THE PRACTICE OF ACTIVE MANAGEMENT OF THIRD STAGE OF LABOUR: FINDINGS FROM DAR ES SALAAM MUNICIPAL HOSPITALS

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By

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CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled: **The practice of active management of third stage of labour: findings from Dar es Salaam municipal hospitals** in fulfillment of the requirements for the degree of Master of Medicine (Obstetrics and Gynecology) of Muhimbili University of Health and Allied Sciences.

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Date: _____

DECLARATION

AND

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I, **Semba Bernard Mugeta,** 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: …….……

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DEDICATION

I dedicate this work to my son Tambuko who faced a lot of challenges at birth. I wish him to grow up in good health and be successful in life.

ABSTRACT

Background

The third stage of labour is defined as the interval between birth of the baby and complete expulsion of the placenta. Some degree of blood loss occurs after the birth of the baby due to separation of the placenta. This period is a risky period because the uterus may not contract well after birth and heavy blood loss can endanger the life of the mother. Active Management of the Third Stage of Labour (AMTSL) reduces the occurrence of severe postpartum haemorrhage by approximately 60 –70%. Active management consists of three interventions packages or steps. These are administration of oxytocin within one minute after delivery of the baby, controlled cord traction and uterine massage.

Objective: To evaluate the performance of health care providers on AMTSL in Dar e s salaam municipal hospitals.

Methodology: This was an observational cross sectional study in three municipal hospitals of Dar es Salaam. It was a prospective direct observation of child birth, particularly in the third stage of labour. A total of 400 deliveries were observed. Study design.

Results: The active management of the third stage of labour was correctly done for 46% of observed deliveries. Oxytocin administration within one minute of the birth of the baby was done in 54.3%, controlled cord traction in 85.2% and uterine massage in 93% of observed deliveries.

Conclusion

Active management of the third stage of labour is an important skill to be acquired by every health care provider. Early preparation of oxytocin before delivery contributes a lot in provision of oxytocin within one minute of the delivery of the baby and therefore this practice should be highly addressed to every health care provider.

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LIST OF ABBREVIATIONS

AMO	Assistant Medical Officer
AMTSL	Active Management of the Third Stage of Labour
FIGO	International Federation of Gynecologist and Obstetricians
FMOH	Federal Ministry of Health Nigeria
HCP	Health Care Providers
ICM	International Confederation of Midwifes
MMR	Maternal Mortality Ratio
MO	Medical Officer
MOHSW	Ministry of Health and Social Welfare
MUHAS	Muhimbili university of Health and Allied Sciences
PPH	Postpartum Hemorrhage
RCM	Royal College of Midwife
RCOG	Royal College of Obstetrics and Gynecology
TDHS	Tanzania Demographic and Health Survey
UK	United Kingdom
WHO	World Health Organization

1.1 INTRODUCTION

Severe bleeding after delivery of the baby is among of the leading cause of maternal death worldwide, with an estimated mortality rate of 33.9% in Africa [1]. The majority of these deaths occur within 24 hours of delivery which indicate that they are consequence of pregnancy and delivery [2]. Postpartum hemorrhage (PPH) accounts for about 5% of all deliveries with a significant impact on maternal mortality [3, 4]. PPH is defined as blood loss in excess of 500ml after vaginal delivery and excess of 1000ml after abdominal delivery [5]. However, in anemic patients, blood loss less than 500ml can be fatal. Uterine atony, which is the failure of the uterus to contract properly after childbirth accounts for 75 to 90 percent of postpartum hemorrhage [6]. Women who survive PPH are likely to suffer from anemia and other complications like transfusion reactions or infections (HIV or hepatitis).

The third stage of labour is defined as the period between the delivery of the fetus and delivery of the placenta [7]. Obstetric tradition has set somewhat arbitrary limit on the third stage. The average time for singleton vaginal delivery usually lasts between 5 and 15 minutes, but any period up to 1 hour may be considered within normal limits [8]. The average time is reduced to 5 minutes from 15 minutes in active management of the third stage of labour. The physiology of the third stage is a continuation of processes and forces occurring during the first and second stages of labour [9]. The forces include those which bring about uterine contraction, separation of the placenta, expulsion of placenta, and permanent retraction and contraction of the uterus. The separation of the placenta is brought about by contraction and retraction of uterine muscles. Normally the process of separation begins at the central part of the placenta which leads to the formation of blood clot. The peripheral sides of the placenta starts to detach because of the increasing weight of the blood clots [10]. After complete separation of the placenta, the uterus contracts strongly forcing down the placenta into the lower segment to the vagina. Finally, the placenta is expelled out either voluntary by contraction of abdominal muscle (bearing down effort) or manipulative procedure [10, 11].

The third stage of labour basically is managed in two different ways. These are physiological management and active management. Physiological approach promotes natural separation and delivery of the placenta. No intervention is provided to hasten the process. In active management (AMTSL), a number of interventions are applied in combination. This includes administration of uterotonic drugs, controlled cord and uterine massage [12-16].

