

**PREDICTORS FOR VESICOVAGINAL OBSTETRIC FISTULA AMONG MOTHERS  
ATTENDING KITOVU HOSPITAL IN MASAKA DISTRICT**

**BY  
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## DECLARATION

I Atuhaire Immaculate do hereby declare that to the best of my knowledge, this is truly my original research work and it has never been submitted to any University or Institution for the any award or any other academic qualification. All materials and resources used are duly acknowledged.

Signature.....

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## **APPROVAL**

This is to certify that the research report of Atuhairi Immaculate on “predictors for vesicovaginal obstetric fistula among mothers attending Kitovu hospital in Masaka district” has been done under my supervision and is now ready to be submitted as partial fulfillment of the requirement for the award of Master’s degree in Public Health of International Health Sciences University.

Signed: .....

**Mrs. KOMUHANGI ALIMAH**

**(SUPERVISOR)**

## **DEDICATION**

This report is dedicated to my parents and Director of Medicare Health Professionals College Dr. Kampikaho Alex.

## **ACKNOWLEDGEMENT**

I want to thank God for wisdom, courage and provision he gave me during this course.

I am so grateful to my supervisor Komuhangi Alimah (Mrs.) for the endless support, guidance and supervision she rendered to me all the time of my study but more especially in this research work.

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## **LIST OF ABBREVIATIONS AND ACRONYMS**

<b>A.N.C</b>	Antenatal care
<b>M.O.H</b>	Ministry Of Health
<b>NGOs</b>	Non Governmental Organizations
<b>R.V.F</b>	Recto Vaginal Fistula
<b>U.N.F.P.A</b>	United Nations Population Fund
<b>V.V.F</b>	Vesico Vaginal Fistula
<b>W.H.O</b>	World Health Organization

## OPERATIONAL DEFINITIONS

- Mothers** This term was herein used to refer to women who had ever become pregnant regards of the outcome of the pregnancy.
- Vesico-vaginal Fistula (VVF)** For the purposes of this study, VVF referred to presence of a hole/connection between the vagina and urinary bladder hence causing incontinence of urine.
- Fistula Repair** In this study, fistula repair meant a surgical procedure in which a hole that communicated between the vagina and bladder and/ or rectum is closed completely, thus terminating the leakage of urine and/or feaces from the vagina.
- Fistula camp** This was the specific period of time organized by the hospital to carry out massive fistula repairs.

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## ABSTRACT

**Introduction:** The vesico-vaginal is the most common of all the obstetric fistulae (Reassen, 2014). Estimates suggest that at least 3 million women in poor countries have unrepaired vesicovaginal fistulas, and that 30,000-130,000 new cases develop each year in Africa alone.

**Study methods:** This study was a retrospective case-control study design. A pretested researcher administered questionnaire was used to collect data from 50 cases (VVF patients) and 100 controls (mothers discharged from Kitovu hospital after giving birth). Data obtained was entered using Epi-data and analyzed by SPSS (Version 20). All significant variables (P-value < 0.05) at bivariate analysis were fed into the binary logistic regression model and those significant at this level were put in a multivariate model and predictors of VVF determined this way.

**Objective:** The main objective of the study was to determine the predictors for vesico-vaginal obstetric fistula among mothers attending Kitovu hospital in Masaka District so as to enhance the VVF preventive strategies.

**Results:** Married mothers were 3 times more likely to develop VVF compared to those who were not married (OR = 3.8), P-value = 0.000). Employed mothers were 4 times more likely to get VVF compared to those who were not employed (OR = 4.2; P-value = 0.001). Mothers who delivered a still birth for the pregnancy that led to VVF were 5 times less likely than those who gave birth to live babies. (OR = 0.2; P-value = 0.000)

### Conclusion and recommendations

Among the socio-demographic factors, only marital status and employment status were significant in the occurrence of VVF. No individual and health facility factors had a relationship with occurrence of VVF. Among the obstetric factors, only the outcome of the pregnancy (live still birth) had a relationship with the occurrence of VVF. VVF occurred mostly in mothers who did not have significant socio-demographic, individual, health facility and obstetric issues.

There is a need of wide spread health promotion activities in the prevention of VVF like mass campaigns and carrying out health education about VVF during antenatal.

# CHAPTER ONE

## INTRODUCTION

### 1.0 Introduction

This chapter presents the introduction to the study area, background of the study, statement of the problem, research objectives, research questions, significance of the study and conceptual framework.

### 1.1 Introduction to the study

Obstetric fistulae are abnormal communications created between the vaginal wall and the bladder (vesico-vaginal fistula) or the rectum (recto vaginal fistula) (WHO, 2006). It is usually caused by childbirth (obstetric fistula) when the head of the baby in prolonged labour presses the vesico-vaginal walls leading to death of the affected area later after child birth, the affected area sloughs off, creating a hole between vagina and urinary bladder hence a vesico-vaginal fistula.

Vesicovaginal fistula is known to be subtype of female urogenital fistula (UGF). The vesicovaginal fistula is an abnormal fistulas tract extending between the bladder and the vagina that allows the continuous involuntary discharge of urine into the vaginal vault (Forsgen et al, 2009). The loss of the bladder tissue from pelvic ischemia during obstructed labor affects both the technique needed for as well as the functional outcome of fistula repair. However some fistulae can be prevented by prompt treatment of women who arrive at a health facility immediately after obstructed labor because some fistulae can close spontaneously after a prolonged period of emptying the bladder.

Vesico-vaginal fistula (VVF) is a devastating outcome from prolonged labour, which every day complicates a significant number of deliveries in the developing world. Studies in Nigeria have indicated an incidence of 1% of all deliveries; and in Ethiopia, 1000 cases are estimated to occur every year (Cottingham J, 1991).

This VVF occurs more often in primigradae than in multipara and this can be prevented by preventing pregnancy through use of family planning methods. Regardless of the cause, vesicovaginal fistula has profound and devastating consequences for the patients which hinder them from engaging in any economic activity thus becoming economic burden to the society.

However, prior to the middle of the 19<sup>th</sup> century, an obstetric vesicovaginal fistula was generally regarded as an incurable and hopeless condition, the American surgeon Mation and his colleague Thomas established that surgical cure could be undertaken for this condition (Zacharin, 1988).

## **1.2 Background to the study**

WHO in 2006 estimated that, two million women have untreated obstetric fistula with a worldwide incidence of 1-2/1000 deliveries but with the biggest portion living in sub-Saharan Africa (Tuncalp, 2012). The vesicovaginal is the most common of all the obstetric fistulae (Reassen, 2014). Estimates suggest that at least 3 million women in poor countries have unrepaired vesicovaginal fistulas, and that 30,000-130,000 new cases develop each year in Africa alone. Throughout the world, but mainly in parts of sub-Saharan Africa and Asia, it is conservatively estimated that more than 2 million young women live with untreated obstetric fistula. It has also been estimated that between 50 000 and 100 000 new women are affected each year (Columbia University , 2002).



Wall (1988), suggested that 100 000 to one million women are living with fistula in Nigeria alone (Wall, 1998, 19 (4):341-359) and over 70 000 in Bangladesh (Kamal, 2000). It is estimated that 13.2% of fistulae results are from provider error. A review by Reassen (2014) found out that 4 in 5 fistulae developing follows surgery for obstetrics complications. Though it is estimated that fistulae affects 1-2/1000 deliveries and with a corresponding worldwide ratio of 50,000 to 100,000 new cases annually, it's hard to get the actual figure since most of these cases happen in remote geographical setting. Stanton and colleagues in 2007 stated that the prevalence of obstetric fistula in sub-Saharan Africa to be 188/100,000 among women aged 15-49 years with vesicovaginal fistula accounting 79% of the total cases (Tebeu, 2012).

In sub-Saharan Africa the incidence of vesical vaginal fistula has been estimated to be about 124cases per 100,000 deliveries in rural areas, compared with virtually no cases in major cities (Kelly, 1993). Like many other women in remote areas of poor countries, most women who develop untreated fistula give birth at home, without assistance from skilled birth attendants.

According to UNFPA (2007), vesicovaginal fistula accounted for 350/10,000 deliveries in 2001 in Zambia which was generally very high.

Other studies in Ethiopia, Nigeria and other parts of West Africa have projected the incidence of fistula to be 1–10 per 1 000 births (Wall, 1998, 19 (4):341-359). In Ethiopia alone it is estimated that 9000 women annually develop a fistula, of which only 1 200 are treated (Technical Support Division-London, 2001).

In Uganda it has been predicted that 2,000 new cases of obstetric fistulae are recorded every year and 2.6% of women of reproductive age have experienced symptoms of an obstetric fistula. This equates to a prevalence of approximately 142,000 women (Creanga & Arinitwe, 2008). In the same country, between 1999 and 2003, 341 consecutive patients underwent VVF repair complicating child birth trauma. Another 29 VVF patients were seen but not operated because of time constraints (Brian & Mhairi, 2004).

Kitovu Hospital is one of eight hospitals in Uganda that are able to provide fistula repair surgery and it is the Ugandan Ministry of Health's aim is that every referral unit should have people trained to do the repair surgery. Since 2006 1,886 women have had obstetric fistula repair surgery (Dr. Maura Lynch, the project director). VVF workshops are offered several times a year, each lasting for two weeks. Experienced doctors from all over the world visit Kitovu for these workshops, and their work enables 60-100 women to receive treatment each time.

Among the underlying causes of vesicovaginal fistula include biological, social, cultural, behavioral and environmental and its upon this background that the researcher would want to establish the predictors for vesicovaginal obstetric fistula among mothers attending Kitovu fistula hospital in Masaka district.

