

**MIDWIVES' COMPETENCY FOR IMPLEMENTATION OF
ACTIVE MANAGEMENT OF THIRD STAGE OF LABOR
IN DAR ES SALAAM MUNICIPAL HOSPITALS, TANZANIA**

Fatima Ramadhani

**Master of Critical care and Trauma in Nursing
Muhimbili University of Health and Allied Sciences
September, 2011**

**MIDWIVES' COMPETENCY FOR IMPLEMENTATION OF
ACTIVE MANAGEMENT OF THIRD STAGE OF LABOR IN DAR
ES SALAAM MUNICIPAL HOSPITALS, TANZANIA**

By

Fatina Ramadhani

**A dissertation Submitted in (partial) Fulfillment of the Requirements for the
Degree of Master of Critical care and Trauma in Nursing of Muhimbili University
of Health and Allied Sciences**

Muhimbili University of Health and Allied Sciences

September, 2011

CERTIFICATION

The undersigned certifies that he has read and hereby recommend for examination of dissertation entitled *Midwives' Competency for Implementation of Active Management of Third Stage of Labor in Dar es salaam Municipal Hospitals, Tanzania*, in fulfillment of the requirements for the degree of Master of Critical care and Trauma in Nursing of Muhimbili University of Health and Allied Sciences

Dr. A. Outwater (RN, PhD)
(Supervisor)

Date: _____

Dr. I.K.Y. Malima (RN, PhD)
(Co supervisor)

Date: _____

DECLARATION AND COPYRIGHT

I, **Fatina Ramadhani**, declare that this **dissertation** is my own 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 the Berne convention, the copy right 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 Directorate of Postgraduate Studies on behalf of both the author and the Muhimbili University of Health and Allied Sciences.

ACKNOWLEDGEMENT

I am very grateful to express my heartfelt gratitude to my Supervisor Dr. Anne Outwater, for her dedicated efforts, constructive criticism, tireless supervision and encouragement that enabled the production of this dissertation. Sincere thanks go to my Co supervisor Dr. K.I.Y. Malima who added her concrete comments to make sure this work becomes super. My gratitude also goes to Mama Shalla of JHPIEGO for her quick responses during my proposal development concerning data of AMTSL in Tanzania. I also appreciate the contribution of my colleague Mr. Rashidi Heri during the process of data analysis. Much respect to my husband Dr. T. Tigahwa for his comments on MDGs and polishing my Kiswahili questionnaire.

I greatly acknowledge the DAAD embassy of Germany for granting me full sponsorship to pursue the MSc, CCT at MUHAS. The extension of thanks goes to my employer Prof. k. Pallangyo who granted me permission to pursue this course; I would also like to thank the District medical officers (DMOs) of Ilala, Temeke and Kinondoni municipals for granting me with permission to conduct this study in their municipal hospitals, without forgetting maternity block managers of respective municipal hospitals and all ward incharges of wards I attended for data collection for their tireless assistance during the whole process of data collection. I extend my hand of thanks to my fellow classmate for his encouragement and cooperation during research sessions.

Glory is to God whom has been the source of strength and wisdom throughout this work and my studies at large.

DEDICATION:

This work is dedicated to my lovely first lady/daughter Theckla T. Tigahwa for tolerating my absence when I was late at home for studies and my beloved husband Dr. T. Tigahwa for his fully supports, understanding and tolerance of my busy academic schedule during the whole course of my masters studies. This dissertation is also dedicated to my late parents; my father Mr. Ramadhani Bororo and my mother Ms Chenyangu Mwanahawa Bryson whom through their good care and support during their life I got a good education foundation that has brought me to this level, may almighty God rest them in peace amen.

ABSTRACT

Background: Maternal mortality ratio in Tanzania is 454/100,000 live births where by PPH alone accounts for 25-28% of all maternal death (TDHS, 2010). PPH due to uterine atony accounts for more than 75% of PPH in Tanzania (TDHS, 2010). It is an obstetric emergency that can effectively be prevented by conducting a cheap procedure called Active Management of the Third Stage of Labour (AMTSL). This study aimed at assessing knowledge and skills of midwives in conducting AMTSL for preventing primary PPH and to report barriers to its implementation in Municipal hospitals of Dar es Salaam region in Tanzania.

Material and Methods: A comparative cross-sectional within subjects design was conducted at Amana, Mwananyamala and Temeke municipal hospitals of Dar es Salaam region, Tanzania. 87 midwives (30 from Amana 17 from Mwananyamala and 40 from Temeke municipal hospitals) out of all expected (105) who worked in labour and postnatal wards were studied. Data was collected by using questionnaire with four parts (demographic, training, AMTSL knowledge, policy/motivation/barriers information) contained both open and close ended structured questions. Practice of AMTSL was observed on normal vaginal deliveries by using a standard tool developed by Ministry of Health and Social Welfare of Tanzania (MoHSW) in collaboration with Johns Hopkins Program for International Education in Gynecology and Obstetrics (JHPIEGO) in 2010. A satisfactory score in practice and knowledge was 90%+ and 85%+ respectively. A competent midwife on AMTSL had to obtain satisfactory scores in both knowledge and skills (MoHSW, 2010). Data was coded, entered, cleaned and analyzed in SPSS for windows version 15. Chi-square (X^2) test and Odds ratio (OR) with 95% confidence interval (CI) were used to define the association of independent and dependent variables. A tool for logistic assessment was developed from the conceptual model that was developed after multinational study conducted in African Region in assessing the practicability of AMTSL. Participation in the study was purely voluntary.

Results

Majority of participated midwives performed well on what are considered the three most important components of AMTSL by ICM/FIGO (2003), (i.e. 10 IU of oxytocin (87.4%), CCT (92%) and uterine massage (72.4%)). But there are 18 steps that comprise a standard AMTSL practice. When considering that standard observation guide and standard questions set on AMTSL, only 10% of participating midwives achieved satisfactory standard scores in both knowledge and skills. Knowledge gave a strong association with being skillful (x^2 test, $p = 0.01 < 0.05$). Multivariate regression analysis signified association between place of training and competency level (x^2 test, $p = 0.02 < 0.05$), those who learnt AMTSL in midwifery/nursing school then got on job training were more likely to acquire competence on AMTSL than those who got from midwifery school alone, OR = 7.143 (1.017, 50.188) (adjusted OR = 0.140 (0.020, 0.984)). All municipal hospitals had the AMTSL protocol, with enough supply of uterotonics in the previous two consecutive months stored under appropriate temperature. However, lack of on job training and shortage of staff and supplies were reported as major barriers that most midwives suggested were important for more successful AMTSL implementation.

Conclusions and Recommendations.

AMTSL Trials of Improved Practices (TIPS) and maternal outcomes can be conducted to determine barriers to the use of AMTSL and suggestions from providers on how to improve their practice of AMTSL and maternal health in achieving MDG 5.

MoHSW should increased provision of on job training on AMTSL that fits with Tanzanian clinical environment and AMTSL job aids should be used, adapted and disseminated to all health facilities and Provided to pre-service educational programs while creation of ideal work environment (space, staffing, supplies and motivation) should be taken into consideration.

TABLE OF CONTENTS

CERTIFICATION	ii
DECLARATION AND COPYRIGHT	iii
ACKNOWLEDGEMENT	iv
DEDICATION:	v
ABSTRACT	vi
LIST OF TABLES.....	xi
LIST OF FIGURES	xii
CHAPTER ONE	1
1. Introduction/Background.....	1
1.1. Problem statement	3
1.2. Significance	5
CHAPTER TWO	6
2. Literature review.....	6
2.1. Description of third stage of labor	6
2.2. Active management of the third stage of labor (AMTSL)	6
2.3. Components of AMTSL	7
2.4. Recent evidence on AMTSL	7
2.5. Motivation and Barriers to quality obstetric care in Tanzania	9
2.6. Who should perform AMTSL?.....	10
2.7. Objectives	12
2.7.1. General objective	12
2.7.2. Specific objectives	12
2.8. Hypothesis	13
2.9. Conceptual model	13
CHAPTER THREE	16
3. Material and methods	16
3.1. Study design.....	16
3.2. Setting	16
3.3. Target population.....	16
3.4. Accessible population.....	16

3.5. Inclusion and exclusion criteria	16
3.6. Sampling	17
3.7. Sample size	17
3.8. Data Collection Tools	18
3.9. Ethical Clearance	20
4. Pretest of Data Collection Tools	20
4.1. Data management and analysis	20
CHAPTER FOUR	21
4. Results	21
4.1. Demographic characteristics of Midwives at DSM municipal hospitals, 2011.....	22
4.2. Midwives awareness about AMTSL at DSM municipal hospitals, 2011.....	23
4.3. AMTSL use among midwives at DSM municipal hospitals, 2011.	24
4.4. Year of exposure to AMTSL to midwives at DSM municipal hospitals, 2011.....	25
4.5. Knowledge of midwivesabout AMTSL at DSM municipal hospitals, 2011.....	26
4.6. AMTSL practice by midwives at DSM municipal hospitals, 2011.....	27
4.7. Competence level of midwives on AMTSL at DSM municipal hospitals, 2011. ...	29
4.8. Place of exposure on AMTSL to midwives at DSM municipal hospitals, 2011.....	30
4.9. Regression analysis for association of variables in AMTSL competence level.....	31
5. Reference source of AMTSL intervention.	32
5.1. Reasons of midwives for offering AMTSL.	33
5.2. Challenges faced by midwives behind AMTSL implementation.	34
5.3. Midwives' suggestions for improving AMTL implementation.....	35
5.4. Report of ward supplies for AMTSL intervention.	36
CHAPTER FIVE	37
5. Discussion.....	37
CHAPTER SIX	43
6. Conclusion and recommendations	43
REFERENCES	45
APPENDICES	49
Appendix A: Participant's Consent Form (English version).....	49

Appendix B: Consent form (Swahili version)	52
Appendix C: Knowledge Questionnaire (English version)	55
Appendix D: Knowledge Questionnaire (Swahili version)	60
Appendix E: Observation instrument	66
Appendix F: Logistic assessment instrument	69

LIST OF TABLES

Table 1: Demographic characteristics of Midwives at DSM municipal hospitals.....	22
Table 2: Year of exposure to AMTSL to midwives at DSM municipal hospitals	25
Table 3: Knowledge of midwives about AMTSL at DSM municipal hospitals.....	26
Table 4: AMTSL practice by midwives at DSM municipal hospitals.....	27
Table 5: Place of exposure on AMTSL to midwives at DSM municipal hospitals.....	30
Table 6: Regression analysis of variables in AMTSL competence level	31
Table 7: Reference source of AMTSL intervention.	32
Table 8: Reasons of midwives for offering AMTSL.....	33
Table 9: Challenges faced by midwives behind AMTSL implementation.....	34
Table 10: Midwives' suggestions for improving AMTL implementation.	35
Table 11: Report of ward supplies for AMTSL intervention.....	36

LIST OF FIGURES

Figure 1: Midwives awareness about AMTSL at DSM municipal hospitals. 23
Figure 2: AMTSL use among midwives at DSM municipal hospitals..... 24
Figure 3: Competence of midwives on AMTSL at DSM municipal hospitals.....29

ACRONYMS

AMTSL	Active Management of the Third stage of Labor
BEOC	Basic Essential Obstetrics Care
CCT	Controlled Cord Traction
DSM	Dar es Salaam
EmONC	Emergency Obstetric and Neonatal Care
FIGO	Federation International of Gynecology and Obstetrics
ICM	International Confederation of Midwives
IM	Intramuscular
IU	International Unit
IV	Intravenous
JHPIEGO-	Johns Hopkins Program for International Education in Gynecology and Obstetrics.
MoHSW	Ministry of Health and Social Welfare
PATH	Program for Appropriate Technology in Health
PPH	Postpartum Haemorrhage
POPPHI	Prevention of Postpartum Haemorrhage Initiatives.
STGs	Standard Treatment Guidelines
THDS	Tanzania Health Demographic Survey
TSL	Third stage of labour
UNFPA	United Nations Population Fund
UN	United Nations
WHO	World Health Organization

DEFINITION OF TERMS

"Midwife" is a person who has successfully completed a midwifery education programme that is duly recognized in the country where it is located and that is based on the ICM *Essential Competencies for Basic Midwifery Practice* and the framework of the ICM *Global Standards for Midwifery Education*; who has acquired the requisite qualifications to be registered and/or legally licensed to practice midwifery and use the title 'midwife' and who demonstrates competency in the practice of midwifery (ICM, 2011).

"Competency Midwifery" a combination of knowledge, professional behavior and specific skills that are demonstrated at a defined level of proficiency in the context of midwifery education and practice (ICM, 2011).

Enrolled Midwife (EM) in Tanzania: Has certificate qualification in midwifery.

Registered Nurse Midwife (RNM) in Tanzania: Has higher than certificate in nursing/midwifery education.

Postpartum Haemorrhage (PPH): is generally defined as blood loss from the birth canal greater than or equal to 500 ml after birth, while severe PPH is blood loss greater than or equal to 1000 ml.

Primary PPH: any abnormal or excessive bleeding from the birth canal occurring within 24 hours.

Secondary PPH: any abnormal or excessive bleeding from the birth canal occurring between 24 hours and 12 weeks postnatal.

Third Stage of labour (TSL): is the period during which the uterine muscles contract and the placenta gradually separates from the uterine wall. It can be carried out either passively or actively.

