GULU UNIVERSITY

FACULTY OF MEDICINE

PREVALENCE AND FACTORS ASSOCIATED WITH UNINTENDED PREGNANCY AMONG WOMEN ATTENDING ANTENATAL CARE AT GULU REGIONAL REFERRAL HOSPITAL, NORTHERN UGANDA

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REG. NUMBER: 23/U/0712/MPK/PS

A DISSERTATION SUBMITTED TO THE DIRECTORATE OF RESEARCH AND GRADUATE TRAINING IN PARTIAL FULFILLMENT FOR THE AWARD OF A MASTER OF PUBLIC HEALTH OF GULU UNIVERSITY

SEPTEMBER 2026

DECLARATION

I, Nakyeyune Lillian Monica, hereby declare that the work presented in this dissertation is entirely my own and has not been submitted for any qualification at any institution of higher learning. The opinions expressed within are mine, except where explicit references and acknowledgments are made.

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DEDICATION

This dissertation is lovingly dedicated to my father, Dr. Balamaze Joseph (PhD), whose wisdom and unwavering belief in my potential have been a constant inspiration.

Above all, I dedicate this work to the Almighty God, whose guidance and strength have sustained me throughout this academic journey.

ACKNOWLEDGEMENT

I thank God for the health and strength to complete this dissertation.

I am grateful to my supervisors, Dr. Alarakol Simon Peter and Dr. Pebalo Francis Pebolo, for their guidance and thoughtful feedback. I also thank the management and staff of Gulu Regional Referral Hospital, especially the Antenatal Care Unit, for their support during data collection. My appreciation extends to the lecturers and colleagues at Gulu University's Faculty of Medicine for their academic support.

I am particularly grateful to the women who participated in the study and shared their experiences. Finally, I thank my husband, children, and family for their love, prayers, financial support, and understanding throughout this work.

ABBREVIATIONS AND ACRONYMS

ANC	Antenatal Care
GRRH	Gulu Regional Referral Hospital
HIV	Human Immunodeficiency Virus
PNC	Postnatal Care
WHO	World Health Organisation
DHS –	Demographic Health Survey
IQR	Interquartile Range
PR	Prevalence Ratio
aPR	Adjusted Prevalence Ratio
CI	Confidence Interval
ART	Antiretroviral Therapy
PTSD	Post-Traumatic Stress Disorder
VHTs	Village Health Teams
DHIS2	District Health Information System 2
GUREC	Gulu University Research Ethics Committee

OPERATIONAL DEFINITIONS

1. **Unintended pregnancy:** For this study, pregnancy that was not desired by the woman and/or her spouse at the time of conception (Merga et al., 2021). This study did not include mistimed pregnancy.

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ABSTRACT

Background: Unintended pregnancy contributes to adverse maternal, neonatal, psychosocial, and socioeconomic outcomes. Evidence among the general population of women attending antenatal care in northern Uganda remains limited.

Objective: To assess the prevalence and factors associated with unintended pregnancy among women receiving antenatal care (ANC) at Gulu Regional Referral Hospital, Northern Uganda.

Methods:
A facility-based cross-sectional study was conducted among 414 pregnant women attending antenatal care at Gulu Regional Referral Hospital from 1st April to 25th May 2025. Participants were selected through systematic random sampling, and trained midwife research assistants administered a structured questionnaire. Modified Poisson regression with robust variance estimation was used to estimate crude and adjusted prevalence ratios with 95% confidence intervals. Statistical significance was considered at $p < 0.05$.

Results: Among 414 participants, the median age was 24 years (IQR: 21-29). The prevalence of unintended pregnancy was 40.1% (166/414; 95% CI: 35.4%-44.9%). After adjustment, women who attended antenatal care without their partners were 1.6 times more likely to have unintended pregnancy than their counterparts (aPR = 1.6; 95% CI: 1.03–2.53; p = 0.035). No other variable showed a statistically significant adjusted association. No measured variable demonstrated clear independent statistical evidence of association in the adjusted analysis.

Conclusions: Two in five women attending antenatal care reported an unintended pregnancy. Attendance without a partner was associated with a higher prevalence of unintended pregnancy after adjustment for measured factors. Antenatal and family planning services should assess pregnancy intention and provide woman-centred counselling, with partner involvement guided by each woman's preference. Further research should examine the relationship and contextual factors underlying unintended pregnancy.

Keywords: Unintended pregnancy, antenatal care, pregnancy intention, male partner accompaniment, northern Uganda.

CHAPTER ONE: INTRODUCTION

1.1 Background

Unintended pregnancy, defined as a pregnancy that is mistimed or unwanted at the time of conception, is a major public health concern globally arising from non-use or discontinuation of contraception, contraceptive failure, and sexual violence(WHO, 2020;UNFPA, 2022) . Globally, an estimated 121 million unintended pregnancies occur each year, the majority (74 million) in low- and middle-income countries (LMICs), resulting in about 25 million unsafe abortions and 47,000 maternal deaths annually(WHO, 2023). Unintended pregnancy is also linked to a wide range of adverse outcomes, including delayed initiation of antenatal care (ANC), hypertensive disorders, postpartum haemorrhage, maternal anaemia, preterm birth and low birth weight, and contributes to intergenerational cycles of abuse, neglect, illness, malnutrition and poverty (Merga et al., 2021; Bekele et al., 2020; Kozuki et al., 2012).

In sub-Saharan Africa, the burden of unintended pregnancy is substantial, with estimates ranging from 11.2% to 30% across the region(Ayalew et al., 2022). This burden reflects structural and behavioural determinants, including non-use or discontinuation of contraception, contraceptive failure and sexual violence (Bain et al., 2020). Facility- and population-based studies from Ethiopia and other African settings consistently report prevalences around 30% among pregnant women, with higher levels among adolescents, women of low socio-economic status, and those with limited reproductive health knowledge or autonomy (Bekele et al., 2020; Ameyaw et al., 2019; Ayele et al., 2023).

Unintended pregnancy has consistently been associated with younger age, unmarried status, lower socioeconomic position, unemployment, early sexual debut, multiple sexual partnerships, high parity, unmet need for family planning, contraceptive non-use or

discontinuation, limited reproductive decision-making autonomy, poor partner communication, financial barriers to healthcare, and exposure to sexual or intimate partner violence (Ameyaw et al., 2019; Bain et al., 2020; Wasswa et al., 2020; Napyo et al., 2020; Merga et al., 2021; Ayalew et al., 2022; Namukisa et al., 2023; Okalo et al., 2023; Muluneh et al., 2023; Asrat et al., 2024; Onivogui et al., 2024).

Northern Uganda, a post-conflict region with substantial social and economic vulnerability, carry higher burden (ReliefWeb, 2005) . In the Oyam District, 69.8% of adolescent girls reported unintended pregnancy, associated with poor knowledge of the fertile window and limited ability to discuss sexuality with family members (Okalo et al., 2023). In Lira District, a prevalence of about 40% was found among HIV-positive pregnant women, with higher parity and HIV positivity identified as key determinants (Napyo, Nankabirwa, et al., 2020) . However, these studies focus on adolescents and women living with HIV and do not reflect the wider population of pregnant women seeking routine ANC in northern Uganda's emerging urban centres (Napyo, Nankabirwa, et al., 2020; Okalo et al., 2023). Gulu City in northern Uganda, served by Gulu Regional Referral Hospital (GRRH) as the main public health referral facility, is a rapidly urbanizing post-conflict hub drawing women from urban, peri-urban and rural communities across the Acholi sub-region(Owani et al., 2018). Acholi sub-region embodies many of the structural and social determinants associated with unintended pregnancy: persistent poverty, evolving gender norms, changing fertility aspirations and variable access to high-quality contraceptive services(Harris et al., 2023). However, there is limited empirical evidence on the magnitude and determinants of unintended pregnancy among women receiving routine ANC in this setting, and particularly on the role of male partner accompaniment to ANC visits. This study assessed the prevalence and factors associated with unintended pregnancy among women attending ANC at GRRH in Gulu City, Uganda.

1.2 Problem statement

Unintended pregnancy remains an important public health concern because it is associated with delayed initiation of antenatal care, inadequate preparation for pregnancy, unsafe abortion, maternal psychological distress and adverse maternal and neonatal outcomes (Gipson et al., 2008; Palladino et al., 2011). It may also interrupt education and employment, reduce women's future economic opportunities and increase healthcare and childcare costs for affected families (Lloyd & Mensch, 2008; Sedgh et al., 2016).

Northern Uganda presents a particularly important setting for such evidence. The region continues to experience socio-economic vulnerabilities associated with its post-conflict recovery, despite the urbanization status of Gulu city in Acholi subregion. The sub-region has a total fertility rate of approximately 4.7 children per woman, an adolescent birth rate of about 62.6 births per 1,000 girls aged 15–19 years and comparatively low modern contraceptive use among married women(UBOS & ICF, 2023; Mukiza et al., 2019). Persistent poverty, changing fertility aspirations, evolving gender norms and variable access to acceptable contraceptive services may influence women's ability to achieve their reproductive intentions. However, national estimates combine women from diverse geographical and sociocultural settings and may obscure the circumstances specific to Northern Uganda(Asrat et al., 2024; Wasswa et al., 2020).

The limited studies conducted in Northern Uganda have concentrated on specialised populations. A study among pregnant women with HIV infection in Lira District reported an unintended-pregnancy prevalence of 41.1%, with unmarried status, having five or more children and longer duration of antiretroviral therapy identified as associated factors (Napyo et al., 2020). Higher prevalence of 69.8% in Oyam district due to inadequate sexuality education, poor knowledge of the fertile period and limited freedom to discuss family-planning matters as

associated factors (Okalo et al., 2023). Although these studies demonstrate a substantial regional burden, there is paucity of study done on unintended pregnancy in Acholi subregion.

Therefore, this study determined the prevalence of unintended pregnancy and assessed associated factors among women attending antenatal care at Gulu Regional Referral Hospital.

1.3 Purpose of the study

The purpose of this study was to generate context-specific evidence on the prevalence of unintended pregnancy and its associated factors among women attending ANC at Gulu Regional Referral Hospital to inform clinical assessment, reproductive health programming, and future research in northern Uganda.

1.4 Justification

Unintended pregnancies pose substantial challenges to maternal health and well-being, contributing to increased maternal mortality, unsafe abortions, and adverse socio-economic consequences. In Uganda, where fertility rates are high and contraceptive prevalence remains relatively low, exploring the prevalence and determinants of unintended pregnancies among pregnant women receiving ANC is essential. By focusing on pregnant women receiving ANC at GRRH, the study targets a critical juncture where maternal health services intersect with opportunities for contraceptive counselling and provision.

The findings will inform policies and programs aimed at strengthening contraceptive services, improving access to family planning information, and addressing barriers to contraceptive use among women in Northern Uganda. Moreover, understanding the factors contributing to unintended pregnancies can guide the development of tailored interventions that promote informed decision-making regarding contraceptive choices and family planning practices among women in this region.

This work will also act as the stepping stone for the public health department to act related to the sexual and reproductive health of women in Gulu City, as this work will give the image of the community in Gulu City, therefore, easy identification of the weaknesses and more effort will be put there to improve these services to women

1.5 Significance of the study

The findings provide clinicians and programme managers with evidence on the burden of unintended pregnancy among women receiving ANC and identify groups who may benefit from sensitive pregnancy-intention assessment and support. The study also contributes evidence from a general ANC population in northern Uganda, complements previous research among adolescents and women living with HIV, and provides a basis for larger multicentre and qualitative studies.

1.6 Research Questions

1. What is the prevalence of unintended pregnancy among women attending ANC at Gulu Regional Referral Hospital?
2. What factors are associated with unintended pregnancy among women attending ANC at Gulu Regional Referral Hospital?

1.7 Study Objective

1.7.1 Broad Objectives

To assess the prevalence and factors associated with unintended pregnancy among women receiving ANC at GRRH in Gulu City, Uganda.

