

**UPTAKE OF HIV PRE-EXPOSURE PROPHYLAXIS AND ASSOCIATED
FACTORS AMONG SOLDIERS AT THE 4 INFANTRY DIVISION, GULU
UGANDA: A CROSS-SECTIONAL STUDY**

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MIDWIFERY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF
THE DEGREE OF MASTER OF PUBLIC HEALTH OF UGANDA CHRISTIAN UNIVERSITY**

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DECLARATION

I Kakumba Bruno declare that the work entitled “Uptake of HIV Pre-exposure prophylaxis and associated factors among soldiers at the 4 Infantry Division, Gulu Uganda: Across-sectional study” is my original work. I have not copied from any other student (group of students) or from any other sources except where due reference or acknowledgement is made explicitly in the text, nor has any part been written for me by another person.

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Signed.....

Date: June 15,2026

This dissertation has been submitted with the approval of the supervisor

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Date: June 15,2026

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DEDICATION

I dedicate this dissertation to my wife and son

Dr. Atim Martha

&

Kakumba Trinity Gabriel

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Abbreviations and Acronyms

AIDS	Acquired Immunodeficiency Syndrome
HIV	Human Immunodeficiency Virus
MOH	Ministry of Health
NIH	National Institute of Health
PrEP	Pre-Exposure Prophylaxis
PEP	Post Exposure Prophylaxis
UCUREC	Uganda Christian University Research Ethics Committee
UNAIDS	Joint United Nations Program on HIV/AIDS
UPDF	Uganda People's Defense Forces
URC	University Research Co
WHO	World Health Organization

Operational Terms

PrEP Anti-retroviral medicine taken orally, intravaginally or by injection by high-risk HIV negative people to prevent acquisition of HIV.

Sero-discordant couple: Are sexual partners where one partner is living with HIV and the other is HIV negative.

Monday Balaza: This is a must attend meeting in a military barracks whereby the commander of the barracks comes to update soldiers on matters of importance and listen to the challenges soldiers might be facing.

Abstract

Background: HIV global burden. In Uganda the prevalence of HIV is at 5% however there is a higher level among armed forces ranging from 15-37%. HIV PrEP has revolutionized the biomedical arm of HIV prevention. Despite numerous studies carried out on the Uptake of PrEP among high-risk groups, there is very little knowledge regarding Uptake of PrEP among armed personnel including soldiers.

Objectives: To determine the level of uptake and factors associated with HIV PrEP use among soldiers at 4 infantry Division Headquarters, Gulu.

Methods: This was across-section study: soldiers at the 4 Infantry Division Headquarter during the month of August were recruited. PrEP uptake was defined as history of lifetime use of PrEP, awareness of PrEP and willingness to use PrEP. A pre-tested semi-structured questionnaire was used to collect data. Descriptive statistics were used to analyze the study sample. Bivariable and multivariable logistic regression analysis was performed to assess the variables associated with PrEP uptake

Results: A total of 425 participants with median age being 32 years (IQR=16 years), 88.47% (n=376) were male with the median duration of service being 6 years (IQR=15). Prevalence of lifetime use of PrEP was 5.18% (n=22), level of awareness of PrEP was 59.8% (n=245); Oral daily pills 45.4% (n=193), injectable form at 12.2% (n=52), and Vaginal ring at 2.1% (n=9). Level of willingness was at 78.1% (n=332). Factors associated with lifetime PrEP use include: having another profession besides being a soldier (AOR: 3.3; 95% CI:1.38-7.88 p=0.007), having ever used PEP before (AOR: 14.3, 95% CI: 5.12-40.10 p<0.000), sometimes taking alcohol before or during sex (AOR: 5.6, 95% CI: 1.90-16.34 p=0.002), always taking alcohol before or during sex (AOR 3.1, 95% CI: 1.08-8.89 p=0.036).

Conclusion: The prevalence of lifetime use of HIV PrEP among soldiers is very low. Despite the high levels of awareness and a strong willingness to utilize HIV PrEP, the utilization of PrEP is very low.

Key words: PrEP Uptake, PrEP in Soldiers.

CHAPTER ONE: INTRODUCTION

1.1 Background

Human immunodeficiency virus (HIV) is a global public health problem with an estimated 39.9 million people infected globally, including 65% of whom are in Sub-Saharan Africa. (WHO, 2023). In Uganda, the prevalence of HIV is at 5% however there is a higher prevalence among the armed forces ranging from 15-37% compared to the civilian population (UNAIDS, 2024; URC, 2024). Soldiers live a life full of deployment for long periods of time away from their families, high mobility in different areas with very risky sexual behaviors which makes them a high-risk population.

Pre-exposure prophylaxis (PrEP) refers to use of antiretroviral therapy (ART) by high risk HIV-negative individuals to prevent acquisition of HIV (WHO, 2023). Multiple studies have shown that PrEP is efficacious, with approximately 99% effectiveness in stopping acquisition of HIV infection after potential exposure (NIH, 2025). Oral HIV PrEP was implemented in Uganda in July 2017 and many more other HIV PrEP alternatives have been introduced ever since including Vaginal ring and injectable HIV PrEP (Ministry of Health, 2022). Across the country, Uganda People's Defense Forces (UPDF) has got about 40 military health facilities with 31 of them having an accredited antiretroviral therapy (ART) clinic which provide HIV related services including HIV PrEP to the soldiers and some civilians (URC, 2024).

A study among fisherfolk along Lake Victoria showed that 85.7% of participants had knowledge about PrEP however lifetime use was at 18.9% among men and 27.8% among women (Ntabadde et al., 2024). These findings closely correlate with a study done in Chicago among black women showing that majority 72% were aware of PrEP (Jones et al., 2020). These contradict with a study among adolescent girls and young women whereby only 23.2% had knowledge about oral PrEP and only 3.9% had heard about injectable PrEP (Lunkuse et al., 2022). In Kampala, another study showed that willingness to take PrEP is at 90.2% among adolescent girls and young women (Mayanja et al., 2022). This is in line with a study among African American women where 85% are willing to use PrEP (Hill et al., 2021). In Gulu city, a study carried out

on female sexual workers showed that 66.3% used HIV PrEP which contradicts with most studies showing low levels of use of PrEP (Bongomin et al., 2023)

Several studies have identified risk factors such as sexual behavior, negative attitude towards condom use, social support, need to maintain HIV negative status, number of sexual partners and not knowing the HIV status of their partners, practicing sex work, having a regular facilitated use of PrEP (Bongomin et al., 2023; Hill et al., 2021; Lunkuse et al., 2022; Mayanja et al., 2022).

However, despite numerous studies carried out on the Uptake of HIV PrEP among high-risk groups, there is very little knowledge regarding uptake of PrEP among armed personnel, including soldiers. Therefore, this study aims to determine the level of uptake and factors associated with HIV PrEP use among soldiers at \$ Infantry Division Headquarters, Gulu.

1.2 Problem statement

There is little information concerning PrEP among soldiers but also studies carried out in other HIV/AIDS high risk groups demonstrate conflicting information on awareness some giving values as low as 3.9-23.2% among adolescents and young girls and others high values of 72-85.7% among black women and fisherfolks respectively (Jones et al., 2020; Lunkuse et al., 2022; Ntabadde et al., 2024). Studies have demonstrated that there is a very high willingness to use PrEP among the different HIV/AIDS high risk groups other than soldiers of up to 90.2% among adolescent girls and young women but with very low levels of lifetime use of only 14.5% among the fisherfolks (Mayanja et al., 2022; Ntabadde et al., 2024). Despite all this information, there is inadequate data from soldiers and armed personnel where the prevalence of HIV/AIDS is almost 6-7 times that of the general public due to the unique nature of their job involving high mobility, long period deployments away from families and risky sexual behaviors. (UNAIDS, 2024; URC, 2024). Due to the impact of HIV among the armed personnel, understanding the uptake of HIV PrEP is essential to reduce on the spread of the disease.

1.3 Justification

HIV PrEP has revolutionized prevention of HIV spread and is a key component in achieving the Global HIV strategy for year 2030 and the Presidential fast track initiative on ending HIV in Uganda by 2030. Results from the study will provide knowledge on the level of awareness, prevalence of lifetimes use, level of willingness to use PrEP and factors associated with uptake of PrEP against HIV/AIDS among soldiers. This information will inform policy and practice enabling the UPDF especially the Department of HIV/AIDS to implement practices which will increase on the utilization of PrEP services from the accredited UPDF ART clinics around the country thereby reducing on the incidence rate of HIV among the men in uniform

1.4 Research questions

1. What is the lifetime prevalence of use of HIV PrEP among soldiers at the 4 Infantry Division, Gulu?
2. What are the factors that influence HIV PrEP among soldiers at the 4 infantry Division Gulu?

1.5 Objectives

1.5.1 Broad Objective

To determine the uptake of HIV PrEP among soldiers at the 4 Infantry Division in Gulu, Uganda.

1.5.2 Specific Objectives

1. To determine the prevalence of lifetime use of HIV PrEP among soldiers at the 4 infantry Division, Gulu.
2. To determine the factors associated with lifetime use of HIV PrEP among soldiers at the 4 Infantry Division, Gulu.

