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COLLEGE OF HEALTH SCIENCES

SCHOOL OF MEDICINE

DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

PREVALENCE AND FACTORS ASSOCIATED WITH CERVICAL CANCER SCREENING UPTAKE AMONG HIV-POSITIVE WOMEN ATTENDING THE ART CLINIC AT KAWEMPE NATIONAL REFERRAL HOSPITAL

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DECLARATION

I do hereby declare that the work presented in this thesis is original and has never been submitted either partially or in totality for any academic award at Makerere University or any other institution. Where the works of others have been quoted, this has been acknowledged in the text.

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DEDICATION

I dedicate this dissertation to my beloved husband Daniel HABAMUNGU CHINYABUGUMA: your unwavering support, love and belief in me made this possible.

To my family: my father Jean Baptiste Kilolo and my mother Eveline Mapendano Muvunga, your love has always been my foundation: thank you for lifting me up and believing in me every step of the way.

To my children Jean Luc BARAKA CHINYABUGUMA and Daniella NSIMIRE CHINYABUGUMA who asked why I worked so much, I hope this inspires you to chase your own dreams too.

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ABBREVIATIONS

AIDS: Acquired Immune Deficiency Virus
aOR: Adjusted Prevalence Ratio
ART: Antiretroviral Therapy
CC: Cervical Cancer
CCS: Cervical Cancer Screening
cOR: Crude Prevalence Ratio
CI: Confidence Interval
HIV: Human Immunodeficiency Virus
HTS: HIV Testing Services
HPV: Human Papillomavirus
Km: Kilometer
MoH: Ministry of Health
No: Number
PCR: Polymerase Chain Reaction
PLHIV: People Living with HIV
Prof: Professor
SOMREC: School of Medicine Research and Ethics Committee
STATA: Statistical Software for Data Science
STIs: Sexually Transmitted Infections
Reg No: Registration Number
WHO: World Health Organization
WLHIV: Women Living with HIV

OPERATIONAL DEFINITIONS

Accessibility to cervical cancer screening service: Availability of cervical cancer screeningcenter within 5 km of the vicinity of the study participant's residence.

Awareness of cervical cancer screening: HIV-positive women who have heard about cervicalcancer and cervical cancer screening

Cervical cancer screening uptake: HIV-positive women who were screened for pre-malignantcervical lesions within 3 to 5 years

ABSTRACT

Background: Cervical cancer is a major public health concern globally and in Uganda. The incidence of cervical cancer is at least 4 times higher among HIV-positive women as comparedto their HIV-negative counterparts. Cervical cancer screening is a secondary prevention approachin the WHO's strategy for the elimination of cervical cancer. The target is to have globally, 70% of women screened for cervical cancer by the age of 35 years, and again by 45 years by the year 2030. The major goal of cervical cancer screening is to reduce cervical cancer incidence and mortality through early detection and treatment of women with pre-malignant lesions.

Objective: Therefore, the aim of this study was to determine the prevalence and the factors associated with cervical cancer screening uptake among HIV-positive women attending the ART clinic at Kawempe National Referral Hospital

Research methods: A cross-sectional study design with quantitative approach was conducted in the ART clinic of Kawempe NRH. 243 WLHIV were subjected to interviewer-administered questionnaires. These were selected by systematic random sampling. Logistic regression analysis was used to determine associated factors to CCS and their prevalence ratios with their confidence intervals were reported.

Results: Of the 243 HIV-positive women 86.8% had received cervical cancer screening in this study The mean age of the participants was 34.6%. The factors found to be associated with CCS were; being aged 40 years and beyond [aOR=1.21, 95% CI: 1.11-1.35, P=<0.00001], having a diagnosis of HIV made 10 years and beyond [aOR=0.72, 95% CI: 0.64-0.95, P=0.011], perceived embarrassment of CCS procedures [aOR=0.75, 95% CI: 0.61-0.87, P=0.004]; perceived risk of cervical cancer [aOR=0.82, 95% CI: 0.71-0.93, P=0.006], perceived benefits of CCS [aOR=0.35, 95% CI: 0.08-0.98, P=0.005], awareness of CCS health talks received at ART clinic [aOR=0.52, 95% CI: 00.41-0.74, P= <0.00001] , health worker recommendation on CCS [aOR=0.08, 95% CI: 0.01-0.32, P= <0.00001], awareness of the availability of CCS at the facility [aOR=0.04, 95% CI: 0.004-0.31, P=<0.00001] and the cost of the CCS at the health facility [aOR=0.18, 95% CI: 0.04-0.42, P=0.004].

Conclusion: This study revealed a significantly high uptake of cervical cancer screening among HIV-positive women. This highlights the effectiveness of targeted interventions and screening programs in increasing CCS rates among this vulnerable population. The results underscore the importance of continuing to prioritize CCS and prevention in HIV care and treatment programs, particularly in resource-limited settings

CHAPTER ONE

Background of the study

Globally, cervical cancer is the fourth most common cancer among women, and in 2018, it was reported to have been responsible for about 570,000 new cases and 311,000 deaths (World Health Organization, 2020). More than 85% of these deaths occur in low and middle-income countries (WHO, 2020). Human Immunodeficiency virus (HIV) has been associated with an increased risk of developing cervical cancer. The Human Papillomavirus especially subtypes 16 and 18 plays a significant role in the causation of cervical cancer, and yet HIV-infected women have a higher incidence of persistent HPV infection which ultimately results in fast progression of premalignant cervical lesions to cervical cancer compared to women uninfected with HIV (Liu, et al., 2018). The risk of cervical cancer and risk of death due to cervical cancer has been reported to be sixfold and twofold respectively among HIV-infected women as compared to HIV-negative women. It is against this background that the WHO emphasized the need for HIV- infected women to undergo regular cervical cancer screening and treatment if found with premalignant lesions (Ninsima, et al., 2023).

The major goal of CCS is to reduce cervical cancer incidence and mortality through early detection and treatment of women with pre-malignant lesions. The WHO in their global strategy to accelerate the elimination of cervical cancer as a public health problem by2030 aims to have 70% of women screened once by the age of 35 years and again by the age of 45 years (WHO, 2020). In recognition of the vulnerability faced by HIV-infected women, the WHO guidelines outline recommendations particular for women infected with HIV such as screening at an earlier age of 25 years than the general population and a shorter time interval to be retested following a positive test and following treatment as compared to the general population (WHO, 2021).

Despite this global campaign, CCS coverage remains unevenly distributed across geographical regions; with higher screening coverage (more than 60%) reported in the high-income country world and lower screening coverage in LMIC. In sub-Saharan Africa, the screening coverage was reported to range from 0.4% to 20.2% (Yang, et al., 2023). The reasons for low screening coverage vary from region to region and though HIV-infected women may have unique challenges that limit their uptake of CCS, the majority share the same barriers with their HIV-negative counterparts. Barriers reported in some studies conducted among HIV-infected women included poor knowledge about CCS, low-risk

perception, fear of test results, fear of pain during screening, lack of access to screening services, high cost of screening and poor partner attitude and acceptance of the service (Mengesha, et al., 2023). Uganda's strategic plan for cervical cancer prevention and control (2018-2023) emphasizes integrating HPV DNA testing into the VIA-based program. It outlines prevention and control elements, mandating Health Center IIIs and IVs to provide health education, mobilization, HPV vaccination, and cervical cancer screening (VIA, HPV testing, or cytology).

In Uganda, cervical cancer is the leading cause of cancer deaths and contributes 20% (6,959) of new global cases annually and 20% (4,607) of all global cancer deaths annually (UgandaMinistry of Health, 2022). For the fact that HIV-infected women are more at risk of acquiring cervical cancer as compared to their HIV-negative counterparts, the MoH guidelines recommend the integration of CCS. The recommended primary CCS method is using self HPV testing (MoH, 2022). Uganda's strategic plan for cervical cancer prevention and control (2018-2023) emphasizes integrating HPV DNA testing into the VIA-based program.

The few studies so far conducted in Uganda have reported CCS uptake among HIV-infected women to be low, accounting for less than 40% for almost all (Wanyenze,et al., 2017; Maria, et al., 2022). The implication here is that many of the HIV-infected women will miss out on the benefits that come with routine screening such as early detection of the premalignant cervical lesions and therefore, early interventions before the progression to cancer (Ninsima, et al., 2023). With such missed opportunities, the likelihood of these HIV-infected women seeking health care with advanced cervical cancer, at which time the prognosis would be poor, is high (Ninsima, et al., 2023). Therefore, with the need to improve cervical cancerscreening uptake among this vulnerable population, this study focused on the factors associated with cervical cancer screening uptake among HIV-positive women attending the ARTclinic at Kawempe National Referral Hospital

Statement of the problem

Cervical cancer is a significant public health concern in Uganda with the age-standardized incidence rate of 56.2 per 100,000 women, and the age-standardized mortality rate of 41.5 per 100,000 women, notably 3-fold and 4-fold higher than global averages respectively (Isabirye, et al., 2020). Women living with HIV (WLHIV) are at four times greater risk of developing cervical cancer compared to HIV-negative women. In response, the Ugandan Ministry of Health and various stakeholders have implemented multi-pronged initiatives to enhance cervical cancer screening (CCS) uptake among WLHIV especially those aged 25-49 years. These efforts include, among others increasing funding for screening in HIV care sites, introducing self-screening methods such as HPV DNA detection and training of community health workers (Kiirya, 2024; Maria, et al., 2022). The major goal of CCS is to reduce cervical cancer incidence and mortality through early detection and treatment of women with pre-malignant lesions (WHO, 2020).

Despite these measures, CCS coverage in Uganda remains low. The few studies so far conducted in Uganda among WLHIV have reported CCS uptake to be less than 40% (Wanyenze, etal., 2017; Maria, et al., 2022*).* This lack of uptake is concerning given that WLHIV face a higher risk of cervical cancer complications. Factors influencing screening participation include knowledge, attitudes towards screening, healthcare provider recommendations, and fears regarding test results (Mwantake, et al., 2022; Ninsima et al., 2023). While significant strides have been made in HIV care, there is a vital need to prioritize CCS to protect the health of WLHIV. Notably, most existing research on CCS has focused on the general population, leaving a substantial gap in our understanding of the specific barriers and facilitators influencing CCS uptake within this high-risk group. Furthermore, limited studies have examined the effect of newly introduced client-friendly screening methods on the participation rates among WLHIV. This study aims to fill this critical gap by investigating the prevalence of CCS uptake among HIV-positive women attending the ART clinic at Kawempe NRH and exploring the associated factors influencing their decisions to participate in screening. By focusing on this vulnerable sub-population and assessing the impact of innovative screening methods, the research will contribute valuable insights for tailoring interventions to improve CCS uptake and ultimately reduce cervical cancer incidence and mortality among WLHIV in Uganda.

Research Questions

The following are the research questions:

1. What proportion of HIV-positive women attending the ART clinic at Kawempe National Referral Hospital has taken up cervical cancer screening?
2. What are the factors associated with cervical cancer screening among HIV-positive women attending the ART clinic at Kawempe National Referral Hospital?

Objectives of the Study

Broad Objective

To determine the prevalence and factors associated with cervical cancer screening among HIV-positive women attending the ART clinic at Kawempe National Referral Hospital.

Specific objectives

1. To determine cervical cancer screening uptake among HIV-positive women attending ART clinic at Kawempe National Referral Hospital
2. To determine factors associated with cervical cancer screening uptake among HIV- positive women attending ART clinic at Kawempe National Referral Hospital.

