

**THE INCIDENCE OF FACILITY BASED DELIVERIES AND
THEIR PREDICTORS AMONG HIV POSITIVE AND HIV
NEGATIVE PREGNANT WOMEN IN MARA REGION,
TANZANIA**

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**THE INCIDENCE OF FACILITY BASED DELIVERIES AND THEIR PREDICTORS
AMONG HIV POSITIVE AND HIV NEGATIVE PREGNANT WOMEN IN MARA
REGION, TANZANIA**

By

Mukome Nyamhagatta

**A dissertation Submitted in (partial) Fulfillment of the Requirements for the Degree
of Master of Medicine (Community Health) of
Muhimbili University of Health and Allied Sciences**

**Muhimbili University of Health and Allied Sciences
October, 2013**

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled “*The incidence of facility based deliveries and their predictors among HIV Positive and HIV Negative pregnant women in Mara Region, Tanzania*” in (Partial) fulfillment of the requirement for the degree of Master of Medicine (Community Health) of Muhimbili University of Health and Allied Sciences.

DR. E. J. MMBAGA

(Supervisor)

Date: _____

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I, **Mukome Nyamhagatta**, 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.

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DEDICATION

This dissertation is dedicated to my beloved wife Pricillah Kinyunyi Mukome, my daughter Faith Wasatu Mukome and my son Felix Mukome.

ABSTRACT

Introduction and Background: If an HIV positive mother delivers in a health facility, interventions can be effected to ensure the safety of both mother and her newborn baby including reducing the risk of transmission of HIV to the baby. In Tanzania, only about half (51 percent) of births are assisted by health professionals. Barriers to the use of skilled delivery attendants in developing countries include cost, long distances to health facilities, fears and experiences of HIV-related stigma and discrimination. Studies done to determine the incidence of facility based deliveries and their predictors among HIV positive and HIV negative pregnant women are few and in Tanzania little information is available.

Study objective: This study aimed at determining the incidence of facility based deliveries and their predictors among HIV positive and HIV negative pregnant women from April to May, 2012.

Materials and Methods: A retrospective cohort study was conducted in Mara region. A structured questionnaire was used for data collection by an interviewer. Data for sero-status of sampled participants was obtained from ANC registers after which study participants were traced from the community using contact addresses left at the facility and postnatal clinics where they bring their infants for immunization and asked to self report place of their last child birth and associated predictors. Then data was entered into SPSS where incidence of institutional delivery for both groups, relative risk, p-values, confidence intervals, chi-square, logistic regression and associated predictors were calculated and analysed.

Results: A total of 326 postnatal women, 50% (n= 163) from Butiama and 50%(n= 163) from Bunda districts, were involved in the study. Of these 49.3%(n=162) were HIV positive while 50.3%(n= 164) were HIV negative. The two groups were sociodemographically similar except for age and marital status. Only 44.4%(n= 72) of the HIV positive women and 45.7%(n=75) of the HIV negative women had their last childbirth in a health facility respectively. There was no significant difference in the incidence of facility based delivery between HIV positive women and HIV negative women in Mara region ($p= 0.847$, $X^2 = 0.332$) even after adjusting for confounders.

After adjusting for confounders, low maternal age, positive experience of facility based delivery, good knowledge of facility based delivery advantages and onset of labour during

day time were significantly associated with facility based deliveries among HIV positive women ($p= 0.016, 0.002, 0.042$ and <0.001 respectively) while fewer numbers of living children and short distance from nearby health facility were significantly associated with facility based deliveries among HIV negative women ($p= 0.012$ and 0.023 respectively).

Conclusion and Recommendations: This study showed that 44.4% of the HIV positive women and 45.7% of the HIV negative women in Mara region give their childbirth in health facilities respectively. There was no significant difference in the incidence of facility based deliveries between HIV positive and HIV negative women in the region. However, maternal age, experience of facility based delivery, knowledge of facility based delivery advantages and timing of onset of labour were predictors of facility based deliveries among HIV positive women while number of living children and distance from nearby health facility were predictors of facility based deliveries among HIV negative women. This study recommends increased community awareness creation activities on utilization of RCH services and revival of community health workers cadre.

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LIST OF ABBREVIATIONS AND ACCRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Ante-Natal Care
ART	Anti-Retroviral Therapy
ARV	Anti-Retroviral drugs
CD4	Cluster of Differentiation number 4
FBD	Facility Based Delivery
HBC	Home Based Care
HCWs	Health Care Workers
HIV	Human Immunodeficiency Virus
HFD	Health Facility Delivery
HRH	Human Resource for Health
IUGR	Intra-uterine Growth Restriction
MAMAS	Martenity in Migori and AIDS Stigma study
MCH	Maternal and Child Health
MOHSW	Ministry of Health and Social Welfare
MTCT	Mother- to- Child Transmission of HIV
OR	Odds Ratio
PEPFAR	President's Emergency Plan For AIDS Relief
PMTCT HIV	Prevention of Mother-to-Child Transmission of HIV
RCHS	Reproductive and Child Health Services

RR	Relative Risk
SPSS	Statistical Package for Social Sciences
TBAs	Traditional Birth Attendants
TDHS	Tanzania Demographic and Health Survey
THMIS	Tanzania HIV and Malaria Indicator Survey
TZS	Tanzanian Shillings
VVU	Virusi Vya Ukimwi
WHO	World Health Organization

CHAPTER ONE

1.0 INTRODUCTION

1.1 Introduction and Background

Maternal Health Services are organized services provided to cater for the health needs of women during pregnancy, labour, delivery and puerperal periods. During pregnancy, these services also include HIV testing and counseling and provision of ARVs to those who will be found HIV infected with the aim of protecting their unborn infants from contracting the infection in-utero and/or for their own health if they will be found eligible for ART. However, not all pregnant women attend ANC and some will attend but they will not be able to undergo a HIV test because of stock out of HIV test kits and/or fear of stigma (*Turan et al; 2010*). Such women will be captured in labour if they go to a health facility for labour and delivery and get tested.

If a HIV positive mother delivers in a health facility, interventions can be effected to reduce the risk of transmission of HIV to the baby and other fatal maternal and perinatal outcomes. Anaemia, pre-term labour, intrauterine growth restriction (IUGR), foetal deaths, still births and low birth weight are some of the complications associated with HIV in pregnancy (*Onakewhor et al; 2011*).

The risk of vertical transmission of HIV is highest during labour and delivery (*Thomas et al; 2010*). Supervised health facility delivery (HFD) of HIV positive pregnant women is therefore important in the Prevention of Mother-To-Child Transmission of HIV (PMTCT) (*Thomas et al; 2010*). Safe obstetric practice is one of the components of the prevention of mother-to-child HIV transmission (PMTCT) programme (*Read et al; 2005*). The rate of MTCT during pregnancy is about 10% while it reaches 20% during the intrapartum period (*De Cock et al.; 2000*). The intrapartum HIV transmission is responsible for about 75% of the HIV infection in non-breast feeding infants and 50% among infants receiving breast feeding for 18 to 24 months (*De Cock et al.; 2000; Gaillard et al.; 2000; Read et al; 2005*). Certain obstetric procedures during the intrapartum period such as episiotomy and artificial rupture of membrane can increase the risk of mother-to-child HIV transmission (MTCT). The rate of MTCT also increases with increasing duration of labour especially after membrane rupture, indicating the need for prompt attention during the intrapartum period.

In obstetric literature, the “three delays” models often used to explain the non-obstetric causes for poor maternal and perinatal outcomes (*Barnes et al; 1998; WHO et al; 2009; Waiswa et al; 2010*). The “first delay” refers to delay in making decision to seek care, the “second delay” refers to delay in reaching health care facilities and the “third delay” refers to delay in receiving appropriate care after reaching health facility. Studies from resource poor settings show that women often encounter considerable delay in receiving appropriate obstetric care even after reaching a health facility (*Coley et al; 2001; WHO et al; 2009*).

The interval between admission and treatment often determines the pregnancy outcomes: The shorter the interval the better the outcome and vice versa (*WHO et al; 2009*). In resource poor settings, 25% of the stillbirths are caused by prolonged labour and asphyxia, largely a result of lack of prompt attention and poor intrapartum obstetric management (*Goldenberg et al; 2009*).

In PMTCT programmes, a lot of attention and debate has surrounded medication and infant feeding, while safe obstetric practice despite being an important component of a PMTCT programme has been given less attention. Reviews and Meta analyses have shown that the risk of MTCT is higher in vaginal deliveries compared to elective caesarean deliveries (*The International Perinatal HIV Group; 1999; Read et al; 2005*). Nevertheless, for practical and technical reasons safe vaginal delivery remains the standard of care in many resource poor settings. In these settings, HIV positive women’s access to safe obstetric care and the actual care these women receive have not been well documented. Annually, it is estimated that 536,000 women worldwide die from pregnancy- and childbirth-related conditions, as do 11,000,000 under-fives, of which 4.4 million are newborns. Most of these deaths occur in Sub Saharan Africa.

Tanzania is one of the ten countries contributing to 61% and 66% of the global total of maternal and newborn deaths, respectively. In Tanzania, the estimated annual number of maternal deaths is 13,000, the estimate for under-fives is 157,000, and newborn deaths are estimated at 45,000 (*MOHSW; 2008*). Majority of these maternal deaths occur in the community.