1.6 Conceptual framework

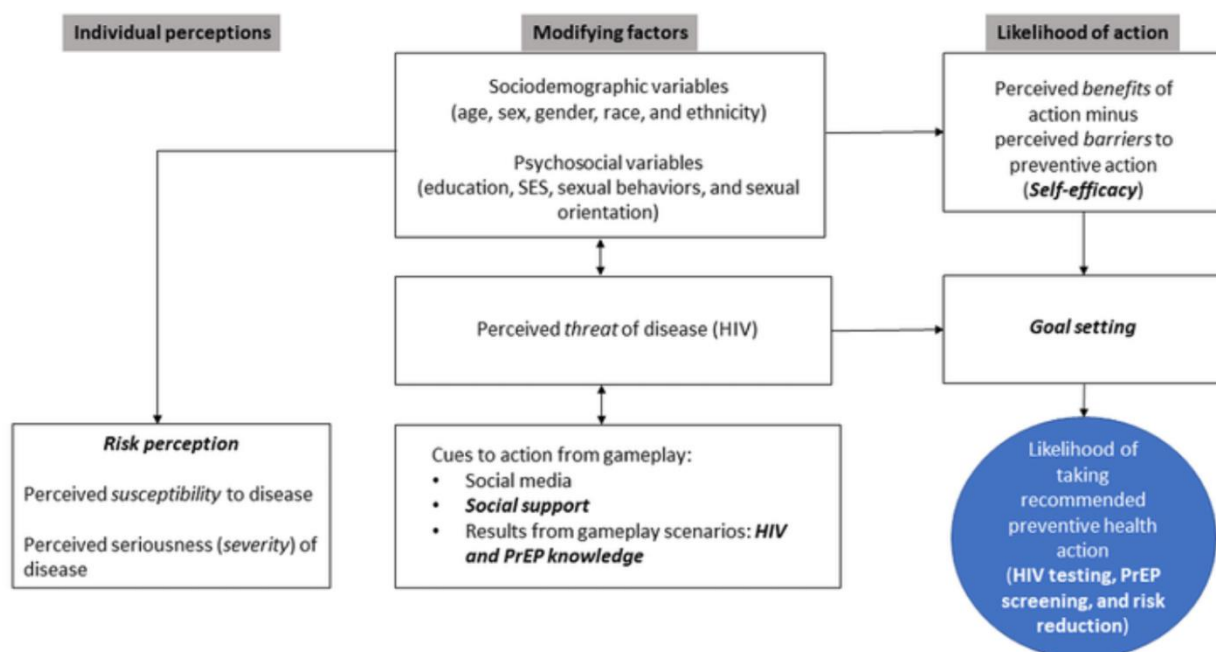


Figure 1: conceptual fame work. Adopted from (Wilbourn et al., 2021)

Narrative of the conceptual framework.

This conceptual framework illustrates the interplay between different independent variable in influencing uptake of PrEP. At the center of the framework in the individual perceived threat of HIV which is influenced by different factors including sociodemographic variables like age, sex, and gender, psychosocial variables including education level, sexual behaviors. These different factors influence the perceived risk of acquiring HIV. Combined with the perceived benefit of taking PrEP as a preventive strategy, this determines the uptake of HIV PrEP. This study is guided by the health belief model.

1.7 Scope of the study

1.7.1 Geographic scope

The study will be limited to Soldiers deployed at the 4 Infantry Division Headquarters found in Kasubi Parish, Barderge Division, Gulu City, Gulu District in Uganda.

1.7.2 Content scope

The study will be limited to prevalence of use of HIV PrEP and sociodemographic factors associated with HIV PrEP use.

1.7.3 Time scope

The study will be limited to four months from June 2025 to October 2025.

CHAPTER TWO: LITERATURE REVIEW

2.1 HIV PrEP effectiveness

PrEP is antiretroviral treatment medication taken by high-risk people who do not have HIV that reduces the risk of getting HIV from sex by 99% and from injection drug use by at least 74% (NIH, 2025). Uganda currently has a number of PrEP choices including tenofovir disoproxil fumarate based daily pills, monthly Dapivirine PrEP vaginal ring and a long acting injectable cabotegravir (Ministry of Health, 2022). The twice yearly Lenacapavir had trials in Uganda with 100% effectiveness (0 per 100 person-years; 95% CI, 0.00-0.19) in preventing HIV Acquisition however not yet integrated in Uganda (Bekker et al., 2024).

Several studies have shown PrEP to be effective if there is good adherence. A study among different high risk populations showed PrEP to reduce the risk of getting HIV, men who have sex with men had (RR=0.25, 95%CI 0.1-0.61 absolute rate difference -0.03, 95%CI-0.01 to -0.05), Sero-discordant couples had (RR 0.25, 95%CI0.14-0.46, absolute rate difference -0.01, 95%CI -0.01 to -0.02) and people who inject drugs had (RR 0.51, 95% CI 0.46-1.29) (O Murchu et al., 2022). Another study to find out the effectiveness and safety of oral HIV PrEP for all populations found PrEP is protective against HIV infection across population. Trials with PrEP use of more than 70% had the highest PrEP effectiveness (risk ratio=0.30 95%CI 0.21-0.45, $p<0.001$) compared to placebo groups and trials with lower levels of PrEP use (Fonner et al., 2016). Another study to determine the safety and efficacy of Dapivirine vaginal ring for HIV prevention in women revealed that Dapivirine was safe with a 4.1 seroconversions per 100 person-years among women in Sub-Saharan Africa (Nel et al., 2016).

2.2 Prevalence of lifetime use

In Gulu city, a study among female sex workers showed that 66.3% of participants used PrEP (Bongomin et al., 2023). Findings in this study differ from those carried out in Mbarara and Mbale city among female sex workers whereby 33% in Mbale and 67% in Mbarara had heard about PrEP however prevalence of use was only at 9.7% compared to 66.3% found in Gulu City (Muhindo et al., 2025). A study among men who have sex with men in Kigali, Rwanda revealed that 73% of participants where

aware of HIV PrEP and 96% of them expressed willingness to use PrEP (Munyaneza et al., 2024).

A study at Kiruddu National Referral Hospital among female sex workers showed that 34.6% of participants were active on HIV PrEP (Kawuma et al., 2025). A study among fisherfolk along Lake Victoria showed that 85.5% of participants had knowledge about HIV PrEP however only 14.5% of participants reported ever using PrEP (Ntabadde et al., 2024). In Rakai community, 62.4% of participants were aware of HIV PrEP as a prevention strategy however only 1.7% of Adolescents and young adults, 2.6% of participants meeting PrEP eligibility criteria had ever used it (Murphy et al., 2025).

Studies in different settings have shown varying statistics concerning the level of awareness among different high-risk populations. A study carried out in two districts of South Africa among young people, showed that 44.6% were PrEP aware while another study on community members in Chicago, PrEP awareness was only 28% (Jones et al., 2020; Shamu et al., 2021). A study in Kampala among adolescent girls and young women reported very low levels of awareness about PrEP being at 23.2% and 3.9% for oral and injectable PrEP respectively (Lunkuse et al., 2022).

2.3 Factors affecting level of awareness, use and acceptance of PrEP

Several studies have revealed a few factors influencing level of awareness, lifetime use and acceptance of PrEP for HIV among different high-risk groups. A study among adolescent boys and young men in Masese fishing community shows that perceiving oneself as being at high risk of HIV infection (aPR=1.11, 95%CI:1.03, 1.20) and availability of PrEP which is easily accessible (aPR=1.4; 95%CI:1.25, 1.57), confidence in PrEP safety (Adj.PR=1.56, 95%CI:1.55, 2.24) were positively associated with willingness to take PrEP while being unmarried (aPR=0.92; 95%CI:0.87, 0.98) and earning more than USD 27 a month (aPR=0.92; 95%CL:0.87, 0.97) were negatively associated with willingness to take PrEP (Agwang et al., 2023) while another study among a fisher-folk community in peri-urban Kampala, factors associated with willingness to use PrEP were perceiving oneself to be at high risk of HIV (aPR=1.99, 95%CI 1.31-3.02, p=0.001), having tested for HIV in the past 6 months

(aPR=1.13, 95%CI 1.03-1.24, p=0.007), and completion of tertiary education (aPR 1.97, 95%CI 1.39-2.81, p<0.001) (Ssuna et al., 2022)

A study done in Gulu among female sex workers showed that HIV PrEP use was associated with;- having a regular source of income beside sex work (aPR=3.7; 95%CI:2.11-6.35, p<0.001), being in a polygamous marriage (aPR=6.9, 95%CI:1.32-35.77, p=0.022), practicing sex work in both rural and urban areas (aPR=2.5, 95%CI 1.49-4.35, p<0.001), having symptoms of depression (aPR3.3, 95%CI:1.43-7.74, p=0.005) and use of post exposure prophylaxis in the past 12 months (aPR=0.31, 95%CI:0.17-0.59, p<0.001) (Bongomin et al., 2023). In Mbale and Mbarara, a study found that attainment of secondary education (aPR=2.50; 95% CI: 1.14-5.45; p=0.02) or tertiary education (aPR 3.12; 95% CI:1.09-8.98; p=0.03) were associated with HIV PrEP use among female sex workers (Muhindo et al., 2025).

A study at Kiruddu National Referral Hospital among female sex workers shows that awareness of risk associated with sex work, integration of PrEP with other HIV prevention services, presence of PrEP peer support and use of Drop in centers facilitated continuation of HIV PrEP while barriers included low community awareness about PrEP, high mobility of sex workers, substance abuse and the unfavorable daytime clinic schedules (Kawuma et al., 2025). In Kigali, Rwanda, a study among men who have sex with men showed that factors associated with PrEP awareness included residing in the capital, being in the age group 18-29 years, having a higher education levels, perceiving a benefit from PrEP and engaging in vaginal sex with a woman while using a condom in the last year (Munyaneza et al., 2024).