Study justification

Limited research has been done since the MoH introduced newer screening methods like HPV DNA. The present study is motivated by the vital need to document factors influencing cervical cancer screening uptake among the more vulnerable HIV-infected since the availability of newer client-friendly screening methods like introduction of HPV self-collect. It is hoped that the findings of the studywill help to know if cervical cancer screening has improved among HIV positive women and if not, it will highlight the need to enhance the existing national strategies towards cervical cancer screening so as to fortify cervical cancer screening uptake

Conceptual framework

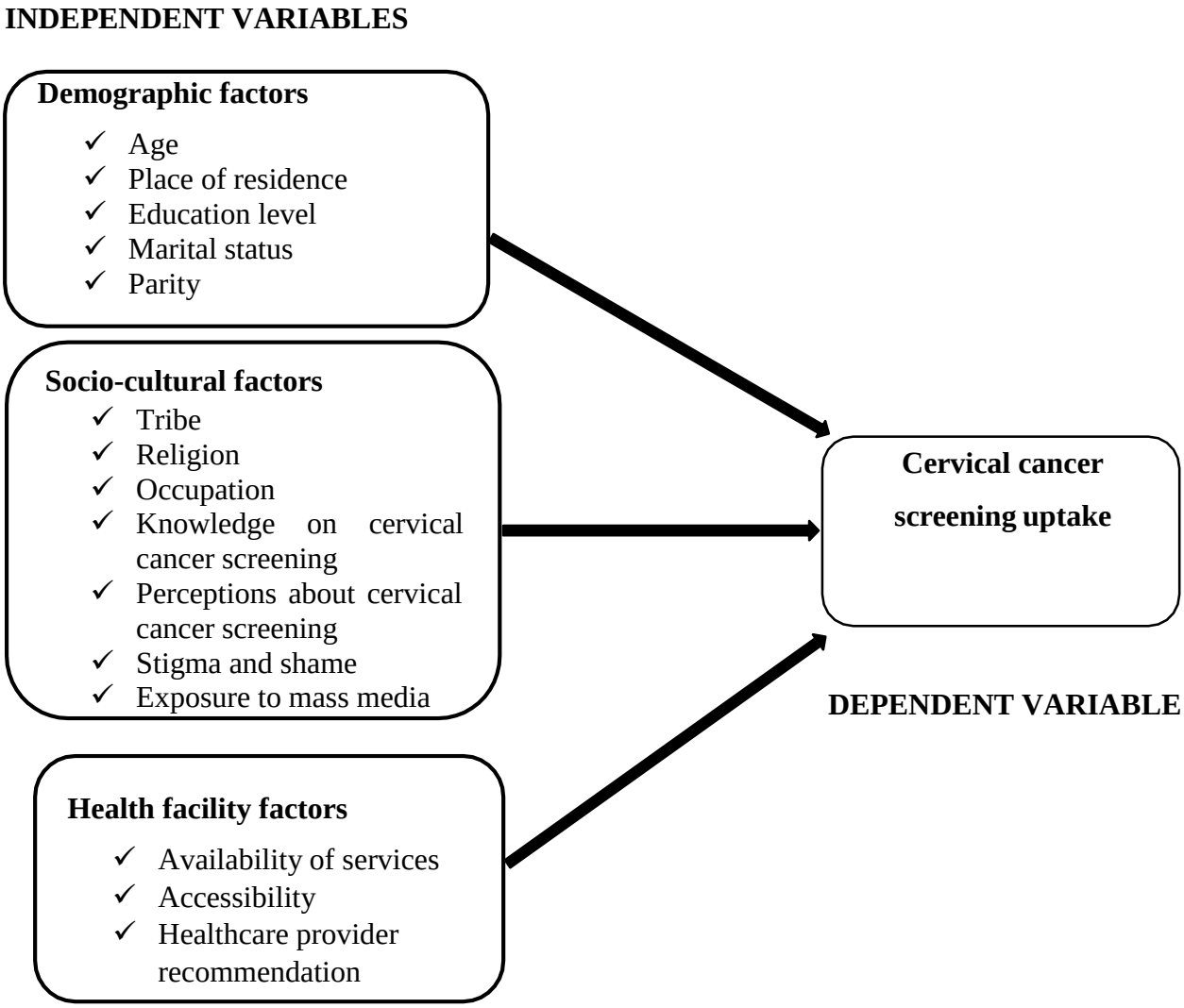


Figure 1: Conceptual framework

Narrative:

The conceptual framework for this study illustrates the multifaceted factors influencing cervical cancer screening (CCS) uptake among HIV-positive women. It is organized into three primary categories of independent variables: demographic factors, socio-cultural factors, and health facility factors, all of which interact to affect the dependent variable—cervical cancer screening uptake.

Demographic Factors:

These factors include age, marital status, education level, parity, and place of residence. The framework posits that younger women may perceive themselves as less vulnerable, which can hinder their participation in CCS. Meanwhile, higher education levels are likely associated with increased awareness and

understanding of the importance of CCS. Additionally, marital status and parity may influence healthcare-seeking behaviors, with women who have children or are married potentially experiencing different motivators or barriers compared to their single counterparts.

Socio-Cultural Factors:

This category encompasses perceptions, beliefs, and cultural norms regarding cervical cancer and its screening. Factors such as stigma, embarrassment related to the screening procedures, cultural attitudes towards reproductive health, and knowledge about cervical cancer all play crucial roles in shaping women's decisions to undergo screening. Women who perceive a higher risk of cervical cancer or understand its benefits are more likely to seek screening. Conversely, negative beliefs, such as viewing screening as embarrassing, can significantly deter participation.

Health Facility Factors:

These factors address the accessibility and quality of screening services available at the health facility, including the recommendation by healthcare providers, the availability of screening services, and the cost associated with screening. The framework suggests that strong healthcare provider recommendations can enhance women's confidence and motivation to seek CCS. Furthermore, the perceived availability and affordability of services directly impact the likelihood of women utilizing these resources.

Interconnections and Implications

The interactions among these independent variables are critical to understanding CCS uptake. For instance, a woman’s demographic profile may influence her socio-cultural perceptions, which, in turn, impacts her response to healthcare provider recommendations. Health facility factors can either facilitate or hinder access to CCS, depending on how well they address the needs and perceptions of the target population.

Overall, this conceptual framework underscores the complexity of factors influencing CCS uptake among HIV-positive women. A holistic approach to addressing these factors—by combining educational interventions, improving healthcare access, and understanding the socio-cultural context—can enhance the effectiveness of CCS programs. By identifying and addressing barriers at multiple levels, interventions can be better tailored to meet the needs of this vulnerable population, ultimately leading to increased screening rates and improved health outcomes.

In conclusion: The conceptual framework explains the factors associated with CCS. The dependent variable is cervical cancer screening uptake and the independent variables, are demographic, sociocultural, and health facility factors. The utilization of CCS is either positively or negatively influenced by demographic, socio-cultural, orhealth facility characteristics. Combined together, the assumption is that the effect on CCS uptake could even be greater

CHAPTER TWO

LITERATURE REVIEW

Cervical cancer screening uptake

Wanyeze et al., (2017) in their study conducted in Uganda among HIV-infected women attending HIV care found uptake of cervical cancer screening to be 30.3%. In this study, 63.6% had been screened once and 22.2% had been screened twice. The undesirable experiencesreported by those who had ever been screened included pain during the procedure (33%),embarrassment (19.0%), and discomfort (26.0%) (Wanyeze, et al., 2017). Similar findings were found in a study by Maria, et al., (2022) conducted among HIV-positive women in urbanUganda. In this study, the cervical cancer screening prevalence among HIV-positive women was reported to be 44%. Nega et al., (2018) in their study in Northwest Ethiopia, Oliver et al., (2013) in a study in Nigeria and Belete et al., (2015) in a study in Addis Ababa reported even lower uptake at 10%, 9% and 12% respectively. However, studies conducted among HIV-positive women in Atlanta Georgia in the United States by Fraiser, et al., (2016), in South Eastern United States of America by Wigfall et al., (2016) and in the North Italy by Dal Maso, et al., (2010) reported the prevalence of cervical cancer screening to be high accounting for 78%, 83% and 81% respectively. According to Kumakech, et al., (2015), this good cervical cancer screening uptake in the high countries could be as a result of better and well-structured healthcare systems and health care seeking behaviors of people in these countries combined with the integration of cervical cancer screening services into HIV care that brings cervical cancer services closer to HIV-infected women. Cervical cancer screening programs have remained as standalone programs in most developing countries hence resulting in missed opportunities for HIV-positive women to screen for cervical cancer, despite numerous visits to HIV care clinics for reviews and drugs refills (Kumakech, et al., 2015).

Factors associated with cervical cancer screening among HIV-infected women

Demographic factors:

In a study in Gondar University Ethiopia, Nega, et al., (2018) reported that women living with HIV who had children were three times more likely to take up cervical cancer screening than those who had no children. Nega, et al., (2018) explained that this was because women who had children were more likely, in addition to their routine HIV care follow-up, to visit healthfacilities. As a result, the chances are that they might get information and advice from healthcare providers to utilize screening services (Nega, et al., 2018). In the same study, the odds of being screened among HIV-infected women were

four times higher in women who had attainedprimary, secondary, and tertiary levels of education, as compared to those who had neverattained any form of education (Nega, et al., 2018). Similar findings were reported by Serraino,et al., (2008) who in a study in Rome found women who had attained formal education to be more likely to take up cervical cancer screening. Nega, et al., (2018) reasoned that educated women can have a better awareness about cervical cancer screening, possibly have the power to make decisions, and possibly have better healthcare-seeking behavior than non-educated women which can in turn indirectly translate in the utilization of cervical cancer screening services. Mekonnen (2020) in a systematic review and meta-analysis in Ethiopia reported that women living with HIV who had had formal education were 3.5 times more likely to be screened for cervical cancer as compared to those who had no formal education. He explained that women who have attained an education are expected to be motivated, confident, and have social inclusion in search of information and health intervention (Mekonnen, 2020). However, Dal Maso, et al., (2010) in their study among women living with HIV in Northern Italy, found no association between education and cervical cancer screening.

Belay, et al., (2023) in their study among HIV-positive women in Southwest Ethiopia reported that women of advanced age were more likely to utilize cervical cancer screening services than women of younger ages. Bayu, et al., (2016) in a study in Northern Ethiopia reported that womenbetween the ages of 30 and 39 years were 1.7 times more likely to be screened as compared to those between the ages of 21 and 29 years. In the same study, women who reported having multiple sexual partners were 1.6 times more likely to be screened as compared to those with no history of multiple sexual partners. Ebu (2018) in their study on socio-demographiccharacteristics influencing cervical cancer screening among HIV-positive women in Ghana reported that marital status was not a predictor of cervical cancer screening. She explained that this could have been probably because of the way this concept was measured in this study, seeing as those cohabiting was regarded as being in a marital relationship. Similar findings were reported by Ezechi, et al., (2013) in a study among HIV-positive women in Nigeria who reportedno significant association between marital status and cervical cancer screening uptake.

Woldetsadik, et al., (2020) in their study in their study in St. Paul Teaching and Referral Hospitalin Ethiopia found that women who lived in urban areas were more likely to be screened for cervical cancer. This is consistent with findings from a study in Gomma district in Ethiopia by Gizaw, et al., (2022) which found that women who lived in urban areas were four times more likely to receive cervical cancer screening as compared to those who lived in rural areas. For this, Gizaw, et al., (2022) explained that

this was more likely because the majority of health facilities that offered screening services were found in urban areas, and for the fact that many women in urban settings have more information about cervical cancer screening through various mass media.