### **1.3 Statement of the problem**

VVF is preventable and treatable; yet it is one of the disturbing conditions among females admitted in Kitovu hospital. Apart from the fact that the abnormal fistulous tract extending between the bladder and the vagina allows the continuous involuntary discharge of urine into the vagina, the condition also has a profound effect on the patient's emotional well-being. Slightly more than half (55%) of the patients in Kitovu Hospital that undergo V.V.F repairs completely heal, implying that the remaining percentage have to live with effects of VVF for the rest of their lives (Kajunjo et al; 2014).

Vesicovaginal fistula still poses a huge public health threat and this can be seen during the VVF camp weeks at Kitovu hospital and it accounts for 79% of all cases of obstetric fistulas (Tebeu, 2012).

Despite the fact that the government of Uganda has implemented the 5km radius to increase accessibility, improved staffing of health workers through collaboration of ministry of health and public service so as to improve client-health worker ratio, encouraging women to deliver from health facilities, encouraging pregnant women to attend antenatal care during their pregnancy, the prevalence of women with VVF attending Kitovu hospital has not reduced (Creanga & Arinitwe, 2008).

If the problem is not addressed, women will continue facing social humiliation, shame and embarrassment and they will become outcasts in the society due to pungent smell and wetness from urinary incontinence (Creanga & Arinitwe, 2008).

Therefore, it is upon this background that the study to establish predictors for vesicoviginal obstetric fistula among mothers was conducted so as to enhance the preventive strategies while using mothers attaining health services from Kitovu hospital, Masaka district as a case study.

## **1.4 Objectives of the study**

### **1.4.1 General objective**

To determine the predictors for Vescicovaginal obstetric fistula among mothers attending Kitovu hospital in Masaka District, Uganda so as to enhance the VVF preventive strategies.

### **1.4.2 Specific objectives**

1. To identify the socio- demographic characteristics of women with vescicovaginal obstetric fistula among mothers attending Kitovu hospital in Masaka district in the period between June-October 2016.
2. To identify individual factors of women that contributes to vescicovaginal obstetric fistula among mothers attending Kitovu hospital, Masaka District in the period of June – October 2016.
3. To assess the health service related factors contributing to vescicovaginal obstetric fistula among mother attending Kitovu hospital, Masaka District in the period of June – October 2016.
4. To establish obstetric factors contributing to vesicovaginal obstetric fistula among mothers attending Kitovu hospital, Masaka District in the period of June- October, 2016.

### **1.5 Research questions**

1. What are socio- demographic characteristics of women with vesicovaginal obstetric fistula among mothers attending Kitovu hospital in Masaka district in the period between June October 2016?
2. What are individual factors of women that contribute to vesicovaginal obstetric fistula among mothers attending Kitovu hospital, Masaka District in the period of June October 2016?
3. What are the health service related factors contributing to vesicovaginal obstetric fistula among mother attending Kitovu hospital, Masaka district in the period between June October 2016?
4. What are the obstetric factors contributing to vesicovaginal obstetric fistula among mothers attending Kitovu hospital, Masaka district in the period of June October 2016?

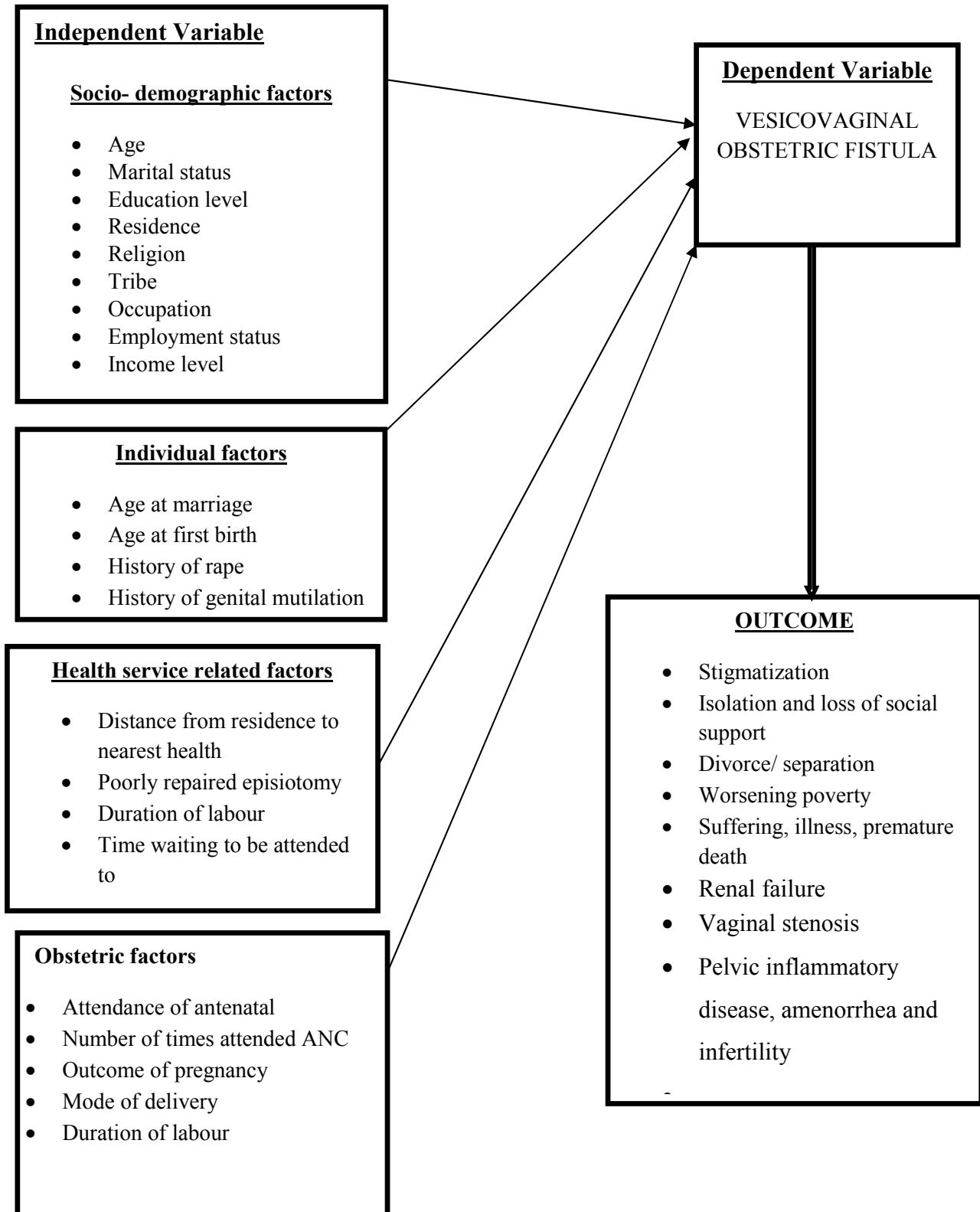
### **1.6 Significance of the study**

The results from this study will be useful to the women of the reproductive age group in a way that it will act as their voice to represent them to relevant bodies which in turn will yield to improved maternal services.

The results from the study will also be helpful to other researchers. This will enable different scholars to explore possible areas for advocacy of VVF services.

This study results will provide evidence based knowledge about predictors of VVF for the policy makers to enable them design appropriate interventions and policies to help out the affected women

## 1.6 Conceptual framework



The dependent variable is the occurrence of VVF and predictors are the independent variables.

There are several predictors presumed to influence the occurrence of VVF and among them are the: socio demographic factors (age at interview, marital status, religion, respondent's education, Employment status, source of income, amount earned).

The individual factors that could influence the occurrence of VVF (age at marriage, age at first birth, history of rape, history of genital mutilation, parity, accompanied by the husband).

Health service factors (distance from residence to nearest health, told baby's presentation, discussion about the delivery plan, time waiting to be attended to).

There are also several obstetric factors that could one way or the other predict the occurrence of VVF, and these include; parity, antenatal care attendance, number of antenatal visits, use of herbs in pregnancy and labor, attending antenatal health education classes); This conceptual framework also portrays intermediate variables which can contribute to high rates of VVF (culture, nutrition and awareness about VVF).

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter presents the literature that was done by other scholars about vesicovaginal fistula and is arranged in regard to the study specific objectives which are: to identify the socio-demographic characteristics of women associated with vesicovaginal obstetric fistula, individual factors of women contributing to vesicovaginal obstetric fistula, the health service related factors contributing to vesicovaginal obstetric and obstetric factors contributing to vesicovaginal obstetric fistula among mothers attending Kitovu hospital, Masaka District in the period of June- September, 2016.

#### **2.1 Socio- demographic characteristics of women with vesicovaginal obstetric fistula**

According to John Kyanda (a gynaecologist at Mengo hospital), any woman can get fistula but it is more prevalent among the poor, illiterate and those living in rural areas. This is because most of these women do not know the necessity of antenatal care, while others who live far away from health facilities are too poor to access antenatal care and delivery services in time hence forcing them to seek health services from TBAs who expose them to fistula by forcing them to push even when a cesarean section is needed (New Vision, Monday, May 23<sup>rd</sup>, 2016).

According to Peter Mukasa Kivunike, a technical specialist in fistula at ministry of health, VVF is common among young mothers who conceive before 20 years since their pelvic bones are not fully developed to support delivery (New Vision, Monday, May 23<sup>rd</sup>, 2016).



According to Ngoma (2010), Women in developing countries particularly girls in Africa, are married at a tender age and this increases the possibility of obstructed labor especially in rural areas where there is inadequate health facilities and childbearing are common. Although girls are capable of becoming pregnant at a relatively early age, their pelvis would not have developed to their full capacity to accommodate childbearing. Most of these girls' lives are destroyed by obstetric injury as most of them have not attained full adulthood. In most cases, the average age of a fistula patient is 25 years or less, and many are as young as 13 years (Ngoma, 2010).

