ACCEPTABILTY OF HIV PRE- EXPOSURE PROPHYLAXIS, ASSOCIATED FACTORS, AND EXPERIENCES AMONG HIV NEGATIVE FEMALE SEX WORKERS IN GULU CITY, NORTHERN UGANDA: A MIXED-METHOD STUDY.

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DECLARATION

I Alwedo Immaculate declare that the work presented in this research is my original work and has never been presented to any institution before for any award. I therefore present it for the award of a master's degree in public health.

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APPROVAL

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ART	Anti-Retroviral Therapy
CAB-LA	Long Acting Cabotegravir
DVR	Dapivirine Vaginal Ring
FSWs	Female sex workers
HBM	Health Belief Model
HIV	Human Immune deficiency
KP	Key Population
MOH	Ministry of Health
PEP	Post Exposure Prophylaxis
PP	Priority Population
PREP	Pre-Exposure Prophylaxis
UCG	Uganda Clinical Guideline
UNAIDS	Joint United Nations Programme on HIV/AID
SSA	Sub-Sharan Africa
WHO	World Health Organization

OPERATIONAL DEFINITIONS

HIV PrE-Exposure Prophylaxis (PrEP): Refers to the use of antiretroviral medicines by HIV-negative individuals before potential exposure to HIV to reduce the risk of HIV acquisition (World Health Organization [WHO], 2024). In this study, PrEP included three modalities:

Oral PrEP: A daily oral antiretroviral pill taken by an HIV-negative individual to reduce the risk of acquiring HIV (WHO., 2024).

Dapivirine vaginal ring (PrEP ring): A vaginal ring containing the antiretroviral medicine dapivirine that is inserted into the vagina and continuously releases the medicine for HIV prevention. The ring is worn continuously and replaced monthly (every 28 days) (WHO., 2021).

Long-acting injectable cabotegravir (CAB-LA): An antiretroviral medicine administered through intramuscular injection every two months to provide sustained protection against HIV acquisition (WHO., 2022).

Acceptability of PrEP: Refers to the extent to which an individual perceives PrEP as appropriate, suitable, satisfactory, and worthwhile for preventing HIV (Sekhon et al., 2017). In this study, PrEP acceptability was operationally defined as the participant's personal assessment of whether taking PrEP would be worthwhile for preventing HIV. It was assessed using a question adapted from Beckham et al. (2022): "Do you personally think it would be worth it for you to take PrEP if you could prevent HIV?" Participants who responded "Yes" were classified as having acceptable PrEP, while those who responded "No" were classified as having unacceptable PrEP.

Female sex workers defined as: Women (18 years of age and above) who receive money or goods in exchange for sexual services, either regularly occasionally (UNAIDS., 2021).

ABSTRACT

Background: Female sex workers (FSWs) are at heightened risk of HIV infection due to their structural, economical and socio-cultural vulnerabilities. Pre-exposure prophylaxis (PrEP) is a highly effective HIV prevention tool however; its acceptability varies across settings. This study aimed to assess the acceptability and identify factors associated with PrEP among HIV-negative FSWs in Gulu City, Northern Uganda.

Methods: A concurrent mixed-method study was conducted among 301 HIV-negative FSWs aged 18 years and above in Gulu City, Northern Uganda. Participants were purposively sampled and interviewed using a structured questionnaire. Quantitative data were analyzed using multivariable logistic regression to determine Adjusted Odds Ratios (AORs), 95% confidence intervals (CIs), and statistical significance at $P < 0.05$. Additionally, in-depth qualitative interviews were conducted with a purposive sub-sample of nine participants to explore attitudes, beliefs, and experiences regarding PrEP use. Thematic analysis was used to interpret qualitative data, complementing quantitative findings.

Results: Of 301 participants, most were predominantly aged 25–34 years 48.2 %(n=145) with primary 47.5% (n=143) or secondary education 40.5% (n=122) and 66.5% (n=200) reporting no employment outside sex work. Condom use was inconsistent, with 63.8% (n=192) sometimes using condoms and 18.3% (n=55) never using them. Majority 81.4% (n=245) accepted to use PrEP when availed to them. Higher education (primary: AOR=3.63, 95% CI: 1.29–10.19; secondary: AOR=8.23, 95% CI: 2.64–25.69; tertiary: AOR=6.43, 95% CI: 1.03–40.06), monthly income UGX 100,001–500,000 (AOR=2.42, 95% CI: 1.26–4.65), and sometimes using condoms (AOR=2.37, 95% CI: 1.00–5.59) remained independently associated with PrEP acceptability while age, marital status, living arrangement, and never using condoms were not. Awareness of PrEP was also a key determinant, with 96.3% (n=236) of acceptors aware of it compared to 3.7% (n=9) among non-acceptors. Qualitative findings highlighted that perceived HIV risk, peer influence, convenience, and cultural beliefs shaped attitudes toward PrEP use.

Conclusion: PrEP acceptability among HIV negative FSWs in Gulu City is high and strongly influenced by education, income, and sexual risk behaviors. To improve PrEP acceptability; programs should expand PrEP modality options and interventions targeting lower-educated FSWs, address economic and behavioral barriers, and leverage peer networks to enhance PrEP uptake. These findings underscore the need for integrated and responsive HIV prevention interventions targeting FSWs in urban Uganda.

Key words: HIV PrEP, Acceptability, FSWs, HIV Prevention, Gulu City**.**

CHAPTER ONE

INTRODUCTION

1.1 Background

Globally, an estimated 41.0 million people were living with HIV in 2025, with approximately 1.2 million (950,000–1.7 million) people newly acquiring HIV and 570,000 (430,000–780,000) people dying from AIDS-related illnesses. Women and girls accounted for 44% of all new HIV acquisitions in 2025. People from key populations continued to experience substantially higher risks of HIV acquisition than adults aged 15–49 years in the general population, with sex workers experiencing a 17-fold higher risk of HIV acquisition (UNAIDS, 2026). The burden of HIV remained elevated among key populations and their partners, with an estimated prevalence of 2.3% among females aged 15–24 years in eastern and southern Africa, 3% among sex workers (Unaids, 2024).

In Uganda, female sex workers (FSWs) experience a disproportionately high burden of HIV compared with the general adult population. A systematic review of 24 quantitative studies conducted among sex workers in Uganda reported HIV prevalence among FSWs ranging from **32.4% to 52.0%** across Kampala, southwestern Uganda, and northern Uganda (Muldoon, 2015). This high burden is also reflected in studies conducted in Kampala. A respondent-driven sampling study among 942 FSWs estimated HIV prevalence at **33.0%** (95% CI: 29.7–36.6%) (Hladik et al., 2017). Similarly, a subsequent respondent-driven sampling survey involving 1,497 FSWs in greater Kampala reported an HIV prevalence of **31.4%** (95% CI: 29.0–33.7%) (Doshi et al., 2018). In comparison, UNAIDS estimated HIV prevalence among Uganda's general population aged 15–49 years at **5.2% in 2021**(UNAIDS, 2022).

HIV pre-exposure prophylaxis (PrEP) is available in different modalities that provide individuals at substantial risk of HIV infection, including female sex workers (FSWs), with choices for HIV prevention. These include daily oral PrEP, the monthly dapivirine vaginal ring (DVR), and long-acting injectable cabotegravir (CAB-LA)**.** The dapivirine vaginal ring is a women-controlled and woman-initiated prevention option that is self-inserted into the vagina and replaced every 28 days, allowing women greater control over HIV prevention without requiring administration by a healthcare provider (WHO, 2021). In contrast, CAB-LA is a provider-administered long-acting injectable PrEP, given as an intramuscular gluteal injection

by a trained PrEP provider, with the first two injections administered one month apart and subsequent injections every two months (WHO, 2024). Oral PrEP is taken as a daily tablet and provides an additional prevention option for people at substantial risk of HIV infection.

Global evidence highlights significant variations in pre-exposure prophylaxis (PrEP) acceptability among FSWs. Acceptability ranges from 25% to 95%, influenced by local HIV prevalence, awareness, and perceived personal risk (UNAIDS, 2022). In high-income regions, PrEP acceptability is generally high, with cities such as San Francisco, New York, London, and Paris reporting rates around 70-80%, supported by robust healthcare systems and public health initiatives (Lorenzetti et al., 2023). Conversely, in lower-income settings, such as Iringa, Tanzania, the acceptability of PrEP was significantly associated with higher social cohesion and recent STI symptoms. Nearly nine in ten participants (88%) favored long-acting (LA) PrEP over the oral formulation. While qualitative findings showed positive views on all PrEP forms as supplements to condoms, concerns were raised about daily pills (burden and stigma) and the vaginal ring (client detection and infertility fears). Overall, LA-PrEP was favored for its less frequent use, ease of concealment, and perceived higher efficacy(Beckham et al., 2022).

In China, acceptability was notably low at 35.5%, primarily due to lack of awareness and concerns about cost and side effects (Poon et al., 2019). In Africa, Kenya and Uganda exhibit relatively high acceptability rates, with around 70-75% in Nairobi and coastal regions, and 65% in Kampala, while Western Uganda reports a lower rate of 50%. South Africa shows high acceptability at 80% in Johannesburg and 60% in Cape Town. Nigeria and Zimbabwe present moderate to high acceptability, with rates of 55% and 58% in Lagos and Abuja, and 68% and 62% in Harare and Bulawayo, respectively(Beckham et al., 2022; Mutua et al., 2012).

There is limited information on PrEP uptake and acceptability among FSWs in Northern Uganda given the newly introduced HIV PrEP modalities in the country. Therefore, this study aims to explore using a mixed method approach the level of acceptability and factors associated with PrEP among HIV negative FSWs in Gulu City, Northern Uganda so as to inform policy and enhance targeted PrEP service delivery in Gulu City hence reducing HIV prevalence among this vulnerable population.

1.2 Problem Statement

Gulu City has a substantial HIV burden among FSWs, with HIV prevalence reported at approximately 32%, highlighting the city's contribution to the national HIV burden (Makerere University School of Public Health (MakSPH., 2024).

PrEP is recommended for HIV-negative individuals at substantial risk of acquiring HIV, including people with multiple sexual partners, those engaged in transactional sex such as FSWs, and other key-population members who are unable or unwilling to use condoms consistently. PrEP services include HIV testing, risk assessment, counselling on PrEP options and adherence, provision of condoms, discussion of possible side effects, and development of an adherence plan. Clients can then select an appropriate PrEP modality in consultation with the provider. Follow-up includes repeat HIV testing, assessment of adherence, side effects and ongoing HIV risk, and provision of the selected PrEP method. In Uganda, PrEP services are delivered through health facilities and other differentiated service-delivery approaches as part of the national HIV prevention programme (MoH., 2022).

PrEP acceptability among female sex workers varies across African settings. Witte et al. (2022) reported 91.0% acceptability to use PrEP among women engaged in sex work in Uganda, compared with **58.0%** among FSWs in Iringa, Tanzania (Beckham et al., 2022) and 67.9% among commercial FSWs in Addis Ababa, Ethiopia (Berhe et al., 2024).

Despite the high HIV burden and relatively high PrEP use (63%) among FSWs in Gulu City (Bongomin et al., 2023), there is limited evidence on the acceptability of PrEP and the factors influencing its acceptability among FSWs in Gulu city.

Currently, there is no available data that directly measures and explains the actual acceptability of PrEP among FSWs in Gulu City.

1.3 General Objectives

To determine acceptabilty of HIV Pre- Exposure Prophylaxis, associated factors, and experiences among HIV negative female sex workers in Gulu city, Northern Uganda

1.3.1 Specific Objectives

1. To assess the level of PrEP acceptability among HIV negative FSWs in Gulu City, Northern Uganda.
2. To assess the factors associated with acceptability of PrEP among HIV negative FSWs in Gulu City, Northern Uganda.
3. To explore the experiences of PrEP use among HIV negative FSWs in Gulu City, Northern Uganda.

1.4 Research Questions

1. What are the levels of PrEP acceptability among HIV negative FSWs in Gulu City, Northern Uganda?
2. What are the factors associated with acceptability of PrEP among HIV negative FSWs in Gulu City, Northern Uganda?
3. What are the experiences of HIV negative FSWs in the use of PrEP in Gulu City, Northern Uganda?

1.5 Significance/Justification of the Study

The findings will inform key stakeholders, including the Ministry of Health, implementing partners, healthcare providers, and local communities, in designing and strengthening targeted HIV prevention interventions for FSWs in Gulu City. They will also contribute to improving practices at health facility and community PrEP service delivery points by identifying and addressing barriers to access and supporting the introduction and uptake of appropriate PrEP modalities. These improvements may enhance the accessibility, acceptability, and quality of PrEP services and contribute to reducing new HIV infections and improving public health outcomes.

The study will also guide targeted PrEP and HIV prevention education and community sensitization in Gulu City, focusing on PrEP methods and modalities, benefits, adherence, side effects, stigma, and misconceptions. The information may be incorporated into peer education, community outreach, and health facility counselling to improve awareness and informed decision-making among FSWs.

Furthermore, the findings will support training and capacity building for healthcare providers, medical and nursing institutions, and relevant non-medical organizations in Gulu City. The evidence may be used to strengthen training on PrEP counselling, confidentiality, stigma reduction, and FSW-friendly service delivery, thereby improving the capacity of service providers to respond to the needs of FSWs.

Finally, the study will provide a basis for further research on PrEP acceptability, uptake, continuation, adherence, different PrEP modalities, and barriers to sustained PrEP use among FSWs in Gulu City and other settings in Uganda.

CONCEPTUAL FRAMEWORK

Dependent variable **Independent variable**

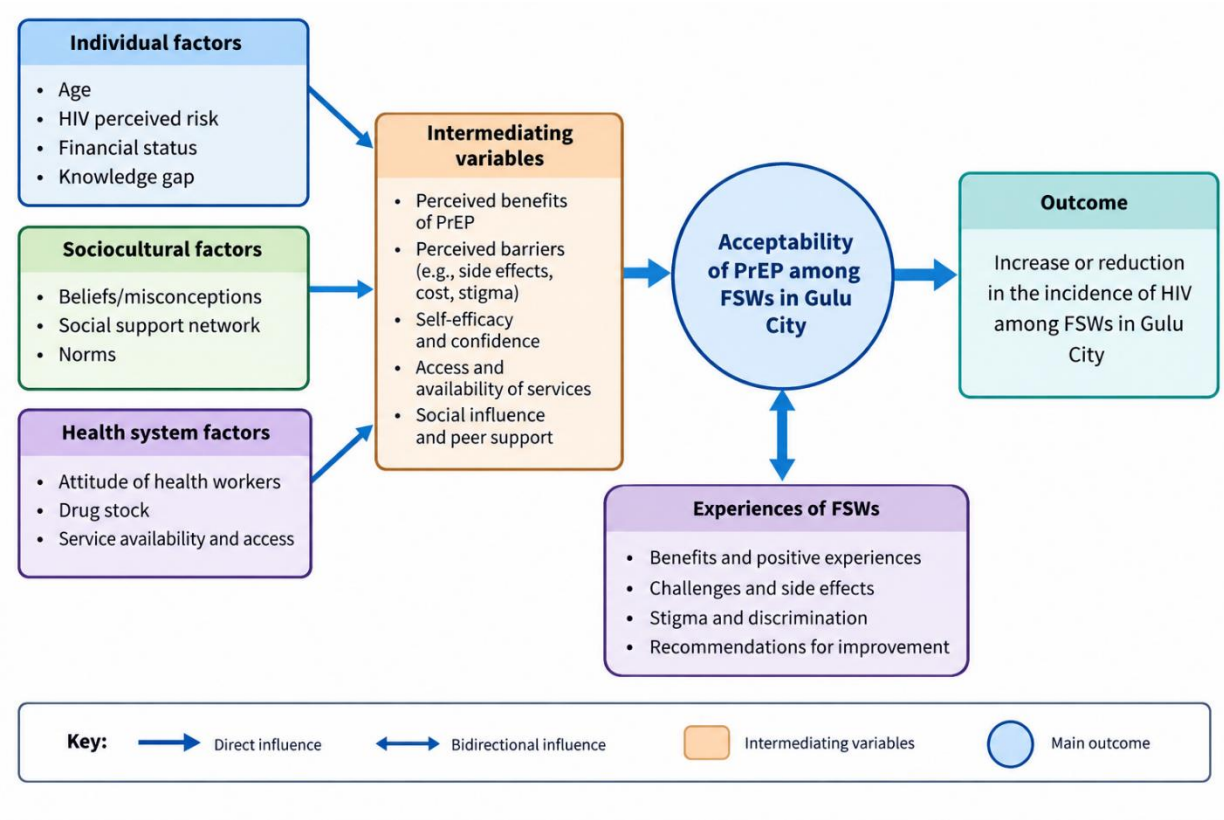


Figure 1: Conceptual Framework

Conceptual Framework Narratives

The conceptual framework illustrates how individual, sociocultural, and health-system factors influence PrEP acceptability among HIV-negative female sex workers (FSWs) in Gulu City.

Individual factors, including age, perceived HIV risk, financial status, and knowledge about PrEP, may shape PrEP acceptability. Sociocultural factors, such as beliefs and misconceptions, stigma, social norms, and social support, may either facilitate or discourage PrEP acceptability. Health-system factors, including healthcare-provider attitudes, availability of PrEP commodities, and accessibility of services, may influence trust, access, and acceptability of PrEP. These factors may influence PrEP acceptability directly or indirectly through perceived benefits and barriers, self-efficacy, access to services, and social influence or peer support, which serve as intervening factors. The dependent variable is PrEP acceptability, defined as the extent to which FSWs consider PrEP appropriate and beneficial for HIV prevention. The framework also incorporates FSWs' experiences with PrEP, including perceived benefits, side effects, stigma, provider-related challenges, and recommendations, which provide qualitative explanations of the factors influencing PrEP acceptability **(Sekhon et al.,2017).**

THEORETIC FRAMEWORK

The **Health Belief Model (HBM)** contributed to this study by explaining how individual perceptions influence PrEP acceptability among FSWs. The model focuses on perceived susceptibility to HIV, perceived severity, perceived benefits of PrEP, perceived barriers, cues to action, and self-efficacy, which are relevant to understanding decisions to accept and use PrEP (Rosenstock, 1974).

Social Constructionist Theory complemented the HBM by explaining how FSWs' perceptions and experiences of PrEP are shaped by their social and cultural environment. The theory helped interpret the influence of peer interactions, cultural beliefs, stigma, misinformation, healthcare-provider attitudes, and community perceptions on PrEP acceptability and use. It was therefore relevant to the objectives examining PrEP acceptability and exploring FSWs' experiences with PrEP in Gulu City (Andrews, 2012).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

HIV is a major global public health concern that claims the lives of over 10 million adults annually. Key populations and their partners are negatively impacted by the infection, accounting for 70% of new cases. Sex workers, people who inject drugs, and transgender individuals are among the populations at heightened risk of HIV infection. In Sub-Saharan Africa (SSA), key populations and their partners accounted for nearly 70% of new HIV infections, with female sex workers bearing a disproportionate burden, as evidenced by an HIV prevalence of 42.2%, substantially higher than that of the general population (UNAIDS, 2022). HIV prevalence among female sex workers (FSWs) in Uganda is estimated to be 31.1%, compared to 5.2% in the adult population as a whole, and 9.3% of FSWs report obstacles in accessing health services (UNAIDS.,2022) because of their vulnerability shaped by a complex interplay of individual, behavioral, social and structural factors but not limited to gender-based violence (GBV) and unfriendly policy that unfavorably impact their work(Schweitzer et al., 2015; Wanyenze et al., 2017).

