



DETERMINANTS OF REPEAT ABORTION AMONG PATIENTS SEEKING POST
ABORTION CARE SERVICES IN EASTERN UGANDA: A FACILITY-BASED CASE-
CONTROL STUDY

BY

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DECLARATION

I declare that this research dissertation, entitled Determinants of repeat abortion among patients seeking post-abortion care services in Eastern Uganda is my original work and it has never been submitted to any university or institution of higher learning for any academic award or any other purposes.

Mr. MUDIMI VICTOR

Signature  13th-June-2026

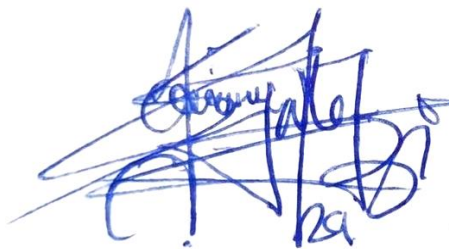
SUPERVISOR'S APPROVAL

This is to certify that this research dissertation has been written and developed under the guidance of my supervision.

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DEDICATION

To my beloved family — parents and siblings who stood by me with unwavering love, sacrifice, and encouragement throughout this academic journey.

To my friends and classmates for the shared struggles and endless motivation.

And to every woman who has faced the burden of repeat abortion — may this work contribute to better care, understanding, and reproductive health services for you.

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TABLE OF CONTENTS

Table of Contents

DECLARATION	i
SUPERVISOR’S APPROVAL	ii
DEDICATION	iii
ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS	v
Table of Contents	v
OPERATIONAL DEFINITIONS	viii
LIST OF ABBREVIATIONS	ix
Abstract:	x
Background.....	x
Materials and methods	x
Results	x
Conclusion	xi
CHAPTER ONE: BACKGROUND	1
Problem statement	3
Justification	4
Significance.....	4
National family planning program	4
District health management	4
Gynaecology ward	4
Objectives of the study.....	4
Broad research objective	4
Specific objectives	4
Research questions	5
Conceptual Framework	5
CHAPTER TWO: LITERATURE REVIEW.....	6
Introduction	6
Prevalence of repeat abortion	6
Associated factors	8
Social demographic factors	8
Obstetric and gynecologic factors	8

Environmental and reproductive health factors	9
Legislation about abortion	9
Conclusion	10
CHAPTER THREE: MATERIALS AND METHODS	11
Study design	11
Study setting site	11
Study population	12
Target population	12
Accessible population	12
Inclusion criteria.....	12
Exclusion criteria.....	12
Dependent variable.....	12
Independent variables.....	12
Sample size determination.....	13
Sampling method.....	13
Data collection tool	13
Data collection procedure.....	14
Quality control.....	14
Pre-testing of data collection tools.	14
Data management	14
Data analysis and presentation plan	14
Ethical considerations	15
Dissemination of results	15
CHAPTER FOUR: RESULTS.....	16
Summary	27
CHAPTER FIVE: DISCUSSION	28
Study strengths	32
Study limitation	32
Conclusion.....	33
Recommendations	33
References	34
APPENDIX	40
Appendix 1: Approval letter.....	40
Appendix 2: Participant consent form.....	42
Appendix 3: Data collection tool.....	44

Appendix 4: Administrative clearance.	48
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OPERATIONAL DEFINITIONS

Abortion: refers to the spontaneous termination of pregnancy before viability. In Uganda, viability is from 26 weeks going forward.

Antecedent abortion: Pregnancy loss before viability that occurred before the current

Index abortion: The current or reference pregnancy loss that is the focus of the study.

Morbidity: Is the state of being symptomatic or unhealthy due to a disease or condition.

Mortality: Is the number of deaths per given unit of population over a given period

Prevalence: The total number of cases of a disease in a given statistical population at a given time divided by the number of individuals in that population.

Repeat abortion: refers to pregnancy loss occurring more than once before viability.

LIST OF ABBREVIATIONS

ESHRE- European Society of Human Reproduction and Embryology

FHS- Faculty of Health Sciences

MRRH- Mbale Regional Referral Hospital

RA- Repeat abortion

SSA- Sub-Saharan Africa

WHO- World Health Organization

PAC- Post Abortion Care

Abstract:

Background

Maternal mortality remains a global health concern, with Uganda recording a maternal mortality ratio of 189 per 100,000 deliveries, which is above the Sustainable Development target of less than 70. Unsafe abortion contributes greatly to this burden, which accounts for approximately 6-8% maternal mortality in the country. Moreover, repeat abortion (RA) is one of the persistent challenges for healthcare systems worldwide and addressing it remains a significant challenge that requires a targeted approach. Uganda has abortion related severe morbidity, near-miss, and mortality ratios of 2063, 938 and 23 per 100, 000 live births, respectively. Repeat abortion is a public health challenge that needs to be investigated. Despite the existence of this problem, there is a dearth of literature regarding the prevalence and determinants of repeat abortion in Uganda, especially in the eastern region.

Materials and methods

The study employed a non-matched case-control study design in three selected health facilities in eastern Uganda. A total sample size of 366 study participants (122 cases and 244 controls) was recruited. Controls were recruited by simple random sampling, and the cases by a consecutive sampling technique.

Data were entered into MS Excel 2010 and cleaned for missing values, outliers, and inconsistencies. Coded data were then exported to Stata version 15 for analysis. Descriptive statistics, including means, percentages, frequencies, and standard deviations, were used to summarize participant characteristics. Associations between categorical variables were tested using the chi-square test, while an independent t-test was used for continuous variables. Multivariable logistic regression was performed to identify predictors of the outcome while controlling for confounders. Statistical significance was set at $p < 0.05$ with 95% confidence intervals reported.

Results

Of the 366 participants, 33.3% (122/366) were cases (“repeat abortion”) while 66.7% (244/366) were controls (“index abortion”). The mean age of cases was 27 years while that of controls was 24 years. The majority of the controls reported unplanned pregnancy, 68.4% compared to 56.6% for the cases. Notably, whereas 72.9% of the controls had early sexual debut, 67.2% among the cases did so.

Additionally, there was low utilization of modern contraceptives across the board, with only

27.1% of the cases, 36.5% for the controls.

The study found statistically significant associations between advanced maternal age and higher odds of repeat abortion (AOR: 9.42 95%CI: 1.82-48.67, $p=0.007$) with 30-34 years older women most affected. Symptoms preceding current abortion specifically malaria and urinary tract infections were significantly associated with repeat abortion (AOR: 3.2, 95%CI (1.81-6.01), $p<0.001$), Women who had a short interpregnancy interval had higher odds of repeat abortion compared to those who had the recommended or long interpregnancy interval (AOR: 0.32, 95%CI 0.18-0.57, $p<0.001$). Moreover, women whose preceding pregnancy ended in a stillbirth had substantially higher odds of suffering a repeat abortion unlike those who had a live birth (AOR: 0.23, 95%CI 0.13-0.39, $p<0.001$), Unwillingness to use a modern contraceptive as part of the post-abortion care package was significantly associated with repeat abortion (AOR: 0.65 95%CI 0.51-0.82, $p<0.001$). No significant associations were observed with contraceptive use, having more than one partner, and a history of child abuse.

Conclusion

In eastern Uganda, efforts to tackle repeat abortion should aim to target mothers of older mothers, encourage postpartum and post abortion modern contraceptives to prolong interpregnancy interval. In addition, early antenatal care attendance and screening for infections such as malaria, urinary tract infections and asymptomatic bacteriuria should be encouraged and emphasized.

Keywords: Repeat Abortion, Uganda, Index Abortion, Current Abortion.

CHAPTER ONE: BACKGROUND

Maternal mortality remains a major health issue worldwide (Bara, 2020; Onuoha et al., 2025). In 2023, the World Health Organization reported 260,000 maternal deaths (MDs) globally (World Health, 2023). Ninety four percent of MDs occur in low- and middle-income countries, with Sub-Saharan Africa (SSA) accounting for 66.5 per cent (196,000 deaths annually) and Southern Asia 19.5 per cent (58,000 deaths annually) (Refaat, 2023). Uganda's maternal mortality ratio of 189 per 100,000 live births remains very high and is below the Sustainable Development Goal (SDG) 3.0 target of fewer than 70 per 100,000 live births.

Globally, there were 121 million unintended pregnancies between 2015 and 2019. In SSA, there were 339 unintended pregnancies per 100,000 women of reproductive age 15-49 (Bain et al., 2020; Bearak et al., 2020). Sixty one percent of the unintended pregnancies ended in abortions (Wang et al., 2023) and in Tanzania, every year, over one million women and girls get unintended pregnancies, of which 39% end up in abortions (Guttmacher, 2016). Worryingly, 45% of these abortions were unsafe abortions (World Health, 2024).

Abortion is a major contributor to maternal deaths. A review from 2009–20 found that 8% of maternal deaths were linked to abortion. While deaths from safe abortion are negligible, in the range of less than 1/100 000, unsafe abortions related deaths are higher than 200/1000, 000 abortions. Relatedly, maternal deaths due to unsafe abortion are often misclassified and underreported due to stigma. (Cresswell et al., 2025). No wonder countries and states with abortion restrictive laws suffer the highest maternal mortality ratios (Emily Nuss, 2025; Nteziyaremye., 2020). Relaxation of such restrictions has been shown to reduce maternal deaths and allows women to participate more in the labour market with subsequent upturn of the country's gross domestic product (GDP) (Rodgers et al., 2021).

Uganda is not spared the adverse effects of abortion either. In a study conducted by Atuhairwe et al., which assessed near-miss cases across 43 health facilities, it was found that abortion-related maternal mortality in eastern Uganda was 57 per 100,000 live births compared to 11 per 100,000 live births in central Uganda. Furthermore, abortion is a major contributor to the Institutional Maternal and Mortality Ratio (IMMR) in Uganda, accounting for about 5-8% of maternal deaths (MoH, 2023). However, literature regarding the effects of RA in Uganda is scant.