In a study among adolescent girls and young women in Kampala shows that factors associated with PrEP uptake are having more sexual partners in the past 3 months whereby 2-9 partners (aRR=2.36 95%CI: 1.20-4.63), more than 10 partners (aRR=4.70, 95%CI 2.41-9.17), oral PrEP preference (aRR=1.53, 95% CI 1.08-2.19) and being separated (aRR 1.55, 95% CI: 1.04-2.33)(Mayanja et al., 2022).

2.4 Summary of Literature review and gaps

This literature review highlights differing levels of prevalence of HIV PrEP use among different high-risk populations with values ranging from as low as 1.7% among

adolescents and young adults to as high as 66.3% among female sex workers. This also shows differing trends in the awareness levels for HIV PrEP with values ranging from as low as 3.9% among adolescent girls and young women to as high as 85.5% among fisherfolks along Lake Victoria. This shows that awareness and use vary greatly among different high-risk populations and geographical setting including female sex workers, men who have sex with men, fisherfolk and adolescent girls and young women. The literature also highlights that factors associated to PrEP uptake and awareness include perceived risk of HIV infection, education level, income and economic stability, marital status, access to HIV services, mobility and substance abuse among the different high-risk populations. Though there are several studies about HIV PrEP, there is very limited knowledge about armed personnel including soldiers.

CHAPTER THREE: METHODS

3.1 Study design

This was a cross-sectional study to determine PrEP use among soldiers at the 4 infantry Division, Gulu.

3.2 Study area

The study was carried out at the 4-infantry division headquarter barracks. The 4-infantry division headquarter barracks is located in Bardege-Layibi Division, Gulu city, Gulu District in the Acholi Sub-region. The Headquarter has got a number of activities within the barracks including Gulu Military hospital which is at the level of a health center 4 with an ART accredited clinic fully operational. The barracks is the home to a number of UPDF soldiers and their families. Number of soldiers in any barrack in Uganda is guarded

3.3 Study population

3.3.1 Target population

Uganda People's Defense Forces (UPDF) Soldiers.

3.3.2 Accessible population

Soldiers deployed at the 4-infantry division Headquarter Gulu

3.3.2 Sample population

Soldiers deployed at the 4-infantry division Headquarter Gulu who will meet the eligibility criteria

3.3.3 Inclusion criteria

- i. Soldier residing at 4 infantry division headquarter barracks.
- ii. Age 18 years and above.
- iii. Soldier who are HIV seronegative.

3.3.4 Exclusion criteria

- Soldiers on ART at the 4-infantry division headquarter barracks. A total of 24 participants were excluded due to this.
- Soldiers who declined to consent or withdraw their consent. A total of 7 participants were excluded due to withdrawal of consent.

3.4 Sample size estimation

Sample size will be calculated using the Kish and Leslie formula for calculating sample size, that is; -

$$n = \frac{z^2 \times p(1 - p)}{d^2}$$

where.

n is sample size,

z is z score for 95% confidence interval of 1.96,

p is assumed true population prevalence awareness of PrEP assumed to be 50%,

q=100-50% and

d is margin of error of 0.05

$$n = \frac{1.96^2 \times 0.5(1 - 0.5)}{0.05^2}$$

$$n = 384.16 = 385$$

Assuming a 10% non-response rate, the sample size will be adjusted to 385/0.9 giving 423.5 approximately 424 participants.

3.5 Sampling

Simple systematic random sampling method was used to select the participants. During the Monday Balaza of 4th August 2025. We reached the Balaza ground before arrival of any soldier, and using the previous attendance number of 1600 soldiers, we calculated (1600/424) getting 3.77 rounded off to 4 and decided to sample every 4th soldier to arrive at the Balaza ground. 1822 soldiers attended the Balaza, and we

selected 456 soldiers in total. After selecting the soldiers, we obtained their contact information after which we reached them in person, explained the purpose of the study, study criteria and asked them if they were HIV positive as per their last results. Those who reported to be HIV negative were included in the study and given a written consent form.

3.6 Study variables

3.6.1 Dependent Variable

The dependent variable is lifetime use of HIV PrEP assessed using a single question *“Have you ever used HIV PrEP?”*.

3.6.2 Independent variables

These were: -

- i. Demographic characteristics including age, sex, education status, marital status, and income.
- ii. Behavioral characteristics including number of sexual partners in past 3 months, duty station, knowledge of HIV status of the partner, alcohol use and smoking, perceived risk of acquiring HIV, having tested for HIV in the past three months.

3.7 Data collection

Data was collected using an online questionnaire on google forms. 2 research assistants and PI administered the questionnaire to the study participants. On the day of data collection, the PI and research assistants called the participants and briefed them on the study, the benefits and the risks in participating in the study. After the participants were given an informed consent form on which they signed to show that they have accepted to participate in the study. After this the participants were given the questionnaire to start answering the questions.

3.8 Data management

All data collected was automatically sent and stored on the PI's google drive only accessible to the PI. After data collection, the PI verified the data for completeness,

accuracy and any errors or missing data corrected. Data was then be extracted to Microsoft Excel for coding and further cleaning from where it was exported to STATA version 19.0 for analysis.

3.9 Data Analysis

Descriptive statistics was used to summarize data.

Categorical data was summarized as proportions, and continuous data summarized as mean and standard deviation for normally distributed data or median and interquartile range for data with outliers. Bivariable and multivariable regression analysis was used to assess for associations. The Internal consistency of 27 item scale was evaluated using Cronbach's alpha. Showing marginal internal consistency $\alpha=0.61$ with an average inter-item covariance of 0.03

3.9.1 Objective 1:

Summary statistics was used to describe prevalence of lifetime use of PrEP

3.9.2 Objective 2:

Bivariable followed by and multivariable logistic regression was done to assess factors influencing the awareness, lifetime use and acceptance of PrEP.

All independent variables with a p value less than 0.2 were entered into a multivariable model to adjust for confounding. A p value <0.05 was considered statistically significant.

3.10 Quality control

The PI trained 2 research assistants on data collection and ensured both of them completed an online course on Good clinical practice. The questionnaire was pre-tested on 20 participants to ensure it answers the study questions. The online data collection tool was programmed to only accept fully filled forms only and a provision was put on questions whereby in case, the participant does not want to answer, they can choose that provision. Questions that were not relevant were eliminated from the list and re-adjustment done to capture the necessary data. The research supervisor guided on the questionnaire to ensure it is standardized to meet study

objectives. There was periodic data checks during the data extraction process to ensure no errors were done and data is complete.

3.11 Ethical Considerations

Ethical approval was obtained from Uganda Christian University Research Ethics Committee and administrative clearance from the 4 Infantry Division Administrative officer. All data collected were kept confidential and all participants were identified using unique numbers. All ethical considerations in the *Declaration of Helsinki* were adhered too.

3.12 Dissemination of Results

Results of the study will be disseminated to the Uganda Christian University and UPDF libraries, peer-reviewed medical journal and will be presented at local and international conferences.

CHAPTER 4: RESULTS

4.1 Study enrolment

During the Monday Balaza of 4th August 2025 at the Division headquarter, a total of 1,822 soldiers attended. Of the 1,822 soldiers, 456 were initially sampled using systematic random sampling (every 4th soldier) at the baraza ground. Twenty-four (24) participants were excluded due to being HIV positive, and seven (7) withdrew. Consequently, a total of 425 participants completed the questionnaire and were included in the analysis of lifetime prevalence of, and factors associated with lifetime use of PrEP among soldiers at the 4 infantry Division, Gulu.

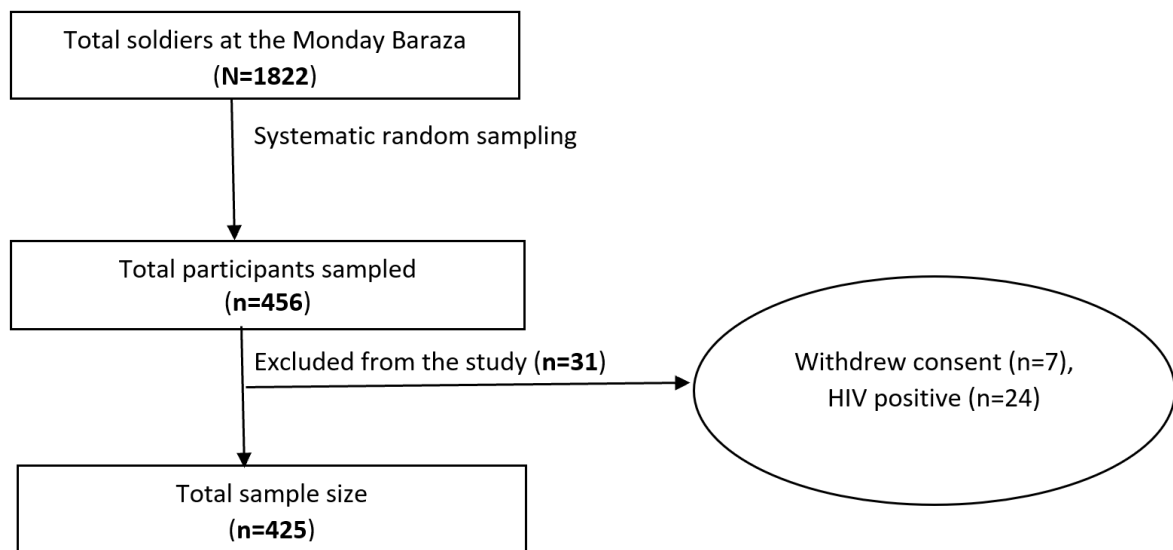


Figure 2: A flow diagram representing the data collection process

4.2 Sociodemographic characteristics of the participants

A total of 425 participants were enrolled. The majority were male (88.5%, n=376), and married (73.9% n=314). The median age was 32 years (interquartile range [IQR]:16 years; range 18-61 years). The median duration of service was 6 years (IQR:15 years; range 1-48 years). The median monthly income was 650,000 Uganda shillings (approximately US \$184.89). Further demographic details are presented in Table 1.