In Tanzania, 98 percent of women who gave birth in 2011, received ANC from a skilled provider at least once (*MOHSW; 2011*). As expected, nurses and midwives are more likely than other health professionals to provide ANC (80 percent).

Women also go to MCH aides (8 percent), doctors (4 percent), and clinical officers (5 percent) for ANC services. Two percent of women receive some kind of antenatal care from people who are not medical professionals, such as village health workers. Almost no women received ANC from a traditional birth attendant (trained or untrained) (*National Bureau of Statistics; 2010*).

The 2010 TDHS findings show no great variation in antenatal care from medically qualified professionals by woman's age at birth or birth order. Urban women are more likely to have ANC than rural women (99 and 95 percent, respectively). Coverage of ANC in Zanzibar is higher than that in Mainland Tanzania (99 percent compared with 96 percent) (*National Bureau of Statistics; 2010*).

In Mainland, more than nine out of ten women in every region reported that they received care from a health care professional at least, except Mwanza and Mara. In Kilimanjaro and in Dar es Salaam, coverage of ANC is 100 percent (First visit). Although the differences are quite small, educated mothers are more likely to receive antenatal care from medical professionals than mothers with less education. There is also a positive relationship between increasing wealth quintile and the receipt of ANC from a health professional (*National Bureau of Statistics; 2010*).

The percentage of women, who received ANC from a skilled provider according to the 2010 TDHS, is slightly higher than that reported in the 2004-05 TDHS (96 and 94 percent, respectively) (*National Bureau of Statistics; 2010*).

Forty-three percent of women whose last birth occurred in the five years before the survey made four or more ANC visits. This is a sharp decline from the percentage recorded in the 2004-05 TDHS (62 percent). Women in Mainland (43 percent) are slightly less likely than women in Zanzibar (49 percent) to make four or more ANC visits. In Mainland, there is marked variation between urban and rural areas (55 percent compared with 39 percent) (*National Bureau of Statistics; 2010*).

Despite the high ANC attendance in Tanzania we still appreciate low incidence of facility based deliveries. For example, TDHS 2010 records only 51% of facility based deliveries incidence among pregnant women. The remaining 49% give birth either at home unassisted or assisted by TBAs.

Studies have been conducted world wide including Tanzania to elicit factors associated with such low incidence of facility based delivery.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Literature review

In sub-Saharan Africa, where over 85% of pregnancies among HIV positive women occur, many countries report low rates of uptake of the widely available and virtually free services to prevent mother-to-child transmission of HIV (PMTCT), such as facility based deliveries and infant prophylactic antiretroviral drugs (*Kibera et al, 2010*).

Many studies performed in Africa have presented pregnancy outcomes among women with known HIV status, but few have included women with unknown HIV status. It is evident that not all pregnant women presenting for delivery at health facilities in developing countries, especially those in the sub-Saharan Africa, are aware of their HIV status (*WHO; 2007*).

A study done to investigate the utilization of delivery services in the context of PMTCT in a rural community in South Africa revealed that 55.9% had delivered their last child in a health care facility and 44.1% at home (mostly without assistance from a traditional birth attendant). Women who stayed close to the hospital were more likely to access the health facility for delivery services. Women who had higher formal education were more likely to deliver in a health facility. Higher traveling costs (affordability) to get to nearest clinic hindered utilization of facility based delivery services, and those who were single were less likely to give their child birth in a health facility. Childbirth experiences of the mother or mother-in-law greatly influenced the delivery choices in terms of home delivery. The majority of the pregnant women were aware of mother-to-child HIV transmission but only 9% of the pregnant women had ever been tested for HIV. HIV knowledge, HIV testing behaviour and attitudes were found to be not associated with the delivery option (*Peltzer et al; 2006*).

In another study done to determine the level of utilization of health care services by pregnant women during delivery in Gokana Local Government Area of River State, Nigeria showed that the incidence of utilization of health facilities for delivery by pregnant women in Gokana Local Government Area was 57.1%. However, the national average was 35%, and the national figure for Rural areas of Nigeria was 24% (*Moore et al; 2011*). In this study, 68.7% of respondents blamed distance from health facilities as the cause of underutilization of health facilities for delivery. Other factors for lack of utilization stated by respondents in this study included: Onset

of labour at night (83.3%), unavailability of means of transportation (77.1%), lack of money for transportation (54.2%), unfriendly attitude of staff of the health facilities (70.8%), unavailability of staff at the health facilities (64.0%), lack of urgency at health facilities (75.0%) and previous uneventful delivery at the health facilities (66.7%) (*Moore et al; 2011*).

Furthermore, lower incidences of utilization of health facilities were reported in rural communities in Africa, for example literatures from rural areas of Orange Free State in South Africa, Changwe district of Zambia and Kenya had shown incidences of 37%, 42% and 47.55% (*Moore et al; 2011*).

In Tororo District however, only 55% of PMTCT mothers deliver in health facilities. This presents a challenge in achieving an HIV free generation (*Thomas et al; 2010*).

In Tanzania, about half (51 percent) of births are assisted by health professionals (doctors, clinical officers, nurses, midwives, and MCH aides). Trained and traditional birth attendants assist 15 percent of deliveries, and relatives or other untrained people assist 29 percent of births. Three percent of births are delivered without assistance (*National Bureau of Statistics; 2010*). These findings are very similar to those reported in the 2004-05 TDHS. However, despite the fact that Tanzania, is among the ten countries with the highest estimated number of HIV-infected pregnant women, only 16% of pregnant women who delivered in health facilities in 2007 were reported to have a HIV test taken (*WHO; 2007*)

A small but growing body of scholarship that has examined the reasons why women might fail to take advantage of PMTCT services has primarily documented structural and resource factors such as long distance or inability to pay for transportation to a health care facility as key barriers to service uptake. Also mothers education has contributed significantly to increased utilization of health facility delivery.

Using mixed methods, The Maternity in Migori and AIDS Stigma Study (MAMAS Study) examined the role of women's perceptions of HIV-related stigma during pregnancy in their subsequent utilization of maternity services. Qualitative data in this study revealed that health facility birth is commonly viewed as most appropriate for women with pregnancy complications, such as HIV. Thus, women delivering at health facilities face the risk of being

labeled as HIV-positive in the community. Quantitative data revealed that women with higher perceptions of HIV-related stigma (specifically those who held negative attitudes about persons living with HIV) at baseline were subsequently less likely to deliver in a health facility with a skilled attendant, even after adjusting for other known predictors of health facility delivery (adjusted odds ratio = 0.44, 95% CI 0.22–0.88). (*Turan et al; 2012*)

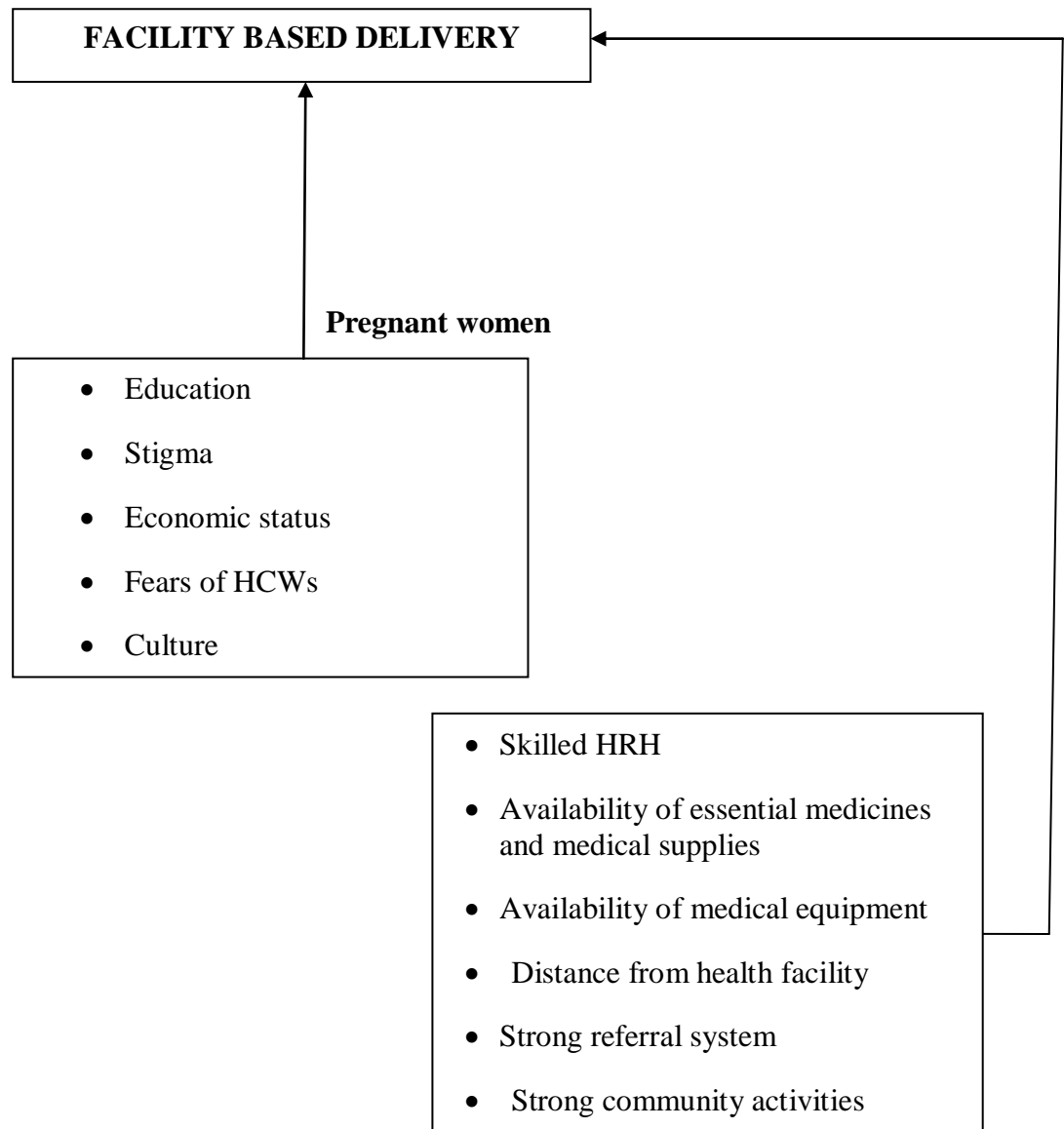
In another study conducted Southern Tanzania, issues of risk and vulnerability, such as lack of money, lack of transport, sudden onset of labour, short labour, staff attitudes, lack of privacy, tradition and cultures and the pattern of decision-making power within the household were perceived as key determinants of the place of delivery. More than 9000 women were interviewed about their most recent delivery in the quantitative survey (*Mrisho et al, 2007*).