Active management of the third stage of labor (AMTSL): an evidence-based, low-cost intervention used to prevent postpartum hemorrhage that can help to prevent primary PPH.

MDG-5: The fifth Millennium Development Goal adopted by world leaders at the Millennium Summit at the United Nations in the year 2000, the goal is to reduce the maternal mortality ratio by three-quarters by 2015 (UN, 2000).

CHAPTER ONE

1. Introduction/Background

Approximately 15 per cent of women will experience a complication during pregnancy or childbirth, most of which cannot be predicted, but almost all of which can be managed (WHO, 2005). Each year, 529,000 maternal deaths and 5.7 million perinatal deaths occur worldwide, 99% of them in the low income countries (WHO, 2006). The Millennium Development Goals (MDGs), endorsed by governments at the United Nations in September 2000, aim to improve human well-being by reducing poverty, hunger, child and maternal mortality, ensuring education for all, controlling and managing diseases, tackling gender disparity, ensuring sustainable development and pursuing global partnerships. There are eight MDGs and one of them is MDG5 which targets at reducing maternal mortality by three-quarters by 2015. Postpartum hemorrhage (PPH) as among the most fatal obstetric emergencies is one of the world's leading causes of maternal mortality (UN, 2000). It occurs in over 10% of all births and is associated with case fatality rate of 1%.

PPH is generally defined as blood loss greater than or equal to 500 ml within 24 hours after birth, while severe condition is blood loss greater than or equal to 1000 ml within 24 hours. Most cases of morbidity and mortality due to PPH occur in the first 24 hours following delivery and these are regarded as primary whereas any abnormal or excessive bleeding from the birth canal occurring between 24 hours and 12 weeks postnatal is regarded as secondary PPH. It may result from failure of the uterus to contract adequately (atony), genital tract trauma (i.e. vaginal or cervical lacerations), uterine rupture, retained placental tissue, or maternal bleeding disorders. Uterine atony is the most common cause and consequently the leading cause of maternal mortality worldwide (ICM, 2003). Twenty five percent of all maternal deaths are caused by severe hemorrhage (WHO, 2005). Recent information indicates that worldwide the percentage is even higher than previously thought, ranging from 30–39% (Khan et al., 2006).

Reports from Tanzania show that hemorrhage accounted for 23% maternal deaths in year 1988 (MoH, 2002). Complications of pregnancy and childbirth are major causes of death for women of reproductive age in Tanzania, with an estimated maternal mortality ratio of 578/100,000 live births where by PPH alone accounts for 25-28% of all maternal deaths (TDHS, 2005). PPH due to uterine atony accounts for more than 75% of obstetric haemorrhage in Tanzania (TDHS, 2005)). It is an obstetric emergency that can effectively be prevented by conducting inexpensive procedure called Active Management of the Third Stage of Labour (AMTSL).

Active management of the third stage of labor (AMTSL) is a feasible and inexpensive intervention that can help to prevent primary PPH and save millions of women's lives. The AMTSL involves three main components: First is, the use of uterotonic agents within one minute following the birth of the baby. Oxytocics (such as oxytocin and ergometrine) and prostaglandins or its analogue such as misoprostol have strong uterotonic properties and have long been used to treat uterine atony and reduce the amount of blood lost during childbirth and placental delivery. The use of these uterotonic drugs immediately after the delivery of the newborn is one of the most important interventions used to prevent PPH (POPPHI, 2010). Second is delivery of placenta with Controlled Cord Traction (CCT) which involves the traction on the cord during a contraction combined with counter-traction upward on the uterus with the provider's hand placed immediately above the symphysis pubis. CCT facilitates expulsion of the placenta once it has been separated from the uterine wall. And the third component is the massage of the uterus after delivery of the placenta, which is an action used after the delivery of the placenta in which the provider or the woman places one hand on the fundus of the uterus through the woman's abdomen to rub or knead the uterus until it is firm. (ICM/FIGO, 2003).

This ICM/FIGO definition is also supported by the World Health Organization (WHO, 2005, 2006). This definition differs from the original research protocol in the Bristol trials which includes immediate cord clamping and do not include massage (Prendiville

& Rogers et al., 1998). The FIGO/ICM Joint Statement and the WHO report on the Managing Complications in Pregnancy and Childbirth do not include immediate cord clamping (WHO, 2000). Studies show that there is considerable evidence that early cord clamping does not benefit mothers or babies and may even be harmful (Cotter et al., 2001; Niermeyer, 2006).

Clinical trials in high income countries show that the use of AMTSL, in contrast to physiologic management of the third stage of labor, significantly reduces PPH (Prendiville et al., 2001). A Cochrane review of these trials concludes by recommending AMTSL for all women delivering in a hospital and anticipating the vaginal birth of a single baby (Prendiville et al, 2001). Before the official circular of guidelines on AMTSL use in clinical settings the disseminated practice of AMTSL in the tertiary hospitals of Tanzania Mainland was only 7% (Mfinanga et al, 2009). The current policy environment in Tanzania is very supportive of AMTSL implementation. At the National level, since 2008 the Ministry of Health and Social Welfare of Tanzania (MoHSWT) circulated the standard treatment guidelines for use of uterotonics in AMTSL for PPH prevention that do not differ from the FIGO/ICM definition of AMTSL. It was recommended that oxytocin should be the first drug of choice for AMTSL before misoprostol and ergometrine, and these drugs should be available in all health facilities from National and Referral Hospitals to dispensaries where deliveries take place (MoHSW, 2008). Therefore the main purpose of this study was to assess the current competency of midwives in preventing primary PPH through AMTSL in Dar es Salaam municipal hospitals in Tanzania.

1.1. Problem statement

The risk of death from childbirth represents one of the greatest inequities in global health. Postpartum Haemorrhage (PPH) is the leading cause of maternal deaths. It occurs in over 10% of all births and is associated with a case fatality rate of 1% while 25% of all maternal deaths are caused by severe haemorrhage (WHO 2005). Without proper management, PPH can rapidly progress to life-threatening blood loss, often within several hours. Because of this unpredictability and rapid progression, reducing

the incidence of PPH, and improving PPH outcome when it occurs remains a challenge. Uterine atony (accounts for more than 75% of obstetric haemorrhage in Tanzania (TDHS, 2015)) can effectively be prevented by conducting Active Management of the Third Stage of labour (AMTSL).

Sine 2008 Tanzanian MoHSW has been putting efforts to ensure the availability of uterotonics for prevention of PPH at all levels of health facilities, undertake the capacity building through training of health provider, include in pre-service teaching curriculum the use of uterotonics in the AMTSL, and finally recommended that, the stock of these medicines will be in Medical Stores Department (MSD) and that all facilities should procure them from this source (MoHSW, 2008).

Little is known on the current situation in the implementation of AMTSL in Tanzania which leaves a critical gap in the continuum of care needed for safe motherhood and the achievement of MDGs 5 by 2015. No enough information on the current status of AMTSL understanding and its operation in Tanzania. Curriculum review activity for nursing and midwifery education still goes on, in-service and pre-service training for AMTSL and its components is being conducted by MoHSW in collaboration with WHO, JHPIEGO and other partners in health issues. As long as the guideline on AMTSL protocol is already available for use, some Lectures/tutors who have received AMTSL updates have already started to teach them to midwifery students.

Dar es Salaam Region includes the most populated City in Tanzania. Regional annual Reproductive and Child Health data shows that PPH is the leading among the direct causes of maternal death that occurs in its municipal hospitals (DRCHAR, 2009). This study intended to assess the competency level of midwives in using AMTSL in Dar Es Salaam municipal hospitals in Tanzania. Subsequently the outcome of this study is expected to identify obstacles that hinder reduction of maternal death from PPH and assist midwives, policy makers and other stakeholders to devise and implement

strategies for continuous quality improvement in maternal health and reducing primary PPH emergencies in Tanzania.

1.2. Significance

Postpartum hemorrhage is one of the world's leading causes of maternal mortality. Active management of the third stage of labor (AMTSL) is a feasible and inexpensive intervention that can help save thousands of women's lives. The inclusion of AMTSL in the WHO evidence-based manual *Managing Complications in Pregnancy and Childbirth* also attests to the international acceptance of this practice as the standard of care.

The World Health Organization (WHO) *Making Pregnancy Safer Technical Update on prevention of PPH by AMTSL* recommends that "AMTSL should be practiced by all skilled attendants at every birth to prevent postpartum haemorrhage." As noted earlier, Africa Region has the highest maternal and newborn mortality and morbidity ratios among low and middle income regions. The maternal mortality ratio in Tanzania is 454/100,000 (TDHS, 2010). Ministry of Health and Social Welfare has been putting a rigorous effort in training service providers on Basic and Advanced Life Saving Skills. However there is limited information on maternal and newborn care providers' competency or the impact of these trainings.

Currently very little is known about the actual practice of AMTSL and given that PPH is a leading cause of maternal death in Tanzania, there is an important and urgent need for information from Tanzania on current practices regarding AMTSL as one of the strategy in reducing maternal mortality from PPH. This study will have advanced our understanding of current midwifery AMTSL practices, and provide the Ministry of Health and Social Welfare (MoHSW), midwives and their international partners with the descriptive information necessary to assess AMTSL practices and to identify major barriers to its use in order to reduce obstetric emergencies due to PPH and remarkably reduce PPH related maternal death and help in achieving MDG 5 by 2015.

CHAPTER TWO

2. Literature review

2.1. Description of third stage of labor

Third-stage labor is the period during which the uterine muscles contract and the placenta gradually separates from the uterine wall. It can be carried out either passively or actively. The volume of blood loss depends on how quickly this occurs. If the uterus becomes atonic and does not contract normally, blood vessels at the placental site cannot constrict adequately and severe bleeding results (PATH, 2001). The passive or physiologic ("expectant") management in which uterotonics are not used depends on normal physiological processes to separate and deliver the placenta without interference.

2.2. Active management of the third stage of labor (AMTSL)

Active management of the third stage of labor (AMTSL) is an evidence-based, low-cost intervention used to prevent postpartum hemorrhage that can help to prevent primary PPH. The Bristol 23 and Hinchinbrook 12 randomized control trials provided conclusive evidence that active management of the third stage of labor (AMTSL) significantly reduces postpartum hemorrhage, decreases blood loss and decreases the need for blood transfusions (Cotter et al, 2001).

In response to the growing evidence supporting the use of active management of the third stage of labor (AMTSL) for the prevention of PPH, the International Confederation of Midwives (ICM) and the International Federation of Gynecology and Obstetrics (FIGO) issued a joint statement. The November 2003 Joint Statement promotes AMTSL to save mother's lives. ICM and FIGO further state: "Every attendant at birth needs to have the knowledge, skills and critical judgment needed to carry out active management of the third stage of labour and access the needed supplies and equipment."

2.3. Components of AMTSL

AMTSL involves three main components: 1/ The use of a uterotonic agents within one minute following the birth of the baby, 2/ delivery of the placenta with Controlled Cord Traction (CCT) and 3/ massage of the uterus after delivery of the placenta (ICM/FIGO, 2003).

The third component – uterine massage - was not present in the Hinchingsbrooke randomized controlled trial in 1998 but it was the International Confederation of midwives (ICM) that took the initiative to add the uterine massage so that skilled birth attendants would stay alert for late PPH. These three interventions hasten placental delivery by increasing uterine contractions, decreasing blood loss and preventing postpartum hemorrhage by averting uterine atony (PATH, 2001). Active third-stage management is currently recommended as protection against postpartum hemorrhage (Prendiville et al., 2001). Oxytocin being the uterotonic drug of choice. Findings from a WHO multi-center study indicated that 10 IU oxytocin (intravenous or intramuscular) is preferable to 600 microgram of oral misoprostol in the AMTSL in hospital settings where active management is the norm (WHO, 2004).

2.4. Recent evidence on AMTSL

There are a number of interventions needed to reduce maternal death due to PPH. Interventions such as the active management of the third stage of labour, when performed routinely, have been shown to reduce the risk of PPH. As an alternative to active management, some clinicians advocate using the expectant management of the third stage of labour which is a passive or physiological approach and involves waiting for signs of placental separation and allowing the placenta to deliver spontaneously or aided by gravity or nipple stimulation. Although this is popular in some northern European countries and in some hospitals and clinics in the United States and Canada, it is less effective in reducing the incidence of PPH than active management (WHO, 2003).

Effectiveness of AMTSL in reducing PPH and the need for PPH treatment has been investigated by a number of large trials. The Hinchingsbrooke 12 randomized control trials provided evidence that AMTSL significantly reduces postpartum hemorrhage, decreases blood loss, and decreases the need for blood transfusions (Cotter et al, 2001). In the Hinchingsbrooke randomized clinical trial of approximately 1500 parturients at low risk for PPH, the rate of PPH was significantly lower in the active management group (6.8%) than the expectant management group (16.5%) (Rogers et al., 1998). An earlier study also found that the incidence of PPH in parturients who received physiological (expectant) management was significantly higher than in those who received all three components of active management (odds ratio 2.4, 95% confidence interval 1.6 to 3.7) (Prendiville et al., 1998).