Active management of the third stage of labor (AMTSL) is an effective measure to prevent PPH that can be delivered by trained health care providers linked with essential supplies in all the settings that women give birth, including home births. This practice shortens the period of expulsion of the placenta and its membranes with the reduction of blood loss [17]. Three definitions of AMTSL have been described by Cochrane review, International Confederation of Midwifes / International Federation of Gynecologist and Obstetricians (ICM/FIGO) and World Health Organization (WHO). In the Cochrane review the definition includes the use of uterotonic drug when the anterior shoulder of the baby is delivered or immediately after the delivery of the fetus but before the delivery of the placenta. Second, early cord clamping and cutting and third intervention is controlled cord traction for delivery of the placenta [16]. The definition of AMTSL as described by ICM/FIGO includes the following interventions. First provision of uterotonic drug preferably 10 IU of oxytocin via intramuscular injection within one minute following delivery of the fetus. Second, controlled cord traction and third, immediate uterine massage following delivery of the of the placenta and palpation of the uterus every 15 minutes over the next 2 hours [18]. Lastly, the definition of AMTSL as recommended by WHO includes the three components of ICM/FIGO described above plus delayed cord clamping (three minutes after birth) [19].

Maternal mortality due to PPH is highest where there is poor access to skilled health care providers, transport systems, and emergency services [20]. This is not surprising that, a woman will die within few minutes after delivery because of blood loss due to failure of uterus to contract if oxytocin was given inappropriately. Or a woman may suffer from acute blood loss after inappropriate controlled cord traction which may lead to uterine inversion. It has been reported that the proportional of maternal death worldwide has been falling since 1990

because access to skilled health care provider has increased [21]. Therefore basic skills are essentially important in the management of the third stage of labour before jumping to surgical interventions. Surgical procedures are often only available in tertiary care or referral hospitals, and many women must be transported long distances to receive these life-saving services. In addition, these surgical procedures are costly and require comprehensive emergency surgical services, including general anesthesia. Thus, in countries with high maternal mortality and limited resources, improving access to skilled health care providers is a priority strategy to improve maternal health as per number five of the millennium development goals.

1.2 LITERATURE REVIEW

In the late 1980's and early 1990's, there were five large randomized controlled trials that were carried out to address the question of whether expectant or active management is preferable in management of the third stage of labour [12-14, 17, 22]. These trials stated consistently that active management of the third stage of labour is superior compared to expectant management in terms of reduction of blood loss, retained placenta and reduction of the need for blood transfusion after delivery. In a meta- analysis conducted in 2011 consisting of seven trials, AMTSL showed reduction of maternal blood loss of 1000 ml at birth in a population of women at risk of excessive bleeding and significant decrease blood loss greater than 500 ml at birth [23].

Several studies have been conducted across the world trying to find out to what extent the active management of the third stage of labour had been performed. A survey of obstetricians and audit of practice during the third stage of labour conducted in Albania 2008 reported that 77% of obstetricians always or usually use active management and oxytocin was almost always the drug of choice [24]. Active management of the third stage of labour is widely used by both obstetricians and midwives in the United Kingdom (UK). A study done among members of the Royal College of Gynecologists and Obstetricians (RCOG) in August 2008 and members of the Royal College of Midwives (RCM) showed that most obstetricians (93%) and midwives (73%) reported always or usually using active management of the third stage of labour for vaginal births [25]. A study done in a large public teaching hospital in Egypt reported the use of active management of the third stage of labour was 15% of all deliveries in 2004 [26]. In the study conducted in 15 university in ten different countries the rate of use of AMTSL was ranging from 0% to 98% (average of 25% across all hospitals) and it was observed that there was no pattern of difference between developing and undeveloped countries [27]. Between October 2005 and December 2006 observation during the third stage carried out in the seven countries revealed the following findings: 32% of those observed in Indonesia correctly use

AMTSL, 18% in Benin and 1–5% in the remaining five countries. The proportion of deliveries that met the less stringent Cochrane definition of correct active management was somewhat greater (45% in Benin, 41% in Indonesia), but remained below 10% in El Salvador, Nicaragua and Tanzania. The use of uterotonics was nearly universal (>95% of deliveries), except in El Salvador (60%).The prevalence of correct use, however, was substantially lower, varying from 7% in Tanzania to 61% in Benin [28, 29].

A survey on variations in management of the third stage of labour in twelve European countries in 2007 showed considerable variations observed between and within countries. Uses of uterotonics in the third stage were widespread ranging from 72% to 100% in most countries except in Austria and Denmark where 55% to 57% of the unit reported using. Controlled cord traction was also common, but their extent differed markedly between countries. Controlled cord traction was in 87% of units in the UK, in 95% of those in Ireland and from 39% to 51% of units in Belgium, the Netherlands, Norway, Portugal and Switzerland. In the other participating countries, it was between 12 and 25%. The proportional of using the full package of active management of the third stage of labour was ranging from 77% in Ireland and 75% in the UK, 34% to 37% in Belgium, the Netherlands, Portugal and Switzerland [30].