1.7.2 Specific objectives

1. To assess the prevalence of unintended pregnancy among women receiving ANC at GRRH in Gulu City, Uganda.

2. To assess factors associated with unintended pregnancy among women receiving ANC at GRRH in Gulu City, Uganda.

1.8 Conceptual Framework

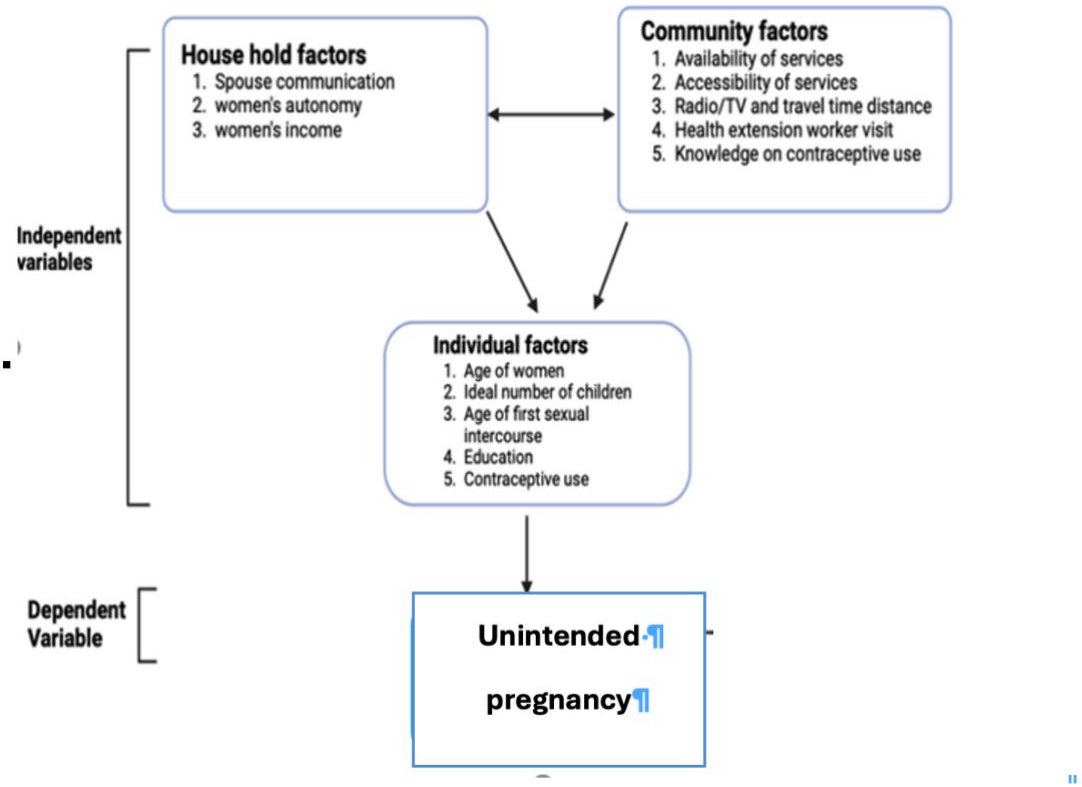


Figure 1:Conceptual framework adapted from the DHS (Demographic Health Survey) Analytical Report No.8

Description of the conceptual framework

Unintended pregnancy is affected by various factors that can be within the marriage or household, community, and individual factors:

Individual factors like age, total number of children, age at first marriage, education level, and contraceptive use influence unwanted pregnancy. For example, a married woman of reproductive age who is not on contraception is most likely to have an unwanted pregnancy.

Household factors such as spouse communication, women's autonomy, and income represent the closest and most influential environment for individual development concerning pregnancy.

Community factors such as availability, accessibility, and knowledge about contraceptives also influence an individual's ability to use contraceptives to prevent unwanted pregnancy. For example, A woman of reproductive age, who knows about contraceptives and lives near a health facility providing contraceptive services, is most likely to use contraceptives, hence unlikely to have an unwanted pregnancy. There is a bidirectional relationship between household and community factors, and each influences the other and accounts for the changes in the individual factors.

1.9 Geographical scope

This study was conducted at Gulu Regional Referral Hospital (GRRH)**,** located in Gulu City, in the northern region of Uganda. Gulu City lies in the north-western part of the Acholi sub-region, which is situated in Northern Uganda, about 340 kilometres north of Kampala, the capital city of Uganda. Geographically, Gulu City bordered by Amuru District to the west, Omoro to the south, and Nwoya to the southwest. North and northeast, it connects to Lamwo and Kitgum Districts, further extending into the Upper Nile corridor of Northern Uganda.

Gulu Regional Referral Hospital as the largest tertiary government hospital in the region and operates as a referral centre for the entire sub-region, which includes the districts include; Amuru, Omoro, Nwoya, Lamwo, Kitgum, and Pader. These districts lie predominantly in the

north-central to north-eastern part of Uganda. The hospital is affiliated with Gulu University and plays a central role in medical training and regional health service delivery.

The hospital's Antenatal Care (ANC) clinic operates on weekdays and offers a wide range of maternal health services to pregnant women from both urban neighbourhoods within Gulu City and rural communities in the surrounding districts. On average, the clinic serves over 100 women daily, making it an ideal setting for studying maternal and reproductive health patterns, including unintended pregnancies.

This geographical scope was selected due to the hospital's high patient load and broad catchment area that spans across both rural and peri-urban populations in Northern Uganda. The study site provides access to a demographically diverse group of women, making the findings applicable to other northern and north-eastern regions of Uganda facing similar reproductive health challenges in post-conflict and resource-limited settings.

The subject-matter scope was the prevalence of unintended pregnancy and its sociodemographic, sexual and obstetric, partner, household, and health-service contact factors among women attending ANC. Data were collected over eight weeks from April to May 2025.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Unintended pregnancy remains a significant global health issue, affecting individuals across diverse socio-economic, cultural, and geographic contexts. Understanding its prevalence and the complex array of contributing factors to it is crucial for informing public health interventions and policies. This expanded literature review synthesizes recent studies to provide a thorough overview of the prevalence rates and multifaceted determinants of unintended pregnancy.

2.2 Prevalence of unintended pregnancy among pregnant women

Globally, approximately half (45%) of pregnancies are unintended, emphasising the pervasive nature of this issue (UNFPA, 2022). This statistic varies significantly across regions and populations, influenced by socio-economic development, cultural norms, access to reproductive healthcare, and educational attainment. In sub-Saharan Africa,(Ameyaw et al., 2019) highlights regional disparities in unintended pregnancy rates, emphasizing the role of socio-economic factors and limited access to contraceptives. Similarly, studies in Uganda during the COVID-19 pandemic revealed heightened vulnerabilities among adolescent girls, attributing increased unintended pregnancies to disruptions in education and healthcare services, with a prevalence of 69.8%(Okalo et al., 2023a).

Secondary study conducted in 36 sub-Saharan African countries reports a pooled prevalence of unintended pregnancy to be at 30.01% among adolescents and young women (Ameyaw et al., 2019). A study in Ethiopia reports the rate of unintended pregnancy among pregnant women to be at 29.7% (Zeleke et al., 2021).

In Uganda a study among married women revealed that 37% of the pregnancies are unwanted(Wasswa et al., 2020b) and 23% among women at risk of HIV(Namukisa et al., 2023a) (Namukisa et al., 2023b). In Oyam district among adolescents, northern Uganda reports prevalence of 69.8% and another study done in Lira among pregnant mothers living with HIV reports prevalence of 41.1 (Napyo et al., 2020; Okalo et al., 2023).

2.3 Factors associated with unintended pregnancy among pregnant women

Unintended pregnancy is shaped by interacting individual, reproductive, relational and health-system circumstances rather than by a single exposure. Across studies, the most frequently reported correlates include age, marital status, education, household wealth, parity, contraceptive non-use or discontinuation, unmet need for family planning, limited reproductive autonomy and sexual violence. Nevertheless, associations vary across populations because studies differ in the definition and timing of pregnancy-intention measurement, the women included, covariate selection and analytical methods. Most evidence is cross-sectional; therefore, findings should be interpreted as associations rather than causal effects. The literature below prioritizes evidence from Uganda and sub-Saharan Africa and uses international studies mainly to clarify areas where local evidence remains limited.

2.3.1 Sociodemographic factors

Age and marital status are among the most consistently reported sociodemographic factors associated with unintended pregnancy, although their effects depend on the population studied.

A systematic review of sub-Saharan African studies identified adolescence, being unmarried and having five or more children as recurring factors associated with unintended pregnancy (Bain et al., 2020). A study using a pooled analysis of Demographic and Health Survey data from 36 sub-Saharan African countries, similarly found that pregnancy intention varied by age, marital status, education, employment and region among adolescent girls and young

women(Ayalew et al., 2022) . Because younger and unmarried women may experience stronger stigma around premarital pregnancy, weaker negotiating power and poorer access to confidential contraception, a pregnancy may be more likely to be reported as mistimed or unwanted. However, these pathways are socially mediated and should not be interpreted as inherent effects of age or marital status.

Ugandan findings reinforce the importance of social position but are not completely uniform. A study using national survey data among currently married women, reported that age, residence, household wealth, education, occupation, region, religion and husbands' characteristics contributed to variation in unintended pregnancy(Wasswa et al., 2020) . A later analysis of the 2016 Uganda Demographic and Health Survey found associations with age, residence, wealth, education, contraceptive decision-making authority and husbands' education and occupation(Asrat et al., 2024). These results indicate that unintended pregnancy is not restricted to adolescents or unmarried women; it also occurs within marriage where economic disadvantage, unequal decision-making or discordant fertility preferences may constrain the ability to plan conception.

Education and wealth show context-dependent relationships. In many studies, education and economic resources appear protective because they can improve access to reproductive health information, service affordability and women's bargaining power. The multi-country analysis of demographic and health surveys found substantial between-country variation and showed that individual and household characteristics jointly shaped pregnancy intention(Ameyaw et al., 2019) . Conversely, analyses restricted to adolescents and young women have sometimes reported higher odds among educated women ((Ayalew et al., 2022; Onivogui et al., 2024). This apparently contradictory finding may reflect delayed fertility preferences among women who remain in school, greater recognition and reporting of an unintended conception, or residual confounding. Thus, education may increase knowledge and autonomy while

simultaneously increasing the likelihood that a pregnancy occurring during schooling is considered mistimed.

2.3.2 Sexual and obstetric factors

Sexual debut, number of sexual partners, gravidity, parity and birth spacing influence cumulative exposure to conception and the extent to which fertility preferences have already been achieved. Higher parity is one of the most consistent correlates. A cross sectional study found that having five or more children was associated with unintended pregnancy among women living with HIV in Lira, northern Uganda (Napyo, Nankabirwa, et al., 2020) . Similarly, a pooled analysis from six Eastern African countries found markedly higher odds among women with more than five living children(Muluneh et al., 2023). Once a woman has reached or exceeded her desired family size, subsequent pregnancies are more likely to be classified as unwanted; short intervals may instead be reported as mistimed.

Earlier sexual debut can lengthen exposure to pregnancy, particularly where contraceptive use is delayed or inconsistent. Conversely, later sexual debut does not always protect against unintended pregnancy if it coincides with limited contraceptive knowledge or low perceived risk. National Ugandan evidence identified age at sexual debut, age at first marriage, age at first birth and total children ever born to be associated with pregnancy intention (Wasswa et al., 2020). These variables are closely related and may attenuate after mutual adjustment, underscoring the need to distinguish crude associations from independent adjusted effects.

Among adolescent girls in Oyam District, lack of knowledge of the ovulation period, inadequate sexuality education during the COVID-19 period and limited freedom to discuss family-planning matters with family members were associated with unintended pregnancy (Okalo et al., 2023a). Among adolescent girls and young women at risk of HIV in Kampala, a cross sectional study reported that multiple recent sexual partners and non-use of contraception

were associated with incident unintended pregnancy despite the availability of free adolescent-friendly services(Namukisa et al., 2023) . These specialized populations have heightened vulnerabilities and cannot be assumed to represent all pregnant women attending routine antenatal care. Nonetheless, they show how sexual exposure interacts with knowledge, communication and contraceptive behaviour.

2.3.3 Contraceptive and health-service factors

The strongest and most proximal evidence concerns unmet need for contraception and ineffective contraceptive use. In the national Ugandan analysis, women with unmet contraceptive need had substantially higher odds of unintended pregnancy than women whose need was met(Asrat et al., 2024) . Similarly, an earlier analysis also identified contraceptive discontinuation, non-use, future intention to use contraception and knowledge of the ovulatory cycle as important explanatory factors (Wasswa et al., 2020a). At the regional level, a study found a strong association between unmet need and unintended pregnancy among women aged 15-24 years across eight sub-Saharan African countries(Onivogui et al., 2024) . Taken together, these studies indicate that knowledge of methods alone is insufficient; women must also be able to obtain, continue and correctly use an acceptable method when they wish to postpone or stop childbearing.