A review in the Cochrane Library lends further credence to the effectiveness of active management over expectant management (Prendiville et al., 2001). There have been five randomized controlled trials; each was designed to assess the effect of active management of the third stage of labour on maternal blood loss, PPH, and other maternal and perinatal complications. Data from these trials suggests that, in a maternity hospital, active management is consistently associated with first, a reduced risk of maternal blood loss, PPH and severe PPH, prolonged third stage of labour, and maternal anaemia, and second, an increased risk of maternal nausea, vomiting, and raised blood pressure due to the use of ergometrine. This review concluded that routine "active management is superior to expectant management" in terms of blood loss, PPH, and other serious complications of the third stage of labour, and it recommends that "the active management of the third stage should be the routine management of choice" for women expecting a single baby by vaginal delivery in a maternity hospital (Prendiville et al., 2001).

Findings from a WHO multi-center study indicated that 10 IU oxytocin (intravenous (IV) or intramuscular (IM)) is preferable to 600 microgram of oral misoprostol in the AMTSL in hospital settings where active management is the norm. One recently published study in Vietnam found that AMTSL was associated with reduced risks for

prolonged third stage beyond 30 minutes, supplemental oxytocin, and bimanual compression. When cases with first stage oxytocin augmentation were excluded, AMTSL was associated with a 34 percent reduction in PPH incidences. Although a WHO multicenter trial concluded that, in hospital settings, oxytocin is preferable to misoprostol in AMTSL, in home births without a skilled attendant, misoprostol may be the only technology available to control PPH. The safety and efficacy of misoprostol as an alternative to oxytocin is now well documented. A study in a university teaching hospital in England demonstrated that giving misoprostol to women immediately after childbirth resulted in significantly lower rates of PPH than when the third stage of labor was managed only through controlled cord traction and rubbing the uterus. Studies also found that 18 percent of women would experience PPH if the placenta were delivered on its own, 2.7 percent if oxytocin were used, and 3.6 percent if misoprostol were used (Cotter et al, 2001). A recent study from India provided evidence that oral misoprostol was associated with about 50 percent reduction (from 12.0 percent to 6.4 percent) in the rate of acute postpartum hemorrhage and mean blood loss.

Based on this body of evidence, ICM and FIGO issued a joint statement in November 2003, stating that every woman should be offered AMTSL "as a means of reducing the incidence of PPH due to uterine atony." Oxytocin was suggested the first drug of choice followed by misoprostol and ergometrine.

2.5. Motivation and Barriers to quality obstetric care in Tanzania

There was a diversity of motivation strategies reported to improve workforce motivation in improving midwifery services in Tanzania. Nyamtema et al. conducted a study to assess staffing needs for quality perinatal care in Tanzania revealed that, the most reported incentives included paying overtime, timely promotion, salary increments, in-service training, seminars, workshop and provision of mid morning tea for staff. In a survey conducted in Kilimajaro region to assess health worker perspective in improving motivation among primary health care workers in Tanzania found that although financial incentives are important, they are not sufficient to motivate health workers but supportive supervision, performance appraisal, career development and

transparent promotion have been prioritized by Primary Health Care Facilities (PHCF) workers for improving the services they deliver in Tanzania while working for more than 10 years without being promoted, was mentioned as an important factor for dissatisfaction (Manongi et al., 2006).

The reported evidence from Tanzania and many maternal mortality studies, revealing that continuing high rates of Maternal Mortality Ratio (MMR) are linked to failure of health system to respond with the right care, at the right time, in the right ways (UNFPA, 2004). The shortage of human resource in the domain of perinatal care was identified as a great barrier which is associated with poor performance and outcomes in Dar es Salaam health institutions (Nyamtema et al., 2008).

2.6. Who should perform AMTSL?

Both ICM and FIGO endorse international recommendations that emphasize the provision of skilled birth attendants and improved obstetric services as central to efforts to reduce maternal and neonatal mortality. The WHO recommends that AMTSL should be practiced only by skilled providers due to the risk of inversion of uterus during controlled cord traction and that, in the absence of active management of the third stage of labour, a uterotonic drug (oxytocin or misoprostol) should be offered by a health worker trained in its use for prevention of PPH (WHO, 2006).

Evidence regarding adoption of this practice, however, is limited. Evaluations of donor funded projects incorporating AMTSL tend to be limited to reporting on the numbers of providers trained and the percent achieving competence following training. Apart from anecdotal information, a 2003 article by the Global Network for Perinatal and Reproductive Health offers a limited glimpse into the adoption of this practice (WHO, 2005). Their results, based on an evaluation of the 15 university-based referral obstetric centers in low and high income countries, show substantial variation between and within hospitals. There is insufficient evidence for drawing conclusions about the effectiveness of this practice in its altered states. These results do suggest, however, that

proportions of the service providers using AMTSL is quite low and, where it is practiced, the definition varies within and between countries.

Festin et al (2003) conducted an international multi-site observational, cross sectional survey to investigate the variations in practice of the management of the third stage of labour and detected a significant intracountry and intercountry variation in the practice of the active management of the third stage of labour which confirmed the existence of a large gap between knowledge and practice and recommended an urgent implementation of the evidence-based clinical management practice defined as the active management of the third stage of labour; increased accessibility to systematic reviews in developing countries; and the conduction of clinical trials that assess the impact of this intervention in other settings.

In an Egyptian teaching hospital, management of the third stage of labour with correct AMTSL practice was found in 15% of the observed deliveries (Cherine et al., 2004). Furthermore the authors suggested a need for more exploration of the obstacles to adopting protocols shown to reduce hemorrhage to maternal death in Egypt. An observational cross sectional study on the use of active management of the third stage of labour in seven low-income countries, (Tanzania being among them) reported that, the use of uterotonic during the third or fourth stages of labour was nearly universal. However, the correct use of active management of the third stage of labour was found in only 0.5% to 32% of observed deliveries due to multiple deficiencies in practice. Additionally in every country except Indonesia, policies regarding active management were conflicting (Stanton et al., 2009).

Since 1987, the Safe Motherhood Initiative has stated that maternal mortality is an issue of health infrastructure. AMTSL is a highly measurable, evidence-based, and life-saving aspect of the health infrastructure. A study was conducted by 2006 in 15 of 21 regions of Tanzania Mainland revealed that the correct AMTSL use in the tertiary hospitals of Tanzania Mainland is only 7% (Mfinanga et al, 2009) and found no official guidelines, policy and curriculums regarding AMTSL use in the revised Tanzania

Standard treatment guideline (STG) (1997) although uterotonics like Oxytocin and ergometrine were reported to be available under proper storage in health facilities in Tanzania. Surprising enough all providers used ergometrine for AMTSL instead of oxytocin as recommended by ICM/FIGO. Moreover they reported that the pre service curricula for both medical and nurse-midwife students do not mention AMTSL. However, the curricula on preventing PPH recommends resources that advocate the use of oxytocin (5 IU/IM) or ergometrine (0.5 mg/IM) after the delivery of the baby's anterior shoulder, followed by umbilical cord clumping immediately after delivery and removing placenta by controlled cord traction and uterine massage was mentioned in the curricula for the treatment of PPH. Due to the very low knowledge and practice of AMTSL, the authors suggested a need for updating the STGs, curricula and training of health providers on AMTSL and monitoring its practice in Tanzania.

Since 2008 in-service and pre-service training for AMTSL and its components is being conducted by the Ministry of Health and Social welfare (MoHSW) in collaboration with WHO and other partners in health issues. Up to Feb. 2011 a total of 925 providers from various health facilities in Tanzania have already been trained on AMTSL (MoHSW, 2011). Additionally MoHSW recommended a need for reviewing obstetric and midwifery curricula. Little information following these efforts of the Ministry has been obtained regarding the current status of AMTSL practice in Tanzania. Therefore, this study will bring to light the current level of competence of the midwives in implementing AMTSL in the most populated city of Tanzania.

2.7. Objectives

2.7.1. General objective

To assess the current level of knowledge and practice of AMTSL among midwives in the prevention of PPH immediately after delivery in Dar es Salaam municipal hospitals in Tanzania and to report the associated barriers to its use.

2.7.2. Specific objectives

These were to:

1. Determine midwives' competency (high knowledge and skills) on AMTSL in relation to acquired training on AMTSL in Dar es Salaam municipal hospitals.
2. Identify associated motivation and barriers in the implementation of AMTSL by midwives' themselves and logistics incorporated in Dar es Salaam municipal hospitals.

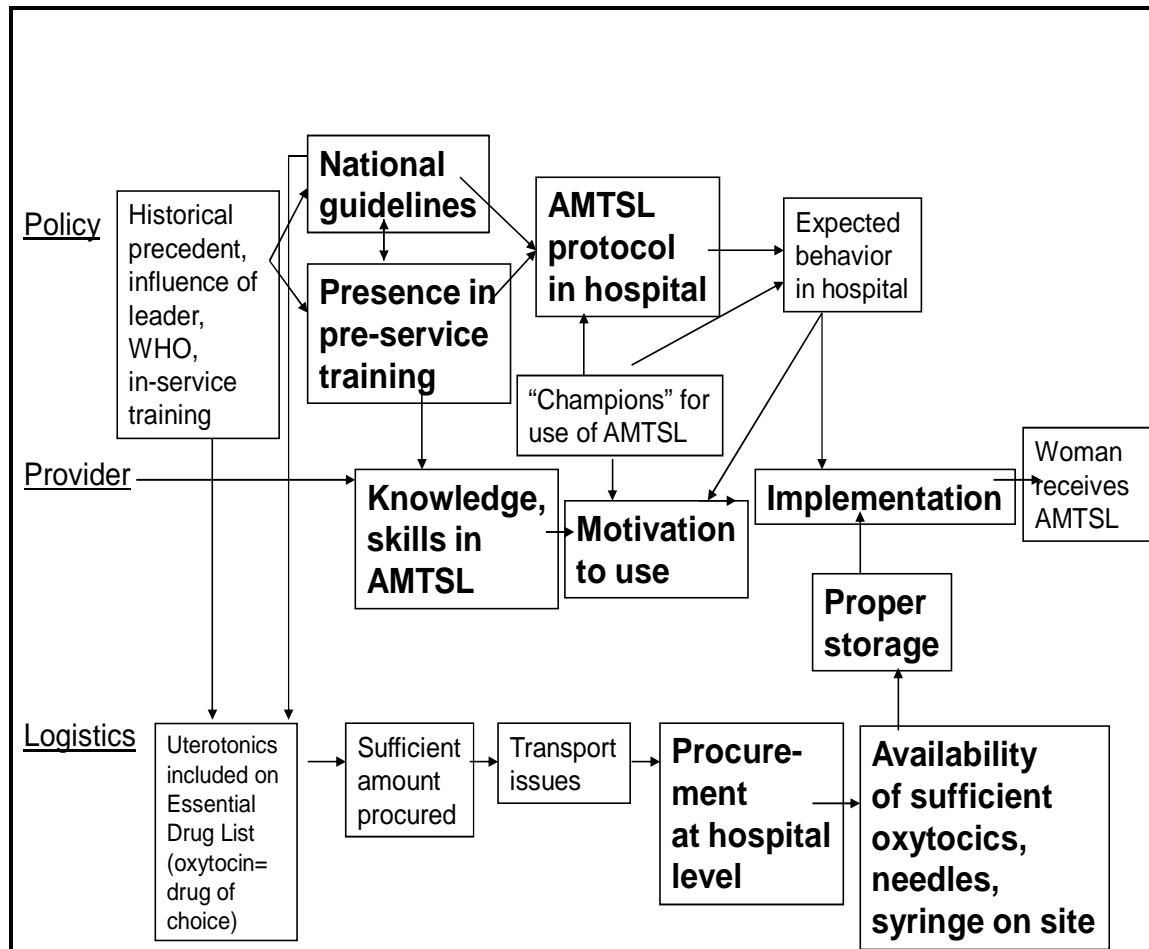
2.8. Hypothesis

Midwives who received AMTSL training have higher levels of knowledge and skills than those who did not.

2.9. Conceptual model

The model describes the determinants of the routine use of AMTSL. As one of the standard interventions in the prevention of PPH, AMTSL application and its implementation in both low and high income settings was obtained as a result of several surveys concerning its practicability in such settings. From ten countries AMTSL surveys focus on policy, provider-related factors, and supplies and logistics. When viewed together, these components provide important insights on routine use of AMTSL (WHO, 2006)(Figure 1.1).

Figure 1.1. Determinants of the routine use of AMTSL.



(WHO, 2006).

Note: Bolded concepts in the boxes were addressed in this study.

Policy

At the national level, a number of influences determine the priority given to AMTSL. For example, given that AMTSL has been a standard of care in the United Kingdom (UK) for many years, some researchers have hypothesized that AMTSL is more common in common wealth countries and among providers who have trained in the UK. Likewise, effective leaders from national or international agencies may have been able to influence national policies, the inclusion of drugs in the essential drug list and

country formulary, and health provider education regarding AMTSL. In turn, such training may influence facility-based policies and behavioral expectations.

Provider-related factors

The knowledge and skills required to perform AMTSL are essential for routine use of the practice. Provider motivation, which is influenced by facility-based behavioral expectations, also is key.

Supplies and logistics

The sufficient availability of high-quality uterotonic drugs, needles, and syringes at national and local levels is essential for routine use of AMTSL. Effective use of AMTSL also requires appropriate conditions during transport and storage to ensure the use of chemically-active drugs and safe, sterile needles and syringes.

CHAPTER THREE

3. Material and methods

3.1. Study design

The study was comparative cross-sectional within subjects design. This will involve comparing midwives in general and not separately according to the municipal hospitals where they work.

