hooper SB, Binder-Heschl C, Polglase GR, Gill AW, Kluckow M, Wallace EM, et al. The timing of umbilical cord clamping at birth : physiological considerations. Matern Heal Neonatol Perinatol. 2016;4(2):1–9.
13. Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) [Tanzania Mainland], Ministry of Health (MoH) [Zanzibar], National

Bureau of Statistics (NBS), Office of the Chief Government Statistician (OCGS), and ICF. Tanzania Demogr Heal Surv Malar Indic Surv 2015-16.

14. Ngwenya S. Postpartum hemorrhage: Incidence, risk factors, and outcomes in a low-resource setting. Int J Womens Health. 2016;8:647–50.
15. World Health Organization. The Global Prevalence of Anaemia in 2011. Geneva World Heal Organ. 2015;
16. Radlowski EC, Johnson RW. Perinatal iron deficiency and neurocognitive development. Front Hum Neurosci. 2013;7:1–11.
17. Hutton EK, Stoll K, Taha N. An Observational Study of Umbilical Cord Clamping Practices of Maternity Care Providers in a Tertiary Care Center. Birth issues Perinat care. 2013;40(1):39–45.
18. Boere I, Smit M, Roest AAW, Lopriore E, Van Lith JMM, Te Pas AB. Current practice of cord clamping in the Netherlands: A questionnaire study. Neonatology. 2015;107:50–5.
19. McDonald S, Middleton P, Dowswell T, Morris P. Effect of timing of umbilical cord clamping of term infants on maternal and neonatal outcomes (Review). Evid-Based Child Heal. 2014;9:2(7):303–97.
20. Tanzania National Anemia Profile. 2010;
21. Bhatt S, Alison BJ, Wallace EM, Crossley KJ, Gill AW, Kluckow M, et al. Delaying cord clamping until ventilation onset improves cardiovascular function at birth in preterm lambs. J Physiol. 2013;591(8):2113–26.
22. Hooper S, Polglase G, te Pas AB. A physiological approach to the timing of umbilical cord clamping at birth. Arch Dis Child Fetal Neonatal Ed. 2015;100:355–60.
23. Andersson O, Lindquist B, Lindgren M, Stjernqvist K, Domellöf M, Hellström-Westas L. Effect of Delayed Cord Clamping on Neurodevelopment at 4 Years of AgeA Randomized Clinical Trial. JAMAPediatrics. 2015;169(7):631–8.
24. WHO. Guideline : Intermittent iron supplementation in preschool and school-age children. Geneva, World Heal Organ 2011.
25. Bayer K. Delayed Umbilical Cord Clamping in the 21st Century. Adv Neonatal Care. 2016;
26. Ersdal HL, Linde J, Auestad B, Mduma E, Lyanga S, Svensen E, et al. Timing of cord clamping in relation to start of breathing or ventilation among depressed neonates — an observational study. BJOG. 2016;123:1370–7.

27. Hege A, Ersdal L, Linde J. Neonatal Outcome Following Cord Clamping After Onset of Spontaneous Respiration. Pediatrics. 2017;134(2):265–72.
28. Gagnon M, Cassista J, Gagnon J, Martel B. Applying the Theory of Planned Behaviour to understand nurse intention to follow recommendations related to a preventive clinical practice. J Reseach Nurs. 2015;20(7).
29. White KM, Jimmieson NL, Obst PL, Graves N, Barnett A, Cockshaw W, et al. Using a theory of planned behaviour framework to explore hand hygiene beliefs at the "5 critical moments" among Australian hospital-based nurses. BMC Health Serv Res. 2015;15(1):1–9.
30. Ajzen I. The theory of planned behavior. Orgnizational Behav Hum Decis Process. 1991;50:179–211.
31. Mcdonald S, Middleton P, Dowswell T, Morris P. Effect of timing of umbilical cord clamping of term infants on maternal and neonatal outcomes (Review). Cochrane Database Syst Rev. 2013;(7).
32. Ibrahim NO, Sukkarieh HH, Bustami RT, Alshammari EA, Alasmari LY, Al-kadri HM. Current umbilical cord clamping practices and attitudes of obstetricians and midwives toward delayed cord clamping in Saudi Arabia. Ann Saudi Med. 2017;37(3):216–24.
33. Cernadas C. Timing of umbilical cord clamping of term infants. Arch Argent Pediatr. 2017;115(2):188–94.
34. Bayer K. Evidence-Based Practice Brief: Delayed Umbilical Cord Clamping in the 21st Century Indications for practice. Adv Neonatal Care. 2016;16(1):68–73.
35. Lundberg C. Umbilical cord clamping at birth – practice in Norwegian maternity wards. 2013;133:2369–73.
36. Hege A, Ersdal L, Linde J. Neonatal Outcome Following Cord Clamping After Onset of Spontaneous Respiration. Pediatrics. 2014;134(2):265–72.
37. Mercer JS, Nelson CC, Skovgaard RL. Umbilical Cord Clamping : Beliefs and Practices of American Nurse-Midwives. J Midwifery Women's Heal. 2000;45(1):4–5.
38. McAdams RM, Backes CH, Hutchon DJR. Steps for implementing delayed cord clamping in a hospital setting. Matern Heal Neonatol Perinatol. 2015;1:10:1–8.
39. Jelin AC, Kuppermann M, Erickson K, Clyman R, Jelin AC, Kuppermann M, et al. Obstetricians ' attitudes and beliefs regarding umbilical cord clamping. J Matern Neonatal Med. 2014;27:14:1457–61.