Socio-cultural factors

Mwantake, et al., (2022) in their study in the Kilimanjaro region among women living with HIV found that women whose attitude towards cervical cancer screening was positive were threetimes more likely to be screened than those who had negative attitudes. Mekonnen (2020) intheir systematic review and meta-analysis in Ethiopia reported that among HIV-infected women, those who had high perceptions of their vulnerability to developing cervical cancer were three times more likely to be screened for cervical cancer than those who had low perceptions.Similarly, Tchounga, *et al.,* (2019) in their study among HIV-positive women in Ivory Coast in West Africa found that women who perceived HIV to be a risk factor for developing cervical cancer were 1.4 times more likely to be screened as compared to those who thought otherwise. How individuals perceive CCS—such as whether they view it as a necessary health check, a stigmatized act, or something that should be avoided—can be shaped by cultural norms and values. Belay, et al., (2023) in their study among HIV-positive women in Southwest Ethiopia also reported that women with perceived benefits of screening were more likely to be screened for cervical cancer. On this Ndikom, et al., (2012) reasoned that if women are not aware of cervical cancer and neither understand their vulnerability to it, then they will not be motivated to utilize cervical cancer screening services. Emotions tied to cultural or traditional beliefs about modesty, femininity, or health can deter individuals from participating in screenings. If a procedure is perceived as invasive or associated with stigma, individuals from certain cultural backgrounds may be less likely to pursue it. Emotions tied to cultural or traditional beliefs about modesty, femininity, or health can deter individuals from participating in screenings. If a procedure is perceived as invasive or associated with stigma, individuals from certain cultural backgrounds may be less likely to pursue it.

Mekonnen (2020) in a meta-analysis in Ethiopia found an association between knowledge of women on cervical cancer and cervical cancer uptake. They reported that women living withHIV who had good knowledge of cervical cancer were four times more likely to be screened as compared to those whose knowledge was poor. Similarly, Ogunwale, et al. (2015) in their study reported that HIV-positive

women who had knowledge that the need for cervical cancer screening does not depend on whether or not a woman is experiencing vaginal bleeding were seven times more likely to be screened than those who thought otherwise. Bayu, et al., (2016) ina study in Northern Ethiopia found women who were knowledgeable on cervical cancer were 2.5times more likely to be screened as compared to those who were not knowledgeable. On this Belay, et al., (2023) explained that good knowledge status is a predictor of cervical cancer screening uptake because these women have an improved understanding of the risk factors, clinical manifestations, complications, and treatment options. As such, knowledge of cervical cancer will result in good cervical cancer screening practices.

Shiferaw, et al., (2018) in their study among HIV-positive women in Ethiopia reported finance tobe a perceived barrier to cervical cancer. They reported that the willingness of research respondents to undergo cervical cancer screening was much lower for services that required payment. This is consistent with findings from a study among women living with HIV in Nigeriaconducted by Ezechi, et al., (2013) which reported that the majority (35.2%) of the research participants reported their refusal to take up screening, to be because of the anticipated high cost of the screening test. Furthermore, Gizaw, et al., (2022) in a study in Goma district Ethiopia, and Mohamed, et al., (2023) in a study at Adama University Ethiopia reported women living with HIV were eight times and three times respectively, more likely to take up cervical cancer screening services

Health facility factors

Mwantake, et al., (2022) in a cross-sectional study among women living with HIV in theKilimanjaro region in Tanzania found that HIV-infected women who received information on cervical cancer from healthcare providers were 17.3 times more likely to be screened for cervicalcancer than those who received information from other sources. These findings are consistent with those in a study by Tchounga et al., (2019) conducted in Ivory Coast which reported therole of healthcare providers being vital in the decision of women living with HIV to take up cervical cancer screening. In this study, Tchounga et al., (2019) found that women living with HIV were 10.1 times more likely to be screened after the proposition of screening from healthcare providers in the HIV care clinics. They reasoned that healthcare providers can be of influence and are in charge of the linkage and retention of women living with HIV and aretrained to inform and refer women living with HIV to screening facilities (Tchounga, et al., 2019). Dal Maso et al., (2010) in a study in North Italy also found that women living with HIV who received advice from healthcare providers were more likely to be screened

for cervical cancer than those who had never.

Wenyenze et al., (2017) in a study among HIV-positive women in Uganda, the greatest portionof health facilities provided cervical cancer screening. Though the screening coverage wasgenerally low, women in private facilities were found to be more likely to have been screened as compared to those in public facilities (Wenyenze, et al., 2017). In this study, there was no significant association between the provision of screening services and uptake They explained that this is possible because of low knowledge and fear of cervical cancer screening which emphasizes the need for thorough education of women in facilities that have integrated cervical cancer screening. Gizaw, et al., (2022) in their study in the Gomma district of Ethiopia found thatwomen who had no perceived distance problem from the cervical cancer screening center were four times more likely to be screened as compared to those who perceived otherwise.

CHAPTER THREE

RESEARCH METHODS

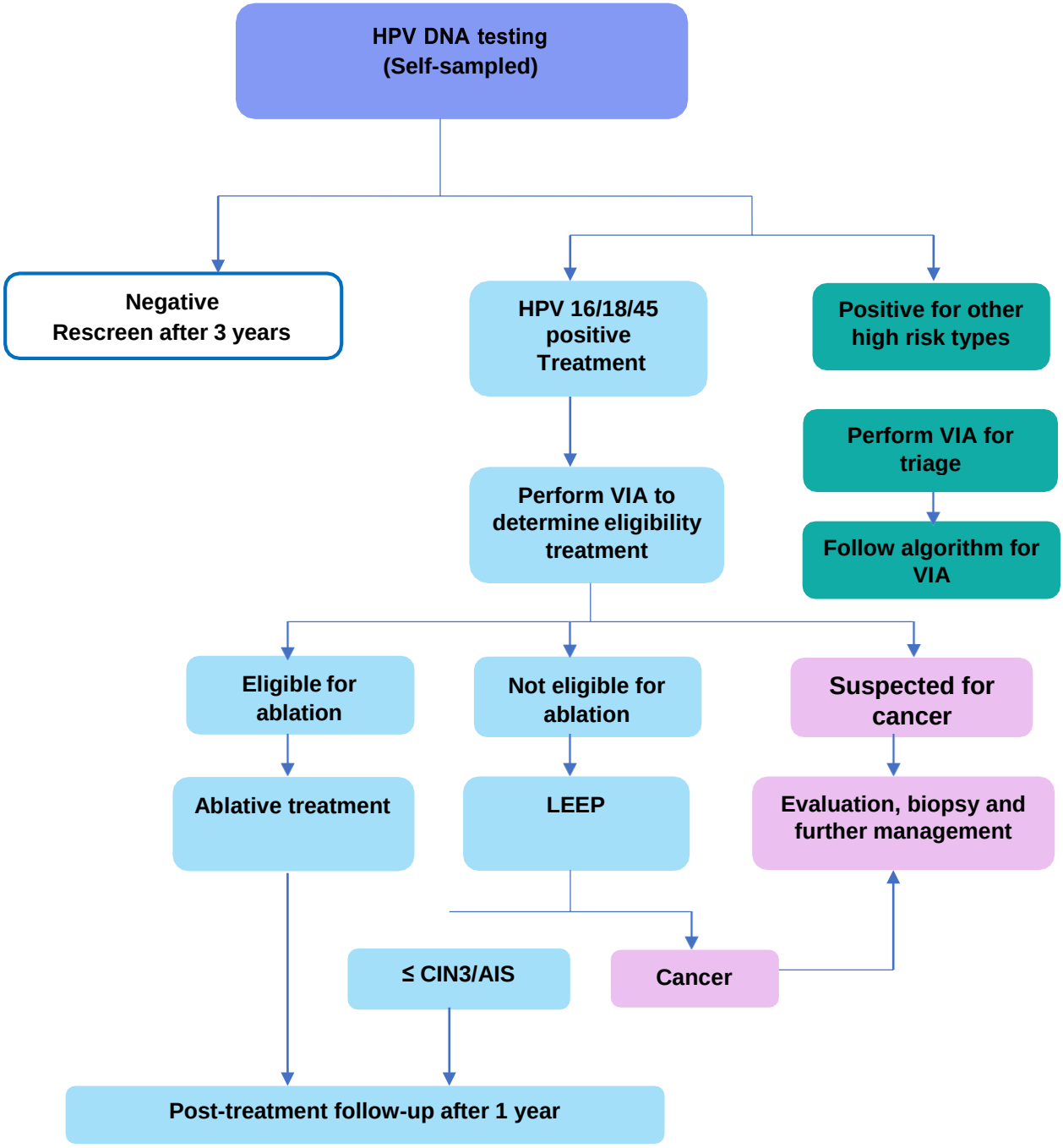
Research design

The study design was a cross-sectional design. The research also adopted quantitative approaches. In this study, the quantitative approach was appropriate because it allowed the researcher collect data from a large number of WLHIV seeking services at the ART clinic of Kawempe NRH on factors associated with uptake of CCS.

Study setting

The study was carried out at the Anti-Retroviral Therapy (ART) clinic of Kawempe National Referral Hospital. The ART clinic runs from Monday to Friday. To be enrolled in the ART clinic at Kawempe NRH, individuals must have received a positive HIV test result. Newly diagnosed HIV-positive individuals are referred from various testing points within the hospital and are connected to the clinic. Enrollment in the clinic requires individuals to be open to initiating ART and committed to collecting their medication from this clinic. Additionally, certain clients may be referred from other ART facilities to the Kawempe ART clinic, often due to factors such as geographical proximity. On average over 600 PLHIV are on appointment monthly in this clinic and of these two-thirds are women aged 20 years and above. A wide range of services are offered at the ART clinic including HTS, ART refills, PCR testing for HIV exposed infants and their follow up, pre-exposure prophylaxis and post-exposure prophylaxis and most relevant to this context, cervical cancer screening services. All WLHIV beyond 20 years are eligible for CCS at the ART clinic. The ART clinic works in collaboration with the gyne-oncology of Kawempe NRH whereupon all WLHIV eligible for CCS are linked tothe latter for CCS services. At the oncology clinic, presently HPV self-collect testing is the primary screening method.

HPV testing can be done via Nucleic Acid Amplification Tests (NAAT) from samples obtained from the cervix or vagina. GeneXpert can be used to detect 13 high risk HPV types including HPV 16, 18, 31,33,35,39,45, 51,52,56,58,59, and 1 possible hrHPV 66 with high sensitivity (Einstein et al., 2014). The samples for HPV testing can be obtained by the clients themselves hence HPV self-testing (HPVST) or can be collected by clinicians.



Study population

- ✓ The target population comprised all HIV-positive women in Uganda
- ✓ The accessible population comprised all HIV-positive women seeking health servicesat Kawempe NRH

- ✓ The study population comprised all HIV-positive women attending the ART clinic of Kawempe NRH who met the eligibility criteria and were available during the time of data collection

Sample size determination

The required sample size for objective one, to establish cervical cancer screening uptake was determined using Fischer et al (1990) formula:

$$n = \frac{Z^2PQ}{D^2}$$

Where:

n= Desired sample size

Z= Standard normal deviation taken as 1.96 at a confidence level of 95%

P= Proportion of target population estimated to have similar characteristics.

Nega, et al., (2018) in a study among HIV-positive women conducted at Gondar University referral hospital in Ethiopia found the uptake of cervical cancer screening to be 10%

Taking P=10% or 0.1

Therefore; Q= is standardized 1.0- P= 0.9

D= Degree of accuracy desired 0.05 or 5%

In this case 95% confidence level has 5% errors. Therefore 0.05 is a level of significance

$$n = \frac{1.96^2 x\ 0.1\ x\ 0.9}{(0.05)^2}$$

Therefore, the calculated required sample size was 144.