3.2. Setting

The study was conducted in three municipal hospitals (called Amana, Mwananyamala and Temeke). These are the only officially recognized municipal hospitals of Dar es Salaam Region in Tanzania. Dar es Salaam is one of the densely populated regions in Tanzania with an estimated population of 3,040,118 people. These municipal hospitals have countable number of midwives compared to other facilities in the country. They are major hospitals in Dar es Salaam that currently operate as both district and municipal hospitals. Annual number of deliveries at Amana, Mwananyamala and Temeke Hospitals is 28482 (98%), 38674 (99%) and 26568 (89%) respectively as calculated out of total annual expected deliveries (MoHSW, 2009). This indicates that most women in Dar Es Salaam region deliver in the public health facilities.

3.3. Target population

All midwives in Dar es Salaam Region both enrolled and registered midwives.

3.4. Accessible population

The study population included all midwives from the participating health facilities (municipal hospitals) who were attending women during delivery when this study was operating.

3.5. Inclusion and exclusion criteria

The inclusion into the study depended on the available midwives who voluntarily provided their informed consent to participate in the study. Those in holidays, sickness and unwilling to participate were not coerced to engage in the study.

3.6. Sampling

All three municipal hospitals of Dar es Salaam region in Tanzania named as Amana, Mwananyamala and Temeke municipal hospitals were involved and a total of 87 midwives out of all 105 midwives who worked in labor and postnatal ward who were expected to be recruited in this study were interviewed and observed in skills. A total of 18 midwives couldn't attend in this study as 10 were attending seminar outside Dar es Salaam and 9 were in their annual leave.

3.7. Sample size

As a rule calculation of sample size was necessary to reflect the actual number obtained from the studied population (advised on personal communication with Professor Hirji K. F. of department of Epidemiology and Biostatistics, MUHAS on 10th March 2011). The sample size for the study was calculated using the following formula:

$$n = \frac{NZ^2 P (1-P)}{d^2 (N-1) + Z^2 P (1-P)}$$

Where:

N=Total Population of midwives who dealt with delivering women at labor and postnatal wards of Amana, Mwananyamala and Temeke Municipal Hospitals = 42 + 35 + 33 respectively = 105

Z= Z value corresponding to the confidence level. For 5% confidence level Z= 1.96

d= Absolute precision= 5%

P= Prevalence is 7% of midwives with correct practice of AMTSL done in tertiary hospitals of Tanzania mainland (Mfinanga et. al., 2007).

n= Minimum Sample Size required= 52

n= 52+ 10% of those who will decide not to take part.

n=52 + (52x10%) = 56 midwives

Due to pre-existing small number of midwives, all 105 midwives (42 from Amana 35 from Mwananyamala and 33 from Temeke) who worked and delivered women in labor and postnatal ward were expected to be recruited in this study.

3.8. Data Collection Tools

All data was collected by a researcher by using questionnaire which had four parts (demographic, training, AMTSL knowledge, policy/motivation/barriers information) containing both open and close ended structured questions to interview participating midwives. Practice of AMTSL was observed on vaginal deliveries by using a standard tool developed by Ministry of Health and Social Welfare of Tanzania (MoHSW) in collaboration with Johns Hopkins Program for International Education in Gynecology and Obstetrics (JHPIEGO) in 2010. A satisfactory score in practice and knowledge was 90%+ and 85%+ respectively. A competent midwife on AMTSL had to obtain satisfactory scores in both knowledge and skills (MoHSW, 2010). A tool for logistic assessment was developed from the conceptual model that was developed after multinational study conducted in African Region in assessing the practicability of AMTSL.

Validity: Is the ability of the tool to measure what is supposed to be measured. Standard observation guide that was already validated by MoHSW was used in this study and the knowledge questions and tool for logistic assessment was developed from the conceptual model that was developed after multinational study conducted in African Region in assessing the practicability of AMTSL. Additionally, **a pilot study** was done at Mnyamani Health Centre to pre test the instrument's adequacy and to get the needed information to answer the research questions in a timely manner. The questionnaire was filled by the researcher after clarifying questions and getting response from the midwives. The questionnaire used was in Kiswahili language to increase midwives understanding. However, English midwifery words seemed to be commonly used and well understood by midwives than when changed to Kiswahili, therefore sometimes the Researcher was mixing language to enhance understanding of the questions.

Reliability: This is internal consistency or dependability with which an instrument measures the attribute or variable to establish if participants in the study were able to understand the instructions and respond correctly. Both interview and observation of

participants practice were done by the researcher of this study and were objective and focused in order to strengthen reliability. It was at pilot study stage that reliability of the instrument was also tested.

Table 1: The table below shows the study objectives, variables and instrument which were used in each objective to obtain the needed information to answer the research questions.

SN	Objectives	Independent Variable	Dependent variable	Instrument
1.	Determine the correct use of AMTSL by midwives in relation to acquired trainings on AMTSL.	Training/Other sources	Practice	Observation guide and training information on AMTSL projected in the Questionnaire
2.	Examine midwives' knowledge on AMTSL in relation to current training on AMTSL	Training/Other sources	Knowledge	Specific Questionnaire questions on AMTSL
3.	Discuss associated motivation and barriers in the implementations of AMTSL by midwives' themselves.	Motivations, Barriers	Implementation	Logistic tool and midwives' self report

3.9. Ethical Clearance

Ethical clearance was sought and obtained from Muhimbili University of Health and Allied Sciences (MUHAS) Research and Publications Committee prior to the study. Research permit was obtained from the Municipal Authorities. Furthermore, informed consent was sought from participants before they participate in the study, and were allowed to opt out if they wished to. Confidentiality was assured by using participant identification numbers instead of their actual names.

4. Pretest of Data Collection Tools

Pre-testing of the data collecting tools was conducted at Mnyamani Health Center which is located at Ilala district in Dar es Salaam Region. Permission to conduct the pre-test was obtained through the District Medical Officer and the HC management team. 2 midwives were randomly selected from the health center. They both voluntarily participated in the study. A finding of the pre- tests was used to revise the tools prior conducting the study.

4.1. Data management and analysis

Each correct response of specific knowledge question on AMTSL or observational skill weighed 1 mark out of 100% score while each incorrectly and not done procedure were given a weight of zero mark. All qualitative multiple responses regarding training information, policy/motivation/barriers behind AMTSL implementation were merged into themes then coded before data entry to quantify its analysis. Data was coded, entered and finally analyzed in the computer using SPSS for windows version 15. Frequency for each variable was run to check and clean for missing data and outliers. Chi-square (X^2) test was computed to measure the association of independent and dependent variables, regression analysis for Odds Ratio (OR) with 95% confidence interval (CI) and p-value were displayed to explain the comparison of associated variables. SPSS programme was also used for analysis of logistic data as string information.

CHAPTER FOUR

4. Results

General observations during data collection in assessing midwives' competency for implementation at AMTSLin Dar es Salaam municipal hospitals, 2011..

All midwives rotated in three shifts named as morning shift (from 7 am to 3 pm), the shortest evening shift (from 3 pm to 7 pm) and the longest night shift (from 7 pm to 7 am). Each morning shift was having two (2) registered nurse midwife and two (2) enrolled midwives while evening and night shifts were having the same number of enrolled midwives but one less registered nurse compared to morning shift. The incharge of the ward was usually registered nurse midwife.

Patients flow was high during the night and morning shifts compared to evening shift. A reason for this was a cultural suspicion that may be most women especially multipara do not rush immediately to the hospital when labour pain starts. This reason can be investigated in future.

Both resting and delivery beds were available but not enough due to the big number of women to delivery and inadequate space that could not accommodate spare beds which were in the store. This contributed to sharing of beds by some women before and after delivery and floor deliveries.

Midwives were available all the time and seemed to work very hard in assisting women to deliver but looked overwhelmed with big number of women waiting to deliver that made them not to complete most of the procedures as listed in the standard observation guide.

There were no enough delivery kits but at least sterile artery forceps were available and oxtocins were also available when this study was observing although some midwives

reported that sometimes oxytocins run out of stock so they had to request woman to buy for her own delivery.

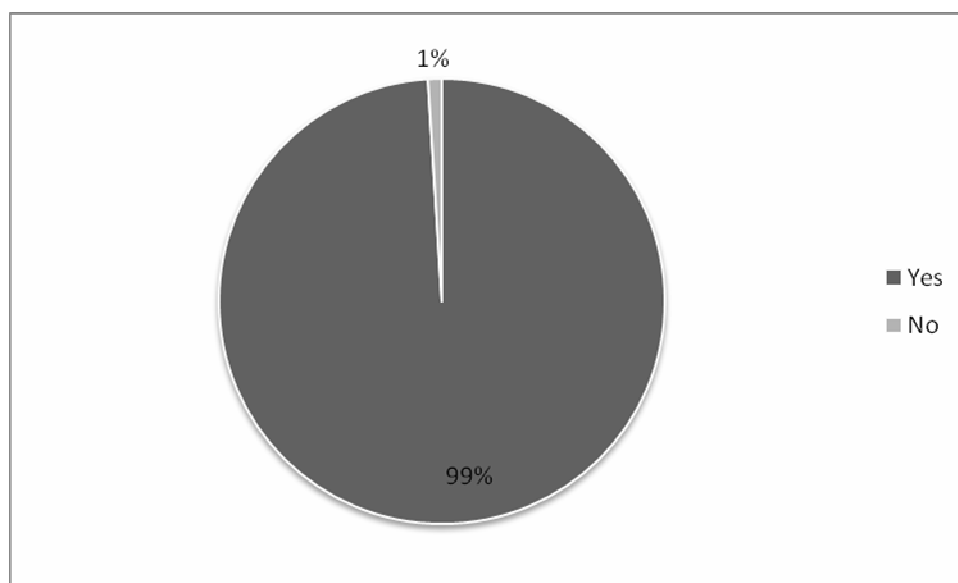
4.1. Table 1: Social Demographic characteristics of Midwives at DSM municipal hospitals, 2011.

Characteristic	N	Percentage	Characteristic	N	Percentage
Age			Midwifery education		
≤30	29	33.3	Certificate	63	72.4
31-40	45	51.7	Diploma	20	23.0
41-50	12	13.8	Advanced diploma	3	3.4
> 50	1	1.1	Degree	1	1.1
Sex			Professional profile		
Female	87	100.0	registered nurse-midwife	25	28.7
Municipal hospital			enrolled nurse midwife	62	71.3
Amana	30	34.5	Midwifery work experience		
Mwanyamala	17	19.5	below 5 years	62	71.3
Temeke	40	46.0	Above 5 years	25	28.7
Level of education					
Primary	5	5.7			
O level	79	90.8			
A level	2	2.3			
University	1	1.1			

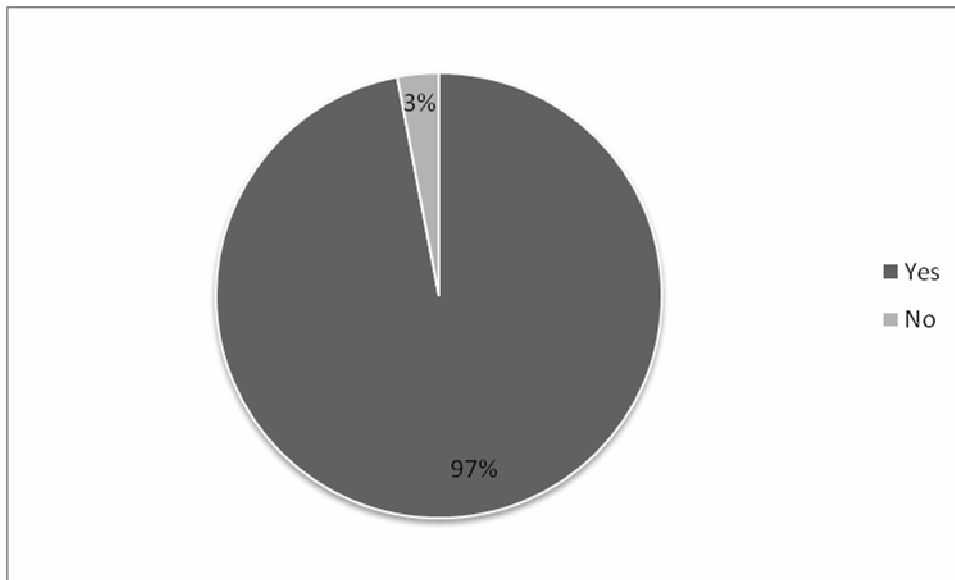
A total of 87 midwives were interviewed. Their ages ranged from 20 to 58 years with a mean age of 33.3 years. Most midwives in these hospitals work at adult age and probably middle adults as were aged between 31 and 40 years and were predominantly females (100 %). Most (40 midwives) were from Temeke municipal hospital. Majority have secondary (O level) education (90.8 %), however they have quite low level of midwifery education as majority indicated to have certificate level of midwifery

education (72.4 %) and most work as enrolled nurse midwives (71.3 %) with less than 5 years of work experience (71.3%), as shown in Table 1.

4.2. Figure 1. Midwives awareness about AMTSL at DSM municipal hospitals, 2011.



Almost all attended midwives are informed of AMTSL (99%), as shown in Figure 1. This was according to their idea if they have ever heard or been informed about AMTSL intervention.

4.3. Figure 2. AMTSL use among midwives at DSM municipal hospitals, 2011.

As almost all midwives are informed of AMTSL, the researcher was interested to know how many use AMTSL and found a wide acknowledgment of AMTSL use while only 3% of midwives indicated no use of AMTSL, as shown in Figure 2.