Forms of PrEP Methods

HIV remains a major global public health concern, taking the lives of over 20 million adults, with high risk HIV-negative individuals and their partners having access to oral PrEP, dapivirine rings, and Long acting injectable Cabotegravir (CAB-LA), which, when used consistently and appropriately, reduce the risk of HIV transmission through sexual activity by 90%, 50%, and 79%, respectively (Beyrer et al., 2022).

In 2015, the World Health Organization (WHO) advised that oral PrEP, which contains tenofovir disoproxil fumarate (TDF), be used with key and priority populations. In 2017, Uganda's Ministry of Health implemented an adaptation of oral PrEP throughout the country. The WHO approved the use of injectable PrEP (CAB-LA) in 2021 for people at risk of HIV globally, and dapivirine vaginal rings (DVR) for cisgender women in 2021. The WHO approved dapivirine vaginal rings (DVR) for cisgender women in 2021, and CAB-LA (injectable PrEP) for use by groups at risk of HIV globally in 2021 to prevent HIV acquisitions (WHO, 2022).

2.2 Individual Factors Associated with Level of PrEP Acceptability and Uptake among FSWs.

Age

Older female sex workers were more likely to adhere to oral PrEP compared to younger women. In Southwestern Uganda, those aged 35 years and above were 2.4 times more likely to adhere than those below 35 years (aOR = 2.40, 95% CI: 1.17–4.86)(Jacenta et al., 2022).

In addition, women aged 15–24 years were 59% less likely to continue PrEP after one month compared to those aged 25 years and above (aOR = 0.41, 95% CI: 0.21–0.82). Similarly, in Kisumu, Kenya, PrEP uptake was higher among women aged 25–29 years than among those aged 15–24 years (77% versus 33%)(Ogolla et al., 2023)

Years of sex work

In Uganda, women with fewer years of experience in sex work were 18.95% more likely to accept PrEP compared to those who had been in sex work for a longer duration (AOR = 18, 95% CI: 0.05–0.66, $p < 0.01$) (Witte et al., 2022).

Religion

A mixed-method study on the determinants of oral PrEP adherence in Regional Referral Hospitals found that FSWs who identified as Christians had a 56% higher rate of discontinuation compared to those who identified as Muslims (P-Value, 0.05, AHR = 1.56, 95% CI: 0.987, 2.467)(Kawuma et al., 2024).

Sexually Transmitted Infections

Studies show mixed findings on the relationship between STI history and PrEP acceptability and uptake among female sex workers. In Tanzania, those presenting with STI symptoms were 2.52 times more likely to accept PrEP compared to those without symptoms in the past six months (aOR = 2.52; 95% CI: 1.38–4.62)(Beckham et al., 2022). Similarly, in Southwestern Uganda, FSWs who had an STI in the previous three months were 1.64 times more likely to accept oral PrEP (aOR = 1.64; 95% CI: 1.07–2.49)(Jacenta et al., 2022). In contrast, a study in Salt River reported lower acceptability of alternative PrEP modalities among FSWs with a history of STI treatment compared to those without such history (difference in acceptability

scores = -5.1; 95% CI: -14.9 to 4.6) (Mbuyamba, 2022). Evidence from South Africa also indicated that FSWs with STI symptoms were more likely to be retained in PrEP care, with higher retention reported among those with symptoms (AOR = 2.21; 95% CI:

95% CI (1.23–14.63), respectively (Dzinamarira & Moyo, 2023).

Multiple sexual partners

In South Africa, FSWs with HIV-negative or partners with unknown HIV status were 44% less likely to continue with PrEP compared to those with HIV positive Partners (COR = 0.56, 95% CI: 0.36–0.86; COR = 0.39, 95% CI: 0.16–0.96)(Dzinamarira & Moyo, 2023).

Evidence from Gulu City shows that female sex workers in polygamous marriages were 6.9 times more likely to take up PrEP compared to those in monogamous marriages (aPR = 6.9; 95% CI: 1.32–35.77; p = 0.022)(Bongomin et al., 2023). In addition, a systematic review in Sub-Saharan Africa reported that FSWs with 10 or more clients per day were 1.71 times more likely to adhere to PrEP than those with fewer than 10 clients per day (aOR = 1.71; 95% CI: 1.06–2.76)(Mpirirwe et al., 2024).

Income status

In Gulu City, Northern Uganda, female sex workers who had a regular income in addition to sex work were 3.7 times more likely to initiate PrEP than those relying on irregular income sources (aPR = 3.7; 95% CI: 2.11–6.35; p < 0.001)(Bongomin et al., 2023). Conversely, other studies have reported that financial constraints and limited access remain significant barriers to PrEP uptake in this population (Koss et al., 2020).

HIV Perceived risk

A mixed-method study in Kampala, Central Uganda, found that participants who did not use condoms with clients were 0.07 times less likely to adhere to PrEP (OR 0.07, 95% CI: 0.01-0.42) (Nalukwago et al., 2021). Similarly, a qualitative study in Uganda's Regional Referral Hospitals highlighted that FSWs recognized the high risk of HIV in their profession, motivating them to continue PrEP. Many FSWs cited the fear of death as a key motivator for maintaining PrEP use, emphasizing the critical need to protect themselves from HIV and its potentially fatal consequences(Kawuma et al., 2024).

In South Africa, a cohort study in Johannesburg reported that 85% of FSWs who perceived themselves at high risk of HIV infection were willing to use PrEP, compared to about 50% among those who perceived their risk as low (Bekker et al., 2015). Focus group discussions in India also revealed that FSWs who perceived themselves at higher risk due to inconsistent condom use or multiple partners were more open to considering PrEP as a preventive measure (Sahay et al., 2021).

In Salt River, Cape Town, female sex workers using condom with the main partner were 0.2 times less likely to take up PrEP compared to female sex workers using condoms with multiple sexual partners. (OR = 0.2, 95% CI: 0.0-0.9, sometimes vs. never) (Mbuyamba, 2022). "Oral PrEP reduces the needs for inconsistent condom use during sexual acts among FSWs which experienced sexual or physical violence, client refusal or coercion, or clients who pay more but for not using a condom" a qualitative study conducted in Kampala, central Uganda (Witte et al., 2022)

2.3 Socio-Cultural Factors associated with Level of PrEP acceptability and Uptake Among FSWs.

Peer support

In Uganda, female sex workers with greater perceived social support from family were 1.39 times likely to accept PrEP compared to female sex workers not receiving support from their family. (AOR= 1·39, 95% CI 1·03 -1.88, p<·05) (Witte et al., 2022).

Places of sex practices

Female sex workers engaged in sex work in both rural and urban settings had a 2.5 times higher likelihood of PrEP uptake compared to those operating solely in urban areas (aPR = 2.5; 95% CI: 1.49–4.35; p < 0.001)(Bongomin et al., 2023).

Stigma

FSWs in Kampala, Uganda who perceived higher stigma due to sex work among their family members were 2.20 times more likely to accept PrEP compared to those who did not perceive such stigma (AOR=2·20, 95% CI 1·15–4·22, p<·05) (Witte et al., 2022). There are still obstacles observed during the global systematic review like stigma and misconceptions of PrEP which hinders the accessibility to their acceptance and use among FSW, notwithstanding

their efficacy in HIV prevention (Lorenzetti et al., 2023).

A qualitative study among women in the US before PrEP implementations pointed out stigma as the major barriers to Oral PrEP access and use (Auerbach et al., 2015).

A study in Gulu City highlighted social factors hindering oral PrEP access and use, including skepticism about its effectiveness, poor belief to PrEP use and stigma associated with its uptake (Bongomin et al., 2023).

2.4 Health System Factors Associated with level of PrEP Acceptability and Uptake among FSWs.

Stigma at the health facility

Many participants reported confusion between PrEP and antiretrovirals (ARVs) for HIV-positive individuals, worsened by health workers mistakenly labelling PrEP as ARVs. This mislabelling contributed to mistrust, stigmatization, and interpersonal conflict among FSWs. Consequently, 58% of FSWs using PrEP felt stigmatized, 43% faced accusations of lying and deception, and 35% experienced broken relationships. These issues led 22% to take PrEP privately and 18% to discontinue its use altogether (Makhakhe et al., 2022).

Long distances

In Kisumu Kenya, Female sex workers described long distances to facility or community refill points that increase transport expenses. They expressed the desire to have integrated services brought nearer to them through establishment of more community structures given their mobile nature and increase of multi-month refills to reduce hospital visits (Ogolla et al., 2023)**.**

Attitude of health workers

In Kisumu, Kenya, female sex workers reported that negative attitudes from some health workers discouraged them from returning for PrEP refills, leading to calls for more safe and friendly service delivery spaces (Ogolla et al., 2023). Similarly, in Gulu City, Northern Uganda, health workers were often reported to demonstrate unfriendly behaviors toward sex workers, including rudeness, discrimination, and verbal abuse, which reduced their willingness to seek HIV services at certain facilities (Wanyenze et al., 2017). A focus group discussion further illustrated this stigma, where a woman seeking care for stomach pain was questioned about her

involvement in sex work; after confirming, she was blamed for her condition and suspected of having syphilis before eventually being treated only after insistence and payment.

Inadequate privacy and limiting service delivery policies:

In Kisumu, Kenya, most female sex workers reported that lack of privacy and restrictive health facility policies such as strict dress codes and centralized medication pick-up points at pharmacies were major barriers to accessing services. Similarly, in Salt River, Cape Town, 31% of respondents identified limited privacy as a key challenge within health facilities (Mbuyamba, 2022).

Stock outs

In Kisumu Kenya, all health providers agreed that stock out of key commodities such as PrEP drugs and rapid HIV testing kits hinders their efforts to retain clients on PrEP services. This interferes with the conduct of standard follow-up activities such as repeat HIV testing and supply of multi month PrEP refills. In Cape town salt river, PrEP unavailability (27%)(Mbuyamba, 2022).

Workload and long waiting time

In Kisumu Kenya, both FSWs and health providers agreed that the increased workload at facility and long waiting time were structural barriers to continuation on PrEP services. In salt river, cape town Long waiting times (72% of participants) (Ogolla et al., 2023)**.**

Providers knowledge

A cross-sectional study conducted at a Uganda Regional Referral Hospital revealed that both healthcare providers and female sex workers (FSWs) supported the use of FSW peer supporters for PrEP delivery, as this approach could help redistribute tasks and reduce providers' workload. It was also noted that FSWs have greater trust in their peers, who are perceived as more effective in reaching them within the community for PrEP refill delivery. (Kawuma et al., 2024).

Level of PrEP acceptability among FSWS

Global evidence demonstrates considerable variation in PrEP acceptability among female sex workers (FSWs), reflecting differences in awareness, perceived HIV risk, social context, and characteristics of available PrEP products and services. For example, studies among FSWs in China have reported relatively low willingness to use PrEP, with Poon et al. (2019) reporting that only 35.5% of 1,466 FSWs were willing to use PrEP; low awareness of PrEP (10.2%) and limited knowledge of HIV prevention were identified as important factors. In contrast, an earlier study in Guangxi, China, found that 85.9% of FSWs would accept PrEP if it were considered effective, safe, and provided free of charge, with acceptability associated with HIV knowledge, income, condom-use practices, and other characteristics. These contrasting findings illustrate that PrEP acceptability can vary substantially according to how acceptability is measured and the social and service-delivery context in which PrEP is introduced.

Evidence from sub-Saharan Africa similarly demonstrates variation while highlighting increasing interest in alternative PrEP modalities. In Iringa, Tanzania, Beckham et al. (2022) assessed acceptability and preferences for oral, vaginal-ring, and long-acting injectable PrEP among HIV-negative FSWs. Although only 58% considered PrEP acceptable, 88% preferred long-acting injectable PrEP over daily oral PrEP. Acceptability was associated with greater social cohesion and recent STI symptoms. Qualitative findings indicated that FSWs viewed long-acting injectable PrEP favourably because of its less frequent dosing, ease of concealment, and perceived effectiveness, while concerns about daily pills included pill-taking burden and stigma from clients. Concerns about the vaginal ring included the possibility of clients noticing it and fears about infertility.

Recent evidence from Uganda provides particularly relevant evidence on preferences for long-acting PrEP among sex workers. Muhindo et al. (2025) conducted a discrete-choice experiment among 251 HIV-negative sex workers in Kampala and Mbarara, including 199 FSWs. Overall, 77.3% of participants preferred injectable PrEP administered every two months, compared with 17.5% who preferred daily oral PrEP and 1.6% who preferred the vaginal ring. Among FSWs specifically, 78.4% preferred injectable PrEP. However, this finding represents preference for a PrEP modality rather than overall PrEP acceptability or actual uptake. The study also found that 39.4% of participants were currently using PrEP, while willingness to use PrEP among non-users was 45.7% among FSWs.

The Ugandan evidence further demonstrates that acceptability and preference for long-acting PrEP are closely related to the way services are delivered. Among both male and female sex workers, the location where CAB-LA was dispensed was the most important service-delivery attribute. FSWs particularly valued private pharmacies or clinics, convenient access, short waiting times, female or peer providers, and availability of additional services such as psychosocial support, cancer screening, and risk-reduction counselling. These findings suggest that privacy, convenience, confidentiality, supportive providers, and integration of services may influence the acceptability and potential uptake of long-acting PrEP among FSWs.

Across settings, several barriers may therefore affect the acceptability and use of PrEP among FSWs. These include limited awareness and knowledge, concerns about side effects, perceived HIV risk, stigma, concerns about confidentiality, pill-taking burden, inconvenient service delivery, waiting times, and limited availability of preferred PrEP modalities. For long-acting injectable PrEP specifically, additional considerations include access to injection services, availability of CAB-LA, preferences regarding where injections are provided, and affordability. Recent Ugandan evidence indicates that although injectable PrEP was highly preferred, only about half of participants who preferred injectable PrEP were willing to pay for it, illustrating that preference does not necessarily translate into financial access.

Overall, the literature shows that PrEP acceptability among FSWs varies across settings, while long-acting injectable PrEP has emerged as a highly preferred modality where it is available. Importantly, preference, acceptability, willingness to use, uptake, adherence, and continuation are distinct concepts and should not be used interchangeably. The high preference for injectable PrEP reported in Uganda provides evidence of demand for long-acting prevention, but the associated service-delivery and financial barriers demonstrate that preference alone may not result in PrEP initiation or sustained use. Despite emerging evidence from Kampala and Mbarara, there remains limited evidence on the acceptability and barriers to long-acting PrEP among FSWs in Gulu City. The present study therefore addresses this gap by examining PrEP acceptability and experiences among HIV-negative FSWs in Gulu City, including the factors and contextual barriers that may influence their use of available PrEP options

The introduction of long-acting injectable pre-exposure prophylaxis (LA-PrEP), particularly injectable cabotegravir (CAB-LA), provides an additional HIV prevention option for female sex workers (FSWs) who may experience challenges associated with daily oral PrEP. Evidence

indicates considerable interest in injectable PrEP among FSWs. In Uganda, recent evidence among female and male sex workers found that 77.3% preferred injectable PrEP over other PrEP modalities, demonstrating substantial preference for long-acting injectable prevention. However, preference for a particular modality should be distinguished from overall PrEP acceptability, willingness to initiate PrEP, and actual PrEP use. The same evidence highlights the importance of service-delivery characteristics, including privacy, convenient dispensing locations, short waiting times, and supportive providers, in shaping preferences for injectable PrEP.

Evidence from other sub-Saharan African settings similarly suggests that FSWs are interested in long-acting PrEP, although preferences vary according to the characteristics of available modalities and services. A mixed-methods study among FSWs in Tanzania found interest in multiple PrEP modalities, with preferences influenced by factors such as dosing frequency, convenience, perceived effectiveness, and concerns about side effects. These findings suggest that acceptability of LA-PrEP is influenced not only by the injectable formulation itself but also by women's perceptions of its benefits, safety, convenience, and compatibility with their daily lives.

Several barriers may limit the uptake and continued use of LA-PrEP among FSWs. At the individual level, concerns may include anticipated or experienced side effects, fear of injections, uncertainty about long-term safety, and limited knowledge about injectable PrEP. At the interpersonal and community levels, stigma and concerns about confidentiality may discourage women from accessing PrEP services. At the health-system level, barriers may include limited availability of CAB-LA, stock-outs, inconvenient service locations, long waiting times, provider attitudes, and inadequate counselling. Financial barriers may also be important where users are required to pay for injectable PrEP. Recent Ugandan evidence on willingness to pay demonstrates that although injectable PrEP is highly preferred, financial capacity may not correspond to this preference, highlighting the distinction between preference and actual access.

Therefore, existing evidence demonstrates considerable interest in long-acting PrEP among FSWs but also shows that preference does not necessarily translate into acceptability, initiation, adherence, or continuation. There remains a need for context-specific evidence on how FSWs perceive long-acting PrEP and the individual, social, and health-system barriers that influence

its acceptability and use. Examining these factors among HIV-negative FSWs in Gulu City is important because local service availability, social context, provider practices, and experiences with existing PrEP modalities may differ from those reported in Kampala, Mbarara, Tanzania, and other settings.

1 **Acceptability vs adherence or continuation**

PrEP acceptability is distinct from adherence and continuation. Acceptability concerns whether an intervention is perceived as appropriate, desirable, satisfactory, or worthwhile by its intended users, whereas adherence refers to actual use of PrEP according to the recommended regimen, and continuation or retention refers to sustained engagement with PrEP over time. Evidence from HIV prevention research shows that retention should not be used as a proxy measure for acceptability, as these represent different constructs and stages of intervention engagement (Ortblad et al., 2023).

This distinction is particularly relevant among FSWs. Glick et al. (2020), in a systematic review of PrEP among women who sell sex and/or use drugs, conceptualized a PrEP care continuum comprising awareness, acceptability, uptake, and adherence. Among the 26 studies reviewed, 16 reported acceptability, four reported uptake, and eight reported adherences, demonstrating that these outcomes are measured separately in the literature. Similarly, Mpirirwe et al. (2024), in a systematic review and meta-analysis of 23 studies involving 40,669 FSWs in sub-Saharan Africa, evaluated PrEP uptake, adherence, and retention as separate outcomes. The review reported substantial differences between initiation and subsequent retention, supporting the need to distinguish initial engagement from sustained PrEP use.

Evidence from Uganda further illustrates this distinction. Witte et al. (2022), among HIV-negative women engaged in sex work, found that 91% reported willingness to use PrEP, whereas only 55% of those not already using PrEP agreed to initiate PrEP. The researchers modelled acceptability and initiation as separate outcomes, demonstrating that willingness to use PrEP does not necessarily translate into initiation. Therefore, the 81.4% PrEP acceptability observed in the present study should be interpreted as an indicator of participants' perceptions or willingness toward PrEP according to the study's operational definition, and not as a measure of PrEP adherence or continuity. Adherence and continuation require separate assessment of actual PrEP-taking behaviour and sustained engagement with PrEP services over time.

2. Ugandan evidence

Evidence specifically examining PrEP acceptability among female sex workers (FSWs) in Uganda remains limited, but available studies demonstrate substantial interest in PrEP and important differences between acceptability, actual use, and preferences for specific PrEP formulations and delivery approaches. Witte et al. (2022), in a study of women engaged in sex work in Uganda, found that 91% of HIV-negative participants reported willingness to use PrEP. However, among women who were not already using PrEP, only 55% agreed to initiate PrEP, demonstrating that expressed willingness does not necessarily translate into PrEP initiation. Greater perceived social support from family and fewer years engaged in sex work were associated with greater willingness to use PrEP.