Contraceptive exposure requires careful interpretation because current or previous users may still report an unintended pregnancy following discontinuation, inconsistent use or method failure. Consequently, a positive association between reported contraceptive use and unintended pregnancy does not mean contraception causes unintended pregnancy. It may instead reflect reverse temporality, method switching after conception, inaccurate measurement of use at the time of conception, or the fact that women using contraception have a stronger desire to avoid pregnancy. Studies should therefore specify method, timing,

consistency, discontinuation and reasons for non-use rather than classify women only as ever-users and never-users.

Health-service availability does not automatically translate into effective access. In Western Oromia in Ethiopia, discussion with a husband, prior contraceptive awareness and use, health-care-provider contact, autonomy in health decisions and fear of contraceptive side effects were associated with pregnancy intention among married young women(Merga et al., 2021). Similarly, in Uganda, a cross sectional study observed unintended pregnancies despite free contraceptive services, suggesting that acceptability, perceived side effects, confidentiality, partner influence and motivation may remain barriers after financial and geographic access improves(Namukisa et al., 2023) . Service quality, method stock, provider attitudes, privacy and youth responsiveness are therefore plausible contextual influences, although they were not measured in the present GRRH study.

Residence and distance to health facilities are frequently used as indirect indicators of access, but they cannot fully capture service readiness or women's lived barriers. Multi-country analyses show geographic heterogeneity in unintended pregnancy, reflecting differences in fertility norms, programme coverage and contraceptive access (Ameyaw et al., 2019;Ayalew et al., 2022) . Because the current study was conducted at one referral hospital and did not measure community-level service availability, accessibility, affordability or quality, these factors cannot be evaluated as independent determinants in its analysis.

2.3.4 Partner, household and gender-related factors

Pregnancy intention is often negotiated within relationships. Partner communication, agreement on desired family size, financial support and women's authority over contraceptive decisions may influence whether conception occurs when desired. In Uganda, a secondary survey analysis found that contraceptive decision-making authority was associated with

unintended pregnancy(Asrat et al., 2024) . In Western Oromia, discussion of contraception with a husband and women's autonomy in health decisions were also associated with pregnancy intention(Merga et al., 2021). These findings suggest that relational conditions may influence the translation of fertility preferences into contraceptive behaviour, although cross-sectional studies cannot establish the direction of effect.

Evidence from women living with HIV also demonstrates the importance of relationship context. In Lira, northern Uganda, a study found higher unintended pregnancy among women who were single, had high parity and had used antiretroviral therapy for longer periods (Napyo, Nankabirwa, et al., 2020). A study among postpartum women living with HIV in rural southwestern Uganda, reported that pregnancy intentions were related to reproductive and partnership circumstances(Atukunda et al., 2019) . These findings may reflect the added complexity of balancing fertility desires, HIV care, perceived transmission risk and partner expectations. Their generalisability to HIV-negative women or general antenatal populations is limited.

Sexual coercion and intimate partner violence provide a more direct pathway by restricting control over intercourse and contraception. Across six Eastern African countries, women who had experienced sexual violence had higher adjusted odds of unintended pregnancy; financial barriers, rural residence and high parity were also associated factors(Muluneh et al., 2023). Among female sex workers in Uganda, pregnancy planning was lower where the pregnancy involved a non-emotional partner or where social support was absent, while rape and substance use characterised additional vulnerability (Bukenya et al., 2019). These studies show that unintended pregnancy may arise within unequal or coercive relationships and that recommendations focused only on individual contraceptive knowledge may be inadequate.

2.4 Conclusions and research gap

The literature indicates that unintended pregnancy arises from the interaction of fertility preferences, sexual exposure, contraceptive behaviour, relationship dynamics and access to acceptable services. The most consistent factors across studies are unmet need or ineffective contraceptive use, unmarried status, high parity, economic disadvantage, limited reproductive autonomy and sexual violence. However, the magnitude and direction of associations differ because pregnancy intention is subjective and may change after conception, while study populations range from nationally representative samples to adolescents, women living with HIV and female sex workers.

Three important gaps remain. First, much of the Ugandan evidence is based on secondary survey analyses or specialised populations, with limited evidence from general antenatal-care populations in northern Uganda. Second, most studies are cross-sectional and cannot confirm whether measured exposures preceded conception. Third, community and facility factors - including method availability, distance, affordability, provider attitudes and confidentiality - are commonly proposed but infrequently measured together with individual and partner factors. The present study therefore focuses on measured sociodemographic, sexual and obstetric, contraceptive, partner and household factors among women attending ANC at Gulu Regional Referral Hospital.

CHAPTER THREE: METHODS

3.0. Introduction

This chapter describes a methodological framework employed to assess the prevalence and factors associated with unintended pregnancy among women receiving ANC at GRRH. It details the study design, setting, population, sampling strategy, variables, data collection tools and procedures, data management and analysis plans, as well as ethical and dissemination plans.

3.1 Study design

A hospital based analytical cross-sectional study was conducted to determine the prevalence and associated factors of unintended pregnancy among women attending ANC at GRRH in Northern Uganda. The study was carried out over eight weeks from 1st April to 25th May 2025.

3.1 Study setting

This study was conducted at GRRH, a tertiary public hospital located in Gulu City in the Acholi sub-region of Northern Uganda. GRRH is affiliated with Gulu University as a teaching hospital and serves as the principal referral facility for Northern Uganda, receiving patients from Gulu City and surrounding districts including Amuru, Omoro, Nwoya, Kitgum, Lamwo, Agago, and Pader. The Acholi sub-region has an estimated population of approximately 2.0 million people, with an average household size of 4.3 persons and a population density of 72 persons per square kilometre, according to the 2024 Uganda National Population and Housing Census(UBOS & ICF, 2023). The population is predominantly rural and largely dependent on subsistence agriculture and public sector health services.

GRRH provides comprehensive reproductive, maternal, and newborn health services, including ANC, delivery services, emergency obstetric care, postnatal care, and family planning to people across the Acholi sub-region, making it a key centre for maternal health

services in Northern Uganda. Regional reproductive health indicators highlight substantial maternal health needs. The total fertility rate in the Acholi sub-region is estimated at 4.7 children per woman, and the adolescent birth rate among females aged 15–19 years is approximately 62.6 births per 1,000 women(UBOS & ICF, 2023). National surveys further estimate modern contraceptive prevalence among married women in Northern Uganda at approximately 30–38%(Mukiza et al., 2019).

The GRRH antenatal clinic operates Monday to Friday from 08:00–17:00 hours and attends to approximately 100 women daily. Services are delivered by obstetricians and gynaecologists, medical officers, intern doctors, midwives, and student midwives, and include routine antenatal assessment, malaria prevention in pregnancy, tetanus immunization, HIV counselling and testing, nutritional counselling, and family planning education.

3.3 Study population

3.3.1 Target population

Every pregnant woman between 15-49 years attending ANC services at GRRH in the study period.

3.3.2 Accessible population

Pregnant women presenting to the ANC clinic at GRRH and eligible for study inclusion

3.3.3 Sample population

Pregnant women who received ANC at GRRH and met the eligibility criteria and consented to participate during the study period.

3.4 Selection criteria

3.4.1 Inclusion criteria

Pregnant women confirmed by the team on ground and are already receiving ANC at GRRH and have consented to participate.

3.4.2 Exclusion criteria

Women who were unable to provide informed consent because of severe illness or an acute psychiatric condition were not approached. Emotional distress alone was not a reason for exclusion; counselling support was available if distress occurred during the interview.

3.5 Sample size calculation

Kish Leslie formula was used to calculate the required sample size for cross-sectional studies(Kish, 1965),

$$n = \frac{Z^2 xpq}{d^2}$$

Where n is the required sample size, z is the Z-score corresponding to the desired confidence level. For a 95% confidence level, Z=1.96 and 5% level of significance, p is the estimated prevalence of unintended pregnancy is 41.1% (Napyo, Tumwine, et al., 2020) from a prior study in northern Uganda, q is the complement of p calculated as (q=1-p), d is the margin of error/level of precision which is 5%.

So, n = $(1.96)^2(0.411*0.589)/ (0.05)^2$; thus n = 372. After adjusting for a 10% non-response rate(Charan & Biswas, 2013), the final sample size was 372/0.9 = 414 participants.

For multivariable analysis, the observed 166 unintended-pregnancy outcomes provided more than 10 outcome events per variable for the six variables in the adjusted model, supporting model stability.

3.6 Sampling Procedure

Systematic random sampling was used to recruit participants. Based on an average daily ANC attendance of approximately 100 women and the required sample size of 414, a sampling interval (k) of 4 was obtained (414/100 = 4). Each clinic day, the first participant was selected using simple random sampling from the first four eligible women registered in the ANC attendance book. Thereafter, every fourth eligible woman was approached for enrolment. If a selected woman declined participation or met an exclusion criterion, the next eligible woman was invited, and the systematic sequence was then resumed until the daily quota and, ultimately, the overall sample size was achieved.

3.7 Study Variables

3.7.1 Dependent variable

Unintended pregnancy was the dependent variable. Pregnancy intention was assessed using a standardized question adapted from the Uganda Demographic and Health Survey (UDHS): "At the time you became pregnant, did you want to become pregnant then?" Women responding "No" were classified as having experienced an unintended pregnancy(UBOS & ICF, 2023) . The question explicitly referenced intention at the time of conception to minimize misclassification due to changing feelings during pregnancy. Nevertheless, as pregnancy intention may evolve over time, we acknowledge the possibility of post-conception rationalization.

3.7.2 Independent variables

Independent variables included socio-demographic characteristics (age in years, education level, marital status, type of marriage—love versus arranged, employment status, place of residence classified as urban, peri-urban or rural, religion, and level of religiosity), partner-related characteristics (partner's education and employment status, approximate personal

monthly income, alcohol use, type of union—monogamous versus polygamous, relationship with the partner's family, and partner accompaniment to ANC), and sexual, obstetric and clinical characteristics (age at sexual debut, age at marriage, gravidity, parity, number of living children, history of pregnancy with another partner, history of abortion or ectopic pregnancy, gestational age at ANC booking, current gestational age, exposure to gender-based violence where applicable, and number of ANC visits). Additional variables captured contraception and HIV-related factors, including prior use of modern contraceptives, consistency of contraceptive use before the current pregnancy, intention to terminate the current pregnancy, and HIV status and antiretroviral therapy use.

Male partner accompaniment was defined as the physical presence of the woman's partner during the current ANC visit. This measure captures one observable dimension of male engagement but does not assess broader aspects such as shared fertility decision-making, financial support, communication quality, or relationship power dynamics.

3.8 Data collection

Data were collected using a structured interviewer-administered questionnaire adopted from the Uganda Demographic and Health Survey (UDHS) tool and contextualized to the study objectives(UBOS & ICF, 2023) . The instrument captured socio-demographic information, obstetric and reproductive history, partner characteristics, contraceptive practices, and pregnancy intention. The questionnaire was initially developed in English, translated into Acholi, and then back-translated to English to ensure semantic equivalence.

The questionnaire was pretested at Laro Health Centre III in Gulu City, a lower-level public health facility not included in the main study. The pretest involved 20 pregnant women attending antenatal care (approximately 5% of the intended study sample) (Boateng et al., 2018). Internal consistency reliability was assessed using Cronbach's alpha, yielding a

coefficient of 0.81 (Taber, 2018). Based on the pilot findings, minor modifications were made to improve wording clarity while maintaining the conceptual meaning of the items.

Data collection was conducted by three trained midwife research assistants fluent in English and Acholi, eliminating the need for external interpreters. The research assistants underwent two days of training on the study protocol, standardized interviewing techniques, and research ethics, including confidentiality and informed consent/assent procedures. All research assistants signed confidentiality agreements prior to data collection.

Interviews were conducted face-to-face in a private space within the antenatal clinic on the same day as the participant's ANC visit to ensure confidentiality and encourage candid responses, and each completed questionnaire was reviewed on site by the principal investigator for completeness and internal consistency. Each interview lasted approximately 25 minutes on average. A trained counsellor was available to provide psychosocial support to participants who experienced emotional distress during the interview.

3.9 Data management

Completed questionnaires were reviewed for completeness and accuracy. Data was entered into Microsoft Excel, cleaned, and stored in password-protected digital files. Paper-based questionnaires were stored securely in locked cabinets. Data were anonymized to protect participant identity.

3.10 Data analysis plan

Data were exported to STATA version 18 for analysis. Descriptive statistics were used to summarize participants' socio-demographic, obstetric, and clinical characteristics. Categorical variables were presented as frequencies and percentages.