A number of different uterotonics are used as part of AMTSL to accelerate separation of placenta and prevent blood loss. The most commonly used drugs are oxytocin, syntometrine and misoprostal. Oxytocin is the first drug of choice as uterotonic agent. It has high efficacy and few side effects [31-34]. In 2001 a systemic review of seven randomized controlled trials involving more than 3000 women, use of oxytocin was associated with a 50% reduction in the risk of post-partum bleeding of more than 500mls [16]. Oxytocin can be administered intravenously or intramuscularly and its effect on postpartum blood loss does not vary with route administration [32]. Intramuscular injection usually takes about two minutes to act where as intravenous route takes about forty five seconds to act [9]. Other trial suggests that when the dose of oxytocin increases, the effectiveness of the drug also increases. One of the trials shows

that increasing of the dose of oxytocin from 5 IU to 10 IU increases effectiveness. However it was found that infusing 80 IU or 40 IU, as opposed to the usual 10 IU, did not decrease postpartum blood loss [35].

Ergometrine can be given orally or by intramuscular injections. The oral route is no longer used after research findings of unpredictable side effect. Likewise the use of intravenous ergometrine is not recommended due to the side effect of increased risk of retained placenta, hypertension, dizziness, nausea, vomiting and reduction of blood level of prolactin [9, 12, 17]. Ergometrine acts systemically on smooth muscles while oxytocin act specifically on the smooth muscle of the uterus. This can explain the side effect of the drug and why it is not preferred for hypertensive patient. The potential benefit of ergometrine is that it has a longer duration of action [36].

Syntometrine which is the combination of ergometrine and oxytocin was developed in 1960s.It has stronger and sustained uterine contractions. Syntometrine is not recommended in the situation where there is any risk of cardiovascular problems or raised blood pressure [37]. Misoprostol is a derivative of prostaglandin E. It is stable at room temperature, and can be given orally or rectally. It had an advantage of being provided even when skilled providers or the necessary supplies are not available compared to oxytocin or ergometrine. Misoprostol has shown to be clearly useful at a dose of 400 mcg to 600 mcg in the AMTSL [38].

Controlled cord traction facilitates placental separation and delivery of the placenta. It involves the application of gentle downward tension on the umbilical cord while maintaining counter pressure on the uterus and is administered in conjunction with uterine contractions [39]. In 1997, a trial involving more than 1600 women found that controlled cord combined with intramuscular oxytocin reduces the risk of postpartum hemorrhage of more than 500mls [40].

Uterine massage stimulates uterine contractions through the release of prostaglandins. In the 2004 joint statement of the International Confederation of Midwives and the International Federation of Gynecologists and Obstetricians recommends routine massage of the uterus after delivery of the placenta to promote contraction. This involves placing a hand on the woman's lower abdomen and stimulating the uterus by repetitive massaging or squeezing movements to stimulate uterine contraction. Uterine massage given every 15 minutes for 2 hours after birth effectively reduced blood loss, and the need for additional uterotonics, by some 80% [39]. A trial involving 200 women in which provision of all three AMTSL components involved was associated decrease of postpartum hemorrhage [41]. Other findings from 2010 systemic review of three randomized controlled trials, all comparing active with expectant management indicated that provision of all three interventions reduces the average risk of severe postpartum hemorrhage (>1000ml) by two-third [42].

2.0 PROBLEM STATEMENT

The risk of death during childbirth represents one of the greatest health challenges globally. Postpartum hemorrhage being among the leading causes can be effectively prevented by active management of the third stage of labour. Despite the fact that AMTSL is recommended by WHO, it is not known how common the intervention is practiced in Tanzania. Also it is not well documented whether health care providers are competent to routinely conduct AMTSL according to the desired standard and recommended guidelines. This leaves a critical gap between knowledge and the practice of AMTSL in the continuum of care for safe motherhood.

2.1 RATIONALE OF THE STUDY

Improving maternal health is the fifth millennium development goals. Among of the key elements which are necessary in order to achieve this goal is the availability of health care providers. Not only the knowledge of the health care provider is essential but also the skill of the health care provider is important. WHO recommends that; AMTSL should be practiced by all skilled health care providers at every birth to prevent excess blood loss after child birth. The maternal mortality ratio in Tanzania is 454/100,000 (TDHS, 2010). Ministry of Health and Social Welfare (MOHSW) of Tanzania 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. Given that PPH is a leading cause of maternal death in Tanzania, there is an important and urgent need of information 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 AMTSL practices, and provide the MOHSW and international partners with the descriptive information necessary to assess AMTSL practices

2.2 RESEARCH QUESTION

What are the current competence levels of health care providers on AMTSL?