For the second objective, to establish the factors associated with cervical cancer screening, the Fleiss (1981) formula will be used for comparing two proportions to estimate the minimum sample size required to detect the difference:

$$N = \frac{[Z_{\alpha/2}\sqrt{p(1-p)(1/q_1 + 1/q_2)} + Z_{\beta}\sqrt{p_1(1-p_1)\ 1/q_1 + p_2(1-p_2)\ 1/q_2}]^2}{(p_1 - p_2)^2}$$

Where:

N=Desired sample size

q1=Proportion of subjects in group 1 (received provider recommendation)

q2=Proportion of subjects in group 2 (never received provider recommendation

p1= Proportion of subjects in group 1 expected to have outcome of interest (screened)

p2 =Proportion of subjects in group 2 (screened)

Zα=Standard normal deviation corresponding to level of significance (α). At α=0.05, Zα=1.96,type 1 error Zβ is standard normal deviate corresponding to β; For power of 80%, β=0.2 thus Zβ=0.84r is the correlation coefficient from the previous study

P=q1p1 + q2p2

Assuming equal sample sizes (q1=q2=1)

In a study conducted in Lira regional referral hospital in Northern Uganda among HIV-positive women, found that health care provider recommendation for cervical cancer screening was significantly associated with the uptake of CCS. In this study, 86% of HIV-positive who had ever received HCP recommendation on CCS had undergone CCS and 13.1% of those who had never received any recommendation from HCP had ever undergone CCS.

$$N = \frac{[1.96\sqrt{0.991(1-0.991)(1/1 + 1/1)} + 0.84\sqrt{0.86(1-0.86)\,1/1 + 0.131(1-0.131)\,1/1}]^2}{(0.86 - 0.131)^2}$$

This gave us a total required sample size of 243

Generally, the sample size that will be adopted for the present study will be 243 research participants.

Sampling technique

A systematic random sampling was used to select HIV-positive women in the present study. According to the records of the ART clinic, on average the clinic attends to 403 WLHIV aged 20 years and above monthly. Therefore, the sampling interval for the desired sample size of 243 was 403/243 = 2. The potential research participants were registered on a list and allocated numbers starting from 1. Between research participants assigned numbers 1 and 2, simple random sampling was used to select the starting point; that is, numbers 1 and 2 were written on separate small papers and placed in a container. The researcher or research assistants then randomly picked one of the papers from the container. The potential research participant to whom the number picked from the container was assigned, would be selected as the starting point. Thereafter every second participant was selected for the study.

Inclusion and exclusion criteria

Inclusion criteria:

- ✓ The study included all HIV positive women aged 20 years and above
- ✓ All participants provided written informed consent

Exclusion criteria:

- ✓ Participants with confirmed cervical cancer
- ✓ Participants who had undergone total hysterectomy

Dependent and independent variables

The dependent variable in this study was cervical cancer screening uptake. The independent variables included research participants' demographic and socio-cultural characteristics such as age, education level, tribe, occupation, and awareness of cervical cancer screening; and health facility factors such as healthcare provider recommendation and accessibility to screening services.

Data collection instruments

An interviewer-administered questionnaire was used to obtain data from HIV-positive

women. The questionnaire possessed both open and closed-ended questions.

Data quality control

The interviewer-administered questionnaire was formulated in line with the study objectives. The questionnaire was pre-tested among 14 HIV-positive women who were not enrolled in the actual study. Thereafter, necessary adjustments were made to the questionnaire. This addressed issues of relevance and acceptability. The researcher also used research assistants who were trained with an emphasis on better understanding the purpose of the study, research methods and ethical considerations. Regular meetings and performance review between the researcher and her research assistants were held. This enabled come up with solutions to problems that arose during the period of data collection.

Ethical Clearance

The study obtained authorization from the Makerere University School of Medicine Research and Ethics Committee (SOMREC). Administrative permission to conduct the study was obtained from the Executive director of Kawempe NRH. The data collectors clearly introduced themselves to the women living with HIV and offered a brief about the study. Informed consent preceded all interviews. The eligible HIV-positive women were subjected to interviewer-guided questionnaires for a maximum of 20 minutes. Thereafter, the data was organized and analyzed.

Data processing and analysis

Data was cleaned and analyzed using STATA version 14. Frequencies and percentages were used to summarize categorical variables and mean and standard deviation for numeric variables.

Research participants were asked whether they had ever been screened for cervical cancer, and their responses were recorded as either "yes" or "no." If they answered "yes," they were then asked whether the screening had occurred within the recommended timeframe. Participants were considered to have taken part in cervical cancer screening if they had received screening within the recommended timeframe (between 3-5 years). In cases where

participants did not recall the method of screening used, this information was verified by checking their cervical cancer screening cards or cross-referencing hospital cervical cancer registers.

Prevalence of cervical cancer screening uptake was calculated as the number of participants with a yes response divided by the total number of participants evaluated in the study. This was expressed as a percentage proportion with the 95% confidence interval. Bi- variate analysis was performed to identify potential independent variables for initial models of multivariate analysis of cervical cancer screening, using logistic regression. Crude prevalence ratios with 95% confidence interval and p-value were selected for multivariable regression analyses. At bivariate analysis only variables with a p-value less than 0.2 were selected for multivariate analyses. Multiple conditional logistic regression was used to determine the factors associated with cervical cancer screening. At multivariate analysis, independent variables with p-values less than 0.05 were considered statistically significant.

Ethical considerations

The researcher obtained ethical approval from the Makerere University School of Medicine Research and Ethics Committee (SOMREC). Informed consent preceded all interviews. The researcher and research assistants provided specific information to HIV-positive women evidently indicating and emphasizing that their participation in the study was voluntary. The potential research participants were informed that their participation or refusal to participate would not affect the care they needed at the ART clinic. The research participants were allowed to refuse to answer any question or terminate the interview when they desired. The interviewer- administered questionnaires were de-identified and interviews conducted in a calm place around the ART clinic. This was done to ensure the confidentiality of research participants' information.

Study dissemination

The findings from this study will be presented in the form of a dissertation to the Directorate of Research and Graduate Training at Makerere University as a requirement for partial fulfillment for the award of Masters of Medicine in obstetrics and gynecology. Copies of the dissertation will also be availed to the offices of the Department of Obstetrics and Gynecology,

the Directorate of Research and Graduate Training, and Albert Cook Library. The findings will also be shared with authorities at Kawempe National Referral Hospital to guide health care policies and may be published in a reputable journal.

CHAPTER FOUR

RESULTS

Table 1: Demographic characteristics of study participants

Regarding the demographic traits of the research participants, the age distribution revealed that the largest group (43.6%) was composed of individuals aged 30 or younger, while the average age was found to be 34.6 years. Additionally, most participants were either married or cohabiting (56.4%). A significant majority (93%) had achieved at least secondary or tertiary education. Furthermore, 73.7% of the participants reported having between one and three children.

Table 1: Demographic characteristics of study participants

(N=243)

Variable		Frequency (n)	Percentage (%)
	Mean Age	**34.6 (SD= 8.2)**	
Age	≤ 30 years	106	43.6
	31-39 years	77	31.7
	≥ 40 years	60	24.7
Marital status	Single	62	25.5
	Married/Cohabiting	137	56.4
	Widowed/Divorced/separated	44	18.1
Education level	None/Primary	17	7.0
	Secondary/Tertiary	226	93.0
Number of children	None	17	7.0
	1-3	179	73.7
	≥ 4	47	19.3

Table 2: Socio-cultural characteristics of study participants

Most participants were Baganda (56%) and Catholics (38.2%), with 39.9% self-employed. Over half (55.6%) started sexual activity before 18, and 51.4% had multiple partners. Nearly all (95.5%) were familiar with cervical cancer screening (CCS), with 65.8% not finding it embarrassing and 58% not perceiving themselves at risk of CC. About 97.1% saw CCS as beneficial. Additionally, 46.7% were diagnosed with HIV within the past five years prior to the study.

Table 2: Socio-cultural characteristics of study participants

(N=243)

Variable		Frequency (n)	Percentage (%)
Tribe	Muganda	136	56.0
	Musoga	14	5.8
	Munyankole	49	20.2
	Acholi	3	1.2
	Langi	4	1.6
	Others	37	15.2
Religion	Catholic	93	38.3
	Anglican	55	22.6
	Muslim	42	17.3
	Born again	37	15.2
	SDA	16	6.6
Occupation	Civil/Private employee	54	22.2
	No formal employment	92	37.9
	Self employed	97	39.9
Age at first sexual intercourse	<18 years	135	55.6
	≥18 years	108	44.4
Number of sexual partners	One	118	48.6
	More than 1	125	51.4
Ever Heard of CCS	Yes	232	95.5
	No	11	4.5
Think screening procedure is embarrassing	Yes	63	25.9
	No	160	65.8
	Don't know	20	8.2
Perceived risk of cervical cancer	Yes	102	42.0
	No	141	58.0
Think CCS is beneficial	Yes	236	97.1
	No	7	2.9
Years diagnosed with HIV	≤ 5 years	114	46.9
	6-9 years	67	27.6
	≥ 10 years	62	25.5

Table 3: Health facility characteristics of study participants

Finally, regarding health facility characteristics, most participants (59.7%) lived within five kilometers of the health facility. A large number of participants were aware of CCS information and services: 82.3% had attended health talks on CCS at the clinic, 90.1% had received CCS recommendations from healthcare providers, and 93.8% mentioned that CCS was conducted at the facility. Additionally, a significant portion of participants (91.4%) stated that the CCS services provided at the health facility were free of charge.

Table 3: Health facility characteristics of study participants

(N=243)

Variable		Frequency (n)	Percentage (%)
Distance to the health facility	≤5km	145	59.7
	>5kms	98	40.3
Heard health talks on CCS	Yes	200	82.3%
	No	43	17.7
HCPs recommendation on CCS	Yes	219	90.1
	No	24	9.9
Availability of CCS at facility	Yes	228	93.8
	No/Don't know	15	6.2
Cost of CCS at the facility	Free	222	91.4
	Not free/Don’t know	21	8.6

Cervical Cancer Screening Uptake

The findings showed that 211 respondents out of 243 had ever been screened for cervical cancer giving an uptake of 86.8% (95% CI: 81.9-90.8)