More recent Ugandan evidence has examined PrEP use and preferences specifically among FSWs. Muhindo et al. (2025) assessed oral PrEP use among cisgender FSWs in two Ugandan cities and found that current PrEP use was associated with educational attainment, with women who had secondary or tertiary education being more likely to report PrEP use than those with lower education. Although this study measured PrEP use rather than acceptability, its findings are relevant because they demonstrate the importance of education in PrEP engagement among Ugandan FSWs.

Similarly, Mpirirwe et al. (2025) conducted a discrete-choice experiment among 203 FSWs attending the MARPI clinic in Kampala to examine preferences for PrEP delivery. Most participants preferred receiving PrEP from a healthcare worker at a health facility, with SMS reminders for adherence support. The findings emphasize the importance of confidential, supportive, and accessible service delivery in facilitating continued engagement with PrEP services. More recent research by Muhindo et al. (2025) involving HIV-negative male and female sex workers in Kampala and Mbarara examined preferences for long-acting injectable cabotegravir (CAB-LA) PrEP. Among FSWs who were not currently using PrEP, 45.7% reported willingness to use PrEP, while injectable PrEP was the preferred formulation overall among the study population. FSWs placed substantial importance on the location of PrEP delivery and the availability of additional supportive services.

These Ugandan findings suggest that PrEP acceptability and engagement among FSWs are influenced by multiple factors, including social support, education, duration of involvement in sex work, perceived HIV risk, formulation characteristics, convenience, confidentiality, and

the organization of PrEP services. Importantly, the available studies measure different outcomes including willingness, initiation, current use, and formulation or service-delivery preference and therefore their percentages should not be interpreted as directly equivalent measures of overall PrEP acceptability.

Conclusion

The literature demonstrates that PrEP acceptability and uptake among female sex workers (FSWs) are influenced by multiple and interrelated factors, highlighting the need for tailored, context-specific interventions. Individual characteristics such as age, duration in sex work, and perceived risk of HIV play a key role in determining PrEP use, with older FSWs and those who perceive themselves at higher risk being more likely to accept and adhere to PrEP.

However, inconsistencies across regions suggest that tailored interventions are necessary. Socio-cultural elements like social support and stigma significantly impact PrEP uptake, with support from peers and family acting as facilitators, while stigma, both from the community and health workers, serves as a major barrier.

Health system factors further complicated PrEP accessibility, with challenges such as stigma in healthcare settings, long distances to facilities, and stockouts hindering uptake. The literature suggests that reforms in healthcare delivery, including the involvement of peer supporters and reducing systemic barriers, are critical for improving PrEP access among FSWs.

CHAPTER THREE

METHODS

3.1 Study design

The study employed a convergent mixed-methods design (Creswell & Plano Clark, 2018), in which quantitative and qualitative data were collected concurrently from different participants, analysed separately, and integrated through triangulation.

Furthermore, a descriptive phenomenological approach was employed for the qualitative component to explore participants'experiences. This approach facilitated an in-depth understanding of how participants perceived and interpreted their experiences, thereby revealing the meanings they attached to their interactions with PrEP

3.3 Scope of the study

3.3.1. Content scope

The study aimed to assess the acceptability of PrEP, identify associated factors, and explore experiences related to PrEP use among female sex workers (FSWs) in Gulu City, Northern Uganda.

3.3.2. Study site and setting

The study was carried out in Gulu City, located in Northern Uganda, specifically targeting 10 hotspots known for high activity levels within the city (Hotspot areas refer to identifiable business premises or geographical locations, such as bars, lodges, nightclubs, and other entertainment establishments, where female sex workers commonly congregate, meet, or interact with clients).

Gulu City is situated at coordinates 2°49'50.0"N 32°19'13.0"E and lies approximately 350 kilometers north of Kampala, Uganda's capital city. The city is positioned in northwestern Uganda and stands at an elevation of approximately 1,100 meters (3,600 feet) above sea level.

With a rapidly growing population estimated at about 150,000 inhabitants, Gulu serves as a significant urban hub in the region. The city was estimated to have around 1,300 female sex workers (FSWs), making it a focal point for this study (Apodaca et al., 2019).

Participants for the study were recruited from various locations commonly frequented by FSWs, including bars, nightclubs, brothels, and streets within the Pece, Layibi, and Laroo divisions.

In addition, Gulu City served as a major hub for both governmental and non-governmental organizations, as well as health facilities actively engaged in supporting the female sex worker (FSW) community. Prominent among these were Gulu Regional Referral Hospital, The AIDS Support Organization (TASO) Gulu Branch, Reproductive Health Uganda, and Voice of Community Empowerment. These institutions played a crucial role in delivering healthcare services, advocacy, and psychosocial support to FSWs, thereby shaping the social and health environment in which they operate. This extensive service network reflects the city's strong commitment to addressing the needs of vulnerable populations.

3.3.3 Time Scope

This study considered FSWs operating in Gulu City from 1st March 2025 to 31st May 2025.

3.4 Study Population

3.4.1. Target Population

The target population consisted of HIV negative women aged 18 years and older who received money or goods in exchange for sexual services, either regularly or occasionally, and who operated in different hotspots within the city.

3.4.2 Accessible Population

The accessible population comprised HIV-negative FSWs operating in the selected hotspots within Gulu City, Northern Uganda, from 1st March 2025 to 31st May 2025. HIV-negative status was ascertained through verification of the most recent HIV test results, obtained within three months prior to the study. Participants were requested to present their most recent test results at the study site. Where necessary, participants were referred to nearby health facilities for HIV testing in order to confirm their HIV status.

3.5 Eligibility Criteria

3.5.1 Inclusion Criteria

1. HIV-negative FSWs. This was verified using the most recent HIV test results from a healthcare facility that were less than three months old.
2. Individuals aged 18 years and above who were actively working as sex workers in Gulu City.
3. Individual willing to be audio-recorded for qualitative interviews.

3.5.2. Exclusion Criteria

1. HIV-negative FSWs who declined to provide consent for participation in the study.
2. Individuals who were mentally incapacitated due to mental illness or substance use–related disorders.

3.6 Dependent variables

PrEP acceptability among HIV-negative female sex workers (FSWs) in Gulu City, Northern Uganda was evaluated using structured survey questions by asking participants questions such as: *"Do you personally think it would be worth it for you to take PrEP if it could prevent HIV infection?"* with response options of Yes or No, consistent with previous studies (Witte et al., 2022).

3.7 Independent Variables

Individual factors were operationalized as follows: age was captured in years, while education level was classified into no formal education, primary, secondary, and tertiary education. Awareness of HIV prevention methods and prior PrEP use were assessed using dichotomous (yes/no) responses.

Health system factors were measured through surveys assessing service providers' attitudes using Likert scale questions on friendliness, respectfulness, and supportiveness. Privacy was assessed using satisfaction ratings during PrEP consultations. Distance to health facilities was recorded in kilometers or travel time from home. Stock levels were evaluated using health

facility records on PrEP availability. Waiting time was measured by asking respondents to report the average time spent waiting for services, in minutes or hours.

Socio-cultural factors were measured using surveys assessing beliefs, norms, values, and misconceptions related to PrEP and HIV prevention. Beliefs and values were evaluated through Likert scale questions regarding individual and community perceptions of PrEP. Norms were assessed by asking participants about common practices and accepted behaviours in their communities. Misconceptions were identified by asking respondents about myths and incorrect information they had heard about PrEP, and their level of agreement with such statements.

3.8 Sampling Techniques and Recruitment Strategies

Participants were recruited through peer leaders using a snow ball sampling method for quantitative study and purposively sampled for qualitative study. Eligibility screening, informed consent, and recruitment were conducted at study sites, where participants were required to present their most recent HIV test results kept in their personal belongings. The first group of participants was assigned unique identification codes linked to their names to ensure proper identification and differentiation from other study participants.

3.9 Sample Size

3.9.1 Objective 1 and 2

A total sample size of 301 participants was calculated using the modified Kish–Leslie formula for a single-population cross-sectional study design. The estimation was informed by a previous study in Uganda which examined acceptability level of PrEP (Witte et al.,2022), a 5% margin of error, and a standard normal deviate of 1.96 at a 95% confidence level. In addition, a 10% non-response rate and a design effect of 2 were factored into the final determination of the sample size.

$$\mathbf{n = (0.05)2(1.96)2\times0.11(1-0.11)\times2 = 301}$$

3.9.2 Objective 3

For Objective 3, nine (9) IDIs were conducted, with the sample size determined by data saturation, reached when no new themes or relevant information emerged from subsequent interviews (Guest et al., 2006; Saunders et al., 2018).

The nine interviews provided sufficient information to address the objective and were analysed thematically. The qualitative findings were triangulated with the quantitative findings from Objectives 1 and 2.

3.10 Data Collection Tools and Procedures

3.10.1 Objective 1 and Objective 2

A well-structured questionnaire (Appendix 2) was used to assess the overall acceptability of PrEP among FSWs. The structured questionnaire was adapted from previously published PrEP research among women engaged in sex work in Uganda, particularly the measures used by (Witte et al.,2022) and other relevant PrEP data tools, and modified to fit the study context and objectives.

To determine factors associated with PrEP acceptability among female sex workers (FSWs) in Gulu City, Northern Uganda, a structured questionnaire was used. It captured socio-demographic characteristics such as age, education level, and duration in sex work, as well as perceived HIV risk and preferred PrEP modality. The tool also assessed behavioural factors including prior PrEP use and condom use; socio-cultural influences such as peer pressure, stigma related to PrEP, and prevailing beliefs and norms; and health system factors including access to services, knowledge of PrEP, attitudes of health workers, and drug stock-outs. The questionnaire comprised Likert scale, multiple-choice, and yes/no items to obtain comprehensive data.

Data were collected through face-to-face interviews to enhance response rates, allow clarification of questions, and ensure confidentiality and comfort of participants.

Interviews were conducted by trained research assistants, including clinicians, nurses, and social workers with prior experience in PrEP service delivery and data collection among similar populations. They were conducted in a private and quiet room rented by the study team within the hotspots.

To ensure accuracy of HIV status, participants' HIV test results were carefully verified by the study team, and where necessary, individuals were referred to the nearest health facility for confirmatory testing.

Interviews were scheduled during daytime hours, preferably between 2:00 PM and 6:00 PM when participants were well rested from the previous night's activities, or at any other time convenient to the participant. Each interview lasted about 30 to 45 minutes. The interview guide was initially developed in English by the Principal Investigator based on existing literature and later translated into Acholi to enhance effective communication.

3.10.2 Objective 3: Qualitative Data Collection

The Experiences of PrEP use among female sex workers (FSWs) in Gulu City, Northern Uganda were explored using in-depth interviews (IDIs), guided by a semi-structured interview guide with prompts (Appendix IV).

Each interview lasted between 40 and 45 minutes. Questions were modified where necessary as new themes emerged during the study. The semi-structured format allowed participants the freedom to openly share their experiences.

The interview guide was piloted with a small number of FSWs to obtain feedback and refine the questions. During the interviews, the researcher took memos and analytical notes to capture reflections and record emerging themes, patterns, and interpretations.

Participants were contacted through their peer leaders to arrange interview appointments, and reminder calls were made one day prior to the scheduled interviews. Through the peer leaders, the researcher scheduled interviews at a time and location convenient for the participants. The researcher introduced herself to the participants and requested their participation in face-to-face interviews, which helped establish trust and rapport.

Participants were allowed to reschedule interviews up to three times. After three unsuccessful attempts, alternative participants were recruited through peer leaders at the hotspots.

Interviews were conducted in either English or Luo, depending on the participant's preference, and were audio-recorded using a digital recorder after obtaining informed consent. To ensure

confidentiality and minimize distractions, all interviews were conducted in a private and quiet room within the designated hotspot.

Participants' responses were transcribed verbatim and cross-checked against the audio recordings for accuracy by an individual independent of the research team. The transcripts were then edited to remove any identifying information.

Data collection and analysis were conducted concurrently to enhance understanding of the research questions. Transcripts were shared with participants for member checking to verify the accuracy and interpretation of their responses.

Participants who were HIV-negative and expressed willingness to initiate PrEP were linked to PrEP service delivery points within Gulu City, including Gulu Regional Referral Hospital, Layibi Teco Health Centre III, Aywee Health Centre III, and Awach Health Centre IV

3.11. Data Management

3.11.1 Data Storage and Access

All documents and data related to the study, including consent forms, compensation logs, and attendance lists, were securely stored in locked filing cabinets at The AIDS Support Organization (TASO) Gulu, with access restricted to authorized study staff only.Interviews were done in a private room by qualified research assistants.

Electronic data were stored in password-protected databases, and transcripts were reviewed for completeness and stored in EpiData files. Any potentially identifying information in the transcripts was removed prior to analysis.

Upon completion of the study, all data collection devices were cleared, and stored physical materials were destroyed according to institutional data protection procedures. Final datasets and transcripts were retained in password-protected electronic files.

Qualitative transcripts were not made publicly available due to the risk of participant identification. However, data sharing with other researchers followed ethical and legal guidelines, and data transfer agreements were implemented where necessary.

3.12 Data Analysis

3.12.1 Objective 1 and 2

Data from the completed questionnaires were entered into EpiData for cleaning and coding. The cleaned data were then exported to STATA version 16.0 for analysis.

Categorical variables were summarized using frequencies and proportions, while numerical variables were summarized using means and standard deviations for normally distributed data, or medians and interquartile ranges for non-parametric data.

The relationship between dependent and independent variables was analyzed using the Chi-square test or Fisher's exact test, with subsequent logistic regression applied to further assess associations. Statistical significance was determined at a p-value of less than 0. 05.

3.12.2 Objective 3

An inductive thematic analysis approach was used to gain an understanding of female sex workers' experiences with PrEP use. This involved five steps:

Familiarization

The researcher familiarized herself with the data by reading and re-reading the transcripts and taking notes on emerging patterns. This process also involved revisiting the audio recordings to capture nuances in participants' responses. These steps helped generate preliminary analytic ideas and provided a strong foundation for the thematic analysis.

Coding of Data

Relevant segments within the dataset were identified and labeled with meaningful codes that reflected the researcher's interpretation in relation to the research question. Coding focused on segments relevant to the research objectives, which helped organize the data and identify patterns and key observations.

Theme Development

Themes were derived by systematically reviewing and grouping related codes into coherent and meaningful patterns. A core organizing concept was then established for each theme to ensure consistency with the study objectives and research questions.

Reviewing and Refining Themes

The study team reviewed and refined each candidate theme to ensure that it accurately reflected the coded data and aligned with the organizing concept. The dataset was revisited to ensure that all key narratives were captured and that themes were well grounded in the data.

Report Writing

Finally, the research team prepared the report by integrating the data and analytic interpretations. Relevant excerpts from the transcripts were used to support the identified themes and analytic claims, while summarizing the core meaning of each theme and addressing any contradictory or divergent cases.

Validation was achieved through member checking, where transcripts were shared with participants for feedback, and through researcher triangulation, which involved discussions with supervisors. The analysis was also guided by Health Belief Model to enhance the relevance and interpretation of findings (Braun and Clarke., 2006).

3.13 Quality Assurance

To ensure consistency and reliability, standardized protocols were followed during data collection. Qualified interviewers were recruited, and the researcher directly participated in the fieldwork.

Senior researchers closely supervised the data collection process to ensure completeness and accuracy. Data collection tools were pre-tested prior to the study, and interviewers transcribed information that was reviewed daily by the researcher, audio recordings were back-translated to maintain quality and accuracy.

3.14 Ethical Considerations

Ethical clearance was obtained from the Gulu University Research Ethics Committee, along with administrative approval from the Gulu City Health Office. Written informed consent was obtained from all participants prior to their involvement in the research.

Audio recordings were conducted only after obtaining participant consent, and copies were provided upon request. To minimize risks, interviews were conducted privately in enclosed rooms, and data were anonymized using identification numbers instead of personal identifiers.

All study materials were securely stored, and research computers were password protected. These measures ensured participant confidentiality, privacy, and well-being throughout the research process.

3.15 Study Limitations

1. The cross-sectional study design captured data at a single point in time, which limited the ability to assess long-term experiences or changes in the acceptability of PrEP among FSWs.
2. The sample size might not have been sufficiently large to fully represent the entire population of female sex workers in Gulu City.
3. Information bias may have occurred due to miscommunication or misinterpretation of responses between interviewers and participants.
4. Cultural beliefs and stigma surrounding sex work may have influenced participants' responses, particularly regarding sensitive issues such as sex work, PrEP use, and HIV.

3.16 Research Dissemination Plan

The results of the study were presented to the Ministry of Health Uganda and other relevant institutions. Copies of the report were shared with participating institutions for reference.

Findings from the study were also presented at relevant conferences and workshops, and the manuscript was prepared for submission to peer-reviewed journals for publication.

CHAPTER FOUR

RESULTS

4.1. Quantitative study: Socio-demographic characteristics of the participants

Among the 301 participants, the majority were aged 25–34 years 48.2 %(n=145) and 15–24 years 41.5%(n=125), with most having primary education 47.5%(n=143) and 66.5%(n=200) reported no employment outside sex work. Condom use was inconsistent, as 63.8 %(n=192) reported sometimes using condoms and 18.3%(n=55) never using them. Awareness of PrEP was high at 81.1%(n=244), and 68.1%(n=205) had previously used it. Although 47.0 %(n=119) felt comfortable and 42.3%(n=107) very comfortable discussing PrEP with healthcare providers, a substantial proportion 64.0%(n=162) reported dissatisfaction with health facility services, and 58.1%(n=175) indicated that cultural or traditional beliefs influenced their decision to use PrEP.

4.1.1: Table 1: Quantitative socio-demographic characteristics of the study participants

Characteristic (n=301)	**Frequency (%)**
Age in completed years	
15 to 24	125(41.5)
25 to 34	145(48.2)
35 to 49	31(10.3)
Highest level of education	
None	20(6.6)
Primary	143(47.5)
Secondary	122(40.5)
Tertiary	16(5.3)
Marital status	
Married/Cohabiting	5(1.6)
Never married/single	161(53.5)
Separated/Divorced	129(42.9)
Widowed	6(2.0)
Occupation	
Bar attendant	41(13.6)
Business/trade	60(19.9)
Not employed	200(66.5)
Who do you live with?	
Family	202(67.1)
Alone	39(13.0)
Friends	60(19.9)
Estimated average monthly income earned from sexual activities (in UGX)	

<100001	92(30.6)
100001 to 500000	188(62.5)
>500001	21(6.9)
How often do you use condoms during sex?	
Always	53(17.9)
Never	55(18.3)
Sometimes	192(63.8)
Aware of PrEP as an HIV prevention measure?	
No	57(18.9)
Yes	244(81.1)
Have you used any of the PrEP methods	
No	96(31.9)
Yes	205(68.1)

4.2.1. Qualitative findings: Socio-Demographic characteristics of participants.

In this study, there were nine female sex workers (FSWs) who participated. Their ages ranged from 20 to 39 years, with most (67%) between 20 and 26 years. The majority had primary education, and almost all (89%) were separated or divorced. Monthly incomes varied widely from 50,000 to 600,000 UGX. Participants had been engaged in sex work for 2 to 10 years.