Inadequate knowledge and skills for health workers on management of obstetrics cases can be the barrier for delivery in health facilities, several study found that health workers tend to unnecessary refer pregnant mother to higher level because they don't know to use partogram which monitor the progress of labour and the woman end up deliver normally. This woman will never come back to that facility due to unnecessary referral to other health facility (*Shankwaya S, 2009*)

Lack of privacy is also documented as a barrier for delivery in health facilities because some older women don't want to be attended by younger mid wives at health facilities who they think there are like their daughter or younger women they fair to be attended by male health workers during delivery. In other health facilities there is no special room for delivery; women are just delivering in OPD. This condition hinders women to deliver in health facilities (*Mrisho et al 2007, Shankwaya S 2009*)

2.2 Conceptual Framework

Figure 1: Conceptual framework illustrating multiple factors that affect utilization of health facilities by pregnant women for delivery services in Mara region.



On top of the conceptual framework above, is the health outcome of facility based deliveries among pregnant women. Below it are various individual and health facility factors which predict facility based deliveries among pregnant women. Individual factors include level of education of individual pregnant women, fear of stigma from fellow community members for those pregnant women who are HIV infected, economic status of an individual or her family, fear of healthcare workers and cultural perception on facility based deliveries.

Health facility factors include availability of skilled human resource for health, availability of essential medicines and medical supplies, availability of medical equipment, distance from the nearby health facility, availability of strong referral system and strong community activities.

These factors may promote utilization of facility based deliveries among pregnant women or may hinder utilization depending on their influence to individual behaviours of pregnant women.

2.3 Problem Statement

The assumption is that the PMTCT services are comprehensive and friendly enough to boast commendable adherence to scheduled appointments, adherence to ARV prophylaxis and higher institutional deliveries as compared to that of the general population. However this assumption is not revealed as a reality by studies conducted in several countries. These studies have shown that the proportion of HIV positive pregnant women giving birth in health facilities is not much different from those who are HIV negative.

Using mixed methods, The Maternity in Migori and AIDS Stigma Study (MAMAS Study) examined the role of women's perceptions of HIV-related stigma during pregnancy in their subsequent utilization of maternity services. Qualitative data in this study revealed that health facility birth is commonly viewed as most appropriate for women with pregnancy complications, such as HIV. Thus, women delivering at health facilities face the risk of being labeled as HIV-positive in the community. Quantitative data revealed that women with higher perceptions of HIV-related stigma (specifically those who held negative attitudes about persons living with HIV) at baseline were subsequently less likely to deliver in a health facility with a skilled attendant, even after adjusting for other known predictors of health facility delivery (adjusted odds ratio = 0.44, 95% CI 0.22–0.88). (*Turan et al; 2012*)

In Tanzania, despite the high ANC attendance of 98% at first visit (*National Bureau of Statistics; 2010*), we still see only 51% of pregnant women giving birth in health facilities (*National Bureau of Statistics; 2010*). The remaining 49% give birth either at TBAs or at home unassisted. More-over, despite the fact that Tanzania, is among the ten countries with the highest estimated number of HIV-infected pregnant women, only 16% of pregnant women who delivered in health facilities in 2007 were reported to have a HIV test taken (*WHO; 2007*). Still

there isn't much information on the incidence of facility based deliveries among HIV positive pregnant women as compared to HIV negative pregnant women in Tanzania. Also there is little information to explain various predictors of facility based deliveries for HIV positive and HIV negative pregnant women. Therefore the paucity of information on the incidence of facility based delivery among HIV positive pregnant women as compared to HIV negative pregnant women and associated predictors in Tanzania need to be addressed.

2.4 Rationale

This study will provide information on the difference in the incidence of facility based deliveries and associated predictors between HIV positive pregnant women and HIV negative pregnant women in Mara region. If there will be any significant difference identified, it may help strengthening advocacy activities by addressing the key factors for not utilizing health facilities for child birth and make people think more about new innovations to create demand for utilization of facility based delivery services.

Anaemia, pre-term labour, intrauterine growth restriction (IUGR), foetal deaths, still births and low birth weight are some of the complications associated with HIV in pregnancy. Studies show that these complications are much more evident among HIV infected pregnant women than the HIV negative ones. If pregnant women infected with HIV deliver in a health facility, they will get interventions that will protect them and their babies from poor maternal and newborn health outcomes.

Although skilled delivery attendants reduce maternal mortality, there are many barriers to their use in developing countries including cost and the need to travel long distances to health facilities. Fears and experiences of HIV-related stigma and discrimination (prejudice, negative attitudes, abuse, and maltreatment directed at people living with HIV) may also be a barrier to the use of skilled childbirth service. Maternity services are prime locations for HIV testing and for the provision of interventions for the prevention of mother-to-child transmission (PMTCT) of HIV, so pregnant women know that they will have to "deal with" the issue of HIV when visiting these services. This study will provide information on the various factors known to be associated with facility based deliveries in Mara region where the HIV prevalence among pregnant women is about 9% and the incidence of facility based deliveries for the general population in the region is only 33.3% (*National Bureau of Statistics; 2010*), affect differently

the HIV positive women as compared to HIV negative women. This may bring about different interventions in advocating for facility based deliveries between the two population groups.

2.5 Research Questions

1. What is the incidence of facility based deliveries among HIV positive pregnant women?
2. What is the incidence of facility based deliveries among HIV negative pregnant women?
3. Is there any difference in facility based deliveries between HIV positive and HIV negative pregnant women?
4. What are the factors associated with facility based deliveries among HIV positive pregnant women?

2.6 Objectives

2.6.1 Broad Objective

To determine the incidence of facility based deliveries and their predictors among HIV positive and HIV negative pregnant women in Mara Region-Tanzania

2.6.2. Specific Objectives

- 2.6.2.1 To determine the incidence of facility based deliveries among HIV positive pregnant women
- 2.6.2.2 To determine the incidence of facility based deliveries among HIV negative pregnant women
- 2.6.2.3 To explore predictors (Health facility and individual) for facility based deliveries among HIV positive women

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study design

A Cohort study was conducted in Mara region to determine the incidence of facility based deliveries and their predictors among HIV positive pregnant women and HIV negative pregnant women. HIV positive postnatal women were followed retrospectively over one year to find out their places of child birth (health facility or not) and this was compared with a group of HIV negative postnatal women who were also followed up retrospectively over one year to see their places of child birth. For each cohort predictors of facility based deliveries were explored and compared between the two groups.

3.2 Study area

This study was conducted in the Mara Region of Tanzania. The region is located at the eastern part of Lake Victoria. Mara Region has 6 Districts, 12-Divisions, 105- Wards, 321- Villages and 57- Streets. Total Population in the Region is 1,743,830 (*National Bureau of Statistics, 2013*)

The number of Children less than one year of age is 88,147. The number of children under five years of age is 396,386.

3.2.1 Number and type of health facilities in the region

Mara region has no tertiary hospital, 8-hospitals, 29- health Centres and 214-dispensaries

3.2.2 Number of women of child bearing age

The number of Women of Child bearing age in Mara Region is 428,032. The region has a fertility rate of 7.04 (7 Children / woman). The incidence of facility based deliveries in the general population of Mara is 33.3% (*National Bureau of Statistics; 2010*). The proportion of pregnant women delivered by skilled attendants in Mara in 2011 was 30.4% (*National Bureau of Statistics; 2010*). Prevalence of HIV is 4.8% (*National Bureau of Statistics; 2012*) and total number of PMTCT implementing sites in the region is 187 out of 208 sites with staff trained on providing PMTCT services.