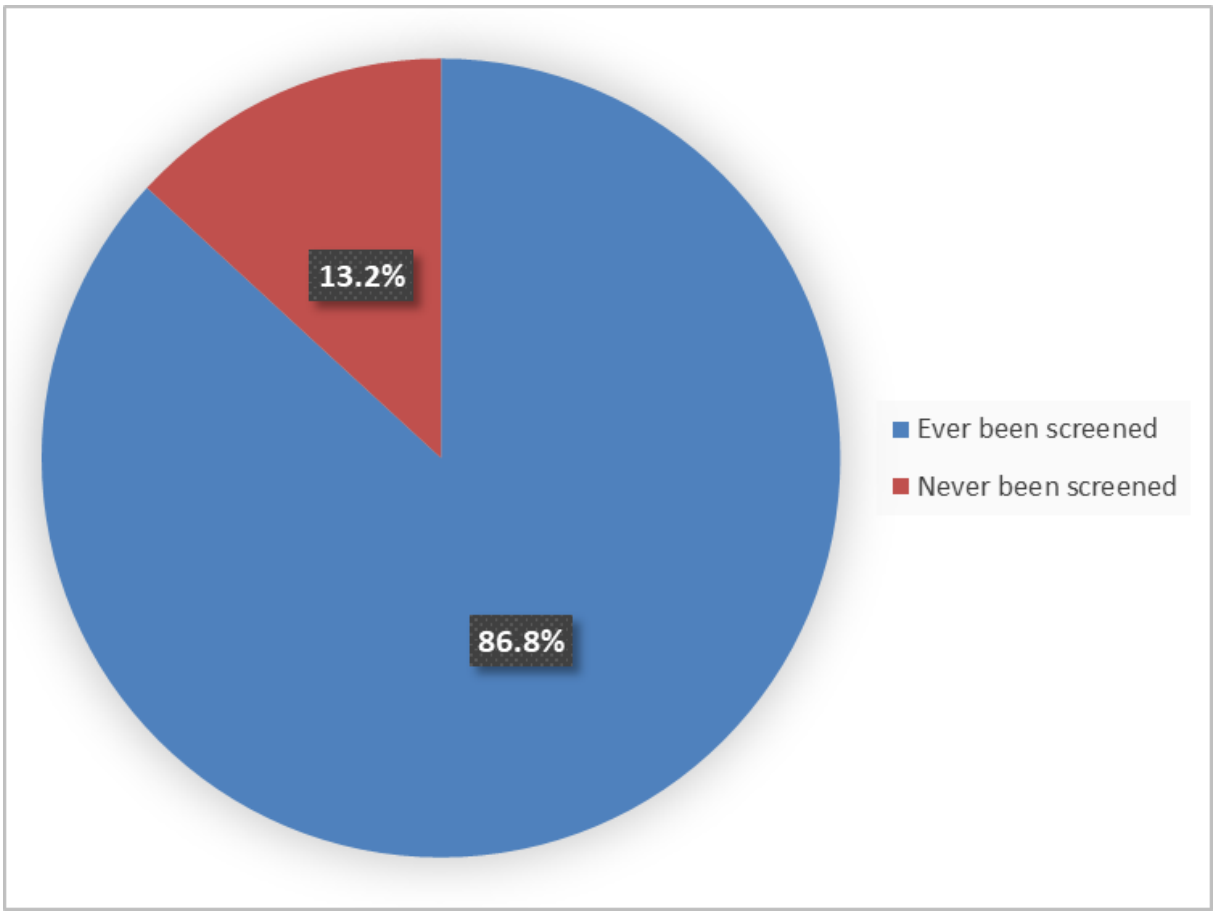


Figure 2: Cervical cancer screening uptake

The majority of participants who had undergone CCS had used HPV self-collection method (52.6%, n=111), followed by the Pap smear/Visual Inspection with Acetic Acid (VIA) methods (45.5%, n=96). Notably, only a small fraction of participants (1.9%, n=4) was unclear about the specific screening method utilized.

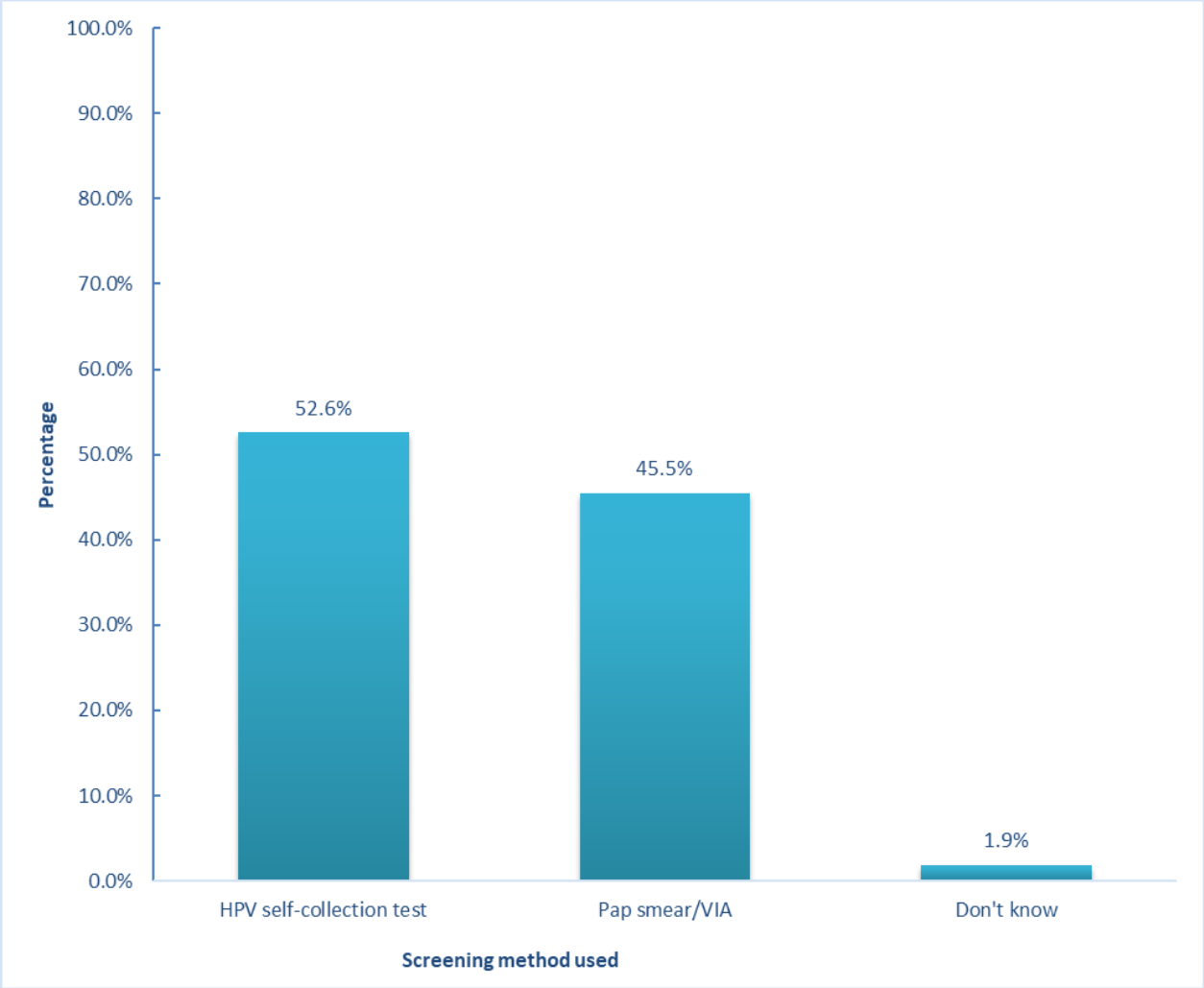


Figure 3: Cervical Cancer Screening Method used

Bivariate analysis of factors associated with cervical cancer screening uptake among HIV-positive attending the ART clinic at Kawempe National Referral Hospital

At the bivariate analysis, factors with a p-value less than 0.2 were identified and selected for further analysis in the multivariate model to evaluate their independent effects on CCS uptake.

Table 4: Bivariate analysis of the demographic factors associated with CCS uptake

Among the demographic factors, the age of study participants was selected for inclusion in the multivariate analysis.

Table 4: Bivariate analysis of the demographic factors associated with CCS uptake

(N=243)

Variable		Cervical cancer screening		cOdds ratio	95% CI	P-value
		No (n=32)	Yes (n=211)			
Age	≤ 30 years	19 (59.4%)	87 (41.1%)	1.0		
	31-39 years	10 (31.2%)	67 (31.8%)	1.06	0.94-1.20	0.356
	≥ 40 years	3 (9.4%)	57 (27.1%)	1.16	1.04-1.29	**0.007**
Marital status	Married/Cohabiting	22 (68%)	115 (54.5%)	1.0		
	Single	5 (16%)	57 (27%)	1.09	0.79-1.22	0.201
	Widowed/Divorced/Separated	5 (16%)	39 (18.5%)	1.06	0.93-1.21	0.407
Education level	Secondary/Tertiary	31 (96.9%)	195 (92.4%)	1.0		
	None/Primary	1 (3.1%)	16 (7.6%)	1.10	0.86-1.24	0.289
Number of children	None	1 (3.1%)	16 (7.6%)	1.0		
	1-3	27 (84.4%)	152 (72.0%)	0.90	0.78-1.03	0.232
	≥ 4	4 (12.5%)	43 (20.4%)	0.97	0.83-1.12	0.706

Table 5: Bivariate analysis of the socio-cultural factors associated with CCS uptake

Among the socio-cultural factors, the variables that had a p-value less than 0.2 and were therefore selected for multivariate analysis included study participants' perceived embarrassment of CCS procedures, perceived risks and benefits of CCS, and the year of HIV diagnosis.

Table 5: Bivariate analysis of the socio-cultural factors associated with CCS uptake

(N=243)

Variable		Cervical cancer screening		cOdds ratio	95% CI	P-value
		No (n=32)	**Yes (n=211)**			
Tribe	Muganda	3 (9.4%)	133 (63%)	1.0		
	Munyankole	14 (43.8%)	35 (16.6%)	0.77	0.64-0.93	0.007
	Musoga	9 (28.1%)	5 (2.4%)	0.87	0.2-0.9	0.327
	Acholi/Langi	1 (3.1%)	6 (2.8%)	0.93	0.68-1.26	0.650
	Others	5 (15.6%)	32 (15.2%)	0.94	0.82-1.08	0.373
Religion	Catholic	10 (31.2%)	83 (39.3%)	1.0		
	Anglican	9 (28.1%)	46 (21.8%)	0.94	0.82-1.07	0.351
	Muslim	6 (18.8%)	36 (17.1%)	0.96	0.83-1.11	0.578
	Born again/SDA	7 (21.9%)	46 (21.8%)	0.97	0.86-1.10	0.666
Occupation	Civil/Private employee	5 (15.6%)	49 (23.2%)	1.0		
	No formal employment	12 (37.5%)	80 (37.9%)	0.96	0.85-1.07	0.473
	Self employed	15 (46.9%)	82 (38.9%)	0.93	0.83-1.05	0.249
Age of 1st sexual intercourse	≥18 years	13 (40.6%)	95 (45.0%)	1.0		
	<18 years	19 (59.4%)	116 (55%)	0.97	0.88-1.08	0.638
Number of sexual partners	One	15 (46.9%)	103 (48.8%)	1.0		
	More than 1	17 (53.1%)	108 (51.2%)	0.99	0.89-1.09	0.838
Ever Heard of CCS	Yes	21 (65.6%)	211 (100%)	1.0		
	No	11 (34.4%)	0 (0.0%)	-	-	-
Think screening procedure is embarrassing	No	3 (9.4%)	157 (74.4%)	1.0		
	Yes	10 (31.2%)	53 (25.1.%)	0.86	0.76-0.96	**0.006**
	Don't know	19 (59.4%)	1 (0.5%)	0.05	0.007-0.344	**0.002**
Perceived risk of CC	Yes	8 (25%)	94 (44.5%)	1.0		
	No	24 (75%)	117 (55.5%)	0.90	0.82-0.99	**0.028**
Think CCS is beneficial	Yes	27 (84.4%)	209 (99.1%)	1.0		
	No	5 (15.6%)	2 (0.9%)	0.32	0.08-0.95	**0.005**
Years diagnosed with HIV	≥ 10 years	5 (15.6%)	57 (27.0%)	1.0		
	≤ 5 years	24 (75%)	90 (42.7%)	0.85	0.75-0.97	**0.013**
	6-9 years	3 (9.4%)	64 (30.3%)	1.04	0.95-1.14	0.405

Table 6: Bivariate analysis of the health facility factors associated with CCS uptake

Regarding health facility factors, variables such as awareness of CCS health talks received at the ART clinic, health worker recommendation on CCS, availability of CCS at the facility, and the cost of CCS at the health facility had a p-value less than 0.2 and were selected for further analysis at multivariate analysis.