In a similar vein, a study done by Daru et al (2011) established that seventy percent (70%) of the patients were married and living with their husbands. Of those who had urinary diversion, 4 (30.7%) were living with their husbands, 2 (15.3%) divorced, while the marital status of 7 (54%) was not stated. Most (65%) of the patients had no formal education and were mainly farmers in 55% of cases. Sixty percent (60%) of the patients were Christians, 40% were Muslims while less than 1% practiced traditional religion. Forty-eight (48%) percent of the patients delayed for over a year, while 5.7% waited for more than 20 years before presentation at the hospital (Daru & Karshima, 2011).

Low literacy levels, especially among women in rural areas, continue to perpetuate misconceptions and superstition. Women in general are not recognized as equal partners in relationships and marriages and there is still an expectation that women will have children because it is their duty rather than their choice or desire. As a result, women affected by obstetric fistula tend to remain invisible and the silence that surrounds their suffering is an additional burden that increases their difficulties at individual level as well as in their relationships with their partners, husbands, families and communities (Daru & Karshima, 2011).

Illiteracy levels seem to be a major determinant factor in the incidence of Vesico vaginal fistula. Education determines the kind of health assistance to seek after when the need arises. Education reduces the incidence of high-risk pregnancies and unwanted pregnancies since with education, you can rightly distinguish between what is good and bad, right or wrong, and it can always be applied to one's utmost benefits (Prof. Bimbola, 2013). With education no woman will want to remain at home during delivery and being attended to by a stark illiterate birth attendant with all sorts of unsterilized and crude instruments hence the occurrence of VVF.

Wall et al also established that young girls and women (aged 10 to 19) suffer disproportionately from fistula. Although more women aged 20 to 45 give birth than women in the age group 10-19 years, close to 50% of all fistula cases occur in women aged 10-19 years. In Jos, Nigeria, 45.8% of the fistula cases occurred in primiparous women (Wall & Karshima, 2004).

A Nigerian case-control study of 241 cases of fistula and 148 controls found that 27% occurred in women 15 years old or younger, and 59% occurred in women 18 years old or younger. Earlier age at marriage was also significantly associated with risk of fistula (Daru & Karshima, 2011).

Also Monseur (1980), confirmed this in his study of 100 cases of extensive uro-genital necrosis at the National University in Lubumbashi, Zaria from 1966-1976, reported that 80% percent of the 17 cases analyzed were under 25 years old, and 40% under 20. Lending credence to these studies is another study carried out by Docquier and Sako (1983), in Niamey Hospital in Niger of 283 patients with vesico-vaginal fistulae out of which 28 recto-vesico vaginal fistulae were found, and 3 of them later died. Of the remaining 25, 20 (80%) were aged 15-19, and 18 (72%) were primiparae.

Furthermore, Haile (1983), using a questionnaire, and an inquiry into the clinical records of 18 obstetric fistula patients found out that their marriages were arranged by their parents when they were as young as 5, and the age distribution indicated that 50% of the women were aged between 15 and 20 years. In communities where early marriage is the norm many girls become pregnant in their early teens before the pelvis is fully developed. These girls have high risk of obstructed labour and ultimately VVF or maternal death.

Another study in Zaria, Nigeria by (Harrison, 1985) revealed that 20% of fistula patients fell under age 16 compared with only 11% in the entire obstetric population. The majority of studies from Africa especially Northern Nigeria where age is analyzed show that 80% of the women with fistulae are between the ages of 9-30.

However this contradicts with the study done in Uganda which revealed that the mean age was 27 years for obstetric fistula and the mean duration of the fistula was 6 years hence a need for this study to establish socio- demographic characteristics of women associated with vesicovaginal obstetric fistula (Brian & Mhairi, 2004).

The delay in seeking medical care often arises from the lack of trained birth attendants who can recognize impending complications. In many unattended births, women and their families do not recognize life-threatening complications early enough to access treatment. Another cause of this initial delay may be the fear of high costs associated with seeking medical treatment (Kamal, 2003).

The same study done in Bangladesh revealed that about 68% were illiterate and 22% had received formal education up to 5 years. 52% of respondents had a family income up to Tk. 1000/ only. Almost all respondents were Muslims (94.7%). 64.6% of respondents had a home delivery assisted by TBA and 72% had a history of prolonged labor. Fifty six percent of respondents did not feel comfortable using the health facilities of the nearby health clinic/hospital because of lack of privacy, objection from husband/family, and because of deliveries were carried out by male doctors (Dr. Muhammad Shan Alam).

## **2.2 Individual factors of women contributing to vesicovaginal obstetric fistula**

In a case-control study of risk factors of vesico-vaginal fistulae in Maidugiri, Nigeria discovered that VVF patients married at an earlier age on average than controls. The difference in age at marriage was found to be significant contributor of VVF.

Also more than a quarter (30%) of these fistulae occurred in women who delivered before they were age 15, and more than half (58.8%) of them delivered before 18 years (Prof. Bimbola, 2013).

According to the study done in Nigeria by Daru et al, they found out that the mean parity of women with VVF was 3.7 (Daru & Karshima, 2011).

Even though female genital cutting engages the external genitalia and has no effect on the pelvis where obstruction requiring Caesarean Section mostly occurs, there is a well-liked belief that female genital mutilation increases the jeopardy of fistula formation (Browning, 2010). It is possible that female genital mutilation may cause direct trauma to the urinary tract during the procedure. The vaginal opening may also be too small, causing a delayed second stage labour. Under such circumstances, an extended midline episiotomy may be performed, leading to recto-vaginal fistula (Wall 2001). What remains clear in areas where female genital cutting is practiced there are also other factors leading to obstetric fistula such as early marriage and poor empowerment of women in general (Browning, 2010).

A study by Dr. Muhammad Shah Alam on 132 VVF patients was conducted to assess and identify the social risk factors related to obstetric fistula. About 54% of the respondents developed VVF as an outcome of their first pregnancy and none of them had a living child, and 39% fell in the age group 15-20 years (Dr. Muhammad Shan Alam -Associate Professor- Department of Obs/Gyn).

Sexual assault has been linked to obstetric fistula, especially in conflict settings. In a retrospective study of 604 consecutive patients seeking treatment for fistula in the Democratic Republic of Congo, 24 (4%) had fistula related to sexual assault: 5 (0.8%) directly from forced

penetration with foreign objects and/or gang rapes; 6 had a fistula before they were raped; 9 had iatrogenic fistulas following inappropriate instrumentation to manage rape-induced spontaneous abortion or stillbirth, or after abdominal hysterectomy, and 4 developed fistulas after prolonged and obstructed labour (Cottingham J, 1991).

A study done by Kamal (2003) at community level, out of 132 VVF patients were recruited to assess and identify the social risk factors related to obstetric fistula<sup>14</sup>. About 54% of the respondents developed VVF as an outcome of their first pregnancy and none of them had a living child, and 39% fell in the age group 15-20 years (Kamal, 2003).

Another individual contributor to VVF is the lack of decision-making power available to women, even in decisions pertaining to their own health. This situation has been found to be particularly true for women in seclusion (Wall & Karshima, 2004). The existence of this problem is a major determinant in the health seeking behaviour of women. For example, if labour becomes obstructed and all local methods fail, a woman may be taken to hospital only if consent is given by her husband or sometimes her mother-in-law. Most times the decision comes too late. Depending on the distance to the nearest hospital, such women and/or their babies may not make it alive; if they do, permanent damage to the internal organs would have occurred.

### **2.3 Health service related factors contributing to vesicovaginal obstetric fistula**

Lack of access to appropriate emergency obstetric care Tebeu et al highlighted it as one of the main risk factor for obstetric fistula (Tebeu, Fomulu, & Khaddaj, 2012). Access to appropriate obstetric care is compromised by poverty and the dynamics in the health care system including the cost of a caesarean section and availability of service providers. Significantly more of the

patients with fistula were living far from the nearest comprehensive Emergency Obstetric Care (EmOC) facilities with a median distance of 17.5 km compared to 5 km among the controls (Barageine & Tumwesigye, 2014).

In Ethiopia, more than 60 per cent of the women with obstetric fistula are primiparas, with average labour duration of 3.9 days (Thomson, 2007).

The delay in getting care at the facility is the most critical one and should be addressed as a matter of priority. It requires ready access to surgical supplies, adequately trained personnel and operating theatres. In many cases, it may mean expediting or waiving the hospitals' fee requirements (Kamal, 2003). Strategies to address VVF must aim to tackle the prevention to care continuum, thus including preventative methods (postponing marriage and pregnancy for young girls and increasing access to education and family planning services for women and men, and providing access to quality medical care for all pregnant women to avoid complications), and curative methods (repairing physical damage through surgical intervention); and rehabilitative methods (repairing emotional damage through counseling, social rehabilitation and vocational training). Fistula prevention requires good management of labor with a partograph, early diagnosis of prolonged and obstructed labor and timely referral to an obstetric care facility. At facilities, punctual surgery should be available. The waiver of hospital user fees for maternity care can facilitate this (Columbia University , 2002).

It is estimated that 13.2 percent of genitourinary fistula results from provider error. In one review, four out of five iatrogenic fistulas developed following surgery for obstetric complications: cesarean section, ruptured uterus repair, or hysterectomy for ruptured uterus. Hysterectomy was the most common gynecological procedure leading to fistula (Raassen 2014).

In their prospective study by Landry and colleagues (2013), found that the overall median travel time to the treatment facility was five hours; women in Guinea had the longest delay (median 24 hours); women in Nigeria, the shortest (median 2 hours). Clearly, if a woman had already labored at home in the hopes of delivering, the extra amount of time spent on the way to hospital only further complicates the issue.

Once a woman arrives at the facility, she may not access adequate care, due to a lack of staff or unfriendly staff, supplies, or electricity (Abrams, 2013).

Insufficiently skilled staff may mean that the woman may not get the care that is needed or when provided, results in complications with less chances of timely referral (Raassen,2014).