Moreover, repeat abortion (RA) whether induced or spontaneous, is one of the persistent challenges for healthcare systems worldwide and addressing it remains a significant challenge

that requires targeted approach. During a global systematic review to analyze prevalence of repeat-induced abortion among women worldwide and determine correlated risk factors by Liu et al, the overall pooled prevalence of repeat-induced abortion (RIA) was 31.3%(Liu et al., 2023).Overall, the burden of RIA varies around the world, ranging from 16% to 70% in many countries (McCall et al., 2016).

RA is linked to both short and long term complications such as severe bleeding ,sepsis, bowel prolapse, risk of preterm birth in future pregnancies and psychological disorders like depression and mood changes(G, 2024; Mzigaba & Wella, 2025).Additionally, Caragh et al, 70% of people who get repeat abortion experience decreased productivity at work(Flannery et al., 2024) and feel helpless (Koert et al., 2019). All of these can impact family functioning, employment opportunities, relationships, direct out-of-pocket financial expenses, and additional healthcare use.

Several studies have been conducted to explore the determinants of RA. Studies by Geta et al and Waktola et al revealed that women who perceived abortion procedures as painless, had not seen or witnessed complications, had more than two partners, consumed alcohol, and had had early sexual debut were more likely to have repeat induced abortions. A study in China found that use barrier contraceptives and oral contraceptives were associated with repeat abortions. This was later confirmed by a study done in Madagascar(Ratovoson et al., 2020)

In a systematic review of 34 studies including 373,424 women, the most frequently reported risk factors for repeat induced abortion (RIA) were older age, higher parity, lower educational attainment, urban residence, contraceptive failure or misuse, intimate partner violence, adverse childhood experiences, and substance use. Several studies also showed that early initiation of contraception after the first abortion—particularly with long-acting reversible contraceptives (LARCs)—reduced the likelihood of subsequent abortions(Paredes et al., 2026). Although there have been studies in Uganda focusing on abortion, to the best of our knowledge, there is a dearth of literature regarding the prevalence of repeat abortion and its determinants, especially in eastern Uganda. Our study aims to investigate the determinants of repeat abortions among patients seeking post abortion health care services in eastern Uganda.

Problem statement

Uganda's maternal mortality ratio of 189 per 100,000 live births remains very high and is below the Sustainable Development Goal (SDG) 3.0 target of fewer than 70 per 100,000 live births. Abortion is a major contributor to the Institutional Maternal and Mortality Ratio (IMMR) in Uganda, accounting for about 5-8% of maternal deaths. In a study conducted by Atuhairwe et al., which assessed near-miss cases across 43 health facilities, abortion-related maternal mortality in eastern Uganda was 57 per 100,000 live births, while in central Uganda, it was 11 per 100,000 live births, indicating a higher rate in eastern Uganda, citing a bigger number in eastern compared to central.

Repeat abortion has been understudied in eastern Uganda. Our study will seek to estimate the associated factors amongst patients seeking post-abortion health care services in eastern Uganda. By exploring the factors contributing to repeat abortions in this region, the research seeks to inform evidence-based interventions to reduce the incidence of repeat abortions and improve reproductive health outcomes for women in the region, and hopes policymakers will use it to make policies that can solve the problem.

Justification

RA is understudied in Uganda and particularly in eastern Uganda. We hope that understanding this problem may provide a background for further follow-up studies, and invaluable insights for healthcare workers, policy makers, and other stakeholders in the design of strategies to tackle this problem.

Significance

The findings of the study will bridge the gap of the dearth of literature and thus will guide the policy makers in making evidence-based interventions to mitigate the problem.

National family planning program

The findings will contribute evidence to family-planning and reproductive health programmes for refining post-abortion contraception guidelines and resource allocation, ensuring that policies are responsive to the specific drivers of repeat abortion identified in this setting.

District health management

The results will inform district health management teams in strengthening linkages between PAC and family-planning units, and in designing outreach programmes that engage male partners and target out-of-school youth, who may otherwise be missed by clinic-based interventions.

Gynaecology ward

The findings will guide Gynaecology ward teams in prioritizing targeted contraceptive counselling and follow-up for women at highest risk before discharge from PAC services. The findings will also prioritize contraceptive counselling for women with early sexual debut, multiple partners, or short inter-pregnancy intervals, and engage male partners.

Objectives of the study

This research was guided by both broad and specific objectives.

Broad research objective

To investigate the determinants of repeat abortion among patients seeking post-abortion care services in eastern Uganda.

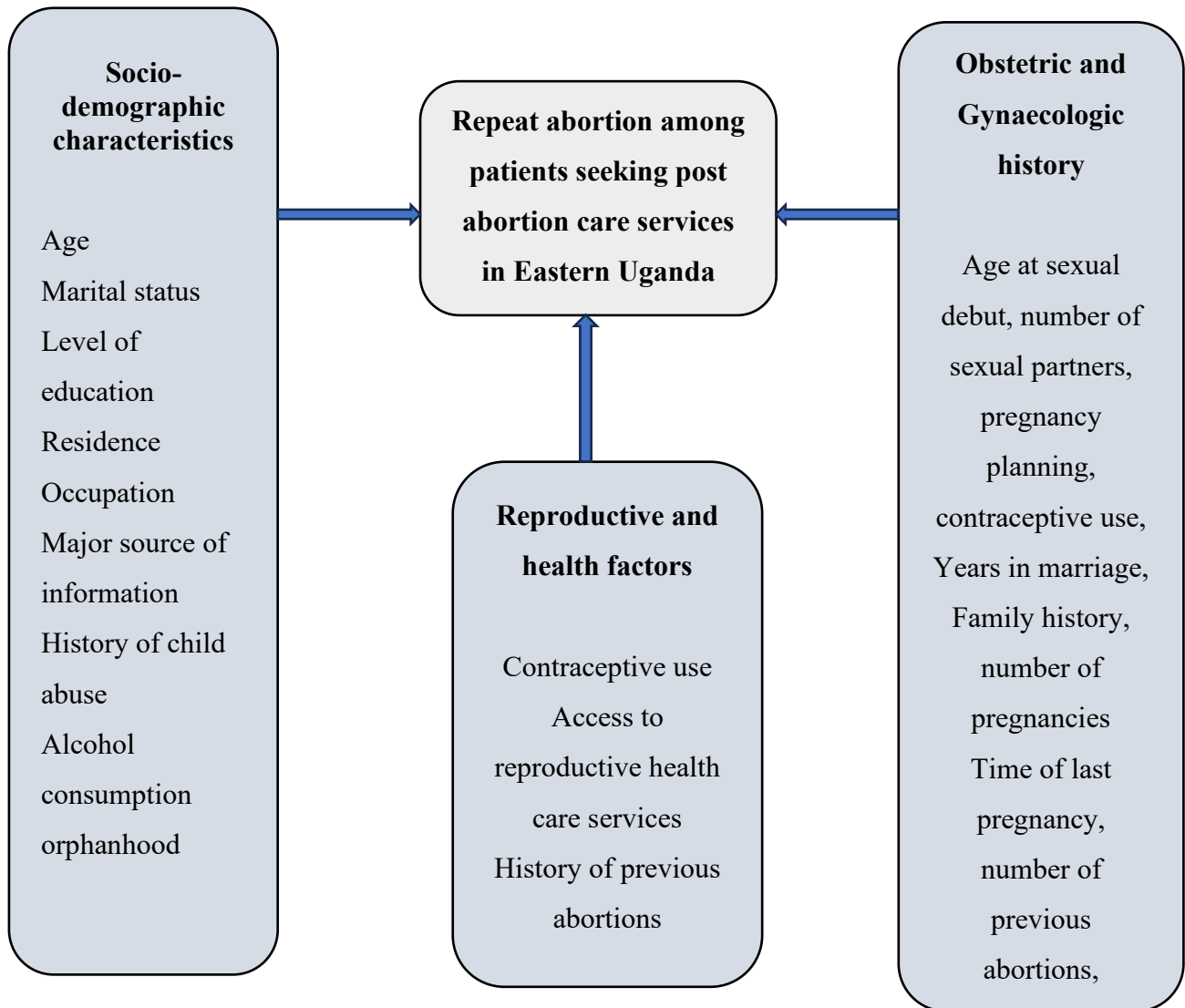
Specific objectives

1. To investigate the determinants of repeat abortion among patients seeking post-abortion care services in eastern Uganda.

Research questions

1. What are the determinants of repeat abortion among patients seeking post-abortion care services in eastern Uganda?

Conceptual Framework



Social ecological modal (SEM) is a framework design that was used to understand human development and the interplay between individuals and their social environments. The SEM states that health is affected by the interaction between the characteristics of the individual, the community, and the environment in which the individual lives. The social-ecological framework provides a theoretical model in which key factors influence participants. The framework highlights that an individual's actions are influenced by interpersonal traits, interactions, community elements, and public policies

CHAPTER TWO: LITERATURE REVIEW

Introduction

Repeat abortion remains a public health concern, yet an under-researched area in reproductive health. This poses a huge health and socio-economic burden globally. The purpose of this chapter is to review the current scientific literature regarding repeat abortion. This will provide a basis for this current study. This chapter is structured under the core themes of regional prevalence, associated factors, contraceptive use, and legislation that contribute to repeat abortion.

Prevalence of repeat abortion

Miscarriage/abortion is generally defined as the loss of a pregnancy before viability(Quenby et al., 2021). Repeat abortion (RA), also referred to as recurrent pregnancy loss, is a much-debated condition that affects 1%–3% of women/couples of reproductive age, depending on the definition applied(Prof Siobhan Quenby, 2021). According to the European Society of Human Reproduction and Embryology (ESHRE), repeat abortion is defined as the loss of two or more pregnancies, with the sequence of the miscarriages not necessarily consecutive(Giouleka et al., 2024). Repeat abortion is the termination of pregnancy more than once at different periods. Abortion-related mortality ratios were 11 and 57 per 100,000 in Central and Eastern regions, respectively. Abortion near-miss cases were significantly associated with referral ($p<0.001$).