3.2.3 Study districts

Two districts selected for this study were Butiama and Bunda districts.

Butiama district has a population of 241,732 (117,129 males and 124,603 females) (*National Bureau of Statistics, 2013*). Population of children under 1 year of age is 10,645 and that of children under 5 years of age is 48,945. Population of women of childbearing age in Butiama is 53,029 while the population growth rate is 2.5% and contraceptive prevalence rate is 42%.

Bunda district has a population of 335,061 people (162,241 males and 172,820 females). Population of children under 1 year of age is 16,752 and that of children under 5 years of age is 70,830. Population of women of childbearing age in Bunda is 80,490 while population growth rate is 3.0% and contraceptive prevalence rate is 34%.

3.2.4 Community Health Care Structure

All districts of Mara region have a functional existing structure of community health workers. These community health workers are home based care providers designed to provide home based HIV support and palliative care services and tracking defaulters from HIV care and treatment services. Every village/street has a minimum of 2 home based care providers working on volunteer basis but capacitated with bicycles and HBC kits. They receive a 2 weeks training and whenever new updates are available they receive refresher training for 5-days with support from the MOHSW and PEPFAR implementing partners. The HBC providers also visit households in their areas of work to identify most vulnerable children and orphans and report them for possible support. All HBC providers in the districts are coordinated by district HBC coordinators who reside in the district hospitals and work at the HIV care and treatment clinics.

3.3 Study Sample

Postnatal women who attended ANC between January and December, 2012

3.5 Sample Size

Sample size was calculated using **Statcalc**, a statistical software for sample size calculation from Epi Info version 3.5.3.

Using this statistical package, and considering 95% confidence interval, frequency of outcome (facility delivery) among unexposed group in Mara region = 33.3%, RR= 1.5, ratio of exposed group to non exposed group = 1:1 and aiming at power of 80% to avoid the effect of type II

error, the sample size calculated was = 296 postnatal women. Adding 10% contingency for lost to follow up and non compliance, the sample size became = 326 postnatal women ,163 postnatal women in the exposed group and the remaining 163 postnatal women in the unexposed group.

3.6 Sampling technique

Selection of study participants was through multistage cluster sampling. This was conducted in four stages involving health centres and dispensaries providing PMTCT services and postnatal women in the selected districts.

Stage 1: Two districts were randomly selected from among the six districts of Mara region using simple random sampling, the selected districts were Butiama and Bunda.

Stage 2: From each district 4 wards were selected using simple random sampling in order to achieve the required sample size of 326 study participants, the selected wards for Butiama district were Butiama, Nyamimange, Nyakatende and Kukirango. For Bunda district the selected wards were Guta, Kabasa, Nyamuswa and Bunda town.

Stage 3: From each ward, 2 health facilities were randomly selected. Because some wards have very few health facilities providing PMTCT services, therefore for convenience two health facilities were selected randomly from each ward in order to achieve the intended sample size.

From Butiama district, the wards selected for this study were Butiama, Nyamimange, Nyakatende and Kukirango.

From Butiama ward, Rwamkoma and Rwamkoma JKT dispensaries were sampled. Rwamkoma dispensary is government owned while Rwamkoma JKT is owned by Tanzania National Service Force.

From Nyamimange ward, Kiagata health centre and Kitaramanka dispensary were sampled for this study. Kiagata health centre is owned by the government of Tanzania while Kitaramanka dispensary is faith based, owned by the Mennonite Church of Tanzania.

For Nyakatende ward, Kigera Etuma and Nyakatende dispensaries were selected for this study. Kigera Etuma dispensary is faith based, owned by Roman Catholic church while Nyakatende dispensary is owned by the government of Tanzania.

For Kukirango ward, Kyawazarwe and Kamgegi dispensaries were sampled for this study. Both are owned by the government of Tanzania.

From Bunda district the selected wards were Bunda town, Kabasa, Guta and Nyamuswa. For Bunda town, Bunda and Boma dispensaries were sampled for this study. Both facilities were government owned.

From Kabasa ward, Manyamanyama health centre and Kabasa dispensary were sampled. Both were government facilities.

For Guta ward, Guta and Bulamba dispensaries were selected for this study. Both of these facilities were government owned.

From Nyamuswa ward, Nyamuswa health centre and Ikizu dispensary were sampled for this study. Nyamuswa health centre is a government owned facility while Ikizu dispensary is faith based, owned by Seventh Day Adventist church of Tanzania.

Stage 4: From each facility 21-postnatal women who attended ANC between January and December, 2012 were selected from ANC registers, 10- of whom were selected from among the HIV positive group (exposed group) and 11- were selected from among the HIV negative group (unexposed group) in order to make a 1:1 ratio between the exposed group and unexposed group and achieve the intended sample size of 326.

3.7 Inclusion criteria

Postnatal women who attended ANC between January and December 2012 were included in the study.

Serostatus of these women had to be checked or determined at ANC during the same period and documented in PMTCT registers.

All women recruited in this study were aware of their HIV serostatus, be it negative or positive. Awareness of the HIV status by the study participants was important because the effect of HIV associated stigma in utilization of facility based delivery services needed to be explored in Mara region. Stigma associated with HIV is one of the stated factors for low utilization of facility based delivery services by pregnant women in most studies.

Being resident of the catchment area of selected facility for easy tracing.

Residence of the catchment area was defined by living within five kilometres or one hour walking distance from the selected health facility. The address given in the ANC registers assisted the researchers in locating distance from the selected health facility. Tracing the study participants was important so as to get responses on the factors for their preferred place of delivery and other sociodemographic information included in the structured questionnaire. Tracing was done through assistance of HBC volunteers. These were given names of sampled study participants from their working areas. They traced them and prepared them for the interview on dates that were indicated.

Willingness to give consent was also another inclusion criteria

3.8 Data Collection

A structured questionnaire was developed in English and then translated into Swahili.

A Swahili translated structured questionnaire was used for data collection.

3.8.1 Pilot of research tools

Before starting the process of data collection, a questionnaire was piloted in Nyamuswa health center and necessary amendments were made to the structured questionnaire to improve clarity.

3.8.2 Data collection process

Data on serostatus of both cohorts of HIV positive and HIV negative women was obtained from the ANC registers of the sample facilities. According to the sampling frame, 21-postnatal women were selected from each sampled health facility, of whom 10-were HIV positive (exposed) and 11-HIV negative (unexposed). Numbers were assigned to names of all HIV positive pregnant women attended ANC between January and December 2012. Then these numbers were written on small pieces of paper, rolled up, thoroughly mixed up in a box and one was picked and its number recorded. Then the picked piece of paper was returned in the box re-mixed thoroughly and one picked up again and recorded. This was repeated until when 10-numbers were picked for the HIV positive women. This process was repeated for the HIV negative individuals until when 11-numbers were picked from a list of the HIV negative women thereby making a sample of 21 women selected from each sampled health facility. This

sampling process enabled all women in both groups to have equal chance of being selected. Then names corresponding to selected numbers were recorded and followed up in the community for interview.

Then women were traced in the community or postnatal clinics where they brought their children for immunization and interviewed using a Swahili translated structured questionnaire. The tracing was done with assistance of HBC volunteers. A one day meeting with all HBC volunteers from the selected wards was conducted where names of postnatal women from their areas who were sampled for this study from the ANC registers were given. They were urged to assist tracing these women voluntarily. They were compensated with five thousand shillings each as transport cost to attend the meeting. For the 4 wards selected, fifty HBC Volunteers were oriented on the research and urged to trace study participants from the community. The HBC Coordinators at the district level assisted in extending invitations to the HBC Volunteers through mobile phones.

Sociodemographic information such as age, education, marital status, parity and indicators of household wealth was part of the questionnaire and this information was obtained by interviews.

Also various sociocultural factors known to influence place of childbirth were measured using the structured questionnaire. These factors included use of antenatal care, distance to the health facility, expectations regarding costs, perceptions of the quality of care, relationship factors, including family decision-making processes about the place of delivery, involvement of the woman's male partner, experience of intimate partner violence (physical, sexual, or psychological) during pregnancy or postpartum and stigma.

With the fact that ANC attendance first visit is 98%, immunization uptake is more than 90% and HIV testing uptake at ANC is 90%, it was assumed that data obtained in this study was representative of the general population.

3.8.3 Recruitment of research assistants

Two research assistants were recruited and trained for one day to assist in data collection. Both of them were nurses.

Also two meetings were convened, one for each selected district, to sensitize and mobilize HBC providers in tracing the sampled study participants. Each meeting lasted for two hours.

3.9 Data analysis and management

Data was entered into SPSS and analysed. Sociodemographic characteristics of HIV positive and negative women were compared. Frequencies were generated for categorical variables and differences between proportion compared using Chi square test. Mean and corresponding standard deviation were calculated for continuous variables and difference between means examined using student-t test. Incidence of facility based deliveries were calculated for both groups of women and comparison done using log rank test. Binary logistic regression model was built to examine independent predictors of facility based deliveries among HIV positive women and HIV negative women. All the analysis was two tailed and error rate was set at 5%.