40. Polit D, Beck C. Nursing Research: Principles and Methods. Seventh Ed. Lippincott Williams Wilkins; 2008. 245-580 p.
41. National Bureau of Standards. 2012 Population and housing census. 2013;I:74. Available from: www.nbs.go.tz
42. Temeke Regional Referral Hospital. Annual Maternity Report Summary Book, 2017.
43. Schneider Z WD. Nursing And Midwifery Research, methods and appraisal for evidence based practice. Fourth Ed. Melinda McEvoy; 2013. 104-160 p.
44. Creswell JW. Qualitative Inquiry & Rerearch Design: Choosing Among Five Approaches. second edi. SAGE Publications Inc; 2013. 35-220 p.
45. Clarke V, Braun V. Teaching thematic analysis : Overcoming challenges and developing strategies for effective learning Associate Professor in Sexuality Studies Department of Psychology Faculty of Health and Life Sciences University of the West of England Coldharbour Lane Br. 2013;26:120–3.
46. Braun V, Clarke V. Using thematic analysis in psychology. Qualitative Research in Psychology. 2006;3(2):77–101.
47. Rheenen P Van. Delayed cord clamping and improved infant outcomes. BMJ. 2011;7127(343):1–2.

APPENDICES

Appendix I: In-depth Semi-Structured Interview Guide for nurse-midwife/obstetrician (English version).

Before I begin, I would like to thank you for taking this time to participate in this study. The information you provide will help us to better understand the experiences and perceptions of nurse-midwives and obstetricians regarding the timing of umbilical cord clamping and factors which influence their practice at Temeke Regional Hospital. Your responses will be kept confidential. There is no right or wrong answer and the intent of the interview is to understand your experiences and perceptions. You can feel free to be open and honest as you can but if there is any question you would prefer not to answer or if you would like to stop the interview, please let me know. There will be no consequences if you decide not to answer any question (s) or if you would like to stop the interview.

Participant demographics: Name of Interviewer _____

Date _____

Participant number _____

Age _____

Occupation _____

Education level; Form 4__ Form 6__ University __ Other (specify)

Professional education for nurse-midwives:.....

Professional education for obstetricians:.....

How many years have you worked in maternal and newborn care _____

In-depth Semi-Structured Interview Questions

1. Can you tell me about your experience regarding the timing of umbilical cord clamping after the delivery of the baby? What do you consider before you clamp the cord? How long do you wait until you clamp the cord? Why so?

2. How do you perceive issues that would make you decide the time of cord clamping? What are the reasons for immediate cord clamping? Delayed cord clamping?
   Probe; benefits of ECC
   benefits DCC
   risks or disadvantages of ECC
   risks or disadvantages of DCC

3. What are the factors influencing the timing of umbilical cord clamping?
   Probe; What are the personal factors?
   What are the health facility factors?

4. What do you think about the timing of UCC? **Probe**: what do you suggest?

   Is there anything you would like to say about the timing of UCC?

   Thank you for your time!

Kiambatanisho II: Mwongozo wa majadiliano kwa wauguzi-wakunga na madaktari wa uzazi (kwa kiswahili).