Participants ID	Age	Education Level	Marital Status	Income Status	Duration of Sex Work
01	22	Primary 6	Separated/Divorce	350000	5 years
02	20	Senior 2	Separated/Divorce	50000	3 years
03	20	Primary 7	single	200000	4 years
04	39	Primary 3	Separated/Divorce	100000	10 years
05	23	Senior 4	Separated/Divorce	100000	2 years
06	39	primary 7	Separated/Divorce	300000	3 years
07	22	Primary 7	Separated/Divorce	600000	3 years
08	24	Primary 5	Separated/Divorce	150000	5 years
09	26	Senior 4	Separated/Divorce	100000	7 years

Table 2 Qualitative: Social-Demographic Characteristics of Participants

4.3. Prep Acceptability Among Study Participants

Overall, 245/301(81.4%) of the participants agreed that they would accept when given to them. PrEP acceptability was assessed by asking participants "Do you personally think it would be worth it for you to take PrEP if you could prevent HIV? Yes or No.

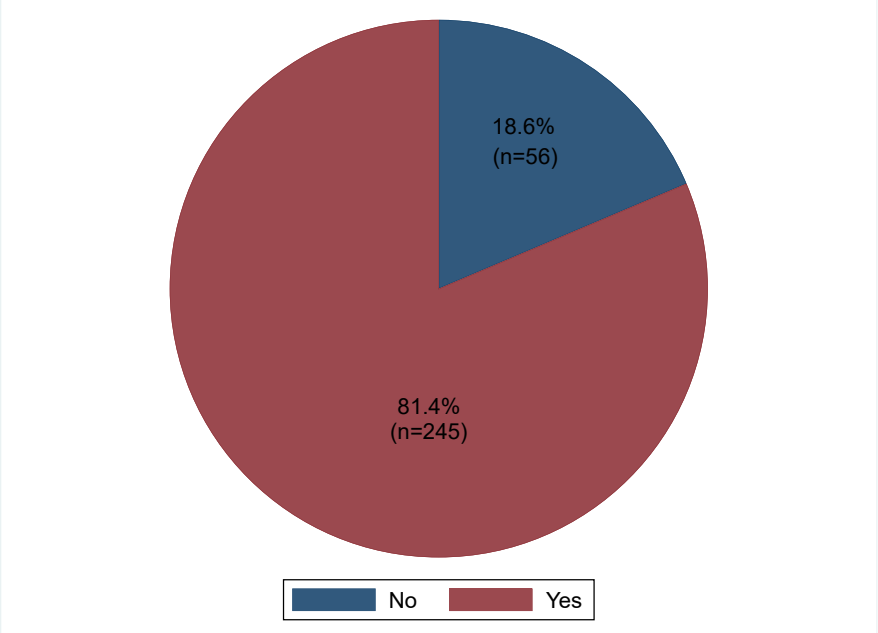


Figure 2: Acceptability of HIV Prep among the Participants.

4.4. Factors Associated with Prep Acceptability among Study Participants

4.4.1. Bivariate analyses to assess acceptability of PrEP use among HIV negative Female sex workers in Gulu city, Northern Uganda.

Education level was significantly associated with PrEP acceptability compared to those with no education, participants with primary education had higher odds of acceptability (COR=3.61, 95% CI: 1.38–9.45, p=0.009), those with secondary education had markedly higher odds (COR=8.38, 95% CI: 2.94–23.92, p<0.001), and those with tertiary education also showed significant association (COR=7.00, 95% CI: 1.25–39.15, p=0.027). Occupation was significant for bar attendants, who were more likely to accept PrEP compared to those in business/trade (COR=4.22, 95% CI: 1.13–15.69, p=0.032). Income was strongly associated with acceptability, as those earning UGX 100,001–500,000 had higher odds of accepting PrEP compared to those earning less than UGX 100,001 (COR=3.31, 95% CI: 1.81–6.05, p<0.001). Condom use was also significant, with those who sometimes used condoms more likely to accept PrEP compared to those who always used condoms (COR=2.27, 95% CI: 1.13–4.59, p=0.022). Age, marital status, living arrangement, and never using condoms were not statistically significant (p>0.05). Awareness of PrEP showed a strong distribution difference, with 96.3%(n=236) of those accepting PrEP being aware of it compared to only 3.7%(n=9) among those not aware, indicating awareness as a key determinant of acceptability.

Table 3: Bivariate analyses to assess acceptability of PrEP use among HIV negative Female sex workers in Gulu city, Northern Uganda.

Variable	**Acceptability**		Crude Odds Ratio (95% CI)	P value
	Yes n=245 (81.4%)	No n=56(18.6%)		
Age in completed years				
15 to 24	102(41.6)	23(41.1)	Reference	
25 to 34	119(48.6)	26(46.4)	1.03(0.56-1.92)	0.921
35 to 49	24(9.8)	7(12.5)	0.77(0.29-2.01)	0.598
Highest level of education				
None	10(4.1)	10(17.9)	Reference	

Primary	112(45.7)	31(55.4)	3.61(1.38-9.45)	**0.009**
Secondary	109(44.5)	13(23.2)	8.38(2.94-23.92)	**<0.001**
Tertiary	14(5.7)	2(3.6)	7.00(1.25-39.15)	**0.027**
Marital status				
Married/Cohabiting	3(1.2)	2(3.6)	Reference	
Never married/single	140(57.1)	21(37.5)	4.44(0.70-28.18)	0.113
Separated/Divorced	98(40.0)	31(55.4)	2.11(0.34-13.19)	0.426
Widowed	4(1.6)	2(3.6)	1.33(0.11-15.70)	0.819
Occupation				
Bar attendant	38(15.5)	3(5.4)	4.22(1.13-15.69)	**0.032**
Business/trade	45(18.4)	15(26.8)	Reference	
Not employed	162(66.1)	38(67.9)	1.42(0.72-2.81)	0.313
Who do you live with?				
Family	164(66.9)	38(67.9)	Reference	
Alone	31(12.7)	8(14.3)	0.89(0.38-2.11)	0.805
Friends	50(20.4)	10(17.9)	1.15(0.54-2.49)	0.706
Estimated average monthly income earned from sexual activities (in UGX)				
<100001	61(24.9)	31(55.4)	Reference	
100001 to 500000	163(66.5)	25(44.6)	3.31(1.81-6.05)	**<0.001**
>500001	21(8.6)	0(0.0)	N/A	
How often do you use condoms during sex?				
Always	38(15.5)	16(28.6)	Reference	
Never	45(18.4)	10(17.9)	1.89(0.77-4.66)	0.164
Sometimes	162(66.1)	30(53.6)	2.27(1.13-4.59)	**0.022**
Aware of PrEP as an HIV prevention measure?				
No	9(3.7)	48(85.7)		
Yes	236(96.3)	8(14.3)		

4.4.2 Multivariable analyses to assess acceptability of PrEP use among HIV negative Female sex workers in Gulu city, Northern Uganda.

Multivariable analysis revealed that level of education, income, and condom use remained independently associated with PrEP acceptability. Compared to participants with no education 17.9%(n=10) among non-acceptors and 4.1%(n=10) among acceptors, those with primary education 45.7%(n=112) had higher odds of acceptability (AOR=3.63, 95% CI: 1.29–10.19, p=0.014), secondary education 44.5%(n=109) showed even stronger association (AOR=8.23, 95% CI: 2.64–25.69, p<0.001), and tertiary education 5.7%(n=14) was also significant (AOR=6.43, 95% CI: 1.03–40.06, p=0.046). Participants earning UGX 100,001–500,000 66.5%(n=163) were more likely to accept PrEP compared to those earning less than UGX 100,001 24.9%(n=61) (AOR=2.42, 95% CI: 1.26–4.65, p=0.008). Condom use was also significant, as those who sometimes used condoms 66.1%(n=162) had higher odds of acceptability compared to those who always used condoms 15.5%(n=38) (AOR=2.37, 95% CI: 1.00–5.59, p=0.049). However, occupation was not independently associated with acceptability after adjustment (p>0.05).

Table 4: Multivariable Analyses to Assess Acceptability of Prep Use Among HIV Negative Female Sex Workers in Gulu City, Northern Uganda.

Variable	Acceptability		Adjusted Odd Ratio (95% CI)	P value
	Yes n=245(81.4%)	No n=56 (18.6%)		
Highest level of education				
None	10(4.1)	10(17.9)	Reference	
Primary	112(45.7)	31(55.4)	3.63(1.29-10.19)	**0.014**
Secondary	109(44.5)	13(23.2)	8.23(2.64-25.69)	**<0.001**
Tertiary	14(5.7)	2(3.6)	6.43(1.03-40.06)	**0.046**
Occupation				
Bar attendant	38(15.5)	3(5.4)	2.25(0.54-9.50)	0.266
Business/trade	45(18.4)	15(26.8)	Reference	
Not employed	162(66.1)	38(67.9)	0.87(0.38-1.98)	0.740
Estimated average monthly income earned from sexual activities (in UGX)				
<100001	61(24.9)	31(55.4)	Reference	
100001 to 500000	163(66.5)	25(44.6)	2.42(1.26-4.65)	**0.008**
>500001	21(8.6)	0(0.0)	N/A	

How often do you use condoms during sex?				
Always	38(15.5)	16(28.6)	Reference	
Never	45(18.4)	10(17.9)	2.30(0.82-6.48)	0.114
Sometimes	162(66.1)	30(53.6)	2.37(1.00-5.59)	**0.049**

4.5. Qualitative results: Experiences of FSWs towards PrEP use in Gulu City.

The qualitative findings of this study capture a multi-dimensional continuum of pre-exposure prophylaxis (PrEP) usage among female sex workers, systematically organized into four primary thematic domains that reflect both individual agency and structural realities. First, Acceptability of PrEP explores the positive affective attitudes of participants, driven by perceived health benefits and a strong sense of emotional security. Second, Perceived Self-Efficacy and Intervention Trust delineates the transition from passive compliance to active behavioral mastery and resilience, illustrating how heightened healthcare literacy fosters unshakeable confidence in PrEP's biological effectiveness. Third, Burden and Challenges of PrEP Use addresses the severe structural bottlenecks, pervasive socio-cultural stigma, misinformation, and biomedical or method-specific fatigue that impose significant financial and socio-emotional opportunity costs on users. Finally, Recommendations and Proposed Solutions highlights actionable, user-driven interventions, emphasizing the critical need for targeted health education, trusted peer-to-peer support networks, and the structural decentralization of health services closer to key communities.

Theme 1: A**cceptability of** PrEP

Female sex workers (FSWs) expressed predominantly positive emotional responses toward using PrEP, and these emotions played a crucial role in its acceptability and continued use. Many women described how PrEP provided a sense of emotional security, noting that protecting their health was closely linked to their ability to fulfill personal and familial responsibilities. The perceived health benefits extended beyond HIV prevention alone, directly enhancing physical well-being, self-esteem, and peace of mind.

"When I take it every morning, I feel like I am taking a step to care for myself and my child because staying healthy means I am still able to take care of both of us." (Participant 01)

"Taking PrEP has also given me some weight gain and I feel like I look more beautiful like this; PrEP increases my appetite for food, hence increasing my weight, and I love my current weight." (Participant 03)

The affective attitudes of participants revealed deep feelings of relief and pride, which effectively counterbalanced the fear of social judgment. FSWs noted that the availability of discreet prevention methods significantly enhanced their satisfaction by seamlessly integrating into their daily lives without disrupting their routines. This high level of personal satisfaction and gratitude ultimately translated into a strong willingness to act as peer advocates within their social networks.

"Honestly, I feel good about using PrEP. It gives me peace of mind and some comfort in knowing that amidst the nature of my work, I still have a way of protecting myself... Sometimes I do feel worried when people judge me or think I am on ARVs but deep down I feel proud that I am doing something responsible for myself" (Participant 01).

"I would say I feel grateful and relieved that it is available... I was excited to start, although I remember in the first few days of taking it, I felt cold most of the time... But the doctors had prepared me for that, and I kept going. By the end of the first week, the side effects were gone. Since then, I have felt okay using it. I feel safer and more at peace with myself knowing I'm protecting my health" (Participant 07).

Theme 2: Perceived Self-Efficacy and Intervention Trust

Female sex workers (FSWs) demonstrated remarkable behavioral mastery and resilience, transitioning from mere compliance to complete ownership of their PrEP routines. Participants described high internal confidence in their ability to stay consistent with the medication, successfully overcoming logistical hurdles such as long clinic distances, pervasive community stigma, physical side effects, and sudden switches between different drug delivery methods. This behavioral mastery turned the intervention into a natural, self-driven habit built into their daily lives.

"After using PrEP for four years, I am very confident in my ability to take it correctly. I rarely miss my daily doses and I have learnt to always carry some with me whenever I am going away from home. I feel fully in control of my PrEP use, even with the distance to the clinic and stigma I sometimes experience, I still manage to stay consistent. I believe I am capable of continuing with PrEP for as long as I need to" (Participant 01).

"I feel proud of myself, I have been consistent with my PrEP use. Even when I had to change from the injectable to the oral pills, I did not give up. I kept going back to the hospital, I stayed informed, and I listened to what the health workers advised me. Now, using PrEP feels natural to me. I have made it part of my daily life. I don't need anyone to push me, I know how important it is, and I take that responsibility seriously (Participant 08).

This internal confidence was heavily reinforced by targeted healthcare literacy and hands-on experience with various biomedical methods. Comprehensive counseling from health workers demystified the technologies, transforming clinical knowledge into personal capability. Trying different methods within the challenging context of sex work dramatically built the participants' confidence, especially as they observed concrete biological proof remaining HIV-negative over time.

> *"I have always felt capable of using all the three methods (Oral PrEP, Vaginal Ring PrEP and Injectable PrEP) because health workers provided all the necessary knowledge to me and me trying each of them with the nature of my work, it greatly built my confidence. It works on me very well because I didn't acquire HIV infections." (Participant 03).*

A deep, unshakeable trust in the biological effectiveness of PrEP served as a vital tool for personal autonomy and safety. FSWs viewed PrEP as an essential protective shield that returned control over their health to them, particularly during occupational encounters where clients actively resisted condom use. This perceived effectiveness provided a sense of peace, strength, and security, allowing them to confidently navigate situations where they otherwise lacked negotiating power.

"I also believe strongly in the effectiveness of PrEP. That is one of the main reasons I continue using it. I know it helps protect me from HIV, and I feel safer knowing I have that extra layer of protection. My work sometimes puts me in situations where I don't have full control over what happens, especially with clients who resist using protection. So, using PrEP makes me feel like I have taken responsibility for my health, and that gives me strength and peace." (Participant 06).

"I believed all the methods were effective, but I felt the Injectable was the most protective because it was in my blood I didn't have to swallow pills or replace my Ring. It gave me peace of mind. I felt more confident that I was safe from HIV." (Participant 03).

Theme 3: Burden and Challenges of PrEP Use

Despite high acceptability and strong self-efficacy, FSWs encountered distinct structural and systemic bottlenecks within health systems that disrupted product continuity. Unexpected product supply chain issues and method stockouts forced participants to switch from preferred long-acting methods back to daily oral regimens, while moral policing and age-related biases from healthcare workers at non-specialized clinics served as acute institutional barriers to accessing care.

"*There were difficulties at the beginning. I had several side effects when I started PrEP, my body did not react well at first. I felt discomfort and was unsure if I could continue. But I pushed through, and eventually my body got used to it. Now, I find the oral PrEP manageable. I have also used injectable PrEP before, and I actually preferred it. Unfortunately, it became unavailable, so I was switched to the oral method. The daily pill can be tiring, especially when you already have many responsibilities, but I have learned to manage it as part of my routine" (Participant 08).*

"Some health workers in other facilities apart from the have ever denied to give me PrEP because of my age. One told me I am very young to take PrEP and that I do not have a husband yet. When I disclosed my reasons for PrEP use, they all accepted." (participant 03)

Pervasive social stigma, misinformation, and deeply entrenched cultural beliefs created a hostile environment for users outside the clinic. Because community members lacked accurate information, they frequently misidentified PrEP packaging for HIV treatment (ARVs), leading to false accusations regarding the participants' HIV status. This public judgment intersected with stereotypes surrounding sex work, exposing users to compounding allegations of immorality and harmful, inaccurate myths about future infertility.

"There has been stigma from neighbors and other friends who do not really know about PrEP. This happens more especially when they see me disposing off the empty bottles and they would be saying that I have HIV." (Participant 07)

"People say that the person using PrEP is already a HIV patient. And they say a person using PrEP is an immoral person. Not with PrEP access. Challenges are mostly stigma from being a sex worker. People assume we are HIV-positive, but we love and protect our health. Our work needs confidence and boldness because of constant judgment." (Participant 04)

"Friends discouraging me that PrEP is not good and I should leave it. They say I will not conceive when I get a man and settle down with a man who wants to marry me." (Participant 02)

Beyond social and structural challenges, the biomedical burden and method-specific demands of PrEP induced notable physical and cognitive fatigue. Alternate options like the vaginal ring introduced unique mechanical anxieties and routine stress, while long-acting injectables caused localized physical pain. Furthermore, oral options created a heavy pill burden, particularly when balanced against complex life stages like pregnancy.

"Oral PrEP was the hardest for me. During pregnancy, taking it daily became a challenge, especially with other medications I had to take. Sometimes I would forget or sleep without taking it. The daily routine felt like a burden." (Participant 03)

"Using PrEP wasn't always easy. When I first started with the vaginal ring, I had to constantly check if it was still in place, and changing it every month was stressful. I found it hectic. That's why I later switched to injectable PrEP, which I preferred because it required less effort. The only problem I faced was pain at the injection site after the first dose—it was hard and painful for about two weeks but it resolved without medication." (Participant 02)

Maintaining adherence also incurred immediate financial friction and hidden socio-emotional opportunity costs. Securing transit fares often drained limited financial resources, and attending scheduled clinic days directly compromised earning hours. The most profound personal sacrifice, however, was the structural necessity of forced secrecy, which required participants to carry their prevention tablets and manage their health in absolute isolation to avoid catastrophic social exposure.

"Sometimes I spend the little money I have on transport just to reach the health facility. Occasionally I may miss some hours of work to go for clinic days. I also have to carry the tablets even when visiting people or travelling, which sometimes makes me uncomfortable if I fear someone will ask questions." (Participant 01)

"The only thing I might be giving up is the chance to be open with friends and family about it because I keep it a secret. That is a personal cost, having to carry it silently without support." (Participant 5)

Theme 4: Recommendations and Proposed Solutions

To improve PrEP access and continuity, participants highlighted a critical need for targeted, community-wide health education. FSWs emphasized that educational programs must be tailored directly to vulnerable demographics, while institutional reforms must focus on retraining healthcare workers to eliminate service denial and moral judgment. Furthermore, expanding public communication channels through radio talk shows and decentralized, door-to-door educational strategies was proposed to counteract pervasive community stigma and long wait times at public facilities.

"They should gather girls of our age and educate them about PrEP because the medicine is good. Some health workers must be educated about how to work with people, in terms of welcoming people, talking to clients to not scare people and deny them services." (Participant 03).

"Community awareness and sensitization to reduce stigma about sex work because they judge us a lot. Radio talk shows and health education at health facility entry points to increase PrEP awareness and uptake in the community. Door-to-door education for those who avoid public facilities due to delays and stigma around public health facilities." (Participant 04).

Participants also advocated for peer-to-peer support mechanisms, identifying trusted social networks and peer-led counseling as essential tools for engagement. It was emphasized that peer educators are uniquely positioned to protect privacy and reach networks that might otherwise avoid clinical facilities. Establishing structured group counseling spaces was highlighted as a vital pathway for building collective encouragement and addressing individual concerns.

"Use peer educators (snowballing method) sex workers trust their own because they won't judge them and leak their secrets outside. Personally, I'm known in the area, even by local leaders, who refer clients and fellow sex workers to me for help. Let the 'street ghettos deal with the streets' just give us the right knowledge and tools." (Participant 04).

"I believe they should have group counselling and sensitization to the sex workers so that they get encouraged to use PrEP and keep safe. Because without that, they will still be scared to use and access PrEP services." (Participant 05).