Main outcomes

The main outcome was facility based delivery status (yes or no). Based on women's responses, a binary variable for giving birth in the health facility or outside the health facility was created. The exposure status was HIV infection, those clients who were aware that they were living with HIV were exposed and those who knew that they were uninfected with HIV were un-exposed. Both exposed and un-exposed groups were followed retrospectively for the primary outcome. Cases developing from among the exposed and un-exposed populations were those who delivered at health facilities.

Variables

Dependent variables: Facility based delivery status (Yes/No)

Independent variables:

Independent variables for this study included individual and facility related factors.

1. Individual factors were:
 - i. Socio demographic i.e age, parity, education level, occupation and marital status ,
 - ii. Knowledge of the importance of health facility delivery,
 - iii. Attitude and perception,
 - iv. HIV status (positive or negative),

- v. Medical condition,
 - vi. CD4 count
 - vii. Treatment status
 - viii. Treatment duration
 - ix. Perceived health status
 - x. Reproductive history (number of pregnancy, number of children alive, gestation age at delivery of last pregnancy).
 - xi. For the last pregnancy: Time of labour, who was left at home?
2. Facility related factors were:
- i. Personnel,
 - ii. Distance to facility and
 - iii. Type of facility dispensary or health centre, private or public

CHAPTER FOUR

4.0 RESULTS

4.1: Socio-demographic Characteristics of respondents

Table 1 gives a summary of socio-demographic characteristics of study population.

A total of 326 postnatal women from two districts of Butiama and Bunda were followed retrospectively over one year to determine level of ANC attendance, place of delivery and associated factors. Of these 50% (n= 163) were from Bunda district and 50% (n=163) from Butiama district. The study population included 49.7% (n= 162) HIV positive and 50.3% (n=164) HIV negative postnatal women. The age of HIV positive women ranged from 17 to 44 years and the mean age was 30 years (standard deviation = 6.3). For the HIV negative group the age range was 15 to 45 years and the mean age was 27 years (standard deviation= 6.4). The mean age of the HIV positive postnatal women was highly statistically different from that of the HIV negative postnatal women (p= 0.008) (see table 1).

For the HIV positive respondents, 74.1.0% (n= 120) had completed primary school or were secondary school dropouts while for the HIV negative women, 70.1% (n= 115) had completed primary school or were secondary school dropouts (see table 1).

With regard to occupation of respondents, 53.1 % (n= 86) of the HIV positive cohort were peasants as compared to 67.7% (n= 111) of the HIV negative cohort (see table 1).

Mean parity of HIV positive study participants was 2 (standard deviation= 0.6) and that of the HIV negative study participants was also 2 (standard deviation = 0.8).

The mean number of living children of HIV positive study participants was 2(standard deviation= 0.7) while that of HIV negative study participants was also 2(standard deviation 0.7).

Concerning marital status, 69.1% (n= 112) of HIV positive study participants, were married or cohabiting while for the HIV negative study participants, 88.4% (n= 145) were married or cohabiting (see table 1).

Table 1: Socio-demographic characteristics of the study population by HIV status (n=326)

Variable	Category	HIV positive	HIV negative	P-value
Age groups	15-24	31(19.1%)	52(31.7%)	0.008
	25-34	85(52.5%)	84(51.2%)	
	35+	46(28.4%)	28(17.1%)	
Education of participant	Never been to school/Primary dropout	36(22.2%)	32(19.5%)	0.062
	Completed Primary/Secondary dropout	120(74.1%)	115(70.1%)	
	Completed secondary school	6(3.7%)	12(7.3%)	
	Completed High school/college	0(0.0%)	5(3.0%)	
Education of Partner	Never been to school/Primary dropout	13(8.0%)	11(6.7%)	0.072
	Completed Primary/Secondary dropout	126(77.8%)	113(68.9%)	
	Completed secondary school	13(8.0%)	29(17.7%)	
	Completed High School/college	10(6.2%)	11(6.7%)	
Occupation of participants	Government employee	10(6.2%)	8(4.9%)	0.031
	Petty businesswoman	43(26.5%)	24(14.6%)	
	Peasant	86(53.1%)	111(67.7%)	
	Housewife	23(14.2%)	21(12.8%)	
Occupation of Partner	Government employee	16(9.9%)	23(14.0%)	0.495
	Petty businessman	53(32.7%)	49(29.9%)	
	Peasant	93(57.4%)	92(56.1%)	
Marital status	Single/Divorced/Widow	50(30.9%)	19(11.6%)	<0.001
	Married/Cohabiting	112(69.1%)	145(88.4%)	
Parity	Para 1	14(8.6%)	25(15.2%)	0.169
	Para 2	31(19.1%)	32(19.5%)	
	Para 3+	117(72.2%)	107(65.2%)	
No. of living children	4 or less number of living children	114(70.4%)	120(73.2%)	0.574
	5+ living children	48(29.6%)	44(26.8%)	

A large proportion of HIV negative women (88.4% (n= 145) reported to be married or cohabiting as compared to HIV positive women (69.1% (n= 122); $p < 0.001$) (see table 1 above).

Table 2: HIV status by place of delivery

HIV Status	Place of delivery for last pregnancy			
	Health facility	Home	At TBA's place	Total
HIV Positive	72(44.4%)	61(37.7%)	29(17.9%)	162(100.0%)
HIV Negative	75(45.7%)	57(34.8%)	32(19.5%)	164(100.0%)
Total	147(45.1%)	118(36.2%)	61(18.7%)	326(100.0%)
$\chi^2 = 0.332$	df= 2		p=0.847	

There was no any significant difference in place of delivery between HIV positive women and HIV negative women in Mara region ($p = 0.847$). However for both cohorts (HIV positive and HIV negative) almost half of the women had their child birth at a health facility (45.1%). For those who delivered outside the health facility, majority gave birth at home (36.2%). Also a good number of them were delivered by traditional birth attendants during their last child birth(18.7%) (see table 2 above).

Table 3: Place of delivery by delivery experience

Place of delivery	delivery experience			Total
	HIV Positive women			
	Very Good	Bad	Just normal	
Health facility	57(79.2%)	1(1.4%)	14(19.4%)	72(100.0%)
Home	19(31.1%)	23(37.8%)	19(31.1%)	61(100.0%)
At TBA's place	13(44.8%)	10(34.5%)	6(20.7%)	29(100.0%)
Total	89(54.9%)	34(21.0%)	39(24.1%)	162(100.0%)
	X²= 40.4,	df= 4,		p< 0.001

Place of delivery	Delivery experience			Total
	HIV Negative women			
	Very Good	Bad	Just normal	
Health facility	69(92.0%)	0(0.0%)	6(8.0%)	75(100.0%)
Home	21(36.8%)	18(31.6%)	18(31.6%)	57(100.0%)
At TBA's place	16(50.0%)	4(12.5%)	12(37.5%)	32(100.0%)
Total	106(64.6%)	22(13.4%)	36(22.0%)	164(100.0%)
	X²= 53.2	df= 4		p<0.001

For both cohorts of HIV positive and HIV negative women, there was a highly significant association between place of delivery and reported experience after giving birth ($p < 0.001$, $X^2 = 40.4$ and 53.2 respectively). Among women who gave birth at health facilities, 79.2% ($n = 57$) of the HIV positive and 92.0% ($n = 69$) of the HIV negative women reported that they had a very good experience delivering in a health facility (see table 3 above).

Table 4: Predictors of facility based deliveries for HIV positive women in Mara region

Variable	Category	OR(95%CI)	Adjusted OR (95%CI)	P- value
Age groups	15-24	1	1	
	25-34	0.5(0.18-1.24)	0.8(0.12-5.02)	0.777
	35+	0.4(0.16-0.76)	0.2(0.04-0.71)	0.016
Parity	Para 1	1	1	
	Para 2	2.3(0.60-9.10)	0.2(0.01-2.23)	0.180
	Para 3+	3.9(1.14-13.04)	0.3(0.05-1.18)	0.086
Marital status	Single/divorced/widow	1	1	
	Married/cohabiting	1.6(0.80-3.04)	0.3(0.08-1.18)	0.086
No.of living children	4 or less living children	1	1	
	5 + living children	0.5(0.22-0.93)	3.1(0.71-13.08)	0.132
Place of delivery Experience	Positive	1	1	
	Negative	41.1(5.45-309.79)	73.0(5.07-1078.08)	0.002
Knowledge of FBD advantage	Known	1	1	
	Not known	1.8(0.79-4.13)	0.2(0.04-0.94)	0.042
Male involvement	Involved	1	1	
	Not involved	1.4(0.59-3.51)	0.7(0.13-4.03)	0.712
Household visit by CHWs during last pregnancy	Visited	1	1	
	Not visited	1.4(0.67-3.02)	1.2(0.32-4.62)	0.777
Timing of labour	Day time	1	1	
	Night time	0.3(0.13-0.57)	54.7(6.98-429.15)	<0.001
Distance from nearby health facility	Short	1	1	
	Long	0.5(0.23-0.95)	1.8(0.54-5.69)	0.346

Various categorical predictors of facility based deliveries were run through a univariate logistic regression model to see if they were associated with facility based deliveries. These were

participant's age, parity, timing of labour, walking time to nearby health facility, male partner involvement in ANC services, number of living children of participant, knowledge of facility based delivery advantages, place of delivery experience, education level of participant, education level of male partner, attitude of participant towards facility based delivery, occupation of participant, occupation of male partner, household visit by CHWs and marital status. Outputs were grouped according to HIV status and every first category was considered as a reference category. Crude odds ratios, p-values and 95% confidence intervals were generated for each category.