4.4. Table 2: Year of exposure to AMTSL among midwives at DSM municipal hospitals, 2011.

Year	N	Percent
Below 2007	9	10.3
2007	25	28.7
2008	16	18.4
2009	20	23.0
2010	13	14.9
2011	4	4.6
Total	87	100.0

Only 10.3% got exposure on AMTSL before official training on AMTSL from 2007, as shown in Table 2. This indicates the possibility of having many midwives with updated information on AMTSL, although recently (4 midwives) already got on job training on AMTSL by June 2011.

4.5. Table 3: Knowledge of midwives about AMTSL at DSM municipal hospitals, 2011.

Asked knowledge questions	Correct response, N=87	Percentage
1. The first line uterotonic recommended is	87	100.0
2. The recommended dose of that drug (selected in Question 1) during AMTSL is	74	85.1
3. The recommended rout to give that drug (selected in Question 1) during AMTSL is	69	79.3
4. The three main sequential components of AMTSL are	61	70.1
5. The following is (are) believed to be harmful practice (s) when performing AMTSL	53	60.9
6. Within how long should AMTSL be completed?	54	62.1
7. In the first two hours post delivery uterine massage to a woman should be done in an interval of;	46	52.9

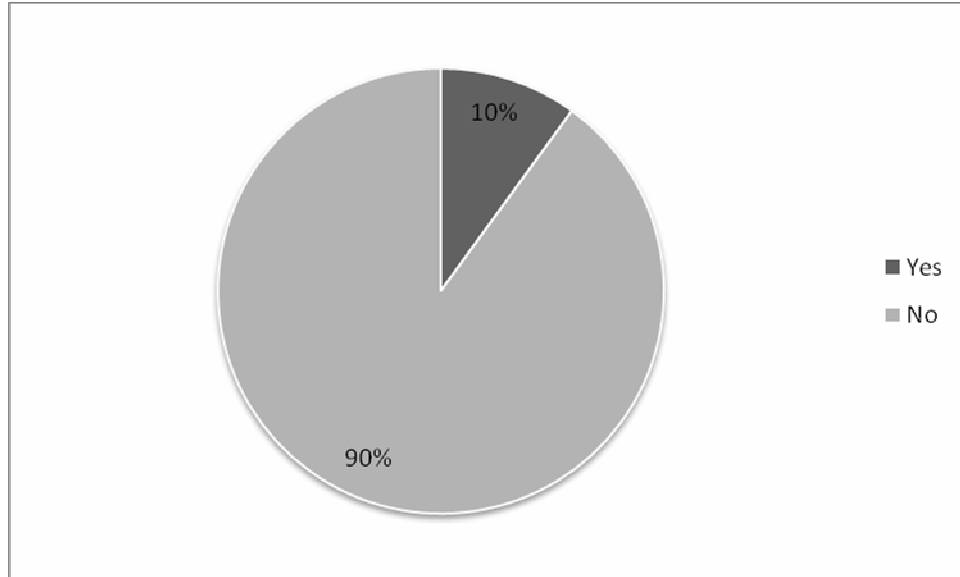
To be declared knowledgeable on AMTSL each midwife had to get correctly 5 questions and above or (85+ %) for 1 mark in each question. Every midwife knew the first uterotonic recommended for AMTSL (100%), as shown in Table 3. This table also indicates that each question was scored correctly by more than half (50%) of the interviewed midwives.

4.6. Table 4: AMTSL practice by midwives at DSM municipal hospitals, 2011.

Observed AMTSL standard steps per observation guide	(Correctly done skills)N=87)	Percentage
1. After delivering the first baby palpates the abdomen and rules out the presence of another fetus before continuing	68	78.2
2. Administers 10 IU of IM oxytocin. If oxytocin is not available, administers 0.5 mg of Ergometrine (Not in pre-eclamptic/eclamptic women) or Prostaglandins (NOT IV)	76	87.4
3. Administration of drug is done within 1 minute	47	54.0
4. Clamps cord close to perineum	67	77.0
5. Uses sponge/artery holding forceps in clamping the cord	82	94.3
6. Places the other hand just above the woman's pubic bone to stabilize uterus for CCT	71	81.6
7. Waits for strong uterine contraction (2-3 minutes)	65	74.7
8. Doesn't wait for a gush of blood	44	50.6
9. During contraction, applies controlled traction (CCT) to the cord so as to avoid uterine inversion	80	92.0
10. Pulls the cord gently, firmly, and uniformly downward to deliver the placenta	79	90.8
11. Supports placenta with both hands	64	73.6
12. Extracts membranes gently with lateral movements	65	74.7
13. Immediately massages uterine fundus	63	72.4
14. Ensures uterus doesn't relax after stopping uterine massage	57	65.5
15. Checks to see if tissues are complete	41	47.1
16. Checks to see placenta is whole and intact	41	47.1
17. Examines woman for cervical or vaginal tears, or episiotomy to be repaired	68	78.2
18. Reports that she will assess uterine contraction, 15 hourly in the first hour, then twice hourly in the next hour	26	29.9

To be declared skillful on AMTSL each midwife had to get 17 points out of 18 points or (94.4 %) for 1 mark in each correctly done procedure and 0 mark for incorrectly and not done procedures. Majority of participated midwives performed well all of the three important components of AMTSL according to (ICM/FIGO, 2003), (i.e. 10 IU of oxytocin (87.4%), CCT (92%) and uterine massage (72.4%) additionally CCT was the most correctly done procedure while most didn't report uterine massage during post care (92.0 % and 29.9 %) respectively, as shown in Table 4. This table also shows that, most of the 18 standard AMTSL steps were correctly done by more than half (50%) of the observed midwives except for checking tissue and placenta completeness and post care reporting for doing uterine massage which are also crucial in controlling post delivery bleeding.

4.7. Figure 3. Competence level of midwives on AMTSL at DSM municipal hospitals, 2011.



Majority of participated midwives performed well all of the three most important components of AMTSL according to (ICM/FIGO, 2003).

But there are 18 steps that comprise a standard AMTSL practice that were not completed by most of the midwives to declare them competent. By considering standard observation guide and standard questions set on AMTSL all midwives who reached satisfactory scores for both knowledge and skills were declared competent on AMTSL. Only 10 % of participated midwives were competent (high knowledge and skills), as shown in Figure 3. This also showed that there is strong evidence that midwives with high knowledge will also have high skills (X^2 test, $p = 0.01 < 0.05$).

4.8. Table 5: Place of exposure on AMTSL training among midwives at DSM municipal hospitals, 2011.

Place	N	Percentage
Midwifery/nursing school	42	51.2%
On job training	25	30.5%
Observed colleague	10	8.5%
Job aid reference	1	1.2%
Midwifery/nursing school and On job training	5	6.1%
Midwifery/nursing school, on job training and observed colleague	2	1.2%
Midwifery/nursing school and observed colleague	2	1.2%
Total	87	100.0%

Several opportunities for exposure to AMTSL existed. More than half of midwives got their expertise on AMTSL at the midwifery/nursing school (51.2 %), as shown in Table 5. This indicates that apart from on job training on AMTSL most of assessed midwives already got pre service education on AMTSL.

When ages, education, professional profile, midwifery experience, year of training were associated with competence level on AMTSL couldn't give significant results except for the place of training, shown in Table 5. ((χ^2 test, $p = 0.02 < 0.05$).

4.9. Table 6: Regression analysis for the association of midwifery school and (midwifery school plus on job training on AMTSL) for midwives' competence level at DSM municipal hospitals, 2011.

Variable	Crude OR (CI)	Adjusted OR (CI)
Midwifery school	0.11 (0.01, 0.95)	
midwifery school plus on job training	7.14 (1.02,50.19)	0.14 (0.02, 0.98)

Regression analysis was run in order to isolate and identify variables that have significant association with level of midwife's competence on AMMTSL. Midwives who got additional on job training on AMTSL are seven times more likely to acquire competence on AMTSL than those who got from midwifery school alone, (Odds Ratio(OR) =7.143 (1.017,50.188) (adjusted OR = 0.140 (0.020, 0.984), as shown in Table 6.

5. Table 7: Reference source of AMTSL intervention among midwives at DSM municipal hospitals, 2011.

Title of reference	Responses	Percent of cases * N=87
BEMONC manual and checklist	12	17.6%
Life saving skills manual	3	4.4%
Midwifery book	36	52.9%
AMTSL checklist	20	29.4%
Human resource	13	19.1%
Total	84	

Note *= Multiple responses

Midwifery book especially was the most mentioned references at work that guides AMTSL use (52.9%) while less than half (29.4%) revealed AMTSL checklist as their source of reference, while life saving skills manual which usually contains AMTSL procedure was reported by only 3 midwives (4.4%), as shown in Table 7.

5.1. Table 8: Reasons of midwives for offering AMTSL intervention to women at DSM municipal hospitals, 2011.

Motivation	Responses	Percent of Cases * N=87
Uterine contraction	10	11.9%
PPH prevention	83	98.8%
Placenta removal	4	4.8%
Prevent retained placenta	1	1.2%
Total	98	

Note *= Multiple response

When midwives were asked about what makes them offer AMTSL to women during third stage labour, majority reported that they offer AMTSL mainly for preventing PPH (98.8%) while only 1 midwife (1.2%) thought it is for preventing retained placenta, as shown in Table 8.

5.2. Table 9: Challenges faced by midwives behind AMTSL implementation at DSM municipal hospitals, 2011.

Kind of challenge	Responses	Percent of Cases * N=87
PPH	5	7.6%
Oxytocin shortage	24	36.4%
Staff shortage	18	27.3%
Retained placenta	4	6.1%
Birth asyphyxia	3	4.5%
Equipment shortage	16	24.2%
Lack of knowledge	13	19.7%
Ergometrine use	2	3.0%
Total	85	

Note *= Multiple response

Oxytocin and staff shortage were among the leading challenges reported by midwives in implementing AMTSL, 36.4% and 27.3% respectively, as shown in Table 9.

5.3. Table 10: Midwives' suggestions for improving AMTL implementation at DSM municipal hospitals, 2011.

Suggestion	Responses	Percent of Cases *N=87
Training/seminar/updates needs	28	32.6%
Supply enough oxytocine and other needed supplies	36	41.9%
Intervention is highly recommended as it reduces PPH cases	64	74.4%
Improve staffing(number, development, incentives)	82	95.3%
Total	210	

Note *= Multiple response

Staff improvement in terms of number of man power per number of clients/patients, staff continuing education programmes and other incentives and other motivations was the main suggestion in upgrading AMTSL implementation (95.3%), although majority recommended AMTSL intervention to continue as they think it reduces PPH cases (74.4%), as shown in Table 10.

5.4. Table 11: Report of ward supplies for AMTSL intervention by nurse midwives in-charges of labour wards at DSM municipal hospitals, 2011.

	Amana	Mwananyamala	Temeke
Presence of AMTSL protocol	Yes	Yes	Yes
Uterotonics available	Oxytocin (yes) misoprostal (yes) & ergometrine (yes)	Oxytocin (yes) misoprostal (yes) & ergometrine (yes)	Oxytocin (yes) misoprostal (yes) & ergometrine (yes)
Enough amount of uterotonics procured per month from MSD	February (Yes) March (Yes)	February (Yes) March (Yes))	February (Yes) March (Yes)
Enough syringes and Needles procured per month from MSD	February (Yes) March (Yes)	February (Yes) March (Yes)	February (Yes) March (Yes)
Stores in temperature recommended by the manufacture	Oxytocin (Yes) misoprostal(Yes) & ergometrine(Yes)	Oxytocin (Yes) misoprostal (Yes) & ergometrine(Yes)	Oxytocin (Yes) misoprostal (Yes) & ergometrine(Yes)

In charges of the ward were interviewed to provide ward supplies information. All municipal hospitals have AMTSL protocol, with enough supply of uterotonics in the previous two consecutive months. And are stored in appropriate temperature (less than 28°C), as shown in Table 11.

CHAPTER FIVE

5. Discussion

The findings of having high awareness in terms of being informed on AMTSL, high rate of using all three components of AMTSL per ICM/FIGO definition and having positive attitude on AMTSL as most midwives recommended to continue for PPH prevention reflect strength among midwives who deliver women in Dar es Salaam municipal hospitals. If I had to grade midwives skills on AMTSL by concentrating on the three components of ICM/FIGO, 2003 only I would have improved competence level or practice of midwives on AMTSL up to a certain percentage which could have been declared better than the previous correct practice of AMTSL of 7% only in Tanzania as reported by Mfinanga et al., 2009. Use of AMTSL according to the recommendations of FIGO/ICM was observed in 75 percent of deliveries in Cirebon district and that, factor that accounted for the drop of AMTSL practice is the timing of administration of oxytocin following the delivery of the fetus (POPPHI, 2006). However, standard AMTSL practice consists of about 18 steps that a midwife has to follow when conducting this intervention to a woman during third stage of labour. These steps were not completed by most of the midwives that made majority to score low in the skills that contributed to very low rate of competence on AMTSL.