Table 1: Sociodemographic characteristics of the participants

Characteristics (n=425)	Frequency (%)
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Age in completed years (median, IQR, range)	32 (IQR=16; 18-61)
Duration of service (median, IQR, range)	6 (IQR=15; 1-48)
Monthly income (median, IQR, range)	650000UGX (IQR=500,000 450,000-3,000,000)
Age categories	
Youth	40 (9.41)
Young adult	298 (70.12)
Middle age	85 (20.0)
Older person	2 (0.47)
Gender	
Female	49 (11.53)
Male	376 (88.47)
Marital status	
Single	107 (25.18)
Married	314 (73.88)
Divorced/ separated	4 (0.94)
Rank in the army	
Officer	6 (1.41)
Other ranks	419 (98.59)
Level of education	
No formal education	8 (1.88)
Primary level	60 (14.12)
Secondary level	267 (62.82)
Tertiary or university	90 (21.18)
Do you have any other profession?	
No	321 (75.53)
Yes	104 (24.47)
If yes, what profession is that?	
Health worker	40 (38.46)
Non-health worker	64 (61.54)
Alcohol Intake	
No	219 (51.53)
Yes	206 (48.47)
Smoking status	
No	341 (80.24)
Yes	84 (19.76)

4.3 Awareness, knowledge and uptake of PrEP among soldiers at the 4 infantry Division

Overall, more than half of the participants (59.8%, n=254) reported being aware of PrEP. However, only 20.9% (n=53) of those aware could correctly identify the

proper dosing. Lifetime Prep use was low, reported by 5.2% (n=22) of participants. Only one participant (0.2%) was currently using PrEP at the time of the study. Two thirds (66.1%, n=281) of the participants were aware of the availability of ARVs and PrEP at the 4th Division Health Centre.

Table 2: Awareness, knowledge and Uptake of PrEP

Characteristic (n=425)	Frequency (%)
Have you ever heard about PrEP?	
No	171 (40.2)
Yes	254 (59.8)
If yes, where did you hear about it from?	
Community outreach	30 (11.8)
Health facility	174 (68.5)
Media	6 (2.4)
Peer soldier	44 (17.3)
How often must PrEP be taken? (n=254)	
Correct answer	53 (20.9)
Incorrect answer	201 (79.1)
Have you ever used PrEP for HIV prevention	
No	403 (94.8)
Yes	22 (5.2)
If yes, why did you use PrEP before in your life?	
I prepare to use PrEP as my choice to prevent HIV	1 (4.6)
Was not sure of HIV status of my sexual partner	20 (90.9)
Was not sure of HIV status of my sexual partner and was hoping to engage in some sexual activity	1(4.6)
Are you currently taking PrEP?	
No	424 (99.8)
Yes	1 (0.2)
If no, are you willing to start using PrEP if indicated?	
No	93 (21.9)
Yes	332 (78.1)
If currently on PrEP, which PrEP?	
Daily oral pills	1 (100)
How long have you been on it in months?	
3 months	1 (100)
Do you plan to continue taking PrEP?	
Yes	1 (100)
Would you be ashamed if people knew that you are taking PrEP?	
No	340 (80.00)
Yes	85 (20.00)

Are you aware of availability of ARVs and PrEP at the 4 division health facility?	
No	144 (33.9)
Yes	281 (66.1)
Do you feel comfortable accessing PrEP services at the military health facility	
No	22 (5.2)
Yes	403 (94.2)
Have you received support from fellow soldiers r command regarding HIV prevention strategies like PrEP?	
No	10 (2.3)
Yes	415 (97.7)
Would you recommend PrEP to fellow soldiers?	
Maybe	9 (2.2)
No	7 (1.6)
Yes	409 (96.2)
Do you know about the oral daily PrEP?	
No	232 (54.6)
Yes	193 (45.4)
Do you know about the Injectable PrEP?	
No	373 (87.8)
Yes	52 (12.2)
Do you know about the vaginal ring PrEP?	
No	416 (97.9)
Yes	9 (2.1)
If you're to choose a PrEP method, which would you prefer?	
Daily oral pills	
Injectable once or twice monthly	130 (30.6)
Injectable twice yearly	28 (6.6)
Vaginal ring	231 (54.4)
None	1 (0.2)
	35 (8.2)

4.4 HIV risk factors and Prevention characteristics among soldiers at the 4-infantry division, Gulu

More than a fifth of participants (22.1%, n=94) reported a history of Post-Exposure Prophylaxis (PEP) use. Of those who used PEP(n=94), 91.5% (n=86) initiated it correctly and 85.1% (n=80) completed full 28-day course. High risk behaviors were common: 51.1% (n=217) reported having more than one sexual partner, and 25.2%, (n= 107) reported consuming alcohol before or during sex (this is based on 9.2% + 16.00% =25.2% from table 3).

Table 3: HIV risk factors and prevention characteristics among soldiers at 4 infantry division, Gulu

Characteristic (n=425)	Frequency (%)
Have you ever used PEP for HIV before	
No	331 (77.9)
Yes	94 (22.1)
How soon did you start taking the PEP	
Correct use	86 (91.5)
Incorrect use	8 (8.5)
Did you complete the full 28 days	
No	14 (14.9)
Yes	80 (85.1)
Are you circumcised (men only)	
No	28 (7.4)
Yes	348 (92.6)
If yes, what was the reason for circumcision	
Religious/ cultural	95 (27.3)
Medical	253 (72.7)
Have you ever had sex without a condom in the past 6 months	
No	139 (32.7)
Yes	286 (67.3)
Do you currently have more than one sexual partner?	
No	208 (48.9)
Yes	217 (51.1)
Do you know the HIV status of your sexual partner(s)?	
No	35 (8.2)
Yes	390 (91.8)
Have you ever engaged in transaction sex?	
No	390 (91.8)
Yes	35 (8.2)
Do you consume alcohol before or during sex?	
Sometimes	39 (9.2)
Always	68 (16.00)
Never	318 (74.8)
Have you tested for HIV in the past 6 months?	
No	63 (14.8)
Yes	362 (85.2)

4.4 Prevalence of lifetime use of PrEP for HIV

$$\text{Prevalence} = \frac{\text{Number of soldiers who have ever used PrEP}}{\text{Total number of soldiers}}$$

$$\text{Prevalence} = \frac{22}{425}$$

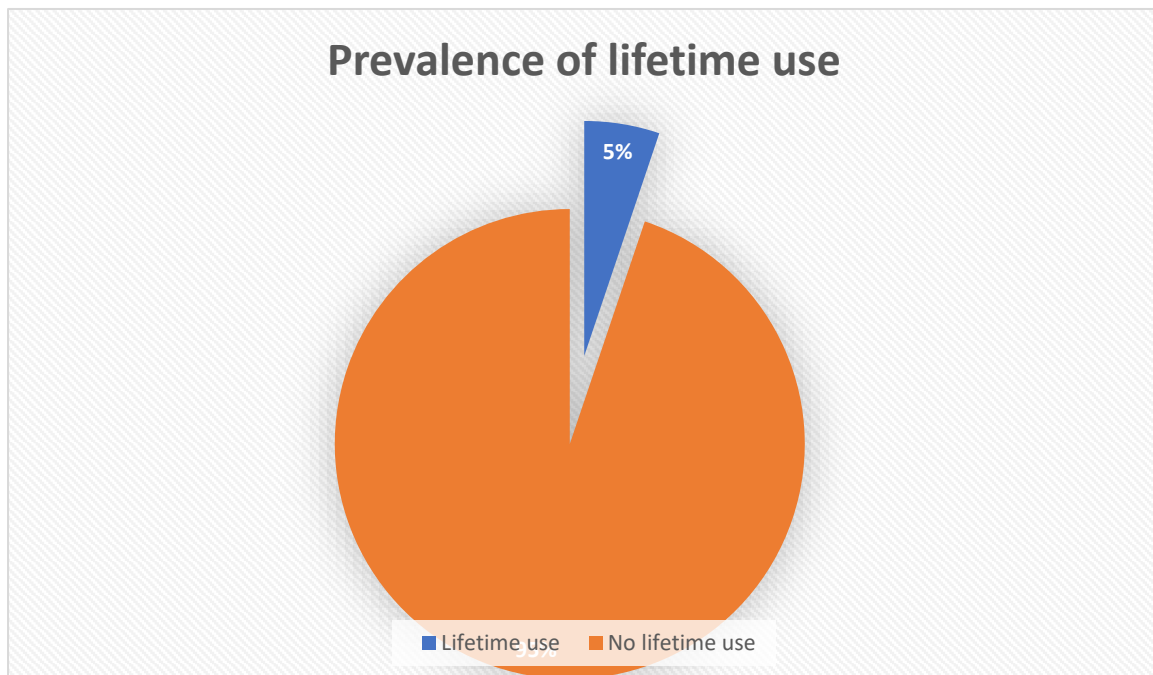


Figure 3: prevalence of lifetime use of PrEP

The lifetime prevalence of PrEP use among soldiers was 5.2% (n=22)

Table 4: Shows the association between sociodemographic and behavioral factors and lifetime PrEP use.