In Uganda, the overall induced abortion incidence rate among women living in refugee settlements was 37.3 per 1000 women aged 15–49. Of the 31,189 live births, 25,023 pregnancies were unintended, translating to an unintended pregnancy rate of 73.7 per 1000 women of reproductive age. Of all pregnancies among women living in refugee settlements, 25 per cent were estimated to end in induced abortion, 24 per cent in unplanned birth, 37 per cent in planned birth, and 15 per cent in miscarriage(Odwe et al., 2025). The prevalence of abortion was found to be 4.8 per cent among women with 20 percent of them conducted using unsafe methods,(Kirabo, 2022). However, few studies have specifically examined the phenomenon of repeat abortions in Eastern Uganda, leaving a knowledge gap regarding the specific determinants and context of repeat abortions in this region. Moreover, existing research has primarily focused on single-

incident abortions, and there is a need for more comprehensive data on repeat abortions to inform evidence-based intervention.

In sub-Saharan Africa, an estimated 37% of women who become pregnant unintentionally terminate the pregnancy, with repeat abortions being a significant concern. According to a study, the pooled prevalence of abortion in Sub-Saharan Africa is 6.93%(Seifu et al., 2024). The abortions can occur at any trimester; however in Uganda second trimester abortion was 41.7% way higher than the global prevalence of 10-15%(Irumba et al., 2024), a higher abortion-related mortality in the second trimester compared with first trimester(Atuhairwe et al., 2021).

In a study conducted to determine the Pooled prevalence and associated factors of pregnancy termination among youth aged 15–24 year women in East Africa, a Multilevel level analysis, the pooled prevalence of pregnancy termination is around 7.79% (95% CI: 7.54, 8.04), with Uganda having the highest prevalence 12.51%(95% CI: 11.56, 13.41) and the lowest proportion was observed in Ethiopia 5.26% (95% CI: 4.39, 6.16). Maternal age, marital status, education status, parity, age at first sex, media exposure, working status and leaving countries were significantly associated with pregnancy termination(Hailegebreal et al., 2022).

According to the study carried out in Ethiopia, it revealed that 1/10 women who had a history of abortion experiences repeat induced abortion. According to a research study carried out on the likelihood of repeat abortions in Swedish, it revealed that 46% of the women seeking family planning chose oral contraceptive, 34% chose long acting reversible contraceptive (LARC) was the most commonly chosen by women with previous pregnancy child birth or abortion. Choosing LARC at the time of first abortion was associated with lesser repeat abortions compared to choosing oral (13% versus 26%). However sub-dermal implant similar to an intrauterine device was more effective in the prevention of repeat abortions for more than 3 years(Kilander et al., 2016).

England and Wales registered the highest records (252,122) of abortions reported in 2022. The number of abortions was performed on residents of England and Wales. This translates to an abortion standard rate of 21.1 per 1000 resident women of 15-44 years. However, this high rate exceeded the previous peak of 18.6 per 1000 in 2022.

A research study conducted to determine the timing of subsequent pregnancies and their outcomes within 3 years of a first known pregnancy revealed that one year following their first pregnancy was 22.6%, 17.8%, and 11.7% for women who induced abortion, natural loss, or a birth, respectively, who conceived at least 1 additional pregnancy. By the second year, the percentage increased to 37.5% after an abortion, 25.6% after a natural loss, and 23.1% after a birth. Therefore, graphing the weekly conception evidenced that women who had abortions and natural losses showed patterns that are similar of rapid repeat pregnancy. The rate of second conception spiked faster within 3-4 months after the first pregnancy outcome(Reardon & Craver, 2021).

According to the research study carried out in New York, it revealed that 76, 614 of the abortion cases reported in 2010, 57% were repeat abortions. Repeat abortions comprised more than 50% of the total abortions among the social demographics examined. The average number of past abortions was 1.3. The mean number of past abortions was way higher (1.77) for women in the age groups 30-34 and 2.50 for women with five or more children. This analysis evidenced that although socioeconomic disparities exist, all abortion patients have a higher risk for repeat unintended pregnancy and abortion(Government of the United, 2022).

Associated factors

Social demographic factors

Women aged 30 years or older were more likely to undergo repeat abortion, according to a study conducted to identify associated factors among women seeking care in China. A similar study also indicated that women who had attained low-level education and were jobless were more likely to have repeat abortion; however, those who received a high monthly salary were also likely to have repeat abortion (Mekie et al., 2021; Tang et al., 2021). Another study conducted to identify the determinants of repeat induced abortion among women of reproductive age in Ethiopia indicated that age at first sex is associated with repeat induced abortion. Another study conducted about the determinants of repeat abortions revealed that starting sex before the age of 18 years is associated with repeat abortions. Women who are married and those with children have a high risk of repeat abortion. Women of age group 25-34 years were associated with repeat abortion according to a study in Ghana about community and individual factors associated with repeat abortion (Yeboah et al., 2024).

Obstetric and gynecologic factors

Having several sexual partners was associated with repeat abortion, according to a study to determine the prevalence and determinants of repeat induced abortion in Ethiopia (Waktola et al.,

2020a). Not facing a complication in the prior abortion care, having more than two partners in the last 12 preceding months was associated with repeat abortion was associated with repeat abortion, according to a study conducted in South Ethiopia

Environmental and reproductive health factors

According to a study to determine the prevalence and determinants of repeat induced abortion in Ethiopia, it revealed that use of alcohol, lack of fertility awareness, and perceiving the procedure as non-painful were associated with repeat induced abortion(Geta, Seyoum, Gomora, & Kene, 2022). Use of contraceptive methods such as condoms, withdrawal, and emergency contraceptives was associated with repeat abortion. Women who had a very poor willingness to use contraception were also at greater risk of having repeat abortions(Li et al., 2021). According to a study conducted about induced abortions in Finland, it showed that factors such as lack of use of contraceptives and being an immigrant were associated with repeat abortion(Heino et al., 2020). Women who live in urban areas are at high risk of repeat abortion. Another study conducted about repeat abortions and associated factors in Ethiopia revealed that women who had a history of physical violence by a male partner were associated with repeat abortion.

Legislation about abortion

According to the Protocol to the African Charter on Human and Peoples' Rights on the Rights of Women in Africa, women have rights to sexual and reproductive health. This includes the right to control their fertility, the right to decide the number of children and the spacing of children, the right to choose any method of contraception, and the right to have family planning education(Ocran, 2007; Viljoen & Rudman, 2023).

A study to analyse all-cause mortality in reproductive-aged females by states revealed that maternal mortality was significantly lower in moderate states compared to restrictive states. It also indicated that an increase in the number of laws that restrict abortion was associated with an increase in maternal and infant mortality(Harper et al., 2023). However, another study to explore the association of highly restrictive state abortion policies with abortion rates showed that a highly restrictive legislative climate was associated with fewer abortions compared to less restrictive ones(Brown et al., 2020). According to Remez et al, complications of abortions are exceedingly rare in states where abortion is legal since they are carried out using the best practices and guidelines, unlike restrictive states that are associated with high complications(Remez et al., 2020). A study to assess the public attitudes towards the legality of abortion, 88% of the participants who were in support of the legality of abortion were participants from more supportive policies, more likely to oppose restrictions of the federal government(Scoglio &

Nayak, 2023). According to the global abortion policies, the regulatory and policy environment related to abortion, abortion restrictive policies may be facilitative or restrictive(Lavelanet et al., 2020). Studies indicate that there are several reasons why this situation, which is harmful to women's physical and mental health, persists, despite the very high daily rate of maternal mortality in Africa(African Commission on & Peoples, 2014). Uganda's law explicitly allows for access to safe and legal abortion only to save a woman's life(Nteziyaremye, 2020). However, the 2006 national policy guidelines and Service Standards for Sexual and Reproductive Health and Rights (SRHR) go even further, permitting abortion under additional circumstances, including in cases of fetal anomaly, rape and incest, or if the woman is HIV-positive and/or has cancer of the cervix(Poku, 2021).

Conclusion

The literature review affirms that maternal mortality attributed to complications of unsafe abortion still remains a public health concern, mostly in low and middle-income countries such as Uganda and the broader SSA. A significant proportion of global unintended pregnancies end in abortions, with repeat abortion constituting a big portion of the total abortion cases. Despite this significant global and regional burden, there is a lack of current understanding of the associated factors of repeat abortion among patients seeking post abortion care services in eastern Uganda. Therefore, with this study, we intend to fill the gap by determining the determinants of repeat abortion among patients seeking post abortion care services in eastern Uganda.

CHAPTER THREE: MATERIALS AND METHODS

Study design

The research study employed an unmatched case-control study design.

To investigate the determinants of RA, an unmatched case-control study design was used. Cases and controls were not matched on age, health facility or any other variable. This was done to preserve the statistical power to study age and other variables as risk factors. Age and health facility are plausible determinants of repeat abortion in eastern Uganda. Matching would make cases and controls identical by design; this therefore, would prevent us from quantifying their association independently with repeat abortion using odds ratios. An unmatched design allows to study age and health facility as exposures of interest.

A case was a patient who had experienced pregnancy loss more than once before viability in eastern Uganda.

A control was a patient who was experiencing her index pregnancy loss in eastern Uganda.

Study setting site

The research study was conducted from Mbale and Bulambuli districts of the Bugisu sub-region. Mbale district is 224.2km from Kampala, the capital city of Uganda. MRRH is a teaching and practicing hospital for medical students. The hospital serves Sebei, Bukedi and Bugisu sub regions that include Tororo, Pallisa, Busia, Kibuku, Budaka, and Butalejja (districts of Bukedi); Mbale, Bududa, Manafwa, Bulambuli, Sironko, and Namisindwa (districts of Bugisu); Kapchorwa, Kwen and Bukwo districts (districts of Sebei). The hospital has 6 major departments, which include; Gynecological and Obstetric department, General surgery, Paediatrics and Child Health, Internal medicine, and the psychiatric department (Jimmy & Geresom).

In Mbale city, the study was conducted from Mbale regional referral hospital and Namatala health centre IV. MRRH serves as the tertiary referral hospital of eastern Uganda. The study was carried out from the Department of Obstetrics and Gynaecology, Mbale Regional Referral Hospital. It serves as a teaching hospital for Busitema University, Mbale School of Clinical Officers, and other nursing schools, as well as an internship Centre for medical interns. The Obstetrics and Gynaecology department has three major wards: the High Dependency Unit, Postnatal, and Gynaecology ward. The wards admit Gynaecology patients, postpartum mothers, and mothers

who have lost their babies(Nakawuki et al., 2022). The study took place at the Gynaecology unit, Department of Obstetrics and Gynaecology. This is the unit that receives clients of abortion and its related complications.