For the HIV positive women, four out of fifteen potential predictors were significantly associated with facility based deliveries in a univariate model ($p \leq 0.05$). These were age of participants, number of living children, timing of start of labour for last delivery and distance from nearby health facility. After adjusting for confounders in a multivariate analysis, age of participants, place of delivery experience, knowledge of facility based delivery advantages and timing of onset of labour were significantly associated with facility based deliveries ($p = 0.016$, 0.002 , 0.042 and <0.001 respectively) (see table 4). Timing of onset of labour and place of delivery experience were highly associated with facility based deliveries ($p < 0.001$ and 0.002 respectively) (see table 4).

The likelihood of giving birth in a health facility for HIV positive women who were between 15 and 24 years of age was 10 times more than those HIV positive women who were 35 years and above (Adjusted OR= 0.2, 95% CI= 0.04- 0.71) (see table 4).

HIV positive women who had onset of labour at day time were 55 times more likely to deliver in a health facility than those HIV positive women who had onset of labour during night time (Adjusted OR= 54.7, 95% CI= 6.98- 429.15) (see table 4).

HIV Positive women with positive experience delivering in health facilities were 73 times more likely to deliver in a health facility than HIV positive women who had a negative experience delivering in health facilities (Adjusted OR= 73.0, 95% CI=5.07-1078.08) (see table 4).

Those HIV positive women who knew the advantages of giving birth in a health facility were 5 times more likely to deliver in a health facility than HIV positive women who did not know advantages of facility based delivery (Adjusted OR= 0.2, 95% CI= 0.04-0.94) (see table 4)

Table 5: Predictors of facility based deliveries for HIV negative women in Mara region

Variable	Category	OR(95%CI)	Adjusted OR (95%CI)	P-value
Age groups	15-24	1	1	
	25-34	0.6(0.26-1.65)	0.9(0.15-5.08)	0.887
	35+	0.8(0.33-1.87)	1.4(0.35-5.20)	0.656
Parity	Para 1	1	1	
	Para 2	0.8(0.28-2.25)	4.3(0.83-22.63)	0.083
	Para 3+	1.0(0.40-2.30)	2.7(0.78-9.16)	0.117
Marital status	Single/divorced/widow	1	1	
	Married/cohabiting	1.7(0.66-4.58)	0.3(0.06-1.40)	0.118
No.of living children	4 or less living children	1	1	
	5+living children	0.4(0.19-0.82)	0.2(0.06-0.70)	0.012
Attitude towards facility based delivery	Positive	1	1	
	Negative	1.2(0.07-19.34)	3.5(0.13-95.33)	0.460
Knowledge of FBD advantage	Known	1	1	
	Not known	0.8(0.34-1.68)	1.9(0.64-5.49)	0.254
Male involvement	Involved	1	1	
	Not involved	0.7(0.35-1.37)	1.9(0.72-5.16)	0.195
Household visit by CHWs during last pregnancy	Visited	1	1	
	Not visited	2.4(0.61-9.39)	0.4(0.06-2.60)	0.334
Timing of labour	Day time	1	1	
	Night time	1.1(0.50-2.14)	0.9(0.34-2.60)	0.899
Distance from nearby health facility	Short	1	1	
	Long	0.3(0.16-0.62)	2.9(1.16-7.17)	0.023

After adjusting for confounders in a multivariate analysis, number of living children and distance from nearby health facility were significantly associated with facility based deliveries for HIV negative women ($p= 0.012$ and 0.023 respectively) (see table 5).

HIV negative women living within 30 minutes walking distance were 3 times more likely to deliver in a health facility than HIV negative women living at a walking distance of one hour or more from the nearby health facility (Adjusted OR= 3.0, 95% CI=1.20-7.72) (see table 5).

HIV Negative women who had four or less living children were 5 times more likely to deliver in a health facility than HIV Negative women who were having 5 or more living children (Adjusted OR= 0.2, 95% CI= 0.05- 0.69) (see table 5)

CHAPTER FIVE

5.0 DISSCUSSION

5.1 Incidence of facility based deliveries

In this study, findings indicate that there is no significant difference in incidence of facility based deliveries between HIV positive and HIV negative pregnant women in Mara region. However, we see the incidence of facility based deliveries for both cohorts is below fifty percent. Only forty four percent of pregnant women who are HIV positive in Mara region gave their child birth in a health facility and for those who are HIV negative the incidence of delivering in a health facility was about forty five percent .

These findings show an improvement in utilization of health facilities for child birth in the region as compared to the incidence determined by Tanzania Demographic and Health Survey of 2010 where the proportion of pregnant women giving birth in health facilities in the general population of Mara was 33.3% (*National Bureau of Statistics; 2010*). However, this indicates that the assumption that availability of PMTCT services will attract more HIV positive pregnant women to deliver in health facilities is not a true assumption for Mara region. But also, these findings show a low incidence of facility based deliveries than the reported national magnitude of utilization of health facilities for child birth which indicates that 51% of pregnant women in Tanzania give their childbirth in health facilities (*National Bureau of Statistics; 2010*).

Furthermore, among those pregnant women who had their child birth outside a health facility, 36.2% had their child delivery at home and 18.7% were assisted by TBAs. There was no significant difference in place of child delivery between the HIV positive and the HIV negative pregnant women. These findings were close to that reported in the 2010 Tanzania Demographic and Health Survey, which indicated that trained and traditional birth attendants assist 15 percent of deliveries, and relatives or other untrained people assist 29 percent of births. Three percent of births are delivered without assistance (*National Bureau of Statistics; 2010*).

5.2 Place of delivery experience and attitude

Findings from this study show that pregnant women value facility based delivery and would like to have their child birth in a health facility but due to certain factors which will be explained later in this discussion they find themselves ending giving birth out of a health facility. When

asked about their experience of places where they gave their last child birth, 79.2% of HIV positive women and 92.0% of HIV negative women who gave child birth at health facilities, reported that they had a very good experience delivering in a health facility while 19.4% of HIV positive and 8.0% of HIV negative women who delivered in a health facility said that it was just a normal experience for them. About 1.4% of the HIV positive women reported to have a bad experience delivering in a health facility while none of the HIV negative women reported to have a bad experience delivering in a health facility.

The proportion of HIV positive women who delivered at home or at TBAs place, reported to have good experience in their respective places of child birth were 31.1% and 44.8% respectively while for the HIV negative women the proportions were 36.8% and 50.0% respectively. These findings are similar to that of Shimpuku et al in a study titled “*Women's Perceptions of Childbirth Experience at a Hospital in Rural Tanzania*” where 25 women were interviewed within 24 hours after delivery using semistructured interviews on their hospital delivery experience and most women reported to prefer having their child birth in health facilities because they sought life-saving technological support in case of complications. They also valued having family present to provide care and affection. Women's needs, however, were difficult to fulfill at these busy facilities (Shimpuku et al, 2013).

Findings of this study also correspond with findings from another study aimed at assessing women's satisfaction with traditional birth attendants (TBAs) in rural Tanzania. In that study a population-representative sample of households in Kasulu district was used to collect data on demographics, childbirth history, and perception of TBAs and doctors/nurses from women who had recently had a child and from their partners. Two-thirds of women who gave birth in a health facility reported being very satisfied with the experience, compared with 21.2% of women who delivered at home with TBAs (Mbaruku et al, 2009).

When asked about how they felt about giving childbirth in a health facility, 86.4% of HIV positive postnatal women in Mara region reported that they like very much delivering in a health facility and 1.9% reported to hate delivering in a health facility. For the HIV negative group, 82.3% reported that they like very much delivering in a health facility and 1.2% hate it very much. Status of HIV had no significant influence on the attitude of health facility delivery among pregnant women in Mara region

These findings correspond with that of *Mbaruku et al, 2009*. In that study, a sizeable proportion of women felt that TBAs had poor medical skills (23.1%), while only 0.3% of women felt the same about doctors' and nurses' skills. Of women who delivered with a TBA, 16.0% reported that TBAs had poor medical skills whereas 0.5% stated the same for doctors and nurses (*Mbaruku et al; 2009*).

5.3 Predictors of facility based deliveries

Various predictors of facility based deliveries were run through a binary logistic regression model for both HIV positive and HIV negative women to see if they had any significant association with giving child birth in a health facility. These were participant's age, parity, timing of labour, walking time to nearby health facility, male partner involvement in ANC services, number of living children of participant, knowledge of facility based delivery advantages, place of delivery experience, education level of participant, education level of male partner, attitude of participant towards facility based delivery, occupation of participant, occupation of male partner, household visit by CHWs and marital status.

After adjusting for confounders, young age, positive facility based delivery experience, good knowledge of facility based delivery advantages and onset of labour during day time were predictors found to be significantly associated with facility based deliveries for HIV positive women

For the HIV negative women, fewer numbers of living children and need to walk short distance to nearby health facility were found to be significantly associated with utilization of health facilities for child birth among HIV negative women.