Factor	Lifetime use (n, %)	No lifetime use (n, %)	P-value
Prevalence	22 (5.2)	403 (94.8)	
Sex			
Female	2 (4.1)	47 (95.9)	
Male	20 (5.3)	356 (94.7)	0.630
Age category			
Youth	1 (2.5)	39 (97.5)	
Young adult	18 (6.0)	208 (94.0)	0.388
Middle aged	3 (3.5)	82 (96.5)	0.768
Older persons	0 (0.00)	2 (100.00)	

Marital status			
Divorced	0 (0.00)	4 (100.00)	
Married	15 (4.8)	299 (95.2)	0.993
Single	7 (6.5)	100 (93.5)	0.993
Rank in army			
Officer	0 (0.00)	6 (100.00)	
Other rank	22 (5.3)	397 (94.5)	
Level of education			
No formal education	0 (0.00)	8 (100.00)	
Primary level	1 (1.7)	59 (98.3)	0.990
Secondary level	13 (4.9)	254 (95.1)	0.989
Tertiary level	8 (8.9)	82 (91.1)	0.988
Do you have any other profession			
No	11 (3.4)	310 (96.6)	
Yes	11 (10.6)	93 (89.4)	0.007
If yes, what profession			
Health	7 (17.5)	33 (82.5)	0.080
Non-health	4 (6.2)	60 (93.8)	
Do you drink alcohol			
No	9 (4.1)	210 (95.9)	
Yes	13 (6.3)	193 (93.7)	0.249
Do you smoke			
No	17(5.0)	324 (95.0)	

Yes	5 (6.0)	79 (94.0)	0.655
Have you ever used PEP after potential exposure			
No	5 (1.5)	326 (98.5)	
Yes	17 (18.1)	77 (81.9)	0.000
Are you circumcised			
No	0 (0.0)	28 (100.00)	
Yes	20 (5.7)	328 (94.3)	
Have you had sex without a condom in the past 6 months			
No	5 (3.6)	134 (96.4)	
Yes	17 (5.9)	269 (94.8)	0.299
Do you currently have more than one sexual partner?			
No	10 (4.8)	198 (95.2)	
Yes	12 (5.5)	205 (94.5)	0.735
Do you know the HIV status of your sexual partner(s)			
No	1 (92.9)	34 (97.1)	
Yes	21 (5.4)	369 (94.6)	0.521
Have you ever engaged in transactional sex			
No	18 (4.6)	372 (95.4)	
Yes	4 (11.4)	31 (88.6)	0.089
Do you consume alcohol before or during sex?			
Always	6 (8.8)	62 (91.2)	0.036
Sometimes	6 (15.3)	33 (84.6)	0.002
Never	10 (3.1)	308 (96.9)	

Have you tested for HIV in the past 6 months			
No	2 (3.2)	61 (96.8)	
Yes	20 (5.5)	342 (94.5)	0.451

4.5 Level of awareness of PrEP and willingness to use PrEP

Overall PrEP awareness was 59.8% (n=254). Among the 425 participants. Awareness of specific HIV PrEP modalities was substantially lower: 45.4% were aware of oral daily pill PrEP, 12.2% were aware of an injectable form and only 2.1% were aware of a vaginal ring. Crucially, despite the low awareness of specific methods, a strong majority of participants (78.1%, n=332) reported a willingness to start PrEP if indicated.

4.6 Factors associated with lifetime use of PrEP among soldiers at the 4 infantry division headquarters, Gulu.

Bivariable analysis revealed several factors significantly association with lifetime PrEP use: being “other rank” in the army ($p<0.001$), holding another profession besides being a soldier ($p=0.007$), having history of PEP use ($p<0.001$), sometimes consuming alcohol before or during sex ($p=0.002$), and always consuming before or during sex ($p=0.041$). IN the final multivariable model, adjusted for age, four factors remained significantly associated with lifetime PrEP use: having another profession besides being a soldier (Adjusted Odds Ratio [AOR]: 3.3; 95% CI:1.38-7.88, $p=0.007$), having history of PEP use (AOR: 14.3 95% CI: 5.12-40.06, $p<0.000$), sometimes consuming alcohol before or during sex (AOR: 5.6 95% CI: 1.90-16.34, $p=0.002$), always consuming alcohol before or during sex (AOR 3.09 95% CI: 1.08-8.89 $p=0.036$). The odds of lifetime use of PrEP among participants with other professions were 3.3 times more compared to those who did not have any other profession, participants who had ever taken PEP before had 14.3334 times higher odds of lifetime use of PrEP compared to those who had never used PEP before, participants who sometimes take alcohol before or during sex had odds of 5.6 times higher of lifetime use of PrEP compared to those that never take alcohol before or during sex and participants who always take alcohol before or during sex had odds of 3.1 times higher of lifetime use of PrEP compared to those who never take alcohol before or during sex, table

Table 5: Bivariable and multivariable analysis of factors associated with Lifetime use of PrEP

Variable	Crude OR	95% CI	p-value	Adjusted OR	95%CI	p-value
Age category						
Youth	1			1		
Young adult	2.51	0.33-19.30	0.378	2.61	0.29-23.10	0.388
Middle age	1.43	0.14-14.16	0.761	1.59	0.07-36.25	0.768
Older person	1 (omitted)			1 (omitted)		
Sex						
Female	1			1		
Male	1.32	0.29-5.83	0.714	1.4539	0.3172-6.6634	0.630
Marital status						
Divorced/ separated	1			1		
Single	260115.3	0	0.990	695376.5	0	0.993
Married	186484.3	0	0.990	515078.9	0	0.993
Level of Education						
No formal education	1			1		
Primary	116996.4	0	0.990	117375.2	0	0.990
Secondary	353255.7	0	0.989	383227.4	0	0.989
Tertiary or University	673438.3	0	0.988	728901.1	0	0.988
Rank in army						
Officer	1			1		
Other rank	0.06	0.036-0.09	0.000	1 (omitted)		
Another profession						
No	1			1		
Yes	3.3	1.40-7.93	0.007	3.3	1.38-7.88	0.007
What profession						
Non-health worker	1			1		
Health worker	3.2	0.87-11.67	0.081	3.2	0.87-12.05	0.080
Alcohol intake						
No	1			1		

Yes	1.6	0.66-3.76	0.310	1.7	0.69-4.1594	0.249
Smoking						
No	1			1		
Yes	1.2	0.43-3.36	0.720	1.3	0.45-3.62	0.655
Ashamed if people knew						
No	1					
Yes	0.39	0.09-1.68	0.205	0.4	0.09-1.67	0.200
Knowing Availability of PrEP at Division HC						
No	1			1		
Yes	2.4	0.80-7.22	0.120	2.5	0.81-7.44	0.111
Comfortable picking PrEP at division HC						
No	1			1		
Yes	1.2	0.15-9.00	0.891	1.1	0.14-8.82	0.909
Ever used PEP before						
No	1			1		
Yes	14.3948	5.15-40.22	0.000	14.3	5.13-40.07	<0.001
Are you Circumcised						
No	1			1		
Yes	1 (omitted)			1 (omitted)		
Had sex without a condom in last 6 month						
No	1			1		
Yes	1.7	0.6117-4.6896	0.311	1.7174	0.62-4.76	0.299
Having more than one sex partner						
No	1			1		
Yes	1.2	0.4897-2.7434	0.737	1.1606	0.49-2.75	0.735
Knowing HIV status of sex partner						
No	1			1		
Yes	1.9	0.2525-14.8307	0.525	1.9474	0.25-14.93	0.521
Engaging in transaction sex						

No	1			1		
Yes	2.7	0.85-8.37	0.093	2.7	0.85-8.49	0.089
Taking alcohol during or before sex						
Never	1			1		
Sometimes	5.6	1.91-16.39	0.002	5.6	1.90-16.34	0.002
Always	2.9	1.04-8.50	0.041	3.1	1.08-8.89	0.036
Tested for HIV in past 6 months						
No	1			1		
Yes	1.8	0.41-7.83	0.443	1.8	0.40-7.75	0.451

CHAPTER FIVE: DISCUSSION

5.1 Introduction

This study determined the lifetime prevalence, awareness level and associated factors for HIV PrEP use among soldiers at the 4 Infantry Division Headquarter, Gulu. The findings revealed a low lifetime PrEP use prevalence of 5.2% (n=22). A total of 598(n=254) were aware of PrEP overall. However, awareness of specific modalities was lower: 45.4% aware of oral PrEP, 12.2% aware of injectable PrEP and only 2.1% aware of vaginal ring PrEP. The multivariable analysis showed four factors were significantly associated with lifetime PrEP use: having another profession (AOR:3.3), history of PEP use (AOR:14.4) sometimes consuming alcohol before or during sex (AOR:5.6), always consuming alcohol before or during sex (AOR:3.1)

5.2 Prevalence of lifetime use of PrEP among soldiers at the 4 Infantry Division Headquarter, Gulu.

The prevalence of lifetime use of PrEP of 5.2% is comparable to findings among high-risk populations, specifically female sex workers in Mbarara and Mbale city where prevalence was reported at 9.7% (Muhindo et al., 2025). This similarity suggests that, like female sex workers, the soldiers perceive themselves as being at elevated risk. Conversely, our finding is significantly lower than reported among female sex workers in Gulu city (66.3%) and Kiruddu National referral hospital (34.6%) (Bongomin et al., 2023; Kawuma et al., 2025). This disparity reflects the intentional targeting prioritization of female sex workers as a key population for PrEP programming, a focus which has historically been less intensive within the military setting. The finding is also lower than a study done among fisherfolk along Lake Victoria where there was a lifetime prevalence of 14.5% (Ntabadde et al., 2024). This could be due to fisherfolk having a permanent residence along the shores of Lake Victoria compared to soldiers who are always mobile, potentially resulting in disrupted access to PrEP services and resupply. Surprisingly, the prevalence of Lifetime PrEP use in our study, is higher than that previously done in Rakai among adolescent girls and young women whereby only

1.7% had ever used it (Murphy et al., 2025). This observed difference could be that the adolescents and young adults were not as sexually active as the soldiers hence the lower prevalence compared to our study. These findings suggest a service and priority gap for PrEP access and uptake among armed forces compared to other high-risk groups.