Kabla ya kuanza napenda kukushukuru kwa kutumia muda wako kushiriki katika utafiti huu. Maelezo utakayoyatoa yatatusaidia kuelewa vizuri uzoefu na mtazamo wa wauguzi-wakunga na madaktari wa uzazi kuhusu muda wa kubana kamba ya kitovu baada ya mtoto kuzaliwa na mambo yanayo zuia au wezesha utendaji wao katika hospitali ya mkoa ya Temeke. Maelezo yako yatakuwa ni siri yako na mtafiti. Nitakuuliza maswali kadhaa kuhusu kazi yako kama muuguzi-mkunga / daktari bingwa wa uzazi, kwa akina mama, watoto na familia zao. Hakuna jibu sahihi au jibu lenye makosa. Dumuni la mahojiano haya ni kuibua uzoefu na mtazamo wako. Jisikie huru kuwa muwazi na mkweli kadri unavyoweza, hata hivyo, kama kuna swali ambalo hujisikii kulijibu au ungependa kusitisha mahojiano, tafadhali nijulishe. Hakutakuwa na madhara kwako kama utaamua kutojibu maswali fulani au kusitisha mahojiano.

Taarifa binafsi za mshiriki

Jina la mhoji..... Tarehe.....

Namba ya mshiriki..... Umri.....

Kada .....

Elimu: Kidato cha nne..... ...Kidato cha sita.....chuo kikuu.....kwingine.....

Elimu ya kitaaluma kwa muuguzi-mkunga: .....

Elimu ya kitaaluma kwa daktari wa uzazi:.....

Umeshafanya kazi kwa muda wa miaka mingapi kwenye afya ya mama mzazi na mtoto?.....

Maswali ya majadiliano

1. Je? Unaweza kunieleza juu ya uzoefu wako kuhusu muda wa kubana kamba ya kitovu baada ya mtoto kuzaliwa? Je? Unazingatia nini kabla ya kubana kamba ya kitovu? Je? huwa unasubiri muda gani hadi ubane kamba ya kitovu? Kwa nini?

2. Je? Unamtazamo gani kuhusu masuala yanayofanya uamue muda wa kubana kamba ya kitovu baada ya mtoto kuzaliwa? Ni sababu gani hufanya ubane mapema au

uchelewe kubana? ***Dodosa zaidi-*** faida za kuwahi kubana, faida za kuchelewa kubana, hatari au hasara za kuwahi kubana na hatari na hasara ya kuchelewa kubana.

3. Unadhani ni mambo gani yanayowezesha muda wa ubanaji wa kamba ya kitovu baada ya mtoto kuzaliwa? ***Dodosa zaidi***- je ni mambo gani ya kibinafsi, na unadhani ni mambo gani yanayohusiana na kituo cha afya.

4. Wewe unafikiri nini kuhusu muda wa kubana kamba ya kitovu baada ya mtoto kuzaliwa? ***Dodosa zaidi***- nini mapendekexo yako kuhusiana na hilo?

   Kuna kitu chochote ungependa kusema kuhusu muda wa kubana kamba ya kitovu baada ya mtoto kuzaliwa?

Asante kwa muda wako

Appendix III: FGD interview Guide (English version)

Pre amble

This study is aimed at exploring nurse-midwives and obstetricians' experiences, perceptions and factors influencing their practice on timing of umbilical cord clamping.

The study is being conducted by Dorkasi Mwakawanga, I am pursuing Masters Degree of Science in Midwifery and Women's Health at MUHAS.

I anticipate that your participation in this study through in-depth Interview will enable you to give your experiences, perceptions and factors influencing your practice regarding the timing of umbilical cord clamping. The information gathered will generate a research report that may in turn be used by relevant authorities' such as Temeke hospital, nurse-midwives and MoHCDGEC, policy/guideline makers and other stakeholders to make some recommendations that will help in improving maternal and child health in Tanzania.

Please feel free to share your views, all information you share will be used for research report and will be handled with highly confidentiality.

Questions

1. Can you tell me about your experience regarding the timing of umbilical cord clamping after the delivery of the baby?
   Probe; the timing and what do they consider before clamping

2. How do you perceive issues that would make you decide the time of cord clamping?
   Probe; reasons of clamping early or late

3. What are the factors influencing the timing of umbilical cord clamping?

Appendix IV: FGD interview question guide (Swahili version)

Utangulizi

Huu ni utafiti unaokusudia kuangalia uzoefu na mtazamo wa wauguzi-wakunga na madaktari wa uzazi kuhusu muda wa kubana kamba ya kitovu baada ya mtoto kuzaliwa katika hospitali ya mkoa ya Temeke.