Another facility in Mbale called Namatala HCIV, was also chosen as a study site. Namatala Health Center IV is located in the southwest part of Mbale city. Approximately 200 births are conducted per month, and skilled birth attendants include doctors and midwives(Mutaki et al., 2025).

Muyembe Health IV was randomly chosen because of her high numbers of maternal cases. It is located in Bulambuli district, found in eastern Uganda, north east of Mbale, approximately 32Km by road from Mbale city, a major city in the Bugisu-sub-region(Wakooko et al., 2020) .

Study population

The participants of the study were patients seeking post-abortion care services in eastern Uganda during the study period from March - May 2026 who met the inclusion criteria, aged between 15 and 49 years.

Target population

Patients who were seeking post-abortion care in the health facilities in eastern Uganda.

Accessible population

Patients who were seeking post abortion care services in the study sites of eastern Uganda at the time of data collection.

Inclusion criteria

Patients who were seeking post abortion care services in the Gynaecology wards in Bugisu sub-region in eastern Uganda, and were of the reproductive age group (15-49 years of age).

Exclusion criteria

- i. Those who had not had the abortion but were diagnosed with a missed abortion, threatened or inevitable abortion. They were enrolled only when they met the criteria above.
- ii. ii) Impaired mental state.

Dependent variable

Repeat abortion among patients seeking post-abortion care services in eastern Uganda

Independent variables

Sexual debut, number of sexual partners, number of previous abortions, time of last abortion,

time of last pregnancy, occupation, years in marriage, family history, level of education, age, marital status, economic status, methods used for last pregnancy, access to reproductive health care services.

Sample size determination

Using a study from Kenya(Maina et al., 2015b) and(Fleiss et al., 1980) method to calculate sample size.

Sample Size:X-Sectional, Cohort, & Randomized Clinical Trials			
Two-sided significance level(1-alpha):			95
Power(1-beta, % chance of detecting):			80
Ratio of sample size, Unexposed/Exposed:			2.72
Percent of Unexposed with Outcome:			5
Percent of Exposed with Outcome:			26
Odds Ratio:			6.8
Risk/Prevalence Ratio:			5.3
Risk/Prevalence difference:			21
	Kelsey	Fleiss	Fleiss with CC
Sample Size - Exposed	23	27	33
Sample Size-Nonexposed	62	72	89
Total sample size:	85	99	122

We took the ratio of cases to controls as 1:2, meaning that we needed 122 cases and 244 controls, giving us a total of 366 participants. This answered the objective of determinants.

Because Mbale regional referral hospital(MRRH) receives approximately twice the numbers at of Muyembe(MHC) and four times the numbers at Namatala health center(NHC) IVs, we recruited the participants in the ratio of 4:2:1(MRRH -209, MHC-102; NHC-55).

Sampling method

A consecutive sampling method was used to recruit cases, and simple random sampling for controls during the time of data collection of the research study.

Data collection tool

A data collection tool with a semi-structured questionnaire adopted from the previous studies (M. Binayew et al., 2022; Geta, Seyoum, Gomora, Kene, et al., 2022; Seyoum & Mengistu, 2023; Waktola et al., 2020b) and adopted for this research (Appendix 4). The questionnaire was printed in both English and the local language, but was also interpreted for the patients during the process of data collection

Data collection procedure

Research administered questionnaire was used to collect data. A private room with a conducive environment was availed for the study. The surveys took approximately 30 minutes, and the purpose of the research study was explained clearly to obtain informed consent. Research assistants were chosen and trained depending on their willingness. The research assistants were not staff employed on the gynaecological unit; this was done to minimize bias.

Quality control.

Pre-testing of data collection tools.

Pre-testing of the questionnaire guide was carried out on patients who were seeking post abortion care services in other health facilities in eastern Uganda that were not part of our study sites.

Each questionnaire was checked for completeness after raw data collection and entered into the computer data tool, whereas access was limited to only the researcher.

Data management

The data obtained was encoded and treated with utmost confidentiality. Analysis was carried out at the end of every working day to ensure completeness, correctness, and adequacy of the information collected.

Data analysis and presentation plan

Data was analyzed electronically using Stata and Excel 2010. The major determinants were determined by comparing the groups among mothers who had a history of abortions. Bivariate analysis was used to determine the crude odds ratio. Using a chi-square test, significant p-values were determined. For p values less than or equal to 0.2, we subjected them to multivariate binary logistic regression to determine the statistically significant factors, which were those with $p < 0.05$ at 95%CI. Potential confounding was addressed analytically rather than through matching. All potential confounders were entered into a multivariable logistic regression model. Confounding was assessed using a change in the estimate criterion of $>10\%$. Variables that changed the crude odds ratio of the primary exposure by $>10\%$ were retained in the final model. The final adjusted odds ratios with 95% confidence intervals were therefore presented after controlling for these confounders. Multicollinearity among independent variables in the final multivariable model was assessed before model fitting. Pairwise correlation was examined, and multicollinearity was formally tested using the variance inflation factor (VIF).

A VIF value >10 was considered indicative of significant multicollinearity. No variables

exceeded this threshold and thus were all retained in the model. Gestational age at the time of abortion was included because it is a known factor of abortion complications. Early gestation age may also be associated with self-managed or unsafe abortions, which are risk factors for repeat abortion. The type of abortion (induced/spontaneous) was also included because the underlying aetiology and behavioural context differ. Induced abortion is often associated with unintended pregnancy and unmet contraceptive need, whereas spontaneous abortion is often linked to underlying medical conditions such as malaria, which all predispose women to pregnancy loss. Editing involved manual checking for errors and omissions in the filled tools to ensure consistency, completeness, validity, relevancy, and accuracy of data collected. The analysed information was presented as frequency distribution tables and graphs.

Ethical considerations

The study was initially presented to the Department of Nursing and cleared to proceed to the Research and Ethics Committee (REC) of the faculty. Ethical approval for this study was obtained from the Research and Ethics Committee (REC) of the Faculty of Health Sciences, Busitema University, and approval was granted with the number BUFHS-2026-66.

Written informed consent was provided explaining the details of the research. The research did not involve collecting any samples, and we envisaged that the significant inconvenience was caused by the time spent answering the researcher-administered questionnaire. However, this did not interfere with patients' access to any services. The data collection took place in a separate room from the ward. This was done to ensure privacy. The participants were asked for permission to decide whether to participate voluntarily in the study without any implications if they refused to participate. Those who agreed to be part of the study were required to sign the consent form.

Dissemination of results

A copy of the results will be printed and submitted to the department, library, health offices of Elgon sub-region and the Association of Obstetricians and Gynaecologists (AOGU) of Uganda. Efforts will be made to disseminate it to the wider audience by publication in peer reviewed journals.

CHAPTER FOUR: RESULTS

Socio-demographic characteristics of the study respondents

All the 366 women approached during the study period, April 2026 to May 2026, agreed to participate, and all completed the interview, resulting in a 100% response rate.

Among these, 122/366(33.3%) were cases/repeat abortion (RA) while 244/366(66.7%) were controls/index abortion. The mean age of cases was 27years (SD=4.46) and that of controls was 24years (Min=15, Max=40, SD=4.79). The majority of cases were married, at 77.1%, compared to 33.2% for the controls. Most of the controls were students, at 51.1%, while for the cases, 68.9% were informally employed. Additionally, with regard to the major source of information on health, all categories reported the health facility as a major source of health information; 63.9% for cases and 38.1% for controls. Moreover, 48.0% of the controls had attained only the seven basic years of primary education compared to 36.9% of the cases (TABLE 1)

Table 1: The sociodemographic characteristics of the 366 participants in eastern Uganda.

Variables	Cases(repeat abortion) Number, n (%)	Controls(index abortion) Number, n (%)
Age		
15-19	3(2.5)	52(21.3)
20-24	30(24.6)	100(40.0)
25-29	50(40.9)	66(27.1)
30-34	31(25.4)	15(6.2)
35+	8(6.7)	11(4.5)
Marital status		
Married/cohabiting	94(77.1)	81(33.2)
Single-in a relationship	16(13.1)	123(50.4)
Single- not in a relationship	11(9.0)	32(13.1)
Divorced/separated	1(1.8)	8(3.3)
Religion		
Muslim	26(21.3)	56(22.9)
Catholic	41(33.6)	69(28.4)
Protestant	28(23.0)	56(22.9)
Seventh-day Adventist	9(7.4)	18(7.4)
Born again	15(12.3)	34(13.9)
Atheist	1(0.8)	3(1.2)

Other	2(1.6)	8(3.3)
Level of education		
Primary	45(36.9)	177(48.0)
Secondary	54(44.2)	82(33.6)
Tertiary	14(11.5)	40(16.4)
Informal	9(7.4)	5(2.0)
Occupation		
Formal	10(8.2)	18(7.4)
Only Informal	84(68.9)	25(10.3)
Peasant/subsistence farmer	13(10.7)	26(10.7)
House wife	6(4.9)	25(20.5)
Student	9(7.4)	125(51.1)
Residence		
Urban	70(57.4)	108(44.3)
Rural	52(42.6)	136(55.7)
Husband/partner's level of education		
Primary	42(34.4)	53(21.7)
Secondary	49(40.2)	131(53.7)
Tertiary	23(18.9)	55(22.5)
Only Informal	8(6.5)	5(2.1)
Husband/partner's occupation		
Formal	13(10.7)	29(11.8)
Informal	88(72.1)	66(27.1)
Peasant/subsistence farmer	15(12.3)	66(27.1)
Student	6(4.9)	83(34.0)
Monthly income		
Less than 1.2 million(<317 United states dollar (USD))	117(95.9)	237(97.1)
1.2-2.9million(317-768USD)	5(4.1)	7(2.9)
≥3million (≥796USD)	0(0.0)	0(0.0)
Alcohol consumption		
Yes	2(1.6)	1(0.4)
No	120(98.4)	243(99.6)

Smoking		
Yes	0(0.0)	0(0.0)
No	122(100.0)	244(100.0)
Use of other illicit substances		
Yes	2(1.6)	1(0.4)
No	120(98.4)	243(99.6)
Experienced Child Abuse		
Yes	29(23.8)	34(13.9)
No	93(76.2)	210(86.1)
Orphan		
Yes	50(41.0)	52(21.3)
No	72(59.0)	192(78.7)
Major source of health information		
Health facility	78(63.9)	93(38.1)
Radio	6(4.9)	34(13.9)
Television	4(3.3)	35(14.3)
Social media	21(17.2)	23(9.4)
School	4(3.4)	53(21.7)
Community health worker/outreaches	9(7.4)	6(2.5)

Gynaecologic and reproductive history of the study respondents

The majority of the controls reported unplanned pregnancy, 68.4% compared to 56.6% for the cases. Notably, the majority in all categories had had an early sexual debut (before 18 years of age), with 72.9% doing so amongst the controls and 67.2% among the cases. Additionally, there was low utilization of modern contraceptives across the board, with only 27.1% of the cases, 36.5% for the controls, using them at around the time of the sexual intercourse leading to the pregnancy. Additionally, multiple sexual partners were reported by either categories 92.7% of the cases and 63.5% for the controls reported to have two or more sexual partners at the time leading to the pregnancy. Relatedly, 54.9% of the cases reported a shorter than recommended interpregnancy interval compared to 26.6% of the controls.