5.3 Level of awareness of PrEP and willingness to use PrEP

The overall PrEP awareness of 59.8% is comparable to the 62.4% reported among adolescents and young adults in the Rakai community (Murphy et al., 2025). This similarity may stem from the common exposure to targeted HIV prevention efforts such as the DREAMS program and the Department of Defense HIV/AIDS program, which disseminate information to both demographic groups. However, our finding is lower than those found in a study among men who have sex with men in Kigali, Rwanda where 73% of participants were aware of HIV PrEP (Munyaneza et al., 2024). This observed difference could be due to the differences in health policies between the two countries Uganda and Rwanda, whereby there might be more aggressive HIV prevention outreaches targeting men who have sex with men in Rwanda, increasing on the level of HIV PrEP awareness. Also, a study among fisherfolk along Lake Victoria shores, where 85.5% of participants were aware about HIV PrEP (Ntabadde et al., 2024). This higher level of knowledge among the fisherfolk could be due to the fact that fisherfolk have a more direct and persistent engagement with targeted, community-based HIV prevention programs compared to the UPDF soldiers who are always mobile limiting their access to such community outreach programs.

The willingness to use HIV PrEP (78.1%) is substantially lower than the 96% reported among men who have sex with men (MSM) in Kigali, Rwanda (Munyaneza et al., 2024). This difference may be explained by the soldiers' lower overall awareness compared to the Kigali Men who have sex with Men group, potentially leading to lower PrEP literacy. Additionally, the soldiers may possess a lower perceived personal risk for HIV acquisition, which is a known barrier to the acceptance of preventive measures.

5.4 Factors affecting prevalence of lifetime use of PrEP

Some factors were found to increase the odd of lifetime use of HIV PrEP among the participants. Having another profession besides being a soldier (AOR:3.3; $p=0.007$) was positively associated with lifetime PrEP use. This association may be explained by the socioeconomic and behavioral dynamics of this subgroup. Individuals with secondary professions may possess higher education, greater disposable income, and potentially increased social mixing or more permissive risk behaviors, making them more inclined to seek out or be offered PrEP. The odd of lifetime use of HIV PrEP among participants who had another profession besides being a soldier were 3.3 higher than those who had no other profession. This result aligns with findings from a fisher-folk community in peri-urban Kampala, where completion of tertiary education was associated with a higher PrEP uptake (adjusted prevalence ratio:1.97) (Ssuna et al., 2022). This supports the concept that socio-demographic factors linked to education and alternate employment may drive health seeking behavior including PrEP use. A history of PrEP use was the strongest predictor of lifetime PrEP uptake (AOR:14.3; $p<0.001$). this strong association suggests that individuals who have previously accessed PEP demonstrate greater health-seeking behavior following risk exposure and have already established trust in HIV prevention methods delivered through the health system, making the transition to PrEP easier. This finding is similar to that found in a study among sex workers in Gulu City where adjusted prevalence ratios were 0.31 with a $p<0.001$ (Bongomin et al., 2023). Alcohol consumption before or during sex was a significant predictor of lifetime PrEP use (Sometimes: AOR:5.6; Always: AOR;3.1). this finding suggests a compensatory health behaviour, where individuals who engage in activities that increase their sexual risk (alcohol use leading to disinhibition) are also more likely to perceive this risk and adopt PrEP as a mitigation strategy.

5.5 Strengths of the study

The selection of the 4th Infantry Division Headquarter provided a large, heterogenous sample of soldiers, enhancing the external validity and representativeness of the

findings across the Uganda People's Defense Forces. The study was strengthened by rigorous preparatory measures, including the pretesting of the questionnaire to ensure clarity and improve response rate. Furthermore, the two research assistants received training, including an online Good Clinical Practice course, ensuring data collection adhered to the highest ethical standards. To add on, the sample size for the study made it representative of the study population enhancing the generalizability of the research findings.

5.6 Limitations of the study

Absence of HIV status screening: soldiers were never screened for HIV status before administering the questionnaire. This is a significant methodological limitation, as lifetime PrEP use is medially indicated only for individuals who are HIV-negative. Consequently, the study's overall lifetime prevalence rate (5.2%) maybe an underestimate of PrEP use among the truly eligible (HIV-negative) high-risk group. Additionally, while 24 participants were excluded for being HIV-positive based on medical records, the lack of current screening means the true number of eligible participants could not be precisely determined.

Geographic scope: sampling only the 4th infantry division Headquarter in Gulu city limits generalizability of the findings to the wider UPDF infantry, particularly soldiers in remote field units or operational areas (e.g., DR Congo, Somalia). Further research could consider multiple study areas comprising of more-than one infantry division and also soldiers in operational areas like DR Congo, Somalia among others

Study Design: The cross-sectional design prevents the establishment of causal relationships (e.g., whether risk perception led to PrEP use, or vice versa). Future research, such as cohort studies, would be beneficial for establishing temporal and causal linkages between risk factors and PrEP uptake.

Social desirability bias: since the topic involves sensitive behavior and drug use, participants may have under-reported high-risk behaviors or over-reported awareness, potentially leading to social desirability bias.

5.7 Implications of the study

This study has a number of implications to different stakeholders including soldiers, Health workers, UPDF Administration and policy.

5.7.1 Implications for soldier behavior and awareness

The relatively low lifetime prevalence of PrEP, and low level of awareness of HIV PrEP among soldiers shows a need for coming up with interventions aimed at increasing the level of knowledge and benefits of HIV PrEP in preventing HIV spread. Health education should be strengthened whenever soldiers are found to talk about HIV prevention strategies including use of HIV PrEP.

5.7.2 Implications for Military Health service providers

Health workers should improve on their communication skills and provide knowledge on life saving options to the soldiers whenever there is an opportunity. They should start to treat a patient as a whole instead of focusing only on the disease at hand.

5.7.3 Implications to the UPDF leadership and Policy

The UPDF Administration and command should put in place policies which ensure that the soldiers get enough information on the health promoting life styles and preventive measures like use of HIV PrEP. This can be achieved through regular campaigns as it is in the civilian populations.

Health care policies should also ensure and prioritize continuous availability and accessibility of HIV PrEP services to all soldiers despite the location they are in.

5.7.4 Broader Public Health Policy Implications

Public awareness on the lifesaving options like use of HIV PrEP should be prioritized in all population groups.

Development of public health strategies for example health education and community sensitization about the benefits of HIV PrEP should be put in place.

5.7.5 Elevation plan for methodological limitation (HIV screening)

To address the methodological gap of not screening participants for HIV status prior to questionnaire administration, the following actions are recommended for future studies and policy

- Future studies should integrate the research process with the military health services ensuring all sampled soldiers are offered immediate, confidential HIV testing and pre-PrEP counselling immediately prior to enrollment.
- A formal referral path way should be established where participants who screen HIV negative but report high-risk behaviors must be immediately referred for PrEP initiation and enrollment, ensuring research actively benefits the participants by linking them to care.
- Informed consent process should state that participation includes the opportunity for confidential, on-site HIV testing and access to HIV prevention services, thereby providing tangible health benefit to the soldiers for their participation.

5.8 Areas of future research

Future research should employ a multi- center design covering more than one division to validate the findings on lifetime use, awareness, and associated factors across a broader, more representative sample of the UPDF.

Given the challenges of mobility and the expressed preference for injectable PrEP among soldiers, research focusing on the feasibility and acceptability of long-acting injectable PrEP in operational military environments e.g., DR Congo is recommended to inform future programming.

Furthermore, research focusing on the Feasibility of using Daily Oral PrEP among soldiers in an operational area like DR Congo should be considered. This will help in programming as a number of soldiers in our study mentioned they would be more comfortable using injectable PrEP.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The lifetime prevalence of PrEP use among soldiers at the 4th Infantry Division Headquarter is low at 5.2%. This suggests a significant gap in the uptake of PrEP compared to other high-risk groups in Uganda, highlighting that the armed forces may be an underserved population in national HIV prevention efforts.

Overall awareness of PrEP (59.8%) is moderate. However, knowledge of specific, newer PrEP modalities (e.g., injectable and vaginal ring) is substantially low. This lack of knowledge may contribute to the low uptake, despite a high reported willingness to use PrEP (78.1%) if indicated.

Four factors were strongly and positively associated with lifetime PrEP use: 1. Having another profession besides being a soldier. 2. A prior history of using post-exposure prophylaxis, 3. Sometimes consuming alcohol before or during sex. 4. Always consuming alcohol before or during sex. The strong association with PEP and alcohol use suggests that PrEP is primarily being sought by soldiers who perceive themselves to be at acute or recurring risk and are actively seeking preventative measures.