Utafiti huu unafanywa na Dorkasi Mwakawanga, mwanafunzi wa shahada ya uzamili ya Ukunga na Afya ya Wanawake katika Chuo Kikuu Afya na Sayansi Shirikishi Muhimbili.

Ni matarajio yangu kuwa ushiriki wako katika utafiti huu kupitia mahojiano yatakuwezesha kuelezea uzoefu na mtazamo wako kuhusu muda wa kubana kamba ya kitovu baada ya mtoto kuzaliwa.Maelezo yatakayopatikana yatatumika katika ketengeneza taarifa ambayo itatumika katika mamlaka husika, kama vile hospitali ya mkoa ya Temeke,Wakunga ,MUHAS, Wizara ya Afya na Ustawi wa Jamii.Watunga sheria na wadau wengine kwa kutoa mapendekezo ambayo yatasaidia uboreshaji wa huduma kwa akina mama na watoto wachanga katika nchi yetu ya Tanzania, pia kuboresha utenda kazi kwa wakunga ili kuendana na sayansi ya kisasa kulingana na tafiti mbalimbali.

Tafadhali kuwa huru kuchangia uzoefu na mtazamo wako kuhusu muda wa kubana kamba ya kitovu baada ya mtoto kuzaliwa.Mchango wako kuhusu uzoefu na mtazamo wako utatumika katika kutengeneza taarifa muhimu za utafiti huu. Maoni yako yanathaminiwa kwa kiasi kikubwa na yatatunzwa kwa siri sana.

Maswali

1. Je ? unaweza kunieleza uzoefu wako kuhusu muda wa kubana kamba ya kitovu baada ya mtoto kuzaliwa ? ***dodosa zaidi ;*** muda ambao hubana na nini huwa wanazingatia kabla ya kubana
2. Je? Unamtazamo gani kuhusu masuala yanayofanya uamue muda wa kubana kamba ya kitovu baada ya mtoto kuzaliwa? Ni sababu gani hufanya ubane mapema au uchelewe kubana?***dodosa zaidi***; sababu za kubana mapema au kuchelewa kubana
3. Unadhani ni mambo gani yanayowezesha muda wa kubana kamba ya kitovu baada ya mtoto kuzaliwa?

Appendix V: Informed consent form for nurse-midwives/obstetricians (English Version)

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED HEALTH SCIENCES

DIRECTORATE OF RESEARCH AND PUBLICATIONS

ID. NO ☐

CONSENT FORM FOR PARTICIPATING IN A RESEARCH STUDY

Hello greetings! My name is **Dorkasi L. Mwakawanga**. I am studying Master of Science in Midwifery and Women`s Health at Muhimbili University of Health and Allied Sciences (MUHAS). I am doing research on experiences and perceptions of nurse-midwives and obstetricians regarding the timing of umbilical cord clamping at Temeke Regional hospital in Dar es Salaam.

The aim of the Study

This study aims to explore the experiences and perceptions of nurse-midwives and obstetricians regarding the timing of umbilical cord clamping at Temeke Regional hospital. The findings of this study will provide depth information about factors influencing the practice of timing of umbilical cord clamping, the information will help the municipal health authorities in identifying factors that motivate or hinder implementation of delayed cord clamping as recommend by WHO and TNAP guidelines. The findings will also contribute on the advancement of umbilical cord clamping knowledge and hence practice of nurse-midwives` and obstetricians` in the country for improving maternal and newborn health and nutrition outcome.

Procedure

I would like you to participate in this study. You are selected because you are responsible for providing maternal and newborn care and your opinions will help to improve the intervention in the near future. If you choose to participate you will be interviewed for about 40-60 minutes and will be audio recorded because I don't want to miss any of your comments and I can't be quick enough to write everything you say.

Confidentiality

All responses will be kept confidential. This means that your interview responses will only be shared with research team members and MUHAS for academic purposes when necessary. I will ensure that any information included in my report does not identify you as the respondent.

Right to refuse or withdraw

It is your choice to participate in this study. Also you don't have to talk about anything you don't want to and you may end the interview at any time. However, I encourage you to participate because your views are very important in this study.

Benefits

Participating in this study may not benefit you personally, but might provide useful information that will benefit others and improve maternal and infants' health.