The reason to why timing of onset of labour predicted facility based deliveries for HIV positive pregnant women but not for HIV negative women inspite of almost equal distribution of respondents for this predictor, is an area which needs further studies.

In another study conducted Southern Tanzania, issues of risk and vulnerability, such as lack of money, lack of transport, sudden onset of labour, short labour, staff attitudes, lack of privacy, tradition and cultures and the pattern of decision-making power within the household were perceived as key determinants of the place of delivery. More than 9000 women were interviewed about their most recent delivery in the quantitative survey (*Mrisho et al, 2007*). From the study above we can deduce that distance from a nearby health facility could be not an

issue if there was transport. The expecting mother might have money for transport but in the rural setting means of transport is a problem. The same thing was stated by participants in this study.

Onset of labour in the night for many was a factor for them to give childbirth at home even though they are within 30 minutes walking distance. Poor male involvement in reproductive and child health services in Mara can explain why onset of labour in the midnight will result into home delivery. If these women had their partners supporting them, they would be escorted to a nearby health facility as soon as labour pain ensued regardless the timing. A good number of women reported to have delivered in absence of their male partners.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

This study showed that 44.4% of HIV positive women and 45.7% of HIV negative women in Mara region give their childbirth in health facilities respectively. There is no significant difference in the incidence of facility based deliveries between HIV positive and HIV negative women in the region even after adjusting for confounders. However, maternal age, experience of facility based delivery, knowledge of health facility delivery advantages and timing of onset of labour are predictors of facility based delivery among HIV positive women while number of living children and distance from nearby health facility are predictors of facility based delivery among HIV negative women in Mara region.

6.2 RECOMMENDATIONS

1. More community activities ranging from individual, family and community sensitizations to high level advocacy are needed to create awareness on utilization of health facilities for childbirth.
2. Community health workers cadre should be revived. These will provide linkages and networking of individuals and families to health facilities and create awareness on utilization of health facilities for child birth.

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APPENDICES***APPENDIX- 1a******Structured questionnaire: English version***

1. District----- 2. Ward-----
3. Street/village of residence-----4. Hamlet-----
5. Age -----(in complete years)
6. Parity..... 7. Number of living children.....
8. Are there any twins?.....(yes/No)
9. Number of miscarriages or dead children.....
10. Marital status
 - a) Single
 - b) Married
 - c) Cohabiting
 - d) Divorced
 - e) Widow
11. What is your level of education?
 - a) Never been to school
 - b) Primary school drop out
 - c) Completed primary education
 - d) Secondary school drop out
 - e) Completed secondary school
 - f) High school

g) College education

12. What is your occupation?

a) Employed by the government

b) I am engaged in doing petty business

c) I am a peasant

d) Housewife

13. What is your partners occupation?

a) Employed by the government

b) Engaged in doing petty business

c) Peasant

14. What is your partner's level of education?

a) Never been to school

b) Primary school drop out

c) Completed primary education

d) Secondary school drop out

e) Completed secondary school

f) High school

g) College education

15. Have you ever been accompanied by your partner to a health facility during your last pregnancy?

a) Yes

b) No

16. What is the level of facility you attended ANC during your last pregnancy?

- a) Dispensary
- b) Health centre
- c) Hospital
- d) Tertiary hospital
- e) Did not attend ANC (go to question 18)

17. How many ANC visits did you make during the last pregnancy?

- a) Only one
- b) Two
- c) Three
- d) Four
- e) More than four

18. Where did you give birth to your last child?

- a) Health facility
- b) Home unassisted
- c) Home assisted by mother/mother in law
- d) At TBA

19. What was your experience in delivering at this place?

- a) It was pleasant for me
- b) It was bad
- c) It was just normal

20. What are the benefits of giving birth in a health facility?.....,

21. How do you feel about utilizing health facilities for delivery services

- a) I like it very much
- b) It is just normal for me
- c) I hate it very much

22. How do you feel about giving birth at home or TBAs place?

- a) I like it very much
- b) It is just normal for me
- c) I hate it very much

23. What was the gestation age at delivery of your last pregnancy ?.....

24. What was the time of onset of labour for your last pregnancy?

- a) Day time
- b) Early night
- c) Mid-night
- d) Late night

25. Who did you leave at home?.....**(for those who went to health facility for delivery)**

26. How long does it take to walk to a nearby health facility?

- a) 30 Minutes
- b) 1 hour
- c) 2 hours
- d) More than 2 hours

27. Why didn't you go to a health facility for your childbirth? **(for those who did not go to health facility for childbirth)**

- a) There are no skilled human resource for health in our health facilities
- b) Health workers use insulting language
- c) My family and community doesn't allow to deliver in a health facility as this will make people perceive you as not brave
- d) There are no medicines and medical supplies in our facility
- e) I feared stigma because of being HIV infected

28. Have you ever been visited by a community health worker at your household?

- a) Yes
- b) No

For those who are HIV infected

29. What is your CD4 level

- a) More than 350
- b) Less than 350

30. What is your treatment status?

- a) On ART
- b) I was just given ARV prophylaxis during pregnancy (Skip no. 31)
- c) I am not on any form of ARVs (Skip number 31)

31. For how long have you been on treatment?.....

32. How do you perceive your health status currently?

- a) Good
- b) Not good, I am frequently sick

33. Do you suffer from any medical condition? Yes or No (Circle appropriately)

34. If yes, state(If No skip this question)

APPENDIX – 1b**DODOSO LA KISWAHILI**

1. Wilaya----- 2. Kata-----
4. Mtaa/Kijiji-----4. Kitongoji-----
5. Umri -----(Katika miaka kamili)
6. Idadi ya vizazi..... 7. Idadi ya watoto walio hai.....
8. Una mapacha?.....(Ndiyo/Hapana)
9. Idadi ya mimba zilizoharibika.....
10. Hali ya ndoa
 - a) Sijaolewa
 - b) Nimeolewa
 - c) Nina mwenzambaye tunaishi bila ndoa
 - d) Nimeachika
 - e) Mjane
11. Una kiwango gani cha elimu?
 - a) Sijawahi kwenda shule
 - b) Sikumaliza shule ya msingi
 - c) Nilimaliza shule ya msingi
 - d) Sikumaliza shule ya upili
 - e) Nilimaliza shule ya upili
 - f) Nilimaliza shule ya juu ya upili
 - g) Nilimaliza chuo
12. Unafanya kazi gani?

- a) Nimeajiriwa serikalini
- b) Najihusisha na biashara ndogo ndogo
- c) Mkulima
- d) Mama wa nyumbani

13. Mwenza wako anafanya kazi gani?

- a) Amejiriwa serikalini
- b) Anajihusisha na biashara ndogo ndogo
- c) Mkulima

14. Mwenza wako ana kiwango gani cha elimu?

- a) Hajawahi kwenda shule
- b) Hakumaliza shule ya msingi
- c) Alimaliza shule ya msingi
- d) Hakumaliza shule ya upili
- e) Alimaliza shule ya upili
- f) Alimaliza shule ya juu ya upili
- g) Alimaliza chuo

15. Uliwahi kwenda pamoja na mwenza wako katika kituo cha kutolea huduma za afya wakati wa ujauzito uliopita?

- a) Ndiyo
- b) Hapana

16. Kituo ulichohudhuria kliniki wakati wa ujauzito uliopita ni cha ngazi gani?

- a) Zahanati
- b) Kituo cha afya

- c) Hospitali
- d) Hospitali ya Rufaa
- e) Sikuhudhuria kliniki (Nenda swali la 18)

17. Ulihudhuria kliniki mara ngapi katika ujauzito uliopita?

- a) Mara moja
- b) Mara mbili
- c) Mara tatu
- d) Mara nne
- e) Zaidi ya mara nne

18. Ulijifungulia wapi ujauzito uliopita?

- a) Kituo cha kutolea huduma za afya
- b) Nyumbani bila msaada wowote
- c) Nyumbani kwa msaada wa mama/mama mkwe
- d) Kwa mkunga wa jadi

19. Nini uzoefu wako kujifungulia mahali hapo?

- a) Ilikuwa vizuri sana kujifungulia mahali hapo
- b) Ilikuwa vibaya
- c) Kawaida tu

20. Ni faida zipi mtu huzipata akijifungulia katika kituo cha kutolea huduma za afya?.....,

21. Nini hisia zako katika kutumia vituo vya kutolea huduma za afya kwa kujifungua?

- a) Napenda sana
- b) Ni kawaida tu
- c) Nachukia sana

22. Nini hisia zako kuhusu kujifungulia nyumbani au kwa mkunga wa jadi?

- a) Napenda sana
- b) Kawaida tu
- c) Nachukia sana

23. Mimba yako ya mwisho ilikuwa na umri gani wakati ulipojifungua?.....

24. Uchungu ulikuanza wakati gani?

- a) Mchana
- b) Mapema usiku
- c) Usiku wa manane
- d) Alfajiri

25. Ulimwacha nani nyumbani?.....**(Kwa wale waliojifungulia katika vituo vya kutolea huduma za afya)**

26. Inachukua muda gani kutembea hadi kituo cha huduma za afya kilicho karibu?

- a) Dakika 30
- b) Saa 1
- c) Saa 2
- d) Zaidi ya saa 2

27. Kwa nini hukujifungulia katika kituo cha kutolea huduma za afya? (**Kwa wale ambao hawakujifungulia katika vituo vya kutolea huduma za afya**)