These delays may, other than synergy, trigger a vicious cycle e. g if a woman reaches the facility, workers with poor attitude may quarrel why she came late, or embarrass her if she is too young.

Where maternity care is not free, extra costs for caesarean section or costs of fistula repair may push the family further into poverty. Eventually, the woman may be discouraged to seek care from the facility next time she is in labour (Abrams, 2013).

#### **2.4 Obstetric factors contributing to vesicovaginal obstetric fistula**

The baby's weight of 3.5 kg or more was a significant risk factor for fistula. This can be explained by the fact that a big baby is more likely to lead to obstructed labour due to cephalo-pelvic disproportion as has been highlighted in other studies (Tebeu, Fomulu, & Khaddaj, 2012).

This calls for vigilant screening for foetal size through well trained/skilled midwives assessing the pelvis and also the use of ultrasound to identify large babies followed by a planned delivery and extra monitoring.



Also attending antenatal care is another factor that is associated with VVF. A case-control study was done in Kenya's selected hospitals and it revealed that despite the fact that more than 96 out of 100 women had attended antenatal care in cases and controls, the fistula patients took twice as long time to make a decision to seek care compared to the controls. This delay in seeking care may be explained by the fact that despite women attending, the antenatal care messages may not be well packed to emphasize delivery under skilled attendance (Roka et al, 2013).

Obstructed labour that is not attended to in time or totally unattended is the most common final pathway that begets obstetric fistula. However, a variety of predisposing factors come into play (Columbia University , 2002).

Teenage pregnancies constitute a large proportion of pregnancies in developing countries (7-30%), and because teenage pregnancy is associated with cephalopelvic disproportion, efforts in reducing obstetric fistulae should focus on prevention of teenage pregnancy (Tebeu, 2012).

According to the study done by Kafunjo et al in western Uganda, time spent at the health facility before delivery, delivery attendant, a woman being told the baby's presentation, use of herbs during pregnancy, having a delivery plan, husband accompanying the wife during antenatal care, attending antenatal care services and the number of times a woman attends antenatal care clinic were not associated with fistula in this study (Kafunjo & Mbona, 2014) while Primiparas, use of local herbs in labour, not attending antenatal classes, delivery by caesarean section were found to be statistically significant.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.0 Introduction**

This chapter presents the study design, study population, data collection tools, sample size determination, justification of the study, background to the study area, sampling procedure, data management, data analysis and ethical considerations.

#### **3.1 Study Area**

The study area was Masaka district. The district is bordered by Bukomansimbi district to the north-west, Kalungu district to the north, Kalangala district to the east and south, Rakai district to the south-west, and Lwengo district to the west.

#### **3.2 Scope of the Study**

The study was done at Kitovu hospital. Kitovu hospital is located within Masaka municipality (population of 74,100); within Masaka district (population of 249,200), Uganda (population of 34 million, 89% of which live in rural areas). The hospital is 130km south of Kampala and 3km from Masaka Town.

The Obstetric Fistula VVF Clinic at Kitovu Mission Hospital was founded and developed by Dr Maura Lynch, an Irish surgeon who has settled in Uganda. Dr Lynch was granted Honorary Fellowship of the RCOG in 2013. Through her vision, the Clinic provides a free fistula repair service, undertakes the surgical repair of over 250 women every year through the commitment of visiting international surgeons such as Dr Shane Duffy FRCOG and Dr Andrew Browning MRCOG.

Currently the fistula service comprises 4 camps per year of two weeks duration each, staffed by experienced overseas surgeons, repairing 60-80 fistulae per camp.

The hospital also offers services like community based/primary health care program, nutrition Education/Rehabilitation Unit, Psychological and Counseling Unit, Regional Blood Bank, Laboratory Assistant Training School, training center for doctors and nurses in VVF repair and caring for VVF sufferers, Ugandan Intern doctors training program (linked with Makerere University), AIDS Care and Treatment Program, neo-natal Care Unit and international programs for overseas medical experience.

### **3.3 Study Design**

This study was a retrospective case-control study. This type of study was chosen because it is efficient for rare diseases like VVF, less costly and less time-consuming. This study included 50 cases (confirmed VVF cases) and 100 controls (women without VVF). They were interviewed using a similar questionnaire in order to determine the relationship between these risk factors and the occurrence VVF.

### **3.4 Study Population**

The study population was the VVF patients obtaining their healthcare services at Kitovu hospital irrespective of duration of the condition and controls were women who gave birth from Kitovu hospital and were being discharged from the hospital.

### 3.5 Sample Size Determination

The Israel method of sample size calculation was used to calculate sample size

Sample Size Formula

$$N/1+Ne^2$$

Where,

N = population size

e = Acceptable sample error

Population for Kitovu fistula hospital is 60-80 patients per camp session

$$=60/1+60(0.05)^2 \text{ taking 95\% confidence interval}$$

$$=60/1.15$$

$$=52$$

Approximately 50 cases will be interviewed in the study.

And a double number of controls were recruited into the study i.e. 100 respondents in order to increase the precision of the study.

### 3.6 Sampling Procedure

In this study a census was done to obtain the cases since it's a rear condition. All cases with VVF who turned up for the two VVF camps at Kitovu hospital between June and October were all recruited into the study.

A simple random sampling was done for controls to reduce bias since this procedure provides equal chance of participating in the study. Lottery method was used in which pieces of papers written on **Yes** and **No** were provided to women who gave birth from Kitovu and were being discharged and those who picked **Yes** participated in the study while those who pick **No** were

excluded from the study. This procedure was done until the required number (100) of controls was obtained.

### **3.7 Inclusion criteria**

This study included all women with VVF attaining their health services at Kitovu-fistula hospital who attended August and October camps and who consented to participate in the study.

It also included mothers who had given birth from Kitovu hospital and had been discharged from the hospital without fistula and only those who consented to participate in the study.

### **3.8 Exclusion criteria**

Women with VVF that were too ill to be interviewed and those who refused to consent to participate in the study.

Women with other obstetric conditions like RVF and fibroids.

### **3.9 Sources of Data**

Primary data was obtained from respondents enrolled in this study while using researcher administered questionnaires. Research assistants asked questions to respondents and answers given were written down by the research assistant.

Primary data was also obtained from the key informant interviews where administrators from Kitovu hospital and from VVF department were asked general questions about VVF and mothers.

Secondary data was obtained from the database of the hospital and published literature from Kitovu-fistula hospital after seeking permission from the administrators of Kitovu hospital.

### **3.10 Study Variables**

#### **3.10.1 Dependent Variable**

Presence Vesicovaginal fistula (VVF).

#### **3.10.2 Independent variables**

The following independent variables were measured to determine the predictors for VVF among mothers attending Kitovu Hospital.

##### **1. Socio-demographic factors**

- Age at interview
- Marital status
- Religion
- Respondent's
- Education
- Employment
- Main source of income
- Amount of income earned monthly

##### **2. Individual factors**

- Age at marriage
- Age at first pregnancy
- History of sexual rape
- Age of first birth
- Making a decision
- Number of pregnancies

- Number abortions
- Number children born dead
- Where labour pains begun

### **3. Obstetric factors**

- Antenatal care attendance
- Number of antenatal visits
- Being accompanied by the husband
- Having a delivery plan
- Use of herbs in pregnancy and labour
- Mode of delivery
- Delivery outcome

### **4. Health service factors**

- Delay at health facility
- Type of health facility
- Distance to the nearest health facility and
- Time taken while waiting to be attended to

#### **3.11 Data collection/methods**

Data was collected by face-face interview using interviewer administered questionnaires by the trained research assistants. The questionnaire was both qualitative and quantitative in order to get in-depth information that can enrich the study.

A key informant interview was done among the specialists in obstetric care and mid-wives at Kitovu-fistula hospital.

### **3.12 Description of the tools**

Interviewer administered questionnaires contained four sections according to the specific objectives. It has a total of 33 questions and the study participants were required to answer the questions and seek clarifications where necessary.

The key informant consist a total of 5 open ended questions which are divided along prevention and treatment categories. They were administered to health workers who had been in direct contact with patients with VVF at Kitovu hospital and mothers who gave birth from Kitovu hospital.

### **3.11 Quality Control**

The questionnaire was first piloted using 10 women who had VVF and were obtaining their healthcare from Kitovu hospital in Masaka to check if the tool was collecting information that it was intended for. All the anomalies identified were collected hence making it a suitable tool for data collection.

### **Pre-visit to study area**

The pre visit was done one month before the actual week for data collection to establish the clinic days (Camp week) when patients are hypothetically many. This did not only ease data collection but also helped the researcher to understand the natural setting of Kitovu hospital.

### **Training research assistants**

The research assistants were trained to use the research tool. This included explaining terms used in the questionnaire and also gave them a chance to ask any question for clarification from the researcher.



### **Editing of data**

The researcher checked questionnaires to ensure their completeness and cross-checked if the responses given made some sense and it was done every day to avoid bulkiness of the questionnaires.

### **Validity and reliability tests**

The data collection tool was piloted and revised to ensure reliability and clarity in a way that it would meet the study objectives.

There was training of research assistants so that they get acquainted with the tool and to reduce on the interview fatigue to minimize errors.

Also the researcher briefed the research team to ensure that they understood purpose of research and methods to be followed.

### **3.12 Data Management and Analysis**

Data analysis for predictors for vesico-vaginal fistula was done using the statistical package for social scientists (SPSS 20). Data collected was first coded and entered in the computer by a data entry clerk using Epi-data entry sheet.

### **Univariate analysis**

Frequencies were used to clean data. Mothers (variables) were compared with the presence or absence of VVF in a cross-tabulation.

### **Bivariate analysis**

Each variable was first tested alone (individually). Statistical significance ( $p < 0.05$ ) was evaluated by the Pearson Chi-square Test. Where there were less than mothers expected in any cell of the table, the fisher's Exact Test was used. At this stage, all variables that are not significant were dropped.