Risks

There will be no any harm to you as a result of participation in this study although some questions will be personal.

Whom to Contact

In case of any inquiry please contact the principal investigator, Ms. Dorkasi Mwakawanga (MSc. Midwifery & Women`s Health) from MUHAS, P. O. BOX 65004, Dar es Salaam, mobile number +255 762 397593. If you ever have questions about your rights as a participant, you may call Dr. Bruno Sunguya a Chairperson of the (Research and Publications Committee, MUHAS. P.O. Box 65001, Dar es Salaam-Tanzania, Tel+2552150302-6)

Signature

Do you agree to participate? Put a tick in appropriate box

Participant agrees ☐ participant does NOT agree ☐

I, ……... have read the contents of this form and understand. My questions have been answered. I agree to participate in this study.

Signature of participant……..Date……..

Signature of researcher/research assistant …….Date……..

Kiambatanisho VI: Fomu ya ridhaa kwa wauguzi-wakunga na madaktari wa uzazi (kwa kiswahili)

CHUO KIKUU CHA AFYA NA SAYANSI SHIRIKISHI MUHIMBILI

KURUGENZI YA UTAFITI NA MACHAPISHO

NAMBA YA FOMU

FOMU YA IDHINI YA KUSHIRIKI KATIKA UTAFITI

Habari, naitwa **Dorkasi L. Mwakawanga,** nasoma digrii ya uzamili ya ukunga na afya ya wanawake katika Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili(MUHAS). Ninafanya utafiti kuangalia uzoefu na mtazamo wa wauguzi wakunga na madaktari wa uzazi kuhusu muda wa kubana kamba ya kitovu baada ya mtoto kuzaliwa, katika hospitali ya mkoa ya Temeke.

Lengo la Utafiti

Utafiti huu unalenga kuangalia uzoefu na matazamo wa wauguzi-wakunga na madaktari wa uzazi kuhusu muda wa kubana kamba ya kitovu baada ya mtoto kuzaliwa katika hospitali ya mkoa ya Temeke. Matokeo ya utafiti huu yatatoa taarifa za kina juu ya mambo yanayoathiri utaratibu wa kufuata muda mwafaka wa kubana kamba ya kitovu baada ya mtoto kuzaliwa, pia itasaidia mamlaka ya afya ya manispaa kutambua sababu zinazohamasisha au kuzuia utekelezaji wa kuchelewa kubana kamba ya kitovu kama inavyopendekezwa na miongozo ya WHO na TNAP. Matokeo ya utafiti huu pia yatachangia katika kuendeleza ujuzi wa ubanaji na ukataji wa kamba ya kitovu na hivyo utendaji kazi wa wauguzi-wakunga na madaktari wa uzazi nchini kwa kuboresha matokeo ya afya ya uzazi na watoto wachanga na matokeo bora ya lishe.

Utaratibu

Ningependa ushiriki katika utafiti huu.Umechaguliwa kwa sababu unahusika katika kutoa huduma ya uzazi na watoto wachanga na maoni yako yatasaidia kuboresha huduma hii katika siku za usoni. Ikiwa unachagua kushiriki katika utafiti huu utahusushwa katika majadiliano yatakayochukua muda wa dakika 40-60 na majadilano yatarekodiwa kwa sababu sitaki kukosa maoni/mchango wako na sitaweza kuandika kila kitu unachosema kwa haraka.

Usiri

Majibu yote utakayotoa yatakuwa siri, Hii inamaana ya kuwa majibu yako yatatumiwa na mtafiti

kwa lengo la utafiti huu na kama kunaulazima yatatumiwa na Chuo Kikuu Muhimbili.

Tunakuhakikishia kwamba taarifa zote tutakazozijumuisha katika utafiti hazitakufanya ujulikane

kama ndiye mshiriki, namba zitatumika badala ya jina lako.

Haki ya kukataa au kujitoa

Ushiriki katika utafiti huu ni wa hiari. Pia hulazimishwi kuongea jambo lolote ambalo usingependa kuliongea. Unaweza kusitisha mahojiano wakati wowote endapo utaona ni vyema kufanya hivyo. Licha ya hayo tungependa ushiriki wako katika utafiti huu kwani maoni yako yanaumuhimu mkubwa.