Continuous variables (e.g., age, ages at sexual debut and marriage, number of living children, gestational age at booking and current gestational age) were screened for outliers and distribution using histograms, boxplots and the Shapiro–Wilk test. Because distributions were non-normal, they were summarised as medians with interquartile ranges (IQRs). Categorical variables (e.g., education, marital status, residence, employment, type of union, partner accompaniment, contraceptive use, HIV status) were summarised as frequencies and percentages. The primary outcome, unintended pregnancy, was coded as a binary variable (1 = unintended pregnancy, 0 = intended pregnancy) based on women's self-report of pregnancy desire at conception.

Bivariable associations between independent variables and unintended pregnancy were assessed using modified Poisson regression with robust variance estimation to estimate crude prevalence ratios (cPR) and 95% confidence intervals (table 2). Due to sparse observations in some marital status categories, marital status was collapsed into two categories (married/cohabiting vs. unmarried) to ensure adequate cell counts and stable model estimation. Variables demonstrating $p < 0.20$ in bivariable analysis or considered epidemiologically relevant based on prior literature were considered for inclusion in the multivariable model. Variables considered biologically plausible or theoretically associated with unintended pregnancy were identified a priori based on existing literature and included age, marital status, employment status, parity, age at sexual debut, HIV status, and prior contraceptive use. These variables were retained in the multivariable model regardless of statistical significance in order to minimise residual confounding and model misspecification.

Multivariable analysis was then conducted using modified Poisson regression with robust variance estimation to estimate adjusted prevalence ratios (aPR) and 95% confidence intervals. This approach was selected because the prevalence of unintended pregnancy exceeded 10%,

making prevalence ratios more appropriate than odds ratios. Multicollinearity among associated factors was assessed using variance inflation factors (VIF), and all variables demonstrated acceptable levels (mean VIF = 1.4; all VIF values < 5). Model adequacy and dispersion were evaluated using deviance and Pearson goodness-of-fit statistics, which indicated no evidence of lack of fit or overdispersion (Deviance p = 1.00; Pearson p = 1.00; Pearson χ^2/df = 0.71). Partner-related variables with substantial missing data were excluded from the multivariable model to preserve the analytic sample and maintain statistical power. All analyses were performed using Stata and statistical significance was assessed at a two-sided α level of 0.05.

Missing data handling

Partner-related variables (e.g., partner education and employment status) had substantial missing data because information on partners was not available for all participants. Including these variables in multivariable models would have resulted in a substantial reduction in the analytic sample due to complete-case analysis. To preserve statistical power and maintain model stability, these variables were excluded from the final multivariable model. The final analysis therefore used the full available sample (N = 414), minimizing potential bias associated with differential missingness.

Sensitivity checks confirmed that exclusion of partner-related variables did not materially alter the estimates of the remaining covariates.

3.11 Ethical consideration

Ethical approval was obtained from the Gulu University Research Ethics Committee (GUREC), reference number GUREC–2025–1074. Administrative clearance was secured from GRRH. Written informed consent was obtained from all participants. Data confidentiality was

maintained by anonymizing all participant records, and access was restricted to the research team. This study adhered to the principles of the Declaration of Helsinki.

3.12 Dissemination plan

The dissertation will be submitted to the Directorate of Research and Graduate Training, Gulu University Library, and copies will be shared with the Department of Obstetrics and Gynaecology, Gulu Regional Referral Hospital. Findings was published in peer reviewed journal, presentation will be made at stakeholder meetings and scientific conferences.

CHAPTER FOUR: RESULTS

4.0 Introduction

This chapter presents findings of the study, organized in line with the objectives, which were to assess the prevalence and factors associated with unintended pregnancy among women receiving antenatal care at Gulu Regional Referral Hospital in Gulu City, Uganda.

4.1 Study enrolment

During the study period, 437 women attending antenatal care were screened for eligibility. Ten women were found to be ineligible and were not approached for informed consent because they had a severe illness (n = 6) or mental illness (n = 4), as specified in the exclusion criteria. The remaining 427 were eligible to participate, of whom 13 declined to provide informed consent. Consequently, 414 women were enrolled and included in the analysis, giving a participation rate of 97.0% among eligible women approached. Of those enrolled, 166 had an unintended pregnancy, while 248 had an intended pregnancy (Figure 2).

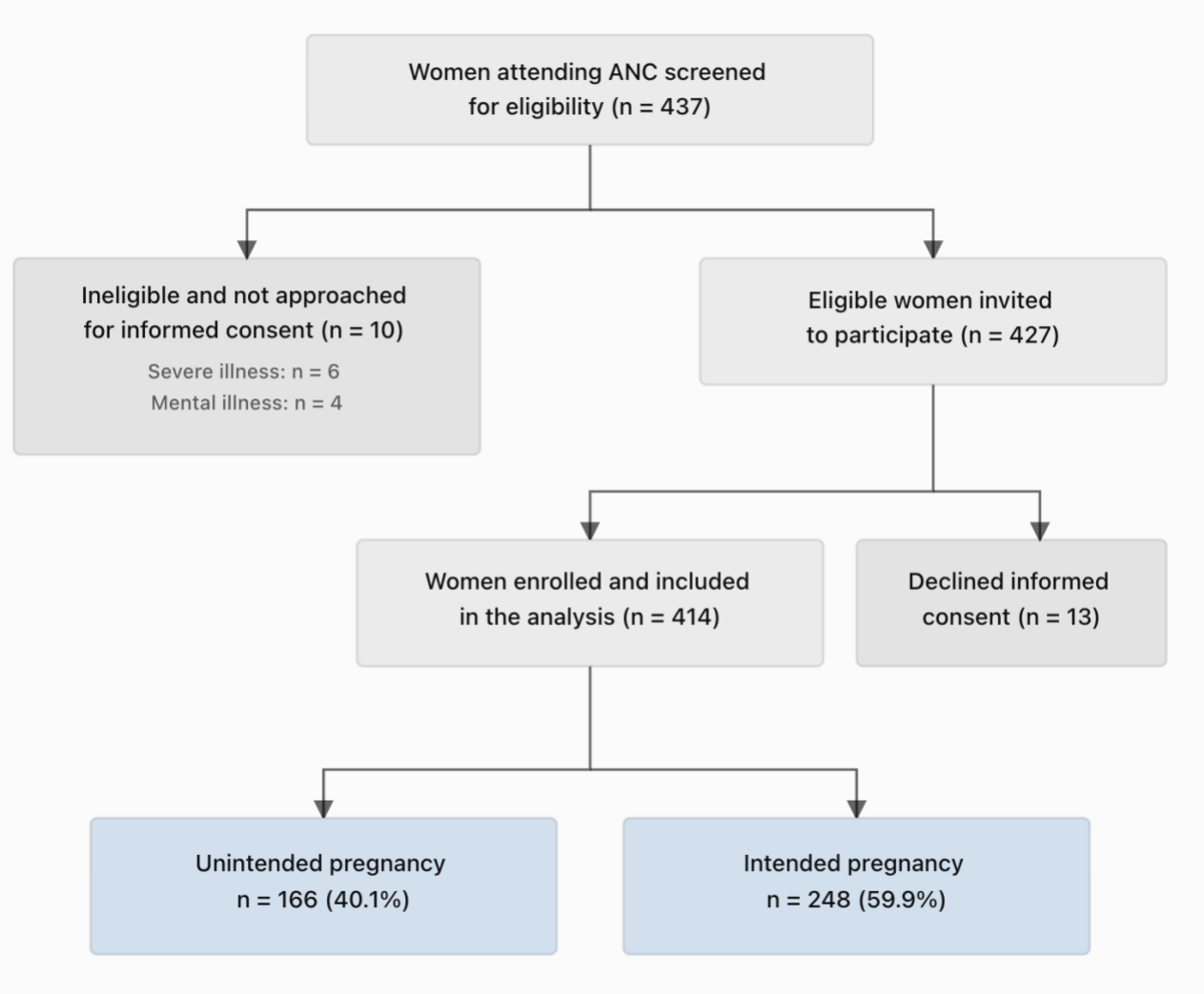


Figure 2: Study flow diagram

4.2. Sociodemographic characteristics of women attending ANC at GRRH, Northern Uganda.

4.2. 1.Socio-demographic characteristics of women attending ANC at GRRH, Northern Uganda

The median age of participants was 24 years (IQR 21–29). Most had completed primary (41.3%) or secondary education (36.2%) and lived in peri-urban or rural areas (43%). The majority were married/cohabiting (83.3%) and unemployed (66.7%), with a median personal monthly income of UGX 350,000 among those who earned. Median age at marriage and sexual debut were 20 and 18 years, respectively (Table 1).

4.2.2. Sexual and obstetric characteristics of women attending ANC at GRRH, Northern Uganda

Women had a median gravidity of 2 and parity of 1. A total of 77 women reported at least one prior abortion (18.6%), and 18 reported a history of ectopic pregnancy (4.3%). Median gestational age at booking was 13 weeks and current gestation 24 weeks. Only **14.5%** of women reported being accompanied by their partner to ANC (Table 1).

4.2.3. Partner characteristics of women attending ANC at GRRH, Northern Uganda.

Regarding partner characteristics, 262 partners had at least secondary education (70.0%), 271 were employed (72.5%), and 207 women reported being in monogamous unions (56.1%). Partner alcohol use was reported by 140 women (37.6%). HIV prevalence among participants was 8.2% (n = 34), and 31 of the 34 HIV-positive women were on ART (91.2%). (Table 1).

4.2.4. Pregnancy intention characteristics among women attending ANC at GRRH, Northern Uganda.

When women learned of the current pregnancy, 183 reported feeling unhappy and not ready (44.2%), 206 were neutral or unsure (49.8%), and 25 were happy and ready (6.0%). Before conception, 302 women reported not using any contraception (73.0%). Ninety-one women reported an intention to terminate the pregnancy (22.0%). (Table 1).

Table 1: Sociodemographic characteristics of women receiving ANC at GRHH, Northern Uganda (N = 414)

Variable n = 414	Frequency (n)	Percent (%)
SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS		
Age, median (IQR), years	24 (21-29)	
≤24 years	215	51.9%
>24 years	199	48.1%
Education		
Informal	37	9.0
Primary	171	41.3
Secondary	150	36.2
Tertiary	56	13.5
Residence		
Urban	86	20.8
Peri-urban	178	43.0
Rural	150	36.2
Chronic illness		
Yes	37	8.9
No	377	91.1
Marital status		
Never married (single/ divorced/separated/widowed)	69	16.7 83.3

Married/Cohabiting	345	
Religion		
Catholic	118	28.5
Protestant	148	35.8
Born again Christian	119	28.7
Moslem	29	7.0
Religiosity		
Very strong	101	24.4
Somewhat strong	171	41.3
Not very strong	142	34.3
Type of marriage		
Love	319	83.5
Arranged	63	16.5
Employment		
Employed	138	33.3
Unemployed	276	66.7
Estimated monthly income, median (IQR), UGX, (n=131)	350,000(250000-450000)	
Age at marriage, median (IQR), years	20 (18-24)	
≤20 years	212	51.2
>20 years	202	48.8
Age at sexual debut, median (IQR), years	18 (17-20)	
≤18 years	232	56.0

>18 years	182	44.0
SEXUAL AND OBSTETRIC CHARACTERISTICS OF THE PARTICIPANTS		
Lifetime sexual partners, median (IQR)	2 (1-3)	
Previous pregnancy with another partner/other than current		
Yes	116	28.0
No	298	72.0
Gravidity, median (IQR)	2(1-3)	
Parity, median (IQR)	1(0-2)	
0–1 previous births	266	64.3
≥2 previous births	148	35.7
Number of Abortions		
0	337	81.4
1	56	13.5
2	17	4.1
3	4	1.0
Ectopic pregnancy		
No	396	95.7
Yes	18	4.3
If parous, median (IQR), n= 259	2 (1-3)	
Number of living children, median (IQR)	1(0-2)	
Age of last child, median (IQR), n=261	2(2-3)	

Gestation age at booking, median (IQR), weeks	13(10-16)	
Current gestation age, median (IQR), weeks	24 (16-32)	
Partner accompaniment		
Yes	60	14.5
No	354	85.5
PARTNER CHARACTERISTICS OF THE PARTICIPANTS		
Partner's level of education		
Informal	26	7.0
Primary	86	23.0
Secondary	167	44.6
Tertiary	95	25.4
Partner's employment		
Employed	271	72.5
Unemployed	103	27.5
Partner's monthly income, median (IQR), n=275	600,000 (400,000-800,000)	
Partner's relation		
Monogamous	207	56.1
Polygamous	162	43.9
Relationship with Partner's family		
Very good	46	12.3
Good	117	31.3
Fair	101	27.0
Poor	79	21.1

Very poor	31	8.3
Partner's alcohol use		
Yes	140	37.6
No	232	62.4
Ever used a modern contraceptive		
Yes	155	37.4
No	259	62.6
HIV status		
Negative	380	91.8
Positive	34	8.2
If yes, on ART? (n=34)		
Yes	31	91.2
No	3	8.8
TIMELINESS AND PLAN AMONG PARTICIPANTS		
At the time you became pregnant, did you t to become pregnant?		
Yes	248	59.9
No	166	40.1
How did you feel when you found out you were pregnant?		