Finally, the decentralization of health services was identified as a necessary structural intervention to improve access. Participants noted that bringing services out of centralized

hospital environments and directly into localized areas would minimize travel burdens and logistical friction, increasing overall uptake and long-term retention.

"Most issues that people face is accessing the health facilities and I would suggest that they be assisted in such a way that services are brought closer to different areas and also sensitize people about using PrEP." (Participant 06).

CHAPTER FIVE

DISCUSSION

5.1 Introduction

A mixed-methods approach was employed to assess the acceptability of PrEP and its associated factors among female sex workers (FSWs) in Gulu City, Northern Uganda. This chapter discusses the findings in relation to existing literature, highlighting areas of agreement and disagreement with previous studies. It also presents the conclusions drawn from the findings.

5.2 Acceptability and Experiences of PrEP among HIV negative Female Sex Workers

PrEP was highly accepted among female sex workers (FSWs) in Gulu City, The high PrEP acceptability in Gulu City (81.4%) may be attributed to high PrEP awareness (81.1%), previous PrEP use (68.1%), and perceived HIV risk among FSWs.

Qualitative findings complemented these results by showing that PrEP was not only valued for its biomedical effectiveness but also for its psychological and emotional benefits. Participants described PrEP as a source of emotional security, confidence, and peace of mind in the context of their high-risk work environment. Participants consistently expressed trust in PrEP's effectiveness and viewed it as a means of protecting both their health and livelihood. One participant explained:

> *"Honestly, I feel good about using PrEP. It gives me peace of mind and some comfort in knowing that amidst the nature of my work, I still have a way of protecting myself..." (Participant 01)*

Similarly, another participant emphasized the reassurance associated with PrEP use:

> *"I would say I feel grateful and relieved that it is available… I feel safer and more at peace with myself knowing I'm protecting my health." (Participant 07)*

These narratives suggest that PrEP acceptability is shaped not only by awareness of HIV risk but also by the psychological benefits associated with its use, including reduced anxiety, increased confidence, and a sense of control over personal health. This aligns with evidence

indicating that PrEP enhances users' sense of empowerment and autonomy, particularly in contexts where condom negotiation is inconsistent or constrained.

The high acceptability observed in this study is consistent with evidence from Uganda and other African settings. Studies among FSWs in Uganda have reported willingness to use PrEP ranging between 66% and 92% (Witte et al., 2022); Kiconco et al., 2020). Similarly, high acceptability has been documented in Zambia (Hensen et al., 2018) and Kenya (Bhattacharjee et al., 2019), where PrEP has increasingly been integrated into key population HIV prevention services.

Outside Africa, similar patterns have been observed. For example, studies in the United States report high PrEP acceptability among high-risk women, particularly among those with elevated HIV risk perception and prior exposure to HIV prevention education (Smith et al., 2016). These consistent findings across settings suggest that perceived HIV risk, combined with increased awareness and integration of PrEP into health services, plays a central role in shaping acceptability.

However, contrasting evidence from other African countries indicates lower levels of PrEP acceptability and uptake. In Ghana, only 53.6% of FSWs reported willingness to use PrEP, while actual utilization remained very low at 6.39% (Ogunbajo et al., 2022). Similarly, in Ethiopia, only 15.9% of FSWs had ever accessed PrEP services, despite ongoing national scale-up efforts (Gebeyehu et al., 2023). In Tanzania, belief in PrEP effectiveness has been reported as low as 44.4% in some settings, indicating persistent misconceptions and limited awareness (Martin et al., 2022). Furthermore, evidence from Rwanda shows that nearly 47% of FSWs discontinued PrEP within the first year of initiation, highlighting challenges not only in uptake but also in sustained adherence (Ingabire et al., 2025).

These variations across settings suggest that while PrEP acceptability may be high in some contexts such as Gulu City, its uptake and sustained use are strongly influenced by structural and contextual factors, including stigma, misinformation, health system capacity, and the effectiveness of community-level sensitization and support systems.

5.3. Factors Associated and Experiences with Prep Acceptability and Use Among Hiv Negative Fsws in Gulu City, Northern Uganda.

The study revealed that PrEP acceptability among HIV negative female sex workers (FSWs) in Gulu City was significantly associated with multiple socio-demographic, behavioral, and structural characteristics. Specifically, education level, income status, condom use practices, PrEP awareness, and occupation emerged as important factors influencing the willingness to accept and use PrEP.

5.3.1. Education and Awareness

Education and awareness identified as closely interconnected determinants of PrEP acceptability among female sex workers (FSWs) in Gulu City. The findings showed that participants with primary, secondary, or tertiary education were more likely to accept PrEP compared to those without formal education. This indicates that formal education enhances individuals' ability to access, interpret, and utilize health information, particularly regarding HIV prevention options. As a result, women with higher education levels are better able to understand their susceptibility to HIV infection and the protective benefits of PrEP. Similar evidence from global studies shows that education is consistently associated with improved awareness, acceptability, and uptake of PrEP among key populations (Glick et al., 2020; Koechlin et al., 2017a).

Education also contributes to improved health literacy, which plays an important role in shaping informed health decisions. Individuals with higher education are more likely to understand how PrEP works, its effectiveness, and the importance of adherence for optimal protection. In contrast, limited education may contribute to poor understanding and misconceptions about biomedical HIV prevention methods. Evidence from systematic reviews shows that increased knowledge and health literacy significantly improve willingness to use PrEP, while inadequate knowledge reduces acceptance(Koechlin et al., 2017b; Ma et al., 2017).

In this study, awareness of PrEP was almost universal among participants who accepted it, highlighting the importance of information exposure in shaping uptake. This finding aligns with studies in sub-Saharan Africa which show that awareness is a strong predictor of PrEP acceptability. For instance, research among women engaged in sex work in Uganda found that those who understood PrEP were more likely to accept and initiate its use (Witte et al., 2022).

Similarly, systematic evidence indicates that awareness consistently increases willingness to use PrEP among female sex workers and other high-risk populations (Glick et al., 2020; Witte et al., 2022).

The qualitative findings strongly supported these quantitative results by highlighting the role of counseling, peer education, and accurate information from health workers in building confidence in PrEP use. One participant explained:

> *"I have always felt capable of using all the three methods because health workers provided all the necessary knowledge to me…"*

Another participant emphasized the importance of peer educators:

> *"Use peer educators… sex workers trust their own because they won't judge them and leak their secrets outside*."

These narratives show that trusted communication channels are essential in translating knowledge into actual acceptance of PrEP. Similar findings from South Africa demonstrate that counseling and clear health education significantly increase willingness to use PrEP once individuals understand its benefits and how it works(Eakle et al., 2018).

These findings further suggest that education alone is insufficient unless reinforced through trusted interpersonal and community-based communication strategies. Peer-led approaches have been shown to improve uptake of HIV prevention services by strengthening trust, reducing stigma, and improving engagement with health services. Systematic evidence also shows that peer education is particularly effective among sex workers because peers are perceived as non-judgmental and credible sources of information (Ma et al., 2017)WHO, 2022).

In addition, education enhances FSWs' ability to navigate health systems, communicate with providers, and actively seek HIV prevention services. Women with higher education levels are more likely to engage in health-seeking behavior and make informed choices regarding prevention methods. Evidence shows that knowledge and education are key predictors of health service utilization among female sex workers and other vulnerable populations (Razu et al., 2023; Ma et al., 2017).

However, studies from sub-Saharan Africa indicate that even when awareness and education levels are high, sustained PrEP use may still be affected by structural barriers such as stigma, discrimination, mobility linked to sex work, and limited access to health services. Systematic reviews of the PrEP continuum among female sex workers highlight that these barriers significantly affect continuation and adherence despite high initial acceptability (Glick et al., 2020; Witte et al., 2022).

Overall, the findings suggest that improving education and awareness is essential for increasing PrEP acceptability among FSWs. However, these efforts must be combined with peer-led interventions, stigma reduction strategies, and accessible health service delivery models to ensure sustained uptake and use of PrEP. This integrated approach is consistent with global HIV prevention recommendations for key populations (Koechlin et al., 2017b; WHO, 2022).

5.3.2 Income and Economic Vulnerability

Income was identified as a significant structural factor influencing PrEP acceptability among female sex workers (FSWs) in Gulu City. Participants earning UGX 100,001–500,000 were more likely to accept PrEP compared to those earning below UGX 100,001. This indicated that economic stability enhanced the ability to access HIV prevention services by reducing the impact of indirect costs such as transport, time loss, and competing livelihood demands.

This finding aligns with evidence from HIV prevention research showing that socioeconomic vulnerability strongly shapes access to biomedical interventions among key populations. Female sex workers often operate in unstable informal economies where daily income is directly linked to time spent working, making healthcare access a trade-off between income generation and service utilization. A systematic review of HIV prevention services among sex workers highlights that financial insecurity, mobility demands, and competing survival needs consistently limit engagement with HIV prevention interventions, including PrEP (Glick et al., 2020).

Similarly, evidence from Uganda demonstrates that structural vulnerabilities, including poverty and economic instability, influence both uptake and continuation of PrEP among women engaged in sex work. (Witte et al., 2022) found that although PrEP acceptability was generally high, economic and social constraints affected consistent access to services and long-term

adherence. This suggests that affordability is not only about direct cost but also about opportunity costs associated with accessing healthcare.

Further evidence from South Africa supports these findings, where sex workers reported that transportation costs, loss of working time, and unstable income were major barriers to consistent engagement with PrEP services. Even when PrEP was acceptable and desired, economic pressures limited sustained use and continuity of care (Eakle et al., 2018). These structural barriers illustrate that acceptability does not automatically translate into sustained uptake without addressing underlying economic constraints.

The qualitative findings in this study further reinforced the role of financial hardship in shaping healthcare-seeking behavior. Participants described the tension between earning a daily income and attending clinic appointments:

> *"Sometimes I spend the little money I have on transport just to reach the health facility. Occasionally I may miss some hours of work to go for clinic days." (Participant 01)*

This lived experience highlights how economic survival needs directly compete with health service utilization among FSWs. Such trade-offs contribute to missed appointments and irregular PrEP follow-up, potentially undermining both initiation and continuation.

Broader global evidence also shows that structural economic barriers are central to the PrEP care continuum. A review of PrEP implementation among women who sell sex and other key populations found that poverty, unstable housing, and food insecurity reduce both initiation and continuation of PrEP use (Glick et al., 2020). These findings emphasize that structural vulnerabilities are not peripheral but central determinants of HIV prevention behavior.

In addition, differentiated service delivery models have been recommended as a way to address economic barriers faced by key populations. Community-based PrEP delivery, mobile clinics, and integrated outreach services reduce transport costs and time burdens, thereby improving accessibility and continuity of use among high-risk groups such as FSWs (WHO., 2022).

Overall, the findings suggest that income influences PrEP acceptability both directly and indirectly. While higher income improves initial willingness and access, sustained use is heavily dependent on the ability to overcome structural and economic barriers. Addressing

these challenges requires integrated HIV prevention strategies that reduce financial burden and bring services closer to the daily environments of female sex workers.

5.3.3 Condom Use and Perceived HIV Risk

Condom use patterns were significantly associated with PrEP acceptability among female sex workers (FSWs) in Gulu City. Participants who reported inconsistent condom use were more likely to accept PrEP compared to those who consistently used condoms. This finding suggests that perceived HIV risk plays a central role in shaping willingness to adopt PrEP, particularly among individuals who experience uncertainty or inconsistency in condom use during sexual encounters.

This result is consistent with recent evidence from sub-Saharan Africa indicating that PrEP is often more acceptable among individuals who perceive higher HIV risk due to inconsistent condom use or condom failure. A mixed-methods study among female sex workers in Tanzania found that PrEP was widely perceived as a "backup" prevention method in situations where condom use could not be guaranteed, particularly due to client resistance and sexual negotiation challenges(Beckham et al., 2022). Similarly, systematic evidence from sex worker populations shows that PrEP uptake is strongly influenced by perceived vulnerability arising from inconsistent condom use and exposure to high-risk sexual encounters (Glick et al., 2020).

Further evidence from Uganda and surrounding settings shows that condom use is often constrained by structural and relational factors, including economic dependency on clients, gendered power imbalances, and exposure to coercion or violence. These factors limit consistent condom negotiation and increase perceived HIV risk, thereby strengthening motivation to adopt alternative prevention strategies such as PrEP (Duff et al., 2018; Witte et al., 2022). In such contexts, PrEP is not perceived as a replacement for condoms but rather as an additional layer of protection when condom use is not feasible.

The qualitative findings in this study strongly supported these quantitative results. Participants described situations in which condom negotiation was difficult or not fully within their control, especially when dealing with resistant clients:

"My work sometimes puts me in situations where I don't have full control over what happens, especially with clients who resist using protection. So, using PrEP makes me feel like I have taken responsibility for my health." (Participant 06)

This narrative reflects the influence of sexual power dynamics and occupational vulnerability on HIV prevention decision-making. It also highlights how PrEP is perceived as an empowering intervention that restores a sense of control over HIV prevention in contexts where condom negotiation is limited.

These findings are consistent with qualitative evidence from central Uganda, which shows that PrEP is often embraced as a complementary prevention strategy among key populations who experience challenges in consistent condom use (Sundararajan et al., 2022). Similarly, studies among female sex workers in South Africa and Tanzania report that PrEP is commonly viewed as a "safety net" in situations of condom failure, non-use, or client refusal, reinforcing its role as a supplementary rather than replacement prevention method (Beckham et al., 2022; Eakle et al., 2018).

Overall, the findings suggest that condom use patterns and PrEP acceptability are closely linked through perceived HIV risk and structural vulnerability. Inconsistent condom use increases perceived susceptibility to HIV infection, thereby increasing motivation to adopt PrEP as an additional protective strategy. However, PrEP is best understood as part of a combination prevention approach rather than a substitute for condom use among female sex workers.

5.3.4 Barriers to PrEP Acceptability and Continuity

Although occupation was associated with PrEP acceptability at the univariate level, it lost statistical significance after multivariable adjustment. This suggests that its effect is explained by other interrelated factors such as education level, income, and perceived HIV risk. In this regard, occupation alone does not independently determine PrEP acceptability among female sex workers (FSWs) in Gulu City when broader socio-demographic and structural determinants are considered.

This finding aligns with evidence indicating that differences in PrEP uptake among sex workers are largely shaped by structural conditions rather than occupational categories themselves. Studies in Uganda show that HIV prevention interventions delivered within sex work

environments can improve access and uptake; however, these effects are mainly driven by improved service availability and information exposure rather than occupation per se (Kiconco et al., 2020). This underscores the importance of structural access to health services over occupational classification in influencing PrEP uptake.

Qualitative findings in this study demonstrated that structural vulnerabilities were shared across participants regardless of occupational setting. Women reported similar experiences of stigma, secrecy, and fear of disclosure regarding PrEP use. One participant explained:

"The only thing I might be giving up is the chance to be open with friends and family about it because I keep it a secret." (Participant 05)

"There has been stigma from neighbors… they would be saying that I have HIV." (Participant 07)

"People say that the person using PrEP is already a HIV patient… and they say a person using PrEP is an immoral person." (Participant 04)

These findings align with evidence from PrEP implementation studies in sub-Saharan Africa showing that HIV prevention stigma remains a persistent barrier to uptake due to widespread misinterpretation of PrEP as HIV treatment (Beckham et al., 2022; Glick et al., 2020). Such stigma reduces willingness to disclose PrEP use and undermines adherence and long-term retention in PrEP programs.

Beyond stigma, misinformation also shaped perceptions of PrEP. Some participants reported concerns about fertility and future reproductive health:

"They say I will not conceive when I get a man and settle down…" (Participant 02)

Similar misconceptions have been documented among key populations in African settings, where fears about safety, fertility, and long-term effects reduce willingness to initiate PrEP (Beckham et al., 2022). The World Health Organization further highlights that misinformation remains a key barrier to effective PrEP scale-up, particularly in settings with limited community sensitization (WHO, 2022).

In addition to social and perception-related barriers, participants also reported treatment-related challenges, particularly the burden of daily pill-taking. Maintaining adherence was described as difficult in the context of busy and demanding work schedules:

“The daily pill can be tiring, especially when you already have many responsibilities, but I have learned to manage it as part of my routine.” (Participant 08)

Although many participants adapted over time, early side effects and pill fatigue were noted as barriers to consistent use. Evidence indicates that daily dosing burden and initial side effects are common challenges affecting PrEP continuation among female sex workers and other key populations (Koechlin et al., 2017a).

Health system-related barriers further affected continuity of use. Participants reported transport costs, long distances to health facilities, and time constraints as challenges to consistent follow-up:

“Sometimes I spend the little money I have on transport just to reach the health facility…” (Participant 01)

These findings are consistent with systematic evidence showing that structural barriers such as transport costs, service accessibility, and time constraints significantly affect PrEP retention and continuation among female sex workers in sub-Saharan Africa(Eakle et al., 2018; Glick et al., 2020).

Overall, the findings demonstrate that structural barriers including stigma, misinformation, pill burden, side effects, and health system constraints cut across occupational categories and play a more significant role than occupation itself in shaping both acceptability and continuity of PrEP use among female sex workers.

5.4 Conclusion

The findings demonstrate that PrEP acceptability among FSWs in Gulu City is shaped by a complex interaction of individual, behavioral, and structural factors. High acceptability is driven by awareness, perceived HIV risk, education, and income, while sustained use is reinforced by self-efficacy, emotional resilience, and trust in health systems.

However, stigma, misinformation, financial constraints, and health system barriers continue to undermine optimal use. The integration of quantitative and qualitative findings shows that PrEP acceptability is not merely a function of knowledge, but a dynamic process influenced by lived experiences and structural realities,

Overall, PrEP is highly acceptable among FSWs in Gulu City and is perceived as a critical HIV prevention tool. Despite strong acceptability, sustained use is challenged by structural, social, and economic barriers. Strengthening peer-led interventions, improving healthcare worker attitudes, expanding awareness, and reducing structural barriers such as transport costs and service unavailability are essential for improving PrEP uptake and continuation in this population.

5.5 Strengths of the Study

This study demonstrated several key strengths. The use of a mixed-methods design allowed for a comprehensive understanding of PrEP acceptability among female sex workers (FSWs), with quantitative data identifying patterns and associated factors, while qualitative data provided deeper insight into participants' lived experiences and the social and structural influences shaping PrEP use. The study's focus on a high-risk key population in a high HIV burden setting further enhanced the public health relevance of the findings. In addition, recruiting participants from sex work hotspots in Gulu City improved the contextual validity of the results by capturing perspectives from individuals actively engaged in sex work in their natural settings.

Methodological rigor was further strengthened through the use of validated constructs and structured questionnaires, which improved the reliability and consistency of the quantitative findings. On the qualitative side, the use of member checking and researcher triangulation enhanced the credibility and trustworthiness of the data. The inclusion of participants' direct quotations also strengthened transparency and ensured that findings closely reflected

participants' lived realities. Overall, these strengths contribute to the robustness and applicability of the study findings for informing HIV prevention interventions.

5.6 Study Limitations

The cross-sectional design limited the ability to establish causal relationships or assess changes in PrEP acceptability over time, as data were collected at a single point in time. This design therefore restricts interpretation to associations rather than causation.