3.0 BROAD OBJECTIVE

To evaluate the performance of health care providers on AMTSL in Dar e s salaam municipal hospitals

3.1 Specific Objectives

1. To determine the proportion of deliveries where AMTSL is correctly done
2. To assess the correct practice of components of AMTSL
3. To assess the preparedness of health care providers in provision of oxytocin

4.0 STUDY METHODOLOGY

4.1 Study Design

The study was an observational cross section study.

4.2 Study Setting

This study was conducted in public health facilities in Dar es Salaam. The selected hospitals are found in three municipals of the city. These are Amana municipal hospital, Temeke municipal hospital and Mwananyamala municipal hospital. The structure of maternity block in these three hospitals is almost similar. Temeke Municipal hospital has a maternity block which comprises of one labour ward, intensive care unit and postnatal ward. Bed capacity for both labour ward and antenatal care is 42 beds with an average of 80-120 deliveries per day. Mwananyamala hospital has a maternity block with one labour ward, prenatal/post natal ward and intensive care unit. The hospital bed capacity of labour and antenatal ward is 35 beds with an average delivery per day of 40-70. Amana Hospital has a maternity block with labour ward, antenatal and post natal ward. The average delivery per day is 80-90 babies and the bed capacity of 30. The in-flow of the patients is more during the night and morning. The bed capacities of all three municipal hospitals are not enough in comparison to the number of patients. Patients admitted in the latent phase are sent to the waiting rooms in the antenatal ward .But due to high patient number compared to bed capacity, patients share beds before and after delivery. Sometimes delivery beds in the labour ward are not enough therefore delivery process is often conducted in antenatal wards.

A health care provider particularly nurses and midwives work in three rotations or shifts. The morning shift is from 7am to 3pm while evening shift is from 3pm to 7pm and lastly the night shift. According to the job allocation there are more nursing officers in the morning shift compared to other shifts. For example at Temeke hospital, on most cases of the morning shift

there were two or three registered nurses and two enrolled nurses. On the night shift there are one registered nurse or midwife and ward attendants. There is one doctor and one intern doctor on call every day apart from other health care personnel who attend clients according to their duty rosters.

4.3 Study Population

All pregnant women delivered vaginally during the study period and who consented.

4.4 Study Sample

The sample size was calculated from the formula

$$N = \frac{z^2 p (100-p)}{d^2}$$

Where n= desired sample size

Z= Confidence level at 95% (standard value of 1.96)

d = Marginal error (absolute precision of P which is 5%

p = Prevalence use of AMTSL is 48.5% [29]

Therefore from the above formula, the calculated minimum sample size was found to be 383. Five percent that declined to participate was added therefore, the sample size was 400 patients.

4.5 Inclusion Criteria

Pregnant women who delivered vaginally

4.6 Exclusion Criteria

I. Pregnant women with previous scar
II. Pregnant women assigned for emergency cesarean section.

4.7 Study Duration

The study was conducted for 3 months, from September 2012 to November 2012

4.8 Data Collection

The data were collected by observation and short interview after obtaining permission from the patient and health care provider. Short interview on demographic information were sought from the birth attendant and patient who were in the labour ward waiting for the course of labour to progress. Deliveries that were observed were selected by convenient random sampling method (that every third eligible parturient) during the period of the study until the estimated sample size was achieved. Number of observations equally was distributed per each of the three hospitals. A total of 132 deliveries at Amana, 134 deliveries at Temeke and 134 Mwananyamala were observed. One principal investigator and one research assistant were involved in data collection. Observation of deliveries was conducted from one hospital facility to another. The observation started at 9 am and ended up at 6 pm from Monday to Friday. Duration of three weeks was spent in one hospital before shifting to another hospital. The whole exercise of observation stared at 9am and ended at 6pm from Monday to Friday. Estimation of six to eight deliveries was observed per day.

In this study, the components of AMTSL according to FIGO/ICM definition and associated study criteria were as follows.

COMPONENT	CRITERIA
Type of uterotonic used	Oxytocin
Dose	10 IU
Stage of labour	Immediately after fetal delivery
Timing	Within one minute of fetal delivery
Model of administration	Intramuscular
Controlled cord traction	Gentle application to cord with manual support to the uterus
Fundal massage	Immediately after placental delivery
Uterine palpation every 15 minutes for 2 hours after placental delivery	In this study observers were to record if the provider palpated the uterus at least once in the first 15 minutes

4.9 Data Entry and Analysis

Each questionnaire was assigned an identification number. The data was coded and entered into the computer using Epi info version 6. Clean data was analyzed using SPSS computer program version 16.

4.9.1 Ethical Clearance

Ethical clearance was sought from Muhimbili University of Health and Allied Sciences Senate, Research and Publication Committee. Permission to collect data was sought from the three District Medical Officers (Ilala, Kinondoni and Temeke). The hospital administrations were approached and the purpose of the study explained. Details were given to the health care provider on the objectives of the study and that all the information provided was confidential.