As stipulated before, that a competent midwife on AMTSL had to achieve satisfactory scores from standard knowledge questions set for AMTSL and observation checklist. The low rate of general competence of AMTSL can hinder PPH prevention in these hospitals and country as a whole. Compared to knowledge that most midwives tried to achieve satisfactory scores, skills performance scores were mainly affected by incorrectly or incompletely done procedures with the reason of forgetting updates taught, and or procedures which were not done at all during AMTSL intervention with major reason of being busy in the work for them to follow all steps as required in the standard checklist due to staff shortage. The shortage of human resource in the domain of perinatal care is great and is associated with poor performance and outcomes in Dar es Salaam health institutions (Nyamtema et al., 2008). A national representative survey

revealed that, the low rate of correct use of AMTSL practice, use of ergometrine and suboptimal dosages of oxytocin are major barriers to effective PPH prevention in the country and this could slow down achievement of the MDGs of reducing the MMR by 75% by 2015 (Mfinanga et al., 2009).

Although midwives were available all the time and seemed committed in assisting women to deliver but being overwhelmed with big number of women may have affected most of the midwives not to complete all 18 standard steps of AMTSL intervention. Rushing to assist other women who deliver on the floor or at the nearby beds in the ward or saving the life of the asphyxiated baby soon after delivery is believed in this study to contribute to low scores of some procedures such as administration of 10 IU of oxytocin within one minute, avoiding for a gush of blood due to delayed removal of placenta, ensuring tonic uterus, checking for tissue and placenta completeness and to report if she would be doing uterine massage in the first two hours to ensure uterine contraction. These improperly or not done procedures are among the most important observations in reducing PPH cases as retained membranes, placenta tissues and uterine atony may all cause profuse bleeding that may lead to hypovolemic shock, where if appropriate care is not available the life of this woman will be in danger or eventually she may die from PPH.

In their study titled skilled birth attendants are real skilled? Conducted in Benin, Ecuador, Jamaica and Rwanda during Phase I and Nicaragua during phase II, Shane et al., (2007), found significant variations in competency between different evaluation components and different cadres, the generally low scores were troubling. Different countries and cadres showed different strengths and weaknesses, but several patterns emerged where by many participants scored poorly on basic questions related to infection prevention (hand-washing, proper handling of contaminated instruments, proper disposal of medical waste). In Nicaragua, intramuscular (IM) oxytocin use immediately after birth became a provisional standard in 2003, and AMTSL knowledge was high. In other countries, AMTSL was not routine at the time of the study. They

declared that this might explain why many providers could not identify its components (IM oxytocin immediately after delivery of the foetus, controlled cord traction, uterine massage) and did not know that it should be practised universally. Similar explanations were also drowned by Festin et al., (2003). However, Harvey et al., 2007 also found generally lower skills score (46%) on AMTSL than knowledge scores (74%).

Having some good number of young adult midwives is a big strength to these hospitals as young people are believed to have more energy to work than old adults. But the problem of having majority with very low level of midwifery education provokes questions of whether absence or presence of poor hospitals continuing educational programmes and other personal and non personal associated factors that hinder these midwives to continue with higher levels of midwifery/nursing education. These request for future survey of assessing the existence and quality of continuing educational programmes in these hospitals. The American Association of Colleges of Nursing (AACN), the national voice for baccalaureate and graduate nursing programs, believes that education has a significant impact on the knowledge and competencies of the nurse clinician, as it does for all health care providers and added that Nurses with Bachelor of Science in Nursing (BSN) degrees are well-prepared to meet the demands placed on today's nurse as BSN nurses are prized for their skills in critical thinking, leadership, case management, and health promotion, and for their ability to practice across a variety of inpatient and outpatient settings (AACN, 2010). This explains that, level of education in one way or another may hinder someone's logical thinking, owns actions and decision making capacity although in this study level of education couldn't give enough evidence on its association with competence level on AMTSL.

Although training on AMTSL has evidenced to improve midwives awareness and attitude on AMTSL but the observed poor AMTSL knowledge and skills level among the providers interviewed reflect weakness in training programs. The observed poor knowledge is in sharp contrast to the 51.2 % who claimed they received AMTSL training during pre-service education and 30.5 % from in-service training, this is

compared to poor knowledge found in 93% who claimed they received AMTSL training either during pre-service education or in-service training (Mfinanga et al., 2009).

This study also found un conducive work environment such as too much clients/patients per midwives number, shortage of some supplies especially oxytocin as reported by some midwives and inadequate updated reference materials that guide AMTSL use compromise the effectiveness of ideal training environment and real work environment that hinders quality of care provided to women during third stage of labour. There was no opposition towards AMTSL use, which indicates the presence of positive attitude among these midwives and most recommended it to continue as a tool in reducing maternal death from PPH. It is, therefore, important for the Ministry of Health and Social Welfare (MOHSW) to facilitate the process of incorporating the correct use of AMTSL according to ICM/FIGO definition into both preservice and in-service training and provide refresher courses and enough reference materials for MOHSW staff managing deliveries in the country. This should go together with improving work environment appropriate for successful AMTSL implementation (ICM/FIGO, 2003, 2006).

All three municipal hospitals were found to have enough uterotonic drug supplies in the previous two months. All in-chargeurse midwives considered to have enough oxytocin than egometrine and misoprostal. Using oxytocin instead of ergometrine or misoprotsal in AMTSL was not reported as a problem but an achievement for AMTSL implementation as recommended by ICM/FIGO, 2003. However, misoprostal in these hospitals is reported to be used mainly for managing intrauterine fetal death while egometrine is strongly discouraged for AMTSL. All store oxytocin at room temperature since oxytocin can be stored at room temperature for up to three months (Hogerzeil, 1996). However, storage at room temperature should not be encouraged since we cannot ensure that such storage will exceed three months.

Having AMTSL protocol and the routine use of AMTSL, as recommended especially the administration of 10 IU of oxytocin, discouraging ergometrine use has likely increased the use of oxytocin in these hospitals in order to comply with WHO, FIGO, and ICM standards, this is in contrast to the previous situation where by correct practice of AMTSL according to the ICM/FIGO definition in Tanzania was observed in 7% using ergometrine and non using oxytocin (Mfinaga et al., 2009). This study observed the availability of oxytocin along bedsides prepared for women during delivery. However some midwives reported to face a shortage of oxytocin in some days to the extent that a woman has to be requested to buy oxytocin for her own delivery. This calls for extra procurement, distribution and proper storage policies to ensure that sufficient oxytocin supplies are available and properly stored in hospitals. In addition, oxytocin is effective in 2–3 minutes after injection, has minimal side effects, could be used in all women and is more stable in storage than ergometrine(Hogerzeil (1996) , Poeschmann (1991)).

Study limitations

The main limitation for this study was the use of observational method which, is subject to a number of methodological limitations that may jeopardize internal reliability and external validity of the research results as the setting for observation can be viewed unnatural particularly when subjects are aware that they are being studied i.e. the observer's presence may change the behaviors being observed, or knowing their performance is evaluated can be affected due to the Hawthorn Effect. Both of these factors can have an impact on results of the study. This is usually taken care by using long period of time for observations, as it is known that, as time goes on, the subjects are more likely to grow accustomed to researcher's presence and act normally (Polit &Beck, 2008). A long-term observational study will often catch a glimpse of the natural behavior. As AMTSL is a short procedure (expected not to take more than five minutes) and data was collected only once, the elimination of this limitation still remained a challenge. Although midwives seemed committed in assisting women to deliver but being overwhelmed with big number of women could have made them forget that they were being observed and so could have reduced Hawthorn Effect. Travelling beyond

Dar es Salaam Region for more midwives was obstructed by limited study time and resources. The study sample could have been expanded but it was restricted to midwives who were conducting deliveries when this study was operating to avoid bias of involving midwives who haven't practiced AMTSL for a long time as currently they are not dealing with assisting deliveries at their work place. Also small sample size could have hindered broad association of relevant factors regarding midwives' competency in AMTSL intervention. Therefore the interpretation of this finding reflects the competence of midwives who participated in this study.

Midwifery/nursing implication

It is important to monitor and evaluate the use of AMTSL using the updated definition in all health facilities in Tanzania, since AMTSL shows to reduce the incidence of PPH, shortening of the third stage of labor and reducing the need for additional treatments (WHO (2000), Nordström (1997), Poeschmann (1991)). Supportive supervision among skilled midwives is crucial in order to keep them with updated information and skills, this will improve midwifery care and hence reduction of maternal morbidity and mortality towards achievement of MDG 5 by 2015.

CHAPTER SIX

6. Conclusion and recommendations

Most of the interviewed midwives are informed of and use AMTSL (99% and 97% respectively). More than half got exposed during their midwifery/nursing education. AMTSL situation per ICM/FIGO is better as most midwives managed to perform correctly all three components of AMTSL according to ICM/FIGO definition (i.e. administration of 10 IU of oxytocin (87.4%), CCT (92%) and uterine massage (72.4%)) although the general competence according to the set standard knowledge questions and skills checklist was very low (10%). Having AMTSL training in both midwifery and then in-service training has shown to increase competence level to AMTSL intervention, although observed and reported barriers like, uncondusive work environment like too much clients/patients per midwives number , shortage of some supplies and outdated reference materials that guide AMTSL use compromised the effectiveness of ideal training environment and real work environment that hinders competence and quality of care provided to women during third stage of labour. There was no any opposition towards AMTSL use, this indicates the presence of positive attitude among these midwives and most recommended it to continue as a tool in reducing maternal death from PPH. All delivery wards in these hospitals were reported to have good logistics for AMTSL implementation in the previous two consecutive months.

Recommndations:

Practice:

Researcher recommends for more staff, innovative strategies to motivate and retain staff, on the job competency-based facilities and introduction of management protocols to standardize practice in order to achieve the global millennium development goals set for maternal and newborn survival.

Future research:

Evaluation of primary PPH cases in relation to AMTSL use can be conducted to appreciate the strengthening of the intervention, this will increase call for improving

training services, ideal work environment, staffing and supply of oxytocins and other important supplies for this intervention.

Policy makers:

Ministry of health should increase provision of on job training on AMTSL and updated AMTSL job aids should be used, adapted and disseminated to all health facilities and provided to pre-service educational programs. Creation of ideal work environment (space and supplies) should be taken into consideration to make AMTSL implementation effective in reducing maternal mortality from PPH.

REFERENCES

1. AACN. (2010). The impact of education on nursing practice. *Fact Sheet*.
2. Bimbashi, A., Ndoni, E., Dokle, A., & Duley, L. (2010). Care during the third stage of labour. Obstetricians views and practice in an Albanian maternity hospital. *BMC Pregnancy Childbirth*, 10 (4). doi: 10.1186/1471.2393.10.4
3. Cherine, M., Khalil, K., Hassanein, N., Sholkamy, H., Breebaart, M., et al. (2004). Management of the third stage of labor in an Egyptian teaching hospital. *International Journal of Gynaecology and Obstetrics*, 87(1), 54–58.
4. Cotter, A., Ness, A., & Tosola, J. (2001). Prophylactic oxytocin for the third stage of labour. *Cochrane database Syst Rev*, (4).
5. MoHSW. (2009). Annual Reproductive and Child Health Report, Dar es salaam.
6. Festin, M.R., Lumbiganon, P., Tolosa, J., Finney, K., & Ba-Thike, K., et al. (2003). International survey on variations in practice of the management of the third stage of labour. *Bulletin of the World Health Organization*, 81 (4), 286-291.
7. Harvey, S., A., Blandón, Y., C., W., McCaw-Binns, A., Sandino, I., Urbina, I., et al. (2007). Skilled birth attendants are real skilled? *Bulletin of the World Health Organization*, 85(10), 733-820.
8. Hogerzeil, H.,V. (1996). Instability of (methyl) ergometrine in tropical climates. An overview. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 69, 25-29.
9. ICM/FIGO. (2003). *Joint statement management of the third stage of labour to prevent post-partum haemorrhage*. The Hague, London.
10. ICM. (2011). Essential competencies for basic midwifery practice. 2011 update.
11. Khan, K.S, Wojdyla, D, Say, L., Gulmezoglu, A.M., & Van Look, P.F. (2006). WHO analysis of causes of maternal death. A systematic review. *Lancet*, 367, 1066-74.

12. Manongi, R. N., Marchant, T. C., & Bygbjerg, C. (2006). Improving Motivation among primary health care workers in Tanzania. A health worker perspective. *Human Resource for Health*, 6 (4), 4-6.
13. Mfinanga, G. S., kimaro, D. G., Ngadaya, E., Massawe, S., Mtandu, R., et al. (2009). Health facility-based active management of the third stage of labor. Findings from a national survey in Tanzania. *Health Research Policy and Systems*, 7 (6). doi:10.1186/1478.4505.7.6
14. Nordström, L., Fogelstam, K., Gunilla, F.G., Larsson, A., & Rydhstroem. (1997). Routine oxytocin in the third stage of labour. A placebocontrolled randomised trial. *British Journal of Obstetrics & Gynaecology*, 104, 781-786.
15. Nyamtema, A. M., Urasa, D. P., Massawe, A., Lindmark, G., & Van, R. J. (2008). Staffing needs for quality perinatal care in Tanzania. *Afr J Reprod Health*, 12 (3), 113-124.
16. Niermeyer, S. (2006). Clinics in perinatology: The science behind delivery room resuscitation. *Crystoloid versus Colloid*, 33, 133-134.
17. Polit, F., D. & Beck, T. (2008). *Nursing Research. Generating and Assessing Evidence for Nursing Practice*. Wolters Kluwer Health:LippincottWilliams and Willkins.
18. POPPHI. (2006). Active management of the third stage of labor. Data obtained from home deliveries in the Cirebon District.
19. Poeschmann, R. P., Doesburg, W.H., & Eskes, T.K. A randomized comparison of oxytocin, sulprostone and placebo in the management of the third stage of labour. *Br J Obstet Gynaeco*, 98,528-530.
20. Prendiville, W.J., Harding,J.E., Elbourne, D.R., & Stirrat, G.M. (1998). The Bristol third stage trial. Active versus physiological management of the third stage of labour. *British Medical Journal*, 297, 1295-1300.
21. Prendiville, W.J., Harding, J.E., Elbourne. D., & McDonald S. (2001). Active versus expectant management in the third stage of labour. Cochrane review. *Outlook*, 19, 1-8.