The lifetime prevalence of use among soldiers at the 4-infantry division Headquarter is low. Having a profession besides being a soldier, taking of alcohol sometimes or always before sex, and prior history of using HIV PEP are strongly associated with lifetime use of HIV PrEP among soldiers at the 4-infantry division Headquarter. Priority should be given to put in place measures to increase on the level of awareness of HIV PrEP among soldiers.

6.2 Recommendations

Based on the study findings and conclusions, the following recommendations are proposed, targeted at improving HIV PrEP access, awareness, and uptake with the Uganda People's Defense Force and the broader public health sector

1. Health workers serving the armed personnel should take time to conduct health education to these soldiers on life saving practices including use of HIV-PrEP

2. Commanders in the army should provide time during their meeting with soldiers for a health session where informed personnel will educate the soldiers on ways to protect their lives from diseases including use of HIV PrEP.
3. Public awareness about HIV preventive measures should be strategized emphasizing the need to achieve an HIV free population.

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APPENDIX 1: INFORMED CONSENT FORM

Title of Study: Uptake of Pre-Exposure Prophylaxis against HIV among soldiers at the 4 Infantry Division, Gulu Uganda, A Cross-Sectional Study.

No.	Name of Investigator	Designation	Address/Telephone/Email	Institution of Affiliation
1.	Dr. Kakumba Bruno	Principal Investigator	Gulu UPDF Barracks, 0788147100, brunokakumba@gmail.com	Uganda Christian University.
2.	Dr. Bongomin Felix	Co-investigator / Academic supervisor	Gulu University. 0784523395, bongomin@umich.edu	Gulu University

1. Introduction and rationale of the Study

Globally HIV burden is at 39.9 million people of which 65% are in Africa according to WHO. In Uganda Prevalence of HIV is at 5% however there is a higher prevalence among the armed forces ranging from 15-37% compared to the civilian Population according to URC.

Pre-Exposure Prophylaxis reduces the chances of acquiring HIV. Oral PrEP was implemented in Uganda in July 2017 by Ministry of Health. There are numerous studies conducted among other high risk populations including fishermen, sexual workers, adolescents and youth. However, there is little study done among the armed forces. This study focuses on understanding the uptake of PrEP, awareness, level of lifetime uses and factors influencing uptake of PrEP among soldiers.

2. Description of the Research

This is a cross-sectional study of Uptake of PrEP among soldiers in 4 Infantry Division Head quarter, Gulu Uganda. This study focuses on soldiers who are HIV negative residing at the 4 Infantry Division Head quarter Barracks.

3. Participation

Participants are soldiers who reside at the 4 infantry Division Headquarter Barracks who are not on HIV/AIDS medication.

4. Potential Risks and Discomforts

There are no noticeable risks in participating in this study as you will only be required to answer some questions.

5. Potential Benefits

Results from this study will provide information on the level of uptake of PrEP and factors that influence or limit the uptake Of PrEP among soldiers. This information will guide implementation of strategies to increase on the uptake of PrEP and thus reduce on the incidence of HIV/AIDS among armed personnel.

Participants will be re-imbursed with Mobile data worth Five thousand Ugandan Shillings only upon completion of submission of the questionnaire.

6. Confidentiality

The information you give us, will be confidential and only used for purposes of this study. In the process of report writing, your name will never be used and so everything you tell us will remain anonymous. We shall ask questions about your general knowledge, socioeconomic status, everyday life behavior, risky behaviors and previous medical history about testing for HIV in the past three months.. If you do not want to respond to a particular question, you can simply say so, and we will not insist. Every participant will be asked to sign a written study informed consent form before participating in the study as this ensures voluntarism and acceptability to participate in the study.

7. Procedure

In this study you will be required to answer an online questionnaire which will require about 15 to 30 minutes of your time.

8. Voluntary Participation

Your decision to participate in this study is completely voluntary. If you decide to not participate in this study, it will not affect your work in any way.

9. Withdrawal from the Study and/or Withdrawal of Authorization

As a participant in this study, you can withdraw at any point if you choose not to continue. Participants can even choose particular questions/engagements in the process not the entire time.

10. Reimbursements

Reimbursement which is equivalent to UgX 5,000/= for you. This is to compensate for the mobile data used during answering the questionnaire.

11. Whom to contact in case of ethical related concerns.

a) Prior Ethical approvals and permissions.

Permission for this study was obtained from the Division Commander 4 Infantry Division.

b) Local authorities and approvals.

This study was Approved by Uganda Christian University Research Ethics Committee (UCU-REC) and cleared by Uganda national Council for Science and Technology (UNCST), In case of any Ethical or your rights related concerns or inquiries, please contact UCUREC Chairperson; Prof. Peter Waiswa, 0772405357, pwaiswa@musph.ac.ug or UCUREC Manager, Mr. Osborn Ahimbisibwe, 0775737627 or oahimbisibwe@ucu.ac.ug.
UNCST: Tel; +256 414 705500, info@uncst.go.ug

STATEMENT OF CONSENT

Do you accept to be recorded?

Yes

☐

No

☐

I voluntarily agree to participate in this research program; to tick appropriately

Yes

☐

No.

☐

I understand that I will be given a copy of this signed Consent Form.

Name of Participant:

Signature:

Date:

Name of Researcher/designee:

Signature:

Date:

NOTE: Depending on the nature of participants, witnesses or guardians (for minors & other vulnerable groups) will be required.

APPENDIX 2: DATA COLLECTION TOOL

Uptake of Pre-Exposure Prophylaxis against HIV among soldiers at the 4 Infantry Division, Gulu Uganda, An exploratory Study.

Army No: _____

Section A: Socio-Demographic Characteristics

Age (in completed years): _____

Sex: ☐ Male ☐ Female

Marital Status:

☐ Single ☐ Married ☐ Divorced/Separated ☐ Widowed

Rank in the Army:

☐ Officer ☐ Other ranks

Level of Education

☐ No formal education ☐ Primary ☐ Secondary ☐ Tertiary/University

Duration of service (in years): _____

Monthly income (UGX): _____

Do you have any other Profession besides being a soldier?

☐ Yes ☐ No

If yes, what profession is that?

Health worker

Non-health worker

Do you drink alcohol?

☐ Yes ☐ No

Do you smoke?

☐ Yes ☐ No

Section B: Awareness of PrEP

Have you ever heard of Pre-Exposure Prophylaxis (PrEP) for HIV prevention?

☐ Yes ☐ No

If yes, from where did you hear about PrEP?

☐ Health facility ☐ Peer soldier ☐ Media (radio/TV) ☐ Community outreach ☐ Other:

How often must PrEP be taken to be effective?

☐ Routinely ☐ Just before sex ☐ Just after sex ☐ Not sure

Section C: Uptake of PrEP

Have you ever used PrEP for HIV prevention?

☐ Yes ☐ No

If used PrEP, why Did you use PrEP before in your life? (tick all that apply)

☐ Was not sure of the HIV status of my sexual partner?

☐ I was hoping to engage in some sexual activity.?

☐ My colleagues told me to.

☐ I prefer to use PrEP as my choice to Prevent HIV?

Are you currently taking PrEP?

☐ Yes ☐ No

If NO, why not?

☐ Don't know where to get it ☐ Afraid of side effects ☐ Don't feel at risk ☐ Not allowed by superiors ☐ Other: _____

If NO, are you willing to commence PrEP if indicated

☐ Yes ☐ No

If YES,

Which PrEP _____

how long have you been on it? _____ months

Do you plan to continue taking PrEP?

☐ Yes ☐ No ☐ Not sure

Would feel ashamed if people knew I was taking PrEP.

☐ Yes ☐ No

Section D: Accessibility and Support Systems

Are you aware of availability of PrEP at 4 infantry health facility?

☐ Yes ☐ No ☐ Not sure

Do you feel comfortable accessing PrEP services at military health facilities?

☐ Yes ☐ No

Have you received support from fellow soldiers or command regarding HIV prevention strategies like PrEP?

☐ Yes ☐ No

Would you recommend PrEP to fellow soldiers?

☐ Yes ☐ No ☐ Not sure

Section E: Choices of PrEP, PEP, and Male Circumcision

Which type of PrEP have you heard about?

☐ Daily oral pill

☐ Injectable PrEP-once or twice monthly

☐ Injectable PrEP- twice yearly

☐ Vaginal ring

☐ None

If you were to choose a PrEP method, which would you prefer? (choose ONLY ONE)

☐ Daily oral pill ☐ Injectable PrEP-once or twice monthly ☐ Injectable PrEP- twice yearly

☐ Vaginal ring ☐ None

Have you ever used Post-Exposure Prophylaxis (PEP) for HIV prevention after a potential exposure?

☐ Yes ☐ No

If yes, how soon after exposure did you start PEP?

☐ Within 24 hours ☐ Within 48 hours ☐ After 72 hours ☐ Don't remember

Did you complete the full 28-day course of PEP?

☐ Yes ☐ No ☐ Not applicable

Are you circumcised? (men only)

☐ Yes ☐ No

If yes, what was the reason for circumcision?

☐ Religious/cultural ☐ Medical recommendation ☐ Voluntary medical male
circumcision ☐ Other: _____

Section F: HIV Risk Behavior

Have you ever had sex without a condom in the past 6 months?

☐ Yes ☐ No

Do you currently have more than one sexual partner?

☐ Yes ☐ No

Do you know the HIV status of your sexual partner(s)?

☐ Yes ☐ No ☐ Some

Have you ever engaged in transactional sex?