4.9.2 Ethical Issue

During data collection, any minor mistakes that were observed during the practice of the third stage of labour were address at the end of the day. A comprehensive summary of what was done at that particular day was handed over to the in-charge of labour ward.

5.0 RESULTS

A total of 160 health care providers participated in this study. Amana hospital there were 23 (65.7%) nurses, Mwananyamala 25 (63.5%) nurses and Temeke 22 (52.3%) nurses. Medical students together with nursing students were 39 and there were 51 doctors.

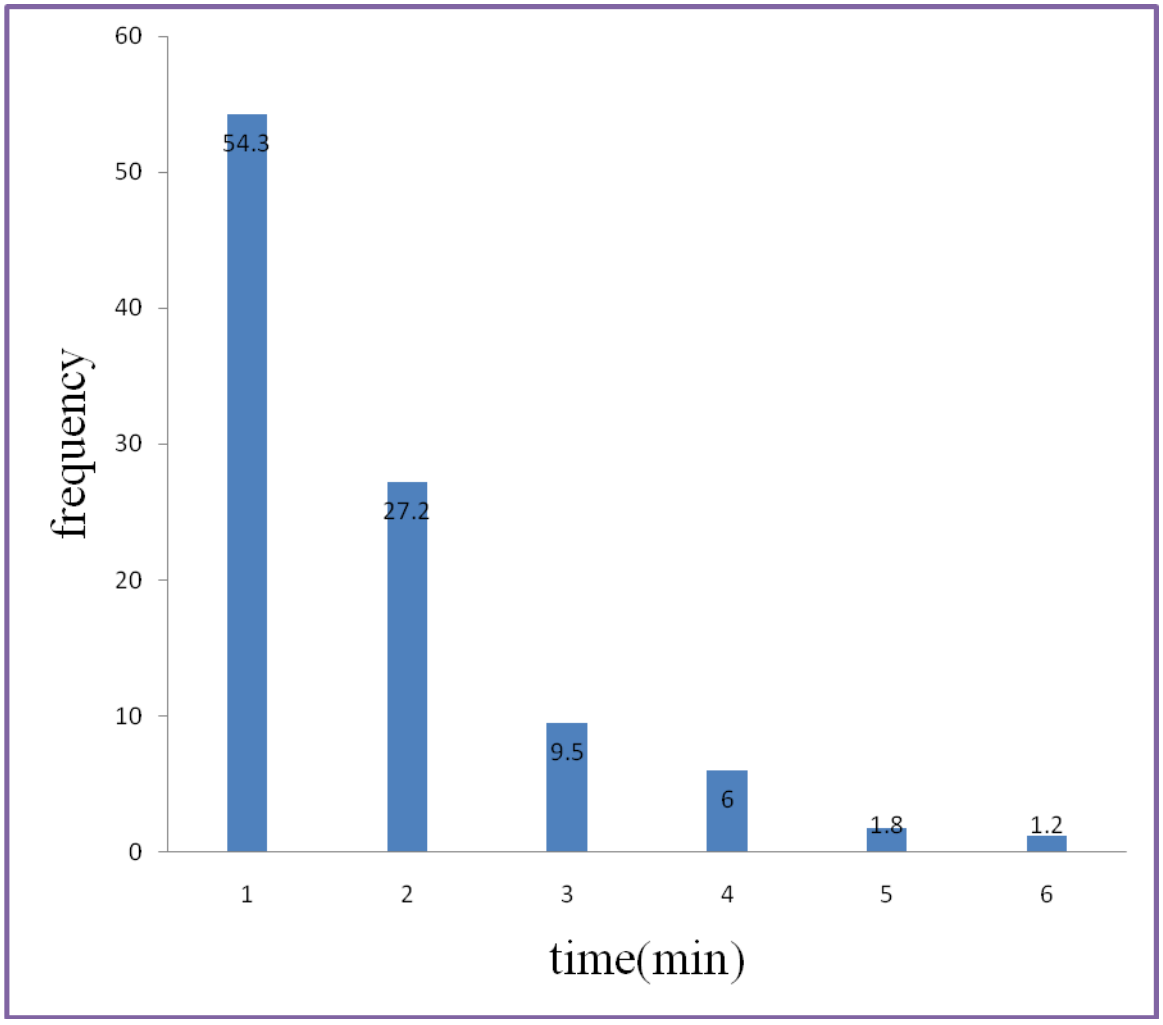
Table 1: Characteristics of Women observed during delivery

N = 400

Variable	Categories	Frequency	Percent
Age	< 20	95	23.8
	20-29	226	56.5
	30-39	78	19.5
	≥ 40	1	0.2
Parity	1	164	41
	2	125	31.2
	3	56	14
	≥ 4	55	13.8

Majority of observed deliveries were of women in the age range 20-29(56.5%) followed by age range < 20 (23.8%). Most women were Primipara (41%) and para 2 (31.2%).