22. Prendiville, W.J., Elbourne, D., & McDonald, S. (2000). Active versus expectant management in the third stage of labor. *The Cochrane Library*, 4 (3).
23. PATH. (2000). Status Report on the Unijecte Prefilled Injection. *Seattle*.
24. Rogers, J., Wood, J., McCandlish, R., Ayers, S., Truesday, A., et al. (1998). Active versus expectant management of third stage of labour. The Hinchingsbrooke randomized controlled trial. *Lancet*, 351, 693-699.
25. Stanton, S., C., Armbruster, D., Knight, R., Ariawan, I., Gbangbade, S., et al., (2009). Use of active management of the third stage of labour in seven developing countries. *Bulletin of the World Health Organization*, 87 (3), 207–215.
26. DHS. (2010). Tanzania demographic health survey.
27. GNPRH. (2002). The Global Network for Perinatal and Reproductive Health.
28. MoH. (2002). *Healthy Statistics Abstract*, 1-107.
29. MoHSW. (2008). Guidelines for use of uterotonics in active management of the third stage of labour.
30. MoHSW. (2010). Quality improvement standards. Assessment tool.
31. UN. (2000). Millennium Development Goals. New York, NY.
32. UNFPA. (2004). *maternal mortality in 2000*. Estimates developed by WHO, UNICEF and UNFPA. Geneva, Switzerland.
33. WHO. (2006). *The World Health Report. Working Together for Health*. Geneva, Switzerland.
34. WHO. (2006). *Making a Difference in Countries. Strategic Approach to Improving Maternal and Newborn Survival and Health*. Geneva, Switzerland.
35. WHO. (2005). MPS technical update. Prevention of postpartum haemorrhage by active management of third stage of labour.

36. WHO. (2000). *Managing Complications in Pregnancy and Childbirth. A Guide for Midwives and Doctors*. WHO Department of Reproductive Health and Research . Geneva, Switzerland.

APPENDICES

Appendix A: Participant's Consent Form (English version)



MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

DIRECTORATE OF RESEARCH AND PUBLICATIONS, MUHAS

INFORMED CONSENT FORM

Introduction

Hello, my name is Fatina Ramadhani, Masters Student at the school of Nursing in Muhimbili University of Health and Allied Sciences (MUHAS), and I would like to invite you to take part in a study. In order to be sure that you understand what it means to be involved in this study, please read the information in this consent form. If you agree to participate, please sign this form at the place indicated. If there is anything in this consent form that you do not understand, please ask us and we shall explain.

Reasons for the Study

This study will assess how midwives manage the third stage of labor in Dar es Salaam municipal hospitals in Tanzania.

Your Part in the Study

The MUHAS Ethics committee and Municipal administration have also granted us permission to conduct the study.

If you agree to participate in the study, you will be observed in performing AMTSL, after the procedure I will request you to answer some questions that I will ask you. Your name will not be recorded in the questionnaire and/or discussion or demonstration

notes. The questionnaires / discussion notes will be marked with numbers for purposes of data analysis only. The information you give will be confidential and nobody will associate it with you personally. Performing AMTSL and answering questions will take you about 10-15 minutes.

Possible Risks

We do not think that you will be at any risk by helping us with this study. Your responses will be confidential and will be used solely for quality improvement purposes.

Possible Benefits

Your participation in this study will help us to make suggestions to the MoHSW and other stakeholders about how to improve maternal service provision in health facilities.

Your Decision to Participate / Not to Participate in the Study

You are free to decide if you want to be in this study or not. Your decision will not be used against you in any way. If you choose to take part, you can change your mind at any time and quit the study.

Confidentiality

The information I collect will be kept private. The questionnaires and discussion notes will be marked only with codes and not with names. Neither your supervisors nor Ministry of Health Officials will be able to see the questionnaires. Study reports and publications will not reveal individual names. Every effort will be made to protect the confidentiality of the information provided.

Compensation

I will not be able to provide you any payment or gift for being in this study.

If You Have a Problem or Have Other Questions

If you have a problem that you think might be related to taking part in this study or any questions, please call Ms Fatina Ramadhani at the School of Nursing, Muhimbili University of Health Allied Sciences (MUHAS), phone number +255 713 380 529.

Your Rights as a Participant

This study has been reviewed and approved by the ethics committee of MUHAS. This committee reviews studies in order to help protect participants. If you have any questions about your rights as a study participant you may contact the Chairperson, MUHAS Research and Publications Committee (Prof. Aboud), tel. no. 2152489

PARTICIPANT AGREEMENT

The above document describing the benefits, risks and procedures for the study on “assessment of midwives’ competency in the implementation of active management of the third stage of labor in Dar es Salaam municipal hospitals, Tanzania”.

has been read and explained to me. I have been given an opportunity to have any questions about the study answered to my satisfaction.

I agree to participate as a volunteer.

Date

Signature of participant

I certify that the nature, purpose, potential benefits and possible risks associated with participating in this study have been explained to the above individual whose code number is

Date

Signature of person who obtained consent

Appendix B: Consent form (Swahili version)



CHUO KIKUU CHA SAYANSI ZA AFYA NA TIBA CHA MUHIMBILI (MUHAS)

FOMU YA KUKUBALI KUSHIRIKI KWENYE UTAFITI

Namba ya Utambulisho

Naanza kwa salamu! Mimi naitwa Fatina Ramadhani. Mimi ni mwanafunzi wa shahada ya pili katika Shule ya Uuguzi ya Chuo Kikuu cha Sayansi ya Afya na tiba Muhimbili. Nafanya utafiti juu ya Umahiri wa wakunga katika utekelezaji wa kulazimisha utoaji wa kondo la uzazi wakati wa hatua ya tatu ya wakati wa kujifungua katika hospitali za manisipaa 3 za Dar es Salaam hapa nchini Tanzania.

Madhumuni Ya Utafiti

Madhumuni ya utafiti huu ni kujua kiasi cha utendaji na ufahamu wa wakunga katika kulazimisha utoaji wa kondo la uzazi wakati wa hatua ya tatu ya wakati wa kujifungua katika hospitali za Maniapaa 3 za Dar es Salaam hapa nchini Tanzania.

Mambo Yanayohusika Katika Utafiti Huu

Kama utakubali kushiriki, mambo yafuatayo yatatokea

2.1 Utaangaliwa jinsi unavyotoa kondo la uzazi kwa njia iliyoshauriwa siku hizi na utaulizwa maswali juu ya ufahamu wako wa njia hiyo ya kisasa ya utoaji wa kondo la uzazi kwa kutumia dawa.

2.2 Pia kutakuwa na maelezo yatakayokupa nafasi ya kujieleza juu ya utafiti huu na maelezo yako yatajazwa kwenye dodoso.

Usiri

Mtafiti anakuhakikishia usiri wa hali ya juu katika habari utakazotoa kwenye utafiti huu. Hakuna jina la mhusika litakalotumika kwenye ripoti ya utafiti huu, bali ni takwimu tu ndizo zitakazotumika. Makabrasha yote yatokanayo na utafiti huu yatahifadhiwa katika sehemu salama na ni msimamizi wa utafiti na watafiti wenzake tu watakao ruhusiwa kuyaona.

Madhara

Hatutarajii kuwa madhara yeyote yatakupata kwa wewe kushiriki kwenye utafiti huu.

Haki Ya Kujitoea Kwenye Utafiti

Kushiriki kwenye utafiti ni hiari. Uko huru kuacha kushiriki kwenye utafiti huu na kujitoea kwenye utafiti wakati wowote. Uamuzi wako wa kushiriki au kutoshiriki hauta aathiri mustakabali wako wa sasa na wa baadaye wa kazi yako kama mkunga. Uamuzi wako wa kutoshiriki au kujitoea kwenye utafiti hauambatani na adhabu yoyote na wala hutapoteza mafao yeyote ambayo unastahili kupata kama mkunga.

Faida

Hakutakuwa na faida ya moja kwa moja kwa wewe kushiriki kwenye utafiti huu. Lakini habari ulizotoa zinaweza kusaidia wataalam wa afya kuelewa hali halizi ya utekeleza wa njia hii ya kisasa ya utoaji wa kondo la uzazi na hivyo kupanga mikakati madhubuti ya kutekeleza njia hiyo kwa umakini zaidi ili kupunguza vifo vya akinana mama kutokana na kutokwa damu nyingi baada ya kujifungua.

Kama Kukitoea Madhara

Hatutegemei kuwa madhara yeyote yatakupata kwa wewe kushiriki kwenye utafiti huu. Kama madhara ya mwili yatatokea kutokana na wewe kushiriki kwenye utafiti huu, utapatiwa matibabu kutokana na taratibu za sasa za Tanzania. Hakutakuwa na fidia ya ziada utakayolipwa.

Mawasiliano Na Wahusika

Kama ukiwa na swali lolote kuhusu utafiti huu, unaweza kuniuliza moja kwa moja au kwa simu namba +255 713 380 529. Kama una maswali yoyote yanayohusu haki zako kama mshiriki, unaweza kuwasiliana na Prof Aboud, Mwenyekiti wa Kamati ya Utafiti na Machapisho ya Chuo kikuu cha Sayansi za Afya Muhimbili kwa simu namba 2152489 au kumwandikia kwa PO Box 65001, Dar es salaam.

Kutia Saini

Kama ukikubali kushiriki tunaomba utie saini hapa chini

Mimi _____ . Nimesoma na kuelewa maelezo kwenye hii fomu. Nakubali kushiriki kwenye utafiti huu.

Saini ya mshiriki wa utafiti _____

Saini ya mtu anayeshudia kukubali kwa mshiriki _____

Tarehe _____

Appendix C: Knowledge Questionnaire (English Version)

TITLE: MIDWIVES' COMPETENCY FOR IMPLEMENTATION OF ACTIVE MANAGEMENT OF THE THIRD STAGE OF LABOR IN DAR ES SALAAM MUNICIPAL HOSPITALS, TANZANIA.

Participants: Midwives.

Part one: Demographic data.

Instructions:

Please fill or encircle appropriately.

ID

1. Age.....

2. Sex..... F/M

3. Highest level of education

(a) Primary

(b) Secondary (O-Level)

(c) Secondary (A- Level)

(d) College

(e) University

(f) Other (Please specify).....

4. Highest level of midwifery Education

(a) Certificate

(b) Diploma

(c) Advanced Diploma

(d) Degree

(e) Other (Please specify).....

5. Profile (Please mark only one)

- (a) Registered nurse-midwife
- (b) Enrolled nurse midwife
- (c) Other (Please specify).....

6. For how long have you been practicing Clinical midwifery?

Years.....

Part two: Training information in AMTSL.

Instructions

Please encircle the one most correct answer in each multiple choice question.

7. Do you know AMTSL?

- (a) Yes
- (b) No

If yes continue, if no please give reasons

8. Where did you get expertise on AMTSL?

- (a) At midwifery/nursing school
- (b) At job training workshop
- (c) When observing my colleagues performing it on a woman
- (d) From job Aid references
- (e) Other (Please specify).....

9. At what year did you get expertise on AMTSL?

- (a) 2007
- (b) 2008
- (c) 2009
- (d) 2010
- (e) 2011
- (f) Other (Please specify).....

10. Do you use AMTSL?

- (a) Yes
 - (b) No.
- If no Please give reasons.....**

Part three: knowledge on AMTSL

11. The first line uterotonic recommended for AMTSL is

- (a) IV Ergometrine (0.5 mg)
- (b) IM Oxytocin (10 IU)
- (c) Misoprostal (600mg)
- (d) Other (Please specify).....

12. The recommended dose of that drug (selected in Question 11.) during AMTSL is

- (a) 5 IU
- (b) 10 IU
- (c) 2.5. IU
- (d) Other (Please specify).....

13. The recommended route to give that drug (selected in Question 11.) during AMTSL is

- (a) Oral
- (b) Intramuscular (IM)
- (c) Intravenous (IV)
- (d) Other (Please specify).....

14. The three main sequential components of AMTSL are

- (a) Oxytocin administration, immediate uterine massage after delivery of the placenta and CCT
- (b) Immediate uterine massage after delivery of the placenta, CCT and Oxytocin administration
- (c) Oxytocin administration, CCT and immediate uterine massage after delivery of the placenta.
- (d) Other (Please specify).....

15. The following is (are) believed to be harmful practice (s) when performing AMTSL.

- (a) Massaging uterus before delivering the placenta
- (b) Applying Controlled Cord traction (CCT) without fundal support
- (c) Both
- (d) Other (Please specify).....

16. Within how long should AMTSL be completed?

- (a) 1 minute if relaxed within 3 minutes
- (b) 5 minutes
- (c) 5-10 minutes
- (d) Other (Please specify).....

17. In the first two hours post delivery uterine massage to a woman should be done in an interval of;

- (a) 15 minutes
- (b) 30 minutes
- (c) 45 minutes
- (d) 60 minutes
- (e) Other (Please specify).....



Part three: Guidelines, motivations and views behind AMTSL implementation.