Happy and ready for the pregnancy	25	6.0
Neutral or unsure	206	49.8
Unhappy and not ready for the pregnancy	183	44.2
Before becoming pregnant, were you using any method to prevent pregnancy?		
Yes, I was using contraception consistently	20	4.8
Yes, but I was not using it consistently	92	22.2
No, I was not using any contraception	302	73.0
Did you have any intention to terminate the pregnancy?		
Yes	91	22.0
No	323	78.0

IQR: interquartile range; UGX: Ugandan shillings

4.3 Prevalence of unintended pregnancy of women attending ANC at GRRH, Northern Uganda

In this study, the prevalence of unintended pregnancy among women receiving ANC at GRRH was found to be 40.1% **(**n = 166; 95% CI:35.4–44.9**)** (Figure 3).

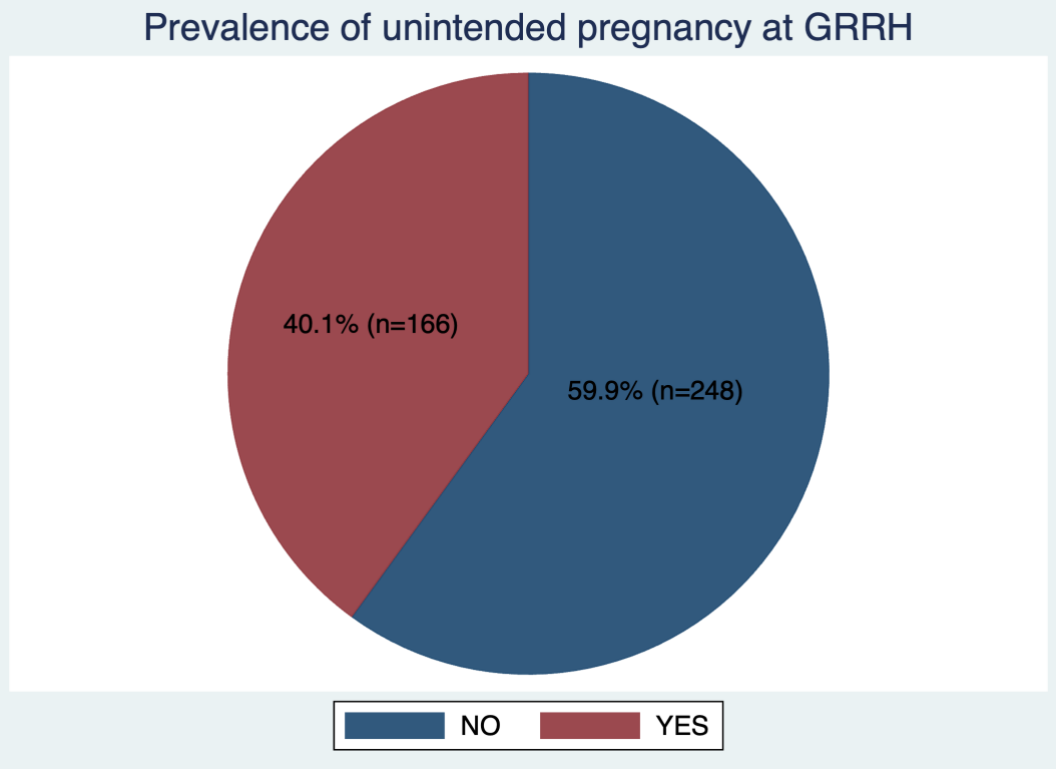


Figure 3: Prevalence of Unintended pregnancy among the participants.

4.4 Analysis of factors associated with unintended pregnancy among women attending ANC at GRRH, Northern Uganda.

4.4.1. Bivariable analysis

Six factors were associated with unintended pregnancy at $p < 0.2$. The prevalence of unintended pregnancy was 30% higher among women who were never married or single than among those who were married or cohabiting (cPR = 1.3; 95% CI: 1.02-1.75; p = 0.041). Unemployed women had a 30% higher prevalence of unintended pregnancy than employed women (cPR = 1.3; 95% CI: 1.02-1.77; p = 0.035). Women whose sexual debut occurred after age 18 were 22% less likely to report an unintended pregnancy than those whose sexual debut occurred at age 18 or younger (cPR = 0.78; 95% CI: 0.61–0.998; p = 0.048). Women older than 24 years were 15% less likely to report an unintended pregnancy than those aged 24 years or younger (cPR = 0.85; 95% CI: 0.67–1.08; p = 0.176), while women who married after age 20 were 16% less likely than those who married at age 20 or younger (cPR = 0.84; 95% CI: 0.67–1.07; p = 0.163).

Women who were not accompanied by their partners during antenatal care had a 60% higher prevalence of unintended pregnancy than those who were accompanied (cPR = 1.6; 95% CI: 1.03-2.46; p = 0.038) (Table 2). The above variables together with those which were epidemiologically significant from literature (parity, contraceptive use and HIV status) were entered in the multivariable model.

4.4.2. Multivariable Analysis

One factor retained in the model was independently associated with unintended pregnancy at $p < 0.05$. After adjustment, women who attended antenatal care without their partners were 1.6 times more likely to have unintended pregnancy than their counterparts (aPR = 1.6; 95% CI:

1.03–2.53; p = 0.035). The remaining adjusted variables were not associated with unintended pregnancy (Table 2). Multicollinearity was not evident (mean VIF = 1.4; all VIF values < 5). The deviance and Pearson goodness-of-fit tests did not indicate lack of fit or overdispersion (deviance p = 1.000; Pearson p = 1.000; Pearson chi-square/df = 0.71).

Table 2: Factors associated with unintended pregnancy among women attending antenatal care at GRRH , Northern Uganda

Variable	Unintended Pregnancy		cPR (95% CI)	p-value	aPR (95% CI)	p-value
	Yes (n=166) n (%)	NO (n=248) n (%)				
Age, years						
≤24 years	93 (43.3)	122(56.7)	Reference			
>24 years	73 (36.7)	126(63.3)	0.9(0.67-1.08)	**0.176**	1.1(0.76-1.48)	0.732
Education						

Informal	19(51.4)	18(48.6)	1.4(0.89-2.30)	0.132		
Primary	72(42.1)	99(57.9)	1.2(0.80-1.75)	0.411		
Secondary	55(36.7)	95(63.3)	1.0(0.68-1.55)	0.991		
Tertiary	20(35.7)	36(64.3)	Reference			
Residence						
Urban	32(37.2)	54(62.8)	Reference			
Peri-urban	75(42.1)	103(57.9)	1.1(0.82-1.57)	0.453		
Rural	59(39.3)	91(60.67)	1.1(0.75-1.48)	0.748		
Chronic illness						
Yes	15(40.5	22(59.5)	1.0(0.67-1.53)	0.954		
No	151(40.1)	226(59.9)	Reference			
Marital status						
Never married	35(50.7)	34(49.3)	1.3(1.02-1.75)	**0.041**	0.8(0.64-1.11)	0.216
Married/Cohabiting	131(38)	214(62)	Reference			
Religion						

Catholic	52(44.1)	66(55.9)	Reference			
Protestant	59(39.9)	89(60.1)	0.9(0.68-1.20)	0.489		
Born-again Christian	44(37)	75(63_	0.8(0.61-1.14)	0.268		
Moslem	11(38)	18(62)	0.9(0.52-1.43)	0.563		
Religiosity						
Very strong	34(33.7)	67(66.3)	Reference			
Somewhat strong	68(39.8)	103(60.2)	1.2(0.85-1.64)	0.323		
Not very strong	64(45.1)	78(54.9)	1.3(0.96-1.86)	0.082		
Type of marriage (n=382)						
Love	121(37.9)	198(62.1)	Reference			
Arranged	27(42.9)	36(57.1)	1.1(0.82-1.55)	0.452		
Employment						
Employed	45(32.6)	93(67.4)	Reference			
Unemployed	121(43.8)	155(56.1	1.3(1.02-1.77)	**0.035**	1.3(0.93-1.69)	0.136
Age at marriage, years						
≤20 years	92(43.4)	120(56.6)	Reference			

>20 years	74(36.6)	128(63.4)	0.8(0.67-1.07)	**0.163**	1.0(0.74-1.32)	0.953
Age at sexual debut, years						
≤18 years	103(44.4)	129(55.6)	Reference			
>18 years	63(34.6)	119(65.4)	0.8(0.61-1.00)	**0.048**	0.8(0.63-1.11)	0.227
Previous pregnancy with another partner/other than current						
Yes	49(42.2)	67(57.8)	Reference			
No	117(39.3)	181(60.7)	0.9(0.72-1.20)	0.575		
Parity						
0–1 previous births	112(42.1)	154(57.9)	Reference			
≥2 previous births	54(36.5)	94(63.5)	0.9(0.67-1.12)	0.272	0.9(0.65-1.27)	0.586
Number of Abortions						
0	139(41.3)	198(58.7)	Reference			
1	21(37.5)	35(62.5)	0.9(0.63-1.31)	0.606		
2	5(29.4)	12(75)	0.7(0.34-1.51)	0.376		

3	1(25)	3(75)	0.6(0.11-3.33)	0.565		
Ectopic pregnancy						
No	159(40.2)	237(59.9)	Reference			
Yes	7(38.9)	11(61.11)	1.0(0.54-1.75)	0.916		
Partner accompaniment						
Yes	16(26.7)	44(73.3)	Reference			
No	150(42.4)	204(57.6)	1.6(1.03-2.46)	**0.038**	1.6 (1.03-2.53)	0.035
Partner's level of education (n=374)						
Informal	11(42.3)	15(57.7)	Reference			
Primary	36(41.9)	50(58.1)	1.0(0.59-1.65)	0.968		
Secondary	67(40.1)	100(59.9)	1.0(0.58-1.54)	0.831		
Tertiary	31(32.6)	64(67.4)	0.8(0.45-1.32)	0.341		
Partner's employment (n=374)						
Employed	100(36.9)	171(63.1)	Reference			

Unemployed	45(43.7)	58(56.3)	1.2(0.90-1.55)	0.219		
Partner's relation (n=369)						
Monogamous Polygamous	71(34.3) 71(43.8)	136(65.7) 91(56.2)	Reference 1.3(0.99-1.65)	 0.062		
Partner's alcohol use (n=372)						
Yes No	57(40.7) 86(37.07)	83(59.3) 146(62.9)	Reference 0.9(0.70-1.18)	 0.482		
Ever used a modern contraceptive						
Yes No	56(36.1) 110(42.5)	99(63.9) 149(57.5)	Reference 1.2(0.91-1.51)	 0.210	 1.03 (0.78-1.37)	 0813
HIV status						
Negative Positive	151(39.7) 15(44.1)	229(60.3) 19(55.9)	Reference 1.1(0.75-1.65)	 0.602	 1.1(0.75-1.72)	 0.539

CHAPTER FIVE: DISCUSSION

5.0. Introduction

Unintended pregnancy continues to be a significant public health problem with substantial implications for maternal, neonatal, and broader societal outcomes (UNFPA, 2022). This chapter discusses what was found out of the study on the prevalence and associated factors of unintended pregnancy among women receiving antenatal care at GRRH in Gulu City, Uganda. The results are interpreted in the context of existing literature and global evidence, highlighting their relevance to clinical practice, health service delivery, and policy formulation.

5.1. Prevalence of Unintended Pregnancy among women attending ANC at GRRH, Northern Uganda.

This study found that 2 of every five (40.1 %) women attending ANC at GRRH in post conflict Northern Uganda reported that their pregnancies were unintended. This prevalence is similar to that found among HIV-infected pregnant women in Lira District (41.1%) and higher than many recent pooled estimates from sub-Saharan Africa, where unintended pregnancy among adults typically ranges between 25–35%(Napyo, Nankabirwa, et al., 2020; Ameyaw et al., 2019) It is also comparable to global estimates indicating that 45% of pregnancies were unintended between 2015 and 2019(UNFPA, 2022; Bearak et al., 2020).