- a) Hakuna watumishi wenye ujuzi wa kutosha katika kituo chetu cha kutolea huduma za afya
- b) Watoa huduma za afya hutoa lugha za matusi
- c) Familia yangu na jamii hawaruhusu mtu kujifungulia katika kituo cha kutolea huduma za afya kwa sababu si ushujaa.
- d) Hakuna dawa wala vifaa tiba katika kituo chetu cha kutolea huduma za afya
- e) Nilihofu unyanyapaa kwa sababu ninaishi na virusi vya UKIMWI

28. Uliwahi kutembelewa na mtoa huduma za afya katika jamii nyumbani kwako? a) Ndiyo

b) Hapana

Kwa wale walio na maambukizo ya VVU

29. Una kiwango gani cha CD4

a) Zaidi ya 350

b) Chini ya 350

30. Hali yako ya matibabu ikoje?

a) Niko kwenye matibabu ya ART

b) Nilipewa dawa za kumkinga mtoto wakati wa ujauzito tu (Nenda namba 32)

c) Sikuwahi kupata dawa yoyote ya ARV (Nenda namba 32)

31. Umekuwa kwenye matibabu kwa muda gani?.....

32. Unaionaje afya yako kwa sasa?

a) Nzuri

b) Si nzuri, naugua mara kwa mara

33. Una maradhi yoyote yanayohitaji tiba kwa sasa? Ndiyo/Hapana (Zungushia inayohusika)

34. Kama ndiyo yataje(kama hapana ruka swali hili)

APPENDIX 2a: DATA COLLECTION TOOL FOR HEALTH FACILITY FACTORS

Health facility factors to be checked by interviewers

1. Does the nearby health facility have an ambulance?
 - a) Yes b) No

2. What is the type of ownership of the facility?
 - a) Public b) Private

3. Number of health care workers in the facility
 - a) Nurses.....c) Assistant Medical Officers.....

 - b) Clinical officers.....d) Medical attendants.....

APPENDIX 2b:**DODOSO LA KUKUSANYIA TAKWIMU KUTOKA KITUO CHA KUTOLEA HUDUMA ZA AFYA*****Taarifa muhimu za kuangalia katika kituo cha kutolea huduma za afya***

1. Kituo cha kutolea huduma za afya kina gari la kubebea wagonjwa?

- a) Ndiyo b) Hapana

2. Umiliki wa kituo hicho ukoje?

- a) Kinamilikiwa na umma b) Ni cha binafsi

3. idadi ya watumishi wa afya katika hicho kituo

- a) Wauguzi.....c) Madaktari wasaidizi.....

- b) Maafisa tabibu.....d) Wahudumu wa afya.....

APPENDIX 3a: CONSENT**MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES****DIRECTORATE OF RESEARCH AND PUBLICATIONS, MUHAS****INFORMED CONSENT FORM**

ID- NO

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Consent to Participate in a Research

Greetings! My name is..... from the Muhimbili University of Health and Allied Sciences carrying out a research aimed at determining the rate and predictors of health facility delivery among HIV Positive and HIV Negative Pregnant women in Mara Region

Purpose of the Study

In this study we interview HIV Positive and HIV Negative women who gave birth between January and December, 2012 about their place of delivery, factors compelling them to give childbirth at such places, and other sociodemographic and obstetric information.

What Participation Involved

If you agree to participate in this study, you will only be required to answer questions on various issues that will be asked. We won't draw blood or give you any medicine.

Confidentiality

All information we collect on forms will be entered into computer with only the study identification number and that the information will be strictly confidential

Rights to Withdraw and Alternatives

Taking part in this study is completely your choice. If you choose not to respond to any question asked you won't be penalized. You can stop participating in this study any time even if you have already given your consent. Refusal to participate or withdraw from the study will not involve penalty or loss of any benefits to which you are otherwise entitled

Benefits

We hope that the information we learn from this study will benefit you and others indirectly through influencing policy changes in improving both curative and preventive services. We hope this will improve utilization of health facilities for childbirth thereby reducing Maternal, Newborn and Child Mortality.

Who to Contact

If you ever have questions about this study, you should contact the study coordinator Dr. Mukome Nyamhagatta of Muhimbili University of Health and Allied Sciences, P.O.Box 65001, Dar es Salaam. If you ever have questions about your rights as a participant, you may call Prof. Mainen J.Moshi, Chairman of the Senate Research and Publications Committee, P.O.Box 65001, Dar es Salaam. Tel:2150302-6, 2152489.

Signature:

Do you agree?

Participant agrees.....Participants does NOT agree.....

Ihave read the contents in this form. My questions have been answered. I agree to participate in this study.

Signature of participant..... Signature of research assistant.....

Date of Signed consent.....

APPENDIX 3b: HATI YA MAKUBALIANO

**CHUO KIKUU CHA AFYA NA SAYANSI SHIRIKISHI MUHIMBILI****KURUGENZI YA TAFITI NA MACHAPISHO, MUHAS****HATI YA MAKUBALIANO BAADA YA KUFAHAMISHWA**

NAMBARI YA

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UTAMBULISHO

Kuridhia Kushiriki Katika Utafiti

Salaam! Mimi naitwa..... kutoka Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili. Tunafanya utafiti unaolenga kubainisha kiwango na visababishi vya kujifungulia katika vituo vya kutolea huduma za afya miongoni mwa wanawake wajawazito wanaoishi na VVU na wale ambao hawana VVU mkoani Mara.

Azma ya Utafiti

Katika utafiti huu tunawahoji akina mama wenye VVU na wasio na VVU waliojifungua kati ya Januari na Desemba mwaka 2012, kuhusu mahali walipojifungulia, sababu zilizowafanya wajifungulie mahali hapo, na taarifa zingine za kijamii, kidemografia na kikunga.

Ushiriki gani unaohitajika toka kwako

Ukiridhia kushiriki katika utafiti huu utahitajika kujibu maswali mbali mbali utakayoulizwa. Hatutachukua sampuli zozote kutoka mwilini kwako au kukupa dawa ya aina yoyote.

Usiri

Taarifa zote ambazo tutakusanya katika utafiti huu zitaingizwa kwenye kompyuta kwa kutumia nambari za utambulisho tu, na taarifa hizi zitakuwa ni siri.

Haki ya Kujitoa katika utafiti na njia mbadala

Kushiriki katika utafiti huu ni chaguo lako. Kama utakataa kujibu swali lolote utakaloulizwa hautaadhibiwa wala haitakukosesha faida yoyote ambayo ni haki yako. Unaweza kujitoa katika utafiti huu muda wowote hata kama tayari utakuwa umeridhia kwa kusaini hati ya makubaliano.

Faida

Tunaamini taarifa itakayotokana na utafiti huu itakunufaisha wewe na wengineo kwa kuhamasisha mabadiliko ya sera yatakayolenga kuboresha huduma za kinga na zile za tiba. Tunaamini hii itaongeza kasi ya utumiaji wa vituo vya kutolea huduma za afya kwa ajili ya kujifungua na hivyo kupunguza vifo vya akina mama vitokanavyo na uzazi, watoto wachanga, na watoto chini ya miaka mitano.

Mawasiliano

Kama utakuwa na maswali yoyote kuhusiana na utafiti huu mpigie mratibu wa utafiti Dr. Mukome Nyamhagatta wa Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili S.L.P 65001, Dar es Salaam. Kama utakuwa na maswali kuhusu haki zako kama mshiriki katika utafiti huu mpigie simu Prof. Mainen J.Moshi, Mwenyekiti wa Kamati ya Utafiti na Machapisho ya Seneti ya MUHAS, S.L.P 65001, Dar es Salaam. Simu:2150302-6, 2152489.

Sahihi:

Unakubali?

Mshiriki anakubali.....Mshiriki hakubali.....

Miminimesoma yaliyomo katika hati hii. Maswali yangu yote yamejibiwa vizuri. Nakubali kushiriki katika utafiti huu.

Sahihi ya Mshiriki..... Sahihi ya mtafiti msaidizi.....

Tarehe.....

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

Directorate of Postgraduate Studies

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Ref. No. MU/PGS/SAEC/Vol. VI/

22nd March, 2013

Dr. Mukome Nyamhagatta,
MMed Community Health,
MUHAS.

RE: APPROVAL OF ETHICAL CLEARANCE FOR A STUDY TITLED "THE RATE AND PREDICTORS OF HEALTH FACILITY DELIVERY AMONG HIV POSITIVE AND HIV NEGATIVE PREGNANT WOMEN IN MARA REGION"

Reference is made to the above heading.

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

Thus ethical clearance is granted and you may proceed with the planned study.

• Please liaise with bursar's office to get your research fund.

Prof. O. Ngassapa
DIRECTOR, POSTGRADUATE STUDIES

/emm

cc Vice Chancellor, MUHAS
cc Deputy Vice Chancellor – ARC, MUHAS
cc Dean, School of Public Health and Social Sciences - MUHAS