### **Multivariate level**

The significant ones were used to construct logistic regression models. This was done by starting with two significant variables and examining their significance in the model. The non significant variables were dropped and this continued for all significant variables until one model of significant variables was achieved. The variables in this model were the main risk factors for occurrence of vesico-vaginal fistula.

### **Qualitative data**

Qualitative data was first summarized and similar responses were coded for analysis. The results obtained were used to back-up the quantitative data.

### **3.13 Ethical considerations**

This study before it commenced, it received an ethical approval from International Health Sciences University and got an approval clearance from the hospital where the study was to be carried out.

Respondents were given detailed information about the study before their enrolment. The participation was purely voluntarily and no one was denied access to services because of refusal to participate in the study. The information obtained was kept confidential by using serial numbers as opposed to names and was only used for the purposes of this study.

Informed written consent was obtained from respondents before participating in the study. Those below the age of 18 years, their guardians or people accompanying them consented on their behalf. Participants did not gain anything financially.

### **3.14 Plan for data dissemination**

A copy of this report shall be submitted to the institute of IHPM at International Health Sciences University, another copy be submitted to Kitovu hospital and lastly to Ministry of health for advocacy.

## **CHAPTER FOUR: RESULTS**

### **4.0 Introduction**

This chapter presents data analysis, presentation and its interpretation in accordance with the level of analysis.

### **4.1 Descriptive analysis**

#### **4.1.1 Socio-demographic characteristics**

The majority of the cases were between 21-25 years (12 respondents). The popular tribe of the cases was Buganda (26 respondents); The majority of the cases were married (28 respondents); The majority of respondents were Catholics (24 respondents). Vast majority of respondents were employed (35 respondents). The majority earned between 10,000-110000 shillings monthly

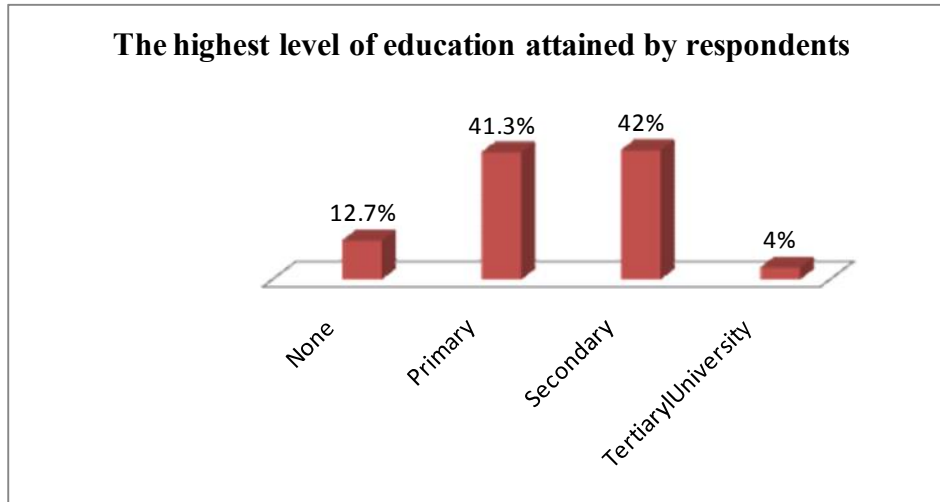
**Table1: A table showing socio-demographic characteristics**

Variable	Presence of VVF		Total	
	Yes (Cases)	No(Yes)		
Age of the mother	Below 15 years	2	0	2
	15-20 years	6	15	21
	21-25 years	12	40	52
	26-30 years	9	34	43
	Above 30 years	21	11	32
Total	50	100	150	
Tribe	Munyankole	11	32	43
	Muganda	26	54	80
	Others	13	14	27
Total	50	100	150	
Marital status	Married	28	83	111
	Not married	22	17	39
Total	50	100	150	
Religious affiliation	Catholic	24	72	96
	Protestant	11	15	26
	Born again	8	8	16
	Moslem	6	5	11
	Others	1	0	1
Total	50	100	150	
Highest level of education attained	None	11	8	19
	Primary	27	35	62
	Secondary	12	51	63
	Tertiary/ vocation/university	0	6	6
	Total	50	100	150
Employment	yes	15	65	80
	No	35	35	70
Total	50	100	150	
Main source of income	Formal employment	1	19	20
	Business	2	38	40
	Farming	10	8	18
	Others	2	0	2
	Total	15	65	80
Approximate amount earned	10,000-100,000 shillings	9	17	26
	110000-200,000	4	35	39
	Above 200,000	2	13	15
Total	15	65	80	

#### 4.1.2.1 The highest level of education attained by respondents

The bigger proportion of respondents had attained secondary level of education (42%).

**Figure 1: A graph showing the highest level of education attained by respondents**



#### 4.1.2 Individual factors

The majority of respondents were in the age group of 21-25 years (55 respondents) compared to those who were below the age of 15 years (4 respondents); The majority had 4 pregnancies and below (97 respondents) compared to 53 respondents who had had above 4 pregnancies; The vast majority had never had abortion (109 respondents) compared to those who had had abortions (41 respondents); The majority had never delivered a dead baby (108 respondents) compared to those who had delivered a dead baby; Slightly above average mothers were being accompanied by the father of the baby (81 respondents) compared to those who were not accompanied by the father of the child (60 respondents); The majority of mothers didn't make decisions on where to give birth from (117 respondents) compared to the minority who made decisions on their own (30 respondents); The vast had no history of rape or FMG (148 respondents) and (149 respondents) respectively.

**Table 2: A table showing the individual characteristics of respondents**

variable	Presence of VVF		Total	
	Yes	No		
Age of getting pregnant	Below 15 years	4	0	4
	15 -20 years	40	31	71
	21-25 years	6	49	55
	26-30 years	0	20	20
Total	50	100	150	
Number of pregnancies ever had	4 and below pregnancies	33	64	97
	Above 4 pregnancies	17	36	53
Total	50	100	150	
Number of abortions ever had	yes	10	31	41
	No	40	69	109
Total	50	100	150	
Have ever delivered a dead baby	Yes	24	18	42
	No	26	82	108
Total	50	100	150	
were you accompanied by the father of the baby	Yes	15	66	81
	No	26	34	60
Total	41	100	141	
Who made the decisions of where you gave birth from	Herself	9	21	30
	Husband/Any relative	38	79	117
Total	47	100	147	
Do have any history of rape	Yes	2	0	2
	No	48	100	148
Total	50	100	150	
Do you any history of FGM	Yes	1	0	1
	No	49	100	149
Total	50	100	150	

**Source: Primary data**

### 4.1.3 Health system related factors

The vast majority were not told that they had any abnormality with the pregnancy (130 respondents); also the majority were not told that the child had abnormality during pregnancy (129 respondents); the average number of mothers were able to discuss about the delivery plan with the health workers (71 respondents); the greatest proportion waited for less than 2 hours (135 respondents); the majority lived within the radius of more than 5 kms (85 respondents).

**Table 3: A table showing Health system factors influencing VVF**

Variables		Presence of VVF		
		Yes	No	Total
If yes, were are told that you had an abnormality with your pregnancy	Yes	7	4	11
	No	34	96	130
	Total	41	100	141
Were you told that the child had an abnormality	yes	6	6	12
	No	35	94	129
	Total	41	100	141
Distance between you place of residence and where you delivered from	Less than 5 kms	20	44	64
	More than 5kms	29	56	85
	Total	49	100	149
How long did you take at the health facility while waiting to be attended to	Less than 2 hours	36	99	135
	2 hours-4 hours	4	1	5
	Above 4 hours	7	0	7
	Total	47	100	147

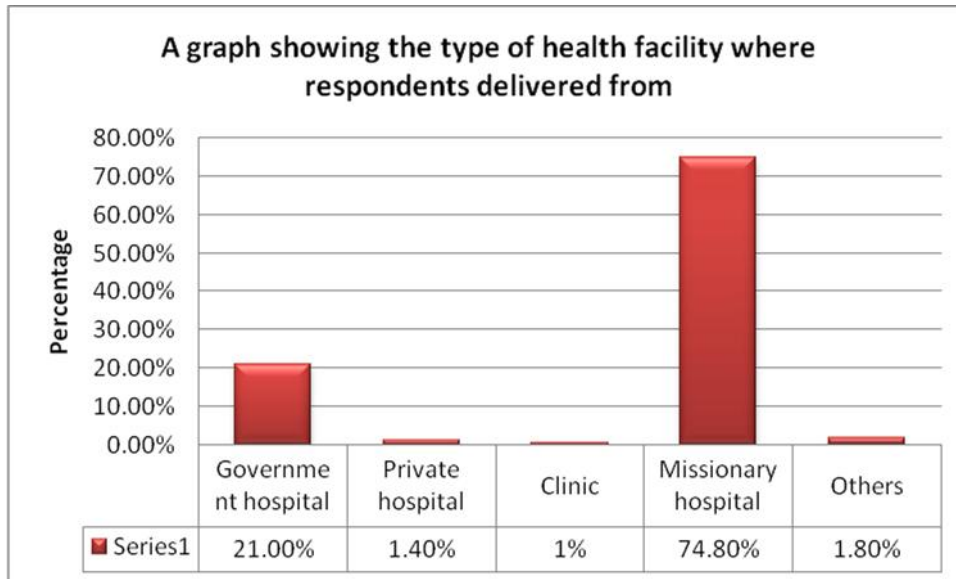
*Source: Primary data*



#### 4.1.3.1 The type of health facility where respondents delivered from

The vast majority gave birth from missionary hospitals (74.8%).