The burden observed at GRRH reflects a continuing global and regional challenge rather than an isolated local problem, that the United Nations Population Fund (UNFPA) has described as a “neglected” global emergency with profound consequences for women’s health, autonomy, and life opportunities(UNFPA, 2022). However, pregnancy intention in this study was assessed during the current pregnancy, although participants were asked to report whether the pregnancy had been intended at the time of conception. Since pregnancy intention and feelings about

pregnancy may change over time, this estimate should be interpreted with that limitation in mind.

5.2. Factors associated with unintended pregnancy among women attending ANC at GRRH, Northern Uganda.

At multivariable analysis, unintended pregnancy was associated with partner accompaniment to ANC. Women who attended ANC without their partners having a 60% higher prevalence of unintended pregnancy than those accompanied by their partners.

The direction of the finding on partner accompaniment is consistent with previous studies from Tanzania, Ethiopia, and multi-country analyses shows that male involvement in ANC and family planning is associated with improved maternal health service utilization, higher contraceptive uptake, and reduced unmet need for family planning (Kabanga et al., 2019; Natai et al., 2020; Mohammed et al., 2019) . It also aligns with WHO and UNFPA guidance that engaging men as supportive partners is essential for preventing unintended pregnancy and advancing sexual and reproductive health and rights (United Nations Population Fund (UNFPA), 2017; World Health Organization., 2016) . However, the present findings do not establish that partner accompaniment itself reduces unintended pregnancy. Rather, the observed association may reflect broader relational and contextual influences on pregnancy intention in this setting.

In the context of Northern Uganda, where patriarchal norms often locate fertility decision-making with men while assigning the physical and emotional burden of pregnancy to women, male absence from ANC may signal deeper relationship and structural dynamics (Harris et al., 2023) . Qualitative and quantitative work from Uganda and the region has linked limited partner communication, male opposition to contraception, and gender-based power imbalances to higher rates of unintended pregnancy and unsafe abortion(Mohammed et al., 2019)

(Kabunga et al., 2023; Sedgh et al., 2016). When partners attend ANC together, they receive the same information on birth spacing, contraceptive options and pregnancy risks, which facilitates shared decision-making and can counter myths about contraceptive side-effects(Mulugeta et al., 2024). Conversely, when men remain not committed to ANC, women may have less room to articulate fertility preferences or to initiate or continue contraceptive use, particularly where they lack economic autonomy(Påfs et al., 2015). Although these factors were not directly measured in the present study, they may help explain why partner accompaniment showed the strongest pattern in the adjusted analysis. The Theory of Planned Behaviour highlights the role of perceived norms and control in shaping reproductive intentions and contraceptive behaviour, while women's agency and gender norms frameworks emphasise autonomy, relationship power, and communication in pregnancy planning.

The absence of statistically significant adjusted associations for the other covariates is also informative. Although marital status, employment status, age at marriage, and age at sexual debut were associated with unintended pregnancy at bivariable analysis, these associations were attenuated after adjustment. This suggests that, in this sample, these variables did not demonstrate clear independent associations with unintended pregnancy once other factors in the model were taken into account. It is also possible that unintended pregnancy in this population is shaped by a combination of social, relational, and reproductive factors not fully captured by the variables included in the analysis.

5.3. Study implications

Findings from this study highlights the urgency for multi-level interventions which will address this high prevalence of unintended pregnancy. Integration of routine pregnancy intention screening into ANC services could enable early identification and support for women at risk. Women with chronic illnesses and high parity require tailored reproductive health services, including specialized contraceptive counselling.

The study also states the critical role of male involvement in reducing unintended pregnancies. Scaling up couple-based counselling, community education on shared reproductive responsibilities, and adapting ANC schedules to accommodate working men may help address gender-related barriers to contraceptive use. Co-locating family planning services within chronic care clinics could further improve accessibility and continuity of care.

From a health systems perspective, ensuring consistent availability of modern contraceptives through strengthened supply chain systems is essential, particularly in rural and peri-urban areas. Additionally, capacity building for health workers is needed to promote respectful, non-judgmental care and address stigma, misinformation, and reproductive coercion during service delivery.

5.4. Study limitations

The study design limits the ability to inform causal relationships between the identified exposures and pregnancy intention outcomes. The study was conducted at a single high-volume tertiary referral hospital serving both rural and urban populations, which limits the generalizing the findings to other facilities within northern Uganda or the national context. Furthermore, self-reported pregnancy intention introduces the potential for social desirability and recall biases, which may affect the accuracy of the reported rates.

Future studies should consider longitudinal and prospective designs to better establish temporal relationships and reduce recall bias in the measurement of pregnancy intention. In particular, assessing pregnancy intention at earlier stages, such as during antenatal booking visits, may provide more accurate estimates by capturing women's perceptions closer to the time of conception. Mixed-methods approaches are also recommended to explore the social, relational, and contextual pathways linking pregnancy intention, contraceptive behaviour, and partner involvement. More detailed measurement of contraceptive history, previous unintended

pregnancies, reproductive decision-making, and related maternal outcomes would further strengthen understanding of unintended pregnancy in this setting.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1. Conclusion

Unintended pregnancy was reported by 40.1% of women attending antenatal care at Gulu Regional Referral Hospital. Women who attended without their partners had a higher prevalence of unintended pregnancy than those accompanied by their partners (aPR = 1.62; 95% CI: 1.03–2.53; p = 0.035). No other factor showed a statistically significant association after adjustment.

These findings support routine, non-judgmental assessment of pregnancy intention during antenatal care and access to responsive family planning counselling. Services should welcome partner participation when women want it, while remaining accessible and supportive for women who attend alone. Because partner accompaniment was recorded after conception, this study cannot establish whether it influenced pregnancy intention.

6.2. Recommendations

1. Integrate pregnancy intention screening into ANC services:

- Routinely assess pregnancy intention during ANC visits to identify women at risk early and provide tailored contraceptive counselling and psychosocial support.
- Antenatal care staff should offer women the option to involve their partners in reproductive health counselling when they wish to do so. Women attending alone should receive the same quality of care, with private opportunities to discuss pregnancy intention and support needs.

2. Support further research:

- Conduct studies to explore underlying socio-cultural determinants and women's lived experiences of unintended pregnancy, informing more targeted and sustainable interventions.

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APPENDICES

Appendix Ia: Informed consent form-English version

Title of the study: Prevalence and factors associated with unplanned pregnancy among pregnant women attending antenatal care at Gulu Regional Referral Hospital: a facility-based cross-sectional study

Introduction: I am Nakyeyune Lillian Monica, a Master of Public Health student at Faculty of Medicine, Gulu University health conducting a study on Prevalence and factors associated with unplanned pregnancies among pregnant women who attend antenatal care at Gulu Regional Referral Hospital. This informed consent explains the study to you. After the study has been explained, any questions you may have will be answered, and if you have decided to participate in the study, you will be asked to sign a consent, which you will be given a copy to keep.

Sponsors of the research project: There is no funding for this study

Purpose: To determine the prevalence and factors associated with unplanned pregnancy among the women attending antenatal care (ANC) in Gulu Regional Referral Hospital, Northern Uganda.

Procedures: Your participation in this study will involve filling in predesigned questionnaires which are predominantly objectives with a few subjective questions.

Who will participate in the study?

You have been chosen to participate in this study because you are eligible for the study. The interview will last for approximately 30 minutes and 414 people will participate in this study.

Risks/discomforts: There is no foreseeable risk of harm or discomfort that will arise from your participation in this study. The only risk or discomfort will be the inconvenience in terms of time spent during the interview.

Benefits: There will be no direct benefit to you for your participation in this study. We hope that the information obtained from this study will broaden the understanding of the determinants of gender-based violence among pregnant women.
As a research participant, you will be given feedback on the findings and progress of the study. In case of any new information that might affect the study participants (including incidental findings) will be made available to you.

Confidentiality: Your identity will not be revealed to anyone as we shall only use codes to identify participants. Information obtained will only be accessible to the research team. Soft copies of the data will be protected by password and hard copy files will be kept under lock and key. Confidential information will only be accessed by the principal investigator.

Alternatives: You do not have to participate in this study if you are not interested. You will not lose any benefit in case of no participation.

Cost to the participant: There will not be any additional cost incurred because of participating in this study.

Questions: If you have any questions related to the study as a research participant, you can contact the Principal Investigator, Nakyeyune Lillian Monica by telephone number +256759181793/+256779853007 or via email at balamazeliane90@gmail.com In case your right as a study participant is violated, you can contact the GUREC chairperson; Dr. Julaina A. Obika at 0772964491 or through email at j.obika@gu.ac.ug or The Uganda National Council for Science and Technology, on plot 6 Kimera Road, Ntinda, Kampala on Tel 0414705500

Statement of voluntariness: Participation in the research study is voluntary and you may join on your own free will. You have a right to withdraw from the study at any time without penalty.

Statement of consent

..... Has described to me what is going to be done, the risks, the benefits involved and my rights as a participant in this study. I understand that my decision to participate in this study will not affect me in any way. In the use of this information, my identity will be concealed. I am aware that I may withdraw at any time. I understand that by signing this form, I do not waive any of my legal rights but merely indicate that I have been informed about the research study in which I am voluntarily agreeing to participate. A copy of this form will be provided to me.

Name of participants……Signature……...……Date ……...…

Name of witness……Signature……Date……...…

Name of interviewer……. Signature……. Date…….

Appendix Ib: Informed consent form-Acholi

Bot min lutino ma lutic ma lutino gi pe oromo mwaka acel

Kwed eni kilwongo ni: Ngo ma gengo onyooo weko mon ma gi lutic doto lutino mamegi acaaki dwee abiciel I Gulu Citi, Uganda.

Gang pwonye: Gulu University

Nyut

Latim kwed mun tye ka kwano maaita iyi yotkon palwak (public health) iyi university me Gulu. Atye ka timo kwed ikom tim me doto lutino keken ikin mege ma yitye ka tic, iyi ot yat madit me Gulu, Uganda

Pwony man kiloko iye I karatac man me cwako tam man matye kin gee. Inge kwano cwak mono, lapeny mo keken ma itye kwede obigamo. Ki bii penyo in me keto lingi ikom cwak man ka iyek me bedo mo bedo ikwan man

Cente metimo kwed: kwed man pe kiculo pire, ento latim kwed aye oculo pire.

Pingo kwan ma kitimo

Kwan ni neno me niang jami ma muko doto lutino keken ikin mege magitiyo iyi ot yat madit me Gulu Uganda

Kit/yoo me limo

Tic ma itimo ipwony man obilubu lok pa latin kwed onyo lapony pony

Anga ma obibedo ka nywako pwony man?

Ki yero in me bedo ipwony man pion ni itye mindot ma tiyo/mego dot ma tye ka bedo tye iyi ot yat pa lutino (YCC) iyi ot yat madit me Gulu.Kwed obi tero cocok ki dakika pyera adek.Latin kwed obi medo ki loko ngee ki bot mege matye nino ki nino wang ma miti me wel ma mito oo

Jami ma kelo peko/Ayeyella

Pe tye peke mo ma kigeno nit were kelo peko mo keken ki ibedo ipwong man. Peko acel keken ma obi bedo tye aye kare me kweda man.

Ber pa kweda man

Joo ma obi bedo iye gu bi gamo alib abic cente me Uganda ki gin amata wa ki mugati acama me dwoko wang cawa gi

Gwoko mung

Nyingi obi bedo mung,kit ma wabi ngeyo kwede jo ma tye ka nywako,kwan kun watiyo ki kodi,keken. Lok ma ki nongo ni obibedo tye pi dul pa dano matye ka kwedo ngee ni.Cal me ngee man kibigwoko maber,kun karatac me ngee man kibi gwoko ne kumaber ngee matye iyi mung obi nongo bot latim kwed keken.