In addition, the use of purposive and snowball sampling (non-probability sampling technique) through peer leaders may have introduced selection bias, potentially excluding female sex workers (FSWs) who were not connected to peer networks or operating outside identified hotspots, thereby limiting generalisability. The reliance on self-reported data may also have resulted in information bias, particularly due to social desirability when discussing sensitive issues such as sex work, HIV risk, and PrEP use. Furthermore, cultural norms and stigma surrounding sex work and HIV prevention may have influenced participants' willingness to fully disclose their experiences. However, efforts such as member checking and supervisor consultation were employed to strengthen qualitative findings.

5.7 Implications for Public Health and Policy

The findings of this study have key implications for strengthening HIV prevention programming and policy for female sex workers (FSWs). The evidence generated on PrEP acceptability and its associated factors can be used to inform the development of targeted, context-specific interventions aimed at improving both access to and uptake of PrEP services among this high-risk population.

The study further highlights the importance of addressing community-level and health system barriers. Strengthening community sensitization and health education is essential to reduce misinformation, stigma, and low awareness regarding PrEP. At the service delivery level, improving drug availability, ensuring confidentiality, and promoting non-judgmental attitudes among health workers may enhance user confidence and uptake of services.

From a policy standpoint, the findings can support the Ministry of Health Uganda in refining and implementing inclusive HIV prevention strategies that prioritize key populations. In addition, integrating PrEP into existing HIV prevention and sexual health services, alongside

strengthening partnerships between health facilities, community-based organizations, and peer-led networks, may improve continuity of care and sustained PrEP use among FSWs.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

PrEP acceptability among HIV negative female sex workers (FSWs) in Gulu City was high, with 81.4% of participants indicating willingness to use it. Acceptability was strongly influenced by education level, income, and sexual risk behaviors, particularly inconsistent condom use, while awareness of PrEP also played a key role. Participants with higher education and moderate income were more likely to accept PrEP, highlighting the importance of knowledge and economic factors in uptake. To improve PrEP acceptability, programs should expand PrEP modality options, target interventions for FSWs with lower education, address economic and behavioral barriers, and leverage peer networks to enhance awareness and uptake.

6.2 Recommendations

PrEP acceptability among HIV negative FSWs in Gulu City was high, with 81.4% of participants indicating willingness to use it.

Acceptability was strongly influenced by education level, income, and sexual risk behaviors, particularly inconsistent condom use

Participants with higher education and moderate income were more likely to accept PrEP, highlighting the importance of knowledge and economic factors in uptake

PrEP counselling should be integrated with discussions on sexual risk and condom-use patterns, particularly among FSWs who report inconsistent condom use, while emphasizing that PrEP does not replace condoms for protection against other sexually transmitted infections.

6.2.1. Research

Further research is needed to expand on these findings. Longitudinal studies could be conducted to assess how PrEP acceptability and its associated factors among female sex

workers (FSWs) change over time, since this study only captured information at one point in time.

In addition, studies with larger sample sizes and covering multiple districts are recommended to improve the generalisability of the findings across different settings in Uganda. This would provide a broader understanding of PrEP acceptability among FSWs.

Finally, implementation research is needed to assess the effectiveness of different PrEP service delivery models for key populations, particularly in improving access, uptake, and sustained use within programmes supported by the Ministry of Health Uganda.

REFERENCES

Apodaca, K., Doshi, R. H., Ogwal, M., Kiyingi, H., Aluzimbi, G., Musinguzi, G., Lutalo, I., Akello, E., & Hladik, W. (2019). Capture-recapture among men who have sex with men and among female sex workers in 11 towns in Uganda. *JMIR Public Health and Surveillance*, *5*(2). https://doi.org/10.2196/12316

Auerbach, J. D., Kinsky, S., Brown, G., & Charles, V. (2015). Knowledge, attitudes, and likelihood of pre-exposure prophylaxis (PrEP) use among us women at risk of acquiring HIV. *AIDS Patient Care and STDs*, *29*(2), 102–110. https://doi.org/10.1089/apc.2014.0142

Beckham, S. W., Mantsios, A., Galai, N., Likindikoki, S., Mbwambo, J., Davis, W., & Kerrigan, D. (2022). Acceptability of multiple modalities of pre-exposure prophylaxis (PrEP) among female sex workers in Tanzania: A mixed-methods study. *BMJ Open*, *12*(8). https://doi.org/10.1136/bmjopen-2021-058611

Beyrer, C., McCormack, S., & Grulich, A. (2022). Pre-Exposure Prophylaxis for HIV Infection as a Public Health Tool. In *The Journal of law, medicine & ethics : a journal of the American Society of Law, Medicine & Ethics* (Vol. 50, Number S1, pp. 24–28). NLM (Medline). https://doi.org/10.1017/jme.2022.31

Bongomin, F., Kibone, W., Okot, J., Ouma, S., Madraa, G., Ojara, F. W., Musoke, D., & Pebolo, P. F. (2023). Pre-exposure prophylaxis use among female sex workers in Gulu city, Uganda: a community-based cross-sectional study. *Therapeutic Advances in Infectious Disease*, *10*. https://doi.org/10.1177/20499361231199550

Dzinamarira, T., & Moyo, E. (2023). The use of oral HIV pre-exposure prophylaxis among people who inject drugs: barriers, and recommendations. *Frontiers in Public Health*, *11*. https://doi.org/10.3389/fpubh.2023.1265063

Eakle, R., Bourne, A., Mbogua, J., Mutanha, N., & Rees, H. (2018). *Exploring acceptability of oral PrEP prior to implementation among female sex workers in South Africa*. https://doi.org/10.1002/jia2.25081/full

Ekwunife, O. I., Ejie, I. L., Okelu, V., Mita, C., Durosinmi-Eti, O., Powell, A., & Franke, M. F. (2022). Interventions to increase the uptake and continuation of pre-exposure prophylaxis (PrEP) by adolescent girls and young women at high risk of HIV in low-income and middle-income countries: a scoping review. *BMJ Global Health*, *7*(12). https://doi.org/10.1136/bmjgh-2022-009474

Glick, J. L., Russo, R., Jivapong, B., Rosman, L., Pelaez, D., Footer, K. H. A., & Sherman, S. G. (2020). The PrEP Care Continuum Among Cisgender Women Who Sell Sex and/or Use Drugs Globally: A Systematic Review. *AIDS and Behavior*, *24*(5), 1312–1333. https://doi.org/10.1007/s10461-019-02733-z

Jacenta, L., Id, N., Grulich, A. E., Poynten, I. M., Serwadda, D., Mulamba Bazaale, J., Jin, J., & Bavinton, B. R. (2022). *Self-reported and pill count measures of adherence to oral HIV PrEP among female sex workers living in South-Western Uganda*. https://doi.org/10.1371/journal.pone.0277226

Kawuma, S., Nangendo, J., Kabugo, C., Kamya, M. R., & Semitala, F. C. (2024). *Determinants to Continuation on Hiv Pre-exposure Propylaxis Among Female Sex Workers at a*

Referral Hospital in Uganda: a Mixed Methods Study Using Com-b Model. https://doi.org/10.21203/rs.3.rs-3914483/v1

Koechlin, F. M., Fonner, V. A., Dalglish, S. L., O'Reilly, K. R., Baggaley, R., Grant, R. M., Rodolph, M., Hodges-Mameletzis, I., & Kennedy, C. E. (2017a). Values and Preferences on the Use of Oral Pre-exposure Prophylaxis (PrEP) for HIV Prevention Among Multiple Populations: A Systematic Review of the Literature. *AIDS and Behavior*, *21*(5), 1325–1335. https://doi.org/10.1007/s10461-016-1627-z

Koechlin, F. M., Fonner, V. A., Dalglish, S. L., O'Reilly, K. R., Baggaley, R., Grant, R. M., Rodolph, M., Hodges-Mameletzis, I., & Kennedy, C. E. (2017b). Values and Preferences on the Use of Oral Pre-exposure Prophylaxis (PrEP) for HIV Prevention Among Multiple Populations: A Systematic Review of the Literature. *AIDS and Behavior*, *21*(5), 1325–1335. https://doi.org/10.1007/s10461-016-1627-z

Koss, C. A., Charlebois, E. D., Ayieko, J., Kwarisiima, D., Kabami, J., Balzer, L. B., Atukunda, M., Mwangwa, F., Peng, J., Mwinike, Y., Owaraganise, A., Chamie, G., Jain, V., Sang, N., Olilo, W., Brown, L. B., Marquez, C., Zhang, K., Ruel, T. D., … Havlir, D. V. (2020). Uptake, engagement, and adherence to pre-exposure prophylaxis offered after population HIV testing in rural Kenya and Uganda: 72-week interim analysis of observational data from the SEARCH study. *The Lancet HIV*, *7*(4), e249–e261. https://doi.org/10.1016/S2352-3018(19)30433-3

Lorenzetti, L., Dinh, N., Van Der Straten, A., Fonner, V., Ridgeway, K., Rodolph, M., Schaefer, R., Schmidt, H.-M. A., & Baggaley, R. (2023). Systematic review of the values and preferences regarding the use of injectable pre-exposure prophylaxis to prevent HIV acquisition. *Journal of the International AIDS Society*, *2023*(S2), 26107. https://doi.org/10.1002/jia2.26107/full

Makhakhe, N. F., Sliep, Y., & Meyer-Weitz, A. (2022). "Whatever is in the ARVs, is Also in the PrEP" Challenges Associated With Oral Pre-exposure Prophylaxis Use Among Female Sex Workers in South Africa. *Frontiers in Public Health*, *10*. https://doi.org/10.3389/fpubh.2022.691729

Ma, P. H. X., Chan, Z. C. Y., & Loke, A. Y. (2017). The Socio-Ecological Model Approach to Understanding Barriers and Facilitators to the Accessing of Health Services by Sex Workers: A Systematic Review. In *AIDS and Behavior* (Vol. 21, Number 8, pp. 2412–2438). Springer New York LLC. https://doi.org/10.1007/s10461-017-1818-2

Mbuyamba, R. (2022). *Acceptability and accessibility of pre-exposure prophylaxis modalities for HIV prevention (oral daily PrEP, dapivirine vaginal ring and long-acting cabotegravir injectable) among female sex workers in Salt River, Cape Town : a cross-sectional study*.

Mpirirwe, R., Segawa, I., Ojiambo, K. O., Kamacooko, O., Nangendo, J., Semitala, F. C., Kyambadde, P., Kalyango, J. N., Kiragga, A., Karamagi, C., Katahoire, A., Kamya, M., & Mujugira, A. (2024). HIV pre-exposure prophylaxis uptake, retention and adherence among female sex workers in sub-Saharan Africa: a systematic review. *BMJ Open*, *14*(4). https://doi.org/10.1136/bmjopen-2023-076545

Mutua, G., Sanders, E., Mugo, P., Anzala, O., Haberer, J. E., Bangsberg, D., Barin, B., Rooney, J. F., Mark, D., Chetty, P., Fast, P., & Priddy, F. H. (2012). Safety and adherence to intermittent pre-exposure prophylaxis (PrEP) for HIV-1 in African men who have sex

with men and female sex workers. *PloS One*, *7*(4). https://doi.org/10.1371/journal.pone.0033103

Nakamanya, S., Kawuma, R., Kibuuka, D., Kusemererwa, S., McCormack, S., Ruzagira, E., & Seeley, J. (2022). Assessing acceptability of pre-exposure prophylaxis (PrEP) among participants in an HIV vaccine preparedness study in southwestern Uganda. *PLoS ONE*, *17*(7 July). https://doi.org/10.1371/journal.pone.0271104

Nalukwago, G. K., Isunju, J. B., Muwonge, T., Katairo, T., Bunani, N., Semitala, F., Kyambadde, P., & Matovu, F. (2021). Adherence to oral hiv pre-exposure prophylaxis among female sex workers in kampala, uganda. *African Health Sciences*, *21*(3), 1048–1058. https://doi.org/10.4314/ahs.v21i3.12

Ogolla, M., Lennah Nyabiage, O., Musingila, P., Gachau, S., Odero, T. M. A., Odoyo-June, E., Ochanda, B., Appolonia, A., Katiku, E., Joseph, R., Ogolla, C., Otieno, L., Odhiambo, F., Truong, H.-H. M., & Achieng' Ogolla, M. (2023). Uptake and continuation of HIV pre-exposure prophylaxis among women of reproductive age in two health facilities in Kisumu County, Kenya. *Journal of the International AIDS Society*, *26*, 26069. https://doi.org/10.1002/jia2.26069/full

Poon, A. N., Han, L., Li, Z., Zhou, C., Li, Y., Huang, L., Liao, M., Shepard, C., & Bulterys, M. (2019). Acceptability and willingness of HIV pre-exposure prophylaxis amongst female sex workers in China. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV*, *31*(12), 1555–1564. https://doi.org/10.1080/09540121.2019.1612001

Sahay, S., Verma, A., Shewale, S., Bangar, S., Bijeshkumar, A., Angolkar, M., Subramanian, T., & Chandhiok, N. (2021). Understanding issues around use of oral pre exposure prophylaxis among female sex workers in India. *BMC Infectious Diseases*, *21*(1). https://doi.org/10.1186/s12879-021-06612-8

Schweitzer, A., Horn, J., Mikolajczyk, R. T., Krause, G., & Ott, J. J. (2015). Estimations of worldwide prevalence of chronic hepatitis B virus infection: A systematic review of data published between 1965 and 2013. *The Lancet*, *386*(10003), 1546–1555. https://doi.org/10.1016/S0140-6736(15)61412-X

Sundararajan, R., Wyatt, M. A., Muwonge, T. R., Pisarski, E. E., Mujugira, A., Haberer, J. E., & Ware, N. C. (2022). Understanding PrEP Acceptability Among Priority Populations: Results from a Qualitative Study of Potential Users in Central Uganda. *AIDS and Behavior*, *26*(8), 2676–2685. https://doi.org/10.1007/s10461-022-03606-8

UNAIDS. (2022). *Joint United Nations Programme on HIV/AIDS 2022*, .

Unaids. (2024). *Fact sheet 2024 - Latest global and regional HIV statistics on the status of the AIDS epidemic*.

Wanyenze, R. K., Musinguzi, G., Kiguli, J., Nuwaha, F., Mujisha, G., Musinguzi, J., Arinaitwe, J., & Matovu, J. K. B. (2017). "when they know that you are a sex worker, you will be the last person to be treated": Perceptions and experiences of female sex workers in accessing HIV services in Uganda. *BMC International Health and Human Rights*, *17*(1). https://doi.org/10.1186/s12914-017-0119-1

Witte, S. S., Filippone, P., Ssewamala, F. M., Nabunya, P., Sensoy Bahar, O., Mayo-Wilson, L. J., Namuwonge, F., Damulira, C., Tozan, Y., Kiyingi, J., Nabayinda, J., Mwebembezi, A., Kagaayi, J., & Mckay, M. (2022). PrEP acceptability and initiation among women engaged in sex work in Uganda: Implications for HIV prevention. *EClinicalMedicine*, *44*, 101278. https://doi.org/10.1016/j

World Health Organization. (2022). *Guidelines on HIV prevention, diagnosis, treatment and care for key populations*. https://www.who.int

(GUIDELINES CONSOLIDATED GUIDELINES ON HIV PREVENTION, DIAGNOSIS, TREATMENT AND CARE FOR KEY POPULATIONS, n.d.)

APPENDICES

APPENDIX I: OPERATIONAL WORKPLAN

S/n	Activity description	2025					
		March	**April**	**May**	**July**	**August**	**September**
1	Final submission of research proposal						
2	Finalize questionnaire and checklists						
3	Ethical approval						
4	Pre-testing of questionnaires and adjustment						
5	Data collection						
6	Data entry and cleaning						
7	Data analysis and write up of draft research paper						
8	Sharing of the draft research paper for inputs						
9	Incorporate comments and write up the final research paper Submit the final research paper for publication						

APPENDIX II: WORKING BUDGET

Budget item	**Quantity/unit cost (Uganda shillings)**	**Total (Ugandan shillings)**	**Rationale**
Printing and Photocopying	1	400,000/=	This will cover the cost of printing and photocopying services
Stationary	1	200000/=	This will cover the cost of pens, note books, box files, stickers, clear bags, ink pad.
Reimbursements for study participants	5000shillings per 312 participants	1,560,000/=	Each participant will be compensated for their time
Local dissemination of data	5000/= per 30 participants	150,000/=	This will be allocated for local dissemination of data to the health providers, programmers, policy makers and community stakeholders of Gulu City, Northern Uganda through workshops, seminars, or community meetings to present the findings to stakeholders, the research findings are accessible and relevant to the Community.
Hire of data collection room	100000/= per 3 months	300,000	We shall hire data collection room at a rate of 100000 per month for 3 months.
Data Analysis	1	500,000	To cover data analysis cost after data cleaning
Total		**3,110,000/=**	

APPENDIX III: INFORMED CONSENT FORM (ENGLISH VERSION)- V2.0

Title of the study:

Acceptability of HIV Pre-Exposure Prophylaxis and Associated Factors among HIV negative female sex workers in Gulu City, Northern Uganda**.**

Investigator(s): Alwedo Immaculate **Institution(s):** Gulu University

Introductory section:

My name is Alwedo Immaculate, a student at Gulu University from faculty of medicine, pursing a master's degree in public health. As part of my studies, I am conducting research for which you can provide valuable information. I will read you some information, so you understand why you are being asked to take part in this study and what is being asked of you. Please feel free to stop me at any point and ask me to explain anything you may not understand. After I read this information to you, you can decide if you wish to join the study, or not. If you decide to join, I will ask you to sign this form and offer a copy to you

Study Background:

HIV is still a big problem in Uganda. There are still many new HIV infections recorded every year despite the availability of effective prevention services such as Pre-Exposure Prophylaxis (PrEP). Female sex workers (FSWs) are particularly at a high risk of acquiring HIV. It is not known whether the available prevention methods are acceptable to FSWs, this research will therefore find out the level of uptake, acceptability of PrEP among HIV negative FSWs in Gulu City, Northern Uganda.

Who will participate in the study?

All HIV negative women involved in sex work in the different hotspots in Gulu city, Peer leaders of the hotspots, facility health workers providing HIV prevention services, key stakeholders from community-based organizations offering services to female sex workers in Gulu City will be eligible to participate in this survey. You will be required to carry your most recent HIV test result to the study site to confirm your eligibility and where need be you will be referred to the nearest health facility for HIV testing and counseling services by the study team.

Data collection procedures:

After you are confirmed eligible and agree to participate in this survey, a research assistant will interview you in a private room hired by the study team within town or any other place

If your choice and document your responses on the survey form. For key informant interviews, the questions will be read through an interview guide and your responses will be recorded. Interviews will be conducted during daytime, preferably in the evenings from 2:00 PM to 6:00 PM, when participants have had sufficient rest from the previous night's activities, or at any other time preferred by the participant. Each interview will last for 30 to 45 minutes. The questions will be developed in English by the Principal Investigator based on existing literature and then translated into the local language, Acholi. The survey will last about three months and data will be collected at once.

Risks of participation:

The study has minimal risks like you may feel embarrassed by some of the questions we ask, like about sexual activity, others may learn of your participation in this study, your HIV status, PrEP use and treat you unfairly but we shall protect you and your information to the best of our ability. Your ability to answer all questions will inform the study objectives and purpose hence improving HIV prevention service delivery.

Benefits of participation:

There will not be immediate direct benefits to you by participating in this study. However, by sharing your honest views, you will contribute to improved service delivery for HIV prevention in Gulu City, Northern Uganda.

Confidentiality: Your participation and information provided in this study will be kept confidential, and any identifying information (your name or phone number) will not be included in the final data-set, study report or any other publication.

You will be required to carry your most recent HIV test results to the study site (results within or less than 3 months) and this will be handled with out-most level of privacy and confidentiality by the study team.