**Figure 2: A graph showing the type of health facility where respondents delivered from**



#### 4.1.4 Obstetric factors

The majority attended Antenatal care (141 respondents) and of those who attended the great below 4 times (111 respondents); Slightly average number of women did not seek care from TBA during pregnancy (74 respondents); majority of respondents had live birth as a birth outcome (111 respondents); the bigger proportion, the child was not the first born (89 respondents); Slightly above average number of mothers, the duration of labour was below 24 hours.

**Table 4: A table showing obstetric factors**

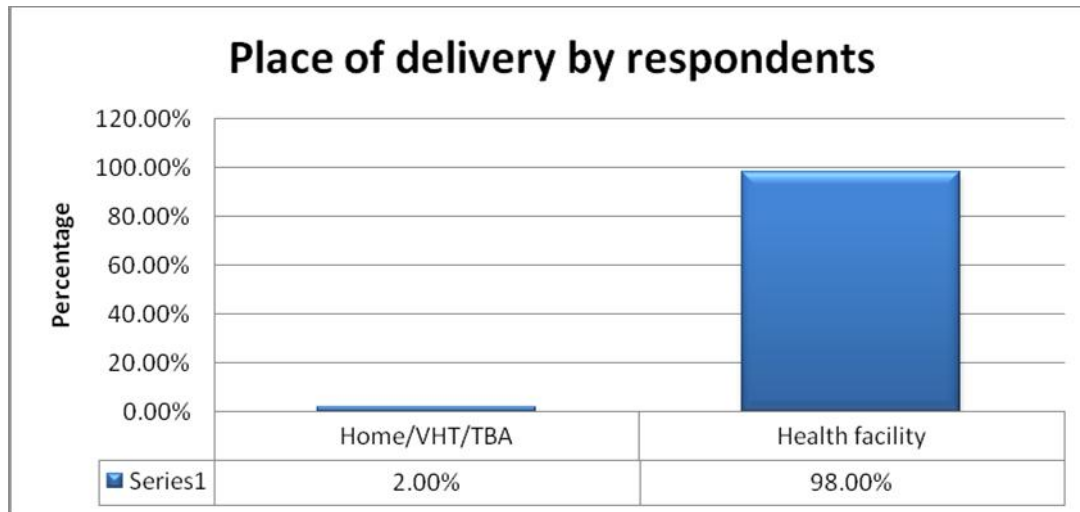
variables		Presence of VVF		Total
		Yes	No	
Did you attend ANC	Yes	41	100	141
	No	9	0	9
Total		50	100	150
How many times of ANC	Less than 4 times	30	81	111
	At least 4 times and above	11	19	30
Total		41	100	141
During pregnancy, did you seek care from TBAs	Yes	26	42	68
	No	16	58	74
Total		42	100	142
what was the outcome of that pregnancy	Still birth	35	4	39
	Live birth	15	96	111
Total		50	100	150
Which order was this pregnancy	1st born	21	40	61
	Not the first born	29	60	89
Total		50	100	150
what was the duration of labour	24 hours and below	20	69	89
	More than 24 hours	30	31	61
Total		50	100	150
Did you use any herbs during pregnancy	Yes	33	81	114
	No	17	19	36
Total		50	100	150

*Source: Primary source*

#### 4.1.4.1 The place of delivery for the respondents

The vast majority delivered from health facility (98%).

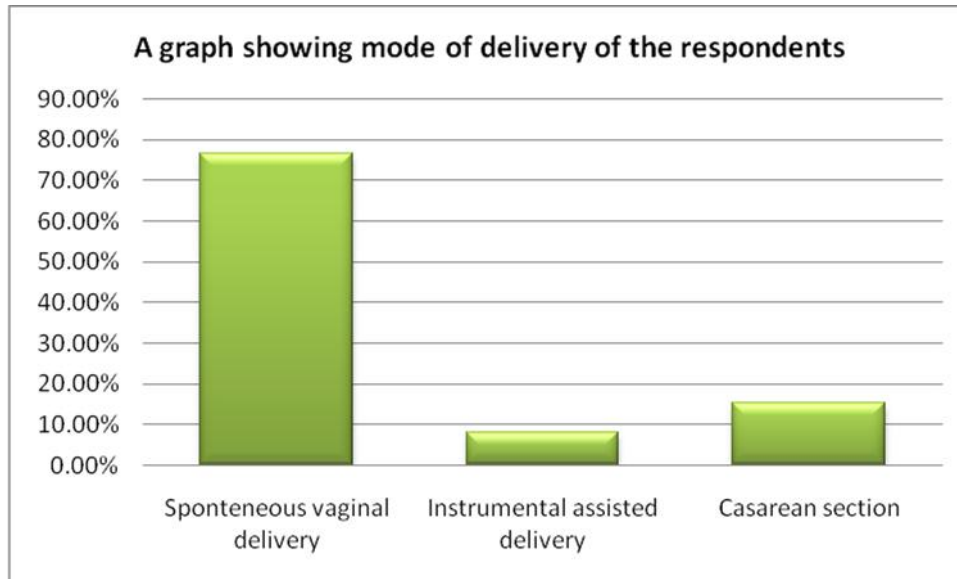
**Figure 3: A graph showing the place of delivery by respondents**



#### 4.1.4.2 Mode of delivery of the respondents

The majority of respondents gave birth by spontaneous vaginal delivery (76.6%).

**Figure 4: A graph showing the mode of delivery by mothers**



## 4.2 Bivariate Analysis

### 4.2.1 Social demographic factors

Almost all the socio-demographic were significant at 95% confidence interval; age of a mother ( $X^2=24.668$ , P-value=0.000), marital status ( $X^2=14.855$ , P-value=0.001), Religion ( $X^2=10.170$ , P-value=0.038), education ( $X^2=16.855$ , P-value=0.001), employment status ( $X^2=16.406$ , P-value=0.000), Main source of income ( $X^2=32.119$ , P-value=0.000) and amount earned ( $X^2=6.432$ , P-value=0.040).

**Table 5: A table showing the relationship between socio-demographic factors and VVF occurrence**

Variable	Presence of VVF		X <sup>2</sup>	P-value	
	Yes	No			
Age of the mother	Below 15 years	2	0	24.668	0.000*
	15-20 years	6	15		
	21-25 years	12	40		
	26-30 years	9	34		
	Above 30 years	21	11		
Total	50	100			
Tribe	Munyankole	11	32	3.854	0.146
	Muganda	26	54		
	Others	13	14		
Total	50	100			
Marital status	Married	28	83	14.855	0.001*
	Not married	22	17		
Total	50	100			
Religious affiliation	Catholic	24	72	10.170	0.038
	Protestant	11	15		
	Born again	8	8		
	Moslem	6	5		
	Others	1	0		
Total	50	100			
Highest level of education attained	None	11	8	16.855	0.001*
	Primary	27	35		
	Secondary	12	51		
	Tertiary/vocation/university	0	6		
Total	50	100			
Employment	yes	15	65	80	0.000*
	No	35	35	70	
Total	50	100	150		
Main source of income	Formal employment	1	19	20	0.000*
	Business	2	38	40	
	Farming	10	8	18	
	Others	2	0	2	
Total	15	65	80		
Approximate amount earned	10,000-100,000 shillings	9	17	26	0.040*
	110000-200,000	4	35	39	
	Above 200,000	2	13	15	
Total	15	65	80		

**\*Significance at P-value<0.05**

#### **4.2.2 Establishing the individual related factors associated with VVF occurrence**

The age of getting married and the age of getting pregnant were statistically significant with ( $X^2=64.813$ , P-value=0.000) and ( $X^2=47.354$ , P-value=0.000) correspondingly.

Also ever delivered a dead child was statistically significant ( $X^2=14.88$ , P-value=0.000)

**Table 6: A table showing individual factors associated with VVF occurrence**

Variable	Presence of VVF		X <sup>2</sup>	P-value	
	Yes	No			
Age of getting married	Below 15 years	5	0	64.813	0.000*
	15-20 years	40	25		
	21-25 years	3	55		
	26-30 years	0	18		
	Above 30 years	0	2		
Total		48	100		
Age of getting pregnant	Below 15 years	4	0	47.354	0.000*
	15 -20 years	40	31		
	21-25 years	6	49		
	26-30 years	0	20		
Total		50	100		
Do have any history of rape	Yes	2	0	4.05	0.110
	No	48	100		
Total		50	100		
Do you any history of FGM	Yes	1	0	2.01	0.333
	No	49	100		
Total		50	100		
Number of pregnancies ever had	4 and below pregnancies	33	64	0.06	0.478
	Above 4 pregnancies	17	36		
Number of abortions ever had	yes	10	31	2.03	0.108
	No	40	69		
Have ever delivered a dead baby	Yes	24	18	14.88	0.000
	No	26	82		
Where did labour pains begin from	Health facility	2	5	0.148	0.792
	Home	48	95		
Who made the decisions of where you gave birth from	Herself	9	21	0.373	0.991
	Husband/Any relative	38	79		

*\*significant at P-value<0.05*

### 4.2.3 Assessing health system factors influencing VVF

The time taken at the facility while waiting to be attended had a strong association with development of VVF ( $X^2=21.944$ , P-value=0.009) and the type of health facility had also a strong association with the development of VVF ( $X^2=105.203$ , P-value=0.000).