Figure 1: Distribution of timing of Oxytocin Administration



Among the deliveries observed, a total of 54.3% received oxytocin within one minute of delivery of the baby.

Table 2: Observed deliveries and timing of Oxytocin administration

N = 400

Variables	Time		Total	P value
	within 1minute	**>1 minute**		
Oxytocin preparation				
Before	201(68.6%)	91(31.4%)	292	< 0.001
After	16(14.8%)	92(85.2%)	108	
Health care provider				
Doctors	25(49.0%)	26(51.0%)	51	0.009
Nurses	179(57.7%)	131(42.3%)	310	
Students	13(33.3%)	26(66.7%)	39	
Health care provider Available at 3rd stage				
>2	107(64.1%)	60(35.9%)	167	0.001
1	110(47.2%)	123(52.8%)	133	
Experience of Health care provider				
≤1 year	73(45.9%)	86(54.1%)	159	0.008
>1 year	144(59.7%)	97(40.3%)	241	

About (68.8%) of women who received oxytocin within one minute of delivery of the fetus, oxytocin was prepared early before the third stage. Preparation of oxytocin before delivery was significantly associated with its being given within one minute of delivery of the fetus

Having two or more health care providers available and attending to the delivery during the third stage was significantly associated with the woman being given oxytocin within one minute of the delivery of the fetus.

Table 3: Observed Practices in third stage of labor (N = 400)

Variable	Doctors	Nurse	Students	Total
AMTSL				
Yes	15 (29.4%)	159 (51.3%)	10(25.6%)	184
No	36 (70.6%)	151 (48.7%)	29(74.4%)	216
Cord traction				
Yes	43 (84.3%)	275 (88.7%)	23 (58.9%)	341
No	8 (15.7%)	35 (11.3%)	16 (41.1%)	59
Uterine massage				
Yes	35 (68.6%)	303 (97.7%)	34 (87.2%)	372
No	16 (31.4%)	7 (2.3%)	5 (12.8%)	28
Oxytocin within one minute				
Yes	25 (49.0%)	179 (57.7%)	13 (33.3%)	217
No	26 (51.0%)	131 (42.3%)	26 (66.7%)	183
Placenta examination				
Yes	20 (39.2%)	185 (59.7%)	14 (35.9%)	219
No	31 (60.8%)	125 (40.3%)	25 (64.1%)	181

Cord traction and uterine massage was nearly performed better in all cadres. Doctors were lagging behind in the intervention of uterine massage (68.6%) while the students were lagging in the intervention of controlled cord traction (58.9%). Nurses performed better in these two interventions with 80.6% in controlled cord traction and 97.7% uterine massage. Oxytocin delivery was not satisfactory. Only nurses (57.7%) managed to administer oxytocin within one minute.

6.0 DISCUSSION

In this study a total of 400 observations were made. All patients observed received oxytocin during the third stage of labour. The prevalence of correct use of AMTSL was found to be 46%. The use of oxytocin within one minute of delivery was found to be 54.3%. Controlled cord traction and uterine massage were relatively performed better. It was also found that early oxytocin preparation was associated with a better performance of administering oxytocin within one minute. Availability of two or more health care provider attending to the birth was also associated with a good outcome in terms of administration of oxytocin within one minute.

In this study, the correct package of active management of the third stage of labour was provided to 46 percent of observed deliveries. The reason to explain this low rate might be high flow of patients compared to the number of allocated health care providers per shift, shortage of staff, inability of the health care to be prepared enough particularly the early preparation of oxytocin (sixty eight percent). Because of this quality of AMTSL was not adequate. In the international survey on variations on the use of AMTSL in different 10 countries, the average use of AMTSL was 25% [43]. The studies conducted in seven undeveloped countries in 2006, showed that the correct use of active management of the third stage of labour ranged from 1% to 45% [28, 29]. In southern Nigeria, only 42 percent of observed deliveries had AMTSL performed correctly [44]. In an Egyptian teaching hospital AMTSL was correctly performed in about 15 percent of all observations [26]. In a study done in the 15 regions of Tanzania in 2006, the prevalence of correct use of AMTSL, was substantially very low (7%). The most significant factor contributing to the low rate of AMTSL use was provision of the uterotonic drug after delivery of the placenta [28]. The current increase from this previous data may be explained by the ongoing trainings by the MOHSW and other stakeholders on AMTSL although this study involves only municipal hospitals in Dar es Salaam.

In this study, oxytocin was the preferred drug used in AMTSL in all three hospitals. It was observed that all 400 patients received oxytocin during the third stage of labour. In a study done at Guatemala 87 percent of deliveries received uterotonic drug during the third stage of labour [45], while in southern Nigeria 83% of women received oxytocin [44]. In a study that was done in Tanzania in 2006, 97 percent observed women received oxytocin [28]. In this study the use of oxytocin was 100% in all observed deliveries although not all women received oxytocine within one minute. Women observed receiving oxytocin within one minutes was 54.3%, therefore, the current findings although it is not a national representation gives a picture of an improvement maternal care during labour and delivery in these three municipal hospitals.