Your data can be requested by GUREC and UNCST whenever necessary in addition to the research team but we shall remove all identifying information before sharing with them.

Costs reimbursement: Since you are not expected to incur additional costs while participating in this study, there will be no costs reimbursed to you.

Time compensation: For your time and efforts, you will be provided with a modest compensation of 5,000/= (Five thousand shillings only).

Dissemination of results: The results of the research will be accessible to all study participants and the general public through evaluation reports, performance review presentations, and

dissemination workshops. The results of the research will additionally be published in an international peer-reviewed journal with open access.

Questions about this sstudy: In case you have any further questions related to the study, kindly contact the Principal Investigator, Ms Alwedo Immaculate- immaculatealwedo@gmail.com, Tel. 0780935812.

Ethical approval: The protocol of this study has been approved by the Gulu University Ethical Research Committee and any further questions can be directed to the GUREC

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.

If you have any issues pertaining to your rights and participation in the study, please contact the Chairperson, Gulu University Research Ethics Committee, Dr. Julaina A. Obika Tel: No., 0772964491; email: 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 Consent

I confirm that I have been explained to and understand the information given. I have had the opportunity to ask questions and had them answered. I understand that all personal information will remain confidential and that all efforts will be made to ensure I cannot be identified. I agree that data gathered in this survey may be stored anonymously and securely, and will be used for the stated purpose of this survey. I understand that my participation is voluntary and that I am free to withdraw at any time without giving a reason and I will not be penalized for such a withdrawal.

Permission to record: The interview will be audio recorded through a device and we also seek for your agreement for this recording.

☐ I agree to be audio recorded.

☐ I agree to take part in this study.

Printed Name of Participant

Signature/Thumbprint of Participant

_____

Date

WITNESS - if participant cannot read/write themselves.

I attest that the information contained in this written consent form has been read and explained to the participant. To the best of my knowledge, the information provided was complete and accurate. The participant understands the purpose of the study and has voluntarily accepted to participate.

I attest that the participant who states that her name is_____has placed her thumbprint on this consent form of her own free will on this day _____

Printed Name of Witness

_____ _____

Signature of Witness Date

PERSON OBTAINING CONSENT

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual. All questions were answered, and the participant demonstrated an understanding of the information provided.

_____

Printed Name of Person Obtaining Consent

_____

Signature of Person Obtaining Consent Date _____

APPENDIX IV: KARATAC ME YEYO (DUL ME LEB ACHOLI), VERSION 2.0

Nying guru ngec man:

Yeyo me HIV Pre-Exposure Prophylaxis ki lok ma kwakko lucat kom ma peke ki two HIV ii Gulu city, Northern Uganda**.**

Nying Lakwed: Alwedo Immaculate

Institution(s): Gulu University

Lok kom lakwed:

An nyinga Alwedo Immaculate, atye latin kwan me Gulu University ii Faculty of Medicine, atye ka kwan me nongo master's degree in public health. Ma rwatte ki dog kwan man, atye ka guru ngec ma patpat, ma in bene iromo miyo ngec ma tye boti. Abi kwano it in dog lok manok, wek iniang pingo atye ka mito ni ibed ii kom guru ngec man, ki me niang jami ma abi penyo boti. Bed agonya me juko an cawa mo keken ka itye ka mito penyo pi dog lok mo ma ipeke ka niang maber. Ka dong akwano dog lok magi it in, iromo mokko tami ka iyer ni apenyi onyo ka **pe iyer. Ka iyer ni apenyi, abi penyo wek iket cingi ii karatac man me nyutu ni iyer.**

Lok angeya ii kom guru ngec man:

Kwiti two jonyo obedo peko madit ii Uganda. Kobo pa kwiti two jonyo pwud tye matek ii mwakki weng, kadi ni yoo me gengo ne calo Pre-Exposure Prophylaxis (PrEP) pe tye ka nyakko nyige. Female sex workers (FSWs) aye dong gitye ki peko madit ma loyo me nongo kwiti two jonyo. Ngec mo pwud peke ka yoo me gengo nongo HIV ki yer bot FSWs, guru dog lok ma obinyutu yeyo me tic ki PrEP bot FSWs ma gi peke ki HIV ii Gulu City, Northern Uganda

Anga ma obibedo ii guru ngec man:

Mon ma gi peke ki HIV ento gityo tic me cato kom ii kabedo ma patpat Gulu city, jo ma loyo cato kom ii kabedo ma patpat, lutic yot kom matiyo ii kom gwokke ii kom HIV, luloc me dul ma miyo kony bot FSWs ii Gulu City, ngat ma mwaka ne tye ma kato apar wi aboro (18) bene rom obedo ii guru lok man.

Yoo me guru ngec:

Ka iyer me bedo ii dog guru lok man, ngat ma obipenyi obiyer wek ibed kama inongo be it in ci obicoyo lagam ma megi piny ii karatac mapat. Pi lapeny bot FGDs ki lumir ngec mukenne, lapeny ki bi kwano ka ki coyo lagam ma meg gi piny. FGDs obibedo dano ma romo abicel (6) me oo ii apar (10). Guru ngec man obi time pi dwer adek, ki ngec ki guru me kicelo. Lapeny magi obitero dakika 25-40.

Adwogi marac me bedo ii yub man:

Guru ngec man romo weko ibedo ki lewic me gamo lapeny ma kibi bedo ki kare me penyi, calo lok me rwatte ii yoo me bwutu. Iromo kwero gamo lapeny ma diyo in cawa mo keken. Tam ni mo keken me kwero gamo lapeny mo keken pe obi gengo in me nongo kony me yoto kom ma imito. **V.10 16/SEP/2024**.

Ber pa bedo ii yub man: Pe tye kony mo pi oyoto ma ibinongo ka ibedo ii guru ngec man. Kadi bed kumeno, ngec ma atir ma imiyo obikonyo me tiro ki yubo yoo ma ki miyo kony me gengo kobo pa HIV ii Gulu City, Northern Uganda.

Gwokko lok kom lagam lapeny: Bedo ni ii guru ngec man pe obibedo gin ma lwak obingeyo, dok lok mo keken ma iwaco kibi gwoko pe kato wokko, ki dong nyinga ki namba cim ni pe obibedo ii dog lok ma obibedo ii ripot me agiki onyo ki karatac mo ma obibedo pa lwak.
Cul: Kit ma ki niang ni tic ki cente obibedo peke wek ibed ii guru ngec man ki tung boti, pe tye cul mo ma kibi miyo me dwoko cente ni.
Pwoc pi miyo cawa: Pi miyo cawa ki kare ni me bedo ii yub man, ibinongo cul me cente alib abic (5,000/=).
Nyutu adwogi me yub man: Adwogi me guru ngec obi dok bot jo ma omiyo ngec ki dong lwak ii yoo ma calo ripot, karatac me nyutu adwogi tic, ki pwonye ma bedo calo workshops. Adwogi me guru ngec man bene obibedo ii karatac ma dano ma lobo woko bene romo tic kwede me nenno kit me miyo kony.
Lapeny pi yub man: Ka itye ki lapeny mukenne madwong ma dok ii kom yub man, iromo kupe ki Principal Investigator, matye Ms Alwedo Immaculate-immaculatealwedo@gmail.com onyo igoyo namba cim man, 0780935812.
Yeyo me tic maber ki guru ngec man: Yoo me doro guru ngec man okati ki bot Gulu University Ethical Research Committee ma ka lapeny mo me niang ma tut tye ci iromo dwoko ne bot GUREC
Dok lok me minne pe in:
Twero me bedo ii guru ngec man weng tye boti, dok bene tye twero ni me aa ki ii yub man cawa mo keken ma cwinyi omito.
Ka itye ki lok ma marac madok ii kom twero ki bedo ii yub man, iromo kupe ki Won Kom me Gulu University Research Ethics Committee, Dr. Julaina A. Obika, ii namba cim,0772964491 onyo ii email: j.obika@gu.ac.ug ; onyo bot Uganda National Council for Science and Technology, ii plot 6 Kimera road, Ntinda, Kampala ii namba cim, 0414705500. **Lok dogi me yeyo:**
Aye ni aniang tyen lok ma ki kwano bene ki gonyo it an. Abedo ki kare me penyo lapeny ci bene ki gamo gin weng. Aniang ni lok koma weng ma amiyo, kibi gwokke maber wek pe okat woko. Aye ni ngec ma amiyo kibi gwokko maber dok bene labongo nyinga kamo iye, ci kibi tiyo kwede ii yoo ma guru lok man cimo. Aniang ni bedo na ii yub man tye labongo dic mo keken dok bene aromo weko ne cawa mo keken labongo pwod mo ka obibedo ii koma.
Yeyo wek ki mak dwon: Lapeny ma obi time ni kibi mako down ne ii cim dok kibi lego ka iyer onyo pe iyer.

☐ An ayer ni ki mak dwonna.

☐ An ayer me bedo ii yub man.

_____

Nying lamir ngec

_____

Ket cingi kany

_____

Ninno Dwer
La caden – ka lamir ngec pe romo kwan onyo coc

An atyero ni dok lok me ii karatac man ki kwano ci bene kiweko lagam lapeny oniang maber. Ki ii ngec ma mega, dog lok matye ii karatac man tye atir dok kakare. Lagam lapeny bene oniang tyen lok me guru ngec man dok bene oyer me bedo iye.
Atyero ni lagam lapeny ma nyinge

_____

oketo cinge ii karatac man me yeyo pire kene ii nino dwer man _____
Nying La caden

_____ _____
Cing La caden Nino dwer

NGAT MATYE KA GAMO YEYO MAN

An ayer ni tyen tic ki guru ngec man, kony ma romo nonge, ki adwogi marac ma rwatte ki guru ngec man kityero bot lagam lapeny ma en nyinge tye malo ii karatac man. Lapeny weng ki gamo, lagam lapeny bene onyutu ni iniang lok ma ki miyo bote.

_____

Nying ngat matye ka gamo yeyo

_____ _____

Cing ngat matye ka gamo yeyo Nino dwer

APPENDIX V: (STUDY QUESTIONNAIRE) -ENGLISH VERSION 2.0.

Hello Madam, thank you for accepting to participate in this study, I will now proceed to ask you some questionnaires and I will appreciate your honest responses.

SECTION A. SOCIO-DEMOGRAPHIC CHARACTERISTICS

Part A

Socio-demographic characteristics	Responses
1. Age (in years)	…….
2. Highest Level of education	No school, Primary level, Secondary level, Tertiary institution/vocation, University
3. Occupation	Farming, Business/trade, Housewife, Bar attendant, Peer educator, Student, Not employed, Civil service
4. Income level	What is your average monthly ..... income (ugs) ?
5. Marital status	Never married/single, Married/Cohabiting, Separated/Divorced, Widowed
6. Who do you live with at the moment?	Alone, Family, Friends, Relatives, Other…specify -- ------

Part B: Assessing HIV related factors

1. Are you aware of your HIV status?

   Yes ☐ No ☐

2. Have you tested for HIV in the past 6 months?

   Yes ☐ No ☐

3. How often do you use condoms during sex?

   Always ☐ ☐ Sometimes Never ☐

4. Do you think you're at a risk of getting HIV/AIDS or STDs?

Yes ☐ No ☐

5. Are you concerned about getting HIV/AIDS?

Yes, ☐ Sometimes ☐ ☐ Not really

6. Are you aware of PrEP as an HIV prevention measure? Yes ☐ No ☐

7. If Yes, where do you get your information from?

My friends ☐ Internet ☐

Doctor/Hospital ☐

Other specify……

8. If No, are you interested in knowing about PrEP?

Interested ☐ Maybe ☐ Not Interested ☐

Socio-cultural factors associated with PrEP uptake among FSWs in Gulu City.

1) Where do access your PrEP services from?

a) Community DIC

b) Health facilities

2) How do you perceive the societal acceptance of FSWs using PrEP?

a. Very accepting

b. Accepting

c. Neutral

d. Unaccepting

e. Very unaccepting

3) Are there any cultural or traditional beliefs that affect your decision to use PrEP?

a. Yes

b. No

4). How influential are your peers in your decision to use PrEP?

a) Very influential
b) Influential
c) Neutral
d) Uninfluential
e) Very uninfluential

5) Do you have access to peer support groups or networks that discuss PrEP?

a. Yes

b. No

Health system factors associated with HIV Pre-Exposure Prophylaxis uptake among FSWs in Gulu City, Northern Uganda.

1) Do you feel comfortable discussing PrEP with healthcare providers?

a. Very comfortable

b. Comfortable

c. Neutral

d. Uncomfortable

e. Very uncomfortable

2) How stratified were you with the services offered to you at the health facility?

a. Not satisfied

b. somewhat satisfied

c. completely satisfied

d. no response.

3) why were you not completely satisfied?

a. Unfriendly staff

b. staff not skilled/knowledgeable

c. staff did not answer my question

d. waiting time

e. stock out

f. No privacy

g. Provider unavailable

h. others……..specify…….

SECTION B: Assessing PrEP acceptability.

1. Do you personally think it would be worth it to you to take PrEP if you could prevent HIV? Yes or No

In this session you agree, strongly agree, neutral, disagree and strongly disagree to the following question.

Construct items	Response
Affective attitude (8 items)	

1) I am happy receiving PrEP	Strong agree, Agree Neutral Disagree Strongly disagree
2) I look forward to receiving/engaging with PrEP Services	Very much a lot A lot Neutral Not so much Not at all
3) I am likely to accept taking PrEP if it's availed?	Strong agree, Agree Neutral Disagree Strongly disagree
4) I like using PrEP	Strong agree Agree Neutral

	Disagree Strongly disagree
5) I am very fine with my preferred method	Strong agree Agree Neutral Disagree Strongly disagree
Burden (5 items)	

In the last 4 weeks I was not bothered by the side effects from PrEP.	a) all of the time, b) most of the time c) some of the time d) a little of the time e) none of the time
During the last 4 weeks, how often did you have problems with taking well daily	a) all of the time, b) most of the time c) some of the time d) a little of the time e) non the time
It took me time to start using PrEP	a) all of the time, b) most of the time c) some of the time d) a little of the time e) non the time
It took me time to work through and start adhering well to PrEP daily?	a) all of the time, b) most of the time c) some of the time d) a little of the time e) non the time
It is easy for me to refill for PrEP daily	Strong agree Agree Neutral Disagree Strongly disagree
Ethicality (3 items)	

For me to take PrEP it is the right thing to do	Strong agree Agree Neutral Disagree Strongly disagree
Using PrEP has ethical implications for patient care	Strong agree Agree Neutral Disagree Strongly disagree

My family will not approve of me using PrEP	Strong agree Agree Neutral Disagree Strongly disagree
I am likely to experience stigma when my friends discover that am using PrEP	Strong agree Agree Neutral Disagree Strongly disagree
Do you feel that you are going against your community expectations because of PrEP	Strong agree Agree Neutral Disagree Strongly disagree
Perceived effectiveness (7 items)	

I think PrEP will work best for me?	Strong agree Agree Neutral Disagree Strongly disagree
My life has changed positively since 1 started using PrEP	Strong agree Agree Neutral Disagree Strongly disagree
I think PrEP will protect me very well (100%) from acquiring HIV Prevention?	Strong agree Agree Neutral Disagree Strongly disagree
How effective do you think engaging with PrEP regularly would be?	Not at all effective- not effective- effective

How effective do you think it will be to have your appointments scheduled by your healthcare team?	5-point scale: Not at all effective- very effective
Intervention coherence (4 items)	
It makes sense to me how PrEP will result in improvements in patient care	5-point scale: Strongly disagree- Strongly agree
It is clear to me how PrEP would help me prevent HIV	5-point scale: Strongly disagree- Strongly agree

How much do you trust healthcare providers to give you accurate information about PrEP?	Not at all A little Somewhat Quite abit Completely
I am confident that taking PrEP will positively impact my health?	Very confident Confident Neutral/no opinion Un-confident Very unconfident
Self-efficacy (6 items)	
During the last 4 weeks, how often were you unable to take PrEP daily as prescribed	a) all of the time, b) most of the time c) some of the time d) a little of the time e) none of the time
In the last 4 weeks, how many days out of 7 were you able to use your PrEP methods daily as prescribe?	0days, 1-3days, 3-6 days, 6days, 7 days
I am confident that PrEP will work for me very well	Very unconfident very confident
How easy do you think it will be to use PrEP daily	Very difficult very easy

Opportunity Costs	What other HIV prevention measures do you consider important aside from PrEP? Have you had to forgo other important ways (activities or expenditures) to obtain PrEP? • Yes • No If yes, please describe the activities or expenditures you have had to forgo

APPENDIX VI: 2 (LAPENY ME GURU NGEC MAN) -LEB ACHOLI VERSION 2.0.

Apwoyo bino, dok bene apwoyo yer me bedo ii yub man. Kombedi dong acito atir ka penyp lapeny, alego ni imi it an lagam ma kakare.

Section A. Lok kom lagam lapeny

Part A

Lok kom lagam lapeny	**Lagam**
1. Mwaka ni	**……**
2. Rwom me kwan	Kwan peke, Primary, Secondary, Tertiary institution/vocation, University
3. Tic ma itimmo	Lapur, biacara, dako ot, latic ot namo, lamir pwonye, latin kwan, peke ki tic
4. Rwom cente ma inongo	Iningo ciling adi ii dwer acel ..... ?
5. Rwom me miti	Pe anyome/atye kena, anyome/wabedo karacel, wa pokke, dako too.
6. Ibedo kwene	Abedo kena, ki dano ma gang, ki lurema, ki wadi na, mukenne…tit matut --------

Part B: Niang lok madok ii kom HIV

7. Ingeyo ka itye ki HIV onyo pe ingeyo? Angeyo ☐ Pe Angeyo ☐

8. Ipimo remo ni pi HIV ii dwer abicel ma okato angec? ☐

Apimo ☐ Pe apimo ☐

9. Tyen adi ma itiyo ki roc bol ka itye ka rwatte ii bwutu?

Cawa weng ☐ Cawa mogo ☐ Pe atiyo kwede ☐

10. Itamo ni itye ki kare marep me nongo HIV/AIDS onyo STDs? Ayer ☐ Pe ayer ☐

11. Itye ki par ni ibinongo HIV/AIDS?

Tye ☐ Atamo manok ☐ Pe atamo ☐

12. Itye ki ngec ii kom PrEP calo yoo me gengo nongo HIV?

Angeyo ☐

Pe angeyo ☐

13. Ka ingeyo, inongo ngec ne ki kwene?

Lurema ☐ Ki ii yamo pa munu ☐ Ki bot daktar/ot yat ☐ Iromo titto mukenne……

14. Ka pe ingeyo, imito ngeyo lok kom PrEP?

Amito ngeyo ne ☐ Atamo ni amito ngeyo ☐ Pe amito ☐

Dog lok matye ii kom neno pa lwak ii adwol madok ii kom tic ki PrEP ii kin FSWs ii Gulu City.

1) Inongo kony me PrEP ki kwene?

a) Community DIC

b) Ki ii ot yat

2) Iromo waco ni ngo ii tam pa FSWs ii kom tic ki PrEP?

a. Gi yer matek

b. Gi yer

c. Pe angeyo

d. Pe gi yer

e. Gi okwero matek

3) Tye lok kaka mo ma dok ii kom tic ki PrEP?

a. Tye

b. Peke

4). Luwoti gi tamo ni ngo ii kom in tic ki PrEP?

a. Gi cwako matek
b. Gi cwako
c. Pe angeyo
d. Pe gi cwako
e. Pe gi cwako tutwal

5) Itye ki gurup onyo kacoke mo ka gi lokko ii kom PrEP?
a. Tye
b. Peke

Dog lok madok ii nongo kony me yot kom calo HIV PrEP ii kin FSWs ii Gulu City, Northern Uganda.