Yoo mukene

Pe omyero ibed ikwan mar kape imito. Culm o bibedo pe pi joo ma pegu bedo iye

Jami ma kwako cul

Bedo ikwan man pe bimito cul mo keken

Lapeny

Ka itye ki lapony mo ikom kwan onyo tweronicalo lakwedo ma bedo ikwan man, rwate ki latin kwed. iyi nama 0788983316

Lok ma pe ki culu

Bedo ni I kweda, kwan man pe kibi ento ne,bene in itwero yero me donyo ka iyi mitini. Itye kitwero me weko kwan man ikare mo keken labongo kit cul mo

Ka itye ki lapeng mo onyo lok mo ikom twero ma megi onyo bedo I kwan man, bed agonya me rwate ki won kom me Gulu University Research Ethic Committee, Dr Juliana A. Obika; Nama sim 0772964491 email: j.obika@gu.ac.ug; or The Uganda National Council for Science and Techonology, on Plot 6 kimera Road, Ntinda Kampala on Tel 0414705500

Winye

Dul ma kwano lok kom kwed otito kit me kwano kwan bot an; medo ki jami ma kubbe kwede. Adwogi maber matworo bino, ki twero na macalo, ngat ma tye ka nyako ipwon. Aniang nitam ma amoko me nywako impwony man pe bibedo ki adwogi marac iyo mo keken nying ma mega bibedo me mungkade kitiyo ki ingee man. Atye kin gee ni atwero weko kwan I cawa mo keken ki koto cinga ikom karatac man. Pe aweke tworo na mo keken me cik, ento, angeyo ni ki Waco bet an lok pwony me kwed dok ni atye ka moko tamma me bedo tye lyub me kwan man.

Anying lanywak pwony: …….

Ka ketocing: …….

Nino dwer: ……

Nying caden: …….....

Cinge: ……

Nino dwe: …….

Nying lamii lapeny: …….…….

Cinge: …….

Nino dwe: …….....

Appendix II: Infectious disease prevention and Risk control

MEASURES FOR THE PREVENTION AND CONTROL OF RISKS DURING THE IMPLEMENTATION OF RESEARCH WITH PREGNANT WOMEN

STUDY TITLE: PREVALENCE AND FACTORS ASSOCIATED WITH UNINTENDED PREGNANCY AMONG WOMEN RECEIVING ANTENATAL CARE AT GULU REGIONAL REFERRAL HOSPITAL, GULU CITY, UGANDA

Introduction:

Research involving vulnerable populations of pregnant women, requires careful consideration of privacy and confidentiality risks. Pregnant women with unintended pregnancies mainly teenagers or young mothers face barriers to accessing healthcare, including fear of judgment and social exclusion, which could affect their participation and well-being during research. Therefore, it is crucial to ensure that research activities are conducted in a safe, respectful, and non-judgmental environment to protect both the research team and participants.

Implementation of Risk Prevention and Control Measures

To guarantee the safety and comfort of the research team, participants, and the pregnant women involved in the study, the research team commits to adhering to ethical guidelines and best practices. These measures will be reviewed and adapted as needed to ensure that they remain effective and relevant throughout the study.

Procedures to be Followed During the Implementation of the Research

A. Prior to Data Collection and Training

1. **Health and Safety Guidance**: Training sessions will be conducted to educate the research team and participants about potential risks related to privacy and confidentiality. Emphasis will be placed on the importance of confidentiality, respectful communication, and creating a non-judgmental space. Guidance will also be given on maintaining confidentiality throughout the study, including safe data handling practices.
2. **Ensuring Privacy**: All research activities that involve interaction with the pregnant women will be conducted in private, safe environment to minimize the risk of exposure and ensure participants feel secure. Researchers will be trained on maintaining confidentiality and protecting the identity of participants at all times.
3. **Confidential Data Handling**: Personal data and any identifying information will be handled with strict confidentiality. Researchers and research assistants will receive training on data privacy and ethical considerations when interacting with participants. Secure data storage and anonymization measures will be enforced.
4. **Safe and Respectful Communication**: Researchers will practice respectful communication, avoiding any judgmental language or behaviours. All team members will be trained to ensure they engage with the participants in a manner that respects their dignity and experiences.

B. During Data Collection

1. **Ensuring Participant Comfort**: Research activities, including interviews and data collection, will be conducted in a manner that prioritizes participant comfort. Locations will be chosen to offer privacy, and participants will be encouraged to set boundaries regarding the types of questions they are comfortable answering.

2. **Informed Consent**: Researchers will follow a strict informed consent process, ensuring that participants fully understand the study's objectives and their rights before they agree to participate. Reasonable distance will be maintained, and confidentiality measures will be emphasized during the consent process.
3. **Equipment and Data Handling**: Devices used to collect data, such as tape recorders or laptops, will be securely managed to protect participant privacy. Equipment will be sanitized as necessary, and secure data storage protocols will be followed to ensure that sensitive information is not compromised.

C. During Dissemination/Community Engagement

1. **Community Engagement with Sensitivity**: Researchers will engage with the communities through carefully planned outreach events that consider privacy and safety. Mask. Researchers will ensure that any public communication does not expose participants to unnecessary risks.

Confidential Data Sharing: Data and research findings will be shared in a manner that ensures confidentiality. Grouped data and anonymized findings will be used to maintain the privacy of individual participants. Any shared equipment during community events will be properly managed to avoid potential breaches of confidentiality. These measures are designed to ensure that the research is conducted in a safe, respectful, and ethical manner, prioritizing the well-being and privacy of the pregnant women. They will be continuously reviewed and adapted based on participant feedback and any new ethical guidance relevant to the study

Appendix IIIa: Data collection tool-English

Date of interview…….

Serial Number……

Section A: Socio-demographic characteristics of the participants

1. Age (in completed years)

   ---

2. What is your highest level of education?

   a) Informal

   b) Primary

   c) Secondary

   d) Tertiary

3. Where do you stay?

   a) Urban……

   b) Peri urban……..

   c) Rural……

4. What is your marital status?

   a) Never married. (Single)

   b) In a union (married or cohabiting)

   c) Divorced

   d) Windowed

5. Any chronic ill health?

   a) Yes, specify……

   b) No……

6. At what age did you get married?

   ……

7. At what age did you first have sex?

   …….

8. Number of lifetime sexual partners

……

9. Previous pregnancy with another sexual partner other than current owner of pregnancy

   a) Yes

   b) No

10. What is your religion?

   a) Catholic

   b) Protestant

   c) Born Again

   d) Moslem

   e) Others

11. How strongly are you associated to your religion?

   a) Very strongly

   b) Somewhat Strong

   c) Not very strong

12. What type of marriage?

   a) Love marriage.

   b) Arranged married.

13. What is your employment status?

   a) Employed

   b) Unemployed

14. If employed, what is your occupation?

……

15. What is your estimated monthly income?

……Ugandan shillings

16. When was your last normal menstrual period? (check ANC card to confirm)

……..

Section B: Obstetric characteristics of the participants

17. Gravity……. Parity……...…. Abortion……...…..…Ectopic…….….

18. If parous, Number of living children, …….

19. If parous, Age of last child, ……

20. What was the gestation age of this pregnancy at the booking visit ….…… (in weeks)

21. What is the gestation age of this pregnancy …… (in weeks)

22. Were you accompanied to ANC?

    a) Yes

    b) No

23. At the time you became pregnant, did you want to become pregnant?

    a) Yes

    b) No

24. How did you feel when you found out you were pregnant?

    a) Happy and ready for the pregnancy

    b) Neutral or unsure

    c) Unhappy and not ready for the pregnancy

25. Before becoming pregnant, were you using any method to prevent pregnancy?

a) Yes, I was using contraception consistently

b) Yes, but I was not using it consistently

c) No, I was not using any contraception

26. Did you have any intention to terminate?

a) Yes

b) No

Section C: Household characteristics

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

a) Informal

b) Primary

c) Secondary

d) Tertiary

28. What is your husband's employment status?

a) Employed

b) Unemployed

29. What is your husband's estimated monthly income?

……Ugandan shillings

30. Husband relationship status?

a) Monogamous

b) Polygamous

31. How do you rate the relationship between you and your husband`s family?

a) Very good

b) Good

c) Fair

d) Poor

e) Very poor

32. How many children do you have? ……..

33. Does your husband take alcohol?

a) Yes

b) No

Section D: Contraceptive use and other related Sexual and reproductive characteristics of the participants

34. Have you ever used modern contraception?

a) Yes

b) No

If Yes, name them, …….

35. Were you using contraceptive when you got pregnant?

a) Yes

b) No

36. If yes, which contraceptive …….

37. What is your HIV status? (Check ANC card)

a) Negative

b) Positive

c) Unknown

38. If positive, are you on ART?

a) Yes

b) No

39. If on ART, how many years have you been on ART? ……..(in years)

40. If positive, did you disclose to your partner?

a) Yes

b) No

41. If no, why?.....

Appendix IIIb: Data collection tool-Acholi

Date of interview…….

Serial Number……

Section A: Dul me acel

1. Mwaka (Ma dong ityeko)

---

2. Rwom kwani ma malu?
    e) Pe ikwano
    f) Puraimari
    g) Secondary
    h) Rwom mamalu
3. Ibedo Kwene?

I town……

Teng town…….

I caro…….

4. Kwo ni me nyome tye nining?
    e) Pwod pe inyome?
    f) I tye ka kwo iot ento pe inyome?
    g) Kenyi oketo?

h) Dako too

5. Two ma dong iri komi?

a) Ka tye, waca……..

b) Pe……..

6. Inyome ki mwaka adii?

……

7. Icako butu ki mwaka adii?

……

8. Iburu ki joo adii ikwoni……

9. Yaco ni me agiki ni obedo ki cwari onyo ki laco mukene

a) Ki cwari…….

b) Ki laco mukene……..

10. Dini aye mene?

a) Katoli

b) Protanti

c) Morokole

d) Cilam

e) Mukene mapat

11. Niye ni tye matek marom kwene I dini?

a) Tek adada

b) Tek gire

c) Goro

12. Itye ikit nyom ma nining?

a) Anyome pi mara.

b) Nyom ayuba.

13. Itiyo tic pa ngat mo kere mamegi?

a) Mamegi

b) Pe itiyo

14. Ka itiyo dog tici aye mamene?

……

15. Igamo mucara ciling adii onyo inango ciling adi idye acel?

……

16. Igiko nenokwer me dwe ni awene? (nen cat me pime)

……..

Section B: Dul me aryo

17. Yac me namba adii…….Lutino adii……Ii o ony wang adii…….Ic ma pe kama omyero obed iye……

18. Ka itye ki lutino adii makwo…….

19. Ka itye ki lutino acogo ni tye mwaka adii…….

20. Tin ma ibino ka mako kal me pime ni, I tye dwe adii?

…..…… (cabit adi)

21. Tini dong iromo dwe adii …… (cabit adii)

22. Ibino keni onyo iwoto ki ngato mo ka bino ka pime?

a) Abino ki ngato mo

b) Pe, abino kena

23. Kare ma i oyot keken, ibedo ka imito oyot anaka?

a) Eyo

b) Pe

24. Iwinyo nining I kare ma Nyang ni I yaco?

a) Anongo yomcwiny dok abedo atera

b) Pe angeyo ka iya obedo yom onyo kwo

c) Pe anongo yomcwinyi dok ono pe ayupe me yac

25. Ma pud pe ya I yac ono itye Katic ki yo megengo yaco?

a) Eyo, abedo ka tic ki yoo megengo yac kare ki kare

b) Eyo, ento pe abedo ka tic kede kare ki kare

c) Ku, pe abedo ka tic ki yo megengo yaco

26. Ka ono I tye ki kare ono itamu ni I gam ii ikare ni/con/lacen/pe I yac matwala?

a) Eyo

b) Pe

Section C: Dul me adek

27. Rwom kwan dako ni, onyo cwari aye mene?

a) Pe okwano

b) Puraimari

c) Senior

d) Rwom kwan mamalo

28. Cwari tiyo?

a) Tiyo

b) Pe tiyo

29. Cwari nongo cene marom kwene idye acel?

……

30. Kwo me bedo I ot pa cwari tye nining?

    a) Tye ki dako acel

    b) Tye ki mon mapol

31. Wat ikin in ki jo gang pa cwari tye?

    a) Ber matek

    b) Ber

    c) Pe ber tutwal

    d) Rac

    e) Rac atika

32. Itye ki lutino adii? ……..

33. Cwari mato kongo?

    a) Mato kongo

    b) Pe mato kongo

Section D: Dul me angwen

34. Itye ki yub me lago nywal?

    a) Atiyo kede

    b) Pe atiyo kede

Ka itiyo kede, tita gi……..

35. Ono kong itiyo ki yat lago nywal mapud peya iyac?

    a) Atiyo kwede

    b) Pe atiyo kwede

36. Ka itiyo, ki yat itiyo ki mene

    …….