**Table 7: A table showing Individual factors associated with VVF occurrence**

Variable	Presence of VVF		$\chi^2$	P-Value
	Yes	No		
If yes, were are told that you had an abnormality with your pregnancy	Yes	7	2.784	0.095
	No	34		
Total		41		
Were you told that the child had an abnormality	yes	6	6.909	0.009
	No	35		
Total		41		
Did you discuss the birth plan with the health worker	yes	20	0.057	0.811
	No	21		
Total		41		
What type of health facility did you deliver from	Government	32	105.203	0.000*
	Private hospital	2		
	Clinic	1		
	Missionary hospital	10		
	Others	2		
Total		47		
How long did you take at the health facility while waiting to be attended to	Less than 2 hours	36	21.944	0.000*
	2 hours-4 hours	4		
	Above 4 hours	7		
Total		47		
Distance between you place of residence and where you delivered from	Less than 5 kms	20	0.136	0.712
	More than 5kms	29		
Total		49		

*\*significant at p-value<0.05*



#### 4.2.4 Obstetric factors influencing VVF occurrence

There was a strong relationship between the obstetric factors and development of VVF among mothers: Mothers who attended ANC were less likely to develop VVF compared to those who did not attend  $\{(CI=0.225-0.376), OR=0.291\}$ ; Of those who attended ANC, those who attended 4 times and above had a lower risk than those who attended less than 4 times  $\{(CI=0.273-1.501), OR=0.640\}$ ; Those who sought care from TBA during pregnancy were 2 times more likely to develop VVF than those who did not  $\{(CI=1.072-4.697), OR=2.244\}$ ; those whose pregnancy outcome was still birth had the greatest risk of developing VVF compared to those with live birth  $\{(CI=17.400-180.226), OR=56.000\}$ ; the order of pregnancy also had a strong relation with VVF where those with 1<sup>st</sup> pregnancy had high risk to VVF  $\{(CI=0.545-2.165), OR=1.086\}$ ; The longer the duration of labour (beyond 24 hours), the higher the risk of VVF  $\{(CI=0.148-1.607), OR=0.300\}$ ; and those who used herbs during pregnancy were at a reduced risk of VVF  $\{(CI=0.211-0.983), OR=0.455\}$ .

**Table 8: Bivariate Analysis for obstetric factors influencing the occurrence of VVF**

Variables		Presence of VVF		CI at 95%		Odds Ratio
		Yes	No	Lower	Upper	
Did you attend ANC	Yes	41	100			
	No	9	0	0.225	0.376	0.291
<b>Total</b>		<b>50</b>	<b>100</b>			
How many times of ANC	Less than 4 times	30	81			
	At least 4 times and above	11	19	0.273	1.501	0.640
Total		41	100			
During pregnancy, did you seek care from TBAs	Yes	26	42			
	No	16	58	1.072	4.697	2.244*
Total		42	100			
what was the outcome of that pregnancy	Still birth	35	4			
	Live birth	15	96	17.400	180.226	56.000*
Total		50	100			
Which order was this pregnancy	1 <sup>st</sup> born	21	40			
	Not the first born	29	60	0.545	2.165	1.086*
<b>*Total</b>		<b>50</b>	<b>100</b>			
what was the duration of labour	24 hours and below	20	69			
	More than 24 hours	30	31	0.148	0.607	0.300
Total		50	100			
Did you use any her during pregnancy	Yes	33	81			
	No	17	19	0.211	0.983	0.455
<b>Total</b>		<b>50</b>	<b>100</b>			

*\*Risk factor at odds ration >1*

### **4.3 Multivariate analysis for all significant variables**

The age of the mother was statistically significant in the development of VVF with a p-value less than 0.05 and shown in the table below.

The marital status of mothers was found to be statistically significant and those who were married were 3 times more likely to develop VVF compared to those who were not married [OR=3.8(1.8-8.2), P-value=0.000].

Employment status of mothers was also statistically significant and those employed were 4 times more likely to get VVF compared to those who were not employed [OR=4.2(2.1-9.0), P-value=0.001].

**Table 9: A table showing multivariate level of analysis of all significant variables**

<b>Variable</b>	<b>Vesico-Vaginal Fistula (VVF) OR (CI at 95%)</b>	<b>P-value</b>
<b>Age of the mother</b>		
Below 15 years	1(Reference variable)	
15-20 years	4.8(1.4-15.8)	0.01*
21-25 years	6.4(2.4-16.9)	0.00*
26-30years	7.2(2.6-20.3)	0.00*
<b>Marital status</b>		
Not married	1(Reference variable)	
Marital status	3.8 (1.8-8.2)	0.000*
<b>Employment status</b>		
Not employed	1(reference variable)	
Employed	4.2(2.1-9.0)	0.001*
<b>Approximate amount</b>		
Above 200,000 shilling	1(Reference variable)	
110,000-200,000 shillings	1.2(0.2-8.2)	0.112
10,000-100,000	0.3(0.1-1.6)	0.742
<b>Ever delivered a dead baby</b>		
No	1(Reference variable)	
Yes	0.2 (0.1-0.5)	0.000*
<b>Told abnormality about the baby during pregnancy</b>		
No	1(Reference variable)	
Yes	0.4(0.1-1.2)	0.106
<b>Ever sought care from the TBA</b>		
No	1(reference variable)	
Yes	0.4(0.2-0.9)	0.032*
<b>Outcome of pregnancy</b>		
Live birth	1 (reference variable)	
Still birth	0.2(0.0-0.1)	0.000*
<b>Order of pregnancy</b>		
Not 1 <sup>st</sup> born	1(reference variable)	
1 <sup>st</sup> born	0.9(0.5-1.8)	0.814

*\*significant at p-value<0.05*

## **4.4 Qualitative Analysis**

### **1. How can VVF be prevented?**

Two thirds of the respondents said that VVF can be prevented through timely cesarean section in case of obstructed labour and the rest of respondents said that timely referral of people with obstructed labour was the way to prevent VVF.

*The majority of women with fistula begun with going to TBA, after they sought health care from nearby clinics and after failing in the clinic, they were taken to health centre II and lastly to hospitals with emergency obstetric care. All this chain of referral encourages the occurrence of VVF by Anite the mid-wife (not the real name).*

### **2. Which interventions are available for prevention of VVF?**

The vast majority stated that interventions to protect women's from VVF are well-known, highly effective and readily available for a reasonable cost. More than a half stated that VVF could be reduced substantially if every woman had access to high-quality sexual and reproductive health services, especially family planning, antenatal care, skilled attendance at birth including trained midwives, and high-quality surgical emergency obstetric interventions.

*Poverty is the root-cause of obstetric fistulas. Early marriage, low social status for women, malnutrition, and inadequately developed social and economic infrastructures are all more common in poor areas. Most importantly, these areas lack access to emergency obstetric services due to nonexistence of health care centers and trained personnel. Fistulas are most prevalent where maternal mortality is high (senior surgical consultant at VVF ward).*

### **3. How many new patients come to seek treatment in a year?**

It has been estimated that 2,000 new cases of obstetric fistulae are recorded every year and 2.6% of women of reproductive age have experienced symptoms of an obstetric fistula. This equates to a prevalence of approximately 142,000 women.

*V.V.F. workshops are offered several times a year, each lasting for two weeks. Experienced doctors from all over the world visit Kitovu for these workshops, and their work enables 60-100 women to receive treatment each time by Mother Catherine the head of VVF ward ( Not the real).*

### **4. What are the possible hindrances for not seeking treatment?**

The vast majority said that the main challenge of women not seeking VVF services is limited awareness of such services and also since the greater part of these mothers are poor; they need transport and someone to take care of the families while they are away.

*The majority of women with VVF have been abandoned back to their parents. This increases the burden of taking care of the sick and the children by elderly parents who do not have stable income. This creates a big gap in seeking healthcare. Also superstitions that once they do VVF repair that they can never give birth again. This delays their seeking of medical care since they would want to first give birth before they come for repairs. This does not prolong the problem but also render early interventions useless by staff Pauline (in charge VVF ward).*

## **CHAPTER FIVE**

### **DISCUSSION OF RESULTS**

#### **5.0 Introduction**

This chapter presents discussion of findings while relating the findings with the literature from other scholars.

#### **5.1 The influence of socio-demographic factors on Vesico-vaginal fistula (VVF) occurrence**

Age was found to be significantly associated with presence of VVF where by those of 15-20 years age group were more likely to have VVF than the of 21 and above years age group. This is in agreement with the report by Peter Mukasa Kivunike (a technical specialist in fistula at ministry of health) who stressed that VVF is common among young mothers who conceive before 20 years (New Vision, Monday, May 23<sup>rd</sup>, 2016). This may be attributed that their pelvic bones have not yet developed.

This is further justified by Ngoma (2010) where she critic that women in developing countries particularly girls in Africa, are married at a tender age and this increases the possibility of obstructed labor especially in rural areas where there is inadequate health facilities and childbearing are common. Although girls are capable of becoming pregnant at a relatively early age, their pelvis would not have developed to their full capacity to accommodate childbearing. Most of these girls' lives are destroyed by obstetric injury as most of them have not attained full adulthood. In most cases, the average age of a fistula patient is 25 years or less, and many are as young as 13 years (NGOMA, 2010).

It is also in agreement with the study done by Well et al which stated that more women aged 20 to 45 give birth than women in the age group 10 to 19 but close to 50% of all fistula cases occur

in women aged 10 to 19 (Wall & Karshima, 2004). This study the majority VVF cases were in the range of 15-20 years.

Marital status was found to be statistically and people who were not married were almost 4 times more likely to have VVF compared to those who were married. This contradicts with a study done by Daru et al who found out that majority of the patients were married and living with their husbands. This could be due to the fact that these studies were done in different geographic locations which share different cultural customs.

### **5.3 Assessing individual factors that influence on Vesico-Vagival Fistula VVF occurrence**

This study established that the age of getting married and the age of getting pregnant were statistically significant. This in agreement with the study done by Dr. Muhammed who said that age of mothers is a contributing factor towards the development of VVF. He stressed that it is most common in young girls due to poor development of the pelvis bone thus rendering them to a high risk of VVF.

This is also in agreement with a study done by Tebeu who established that teenage pregnancies constituted a large proportion of pregnancies in developing countries (7-30%), and because teenage pregnancy is associated with cephalopelvic disproportion, efforts in reducing obstetric fistulae should focus on prevention of teenage pregnancy (Tebeu 2012).