☐ Yes ☐ No

Do you consume alcohol before or during sex?

☐ Always ☐ Sometimes ☐ Never

Have you tested for HIV in the past 6 months?

☐ Yes ☐ No

APPENDIX 3: COMMUNITY ENGAGEMENT PLAN

Study title: Uptake of Pre-Exposure Prophylaxis Against HIV Among Soldiers at the 4-Infantry Division, Gulu Uganda, A Cross-Sectional Study.

Principle Investigator: Kakumba Bruno

Rationale for the study

Findings from this study will provide knowledge on the uptake and factors associated with PrEP against HIV among soldiers. These findings will inform policy and intervention strategies to guide on increasing uptake of PrEP among soldiers.

General objectives and specific objectives to be achieved.

General objective

To determine the uptake of PrEP against HIV/AIDS among soldiers at the 4 Infantry Division in Gulu, Uganda

Specific objectives

1. To determine the level of awareness of PrEP among soldiers at the 4 Infantry Division Gulu.
2. To determine the prevalence of lifetime use of PrEP among soldiers at the 4 Infantry Division Gulu.
3. To determine the level of acceptance and willingness to use PrEP among soldiers at the 4 Infantry Division Gulu.
4. To identify factors influencing the level of awareness, use and acceptance of PrEP among soldiers at the 4 Infantry Division Gulu.

The objectives of the community engagement are to;-

1. To sensitize the community and the stakeholders on the nature of the research study and get real time feedback.

2. Provide clarity on the roles and responsibilities of different stakeholders involved in the study during the whole process.
3. To address key ethical concerns of the research including benefits of the study to the community so as community can appreciate the value of research, rights and consenting process of the research participants.

The key community stakeholders to be involved are;-

- Division commander of 4 Infantry Division and his staff officers.
- Division Medical Officer and Head of Department ART clinic at Gulu Military Hospital.

We will maintain a constant engagement of all the stakeholders throughout the duration of the research.

The research team responsible for managing community engagement activities

S/N	Research Team	Technical abilities	Tasks
1	Kakumba Bruno	Team lead, concept and proposal development, data collection, analysis and coordination of study activities	Will lead the research team, coordinate and oversee the implementation of the community engagement plan
2	Research supervisor	Proposal writing and development	Oversee, guide and review all study proceedings
3	Research assistants	Knowledge of the data collection tool	Assist the PI in data collection

Approaches, activities and mode of implementation.

The approach will involve administrative consultations, existing structures and community events.

Administrative consultations will be used to understand the practices, power influences and local perceptions of soldiers towards HIV. This will be undertaken through different visits to different departments in the barracks.

Gaining community entry will require effective engagement of the community structure and stakeholders as follows.

S/N	Stakeholders	Roles
1.	Division Commander and his staff officers	Oversees all activities concerning administration, command and leadership of the of 4-Infantry division
2	Division Medical Officer and Head of Department ART Clinic	Provides knowledge on how to effectively proceed with the study from an experienced point of view

Division proceeding such as Monday Baraza, Part 1 Orders will be used to inform the stakeholders in the study areas about the study and also give real time feedback.

Communication Strategy for the engagement

Throughout the study period, there will be communication between the research team and the stakeholders.

Prior to the administrative consultative meeting, I will meet the Division Medical Officer and Head of Department ART Clinic where the subject matter will be introduced, and minutes taken for review at a later time. These minutes will be used to enrich and improve on the research understanding. After meeting the hospital team, we shall then meet the Division Commander and His staff officers to share with them the subject matter.

Since during the engagements, there will be sharing of research findings, we shall produce leaflets and distribute to them to participants during workshops informing about the research results, challenges encountered and steps taken to address them, lessons learned and recommendations.

Plan on Mitigation of Risks and Conflicts.

Some risks and conflicts might arise during the research process. These risks and conflicts often disrupt the research and affect the research outcomes. If they do occur, they will be addressed as soon as they are detected. Uganda Christian University REC and UNCST will be notified of the risks and conflicts of adverse nature. There are no foreseeable risks and conflicts to the study participants since only interviews will be done.

Evaluation Plan.

There will be evaluation at every process, during the research and after the research. Field notes during data collection, observations made during the community engagement and during the implementation of the research will be analyzed. Feedback will be considered of at most value.

APPENDIX 4: WORKPLAN

Uptake of Pre-Exposure Prophylaxis Against HIV Among Soldiers at the 4-Infantry Division, Gulu Uganda, A Cross-Sectional Study.

Principle Investigator: Kakumba Bruno

Activity	May 2025	June 225	July 2025	Aug 2025	Sep 2025	Oct 2025	Nov 2025	Dec 2025	Jan 2026
Topic Identification and selection									
Approval of research topic									
Proposal writing and Submission									
Pretesting of Research tools									
Data Collection									
Data processing and analysis									
Report writing									
Report Submission and Thesis defense									
Dissemination of finding									

APPENDIX 5: BUDGET

S/N	ITEM	QUANTITY	UNIT COST	TOTAL COST
1	Duplicating paper	3 reams	20,000	60,000
2	Staples	1 box	10,000	10,000
3	Box file	1	10,000	10,000
4	Printing and binding	10	20,000	200,000
5	Airtime and Data	424	5000	2,120,000
6	Data Analysis	1	500,000	500,000
7	Administration	1	150,000	150,000
9	Research Assistant allowance	2	150,000	300,000
10	Miscellaneous		200,000	200,000
Grand total				3,550,000/=

Appendix 6: Approval letter from UCU-REC



**UGANDA CHRISTIAN
UNIVERSITY**

A Centre of Excellence in the Heart of Africa.

Office of the Vice Chancellor
Research Ethics Committee UG-026



28th May, 2025

KAKUMBA BRUNO,
Uganda Christian University
+256 788 147100
Email: brunokakumba@gmail.com

UG-REC-026 APPROVAL NOTICE

To: Kakumba Bruno, Principal Investigator

Re: UCU-REC Application titled: *Uptake of HIV Pre-exposure prophylaxis and associated factors among soldiers at the 4 infantry division, Gulu Uganda: A cross-sectional study*

Application Number: UCUREC-2025-1699

Version: 4.1

Type: ☐ INITIAL REVIEW
☐ Protocol Amendment
☐ Letter of Amendment (LOA)
☐ Continuing Review
☐ Material Transfer Agreement
☐ Other, Specify:



I am pleased to inform you that the UG-REC-026; UCUREC approved the above referenced application.

Approval of the research is for the period from 28th May, 2025, to 28th May, 2026

This research is considered minimal risk category.

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 additions 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. The REC application number assigned to the research should be cited in any correspondence.
3. Reports of unanticipated problems involving risks to participants or other must be submitted to the REC. New information that becomes available which could change the risk: benefit ratio must be submitted promptly for REC review.

1 of 2

Research and Ethics

P.O. Box 4, Mukono, Uganda, Plot 67-173, Bishop Tucker Road, Mukono Hill
Tel: +256 (0) 312 350 885 Fax: +256 (0) 4142 90 800 Email: rec@ucu.ac.ug Web: www.ucu.ac.ug
UCUREC is accredited by Uganda National Council for Science & Technology, FDA, and National Institutes for Health of the United States of America



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Office of the Vice Chancellor
Research Ethics Committee UG-026

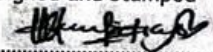


4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by subjects and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Regulations require review of an approved study not less than once per 12-month period. Therefore, a continuing review application must be submitted to the REC eight weeks prior to the above expiration date of 28th May, 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, at which point new participants may not be enrolled and currently enrolled participants must be taken off the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. Your research details have been shared with the Executive secretary of Uganda National Council for Science and Technology (UNCST) and you are not required to get clearance since you are a Master's Degree research. Refer to UNCST Research registration and clearance Policy and guidelines (July 2016) in Uganda section 6(e).

The following is the list of all documents approved in this application by UG-REC _026:

	Document Title	Language	Version	Version Date
1.	Protocol	English	1.0	2025-05-08
2.	Questionnaire	English	1.0	2025-05-08
3.	Informed consent form	English	1.0	2025-05-08

Signed and Stamped


Prof. Peter Waiswa.
UCUREC Chairperson,
pwaiswa@musph.ac.ug



2 of 2

Research and Ethics

APPENDIX 7: ADMINISTRATIVE APPROVAL

UGANDA PEOPLES' DEFENCE FORCES

UPDF/4DIV/MED/A2



HQ 4INFANTRY DIVISION
GULU MILITARY HOSPITAL
P.O BOX 610
GULU BARRACKS
Tel. 0786320999

30 May 25

The: 4DAO

REQUEST TO COLLECT DATA FOR PRE-EXPOSURE PROPHYLAXIS UPTAKE AMONG SOLDIERS.

1. Reference is made to the above.
2. HIV is a global pandemic affecting a number of people globally and in Uganda with multiple methods to prevent transmission.
3. Pre-exposure prophylaxis is medication taken by high- risk HIV negative individuals to prevent acquisition of HIV. This medication is available at the facility however there is low usage by the soldiers.
4. The data collected seeks to understand the uptake of this drug among the soldiers to further enhance the presidential fast track initiative to eliminating HIV in Uganda by 2030.
5. The purpose of this is to request you to grant permission to collect data from a total of 500 HIV negative soldiers.
6. Attached is a copy of the questionnaire to be used for data collection.
7. Forwarded.

*Dmo
Permission granted
10/06/25*

[Signature]
DR VB MAKANIKA
Capt
DMO

4 INF. DIV. MILITARY HOSPITAL
DATE 30/5/25

RESTRICTED