Controlled cord traction and uterine massage were performed relatively better in this study (average of 74% and 84% respectively). Although these two components have never been alone, their inclusion as part of AMTSL shows significant reduction in severe postpartum hemorrhage [46]. In this study nurses performed extremely well in these two aspects compared to others (range of 88% to 97%). Doctors performed poorly (68%) especially when they were called to attend those difficult deliveries

Labour and delivery conducted by skilled health care provider is the one of the proxy indicator in the reduction of maternal mortality [47]. A study done in Benin, Ecuador, Jamaica, and Rwanda in 2001 reported that Availability of skilled health care provider can prevent up to 75% of maternal death that can occurs immediately after delivery of the baby [48]. A study done by Luc de Bernis in 2003 reported that early in the twentieth century, maternal mortality levels in Western Europe and North America were similar to those in the developing countries today. Some countries achieved impressively low maternal mortality very quickly (Sweden, Norway, Netherlands and Denmark) others were unable to show marked reductions in very high maternal mortality. The differences between those who managed to lower their maternal mortality rate quickly and those who lagged behind appear to have been in the way in which care during delivery was organized. Sweden, Norway, Netherlands and Denmark focused their

efforts on providing skilled health care provider close to where women lived [49]. In this study it was observed that availability of two or more health care providers attending one delivery shows significant impact in provision of oxytocin within one minute of delivery. ($p = 0.001$) and therefore quality of care of AMTSL.

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 validity 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 [50]. 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) the elimination of this limitation still remained a challenge. Since Health Care Providers 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. Data was collected during the day hours thus those deliveries obtained at night were not collected and this could have brought bias in the final results. Inter observation error could also compromise internal validity of the study but this was minimized by conducting observation together to one client before shifting another.

7.0 CONCLUSIONS AND RECOMMENDATION

Active management of the third stage of labour is an important skill to be acquired by every health care provider. Early preparation of oxytocin before delivery contributes a lot in provision of oxytocin within one minute and therefore this practice is highly addressed to every health care provider. Also regular training and refresher courses should be provided to all health care providers particularly those who work in maternity block.

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APPENDICES

Appendix I

A: DEMOGRAFIC CHARACTERISTICS

Date of observation……

Attendant Details

Group	**Details**	**Tick**
Qualification of birth attendant	Specialist	
	Resident	
	Medical Officer	
	Assistant Medical Officer	
	Nurse Officer	
	Enrolled Nurse	
	Students	
	Midwife	
Experience of the birth attendant	For how long have you work in labour ward (months)	

Details of Patient

Details					
Age of the woman		Gravidity		Parity	

CHECKLIST

S/No	Practice	Description		Priority (Tick)	
				1	2
I.					
II.	**Preparation**	1.	Is there more than one person assisting the delivery		
		2.	Wear a clean plastic or rubber apron, rubber boots, and eye goggles		
		3.	Use sterile surgical gloves on both Hands		
		4.	Place a sterile drape from the delivery pack under the woman's buttocks, another over her abdomen, and use a third drape to receive the baby		
		5.	Prepare uterotonic drug before delivery		
		6.	Prepare uterotonic drug after delivery		
		7.	Prepare other essential equipment for the birth before onset of the second stage of labour		
		8.	Administer uterotonic drug after delivery		min
		9.	Type of uterotonic drug used		
			a) Oxytocin		
			b) ergometrine		
			c) misoprostal		
III.	**Controlled cord traction**	10.	Clamp and cut the cord at about 3cm and 5 cm from the umbilicus		
		11.	Wait for uterine contraction		
		12.	When there is a uterine contraction, apply counter traction to the uterus with the hand above the pubic bone (apply pressure on the uterus in an upward direction—towards the woman's head		
		13.	While applying counter traction to the uterus, apply firm, steady traction to the cord, pulling downward on the cord following the direction of the birth canal		
IV.	**Delivery of the placenta**	14.	Deliver placenta slowly with both hands, gently turning the entire placenta and lifting up and down until membranes deliver		
		15.	Examine the placenta, membranes and the cord then place the placenta in the receptacle provided		

V.	**Uterine massage**	16.	Immediately massage the fundus of the uterus through the woman's abdomen until the uterus is firm		
VI.	**Examining the birth canal**	17.	Gently separate the labia and inspect the lower vagina for laceration		
		18.	Inspect the perineum for lacerations		
		19.	Repair lacerations if necessary.		
VII	**Infection prevention and decontamination**	20.	Dispose of gauze swabs and other waste materials in a leak-proof container or plastic bag		
		21.	Dispose of needles and sharps in a sharps-disposal Container.		
		22.	Remove gloves by turning them inside out		
		23.	Wash hands thoroughly with soap and water and dry them		
		24.	Record relevant details on the woman's record		
			• Time the baby is born		
			• Duration of third stage		
			• Dosage of uterotonic drug used		
			• Estimated blood loss		

Key Rate the performance of each step or task using the following rating scale:

1 = step performed **2** = step not performed

Appendix II: CONSENT FORM

Introduction

I am Dr Mugeta semba Bernard, a researcher from Muhimbili University of Health and allied sciences (MUHAS).