It is also in agreement with a study done in Maidugiri, Nigeria discovered that VVF patients married at an earlier age on average than controls. The difference in age at marriage was found to be significant contributor of VVF. More than a quarter (30%) of these fistulae occurred in women who delivered before they were age 15, and more than half (58.8%) of them delivered before 18 years (Prof. Bimbola, 2013).



These studies are in agreement and this may be due to the fact that all studies were carried out in a typical African setting where young marriages are common.

#### **5.4 Health system related factors influencing Vesico Vaginal Fistula (VVF) occurrence**

This study found out that the time taken at the facility while waiting to be attended had a strong association with development of VVF and the type of health facility had also a strong association with the development of VVF. This is in agreement with the study by Kamal (2003) who stated that delay in getting care at the facility is the most critical one and should be addressed as a matter of priority. It requires ready access to surgical supplies, adequately trained personnel and operating theatres (Kamal, 2003).

It is also in agreement with Raassen (2014) who further justifies that once a woman arrives at the facility, she may not access adequate care, due to a lack of staff or unfriendly staff, supplies, or electricity (Abrams 2013). Insufficiently skilled staff may mean that the woman may not get the care that is needed or when provided which may result in complications (Raassen 2014).

These studies are in agreement and this may be due to the time in which studies have been out. They are all recent studies hence justifying their agreement.

#### **5.5 Obstetric factors influencing Vesico-vaginal fistula (VVF) occurrence**

Giving birth to a still birth was found to be statistically significant. Women who had ever given birth to a still birth were 54 times more likely to have VVF compared to those who had delivered a live birth. This is in agreement with the study by Dr. Muhammad who stated that about 54% of the respondents developed VVF as an outcome of their first pregnancy and none of them had a

living child, and 39% fell in the age group 15-20 years (Dr. Muhammad Shan Alam -Associate Professor-Department of Obs/Gyn)

The use of herbs during pregnancy was statistically significant in the development of VVF. Those who used herbs during pregnancy were at a reduced risk of VVF compared to those who did not use the herbs during pregnancy. However this contradicts with a study done in western Uganda which found that there was no statistical significance between the use of herbs during pregnancy and the occurrence of VVF (Kajunjo & Mbona, 2014). This could have been brought about by the fact that these two studies were done in different locations i.e. western Uganda and central because they use different herbs which have different functions.

## **CHAPTER SIX**

### **CONCLUSION AND RECOMMENDATIONS**

#### **6.0 Introduction**

This chapter presents conclusions and recommendation in line with the specific objectives of the study and areas for further research.

#### **6.1 Conclusion**

Among the socio-demographic factors, only marital status and employment status were significant in the occurrence of VVF. No individual and health facility factors had a relationship with occurrence of VVF. Among the obstetric factors, only the outcome of the pregnancy (live still birth) had a relationship with the occurrence of VVF. VVF occurred mostly in mothers who did not have significant socio-demographic, individual, health facility and obstetric issues.

## **6.2 Recommendations**

1. The government should put much more emphasis on the implementation of the policy of “no marriage before 18 years”. This should not only apply to those who have come to report to police but the village chairpersons can do active check and ongoing surveillance to discourage early marriages.
2. Sensitization of mothers should be done about the causes of VVF and involve parents against early marriages since age was found to be statistically significant in the VVF occurrence.
3. The government should scale up her programme of eradicating poverty among women through establishment and training in the small scale income generating activities and promoting girl child education through free education. This will not only delay the age of marriage and getting pregnant but will also equip them with resources to be used in seeking early healthcare. The government should also ensure availability and accessibility of family planning methods since family planning can delay the age pregnancy, and number of unwanted pregnancies to reduce intended abortions. This can be done through creating more awareness, providing free services at all levels and proper counseling of mothers before their uptake to encourage sustainability.
4. The government should improve the accessibility of health facilities through improvement of roads, and implementing 5 kilometre radius. This will help to detect abnormalities during pregnancies hence timely interventions.

5. The government should establish more emergency obstetric centres so that those who have obstructed labour can easily access caesarean section and assisted instrumental delivery services hence reducing the prolonged labour. The government should also embark on training and incorporating TBA in the main stream of the health system.

### **6.3 Areas for further study**

During data collection, the researcher found two children who were born with VVF and three elderly women who developed VVF at around 60 years and not directly related to pregnancy.

The researcher would therefore recommend a study to be done causes of congenital VVF among children.

The researcher also recommend a study to be done on awareness of VVF within the community so as to establish Knowledge related to VVF since this can play an important role in improving early seeking of healthcare among pregnant mothers.

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**APPENDIX 1: CONSENT FORM**

**PREDICTORS FOR VESICOVAGINAL OBSTETRIC FISTULA AMONG MOTHERS ATTENDING KITOVU HOSPITAL IN MASAKA DISTRICT.**

You are invited to participate in the study of predictors for vesicovaginal obstetric fistula among mothers attending Kitovu hospital in Masaka district. This study is being conducted by Atuhaire Immaculate a student at International Health Sciences University pursuing masters in Public Health. You are requested to answer and respond to the questions in the questionnaire and answers given will be recorded by the interviewer. This will take approximately not more than 15 minutes.

There are no known risks involved in participating in the study but also the participants will not get any financial or material benefit.

Any information in connection with this study that has been obtained from you will remain confidential and will be disclosed only with your permission. In any written report or publication, no one will be identified or identifiable and only cumulative data will be presented.

The participants have a right to agree to participate or to refuse or to withdraw from the study any time. The participants who refuse to participate or who withdraw shall not be forced to or penalized.

**Contact for inquires:** If you have questions later you may ask Immaculate Atuhaire at 0777816066 or email: [atuhaire\\_immaculate@yahoo.com](mailto:atuhaire_immaculate@yahoo.com)

**Consenting**

You are making a decision to participate or not to participate, your signature indicates that you have read the information provided above and have decided to participate. You may withdraw without prejudice after signing this form should you choose to discontinue participation in this study.

**Signature or thumb print.....Date.....**

**Signature of the researcher/interviewer.....Date.....**

## APPENDIX II: QUESTIONNAIRE

### SECTION A: SOCIO-DEMOGRAPHIC FACTORS

1. What is your age?
  - a) Below 15 years
  - b) 15-20 years
  - c) 21-25 years
  - d) 26-30 years
  - e) Above 30 years
  
2. What is your tribe?.....
  
3. What was your marital status at the time of giving birth?
  - a) Married
  - b) Not married
  
4. What is your religion?
  - a) Christian
  - b) Moslem
  - c) Others (specify)
  
5. What is your highest level of education attained?
  - a) None
  - b) Primary
  - c) Secondary
  - d) Tertiary / vocational/ university
  
6. Are you employed
  - a) Yes
  - b) No
  
7. What was your occupation (source of income) at the time of giving birth?
  - a) Farmer
  - b) Business
  - c) Formally employed

8. If yes, what is your main source of income (only one).....
9. What was your level of income monthly at the time of giving birth?
- a) 10,000-100,000
  - b) 110000-200,000
  - c) Above 200,000

**SECTION B: INDIVIDUAL FACTORS**

10. How old were you when you got married?
- a) Below 15 years
  - b) 16-20 years
  - c) 21-25 years
  - d) 26 and above
11. What age were you when you first gave birth?
- a) Below 15 years
  - b) 16-20 years
  - c) 21-25 years
  - d) 26 and above
12. Do you have any history of rape?
- a) Yes
  - b) No
13. Do you have any history of female genital mutilation?
- a) Yes
  - b) No
14. How many pregnancies have you ever had?.....
15. How many abortions have you ever had?.....
16. Have you ever delivered a dead child?
- a) Yes
  - b) No

**SECTION C: HEALTH SYSTEM RELATED FACTORS**

17. What type of facility did you deliver from?

- a) Government owned hospital
- b) Private owned hospital
- c) Missionary hospital
- d) Clinic

18. How long did you take at the health facility while waiting to be attended to?

- a) Below 2 hours
- b) Between 2 hours and 4 hours
- c) Above 4 hours

19. What is the distance between your place of residence and the health facility?

- a) 5kms and below
- b) Above 5kms

20. If you attended ANC, were you told that you have any abnormality with your pregnancy?

- a) Yes
- b) No

21. If Yes in No. 20 above, what abnormality.....

22. If you attended ANC, were you told that the baby had any abnormality?

- a). Yes
- b). No

23. If yes in No. 22 above, what abnormality?

.....

24. Who made a decision of where you delivered from?

- a) Mother in law
- b) Husband
- c) Any other care-taker, please specify.....

## **SECTION D: OBSTETRIC FACTORS**

25. Which birth order was this pregnancy?

- a) 1<sup>st</sup> born
- b) Not the 1<sup>st</sup> born

26. Did you attend antenatal care?

- a) Yes
- b) No

27. If yes, how many times did you attend antenatal care?

- a) At least 4 times
- b) Less than 4 times

28. During antenatal care were you told about the baby's presentation?

- a) Yes
- b) No

29. Did you have a delivery plan?

- a) Yes
- b) No

30. Were you accompanied by your husband to the hospital when you delivered?

- a) Yes
- b) No

31. Did you use any herb in this pregnancy

- a) Yes
- b) No

32. What was the duration of labour?

- a) Below 24 hours
- b) Above 24 hours

33. Presence of VVF

- a) Yes
- b) No

*Thank you for your participation*

## **KEY INFORMANT INTERVIEW GUIDE**

### **Prevention of VVF**

1. How can VVF be prevented?
2. Which interventions are available for prevention of VVF

### **Treatment**

3. How many new patients come to seek treatment in a year?
4. What are the possible hindrances for not seeking treatment?

**VVF WARD OF KITOVU HOSPITAL-MASAKA**







**Some of the patients in the VVF ward**



## A MAP OF UGANDA



**Masaka district where  
Kitovu hospital is located**