37. Itye ka kwo ki tyo jonyo?(rot card me apima)

    a) Peke

b) Atye ki two

c) Pe angeyo

38. Itye ka munyo yat two jonyo?

a) Atye ka munyo

b) Ape ka munyo

39. Ka itye ka munyo yat,dong imunyo pi mwaka adii?.....(mwaka)

40. Ka itye ki two jonyo,cwari onyo dak oni ngeo?

a) Ngeo

b) Pe ngeo

41. Ka pe ngeo,pi ngo pe iwaco

ire?.....

Appendix IV: Study timeline

Table 3:Study timeline

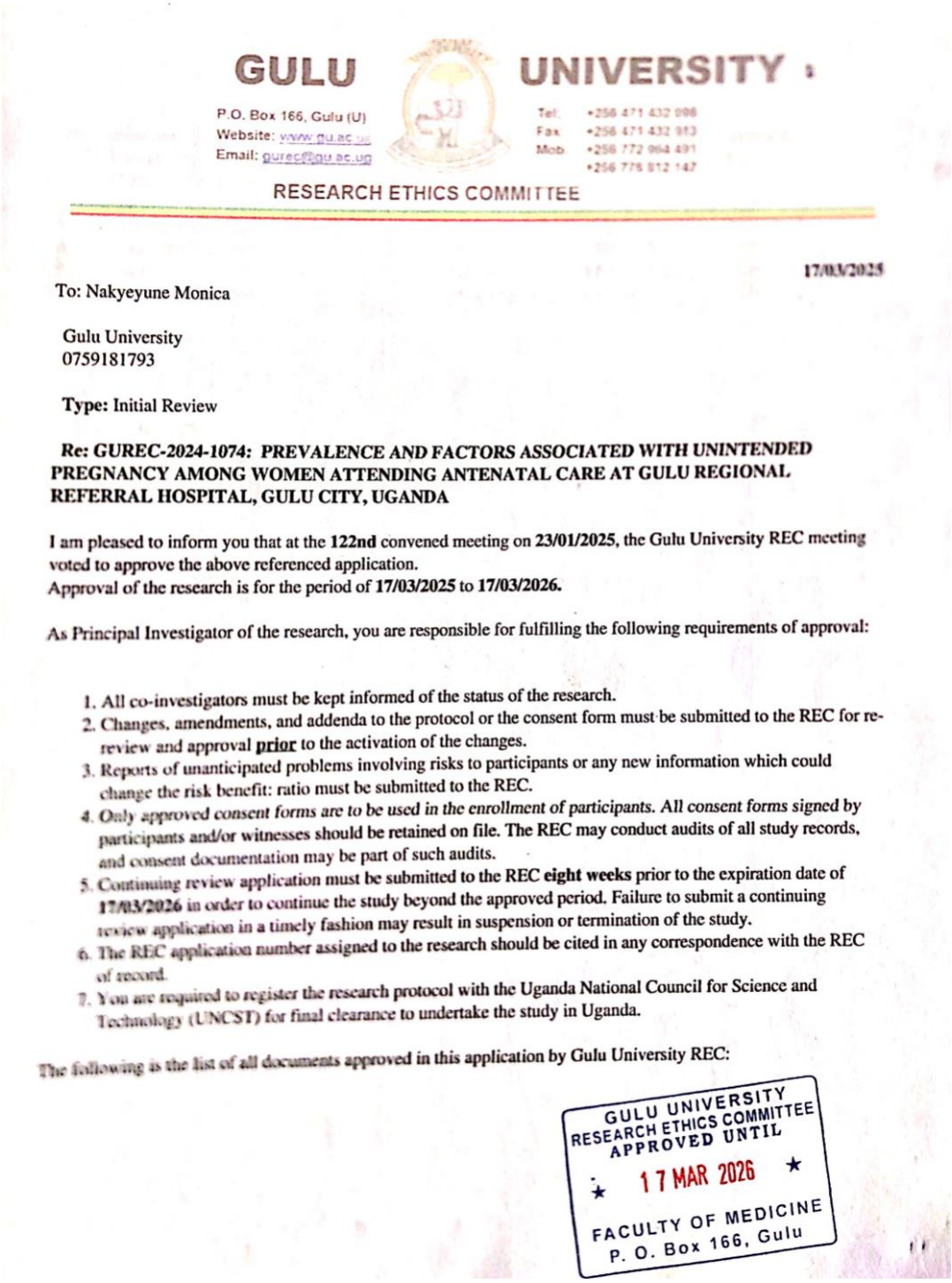
Research Project Timeline	March 2025 – June 2025				
	3/25	4/25	5/25	6-6/25	7-8/25
Operations Research and Data Collection					
Obtain IRB approval					
Data collection					
Data analysis					
Data management					

Data analysis					
Review data					
Reporting and Dissemination					
Submission of a manuscript to a journal for publication					

Appendix V: Budget

Table 4:Research budget

Services	**Cost Per Month**	**# Of Months**	**Total Cost**	**Notes/Justification**
Data Collector	300,000	2	600,000	For three research assistants
Translation Services			300,000	Translation of research questionnaire in Acholi
Patient/Participant Related				
IRB Fees			150,000	Payment to GUREC
Supplies and Materials				
Office Supplies (Printing, Laminating)			500,000	The printing consent form, questionnaire and printing the findings
Transportation and Travel				
Ground Transport			500,000	Facilitates movement
Communication				
Internet costs (minutes)			350,000	Facilitate communication among investigators
Data analysis			1,000,000	For biostatistician to analyze the work
		Total:	**3,400,000**	**Ugandan schillings**



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RESEARCH ETHICS COMMITTEE

17/03/2025

To: Nakyeyune Monica

Gulu University
0759181793

Type: Initial Review

Re: GUREC-2024-1074: PREVALENCE AND FACTORS ASSOCIATED WITH UNINTENDED PREGNANCY AMONG WOMEN ATTENDING ANTENATAL CARE AT GULU REGIONAL REFERRAL HOSPITAL, GULU CITY, UGANDA

I am pleased to inform you that at the **122nd** convened meeting on **23/01/2025**, the Gulu University REC meeting voted to approve the above referenced application.
Approval of the research is for the period of **17/03/2025** to **17/03/2026.**

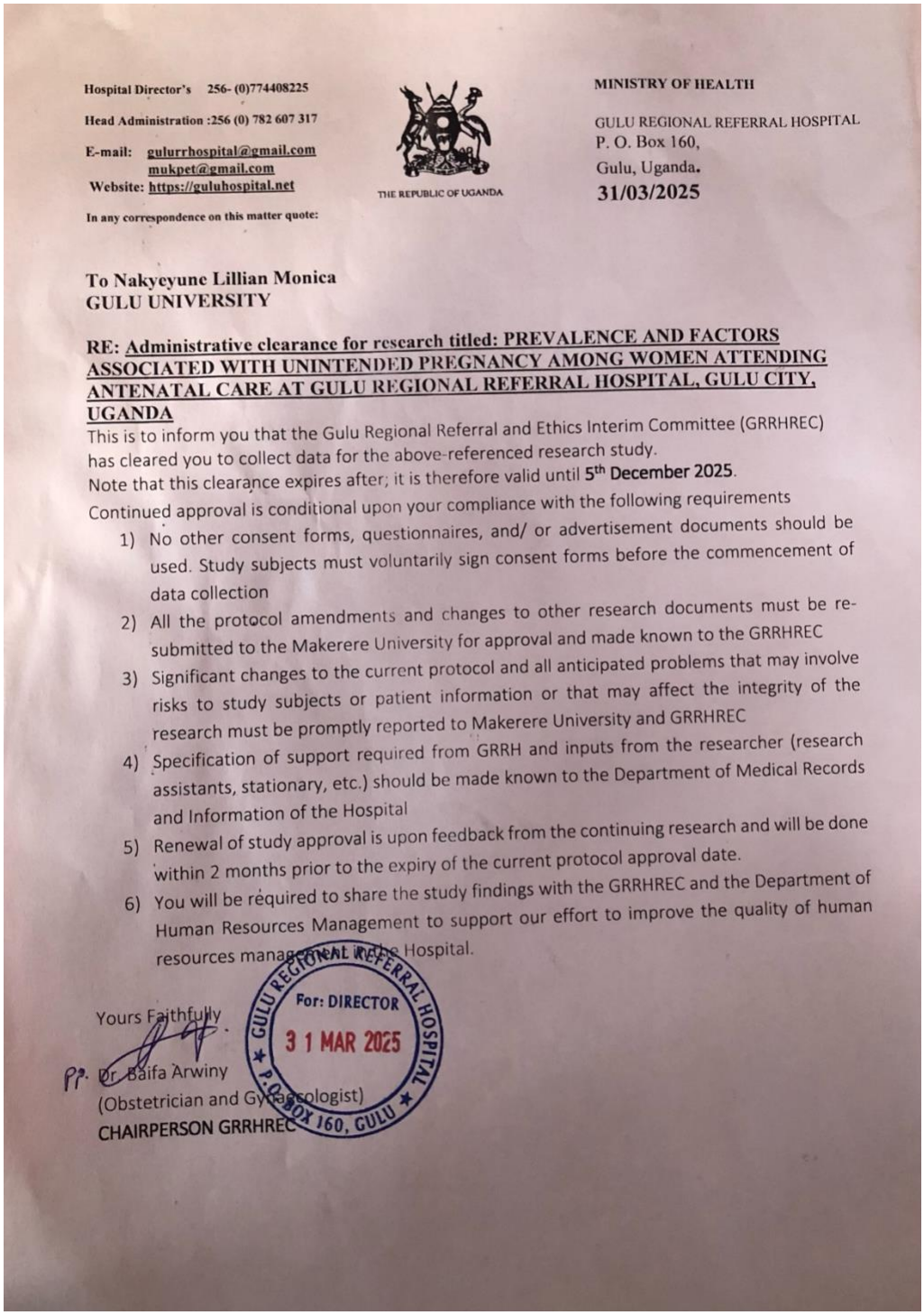
As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

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 **17/03/2026** 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 Gulu University REC:

GULU UNIVERSITY
RESEARCH ETHICS COMMITTEE
APPROVED UNTIL
17 MAR 2026
FACULTY OF MEDICINE
P. O. Box 166, Gulu

Figure 4:GUREC APPROVAL



Hospital Director's 256- (0)774408225
Head Administration :256 (0) 782 607 317
E-mail: gulurrhospital@gmail.com
mukpet@gmail.com
Website: https://guluhospital.net
In any correspondence on this matter quote:

THE REPUBLIC OF UGANDA

MINISTRY OF HEALTH

GULU REGIONAL REFERRAL HOSPITAL
P. O. Box 160,
Gulu, Uganda.
31/03/2025

To Nakyeyune Lillian Monica
GULU UNIVERSITY

RE: Administrative clearance for research titled: PREVALENCE AND FACTORS ASSOCIATED WITH UNINTENDED PREGNANCY AMONG WOMEN ATTENDING ANTENATAL CARE AT GULU REGIONAL REFERRAL HOSPITAL, GULU CITY, UGANDA

This is to inform you that the Gulu Regional Referral and Ethics Interim Committee (GRRHREC) has cleared you to collect data for the above-referenced research study.
Note that this clearance expires after; it is therefore valid until 5th December 2025.
Continued approval is conditional upon your compliance with the following requirements

1) No other consent forms, questionnaires, and/ or advertisement documents should be used. Study subjects must voluntarily sign consent forms before the commencement of data collection
2) All the protocol amendments and changes to other research documents must be re-submitted to the Makerere University for approval and made known to the GRRHREC
3) Significant changes to the current protocol and all anticipated problems that may involve risks to study subjects or patient information or that may affect the integrity of the research must be promptly reported to Makerere University and GRRHREC
4) Specification of support required from GRRH and inputs from the researcher (research assistants, stationary, etc.) should be made known to the Department of Medical Records and Information of the Hospital
5) Renewal of study approval is upon feedback from the continuing research and will be done within 2 months prior to the expiry of the current protocol approval date.
6) You will be required to share the study findings with the GRRHREC and the Department of Human Resources Management to support our effort to improve the quality of human resources management in the Hospital.

GULU REGIONAL REFERRAL HOSPITAL
For: DIRECTOR
31 MAR 2025
P.O.BOX 160, GULU

Yours Faithfully

Pp. Dr. Baifa Arwiny
(Obstetrician and Gynaecologist)
CHAIRPERSON GRRHREC

Figure 5:Administrative clearance