Relatedly of the 366 participants, 208(56.8%) had had induced abortion. More so, 31.2% of the cases had had induced abortion. Of the 244 controls, 170(70%) had had induced abortion (Table 2)

Table 2: Gynaecologic and reproductive characteristics of the 366 participants.

Variable	Cases(repeat abortion)	Controls(index abortion)
	n (%)	n (%)
Planned pregnancy		
Yes	69(56.6)	77(31.6)
No	53(43.4)	167(68.4)
Age at first sexual intercourse		
Less than 18	82(67.2)	163(66.8)
18 and above	40(32.8)	81(33.2)
Ever number of sexual partners		
One	10(7.3)	89(36.5)
Two and above	126(92.7)	155(63.5)
Number of sexual partners in the past 12 months		
One	113(92.6)	216(88.5)
Two and above	9(7.4)	28(11.5)
Outcome of the antecedent pregnancy		
Live child	84(68.9)	83(34.0)
Still birth	38(31.2)	14(5.7)
Not applicable	0(0.0)	147(60.3)
Used a modern contraceptive prior to index pregnancy		
Yes	88(27.1)	89(36.5)
No	34(72.1)	155(63.5)
Willingness to use a modern contraceptive for post abortion care		
Yes	40(32.8)	193(79.0)
No	82(67.2)	51(21.0)
Regret having an abortion		
Yes	91(74.6)	110(45.1)
No	31(25.4)	134(54.9)
Complication during or after the current abortion		
	91(74.6)	151(61.9)

Yes	31(25.4)	93(38.1)
No		
Probable cause of current abortion		
Induced	38(31.2)	170(69.7)
Spontaneous	84(68.8)	74(30.3)
Experienced pressure to terminate pregnancy		
Yes	83(68.0)	126(51.6)
No	39(32.0)	118(48.4)
Interpregnancy interval		
Short	67(54.9)	65(26.6)
Recommended	49(40.2)	16(6.6)
Long	6(4.9)	6(2.5)
Not applicable	0(0.0)	157(64.3)
Symptoms preceding current abortion		
Malaria diagnosis	40(32.8)	48(19.7)
Symptoms of urinary tract infection	31(25.4)	59(24.2)
Others	49(40.2)	15(6.1)
None	2(1.6)	122(50.0)

Table 3: Bivariate analysis of the 366 participants investigated for the determinants of repeat abortion among patients seeking post-abortion care services in eastern Uganda

Variables	Cases n (%)	Controls n (%)	Chi2 p- value	COR (95%CI)	p-value
Age					
15-19	3(2.5)	52(21.3)	<0.001	1	0.009
20-24	30(24.6)	100(40.0)		5.20(1.52-17.85)	
25-29	50(40.9)	66(27.1)		13.13(3.88-44.50)	
30-34	31(25.4)	15(6.2)		35.82(9.60-133.69)	
35+	8(6.7)	11(4.5)		12.61(2.88-55.25)	
Marital status					
Married/cohabiting	94(77.1)	81(33.2)	<0.001	1	<0.001
Single-in a relationship	16(13.1)	123(50.4)		0.11(0.06-0.20)	
Single- not in a relationship	11(9.0)	32(13.1)		0.30(0.14-0.63)	
Divorced/separated	1(1.8)	8(3.3)		0.11(0.86-1.56)	
Religion					
Muslim	26(21.3)	56(22.9)	0.924	1	0.424
Catholic	41(33.6)	69(28.4)		1.28(0.70-2.34)	
Protestant	28(23.0)	56(22.9)		1.08(0.56-2.06)	
Seventh-day Adventist	9(7.4)	18(7.4)		1.08(0.42-2.71)	
Born again	15(12.3)	34(13.9)		0.95(0.44-2.04)	
Atheist	1(0.8)	3(1.2)		0.72(0.71-7.24)	
Other	2(1.6)	8(3.3)		0.54(0.11-2.71)	
Level of education					
Primary	45(36.9)	177(48.0)	0.007	1	0.030
Secondary	54(44.2)	82(33.6)		1.71(1.05-2.78)	
Tertiary	14(11.5)	40(16.4)		0.91(0.45-1.83)	
Informal	9(7.4)	5(2.0)		4.68(1.49-14.72)	
Occupation					
Formal	10(8.2)	18(7.4)	<0.001	1	0.163
Informal	84(68.9)	25(10.3)		0.43(0.13-1.41)	
Peasant/subsistence farmer	13(10.7)	26(10.7)		0.90(0.32-2.50)	

House wife	6(4.9)	25(20.5)		3.02(-1.29-7.07)	0.011
Student	9(7.4)	125(51.1)		0.13(0.05-0.36)	<0.001
Residence					
Urban	70(57.4)	108(44.3)	0.018	1	
Rural	52(42.6)	136(55.7)		0.59(0.38-0.91)	0.018
Husband/partner's level of education					
Primary	42(34.4)	53(21.7)		1	
Secondary	49(40.2)	131(53.7)	0.004	0.47(0.28-0.79)	0.005
Tertiary	23(18.9)	55(22.5)		0.53(0.28-0.99)	0.048
Informal	8(6.5)	5(2.1)		2.02(0.62-6.63)	0.247
Husband/partner's occupation					
Formal	13(10.7)	29(11.8)		1	
Informal	88(72.1)	66(27.1)		0.51(0.21-1.20)	0.122
Peasant/subsistence farmer	15(12.3)	66(27.1)	<0.001	2.97(1.44-6.16)	0.003
Student	6(4.9)	83(34.0)		0.16(0.06-0.46)	0.001
Monthly income					
Less than 1.2 million(< 318 United States Dollars(USD)	117(95.9)	237(97.1)	0.534		
1.2million-2.9million (318-768USD)	5(4.1)	7(2.9)		1	
≥3million(≥796USD)	0(0.0)	0(0.0)		1.45(0.45-4.66)	0.536
Alcohol consumption					
Yes	2(1.6)	1(0.4)	0.219	1	
No	120(98.4)	243(99.6)		0.25(0.02-2.75)	0.255
Smoking					
Yes	0(0.0)	0(0.0)		Empty	omitted
No	122(100.0)	244(100.0)			
Use of other illicit substances					
Yes	2(1.6)	1(0.4)	0.219	1	
No	120(98.4)	243(99.6)		4.05(0.36-45.11)	0.255
Experienced Child Abuse					
Yes	29(23.8)	34(13.9)	0.019	1	
No	93(76.2)	210(86.1)		0.52(0.30-0.90)	0.020

Orphan					
Yes	50(41.0)	52(21.3)	<0.001	1	
No	72(59.0)	192(78.7)		0.39(0.24-0.63)	<0.001
Major source of health information					
Health facility	78(63.9)	93(38.1)		1	
Radio	6(4.9)	34(13.9)		0.21(0.08-0.53)	0.001
Television	4(3.3)	35(14.3)	<0.001	0.14(0.05-0.40)	<0.001
Social media	21(17.2)	23(9.4)		1.09(0.56-2.11)	0.802
School	4(3.4)	53(21.7)		0.09(0.03-0.26)	<0.001
Community health worker/outreaches	9(7.4)	6(2.5)		1.79(0.61-5.25)	0.290
Planned pregnancy					
Yes	69(56.6)	77(31.6)	<0.001	1	
No	53(43.4)	167(68.4)		0.35(0.23-0.55)	<0.001
Age at first sexual intercourse					
Less than 18	82(67.2)	163(72.9)		1	
18 and above	40(32.8)	66(27.1)	0.254	1.32(0.82-2.11)	0.255
Ever number of sexual partners					
One	10(7.3)	89(36.5)	<0.001	1	<0.001
Two and above	126(92.7)	155(63.5)		7.21(3.48-14.92)	
Number of sexual partners in the past 12 months					
One	113(92.6)	216(88.5)	0.004	1	
Two and above	9(7.4)	28(11.5)		2.30(1.29-4.09)	0.005
Outcome of the antecedent pregnancy					
Live child	84(68.9)	83(34.0)	<0.001	1	
Still birth	38(31.2)	14(5.7)		2.68(1.35-5.31)	0.005
Not applicable	0(0.0)	147(60.3)			
Used a modern contraceptive prior to index pregnancy					
Yes	88(72.1)	89(36.5)	0.461	1	
No	34(27.9)	155(63.5)		0.12(0.02-0.90)	0.390