Table 6: Bivariate analysis of the health facility factors associated with CCS uptake

(N=243)

Variable		**Cervical cancer screening**		**cOdds ratio**	**95% CI**	**P-value**
		No (n=32)	**Yes (n=211)**			
Distance to the health facility	≤ 5kms	22 (68.8%)	123 (58.3%)	1.0		
	> 5kms	10 (31.2%)	88 (41.7%)	0.94	0.81-1.22	0.245
Heard Health talks on CCS	Yes	13 (40.6%)	187 (88.6%)	1.0		
	No	19 (59.4%)	24 (11.4%)	0.59	0.46-0.78	**<0.00001**
HCPs recommendation on CCS	Yes	10 (31.3%)	209 (99.1%)	1.0		
	No	22 (68.7%)	2 (0.9%)	0.09	0.02-0.33	**<0.00001**
Availability CCS at facility	**Yes**	18 (56.3%)	210 (99.5%)	1.0		
	No/Don't know	14 (43.7%)	1 (0.5%)	0.07	0.01-0.48	**0.007**
Cost of CCS at the facility	Free	13 (40.6%)	209 (99.1%)	1.0		
	Not free/Don’t know	19 (59.4%)	2 (0.9%)	0.10	0.03-0.38	**0.001**

Multivariate analysis of factors associated with cervical cancer screening uptake among HIV-positive attending the ART clinic at Kawempe National Referral Hospital

Table 7: Multivariable analysis of the factors associated with cervical cancer screening uptake

At multivariate analysis, the factors that were found to be significantly associated with CCS at a 5% level of significance and p-value less than 0.05 included: the age of participants, perceived embarrassment of CCS procedures; perceived risk of cervical cancer, perceived benefits of CCS, awareness of CCS health talks received at ART clinic, health worker recommendation on CCS, availability of CCS at the facility and the cost of the CCS at the health facility.

The participants aged 40 years and above were 1.21 times more likely to take up cervical cancer screening as compared to those aged 30 years and below [aOR=1.21, 95% CI: 1.11-1.35, P=<0.00001]. The participants who thought CCS procedures were not embarrassing were more likely to be screened as compared to their counterparts who perceived it otherwise [aOR=0.75, 95% CI: 0.61-0.87, P=0.004] and participants who thought they were at risk of acquiring cervical cancer were more likely to take up CCS compared to those without any perceive risk [aOR=0.82, 95% CI: 0.71-0.93, P=0.006]. The participants with perceived benefits of CCS were more likely to be screened for cervical cancer as compared to those with no perceived benefits to CCS [aOR=0.35, 95% CI: 0.08-0.98, P=0.005] and those participants who had been diagnosed with HIV for more than 10 years were more likely to have undergone CCS than those diagnosed 5 years and less [aOR=0.72, 95% CI: 0.64-0.95, P=0.011]. Furthermore, participants who had ever heard health talks on CCS in the ART clinic were more likely to be screened as compared to those who had never heard health talks on CCS [aOR=0.52, 95% CI: 00.41-0.74, P= <0.00001]. The participants who have received recommendation on CCS from health workers were more likely to be screened for CCS as compared to those who had never [aOR=0.08, 95% CI: 0.01-0.32, P= <0.00001].

The uptake was more likely among participants who were aware of the availability of CCS at the facility than those who weren't aware of the availability of these services [aOR=0.04, 95% CI: 0.004-0.31, P=<0.00001] and lastly, the participants who said the CCS was free at the facility were more likely to be screened as compared to those who either said CCS wasn't free or didn't know anything to do with the cost of CCS [aOR=0.18, 95% CI: 0.04-0.42, P=0.004].

Table 7: Multivariable analysis of the factors associated with cervical cancer screening uptake

(N=243)

Variable	Adjusted Odds ratio	95% CI	P-value
Age			
≤ 30 years	1.0		
31-39 years	1.10	0.98-1.26	0.209
≥ 40 years	1.21	1.11-1.35	**<0.00001**
Think screening procedure is embarrassing			
No	1.0		
Yes	0.75	0.61-0.87	**0.004**
Don't know	0.01	-	-
Perceived risk of cervical cancer			
Yes	1.0		
No	0.82	0.71-0.93	**0.006**
Think CCS is beneficial			
Yes	1.0		
No	0.35	0.08-0.98	**0.005**
Years diagnosed with HIV			
≥ 10 years	1.0		
≤ 5 years	0.72	0.64-0.95	**0.011**
6-9 years	1.07	0.97-1.21	0.452
Heard Health talks on CCS from the clinic			
Yes	1.0		
No	0.52	0.41-0.74	**<0.00001**
Received Recommendation on CCS from HCPs			
Yes	1.0		
No	0.08	0.01-0.32	**<0.00001**
Availability CCS at the facility			
Yes	1.0		
No/Don't know	0.04	0.004-0.31	**<0.00001**
Cost of CCS at the facility			
Free	1.0		
Not free/Don’t know	0.18	0.04-0.42	**0.004**

CHAPTER FIVE
DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

Discussion

We found the uptake of cervical cancer screening among HIV-positive women attending the ART clinic at Kawempe NRH to be high. The factors that were found to be significantly associated with CCS uptake included: the age of participants, perceived embarrassment of CCS procedures; perceived risk of cervical cancer, perceived benefits of CCS, awareness of CCS health talks received at ART clinic, health worker recommendation on CCS, availability of CCS at the facility and the cost of the CCS at the health facility.

In the present study, the mean age and standard deviation of the study respondents was 34.6 years. This is consistent with findings in study in Nigeria among HIV-positive women which also reported the mean age of the research participants to be 35 years (Ononoghu, et al., 2018). Younger women, particularly those in their 20s and early 30s, are most likely to feel less at risk of risk of cervical cancer, believing it more of a concern for older adults which can ultimately result in lower CCS participation rates. In the present study, more than half (53.1%) of the research participants acknowledged having been involved with more than one sexual partner. This number was however higher in a study by Bogale, et al., (2023) in which they reported that 68.4% of the WLHIV in that study had more than one sexual partner. It is pertinent to note that multiple sexual partners and early onset of sexual activity increase the risk of cervical cancer due to the higher likelihood of exposure to Human Papillomavirus.

Cervical cancer screening uptake

Women living with HIV face a heightened risk of cervical cancer. Therefore, cervical cancer screening (CCS) is highly recommended for this vulnerable group to ensure the timely and appropriate management of premalignant lesions. Accordingly, the findings in this study indicate that 86.8% of HIV-positive women had ever screened for cervical cancer. The prevalence of CCS in this study is higher than that registered by Maria, et al., (2022) in a study conducted in TASO clinic in Mulago national referral hospital and that conducted by Nega, et al., (2018) in Northwest Ethiopia which reported the CCS prevalence among HIV-positive women to be 44% and 10%

respectively. The high prevalence of CCS in the present study can partly be attributed to the collaborative support provided by the Gynecology Oncology clinic to the ART clinic. This partnership has significantly enhanced access to screening for WLHIV and a key element of this success is the clinic's adoption of HPV self-testing as the preferred method for CCS, in line with government guidelines. The advantage of this method is that it offers greater convenience, comfort and privacy for the women, which is likely to increase screening uptake. The fact that over half of participants (52.6%) utilized HPV self-collection further demonstrates emphasis on this user-friendly method.

Factors associated with cervical cancer screening:

Demographic characteristics

The study findings revealed that women aged 40 years and above were 1.2 times more likely to take up CCS as compared to those aged 30 years and below. These findings are in consonance with findings in studies among WLHIV conducted by Belay, et al., *(*2023) in Southwest Ethiopia and Bayu, et al., (2016) in Northern Ethiopia which both reported that women of advanced age were more likely to utilize cervical cancer screening services than women of younger ages. Women in their 40s and beyond may have a heightened awareness of their health and potentially a greater perceived risk of cancer. They might be more concerned about age-related health issues, including the increased likelihood of developing cancer with age. This could prompt them to prioritize preventive measures like CCS.

Socio-cultural characteristics

The findings of the multivariate logistic regression analysis revealed that participants diagnosed with HIV 10 years and above were more likely to screen for CCS as compared to those diagnosed 5 years or less. Similar findings were reported in a study conducted by Vigneshwaran, et al., (2023) in rural western Uganda in which they found that WLHIV diagnosed at 4 years and beyond were more likely to undergo CCS as compared to those diagnosed less than 2 years. Mwantake, et al., (2022) in a study in Kilimanjaro Tanzania also reported that participants diagnosed with HIV 4 years and beyond were more likely to screen for cervical cancer as compared to those diagnosed at 3 years or less. This can be explained by the likelihood that women who have been living with HIV for a long time have had numerous interactions with healthcare providers during their regular HIV care appointments. These women are more probable to receive counseling about CCS and its advantages, thereby enhancing their opportunities for screening compared to those who have been diagnosed more

recently.

The study found that the participants who thought CCS procedures were not embarrassing were more likely to be screened as compared to their counterparts who perceived it otherwise. Similar findings were reported by Vigneshwaran, et al., (2023) who in a study among WLHIV in Western Uganda found the perception of the CCS being embarrassing to have a significant negative association with CCS. In that study the women who agreed that CCS was too embarrassing were 98% less likely to take up CCS. The findings indicate that social and psychological factors, such as feelings of embarrassment, significantly affect health-seeking behavior. These findings suggest that there is need of targeted awareness campaigns tailored around normalizing the screening process, emphasizing its importance, and reducing stigma. These campaigns could include testimonials from peers who have undergone CCS and found it beneficial, thereby fostering a supportive community environment.

The study found that participants who thought they were at risk of acquiring cervical cancer were more likely to take up CCS compared to those without any perceived risk of cervical cancer. The findings in the present study conform to those in studies by Mekonnen (2020) and Tchounga, et al., (2019). Mekonnen (2020) in their systematic review and meta-analysis in Ethiopia reported that among HIV-infected women, those who had high perceptions of their vulnerability to developing cervical cancer were three times more likely to be screened for cervical cancer than those who had low perceptions. Tchounga, et al., (2019) in their study among WLHIV in Ivory Coast in West Africa found that women who perceived HIV to be a risk factor for developing cervical cancer were 1.4 times more likely to be screened as to those who thought otherwise. The findings consistently indicate that perceived vulnerability plays a crucial role in health-related decision making. This underscores the importance of risk perception as a driving factor in promoting CCS.

The findings of the study revealed that research participants who thought CCS was beneficial were more likely to be screened for cervical cancer as compared to those with no perceived benefits to CCS. Layet, *et al.,* (2023) in their study in Lira Regional Referral Hospital in Northern Uganda showed similar findings with those WLHIV who thought CCS was beneficial reported to be 1.21 times more likely to screen for cervical as compared to those who didn't perceived CCS to be beneficial to them. Belay, et al., (2023) in their study among HIV-positive women in Southwest Ethiopia also reported that women with perceived benefits of screening were more likely to be screened for cervical

cancer. The implication is that if women are not aware of cervical cancer and neither understand their vulnerability to it, then they will not be motivated to utilize CCS services.

Health facility characteristics

In this study, research participants who had heard health talks on CCS in the ART clinic were more likely to undergo CCS as compared to those who had never heard talks on CCS. These findings are in consonance with findings from a study conducted by Mwantake, et al., (2022) in Tanzania in which they reported that HIV-positive women who had received health talks on cervical cancer from health workers were 17.3 times more likely to be screened for cervical cancer as compared from those who received information from other sources. Health talks especially those facilitated by health workers can motivate HIV-positive women to participate in CCS programs. Many may have barriers to accessing such services, and informative sessions can empower them to take charge of their health.

This study revealed that the participants who had received recommendation on CCS from health workers were more likely to be screened for CCS as compared to those who had never. Health workers often establish a trusting relationship with patients. When they recommend CCS, women are more likely to feel confident in the advice provided, increasing their likelihood of following through.

Similar findings were reported in studies conducted among WLHV by Tchounga, et al., (2019) in Ivory Coast and Dal Maso, et al., (2010) in North Italy. It was reported in both studies that HIV positive women were 10 times more likely to be screened after the proposition of CCS from healthcare providers in HIV care clinics. Tchounga, et al., (2019) reasoned that health care providers can be of influence and are in charge of the linkage and retention of WLHIV and are trained to inform and refer WLHIV to screening facilities.

The study found that the uptake of CCS was more likely among participants who were aware of the availability of CCS at the facility than those who weren't aware of the availability of these services. This is in agreement with a study conducted in Lira regional referral hospital in which Layet, et al., (2023) reported that WLHIV were 1.2 times more likely to screen for cervical cancer if they the location of the facility offering CCS as compared to those who didn't know. It is possible that most of these get the information from peers or health workers which makes them more confidents in seeking CCS. Having a specific location to go to, often highlighted by trusted sources, can reduce anxiety about the screening process.