18. List at least one reference at your work place that guides how to perform AMTSL

.....
.....

19. What promotes you to offer AMTSL to women after delivery?

.....
.....

20. What barriers do you face in the correct implementation of AMTSL?

.....
.....

21. What would you like to suggest in reinforcing AMTSL implementation in Tanzania?.....

.....
.....

Thank you for your time and for your participation.

Appendix D: Knowledge Questionnaire (Swahili version)

DODOSO LA UFAHAMU KUHUSU UMAHILI WA WAKUNGA WA KUTOA KONDO LA NYUMA LA UZAZI KWA NJIA ILIYOPENDEKEZWA SIKU HIZI KWA AKINA MAMA WANAOFUNGULIA KATIKA HOSPITALI ZA MANISPAA ZA MKOA WA DAR ES SALAAM.

Walengwa: Wakunga wa Hospitali za manispaa za Dar es salaam.

Sehemu ya kwanza: Taarifa binafsi

Maelekezo:

Tafadhali jaza nafasi zilizo wazi au zungushia herufi ya jibu lako.

Nambari ya utambulisho

1. Mwaka wa kuzaliwa.....

2. Jinsia..... Mke/Mme

3. Kiwango cha juu cha elimu ulichofikia

(a) Msingi

(b) Sekondari(O-Level)

(c) Sekondari (A- Level)

(d) Chuo

(e) Chuo kikuu

(f) Nyinginezo (Tafadhali zitaje).....

4. Kiwango cha juu cha elimu ya ukunga ulichofikia

(a) Cheti

(b) Stashahada

(c) Stashahada ya juu

(d) Shahada

(e) Nyinginezo (Tafadhali zitaje).....

5. Ngazi ya usajili

- (a) Registered nurse-midwife (Muuguzi mkunga msajiliwa)
- (b) Enrolled nurse midwife (Muuguzi mkunga mwambata)
- (c) Nyinginezo (Tafadhali zitaje).....

6. Umefanya kazi ya Ukunga kwa kipindi cha muda gani mpaka sasa?

Miaka.....

Sehemu ya pili: Mafunzo juu ya utoaji wa kondo la nyuma la uzazi kwa msaada wa dawa ya kuongeza uchungu wa uzazi wakati wa hatua ya tatu ya kumzalisha mama?

.Maelekezo

Tafadhali zungushia jibu sahihi moja tu katika maswali ya kuchagua yafuatayo.

7. Je unaifahamu njia iliyoshauriwa siku hizi ya utoaji wa kondo la nyuma la uzazi kwa msaada wa dawa ya kuongeza uchungu wa uzazi wakati wa hatua ya tatu ya kumzalisha mama?

- (a) Ndiyo
- (b) Hapana

Kama ndio endelea, kama hapana tafadhali toa sababu

8. Je ni wapi ulipata ujuzi wa kutumia njia iliyoshauriwa siku hizi ya utoaji wa kondo la nyuma la uzazi kwa msaada wa dawa ya kuongeza uchungu wa uzazi wakati wa hatua ya tatu ya kumzalisha mama?

- (a) Katika shule ya Ukunga/Uuuguzi
- (b) Washa ya kazini
- (c) Nilimuona mkunga mwenzangu akimuhudumia mama kwa njia hii.
- (d) Nilisoma kwenye vitabu vya miongozo ya kazi zangu
- (e) Nyinginezo (Tafadhali zitaje).....

9. Ni mwaka gani ulipata ujuzi wa kutumia njia hii?

- (a) 2007
- (b) 2008
- (c) 2009
- (d) 2010
- (e) 2011
- (f) Nyinginezo (Tafadhali zitaje).....

10. Je unatumia njia iliyoshauriwa siku hizi ya utoaji wa kondo la nyuma la uzazi kwa msaada wa dawa ya kuongeza uchungu wa uzazi wakati wa hatua ya tatu ya kumzalisha mama??

- (a) Ndiyo
 - (b) Hapana.
- Kama hapana tafadhali toa sababu.....**

Sehemu ya tatu: ufahamu juu ya njia ya utoaji wa kondo la nyuma la uzazi kwa msaada wa dawa ya kuongeza uchungu wa uzazi wakati wa hatua ya tatu ya kumzalisha mama

11. Dawa ya kwanza ya kuongeza uchungu wa uzazi iliyopendekezwa kutumika katika utoaji huo wa kondo la nyuma la uzazi katika hatua ya tatu ya kujifungua ni ipi kati ya hizi zifuatazo?

- (a) Ergometrine
- (b) Oxytocin
- (c) Misoprostal
- (d) Nyinginezo (Tafadhali zitaje).....

12. Ni kiasi gani cha dawa hiyo (uliyochagua hapo juu swali. Na. 11) inatolewa katika utoaji wa kondo la nyuma la uzazi katika hatua ya tatu ya kujifungua?

- (a) 5 IU
- (b) 10 IU
- (c) 2.5 IU

(d) Nyinginezo (Tafadhali zitaje).....

13. Ni njia gani hutumika zaidi katika kutoa hiyo dawa (uliyochagua hapo juu swali. Na. 11) wakati wa utoaji wa kondo la nyuma la uzazi katika hatua ya tatu ya kujifungua?

- (a) Kupitia mdomoni
- (b) Kupitia mshipa wa damu
- (c) Kupitia msuli, hasa wa pajani

(d) Nyinginezo (Tafadhali zitaje).....

14. Hatua tatu muhimu za mpangilio katika utoaji wa kondo la nyuma la uzazi kwa kutumia dawa ya kuongeza uchungu wa uzazi wakati wa hatua ya tatu ya kumzalisha mama ni;

(a) Kutoa dawa ya oxytocin, kukanda tumbo la uzazi mara tu baada ya kondo la uzazi kuzalishwa na kuvuta taratiibu kondo la nyuma la uzazi kwa ustadi wa kulivuta kwa chini huku mkono mwingine ukizuia kwa juu ya sehemu ya tumbo la uzazi.

(b) kukanda tumbo la uzazi mara tu baada ya kondo la uzazi kuzalishwa, kuvuta taratiibu kondo la nyuma la uzazi kwa ustadi wa kulivuta kwa chini huku mkono mwingine ukizuia kwa juu ya sehemu ya tumbo la uzazi and Kutoa dawa ya oxytocin

(c) Kutoa dawa ya oxytocin, kuvuta taratiibu kondo la nyuma la uzazi kwa ustadi wa kulivuta kwa chini huku mkono mwingine ukizuia kwa juu ya sehemu ya tumbo la uzazi and kukanda tumbo la uzazi mara tu baada ya kondo la uzazi kuzalishwa

(d) Nyinginezo (Tafadhali zitaje).....

15. Matendo yafuatayo yakitendwa wakati wa utoaji wa kondo la nyuma la uzazi wakati wa hatua ya tatu ya kumsaidia mama kujifungua, yanaaminika kuwa ni hatari kwa uhai wa mama anayejifungua.

- (a) Kukandakanda eneo la tumbo la uzazi kabla hujatoa kondo la nyuma
- (b) Kuvuta taratiibu kondo la nyuma la uzazi kwa ustadi wa kulivuta kwa chini bila kuzuia kwa mkono juu ya sehemu ya tumbo la uzazi.
- (c) Yote hapo juu
- (d) Nyinginezo (Tafadhali zitaje).....

16. Ndani ya muda gani hatua hii ya utoaji wa kondo la nyuma la uzazi kwa kutumia dawa ya kuongeza uchungu wa uzazi inatakiwa iwe imekamilika?

- (a) Ndani ya dakika moja au isizidi dakika tatu
- (b) Ndani ya dakika tano
- (c) Ndani ya dakika tano mpaka kumi
- (d) Nyinginezo (Tafadhali zitaje).....

17. Masaa mawili ya mwanzo tangu kumzalisha mama, ukandaji wa tumbo la uzazi inabidi ufanyike kila baada ya;

- (a) Dakika 15
- (b) Dakika 30
- (c) Dakika 45
- (d) Dakika 60
- (e) Nyinginezo (Tafadhali zitaje).....

Sehemu ya tatu: Miongozo, changamoto na maoni juu ya utoaji wa kondo la nyuma la uzazi kwa msaada wa dawa ya kuongeza uchungu wa uzazi wakati wa hatua ya tatu ya kumzalisha mama?

18. Taja angalau kichwa cha habari cha rejea moja uliyonayo kazini, inayokuongoza jinsi ya kutoa kondo la nyuma la uzazi kwa kutumia dawa ya kuongeza uchungu wa uzazi wakati wa hatua ya tatu ya kumzalisha mama.

.....
.....

19. Sababu gani inakulazimu wewe kutoa kondo la nyuma la uzazi kwa kutumia dawa ya kuongeza uchungu wa uzazi wakati wa hatua ya tatu ya kumzalisha mama?

.....
.....

20. Je unakutana na changamoto gani katika kutoa kondo la nyuma la uzazi kwa kutumia dawa ya kuongeza uchungu wa uzazi kwausahihi wakati wa hatua ya tatu ya kumzalisha mama?

.....
.....

21. Una maoni gani ya kuboresha huduma ya kutoa kondo la nyuma la uzazi kwa kutumia dawa ya kuongeza uchungu wa uzazi wakati wa hatua ya tatu ya kumzalisha mama hapa nchini in Tanzania?

.....
.....

Asante sana kwa ushiriki wako katika utafiti huu.

Appendix E: Observation instrument

Date: **Region:** **Municipal:**
 dd mm yyyy

Participant study ID No. - **Evaluator:**

Instructions to the Observer

Please read the following statements loudly **EXACTLY AS THEY ARE WRITTEN**, without adding or leaving out anything. This will avoid bias and provide each participant with the same orientation.

“Good morning/afternoon Dr., Mr., Ms. _____, I am _____. Welcome and thank you for participating. Please make yourself comfortable and don’t feel anxious. I will explain the exercise; please ask me if you have any questions about what you are supposed to do.

Your task is to finish delivering the baby and then carry out active management of the third stage of labour (AMTSL) at the appropriate time.

“Do you have any questions?”

Observer: answer any questions the participant might have. Once the participant has no more questions to ask say:

Note: For step 2, if there is no oxytocin available, it is acceptable that the participant says 0.5 mg of Ergometrine IM or 600mcg Prostaglandin/misoprostol orally/Rectal/Sublingual/Vagially, all are given within one minute of delivery. Nevertheless, if the participant mentions Ergometrine, he/she **MUST** mention that the Ergometrine is not recommended for women with pre-eclampsia or eclampsia to earn a satisfactory score. If the participant mentions Prostaglandin or **misoprostol (prostaglandin E1 analogue)**, he/she **MUST** mention that this drug must not be administered intravenously to earn a satisfactory score.

B. Procedure: Active Management of the Third Stage of Delivery	Done correctly	Done incorrectly	Not done
1. After delivering the first baby palpates the abdomen and rules out presence of another fetus before continuing.			
2. Administers 10 units of IM oxytocin. If oxytocin is not available, administers 0.5 mg of Ergometrine (NOT in pre-eclamptic/eclamptic women) or Prostaglandins (NOT IV). Indicate whether this is			
3. (a). Done within 1 minute? or			
(b) Done within 3 minutes? or			
(c) Done for more than 3 minutes?			
4. Clamps cord close to perineum			
5. Uses sponge/artery holding forceps in clamping the cord (No. 3 Above)			
6. Places the other hand just above the woman's pubic bone to stabilize uterus for CCT			
7. Waits for a strong uterine contraction (2-3 minutes)			
8. Doesn't not wait for a gush of blood			

9. During the contraction, applies controlled traction (CCT) to the cord so as to avoid uterine inversion:			
10. Pulls the cord gently, firmly, and uniformly downward to deliver the placenta			
11. Supporting the placenta with both hands.			
12. Extracts the membranes gently with lateral movements.			
13. Immediately massages the uterine fundus.			
14. Ensures that the uterus does not relax after stopping uterine massage			
15. Checks to see if the tissues are complete.			
16. Checks to see if the placenta is whole and intact.			
17. Examines the woman for cervical or vaginal tears, or episiotomy to be repaired.			
18. Reports that she will assess uterine contraction, 15 hourly in the first hour, then twice hourly in the next hour.			

Appendix F: Logistic assessment instrument

Tool for logistics assessment at each municipal hospital: Responsible incharge has to encircle an appropriate response of either Yes or No.

	Amana	Mwananyamala	Temeke
Presence of AMTSL protocol	(Yes/No)	(Yes/No)	(Yes/No)
Kind of uterotonics available	Oxytocin (Y/N) misoprostal (Y/N) & ergometrine(Y/N)	Oxytocin (Y/N) misoprostal (Y/N) & ergometrine(Y/N)	Oxytocin (Y/N) misoprostal (Y/N) & ergometrine(Y/N)
Enough amount of uterotonics procured per month from MSD	December (Y/N) January (Y/N)	December (Y/N) January (Y/N)	December (Y/N) January (Y/N)
Enough syringes and Needles procured per month from MSD	December (Y/N) January (Y/N)	December (Y/N) January (Y/N)	December (Y/N) January (Y/N)
Reasons for insufficient amount procured			
Stores in temperature recommended by the manufacture	Oxytocin (Y/N) misoprostal (Y/N) & ergometrine(Y/N)	Oxytocin (Y/N) misoprostal (Y/N) & ergometrine(Y/N)	Oxytocin (Y/N) misoprostal (Y/N) & ergometrine(Y/N)