Willingness to use a modern contraceptive post abortion					
Yes	40(32.8)	193(79.0)	<0.001	1	
No	82(67.2)	51(21.0)		0.03(0.00-0.21)	<0.001
Regret having an abortion					
Yes	91(74.6)	110(45.1)	<0.001	1	
No	31(25.4)	134(54.9)		0.28(0.17-0.45)	<0.001
Complication during or after the current abortion				empty	omitted
Yes	91(74.6)	151(61.9)			
No	31(25.4)	93(38.1)			
Experienced pressure to terminate pregnancy					
Yes	83(68.0)	126(51.6)	0.20	1	
No	39(32.0)	118(48.4)		0.44(0.24-0.82)	0.009
Reason for current abortion					
Induced(self/medically)	38(31.2)	170(69.7)	<0.001	1	
Spontaneous	84(68.8)	74(30.3)		0.22(0.14-0.36)	<0.001
Interpregnancy interval					
Short	67(54.9)	65(26.6)		1	
Recommended	49(40.2)	16(6.6)	0.025	1.77(1.11-2.82)	0.017
Long	6(4.9)	6(2.5)		0.88(0.33-2.34)	0.796
Not applicable	0(0.0)	157(64.3)			
Symptoms preceding current abortion					
Malaria diagnosis	40(32.8)	48(19.7)		1	
Symptoms of urinary tract infection	31(25.4)	59(24.2)	<0.001	0.63(0.34-1.15)	0.135
Others diagnoses	49(40.2)	15(6.1)		3.92(1.92-8.01)	<0.001
None	2(1.6)	122(50.0)		0.02(0.00-0.08)	<0.001

Table 4: Multivariate logistic regression of the associated factors that were significant at bivariate analysis of the 366 participants investigated for the determinants of repeat abortion among patients seeking post-abortion care services in eastern Uganda

Variables	Chi2 p-value	COR (95%CI)	p-value	AOR (95%CI)	p-value
Age					
15-19		1		1	
20-24	<0.001	5.20(1.52-17.85)	0.009	2.46(0.59-10.32)	0.218
25-29		13.13(3.88-44.50)	<0.001	3.72(0.85-16.23)	0.080
30-34		35.82(9.60-133.69)	<0.001	9.42(1.82-48.67)	0.007
35+		12.61(2.88-55.25)	0.001	3.13(0.51-19.32)	0.219
Marital status					
Married/cohabiting		1			
Single-in a relationship	<0.001	0.11(0.06-0.20)	<0.001		
Single- not in a relationship		0.30(0.14-0.63)	0.001		
Divorced/separated		0.11(0.86-1.56)	0.038	0.85(0.52-1.41)	0.532
Level of education					
Primary		1			
Secondary	0.007	1.71(1.05-2.78)	0.030		
Tertiary		0.91(0.45-1.83)	0.791		
Informal		4.68(1.49-14.72)	0.008	1.11(0.74-1.65)	0.618
Residence					
Urban	0.018	1		1	
Rural		0.59(0.38-0.91)	0.018	1.13(0.59-2.14)	0.714
Occupation					
Formal		1			
Informal	<0.001	0.43(0.13-1.41)	0.163		
Peasant/subsistence farmer		0.90(0.32-2.50)	0.840		
House wife		3.02(-1.29-7.07)	0.011		
Student		0.13(0.05-0.36)	<0.001	1.35(1.00-1.82)	0.055

Experienced Child Abuse					
Yes	0.019	1			
No		0.52(0.30-0.90)	0.020	0.47(0.19-1.17)	0.104
Orphan					
Yes	<0.001	1			
No		0.39(0.24-0.63)	<0.001		0.241
Major source of health information					
Health facility		1			
Radio		0.21(0.08-0.53)	0.001		
Television	<0.001	0.14(0.05-0.40)	<0.001		
Social media		1.09(0.56-2.11)	0.802		
School		0.09(0.03-0.26)	<0.001		
Community health worker/outreaches		1.79(0.61-5.25)	0.290	0.98(0.79-1.20)	0.823
Planned pregnancy					
Yes	<0.001	1			
No		0.35(0.23-0.55)	<0.001	1.57(0.68-3.67)	0.173
Ever number of sexual partners					
One	<0.001	1			
Two and above		7.21(3.48-14.92)	<0.001	1.99(0.74-5.38)	0.173
Number of sexual partners in the past 12 months					
One	0.004	1			
Two and above		2.30(1.29-4.09)	0.005	1.87(0.87-4.00)	0.106
Outcome of the antecedent pregnancy					
Live child	<0.001	1			
Still birth		2.68(1.35-5.31)	0.005	0.23(0.13-0.39)	<0.001
Not applicable					
Willingness to use a modern contraceptive for post abortion care					

Yes	<0.001	1	<0.001		<0.001
No		0.03(0.00-0.21)		0.65(0.51-0.82)	
Regret having an abortion					
Yes	<0.001	1			
No		0.28(0.17-0.45)	<0.001	2.67(1.08-6.61)	0.033
Experienced pressure to terminate pregnancy					
Yes	0.20	1		1.09(0.86-1.38)	
No		0.44(0.24-0.82)	0.009		0.482
Reason for current abortion					
Induced(self/medically)	<0.001	1			
Spontaneous		0.22(0.14-0.36)	<0.001	0.66(0.32-1.38)	0.275
Interpregnancy interval					
Recommended		1			
Short	0.025	1.77(1.11-2.82)	0.017		
Long		0.88(0.33-2.34)	0.796	0.32(0.18-0.57)	<0.001
Not applicable					
Symptoms/diagnosis preceding current abortion					
Malaria diagnosis/Symptoms of urinary tract infection	<0.001	1			
		0.63(0.34-1.15)	0.135		
Other diagnoses		3.92(1.92-8.01)	<0.001		
None		0.02(0.00-0.08)	<0.001	3.2(1.81-6.01)	<0.001

Summary

After adjusting for confounders in the multivariable logistic regression analysis, independent predictors of repeat abortion were identified: age 30–34 years, stillbirth as an outcome of antecedent pregnancy, unwillingness to use modern contraceptives as part of post abortal care, short interpregnancy interval, and symptoms/diagnosis preceding index abortion.

CHAPTER FIVE: DISCUSSION

This facility-based, unmatched case-control study investigated the determinants of repeat abortion (RA) among women seeking post-abortion care services at selected sites in Eastern Uganda. A total of 366 participants took part, and these included 122 cases (repeat abortion) and 244 controls (index abortion).

Of the 366 participants, 14.9% were teenage mothers, while 5.2% were elderly mothers. This mirrors the Uganda reproductive age group patterns. In Uganda, 24-25% of women aged 15-19 have either given birth or are pregnant with their first child, and this pattern has remained constant from 2006-2022. Specifically, 14.5% of the teenagers in the Elgon sub-region had had live births. Not surprisingly, just like in the Uganda Demographic and Health Survey(UDHS,) only 5.2% of the study participants were aged 35years and above, indicating that by then, probably most have reached their family size, having started reproduction at a younger age(Statistics, 2023).

The mean age of the participants was 27 for the cases and 24 for the controls, which generally correlated with that reported in a study to examine the determinants of repeated abortion among women of reproductive age attending health facilities in Northern Ethiopia: a case–control study that reported a mean age of 24 for controls and 22 for cases

After adjusting for confounders in the multivariable logistic regression analysis, independent predictors of repeat abortion were identified: age 30-34 years, still births as an outcome of antecedent pregnancy, unwillingness to use modern contraceptives as part of post abortion care, short interpregnancy interval, and symptoms/diagnosis preceding index abortion.

Although generally as age of the woman increased so did the odds of repeat abortion(RA), those 30-34 years of age in our study were more likely to suffer RA compared to those of other age groups (AOR: 95%CI: 9.42(1.82-48.67, $p=0.007$). This finding mirrors that reported by (Yeboah et al., 2024) who reported that women who experience repeat abortion were aged 25–34 years (AOR:2.16;95%CI=1.66–2.79).

Two studies in China have revealed similar results. In a cross-sectional study involving 79,954 women, the strongest predictor was age older than 40 years (AOR=7.0,95%CI 6.2-7.9).

Relatedly, another study conducted in northwestern China, 56.6% (1924) of the 3397 abortion services seekers were RA and age older than 30 year was a statistically associated with RA to (OR: 1.37, 95% CI: 1.08-1.73 for 31-35 years, $p=0.009$; 1.82, 1.29-2.57, $p=0.001$ for ≥ 36 years)(Li et al., 2021). A similar study also conducted to determine the factors associated with pregnancy termination in Sub-Saharan Africa particularly in Burundi indicated that the odds of

pregnancy termination were 6 times (COR: 5.89, 95% CI 3.93-8.83) and 11 times (COR: 11.3, 95% CI 7.66-16.6) higher in age group of 20-24 years and 25-29 compared to the 15-19 years. In our study, early sexual debut was not significantly associated with repeat abortion. Several studies have reported early sexual debut as a significant predictor of RA (Zhang et al., 2018). Furthermore, in contrast to our study, in a multilevel analysis to study predictors of abortion amongst the adolescents using the data from the UDHS 2022 by Mungau et al, those who had sex debut before age 15 were 3.44 times more likely to abort compared to those aged 20–24, while those aged 15–17 were 2.24 times more likely, signifying the significance of age at sexual debut (Mungau et al., 2026). However, one has to note that Mungau et al study population were the adolescents, yet in our study, this population was only 14.9%; a population probably too small for statistical significance.

Women who were diagnosed with or had presented with malaria or urinary tract infections had 3.2 times higher odds of repeat abortion (AOR=3.2, 95% CI:1.8-6.0, $p<0.001$). A study by (Berhe et al., 2023) revealed that malaria in pregnancy remains highly endemic in eastern Uganda and is associated with fetal loss through placental parasitaemia. Studies conducted in eastern Uganda have reported adverse pregnancy outcomes associated with malaria (Aguti et al., 2026; Nekaka et al., 2020). Relatedly, asymptomatic bacteriuria in pregnancy is known to be prevalent in eastern Uganda (Nteziyaremye et al., 2020), which aligns with findings in our study.

Although marital status has been reported to have an influence on RA, there was no statistically significant association between marital status and RA. In Nigeria, women presenting for a second or higher-order repeat induced abortion (RIA) were more likely to be single than married (Lamina, 2015) or divorced rather than never married, separated, or even widowed (Luo et al., 2021). Furthermore, another cross sectional study in China involving two surveys reported that married women with at least one child were more likely to have repeat induced abortions though the odds were almost same as that of the control group at 0.93.