1) Iwinyo nining ka inwako lok me PrEP ki lumir kony me yoto kom?
a. Abedo agonya tutwal
b. Abedo agonya
c. Pe angeyo
d. Pe abedo agonya
e. Abedo lwor tutwal

2) Inongo kony me yoto kom ma ki miyo ii ka miyo kony magi tye nining?
a. Pe ayeng tutwal
b. Tye mere lakitte
c. Tye maber tutwal
d. Apeke ki lagam
3) Pingo pe iyeng tutwal?
a. Lutic ne gi ger
b. Lutic pe opwonye/peke ki ngec
c. Latic pe ogamo lapeny ma mega
d. Cawa me kuru kony
e. Jami me miyo kony obedo peke
f. Pe ki woro lok komi
g. Lamir kony obedo peke
h. mukenne……..tit matut…….

SECTION B: Niang matut ii kom yeyo pa dano ii kom PrEP

1. Itamo ni bedo ber ka itiyo ki PrEP ka iromo gengo HIV? Ber onyo Pe ber

Idog lok man, ibiwaco ni, Ayer matek, Ayer, Pe angeyo, Pe ayer ki Pe ayer tutwal ii kom lapeny ma imiyo.

Lapeny	Lagam
Kit ma en winyo pi tic ki PrEP (Jami aboro (8))	
6) Iya yom me tic ki PrEP	Ayer matek Ayer Pe angeyo Pe ayer Pe ayer tutwal
7) Pwud atye ki tam me mede me tic ka nongo kony me PrEP	Ayer tutwal Ayer Pe angeyo Pe ayer Pe ayer tutwal
8) Ayer tic ki PrEP ka ki miyo it an	Ayer tutwal Ayer Pe angeyo Pe ayer Pe ayer tutwal
9) Amaro tic ki PrEP	Ayer tutwal Ayer Pe angeyo Pe ayer Pe ayer tutwal

10) Awinyo maber me tic ki yoo ma an ayero ni	Ayer tutwal Ayer Pe angeyo Pe ayer Pe ayer tutwal
Peko ma bino (Jami abic (5))	
Pi cabit angwen (4) ma okato, ibedo ki par ii kom adwogi me tic ki PrEP?	a) Cawa weng, b) Pol pa cawa c) Cawa mogo d) Pi wang cawa matidi e) mo keken ku
Pi cabit angwen (4) ma okato, wang cawa adi ma ibedo ki peko me tic ki PrEP maber?	a) Cawa weng, b) Pol pa cawa c) Cawa mogo d) Pi wang cawa matidi e) mo keken ku
Otero it an cawa me tic ki PrEP	a) Cawa weng, b) Pol pa cawa c) Cawa mogo d) Pi wang cawa matidi e) mo keken ku
Otero it an kare me ngiyo tic ki PrEP nino weng	a) Cawa weng, b) Pol pa cawa c) Cawa mogo d) Pi wang cawa matidi e) mo keken ku
Yot it an me medo PrEP nino weng	Ayer tutwal Ayer Pe angeyo Pe ayer Pe ayer tutwal
Neno me ber onyo rac ki bot lwak (Jami adek (3))	
An me tic ki PrEP obedo tam maber	Ayer tutwal Ayer

	Pe angeyo Pe ayer Pe ayer tutwal
Tic ki PrEP pe gengo nongo kony me yot kom matye atir	Ayer tutwal Ayer Pe angeyo Pe ayer Pe ayer tutwal
Dano gang wa pe giyer it an me tic ki PrEP	Ayer tutwal Ayer Pe angeyo Pe ayer Pe ayer tutwal
Abibedo ii peko me cimo tok ka lurema gi ongeyo ni atiyo ki PrEP	Ayer tutwal Ayer Pe angeyo Pe ayer Pe ayer tutwal
Itamo ni pe itye ka tic maber ki tam pa lwak ii kom tic ki PrEP?	Ayer tutwal Ayer Pe angeyo Pe ayer Pe ayer tutwal
Yeyo me ber pa PrEP (Jami abiro (7))	

Atamo ni PrEP obitiyo maber it an	Ayer tutwal Ayer Pe angeyo Pe ayer Pe ayer tutwal
Kwo na obedo ka wot maber ocakke ma ayabo tic ki PrEP	Ayer tutwal Ayer Pe angeyo Pe ayer Pe ayer tutwal
Atamo ni PrEP obigwoko an maber (100%) ikom nongo HIV?	Ayer tutwal Ayer Pe angeyo Pe ayer Pe ayer tutwal
Itamo nining ii kom adwogi pa tic ki PrEP ii kare weng?	Pe tiyo matwal- Pe tiyo -Tiyo
Itamo ni bedo ber ka lutic yot kom aye waco it in me rwatte kwed gi ilok kom nongo PrEP?	5-point scale: Pe tiyo matwal- Tiyo matek
Niang tic pa PrEP (Jami angwen(4))	
Anongo niange maber bot an ni PrEP obikonyo ii kom nongo kony me yot kom	5-point scale: Pe ayer- Ayer matek
Aniang maber kit ma PrEP obikonyo ii yoo me gengo nongo HIV	5-point scale: Pe ayer- Ayer matek
Rwom mene ma igeno lutic yot kom me miyo it in ngec ma atir ii ko PrEP?	Pe ageno tutwal Pe ageno Pe aromo waco ne

	Gen tye Ageno matek tutwal

Cwinya tek ni tic ki PrEP obiketo yot kom an kama ber	Cwinya tek tutwal Cwinya tek Tam na peke Atye ma alwor Atye ma alwor tutwal
Kit ma komme yer tic kwede (jami abicel (6))	
Cabit angwen (4) ma okato, wang adi ma pe itiyo ki PrEP kit ma daktar ociko?	a) Cawa weng, b) Pol pa cawa c) Cawa mogo d) Pi wang cawa matidi e) mo keken ku
Cabit angwen (4) ma okato, nino adi ma ii kom nino abiro (7) ma itiyo ki PrEP kit ma daktar ociko?	Nino mo ku, nino acel-adek (1-3), nino adek-abicel (3-6), nino abicel (6), nino abiro (7).
Cwinya tek ni PrEP obitiyo it an maber	Atye ma alwor tutwal Cwinya tek tutwal
Inongo yot it in me tic ki PrEP nino weng?	Tek tutwal Tic ne yot tutwal
Can ma bino kwede	Yoo mene mukenne ma itiyo kwede me gengo nongo HIV mapat ki PrEP? Dong itiyo ki yoo mo mapat onyo iculu cul madit wek inong kony me PrEP? • Ayer • Peke Ka iyer, tit tic ango ma itimo onyo cul ma iculu wek inong PrEP

APPENDIX VII. IN-DEPTH INTERVIEW GUIDE- ENGLISH VERSION 1.0

Introduction: Good morning/afternoon. My name is _____. I am conducting a study to understand the experiences of female sex workers regarding the use of PrEP in Gulu City. We would like to learn about your views, experiences, challenges, and factors influencing access to and use of PrEP. The information you provide will be kept confidential and used only for study purposes. You are free not to answer any question and to stop the interview at any time. With your permission, I would like to record our discussion to ensure accuracy.
Consent obtained: Yes / No **Audio recording consent:** Yes / No

Socio-demographic information: Please tell me more about yourself?

1. Your Age, marital status, highest level of education, your religion, where do you currently live in Gulu City, how long have you lived in Gulu City? what is your main source of income? [Probe: Sex work only / Sex work plus other business / Casual work / Other, specify], how much do you earn per month, for how long have you been involved in sex work? On average, how many clients do you receive in a day or week?
   [Probe: Per day / Per week / Estimate if unsure] and Do you have any children or dependents? [Probe: Number of children / Other dependents, pregnant/breastfeeding].

Socio-cultural factors associated with PrEP uptake:

2. Can you tell me where you usually access PrEP services? [Probe: Health facility / Community DIC / Through a peer outreach worker / Why do you prefer this source? / What makes it easy or difficult to access services there?]
3. How do you perceive the societal acceptance of female sex workers using PrEP? **[**Probe: How do people in the community talk about FSWs who use PrEP? / Do you feel supported or judged? / How do family, friends, clients, or partners react to PrEP use?]
4. Are there any cultural or traditional beliefs that affect your decision to use PrEP? [Probe: What are those beliefs? / How do they affect your access to or use of PrEP?]
5. Some people mention specific beliefs about PrEP. Have you heard any of the following, and how do they affect your decision to use it? [Probe: Prayer cures HIV / PrEP is treated the same as ARVs / PrEP promotes immorality / PrEP is a business from the Western world / PrEP causes infertility / PrEP causes cancer / Other beliefs / If others, please specify]
6. How influential are your peers in your decision to use PrEP? [Probe: Do peers encourage or discourage you? / How do fellow sex workers affect your decisions?]
   7. How do you think your family would react if they knew you cwere using PrEP? [Probe: Do you think your family would approve or disapprove? / Why?]
7. Do you feel you are likely to experience stigma when your friends discover that you are using PrEP? [Probe: What kind of stigma? / Have you experienced or witnessed this stigma before?]
8. Do you feel that using PrEP goes against your community's expectations? [Probe: In what ways? / How does this affect your decision to use PrEP?]

Health-related factors associated with PrEP acceptability:

9. Do you think PrEP protects you very well from acquiring HIV? [Probe: Do you believe it gives full protection or partial protection? / What makes you think so?]

10. How helpful do you think it is for your appointments to be scheduled by your healthcare team? [Probe: Does scheduling help you stay on PrEP? / What challenges do you face with appointments?]
11. Does it make sense to you how PrEP can improve your health and HIV prevention? [Probe: Has anyone explained clearly how PrEP works? / What do you understand about it?]
12. Is it clear to you how PrEP helps prevent HIV? [Probe: What information were you given? / What remains unclear?]
13. How confident are you that taking PrEP will positively impact your health? [Probe: What gives you confidence? / What concerns do you still have?]
14. How much do you trust healthcare providers to give you accurate information about PrEP? [Probe: Why do you trust or not trust them? / Have you ever received conflicting information?]
15. Do you feel comfortable discussing PrEP with healthcare providers? [Probe: Why or why not? / Do you feel respected and listened to?]
16. How satisfied are you with the services offered to you at the health facility? [Probe: What do you like most about the services? / What do you dislike?]
17. If you were not completely satisfied, why? [Probe: Staff attitudes / Lack of privacy / Waiting time / Drug availability / Stigma or discrimination / Please specify other reasons]
18. Have you had to forgo other important activities or expenditures in order to obtain PrEP? [Probe: Transport / Food / Work time / Family needs / Other expenses]
19. If yes, please describe the activity or expenditure you had to forego. [Probe: How often does this happen? / How does it affect your continued use of PrEP?]
20. What have been your biggest challenges in accessing and using PrEP
21. What do you think should be done to improve PrEP services for female sex workers in Gulu City?
22. Is there anything else you would like to share about your experience with PrEP?

Closing statement:

Thank you very much for sharing your experiences. Your contribution is very important and will help improve understanding of the factors affecting PrEP uptake and acceptability among female sex workers in Gulu City.

APPENDIX VIII: IN-DEPTH INTERVIEW GUIDE- LUO VERSION 1.0

ACAKI:

Apwoyo matek. An nyinga _____. Atye ka doro kwed me niang jami ma jo ma cato kom gi nongo ii tic ki yat PrEP ii Gulu city. Wamito niang tami, jami ma ikato iye, peko ma inongo ki jami ma dwoyo tami ii kom nongo ki tic ki PrEP. Ngec ma ibi miyo, kibi gwoko maber ngat mo keken pe obingeyo dok ki bi tiyo kwede me kwed man keken. Itye agonya pe me yer gamo lapeny ki juko nywako lok man ii cawa mo keken. Ki yeyo ma megi, amito mako dwon me nongo ngec ma atir.

Yeyo ononge: Yes / No **Yeyo me mako dwon:** Yes / No

Lok Komi: Tit ira ngat ma in ibedo

23. Mwaka ni, inyome, rwom me kwan, dini ma megi, kama ibedo iye ii Gulu City, kare ma ibedo iye ii Gulu city? Kwene ma inongo iye cente? [Peny matut: tic me cato komi, tic me cato kom ki biacara mukene, tic cing, mukene mapat, waca], ciling adii ma inongo ii dwer acel, itiyo tic me cat komi pi kare ma rom mene? Coo adi ma inongo nino acel onyo cabit acel? [Peny matut: Nino acel, cabit acel, por ka pe ingeyo] ki dong, itye ki lutino onyo dano ma jenge ii komi? [Peny matut: Wel lutino ni/ dano ma jenge ii komi, inywal onyo itye ka doto latin?]

Lok ma neno pa dano ki tam pa kaka madok ii kom tic ki PrEP

2. Kwene ma inongo kony me PrEP iye? [Peny matut: Ot yat/ ka gure pa lwak/ lakube ki latic yot kom/ pingo imaro yoo ma iwaco ni? Ngo ma weko tic ki yoo enoni yot onyo tek?]

3. Ineno neno pa dano tye ni ngo ii kom FSWs tic ki PrEP? [Peny matut: Tam pa dano tye ni ngo ii kom FSWs tic ki PrEP? / Iwinyo ki cwaki onyo pe? Dano gang wu, luremi, lu biacara ni ki la ot ma megi winyo nining ni itiyo ki PrEP?]

4. Neno ki lok pa kaka mo tye ma diyo tami ii kom tic ki PrEP? [Peny matut: Tam magi tye ngo? Gin diyo tam ni me tic ki PrEP nining?]

5. Dano mukene waco tyen lok ki tam mogo ii kom PrEP, dong Iwinyo tyen lok magi ki dong onyweno tami nining me tic kwede? [Peny matut: Lega cango HIV/ PrEP ki neno calo ARV/ PrEP medo kwoo ma peke atir/ PrEP tye biacara pa munu/ PrEP miyo twoo cancer/ lok mukene, ka tye waca]

6. Luwoti mukene tam gi tye ni ngo ii kom tic ki PrEP? [Peny matut: Gin miyo iri tek cwiny onyo balo moko tami? / Lucat kom luwoti ki diyo tami bene?]

7. Dano gang wu obiwinyo nining ka gin oniang ni itiyo ki PrEP? [Peny matut: Itamo ni gin obiyer onyo gin obikwero? Waca Pingo?]

8. Iwinyo ni iromo kato ii cimo tok bot luremi ka gin ongeyo ni itye ka tic ki PrEP? [Peny matut: Kit cimo tok ango? / dong ikato onyo ineno cimo tok mo?]

9. Itamo ni tic ki PrEP tye gin me pe ber ki kit me bedo ii adwol ma megi? [Peny matut: Yoo ma mene? /Diyo tami me tic ki PrEP nining?]

Lok me yot kom ma dok ii kom tic ki PrEP

10. Itamo ni PrEP gwoki matek wek pe inong HIV? [Peny matut: Itamo ni miyo gwok ducu onyo gwoki manok? /Pingo itamo kumeno?]
11. Itamo ni yube me cito ka neno latic yot kom pire tek? [Peny matut: Cikke man weko imede ki tic ki PrEP? / Peko ango ma inong ii kom lubu cikke man?]
12. Inongo ni tye lok ma atir ni PrEP ber pi yot kimi ki gwoki ii kom HIV? [Peny matut: Ngat mo otito iri maber kit ma PrEP tiyo kwede? / Ngo ma iniang ii kom lok ma ki tito iri ni?]
13. Tye atir iri lit ma PrEP gwoki ii kom nongo twoo HIV? [Peny matut: Dog lok ango ma ki miyo iri? / Gin ango ma pe iniang?]
14. Inongo cwinyi tek ni tic ki PrEP obimede ber pa yot komi? [Peny matut: Ngo ma miyo tek cwiny iri? / Gin ango ma kwanyo tek cwinyi?]
15. Kit lakwene ma igeno kwede lok pa lutic yot kom ma lubu lok me PrEP? [Peny matut: Pingo igeno onyo pe igeno gin? / Inongo lok mo ma pe oniango in maber?]
16. Itye agonya me nywako lok kom PrEP ki lutic yot kom? [Peny matut: Pingo? / Itamo ni ki woro in onyo pe?]
17. Inongo kony me yot kom tye maber it iri ki ii ot yat? [Peny matut: Ngo ma imaro tutwal ii kom kony me yot kom magi? Ngo ma pe imaro?]
18. Ka pe oyomo cwinyi, wac pingo? [Peny matut: Kit lutic yot kom/ Ber bedo peke/ cawa me kuru nongo kony/ tye pa yat/ cimo tok ki cac/ iromo tito mukene]
19. Nino mo dong iweko timo gin mo wek icit inong kony me PrEP onyo itiyo ki cente me nongo PrEP? [Peny matut: yoo me wot/ gin acama/ cawa me tic/ kony me gang/ tic ki cente mukene]
20.Ka tye, tit matut kit acara ango ma ikato iye. [Peny matut: Timo lakwene? Balo tic ki PrEP ni rwom mene?]
21. Jami ango ma diyo in ii kit me nongo kony me PrEP ki tic kwede?
22. Gin ango ma konyi wek imede ki tic ki PrEP?
23. Gin ango ma itamo ni romo atima wek kony me PrEP obed tye bot FSWS ii Gulu city?
24. Lok mo tye mapat ma imito waco ne madok ii kom kit ma in ibedo ki kare me tic ki PrEP?

Loro dog lok

Apwoyo pi nyako tam kweda. Dwon ma megi pire tek dok obikonyo me niang gin ma diyo tam pa dano ii kom tik ki PrEP ki yeyo me tic kwede ii kin FSWs ii Gulu city.

APPENDIX IX: ADMINISTRATIVE CLEARNCE

GULU UNIVERSITY

P.O. Box 166, Gulu (U)
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+256 776 812 147

RESEARCH ETHICS COMMITTEE

04/03/2025

To: Immaculate Alwedo

For: CITY HEALTH OFFICER
24 MAR 2025
GULU CITY
P.O. BOX 140, GULU.

Approved.

256-780935812

Type: Initial Review

Re: GUREC-2024-963: ACCEPTABILTY OF HIV PRE-EXPOSURE PROPHYLAXIS, ASSOCIATED FACTORS, AND EXPERIENCES AMONG HIV NEGATIVE FEMALE SEX WORKERS IN GULU CITY, NORTHERN UGANDA.

I am pleased to inform you that at the **119th** convened meeting on **17/10/2024**, the Gulu University REC meeting voted to approve the above referenced application.
Approval of the research is for the period of **04/03/2025** to **04/03/2026.**

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 **04/03/2026** 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
★ 04 MAR 2026 ★
FACULTY OF MEDICINE
P. O. Box 166, Gulu

No.	Document Title	Language	Version Number	Version Date
1	Informed Consent forms	Acholi	2.0	2025-03-04
2	Informed Consent forms	English	2.0	2025-03-04
3	Protocol	English	2.0	2025-03-04
4	Data collection tools	Acholi	2.0	2025-02-02
5	Data collection tools	English	2.0	2025-02-02
6	Data collection tools	Acholi	2.0	2025-02-02
7	Data collection tools	English	2.0	2025-02-02
8	COVID-19 & EBOLA risk management plan	English	2.0	2025-02-02
9	Community engagement plan	English	2.0	2025-02-02

Yours Sincerely

Julaina A. Obika (PhD)
For: Gulu University REC

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

Approved.

For: CITY HEALTH OFFICER
24 MAR 2025
GULU CITY
P.O. BOX 140, GULU.