From the present study, participants who said that CCS was free at the facility were more likely to be screened as compared to those who either said CCS wasn't free or didn't know anything to do with the cost of CCS. Shiferaw, et al., (2018) in their study among HIV-positive women in Ethiopia reported finance tobe a perceived barrier to cervical cancer. They reported that the willingness of research respondents to undergo CCS was much lower for services that required payment. Similarly, Ezechi, et al., (2013) in their study among WLHIV in Nigeria reported that the majority (35.2%) of the research participants reported their refusal to take up screening, to be because of the anticipated high cost of the screening test. These studies collectively suggest that perceived costs, whether actual or anticipated, can significantly impact CCS. To improve CCS uptake, it would be therefore beneficial for healthcare programs to emphasize the availability of free or subsidized CCS services and to provide clear, accessible information regarding costs.

Study limitations and strength

This study provides vital information on factors associated with cervical cancer screening among HIV-positive women at Kawempe National Referral Hospital. The study findings may contribute to improving cervical cancer screening uptake among this vulnerable group of women. The key limitations of this study include the fact that it was hospital-based, including women who attended the ART clinic in Kawempe NRH, hence affecting the generalization of findings to the whole WLHIV population in Uganda. The current study also primarily focuses on quantitative data, which may not capture the nuanced experiences and contextual factors that influence participants' decisions regarding CCS. While statistical analyses provide valuable insights into trends and correlations, they may overlook the underlying qualitative dimensions, such as personal beliefs, cultural attitudes, and specific barriers faced by individuals. Thus, there is a strong justification for future research to adopt a mixed-methods approach, combining both quantitative and qualitative methodologies. This could enrich the understanding of the barriers to CCS by allowing researchers to delve deeper into participants lived experiences and perceptions.

Conclusions

The study concludes that the uptake of cervical cancer screening among HIV-positive women was 86.8%. The factors that were significantly associated with cervical cancer screening included being aged 40 years and beyond, perceived embarrassment to CCS procedures, perceived risk of cervical cancer, perceived benefits of CCS, 10 years or more lapsing after diagnosing HIV, hearing health

talks on CCS, healthcare provider recommendation on CCS, awareness on the availability of CCS services and lastly, anticipated cost of CCS services.

Recommendations

Based on the study findings, the following recommendations are proposed:

Healthcare providers should be systematically encouraged and supported to incorporate cervical cancer screening (CCS) discussions into every routine HIV treatment consultation. This approach will help ensure that women receive consistent, comprehensive information and personalized recommendations regarding CCS, ultimately increasing screening uptake and early detection.

The Ministry of Health should partner with healthcare providers to widely promote free cervical cancer screening for women living with HIV. Clear communication about the free or low-cost services can reduce financial barriers, dispel misconceptions, and boost screening uptake among WLHIV

Healthcare providers should continue to promote the use of HPV self-collection methods, as they offer greater privacy and comfort to women. Training healthcare providers on how to encourage and support patients in using these self-collection kits can further enhance screening uptake

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APPENDICES

APPENDIX I: INFORMED CONSENT FORM

Title:

The prevalence and the factors associated with cervical cancer screening uptake among HIV-positive women attending the ART clinic at Kawempe National Referral Hospital.

Principal Investigator: KITOKO KILOLO Carine, 0778128912. Third-Year Medical student pursuing a Master's Degree in Obstetrics and Gynecology at Makerere University

Background and rationale for the study

Cervical cancer is a major public health concern globally and in Uganda. The incidence of cervical cancer is at least 4 times higher among HIV-positive women as compared to their HIV- negative counterparts. Cervical cancer screening is a secondary prevention approach in theWHO's strategy for the elimination of cervical cancer. The target is to have globally, 70% of women screened for cervical cancer by the age of 35 years and again by 45 years by the year 2030. The major goal of cervical cancer screening is to reduce cervical cancer incidence and mortality through early detection and treatment of women with pre-malignant lesions. The aim ofthe present study will be to determine the prevalence and factors associated with cervical cancer screening uptake among HIV-positive women attending the ART clinic at Kawempe National Referral Hospital

Purpose of the study

The study will aim to determine the prevalence and factors associated with cervical cancer screening among HIV-positive women attending the ART clinic of Kawempe NRH.

Name of sponsor: Self

Estimated duration which participant will take into the study

The questions will take a maximum of 20 minutes.

Participation in the study:

You have been recognized to take part in this study. If you accept to participate in this study, you

will be requested to answer questions about the study from the researcher or research assistants as guided by an interviewer-administered questionnaire.

Participant selection

The study will involve all HIV-positive women attending the ART clinic of Kawempe NRH. The required sample size will be 243 and to participate in the study, one will have to provide written informed consent.

Possible risks/discomforts

During the study, some sensitive and personal information will be sought, but no harm or risksare expected to occur to you during the study

Potential benefits

Your involvement in this study is likely to provide an opportunity to reflect more deeply on taking up cervical cancer screening among HIV-positive women with the aim of developing improved protocols to enhance the early detection of precancerous lesions among this vulnerable sub-population.

Confidentiality

The information you share with us will be kept confidential. The study findings will be reported in summary form and your name will not be used in any report. If any possibility arises that someone other than the researcher such as the School of Medicine Research and Ethics Committee and Uganda National Council for Science and Technology as entities may have access to the private information that identifies you by name, you will be informed of this possibility.

Costs:

You will not incur any costs due to participation in this study

Compensation for participation in the study

You will receive compensation for your time spent in this study of Uganda Shillings 10,000. If the

participant develops any complications, urgent medical care will be provided.

Reimbursement of study participants:

Participants will be reimbursed for reasonable expenses related to study participation, including extended transportation and meal costs resulting from extended study duration, up to Uganda shillings 30,000."

Questions about research participants' rights

If you have any questions related to the study, consult Dr. Kitoko Kilolo Carine, the Principal Investigator of this study on phone or email as detailed below:

Tel: +256-778128912

Email: carinekitoko1@gmail.com

For any questions related to your rights as a research participant in this study, contact Prof. Ocama Ponsiano, Chairman SOM-REC on phone or email as detailed below:

Tel: +256-772 421 190

Email: ponsiano.ocama@gmail.com

Statement of voluntariness and the right to withdraw:

Participation in this study is voluntary and therefore you are free to participate or not to participate in the study. No one should force you to participate and if you were unwilling to participate, be rest assured that your refusal would not result in any form of punishment nor deprivation of medical care. Furthermore, even if you initially consented to participate in this study, you are still free to withdraw from the study at any time for any reason

Dissemination of results

The findings of the study will be presented to the Department of Obstetrics and Gynecology in MAKCHS as a requirement for the partial fulfillment of the award of a master's degree in obstetrics and gynecology. The findings of the study will also be shared with Kawempe National Referral hospital

Ethical approval:

The School of Medicine Research and Ethics Committee of Makerere University has approved this study.

By putting your signature or thumbprint on this assent form, you are voluntarily agreeing to participate. You are free to decline to answer any particular question you do not wish to answer for any reason

Statement of Consent

I …… acknowledge that the researcher has described to me what is going to be done, the risks, the benefits involved and my rights regarding this study. I have also understood that my decision to participate in this study will not alter or have an effect on the medical care provided. In the use of this information, my identity will be a secret. I have not been forced to participate in this study and aware that I may withdraw at any time for whichever reason. I understand that by signing this form, I do not waive any of my legalrights but merely indicate that I have been informed about the research study in which I am voluntarily agreeing to participate. A copy of this form will be provided to me.

Name …….

Signature/thumbprint of participant ……Date……

Name…….

Signature of witness……Date……

Name ……..

Signature of researcher/research assistant……Date ……

APPENDIX II: TRANSLATED INFORMED CONSENT FORM

OMUTWE: OMUWENDO GWABAKYALA N'ENSONGA ZEBASINZIIRAKO OKUKKIRIZA OKUKEBEREBWA KOOKOLO W'OMUMWA GWA NABAANA ERA NGA BALINA AKAWUKA AKALEETA MUKENENYA NGA BAFUNIRA OBUJJANJABI KU DDWALIRO LYA GAVUMENTI EKKULU ELY'EKAWEMPE.

Akulidde okunonyereza:
KITOKO KILOLO Carine, 0778128912. Omuyizi mu ttendekero ekkulu ely'e Makerere ng'asoma ddiguli ey'okubiri mu masomo ga Obstetrics ne Gynecology. Ali mu mwaka gwe ogw'okubiri.

Enyanjula:
Abantu bangi abakwaatibwa obulwadde bwa kokoolo w'omumwa gwa nabaana mu nsi yonna era ne mu Uganda. Abantu abapya abafuna obulwadde buno ate nga balina akawuka akaleeta mukenenya bakubisaamu emirundi ena kwaabo abatalina kawuka. Okukebera kokoolo w'omumwa gwa nabaana kiyambako okumutaangira ng'omuntu tanalwaala era kilambikiddwa bulungi mu nkola ey'ekitongole kyamawanga amagatte ekilondoola ebyobulamu mu nsi yonna (WHO). Ekigendererwa kye nsi yonna kwekuba nabakyala ebitundu 70 ku buli 100 abakebeddwa obulwadde buno nga tebanaweza myaka 35 era baddemu bakeberebwe nga bamaze okuweza emyaka 45. Kino kisuubirwa okutuukibwaako nga omwaka 2030 tegunaba kutuuka.

Ekigendererwa kyokukebera kokoola w'omumwa gwa nabaana kwekukendeeza omuwendo gwaabo abafuna kokoolo w'omumwa gwa nabaana omulundi ogusooka naabo abafa obulwadde buno. Enjawulo eletebwaawo ssinga abakyala abalina obubonero bwa kokoolo obusookera ddala bakeberebwa mangu era nebafuna obujjanjabi.

Okunonyereza kuno kugenda kuzuula omuwendo gwabakyala n'ensonga zebasinziirako okukkiriza okukeberebwa kookolo w'omumwa gwa nabaana era ngabalina akawuka akaleeta mukenenya nga ngabafunira obujjanjabi ku ddwaliro lya gavumenti ekkulu ely'e Kawempe.

Ebigendererwa by'okunonyereza
Okunonyereza kuno kugenda kuzuula omuwendo gwabakyala n'ensonga zebasinziirako okukkiriza okukeberebwa kookolo w'omumwa gwa nabaana era ngabalina akawuka akaleeta mukenenya nga ngabafunira obujjanjabi ku ddwaliro lya gavumenti ekkulu ely'e Kawempe.

Atadde ssente mukunonyereza

Omuyizi yasasulidde okunonyereza kuno.

Okwetaba mu kunonyereza?

Olondeddwa okwetaba mukunonyereza kuno. Ssinga oba okkirizza okwetabamu, ojja kusabibwa okuddamu ebibuuzo ebikwata kukunonyereza nga bibuuzibwa omunonyereza oba abamuyamba ko. Ebibuuzo byebanabuuza bijja kuba kulupapula era bijja kutwaala edakiika ezitasukka 20.

Abanetaba mukunonyereza banalondebwa batya?

Abakyala bonna abafunira eddagala ku ddwaliro lya Gavumenti ekkulu ely'e Kawempe nga balina akawuka akaleeta mukenenya bajja kutuukibwako. Awamu tujja kuyingiza abakyala 243 mukunonyereza kuno era buli omu ajja kusabibwa okuwa olukusa nga tanetaba mukunonyereza. Tujja kubuuza n'abasawo abajjanjaba abakyala abalina akawuka akaleeta mukenenya nga bakola ku ddwaliro lino.