In this unmatched case-control study, women who were less educated had high propensity for RA than the more educated ones with unadjusted odds ratios for the only informal education, primary, secondary, tertiary at 4.68, 1.71 and 0.91 respectively. However, after controlling for confounders, this was not statistically significant. In a study in Ethiopia, participants who attended primary, secondary and college plus education had 79.0%, 89.0% and 99% reduced odds of RA respectively as compared to illiterate participants. During another study at Marie stopes clinics in Addis Ababa, participants with primary, secondary and college plus educational

status had 60%, 60% and 80% reduced odds of repeated induced abortion than illiterate counterparts (Mussie Alemayehu 2017). Another study done in Kenya reported the same trend of those that had attended primary, secondary and post-secondary educational level 71.6%, 66.4% and 72.2% reduced odds of having repeated induced abortion than illiterate counterparts (Maina et al., 2015a). This finding from the east African region shows that when dealing with a woman who has education, there is need to counsel well the less formally educated ones to reduce the odds of RA.

In contrast to several other studies, this study did not find a statistically significant association between RA and number of sexual partners whether in the past 12 months of the mother or since her first relationship although generally there were higher odds of RA of 99% and 88% respectively for those that had had at least two partners at either stage of life compared to those that had had one. Studies elsewhere have reported that having multiple sexual partners in the preceding twelve months was 2-8 (Behulu et al., 2019) more likely associated with RIA.

In this study there was no significant association between smoking, alcohol and illicit substance abuse with RA. In line with a study in Ethiopia, Khat chewing and smoking cigarette did not show association with RA (Mekonen Binayew et al., 2022). However studies conducted in United States of America and Sweden revealed positive association between drug use and repeated induced abortion (Makenzius et al., 2011; Obern et al., 2023; Prager et al., 2007). The differences may be explained by profound differences in wealth index that greatly influences lifestyle. The USA and Sweden are classified as high income countries whereas Ethiopia and Uganda are low income countries (Bank, 2024).

Women who regretted having suffered abortion were 2.67 times more likely to have RA than those that did not (AOR=2.67, 95%CI (1.08-6.61), $p=0.033$). This could be supported by a study by A Systematic Review Dumitriu et al on Contraceptive Barriers and Psychological Well-Being after Repeat Induced Abortion, abortions sought for socioeconomic reasons elevated depression odds by 34%. Furthermore, at the structural level, every standard deviation improvement in a state's reproductive rights index reduced frequent psychological distress odds by 5%, whereas enactment of a near-total legal ban produced an absolute increase of 6.8 percentage points (Dumitriu et al., 2025). This may be taken to mean that most likely the women in our setting may induce abortion due to socioeconomic reasons; a situation that does not easily change. Women who regret suffering an abortion often struggle to find answers about the cause of the abortion and thus have less chances suffering a repeat abortion

In this study, willingness to use modern contraceptives as part of post-abortion care (PAC) had higher odds of RA compared to those that were not ($p < 0.001$, AOR=0.65, 95% CI 0.51-0.82) and had a statistically significant association with RA. Although no similar evidence about the significant association has ever been reported, this is interesting and may mean that women who were willing to use modern contraceptives were probably more empowered in line with sexual and reproductive health and probably more likely to induce abortion.

Although male partner involvement has been shown to improve sexual and reproductive health services utilisation in other studies in eastern Uganda (Priscilla Alupo, 2020) and east Africa generally (Fletcher et al., 2024), it did not demonstrate any statistically significant influence on RA in this study. The nature of male partner's involvement may influence the decision for the female to keep or abort the pregnancy. Many women choose to abort if males deny responsibility or paternity, or provide resources and support for the procedure (Kibira et al., 2023; Strong, 2022)

Furthermore, in this study, short interpregnancy interval (SIPI), was significantly associated with repeat abortion. Longer interpregnancy interval (LIPI) had 68% less odds of repeat abortion compared SIPI (AOR: 0.32, 95% CI (0.18-0.57, $p < 0.001$). This is in agreement with findings from a study carried out in public health facilities in Harar town that revealed that women who had short interpregnancy intervals were about 4.4 times more likely to have repeated abortion, AOR=4.42, 95% CI: 2.38, 8.22, compared to those with LIPI (Mustefa et al., 2026). Other studies too have reported that IPI of less than 6 months is associated with increased hazard ratio of subsequent pregnancy loss (Sundermann et al., 2017). Inappropriate interpregnancy intervals (IPIs) are associated with adverse maternal and perinatal outcomes that have been advanced by several hypotheses such as maternal depletion of major nutrients such as folate and iron hypothesis (King, 2003; Miller, 1991; Winkvist et al., 1992), infection and inflammation hypothesis (DiGiulio DB, 2015; Getahun D, 2010), and physiological regression (Zhu et al., 1999).

Women who had had a stillbirth as an outcome preceding the index pregnancy had lower odds of suffering a repeat abortion, AOR: 0.23, 95% CI 0.13-0.39, $p < 0.001$. This is supported by researches that show that multiparous women especially those with children are likely to experience RA than those without children (Kc et al., 2023; Longmei Tang, 2021). Those without children in African setting are likely to treasure more the occasion of child birth than those already with one, and thus unlikely to take the path of abortion due to stigma related to infertility (Ekpore et al., 2025).

Research shows that children with early childhood abuse are likely to experience an unplanned pregnancy (Bornovalova et al., 2008; Drevin et al., 2020). Furthermore, a study in eastern Uganda demonstrated that parent/parent-figure support enhances modern contraceptive use (Ivan Lyagoba, 2025) which is likely to reduce the odds of unplanned pregnancy. However, in our study, early childhood abuse demonstrated no statistical significance to RA, in contrast to studies done in France by Haddad et al (Haddad et al., 2021) and in northern California by Bleil et al (Bleil et al., 2011) that demonstrated significant odds for RA.

Therefore RA is a problem that is prevalent in Uganda and requires multipronged approach to tackle it as a public health problem.

Study strengths

Adequate case-control ratio was maintained to ensure balanced comparison between groups. Inclusion of multiple health facilities across the eastern sub-region enhanced the generalizability of findings beyond a single site.

Rigorous statistical analysis was conducted using multivariable logistic regression to adjust for potential confounders and strengthen internal validity.

The study used validated questions adapted from prior studies on post-abortion care and reproductive health, which improved the reliability and comparability of the data collected.

Study limitation

The facility-based design restricts the generalizability of findings. Participants were recruited from selected health facilities. Women who sought post-abortion care services outside the formal health facilities- a common occurrence in the restrictive Uganda legal environment were not captured, hence were not represented.

Under-reporting of induced abortions or sexual risk behaviour may underestimate associations, given the nature of the sensitive area.

Cross-sectional exposure measurement within a case-control study design cannot infer causality, and unmeasured confounders such as quality of antenatal care services, history of sexually transmitted diseases, and blood group could have influenced the associations.

Conclusion

In eastern Uganda efforts to tackle repeat abortion should aim to target mothers of older mothers, encourage postpartum and post abortion modern contraceptive to prolong interpregnancy interval. In addition, early antenatal care attendance and screening for infections such as malaria, and urinary tract infections and asymptomatic bacteriuria should be encouraged and emphasized.

Recommendations

Health facility

Because of the unwillingness to use modern contraceptive we recommend integrating comprehensive post-abortion family planning counselling into routine post-abortion care services for all clients before discharge.

Ensure continuous availability of a wide range of modern contraceptive methods, particularly long-acting reversible contraceptives.

Community

Expand community-based reproductive health education programs focusing on pregnancy spacing, contraceptive use, and prevention of unintended pregnancies.

Strengthen youth-friendly sexual and reproductive health services to improve access to accurate information and contraception.

Policy

Strengthen monitoring and evaluation of post-abortion family planning service uptake within reproductive health programs.

Support policies that promote access to comprehensive reproductive health services and contraceptive commodities.

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APPENDIX

Appendix 1: Approval letter



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FACULTY OF HEALTH SCIENCES' REC

26/03/2026
To: MUDIMI VICTOR
BUSITEMA UNIVERSITY

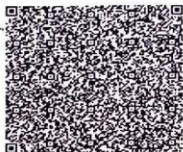
Review Type: Initial Review

BUSITEMA UNIVERSITY
FACULTY OF HEALTH SCIENCES
APPROVED VALID UNTIL

26 MAR 2027

★

RESEARCH & ETHICS COMMITTEE
P. O. BOX 1460, MBALE



Re:BUFHS-2026-666: DETERMINANTS OF REPEAT ABORTION AMONG PATIENTS SEEKING POST ABORTION CARE SERVICES IN EASTERN UGANDA

I am pleased to inform you that at the 3rd convened meeting on 05/03/2026, the Busitema University Faculty of Health Sciences REC meeting voted to approve the above referenced application.
Approval of the research is for the period of 26/03/2026 to 26/03/2027.

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for re-review and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit: ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC **eight weeks** prior to the expiration date of **26/03/2027** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by Busitema University Faculty of Health Sciences REC:

No.	Document Title	Language	Version Number	Version Date
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1	BUFHS-2026-666_Consent Form LUMASABA_DETERMINANTS OF REPEAT ABORTION Study_15March2026	lugisu	1.1	2026-03-15
2	BUFHS-2026-666_Response to Reviewers Letter_DETERMINANTS OF REPEAT ABORTION Study_15March2026	English	1.1	2026-03-15
3	BUFHS-2026-666_Protocol_DETERMINA NTS OF REPEAT ABORTION Study_15March2026 track changes	English	1.1	2026-03-15
4	Main Consent forms	English	1.1	2026-03-15
5	Protocol	English	1.1	2026-03-15
6	Data collection tools	English	1.1	2026-03-15

Yours sincerely,



Richard Katuramu
For: Busitema University Faculty of Health Sciences REC



Appendix 2: Participant consent form



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Study #:
PARTICIPANT CONSENT FORM

FACULTY OF HEALTH SCIENCES RESEARCH AND ETHICS COMMITTEE (BUFHSREC)

PROTOCOL TITLE: DETERMINANTS OF REPEAT ABORTION AMONG PATIENTS SEEKING POST ABORTION CARE SERVICES IN EASTERN UGANDA.