I am conducting a study in management of labour in three Municipal Hospitals of Dar es Salaam. The aim of this research is to determine the correct practice of active management of the third stage of labour in Dar es Salaam municipal hospitals.

Participation in the study

You are kindly requested to participate in this study. If you accept to participate in this study your particulars/information will be taken and used for the purpose of this research and this will certainly not bother you or cause any discomfort to you.

Confidentiality

You are strongly assured of the confidentiality of the information so obtained and that it will only be used for the purpose of this research and anonymity will highly be observed when collecting data and compiling report.

Risk

No anticipated risk or harm that may result from participating in this study.

Right of participation in the study

Your participation is absolutely voluntary and there is no penalty for refusing to participate. You are free to ask any question and you may stop to participate in this study any time.

Contact Person

The principal investigator Dr Mugeta semba Bernard (0753000859) is a key contact person with regard to any queries about this study.

However in the event of the questions about your rights as a participant you may call the chairman of the university senate research and publications, MUHAS P.O.BOX 65001, Dar es salaam. Telephone; 2150302-6

Signing of the consent

If you agree to participate in this study please sign in this consent form.

I …….. have read and understood the contents of this form and I have been given satisfactory explanation with all my questions answered. I therefore consent to participate in this study.

Signature of participant ……. Date ……..

Signature of research assistant…….. Date ……

Appendix III: FOMU YA RIDHAA KUSHIRIKI KATIKA UTAFITI

Utangulizi

Mimi naitwa Dk Mugeta Semba Bernard ,mtafiti kutoka Chuo Kikuu cha Sayansi ya Tiba Muhimbili. Ninafanya utafiti kuhusu afya ya mama mjamzito wakati wa kujifungua.lengo la utafiti huu ni kubaini hatua na vitendo vinavyofanywa na mtoa Huduma mara tu mtoto anapozaliwa na wakati kondo la nyuma linapotolewa.

Kushiriki katika utafiti huu

Tafadhali unaombwa kushiriki katika huu utafiti na mara tu utakapo ridhia ,unahakikishiwa kuwa habari zako na maelezo utakayotoa yatatumika kwa makusudio na malengo ya utafiti huu tu na kuwa hii haitakuletea usumbufu wowote.

Usiri wa taarifa za mshiriki

Unahakikishiwa tena kuwa taarifa zozote zitakazopatikana kutoka kwako wakati wa utafiti huu zitapewa usiri mkubwa sana na hazitatumika kwa malengo mengine yeyote tofauti na utafiti husika.Kuhakikisha hilo dodoso litakalo husika halitakuwa na jina lako wakati wote wa utafiti na hata baada ya utafiti.

Athari za utafiti huu kwa mshiriki

Hakuna athari au madhara yeyote yatakayokupata kutokana na kushiriki katika utafiti huu.

Haki ya kushiriki au kutoshiriki katika utafiti huu

Ushiriki wako katika utafiti huu ni wa hiari kabisa.unayohaki ya kushiriki au kutoshiriki bila kulazimika.Pia unayo haki ya kukataa kuendelea kushiriki/kuacha kujibu maswali wakati

wowote utakapojisikia kufanya hivyo na hakutakuwa na hatua yeyote itakayochukuliwa dhidi yako au kulaumiwa kwa kufanya hivyo.

Mawasiliano

Wasiliana na mtafiti mkuu, Dk. Mugeta Semba Bernard kwa simu namba 0753000859 wakati wowote utakapokuwa na maswali au jambo lolote lenye kuhitaji ufafanuzi kuhusu utafiti huu.

Hata hivyo endapo utakuwa na maswali kuhusu haki yako kama mshiriki unaweza pia kuwasiliana na Mwenyekiti wa Baraza la Utafiti na Uchapishaji wa Chuo Kikuu cha Sayansi ya Tiba Muhimbili. S.L.P. 65001, Dar es Salaam.Simu namba 2150302-6

Kukubali kushiriki

Ukikubali kushiriki tafadhali thibitisha kwa kujaza na kusaini sehemu ya fomu hii hapa chini.

Mimi ……. Nimesoma/nimesomewa na kuelewa yaliyomo kwenye form hii na maswali yangu yote yamejibiwa vizuri.Hivyo ninakubali mwenyewe kwa hiari yangu bila kushurutishwa au kushawishiwa kushiriki katika utafiti huu.

Sahihi ya mshiriki…….. Tarehe……..

Sahihi ya mtafiti msaidizi……. Tarehe …….