Obutyabaga:

Mukunonyereza kuno tujja kubuuza ebibuuzo nga bikwata kubulamu bw'omuntu wadde nga tetusuubira nti wajja kubaawo obulabe oba obutyabaga obunatuuka ku muntu yenna eyetabyeemu.

Ebyokuganyulwaamu:

Okwetabakwo mukunonyereza kuno kuyinza okutondawo omukisa eri abakyala abalina akawuka akaleeta mukenenya okwongera okufumiitiriza ku nsonga y'okwekebeza kokoola w'omumwa gwa nabaana. Era kino kijja kuyambako okunonya engeri endala ezokukebera obubonero obusooka obwa kokoolo amangu ddala mu bantu bano abali mu katyabaga k'okukwatibwa obulwadde.

Okukuuma amawulire gonotuwa nga gakyaama:

Amawulire gonotuwa gajja kukuumibwa nga gakyaama. Ebinaava mukunonyereza bijja kuteekebwa mu alipoota enyimpi naye nga tetujja kukozesa mannya go mu alipoota yonna. Ssinga kiba kyetagisa omuntu omulala atali munonyereza okulaba kubivudde mukunonyereza neebyo ebiliko amannya go, gamba nga abakakiiko akakwasisa empisa (School of Medicine Research Ethics Committee) oba aba Uganda National Council for Science and Technology, ojja kutegezebwa.

Obwanakyewa

Okwetaba mukunonyereza kuno kwa kyeyagalire era oli wa ddembe okwetabamu oba obutetabaamu. Teri

muntu yenna alina kukukaka kwetabamu era ssinga oba osazeewo obutetabaamu, tojja kubonerezebwa mu ngeri yonna oba okugaanibwa okufuna obujjanjabi. Era ne bwoba ngawakkiriza okwetabamu oli wa ddembe okuvaamu essaawa yonna.

Ensasaanya nokuweebwa akasiimo:

Tojja kusasaanya ssente zonna mukunonyereza kuno era ojja kuweebwayo 10,000/= olw'obudde bwonooba otuwadde. Ssinga omuntu yenna afuna embeera yonna nga yetaaga obujjanjabi obwamangu bujja kumuweebwa.

Okuddizibwa ssente z'abeetabye mu kunoonyereza:

Abeetabye mu kunoonyereza kuno bagenda kuddizibwa ssente ensaamusaamu ezikwata ku kwetaba mu kunoonyereza kuno, omuli n'ensimbi z'entambula n'emmere ez'okwongezaayo ezivudde mu kwetaba mu kunoonyereza okumala ebbanga eddene,okutuuka ku sillingi za Uganda 30,000."

Ebibuuzo ebikwata ku ddembe ly'abeetabye mu kunoonyereza:

Bwoba olina ekibuuzo kyonna ekikwata ku kunoonyereza kuno, weebuuze ku Dr. Kitoko Kilolo Carine, Omunoonyereza omukulu ow'okunoonyereza kuno ku ssimu oba ku email nga bwe kirambikiddwa wansi:

Essimu: 256-778128912

Email: carinekitoko1@gmail.com

Ku bibuuzo byonna ebikwata ku ddembe lyo ngomuntu eyeetabye mu kunoonyereza kuno, tuukirira pulofeesa Ocama Ponsiano, Ssentebe wa SOM-REC ku ssimu oba ku email nga bwe kirambikiddwa wansi:

+256-772 421 190.

Email: ponsiano.ocama@gmail.com

Okusasaanya ebyo ebinaava mu kunonyereza:

Ebinaava mukunonyereza bijja kugabanibwako nabo abali mu ttendekero ekkulu e ly'e Makerere ku ttabi lya Obstetrics ne Gynecology nga kino kyekimu kubyetagisa buli muyizi nga tanaba kuweebwa diguli ey'okubiri mu masomo ga Obstetrics ne Gynecology. Era ebivuddemu bijja kugabanibwako n'abe ddwaliro ekkulu ely'e Kawempe.

Okuwa olukusa:

Abakakiiko ka School of Medicine Research and Ethics Committee bebawadde olukusa okunonyereza kuno okugenda mu maaso.

Bwonoteeka omukono gwo oba ekinkumu kulupapula, ojja kuba okkirizza okwetaba mukunonyereza. Oli

waddembe obutaddamu bibuuzo ssinga owulira ng'olina ensonga ekugaana.

Okukkiriza okwetabamu:

Nze..... nkakasa nti omunonyereza anyinyonyodde ekigenda okukolebwa, obutyabaga obuyinza okubaawo, eby'okuganyulwaamu, n'eddembe lyange mu kunonyereza kuno. Nkitegedde nti okusalawo kwange tekujja kukyuusa mu ngeri gyenfunamu obujjanjabi. Amawulire aganaava mu kunonyereza bweganakozesebwa, tewali ajja kumanya nti nze nagawaddeyo. Sikakiddwa kwetaba muunonyereza kuno era nkimanyi nti nsobola okuva mukunonyereza ekiseera kyonna nga siwadde nsonga. Nkitegeera nti bwenteeka omukono ku lupapula luno, tekijjawo ddembe lyange wabula okulaga nti nyinyonyoddwa ebikwata ku kunonyereza era nti nsazeewo kulwange okwetaba mu kunonyereza. Nja kuweebwa ekiwandiiko ekikwaata ku kunonyereza.

Erinnya ly'oyo eyetabyeemu …….

Omukono/ekinkumu gw'oyo/ky'oyo eyetabyeemu …….

Ennaku z'omwezi …….

Erinnya ly'oyo abaddewo……..

Omukono gw'oyo abaddewo……..……

Ennaku z'omwezi…….

Erinnya ly'omunonyereza……..

Omukono gw'omunonyereza……

Ennaku z'omwezi ……..….

APPENDIX III: DATA COLLECTION QUESTIONNAIRE

Prevalence and factors associated with cervical cancer screening among HIV-positivewomen attending the ART clinic at Kawempe National Referral Hospital

SECTION A: BASIC DEMOGRAPHIC INFORMATION

1. Age (in years):

……

2. Marital status

a) Married/Cohabiting [ ] b) Single [ ] c) Widowed/Divorced [ ]

3. Educational level

a) Primary [b) Secondary [ ] c) Tertiary [ ]

d) No formal education [ ]

e) Others [Specify]……

4. Number of children:

a) None [ ]

b) 1-4 [ ]

c) 4 and beyond [ ]

SECTION B: SOCIO-CULTURAL CHARACTERISTICS AND CERVICAL CANCER SCREENING UPTAKE

5. Tribe

a) Muganda **[ ]** b) Muyankole **[ ]** c) Acholi/Langi **[ ]**

d) Musoga **[ ]** d) Others [Specify]…….

6. Religion

a) Catholic [ ] b) Anglican [ ] c) Born again /SDA [ ]

d) Muslim [ ] e) Others [Specify]…….

7. Occupation:

a) No formal employment [ ] b) Civil/Private servant [ ] c) Self-employed [ ] d) others [specify]……

8. Age at first sexual intercourse:

a) Less than 18 years [] b) Above 18 years

9. Number of sexual partners

a) 1[ ] b) More than 1 [ ]

10) Ever Heard of cervical cancer screening?

a) Yes [ ] b) No [ ]

11) Have you ever received cervical cancer screening?

a) Yes [ ] b) No [ ]

12) If yes, which year ?…….

13) If yes, which method did you use?

a) HPV self-collection test [ ]

b) Pap smear [ ]

c) VIA [ ]

d) Co-testing [ ]

e) I don't know [ ]

14) If No, why?

a) Do not have vaginal discharge/vaginal bleeding

b) Fear of pain when doing the procedure

c) Never been recommended by health workers

d) The test is embarrassing

e) Lack of time

f) Others [specify]…….

15) Is the procedure for cervical cancer screening embarrassing?

a) Yes [ ] b) No [ ] c) I don't know [ ]

16)Do you think you are at risk of developing cervical cancer?

a) Yes [ ] b) No [ ]

17)Do you think screening for cervical cancer is of any benefit to you?

a) Yes [ ] b) No [ ]

Give reasons for your answer above: ……

18)You were diagnosed with HIV?

a) ≤ 5 years [] b) 6-9 years [ ] c) ≥ 10 years [ ]

SECTION C: HEALTH FACILITY FACTORS

19)How far are you from this health facility?

a) Less than 5km [ ] b) Above 5km [ ]

20)Have you ever had any health worker talk on cervical cancer from this clinic?

a)Yes b) No

21) Has any health worker from this facility ever recommended cervical cancer screening toyou?

a) Yes [ ] b) No [ ]

22)Does this facility conduct cervical cancer screening?

a)Yes [ ] b) No [ ] c) I don't know [ ]

23)What is the cost of the cervical cancer screening?

a) Free [ ] b) Not free [ ] c) I don't know []

APPENDIX IV: LETTER FROM Mak-SOMREC

MAKERERE UNIVERSITY
P.O. Box 7072 Kampala, Uganda
E-mail: rresearch9@gmail.com
Phone: 256 414 533541
Fax: 256 414 541036/0414 532204
COLLEGE OF HEALTH SCIENCES
SCHOOL OF MEDICINE
RESEARCH ETHICS COMMITTEE

To: carine kilolo

28/10/2024

0778128912

Type: Initial Review

Re: Mak-SOMREC-2024-1043: Prevalence and factors associated with cervical cancer screening among HIV positive women attending ART clinic at Kawempe National Referral Hospital

I am pleased to inform you that at the **196** convened meeting on **24/09/2024**, the MAK School of Medicine REC (Mak-SOMREC) meeting voted to approve the above referenced application.
Approval of the research is for the period of **28/10/2024** to **28/10/2025.**

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 **28/10/2025** 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 MAK School of Medicine REC (Mak-SOMREC):

No.	Document Title	Language	Version Number	Version Date
1	REVISED PROPOSAL AFTER SOMREC COMMENT	English	1	--
2	Translated consent	luganda	1	--
3	Informed Consent forms	English	1	--
4	COVID-19 & EBOLA risk management plan	English	1	--
5	Data collection tools	English	1	2024-06-16

Yours Sincerely

MAKERERE UNIVERSITY
SCHOOL OF MEDICINE
INITIAL APPROVAL
VALID UNTIL
28 OCT 2025
RESEARCH & ETHICS COMMITTEE
P.O. BOX 7072,KAMPALA

Prof. Ponsiano Ocama
For: MAK School of Medicine REC (Mak-SOMREC)

APPENDIX V: LETTER OF CLEARANCE FROM KAWEMPE NATIONAL REFERRAL HOSPITAL

Tele : 0414 672552
Email :
kawemperefhosp18@gmail.com

FOR ANY CORRESPONDENCE ON THIS SUBJECT PLEASE QUOTE NO:**ED.01/04//024**

Office of the Executive Director
Kawempe National Referral Hospital
Plot 1035/3883 Kawempe, Bombo Road
P. o. Box 3253 Kampala, Uganda

THE REPUBLIC OF UGANDA

16th December 2024

Ward In-Charges
ART Clinic
Kawempe NRH

Dear Sir/Madam,

Ref: Administrative clearance to conduct Research at Kawempe National Referral Hospital.

This letter authorizes Dr. Kilolo Carine Kitoko to conduct the research project **"Prevalence and factors associated with cervical cancer screening among HIV positive women attending ART clinic at Kawempe National Referral Hospital"**

Kawempe National Referral Hospital acknowledges that it has reviewed the protocol presented by the researchers and the ethics approval letter from the Makerere University School of Medicine Research and Ethics Committee.

The hospital accepts the protocol and provides administrative clearance for the study.

KAWEMPE NATIONAL REFERRAL HOSPITAL
16 DEC 2024
EXECUTIVE DIRECTOR
KAWEMPE NATIONAL REFERRAL HOSPITAL

Dr. Byaruhanga Kayogoza Emmanuel
Executive Director