PRINCIPAL INVESTIGATOR: MUDIMI VICTOR, nursing student, pursuing a Bachelor of Science in Nursing at Busitema University, Faculty of Health Sciences, Mbale. Contact: 0773873261/0756431788 ymudimi@gmail.com

1. PURPOSE: The purpose of this study is to investigate the determinants of repeat abortion among patients seeking post abortion care services in eastern Uganda. Furthermore, the researchers shall forward the results to the school administration as it is a requirement in partial fulfillment for the award of a Bachelor's degree in Science in Nursing.

2. INVESTIGATORS: The investigator of this research is Mudimi Victor, the principal investigator, nursing student, pursuing a Bachelor of Science in Nursing at Busitema University, Faculty of Health Sciences, Mbale. The research is multi-center, in the different health facilities of eastern Uganda.

3. POPULATION: The participants of the study will be patients seeking post abortion care services in eastern Uganda during the study period who meet the inclusion criteria. Patients seeking post abortion care services to the Gynaecology wards in eastern Uganda diagnosed with either incomplete, complete, missed (or blighted ovum) and or septic abortion, aged will be eligible participants to participate in this study.

4. PERIOD: The study will take approximately 30 minutes for the participants and about 1 month for the whole study to be conducted.

5. PROCEDURES: Patients seeking post abortion care services at the gynecological wards in eastern Uganda will be recruited by consecutive and simple random sampling. Those who meet the eligibility criteria will be given adequate information about the study and requested to participate

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★ 26 MAR 2027 ★

RESEARCH & ETHICS COMMITTEE
P.O. BOX 1460, MBALE



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in the study. The ones that agree to participate in the study will be asked to fill out a questionnaire under the guidance of a researcher.

6. RISKS: There are no known risks or discomforts in this study, however, you may choose not to answer some questions that make you feel uncomfortable or withdraw from the study at any time without a penalty.

7. BENEFITS: While there will be no direct benefit to you, your participation will help us better understand the determinants of repeat abortion among patients seeking post abortion care services in eastern Uganda which will lead to improved health outcomes and improvement in abortion prevention strategies. Furthermore, this study will help the researcher attain a bachelor's degree from Busitema University.

8. COSTS: You will be compensated for your time with a bottle of soda.

9. PARTICIPANT'S RIGHTS:

(a). **Voluntariness:** Your participation in the study is entirely voluntary. You may choose not to participate or to withdraw at any time without affecting your medical care or any other services you receive at Mbale regional referral hospital.

(b). **Alternatives:** there is no alternative participation in this study, you may choose to participate or not to participate.

(c). **Withdrawal:** You may choose not to participate or to withdraw at any time without affecting your medical care or any other services you receive at the health facility.

(d). **Privacy:** The survey will be carried from a private room to ensure privacy. The data collection will take place from a separate room from the ward. This is done to ensure privacy.

(e). **Confidentiality:** All the information collected in this study will be kept confidential. Your identity will not be revealed in any report or publication resulting from this study.

10. CONTACTS: Contact Dr. NTEZIYAREMYE JULIUS Department of Obstetrics and Gynecology, Busitema University, Faculty of Health Sciences. Contact: 0706614213 intezi@gmail.com for any other questions or concerns you may have about this study: OR Contact Dr.



Appendix 3: Data collection tool

APPENDIX II: QUESTIONNAIRE

Questionnaire: **TO INVESTIGATE THE DETERMINANTS OF REPEAT ABORTION AMONG PATIENTS SEEKING POST ABORTION CARE SERVICES IN EASTERN UGANDA.**

Name (Initials only)

Telephone.....

Study number.....

Is this the first time you are having/suffering an abortion?

If Yes, CONTROL ☐

If No, CASE ☐

SECTION A: SOCIO-DEMOGRAPHIC CHARACTERISTICS

1. What is your age?

2. What is your marital status?

a. Married ☐ b. single ☐ c. Divorced/widowed ☐

3. What is your Religion?

a. Muslim ☐ b. Catholic ☐ c. Pentecostal ☐ d. Seventh day ☐

e. Born again ☐ f. No religion ☐ g. Others.....

4. What is your level of education?

a. Primary ☐ b. Secondary (S1-S6) ☐ c. Tertiary ☐ d. informal ☐

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5. What is your Occupation?

- a. Formal ☐ b. Informal ☐ c. Peasant/subsistence farmer ☐
d. Only housewife ☐ e. Student ☐

6. Where do you live?

- a. Urban ☐ b. Rural ☐

7. What is the educational level of your husband/partner?

- a. Primary ☐ b. Secondary (S1-S6) ☐ c. Tertiary ☐
d. No formal education ☐

8. What is the occupation of your partner?

- a. Formal ☐ b. Informal ☐ c. Peasant/subsistence farmer ☐
d. student ☐ e. Only house wife ☐

9. What is your Monthly income (Ugx)?

- a. Less than 1.2m ☐ b. 1.2-2.9m ☐ c. 3m+ ☐

10. Do you currently drink alcohol?

- a. Yes ☐ b. No ☐

11. Have you ever drunk alcohol during pregnancy

- a. Yes ☐ b. No ☐

12. Do you currently smoke?

- a. Yes ☐ b. No ☐

13. Have you ever smoked during pregnancy?

- a. Yes ☐ b. No ☐

14. What is your major source of health information?

.....



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SECTION C: OBSTETRIC AND GYNAECOLOGICAL HISTORY

15. Was this pregnancy planned?

a. Yes ☐ b. No ☐

16. When was the first time you had your partner?

a. At 15 ☐ b. At 16 ☐ c. At 17 ☐ d. At 18 ☐
e. Above 18 ☐

17. How many partners have you had?

a. 1 ☐ b. 2 ☐ c. 3 ☐ d. 4 ☐ e. >4 ☐

18. How many partners do you have currently?

a. 1 ☐ b. 2 ☐ c. 3 ☐ d. 4 ☐ e. >4 ☐

19. What age did you get married at?

20. How old were you at your first pregnancy?

21. How many living children do you have?

a. 1 ☐ b. 2 ☐ c. 3 ☐ d. 4 ☐ e. >4 ☐

22. Have you ever had a stillbirth? If yes how many times

23. How old were you when you had your first miscarriage?

24. What was the reason for your most recent miscarriage/abortion?



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32. If not why? What is your reason for not using?

- a. Lack of awareness ☐ b. Fear of side effects ☐ c. Fear of side effects ☐
d. Spouse/partner refusal ☐ e. Religious beliefs ☐ f. Cultural beliefs ☐
g. Others.....

33. Have you ever had any challenges accessing contraception?

- a. Distant health facility ☐ b. Poor health worker attitude ☐
c. Contraception methods unavailable in the facility ☐ Others

34. Would you want to use a modern contraceptive method, if yes which one?

- Injectable (Sayana, Depo-Provera) ☐ b. Daily pill ☐ c. Jadelle ☐
d. Intrauterine device (IUD) ☐ e. Moon beads ☐ f. Others.....

35. Did you use contraception before the miscarriage?

- a. Yes ☐ b. No ☐

36. How often do you use contraception?

- a. Always ☐ b. Occasionally ☐



Thank you for your participation in this study



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Appendix 4: Administrative clearance.



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**FACULTY OF HEALTH SCIENCES
DEPARTMENT OF NURSING**

The Executive Director,
Mbale Regional Referral Hospital

Through,
The Senior Principal Nursing Officer
Mbale Regional Referral Hospital

Dear Director

RE: INTRODUCING UNDERGRADUATE NURSING STUDENTS FROM BUSITEMA UNIVERSITY

Busitema University undergraduate nursing students undertake individual research projects during their final year of study. The respective projects have ethical approval from the Busitema University Faculty of Health Sciences Research and Ethics Committee (REC).

The purpose of this letter therefore is to request for your permission to allow our nursing students to collect data from your facility. We have provided the list of nursing students who may collect their data from Mbale Regional Referral Hospital.

We thank you for your continued support as we educate the next generation of nurses.

Yours sincerely,

Joshua Epuitai
Head of Department, Nursing
Faculty of Health Sciences
Busitema University.
Tel: 0788450160
Email: joshuaepuitai@gmail.com



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**FACULTY OF HEALTH SCIENCES
DEPARTMENT OF NURSING**

31st March 2026

The Medical Superintendent/In-charge of the facility

Dear Sir or Madam

RE: INTRODUCING UNDERGRADUATE NURSING STUDENTS FROM BUSITEMA UNIVERSITY

Busitema University undergraduate nursing students undertake individual research projects during their final year of study. The respective projects have ethical approval from the Busitema University Faculty of Health Sciences Research and Ethics Committee (REC).

The purpose of this letter therefore is to request for your permission to allow our nursing students to collect data from your facility. We have provided the list of nursing students from Busitema University who may collect data from your facility.

We thank you for your continued support as we educate the next generation of nurses.

Yours sincerely,


Joshua Eputai
Head of Department, Nursing
Faculty of Health Sciences
Busitema University.
Tel: 0788450160
Email: joshuaepuitai@gmail.com

*forwarded for
data collection as
per the study
topic.*

2014/2026.

*Received on
21/4/2026*



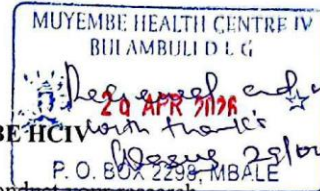
DHO : 0759801161
DHO : 0782209936
Email : mnaimu18@gmail.com



BULAMBULI DISTRICT LOCAL GOVERNMENT
OFFICE OF THE DISTRICT HEALTH OFFICER
P.O. Box 2298
MBALE
UGANDA
Date: 29th April 2026

In any correspondence on
THIS SUBJECT PLEASE QUOTE NO. 300/2

TO. MUDIMI VICTOR
BSN STUDENT
BUSITEMA UNIVERSITY



RE: PERMISSION TO CONDUCT RESEACH IN MUYEMBE HCIV

This is to inform you that you have been granted permission to conduct your research study in Muyembe HCIV. You are therefore authorized to proceed with your study titled “**Determinants of Repeat Abortion Among Patients Seeking Post Abortion Care Services in Eastern Uganda**”

While undertaking your research, you are required to comply with all relevant ethical guidelines and laws governing research and coordinate with the management of Muyembe HCIV to facilitate smooth implementation of your study and to share the findings of the with the District Health Office

We wish you success in your research work.

Naimu Martin
Ag. District Health Officer