Faida

Kushiriki katika utafiti huu hauwezi kufaidika wewe binafsi, lakini kama utakubali kushiriki katika utafiti huu, tunategemea kwamba taarifa tutakazozipata kutokakwako zitasaidia katika kuboresha utoaji wa huduma ya uzazi na watoto wachanga.

Madhara

Hatutegemei ya kwamba utapata madhara yoyote kwa kushiriki kwako katika utafiti huu japo baadhi ya maswali utakayoulizwa ni ya binafsi zaidi.

Watu wa kuwasiliana nao

Kama una maswali katika utafiti huu unaweza kuwasiliana na mtafiti mkuu, Ms. Dorkasi Mwakawanga (Msc. Mid & WH) kutoka Chuo Kikuu cha Afya na Sayansi shirikishi Muhimbili, S.L.P. 65001, Dar es Salaam. Simu namba 0762-397593. Kama utakua na swali kuhusu haki yako yaushiriki, unaweza kupiga kwa Dr. Bruno Sunguya (Mwenyekiti wa kamati ya utafiti na

machapisho, MUHAS. S.L.P 65001, Dar es Salaam-Tanzania, Tel +2552150302-6)

Sahihi

Je? Unakubali kushiriki weka alama ya tiki (√) katika kisanduku husika

Ndiyo ☐ Hapana ☐

Mimi…….....……nimesoma fomu hii ya idhini na nimeielewa. Maswali yangu yamejibiwa. Nakubali kushiriki katika utafiti huu.

Saini ya mshiriki…… Tarehe……

Saini ya mtafiti/ mtafiti msaidizi ……..

Appendix VII: Approval Ethical Clearance letter

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
OFFICE OF THE DIRECTOR OF POSTGRADUATE STUDIES

P.O. Box 65001
DAR ES SALAAM
TANZANIA
Web: www.muhas.ac.tz

Tel G/Line: +255-22-2150302/6 Ext. 1015
Direct Line: +255-22-2151378
Telefax: +255-22-2150465
E-mail: dpgs@muhas.ac.tz

Ref. No. DA.287/298/01A/

19th March, 2018

Ms. Dorkasi Mwakawanga
MSc. Midwifery and Women's Health
MUHAS.

RE: APPROVAL OF ETHICAL CLEARANCE FOR A STUDY TITLED: "TIMING OF UMBILICAL CORD CLAMPING: EXPERIENCES AND PERCEPTIONS OF NRUSE-MDIWIVES AND OBSTETRICISANS AT TEMEKE REGIONAL HOSPITAL, DAR ES SALAAM "

Reference is made to the above heading.

I am pleased to inform you that, the Chairman has, on behalf of the Senate, approved ethical clearance for the above-mentioned study. Hence you may proceed with the planned study.

The ethical clearance is valid for one year only, from 19t March, 2018 to 18th March, 2019. In case you do not complete data analysis and dissertation report writing by 18th March, 2019, you will have to apply for renewal of ethical clearance prior to the expiry date.

Dr. Emmanuel Balandya
ACTING: DIRECTOR OF POSTGRADUATE STUDIES

cc: Director of Research and Publications
cc: Dean, School of Nursing

Appendix VIII: Permission to conduct this study

Dorkasi Mwakawanga
P. O. Box 65004
Dar es Salaam
10th April, 2018.

Medical Officer incharge,
Temeke Regional referral Hospital,
P.O.BOX 45232,
Dar es Salaam

Dear Sir/Madam.

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT TEMEKE REFERRAL REGIONAL HOSPITAL

I am Dorkasi Mwakawanga, a second year postgraduate student from Muhimbili University of Health and Allied Sciences with registration number HD/MUH/T.256/2016 pursuing Master of Science in Midwifery and Women's Health.

I'm requesting to conduct research at your Institution with title; **"Timing of umbilical cord clamping: Experiences and perceptions of nurse-midwives` and obstetricians` at Temeke Regional Hospital, Dar es Salaam, Tanzania"** for the partial fulfilment of the master degree program.

Please find attached a copy of the ethical clearance and introduction letter from the Director of postgraduate studies which indicates that the study has been reviewed and approved by the chairperson of MUHAS, publications and research committee. Data collection is expected to be conducted from April 2018.

Thank you for considering my request.

Sincerely,

Dorkasi Mwakawanga.

RCH/OBGY i/c
Assist her.
Kny: MGANGA MKUU
HOSPITALI YA MANISPAA YA TEMEKE
12/04/18